OSLOMET

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CEO Power and the Market's Reaction to Mergers and Acquisitions

An Empirical Analysis of Listed Norwegian Firms

Abstract

In this paper, we investigate the effects of CEO power on the announcement returns of Norwegian acquiring firms that have announced mergers or acquisitions (M&As) in the period 2008-2017. Based on existing literature and studies on the field, we expect CEO power to affect M&A announcement returns negatively. Our results, however, suggest that CEO power does not significantly affect the short-term M&A announcement returns of Norwegian acquiring firms. These results are robust across several different measures of CEO power. Our findings indicate that powerful CEOs do not necessarily use their power to put their own interests ahead of the interests of the shareholders when engaging in M&A deals. As there are very few studies focusing on the effects of CEO power on M&A returns, we contribute to extant literature by examining this topic further in a Norwegian setting and by using five different measures of CEO power in doing so. Our research further shows that both the percentage of CEO ownership and the debt ratio of the acquiring firm affect M&A announcement returns positively, which might suggest that decreased agency problems are associated with higher market returns related to M&A announcements.

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1 Introduction

Mergers and acquisitions (M&As) are one of the largest forms of corporate investment and are an essential part of corporate growth strategies. As a result, numerous studies have looked at the effect of M&As on the stock market reactions for both the acquirer and the target company. In many cases, findings show that the short-term stock returns for the acquiring companies in M&As are remarkably low or even negative (Andrade, Mitchell & Stafford, 2001; Grinstein & Hribar, 2004). In addition, several studies show that the stock price of the acquiring firms have a negative drift in the years after the acquisition (Agrawal, Jaffe, & Mandelker, 1992; Loughran & Vijh, 1997). Seeing as these transactions do not necessarily create value for the shareholders of the acquiring firm, the question is why these companies choose to invest large amounts of time and resources to go through with them. It might be natural to suspect that many CEOs have other incentives than creating value for the shareholders (Jensen, 1986).

There have been several attempts to explain the driving forces behind mergers and acquisitions, and as a result, various theories have been developed on the subject. Berkovitch and Narayanan (1993) split these theories into three main categories. The first category is the synergy perspective, where companies undertake mergers and acquisitions to improve the daily operations and thus create value for the shareholders. The second perspective points out that individuals are not fully rational, and that this can lead to incorrect assessments. The third is the agency problem perspective, where it is believed that CEOs may initiate mergers and acquisitions in order to maximize their self-interest (Jensen, 1986). The idea that agency problems result in extraction of value from the acquirer shareholders by acquirer CEOs is relatively common in financial literature (Berkovitch & Narayanan, 1993). More recently, there have also been empirical studies examining whether power makes CEOs more inclined to put their self-interest ahead of the interests of the shareholder when making the decision to enter M&A deals (Bebchuk, Cremers & Peyer, 2011; Grinstein & Hribar, 2004).

In line with the agency problem perspective, the main purpose of this paper is to examine the following research question: *How does CEO power affect the market reaction in relation to mergers and acquisitions?* By answering this, we contribute to the literature on M&As and managerial power in several different ways. Firstly, we focus on the effects of CEO power in relation to M&As, which is an aspect that has arguably not been extensively examined in prior studies. Many studies on the field focus on the effects of CEO hubris. In line with other studies, Malmendier and Tate (2008) find that the market reactions to M&A announcements

by firms with overconfident CEOs are generally negative. Our paper thereby differs from similar studies by focusing on a different aspect of CEO characteristics. This is done to get a better understanding of the market reactions to M&A announcements. Secondly, compared to the few studies that do examine the effects of CEO power on M&A announcement returns, we use a wider array of CEO power measures. Thirdly, we examine Norwegian acquiring firms, and our research brings more clarity to how CEO power influences the market reactions in the Norwegian M&A market. In contrast, most of the studies on the field focus on regions where the majority of M&A deals take place, namely the US and the EU. There are no studies that we know of that focus on the effects of CEO power on the M&A announcement returns of Norwegian acquiring firms.

The logic underlying our thesis is that CEOs with a lot of power may exploit their position and put their own self-interest ahead of the interest of the shareholders when carrying out mergers and acquisitions. This perception stems from principal-agent theory where it is assumed that there is a conflict of interest between the shareholders and the CEO and that both parties have incentives to maximize their own utility (Jensen & Meckling, 1976). In addition, our thesis is based on managerial power theory which suggests that powerful CEOs use their power to gain excess benefits from the company (Bebchuk, Fried & Walker, 2002). The inspiration is also derived from studies on the relationship between managerial power and engagement in M&A deals.

In corporate governance literature, some studies point out that CEO power has an effect on the announcement returns related to M&As. For instance, Grinstein and Hribar (2004) find that CEO power is associated with negative market reactions in relation to M&As. Their findings also show that executive bonuses related to M&As are mainly based on increased firm size, indicating that CEOs have strong monetary incentives to increase firm size. Jensen (1986) argues that CEOs also have strong incentives to increase firm size because of the prestige and power associated with managing a larger firm. These studies may explain why powerful CEOs might put their self-interest first and exploit their position when engaging in M&As.

Using a sample of 247 completed Norwegian mergers and acquisitions announced between 2008 and 2017, we find no evidence that CEO power explains the cross-sectional variation in market reactions to announcements of M&A deals for the acquiring company. These results are robust across various determinants of CEO power, as well as event windows of differing

lengths. We therefore have no support for the view that CEO power has a significant effect on M&A announcement returns. These findings might indicate that powerful CEOs do not necessarily put their own interests ahead of the interests of the shareholders when engaging in M&As for Norwegian acquiring firms. Our research also shows that both debt ratio and CEO ownership have a positive effect on announcement returns, which might indicate that decreased agency problems are associated with better short-term market reactions.

2 Literature review

2.1 Principal-Agent Theory

The principal-agent theory is an influential theory explaining why conflict of interest occurs in a company. The theory has its origins in the early 20th century where the competitive business environment forced small private firms to expand into large public companies with multiple owners. This tendency led to the separation of ownership and control, which is the cornerstone of principal-agent theory (Berle & Means, 1932). The theory is based on the relationship between the principal and the agent, which translates to respectively the shareholders and the CEO in our case. The principal enters into a contract with the agent to run the firm on their behalf, and the contract gives the agent authority to make important decisions. This gives rise to the principal-agent problem as there is not perfect goal congruence between the principal and the agent. In our case, the misalignment of interests can manifest itself in that the CEO engages in investment decisions based on self-interest. One way to reduce or even avoid the principal-agent problem is by creating complete contracts that deal perfectly with every aspect of the agent's behavior. The principal, however, cannot specify such a contract, and if it was possible to specify, effective enforcement of it would be too costly (Jensen & Meckling, 1976).

According to Jensen and Meckling (1976), conflict of interest occurs as a result of individuals taking actions to maximize their own utility. Thus, the agents will not necessarily act in the best interest of the shareholders. They will have incentives to maximize their own interests and gain economic advantages at the expense of the interests of the principal. This is referred to as opportunistic behavior and is one of the main assumptions in the principal-agent theory. One common opportunistic behavior is aggressively growing the firm or excessive investments, so-called empire building (Hope & Thomas, 2008). One of the most frequent ways of conducting empire building is by buying up other firms. Empire building can manifest itself by investing in M&A projects with negative net present value (NPV) that destroy rather than create shareholder value (Goergen, 2012, p. 11). In line with this, Jensen (1986) argues that management may not act in the best interest of the shareholders when engaging in takeovers.

One clear benefit of firm growth for the CEO is that managerial compensation tends to increase as the size of the firm increases. Harford and Li (2007) examine the effect of acquisition events on executive compensation. They find that compensation increases

following an acquisition, even in instances where the shareholders are worse off. Khorana and Zenner (1998) also find that the direct post-acquisition effect on CEO compensation is positive for firms engaging in acquisitions characterized as bad for the shareholders. In addition to compensation, Jensen (1986) argues that empire building also tends to be beneficial because of the prestige and power associated with managing a larger firm. The findings of Avery, Chevalier and Schaefer (1998) support the view that CEOs have incentives to engage in acquisitions for the purpose of increasing their prestige and reputation in the business community. The empire building aspect of principal-agent theory may thereby explain why CEOs might engage in value-destroying M&As.

Another key assumption in the theory is asymmetric information between the principal and the agent. The concept of asymmetric information is a necessary condition for complete contracts to be impossible to make and enforce (Goergen, 2012, p. 8). The concept implies that the agent has more information than the principal. For example, CEOs normally have much more information regarding the day-to-day operation of the company. Additionally, the CEOs have perfect information regarding their own intentions. The owners, on the other hand, cannot be completely sure if the CEO engages in M&A deals to maximize shareholder value or if he/she has an agenda of maximizing self-interest. This is a typical moral hazard problem. Holmström (1979) argues that asymmetric information is the main source of the moral hazard problem and thus agency costs in a company.

Corporate governance mechanisms are used to ensure that the agent runs the firm for the benefit of the principal (Goergen, 2012, p. 4). In practice, one corporate governance mechanism used to avoid the principal-agent problem is a compensation program that leads to interest convergence between the CEO and the shareholders. Jensen and Murphy (1990b) emphasize the importance of performance-linked compensation in order to avoid agency problems in a company. They argue that making an incentive program that makes the CEO work in line with the shareholders interest is not difficult. They present three basic policies that combined create monetary incentives for the CEO to maximize shareholder value. The first policy is to make the CEO a considerable owner of the company through share-based compensation. Fama and Jensen (1983) point out the importance of having a contract that aligns the financial interests of the owners and the CEO. They argue that agency problems develop as a result of key decision makers not having a financial interest in the outcome of their decisions. The second policy is to create compensation programs that reward good performance and punishes bad performance. The last policy says that the threat of dismissal

in regard to poor performance should be real. By implementing such policies, Jensen and Murphy (1990b) suggest that the CEO might be more likely to work in line with the interest of the shareholders.

Another common mechanism to control the agency problems in a company is monitoring. In practice, one way to monitor the CEO on behalf of the owners is through the board of directors. One of the primary responsibilities of the board is to make sure that the interests of the CEO and the owners are aligned (Shivdasani & Yermack, 1999). Additionally, the board also provides the CEO with advice and thereby facilitates the conditions for effective decision making (Coles, Daniel & Naveen, 2008). Monitoring can also be done by a large owner. Bebchuk and Fried (2004, p. 82) argue that large shareholders have better incentives to monitor the management than smaller ones. Creditor monitoring is also a strong disciplinary mechanism. Debt can mitigate agency problems by committing a certain amount of the firm's cash flows to servicing the debt and thereby preventing the managers from wasting shareholder funds (Goergen, 2012, p. 105). As such, monitoring can be important to achieve goal congruence between the agent and the principal.

The principal-agent theory is important when it comes to understanding the conflict of interest that occurs in a company. Additionally, it helps us determine measures that reduce the agency problem. However, the empirical grounds for it is weak (Anthony & Govindarajan, 2007, p. 533). As we have discussed earlier, principal-agent theory suggests that one solution to the agency problem is monitoring the agent through the board of directors. A problem the theory does not take into consideration is that the board may not always be an efficient monitor. This is due to the common critique that the CEO often has an important role in appointing board members. Board members may therefore have strong incentives to work in favor of the CEO in hope that he/she will participate in reappointing them (Bebchuk & Fried, 2003, 2005). This gives the CEO significant power over the board. For instance, Bebchuk and Fried (2002) argue that CEOs can use their power over the board to increase their own compensation regardless of their performance. The view that CEO power can potentially influence both monitoring quality and CEO compensation leads us to the managerial power theory.

2.2 Managerial Power Theory

The managerial power theory is an important supplement to the principal-agent theory. Both theories have the same starting point, where it is assumed that both the CEO and the shareholders want to maximize their own interest (Randøy & Skalpe, 2007). However, they have a different view regarding the effect of compensation on agency problems. In contrast to the principal-agent theory, where the compensation is one of the main tools to avoid agency problems, managerial power theory suggests that compensation is part of the problems itself (Bebchuk & Fried, 2004). The theory explains that a powerful CEO can use his/her power to achieve high compensation without necessarily showing good performance (Randøy & Skalpe, 2010; Bebchuk & Fried, 2004; Murphy, 2002).

Bebchuk and Fried (2004, p. 80) point out that managers tend to have more power when "(1) the board is relatively weak or ineffectual, (2) there is no large outside shareholder, (3) there are fewer institutional shareholders, and (4) managers are protected by antitakeover arrangements". They argue that the empirical evidence shows that these sources of power have a significant effect on executive compensation.

In the setting of managerial power theory, the extra value managers can obtain beyond what they are able to get in an arm's length bargaining, where the board has the time, resources and desire to maximize shareholder value, is called *rents* (Bebchuk & Fried, 2004, p. 62). The managerial power approach suggests that there is a positive relationship between CEO power and rent extraction (Bebchuk, Fried & Walker, 2002). The logic is that a powerful CEO will have incentives to use his/her power to secure rents. One obvious way for a CEO to extract rents is by increasing his/her own compensation. A CEO can also use his/her power to make sure that the pay-performance relationship is weak. This can, in turn, give the CEO more room to enjoy slack or implement self-serving strategies like empire building (Bebchuk & Fried, 2004). For instance, Chikh and Filbien (2011) find that CEO power is positively related to the likelihood of completing announced M&A deals when the market reacts negatively to the announcement.

Another important aspect of the theory is the incentive to camouflage the compensation of the CEO. According to the theory, the main costs of adopting compensation plans that are in favor of the CEO are related to important outsiders finding the compensation plans to be unreasonable (Bebchuk & Fried, 2004, p. 67). When outsiders perceive the compensation to be unreasonable, the repercussions can be severe. For example, shareholders might lose faith in the governance of the company and there might be pressure from outsiders to offset the

CEO and the directors. Bebchuk and Fried (2004) argue that CEO compensation tends to decrease following a shareholder proposal concerning executive compensation. Thus, the CEO and directors have incentive to construct compensation plans that appear reasonable. By doing so, the CEO can extract a significant amount of rents without risking outrage (Bebchuk & Fried, 2004, p. 67).

Managerial power theory is an important theory showing that powerful CEOs can use their power to promote their self-interests. The theory also suggests that some traditional governance mechanisms, like monitoring and compensation programs, which are normally viewed as solutions to the agency problem, can actually exacerbate the problem.

2.3 Hypothesis

The principal-agent theory reveals that the interests of the CEO and the shareholders are not always aligned. The lack of goal congruence can, in turn, give the CEO incentives to put their interests ahead of the interests of the shareholders when making important decisions. A common agency problem that can arise because of a lack of goal congruence is excessive corporate growth. Increased firm size tends to benefit the CEO by satisfying his/her desire for status, power, prestige, and compensation (Jensen, 1986). However, excessive growth is associated with decreased shareholder value (Jensen, 1986). Additionally, based on managerial power theory, we have discussed how CEO power tends to amplify excessive growth motivations. The theory suggests that powerful CEOs use their power to maximize self-interest by extracting rents from the company. This indicates that a powerful CEO may use his/her power to increase firm size beyond the optimal level. In line with this, Bebchuk and Fried (2011) find that CEO power has a negative impact on acquisition announcement returns. In addition, Bebchuk and Fried (2002) argue that more powerful CEOs generally extract more rents than less powerful CEOs.

This theoretical framework leads us to believe that there is a negative relation between indicators of CEO power and M&A announcement returns. The idea is that CEO power may lower the average deal quality. Consequently, the market participants may be more likely to have a negative view regarding M&A activities pursued by CEOs with more power. Based on this, we propose the following research hypothesis:

H: CEO power has a negative impact on market reactions to announcements of mergers and acquisitions.

3 Methodology, variables and data description

3.1 Ordinary Least Squares

To test our research hypothesis, we employ an ordinary least squares (OLS) model. OLS is a method used to determine the relationship between one or more independent variables and a dependent variable. This method estimates the parameters which are unknown in a linear regression model. An estimated OLS regression equation can be expressed as (Wooldridge, 2014, p. 61):

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \ldots + \hat{\beta}_k x_k \tag{1}$$

OLS chooses the coefficient estimates $\hat{\beta}_1, \hat{\beta}_2, \ldots, \hat{\beta}_k$ that minimize the sum of squared errors. These errors refer to the difference between the observed values of the dependent variable (y_i) and the expected values predicted by the linear approximation ($\hat{y}_i$) (Wooldridge, 2014, p. 61). The purpose of OLS can thereby be expressed as:

$$min \sum_{i=1}^{n} (y_i - \hat{y}_i) = min \sum_{i=1}^{n} (y_i - \hat{\beta}_0 - \hat{\beta}_1 x_{i1} - \ldots - \hat{\beta}_k x_{ik})^2 \tag{2}$$

OLS relies on five assumptions for the estimates to be considered unbiased, efficient and consistent (Brooks, 2014, p. 91). The Gauss-Markov Theorem defines OLS as the Best Linear Unbiased Estimator (BLUE) if these assumptions hold. When comparing to other linear and unbiased estimators, a BLUE estimator gives the lowest possible variance of the estimate (Wooldridge, 2014, p. 90).

The first assumption is that there is a linear relationship between the dependent and the independent variables. This means that the parameters of the model have to be linear. Secondly, the observations must be acquired by random sampling, meaning that the data used has to be obtained by randomly drawing from the population (Wooldridge, 2014, p. 93). The third assumption is the absence of perfect collinearity. Perfect collinearity refers to the situation where one or more independent variables are exact linear combinations of other independent variables (Wooldridge, 2014, p. 90). Even when this assumption holds, multicollinearity can also cause problems in a regression. Multicollinearity is a result of two or more independent variables correlating highly (Brooks, 2014, p. 217).

The fourth assumption states that the expected value of the error term should be equal to zero. This assumption is fulfilled by including a constant term in the regression (Brooks, 2014, p. 181). Finally, the fifth assumption says that the residuals of the model are assumed to be homoscedastic, which means that the variance of the error term should be constant (Brooks, 2014, p. 181). Violation of this assumption will not affect the unbiasedness of the estimates. However, the estimates will no longer give the lowest possible variance among the unbiased estimators (Brooks, 2014, p. 183).

In the subsequent sections of this chapter, we go through all the variables used in our regression analyses and describe the sources used to obtain these variables.

3.2 Dependent variable

We apply event study methodology to calculate the two-day cumulative abnormal returns, CAR[0, +1]. We use this as the dependent variable in our main regression analyses. Event studies are used to explore security price behaviour around a specific event (MacKinlay, 1997). The methodology is also widely accepted as a tool to estimate the effects of M&A deals (Duso, Gugler, & Yurtogu, 2010). Andrade et al. (2001) state that, in a sufficiently efficient capital market, event studies with short windows are the most reliable indicator regarding whether such deals create or destroy value. Consequently, one can argue that CAR can be used as a measure of firm performance in relation to M&As.

The announcement date of the M&A deal is defined as the event in our case, and it is assumed that the deal becomes publicly known at this time. We use a primary event window of two days, where we look at the effect of the event on the announcement day and after, i.e. [0, +1]. Table IX in the appendix shows that the abnormal returns are only significant for day 0 and 1. The table also shows that CAR[0, +1] is the most significant time frame. In addition, we use a window of [-1, +1] as a robustness test in our analysis. Using a longer time frame than this may create unnecessary noise in our analyses.

We use an estimation window of 120 days, i.e. [-141, -21]. The estimation window is selected based on MacKinlay (1997), as he perceives using an estimation window of 120 days prior to the event as a reasonable approach. A relatively short estimation window like this also decreases the chance of encountering other events during the period. Further, we start the estimation window 21 days before the event. This ensures that the estimation of parameters is minimally affected by rumours regarding the event itself. In some cases, however, the same

firm made several deal announcements in a short period. As a result, there were some overlapping issues where we had one or more M&As in an estimation window. In order to take the effect of overlapping into consideration, we construct a dummy variable with a value of one if the events overlap and zero otherwise. This dummy variable is included in our main model as a control variable.

We calculate the abnormal returns for each event in order to examine the market reactions of M&A announcements. The abnormal returns (AR) for firm i at time τ is estimated according to MacKinlay (1997) as the difference between the actual returns $R_{i\tau}$ and the normal returns $E(R_{i\tau})$:

$$AR_{i\tau} = R_{i\tau} - E(R_{i\tau}) \tag{3}$$

There are several ways to calculate normal returns, which can loosely be grouped into economic and statistical approaches. Economic models, like the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT), are based on assumptions concerning the behaviour of the investor. On the other hand, statistical models, like the Constant Mean Return Model and the Market Model, are based on statistical assumptions regarding the change in asset price (MacKinlay, 1997). We use the market model, and in the following, we explain our choice by comparing it with the other models mentioned above.

The CAPM estimates expected returns for a given security based on the level of systematic risk (Sharpe, 1964; Lintner, 1965). It is a fundamental model in financial literature. However, the model is based on some controversial assumptions. For instance, it assumes that all investors are rational and that everyone can borrow at the risk-free rate of return (Bodie, Kane & Marcus, 2014, p. 303). Fama and French (2004) review the history of empirical work on the CAPM and conclude that the model has never been an empirical success. Further, they argue that due to the model's empirical failings, it is not suitable for calculating abnormal returns. According to MacKinlay (1997), the model was common in event studies of the 1970s. However, due to the restrictions of CAPM, and the probability that the results of studies can be sensitive to these restrictions, MacKinlay claims that the use of CAPM in event studies has decreased drastically.

The APT model is another alternative to the market model. APT uses several risk factors to calculate the expected return for a given asset (Bodie et al., 2014, p. 327). Brown and Weinstein (1985) argue that the most important factor in APT behaves like a market factor,

and that the additional factors contribute very little to its explanatory power. Therefore, the advantages of using APT instead of the market model are marginal.

When it comes to statistical models, the Constant Mean Return Model calculates normal returns by calculating the average returns of the asset during the estimation period (MacKinlay, 1997). Dyckman, Philbrick and Stephan (1984) run multiple comparisons between the models and find support showing that the Constant Mean Return Model gives similar results as more advanced statistical models. They prefer, however, the market model since the model performs significantly better than the other models they test. In addition, Brown and Warner (1980, 1985) find that the Constant Mean Return Model has problems with event-date clustering. Further, MacKinlay (1997) argues that since the market model relates firm returns to variation in the market returns, the model reduces the variance of abnormal returns, which in turn increases the model's ability to detect event effects. Thus, the market model is arguably a better choice than the Constant Mean Return Model, as well as CAPM and APT, for event studies. Therefore, we have used the market model for our estimation of normal returns.

The market model assumes that there is a linear relationship between the returns of the market portfolio and the returns of a given security (Fama, Fisher, Jensen & Roll, 1969). The return for a given firm i, during a given period t, is given by:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \tag{4}$$
$$E(\epsilon_{it} = 0) \qquad \text{var}(\epsilon_{it}) = \sigma^2_{\epsilon_i}$$

Where R_{it} is the return for security i in the period t, and R_{mt} is the return for the market portfolio in the period t. ϵ_{it} is the mean disturbance term and α_i, β_i and $\sigma^2_{\epsilon_i}$ are the parameters of the market model (Mackinlay, 1997). β_i measures the sensitivity of a security to the change in the market return and α_i is the average rate of return of the security in a period with zero market return. We use daily returns on the Oslo Stock Exchange Benchmark Index (OSEBX) as a proxy for market returns, as our sample only consists of Norwegian listed firms. Further, the parameters $\hat{\alpha}_i$, $\hat{\beta}_i$ and $\hat{\sigma}^2_{\epsilon_i}$ are estimated in the 120-day estimation window by running an ordinary least squares regression for each event.

The dependent variable in our regression analyses, cumulative abnormal returns (CAR), is computed to get an overview of the total market reaction. We calculate CAR as the sum of each event window's abnormal return at time τ_1 through time τ_2 (MacKinlay, 1997):

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{it} \tag{5}$$

The cumulative average abnormal returns (CAAR), which we use mainly for descriptive purposes, are calculated by aggregating each CAR and dividing by the total number of observations (MacKinlay, 1997):

$$CAAR(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_i(\tau_1, \tau_2) \tag{6}$$

The variance of CAR is given by the number of observations in the event window plus one multiplied by the daily abnormal-return variance (MacKinlay, 1997):

$$\sigma_i^2(\tau_1, \tau_2) = (\tau_2 - \tau_1 + 1)\sigma_{\epsilon_i}^2 \tag{7}$$

The approach of MacKinlay (1997) is used to test the significance of the observations in our event window. The null hypothesis that the average CAR is zero is examined with the following test estimator:

$$\theta_1 = \frac{CAAR(\tau_1, \tau_2)}{Var(CAAR(\tau_1, \tau_2))^{1/2}} \sim N(0,1) \tag{8}$$

3.3 Proxies for CEO power

In order to comprehensively investigate whether our hypothesis is valid for Norwegian companies, we use four variables as proxies for CEO power. Additionally, we construct a power index that is meant to combine the effects of these variables. The variables are board size, CEO excess pay, largest owner and CEO tenure. The definition of these variables are presented in Table VIII in the appendix.

The board of directors is one of the most important internal control mechanisms. The main responsibilities of the board are to monitor and give advice to executive management (Adams & Ferreira, 2007). Other important tasks include evaluating the performance of the CEO,

deciding and designing executive compensation and approving important corporate decisions, for instance if they should carry out mergers and acquisitions (Adams & Ferreira, 2007). The effectiveness of the board can therefore be of significance when it comes to CEO power and the CEO's ability to promote self-interest.

One way to determine the board's effectiveness is to evaluate its size. The general consensus is that smaller boards are more effective than larger boards. The justification is that smaller boards are more cohesive and therefore more productive. Larger boards, however, tend to have more problems with consensus, and the cost of coordinating tends to be significantly higher. Thus, they will be less productive and efficient monitors (Lipton & Lorsch, 1992; Jensen, 1993). For instance, Jensen (1993) argues that a board is less likely to function effectively if its size gets beyond seven or eight people. Jensen further argues that keeping the board size small improves the company's performance. Yermack (1996) finds an inverse relationship between board size and firm value, supporting the theory of small boards being more effective. Accordingly, Bebchuk and Fried (2004, p. 80) argue that larger boards give the CEO more power.

According to managerial power theory there is a positive relationship between CEO compensation and CEO power. As we have mentioned, the theory suggests that a powerful CEO can extract rents by increasing his/her compensation (Bebchuk et al., 2002). Studies show that CEOs tend to do so in different ways. For example, Yermack (1997) shows that CEOs can use their power to receive stock options awards a short time before favorable corporate news. These findings are also supported by Lie (2005). He documents that abnormal stock returns are usually negative before the date executives receive stock-option awards and positive afterwards. This is especially the case for award dates that are not scheduled in advance. Their results indicate that CEOs uses their power to time the award and thereby extract rents from the company. Grinstein and Hribar (2004) find that CEOs with more power to influence the board receive significantly higher bonuses for completing M&A deals. Consequently, we have included excess compensation, which is a measure of the compensation a CEO receives in excess of the expected compensation, as an indicator of CEO power.

Managerial power theory also indicates that the presence of a large shareholder is another variable explaining the level of CEO power. Bebchuk and Fried (2004, p. 82) argue that a large shareholder affects managerial power negatively, making the CEO less likely to extract

rents. This is due to large owners having much greater incentives to monitor the CEO and make sure that he/she works in line with the interests of the shareholders. Extant literature shows evidence supporting the relationship between the presence of a large owner and CEO power. For example, Cesari, Gonenc and Ozkan (2016) find that CEOs in family firms, where ownership is generally very concentrated, do not receive higher compensation in the post-acquisition period. However, for non-family firms, their findings show a significant increase in compensation. Core, Holthausen and Larcker (1999) find that a big owner with 5 percent or more ownership reduces CEO compensation significantly. They argue that this is due to reduced agency problems in the company. Additionally, research show that there is a stronger pay-performance relationship in companies with a large owner (Bertrand & Mullainathan, 2000).

There is also evidence in the literature indicating that longer tenure gives the CEO more power over the board of directors (Shivdasani & Yermack, 1999). The intuition is that CEOs often have nomination rights. Over time they will therefore nominate board members who are loyal to them and remove the members who are not. This will in turn give the CEOs more power, and their compensation will reflect their own interest rather than their performance (Hermalin & Weisbach, 1998; Bebchuk & Fried, 2003). For instance, Bebchuk and Fried (2004, s. 82) argue that CEO compensation is higher when the chair of the compensation committee has been appointed during the term of the CEO. This implies that CEO tenure affects the power of the CEO and consequently his/her compensation. Hill and Phan (1991) test this relationship, and their findings support the positive relationship between CEO tenure and compensation. The model of Hermalin and Weisbach (1998) predicts that good CEO performance over time will make the board less independent and thus make the CEO more powerful, indicating that CEO tenure is positively related to power.

Based on the discussion above, we expect board size, CEO tenure, and CEO excess compensation to have a negative relationship with cumulative abnormal returns (CAR). We expect, however, a positive relationship between largest owner and CAR. The index we construct is meant to investigate the combined effect of our CEO power proxies on CAR. As such, we expect a negative relationship between the index and our dependent variable.

3.3.1 Estimating excess compensation

We use the methodology of Core, Guay and Larcker (2008) to determine CEO excess compensation. CEO excess compensation is calculated by estimating the expected value of total compensation and subtracting it from total compensation:

$$Excess\ compensation = \text{Total compensation} - \text{E(Total compensation)} \qquad (9)$$

The expected total compensation is estimated by using a regression model built on economic determinants and variables related to board structure, ownership structure and CEO characteristics. The expected total compensation is determined with the help of the following ordinary least squares regression model using 2007-2017 data:

$$
\begin{aligned}
\log(Total\ compensation) & \qquad\qquad\qquad\qquad\qquad\qquad\qquad (10)\\
&= \alpha\ +\ \beta_1 \log(\text{Revenue})_{it-1} + \beta_2 \log(\text{Assets})_{it-1} +\ \beta_3 \text{ROA}_{it-1}\\
&\quad +\ \beta_4 \text{Stock returns}_{it-1}\ +\ \beta_5 \text{CEO change}_{it-1} + \beta_6 \text{Board size}_{it-1}\\
&\quad +\ \beta_7 \log(\text{Chairman compensation})_{it-1} +\ \beta_8 \text{Largest owner}_{it-1}\\
&\quad +\ \beta_9 \text{CEO ownership}_{it-1} + \beta_{10} \text{CEO age}_{it-1}\ +\ \varepsilon_{it}
\end{aligned}
$$

The regression results which form the basis of calculating expected total compensation are presented in Table X in the appendix. Additionally, the variable descriptions and the empirical justification of the variables used in the calculation are presented in Table XI in the appendix.

In line with Core et al. (2008), the expected total compensation is calculated by multiplying the coefficients of each variable from the regression with the corresponding variable values for each company. The sum of the products of these multiplications and the constant term equals the expected total compensation. Excess compensation is then computed by subtracting expected total compensation from the actual total compensation, as stated in equation (9). Excess compensation is used as one of our proxies for CEO power in the main regression.

3.3.2 Constructing our power index

To get a deeper understanding of the effect of CEO power on market reactions to M&A announcements, we construct a power index as a proxy for the combined effect of our CEO power proxies. We construct the index by making a dummy variable for each of the four power variables: excess pay, board size, CEO tenure and largest owner. The dummy variables are constructed so that a value of one indicates high CEO power and zero indicates low. By adding the values of the dummy variables for each firm, we get a total CEO power score. Our index ranges from zero to four, where zero indicates very low and four very high CEO power.

Based on the discussion on CEO power proxies, we construct the dummy variables in the following manner: The variable excess pay has a value of one if the observation is positive, and zero otherwise. CEO tenure has a value of one if the observation is greater than the median of the variable, and zero otherwise. Largest owner has a value of one if the observation is lower than the median of the variable, and zero otherwise. We use median rather than mean since these variables are somewhat unevenly distributed. The board size dummy has a value of one if there are seven or more members on the board, and zero otherwise. This is based on the rationale that larger boards are associated with higher CEO power, as well as the findings of Jensen (1993) who argues that boards are less effective when the size gets beyond seven or eight people.

3.4 Control variables

In the following, we discuss the control variables we use in our analysis. The control variables are divided into two main categories: acquirer characteristics and M&A deal characteristics. Table VIII in the appendix shows a brief overview of the variables.

CEO ownership is an important control variable. According to the principal-agent theory, agency problems arise when the interests of managers are not in line with those of the owners (Jensen & Meckling, 1976). Jensen and Murphy (1990b) argue that direct stock ownership by the CEO is one of the most effective measures to avoid agency problems in a company. As ownership aligns the interest of the CEO and the shareholders, they argue that the CEO is more likely to refrain from wasteful spending. Therefore, CEO ownership may be an effective way to avoid agency costs and value-destroying activities. However, a drawback of CEO ownership could be that CEOs become too risk-averse when they have a substantial portion of their total wealth invested in the firm (Goergen, 2012, p. 101).

Our sample contains several firms where there has been a change of CEO in the year prior to the M&A announcement. As such, we include CEO change as a control variable. Based on managerial power theory, we expect the new CEO to be less powerful. Additionally, based on the logic of Hermalin and Weisbach's (1998) model, the new CEO will have incentives to perform well in the first years in office. Thus, he/she may be less likely promote their self-interests, for example by engaging in value-destroying M&As.

Following Bhagat and Bolton (2008), we use return on assets (ROA) as a measure of firm performance. Firms with higher ROA offer better prospects for the return on investments of the firm (Boubakri & Cosset, 1998). In addition, a high ROA percentage can also indicate that a company has better investment opportunities (Eisenberg, Sundgren & Wells, 1998). This might indicate that firms with high ROA in the past are less likely to engage in low quality M&A deals.

In the manner of Malmendier and Tate (2008), we also use the natural logarithm of assets (Log assets) as a proxy for firm size. There is evidence showing that firm size affects the market reaction in relation to mergers and acquisitions. Larger acquirers tend to have lower abnormal returns than smaller acquirers. This phenomenon is often referred to as the size effect (Moeller, Schlingemann & Stulz, 2004). Moeller et al. (2004) conclude that there is a robust negative correlation between the size of the acquiring company and abnormal returns around the announcement date, and that the size effect is very robust and does not change over time. Additionally, the company size itself acts as an effective anti-takeover defense. This can make senior executives in large companies feel more confident, and they are therefore not as exposed to market forces as smaller companies. Size can thereby increase the likelihood of making value-reducing acquisitions (Masulis, Wang & Xie, 2007).

We also include the acquiring firm's debt ratio as a control variable based on Jensen's (1986) free cash flow hypothesis. This hypothesis is a possible explanation as to why some CEOs engage in value-destroying M&As. Based on agency theory, Jensen (1986) argues that CEOs have incentives to make their firm grow beyond the ideal level. Optimally, a company should only invest in positive NPV investments. However, he claims that CEOs with remaining cash flow after investing in all available positive NPV investment are more likely to use this cash flow in low-benefit, or even value-destroying M&As, rather than paying dividends to the shareholders. Further, he argues that debt is an efficient way to reduce the agency costs of free cash flow and motivate the managers to work in line with shareholders interest. This is

due to its strong disciplinary effect. Lang, Stulz and Walkling (1991) test the cash flow hypothesis. Their results suggest that the free cash flow hypothesis is economically significant. Likewise, Harford (1999) find that M&As done by cash-rich firms are more value-destroying than by companies with smaller cash reserves.

The percentage of women on the board is also included as a control variable. This variable has been subject to intense discussions in Norway due to the Gender Balance Law, which was implemented in 2006. The law makes it mandatory for all PLC companies to have 40 % women on the board (Norwegian Public Limited Liability Companies Act, 1997, § 6-11 a). The Norwegian government believed that the law would contribute to improved company performance (Bøhren & Strøm, 2010). In line with this view, Levi, Li and Zhang (2013) find that female board members tend to be better at monitoring and as such create value for the shareholders. However, several other studies show that having female board members affects firm performance negatively (Bøhren & Strøm, 2010; Ahern & Dittmar, 2012; Bøhren & Staubo, 2014).

Research shows that the characteristics of M&A deals also have an impact on the market reactions to M&A announcements. Hazelkorn, Zenner and Shivdasani (2004) find that the market reacts more positively to cash financing than stock financing. Andrade et al. (2001) argue that this is due to bidders offering equity when their stock is overvalued and offer cash when their stock is undervalued. Hazelkorn et al. (2004) further find that a combination of share and cash financing is associated with a negative short-term market reaction. Based on this discussion, we include dummies that capture the payment methods cash, shares and a combination of the two. In addition, we have categories that capture payment methods other than these, as well as deals with unspecified payment methods.

There is also evidence suggesting that diversifying M&As are more value-destroying than the ones that are within the same industry (Morck, Shleifer & Vishny, 1990). Morck et al. (1990) find that acquirers of public firms generate lower abnormal returns when engaging in diversifying acquisitions. In addition, Berger and Ofek (1995a) and Lang and Stulz (1994) document significant value losses associated with corporate diversification strategies. Additionally, there is evidence showing that cross-border M&As affect the market reaction as well. The direction, however, is not clear. Aybar and Ficici (2009) argue that international expansion through acquisitions leads to several value-creating opportunities. On the other hand, they argue that cross-border M&As present significant challenges that can lead to value

destruction. We therefore include dummies that capture if the M&A is in the same industry and if the target is Norwegian.

The overall performance may not only be due to the characteristics of a single M&A deal, it may also depend on the pattern of them (Laamanen & Keil, 2008). Thus, we add a control variable that captures if a specific company has announced multiple M&As during a calendar year. Laamanen and Keil (2008) find that the acquisition rate affects performance negatively, which may indicate that firms make multiple M&As due to imperial building motivations. We also include the control variable Overlapping estimations, which we construct out of technical purposes to capture the potential effects of overlapping estimation windows or event windows for firms with multiple deals.

Based on the discussion above, we expect the variables CEO ownership, CEO change, Debt ratio, ROA, Same industry and Cash to have a positive effect on CAR. Further, we expect the variables Log assets, Multiple acquisitions, Women %, as well as Shares and Combination to affect CAR negatively. When it comes to the dummy variables Same country and Other financing, the expected direction of the effect is not clear based on empirical literature. We also expect the variable Overlapping estimations to be nonsignificant.

3.5 Data collection

Our sample consists of completed Norwegian mergers and acquisitions with an announcement date between 2008 and 2017. Apart from the deal-specific variables, our data set concerns the acquiring companies in the year prior to the announcement, i.e. the period 2007-2016. The data were obtained by using publicly available information from a wide array of reputable sources, as reported in Table I.

Table I
Sources

An overview of the sources used and the information gathered from each source. We use this information to construct the variables in our analyses. These variables are presented in Table VIII in the appendix.

Source	Information
Zephyr	Acquisitions: announcement date, industry, country of origin
Newsweb	Mergers: announcement date, industry, country of origin
Annual reports	CEO compensation (salary, bonus, pension, other benefits, share/option-based payments), chairman compensation, largest owner, CEO and chairman stock ownership (number of shares owned, shares outstanding)
Norges Bank	Exchange rates (annual mean)
Datastream	Daily stock returns, total annual stock returns
Proff Forvalt	CEO age, revenue, assets, debt ratio, ROA
Brønnøysund Register Centre	CEO tenure, CEO change, board size, women on the board

The acquisitions in our sample come from Bureau van Dijk's Zephyr database. Zephyr contains detailed information on acquisitions and is updated on a daily basis. The database proved to be generally reliable. However, by double-checking with Oslo Stock Exchange Newsweb, we found that some deals in Zephyr had the wrong announcement date. In addition, Zephyr incorrectly labelled a number of mergers as acquisitions. Further, we collected details on mergers from Oslo Stock Exchange Newsweb, as Zephyr proved to be lacking in terms of merger information.

The variables relating to CEO and chairman compensation were collected by going through the annual reports of all acquiring companies. Some annual reports quote their compensation numbers in foreign currencies. In these cases, we converted the numbers to NOK by using the annual mean exchange rates provided by Norges Bank. The annual reports also allowed us to obtain the variables largest owner and the stock ownership of the CEO and chairman. The Register of Shareholders was used to obtain stock ownership in the few instances where this information was not disclosed in the annual reports.

With regards to the calculation of abnormal returns, we obtained daily stock returns for the Oslo Stock Exchange Benchmark Index (OSEBX) and all acquiring companies from Thompson Reuter's Datastream. In order to isolate the effects of the individual events, we

used daily stock returns adjusted for capital actions like dividends and stock splits. For companies with class A and class B shares, we based the calculations on the class A shares. Data on CEO age, revenue, assets, ROA and debt ratio were obtained from Proff Forvalt. Lastly, Brønnøysund Register Centre was used to collect data on the board composition, CEO tenure and if there was a change of CEO in the year prior to the announcement.

3.6 Selection criteria

Our sample is based on a number of different selection criteria. The primary criterion is that the acquirer is a Norwegian firm listed on the Oslo Stock Exchange or Oslo Axess. This is because we use the stock returns of the acquiring companies in our calculation of abnormal returns. Target companies do not have to be listed, as this would leave us with too few observations. Further, we exclude foreign companies. The reason is that compensation data is an integral part of our thesis, and these companies do not have to report executive compensation in line with Norwegian law (Ernst & Young, 2013).

When it comes to the time frame, we only include completed M&A deals with an announcement date from 01/01/2008 to 01/01/2018. The Norwegian Public Limited Liability Companies Act §6-16 a (1997), which came into force at the beginning of 2007, demands that all public limited companies write a statement regarding compensation to executive managers. As the compensation data we collected were for the year prior to the M&A deals, the start of our time frame perfectly coincides with the implementation of the aforementioned law.

Further, we only include acquisitions where the acquirer becomes a majority shareholder, i.e. has an initial stake of less than 49.9 % and a final stake of more than 50 %. By being a majority shareholder, one has control of the company to a large extent. A notable exception is the change of the company's statutes, which requires 67 % of the votes (Norwegian Public Limited Liability Companies Act, 1997, § 5-18).

The acquiring company must also have a sufficient amount of trading days before the event. As we use an estimation window of 120 days, we exclude several deals where the acquirer did not have enough trading days prior to the event. This comes from the fact that these companies were listed on the stock exchange too close to the event date.

Finally, we exclude companies with shares that are too illiquid. If a given company is not traded enough during the estimation period, the beta estimates become easily affected by individual events in this period. MacKinlay (1997) recommends removing these companies, as he claims illiquidity makes the estimated beta values incorrect.

By taking our selection criteria into consideration, in addition to meticulous data cleaning, we end up with a sample of 247 mergers and acquisitions, consisting of 30 mergers and 217 acquisitions. The comprehensive and time-consuming work invested in manually collecting and double-checking has instilled confidence about the quality and precision of our data. Figure I below illustrates the annual distribution of mergers and acquisitions in our data set.
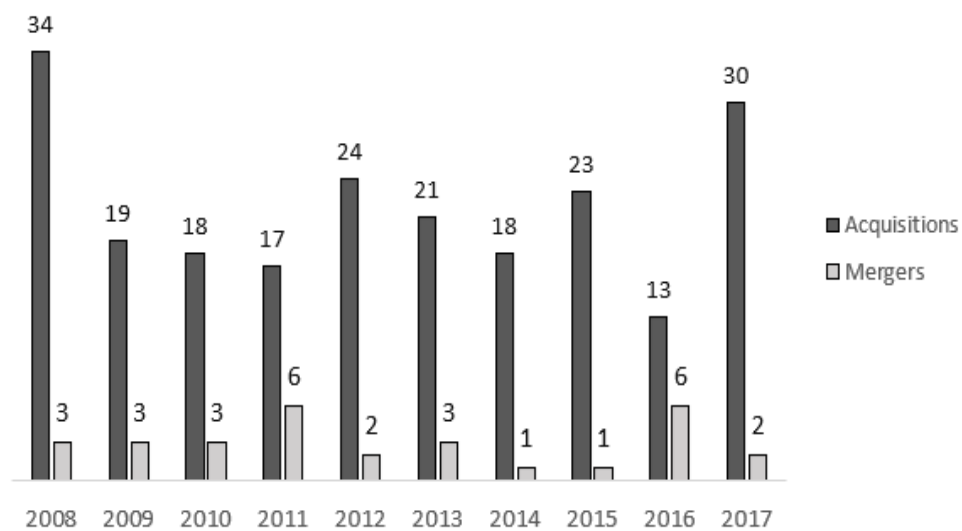
Figure I: This figure shows the distribution of M&As in our sample after taking our selection criteria into consideration and after removing deals with missing observations on at least one variable. The sample consists of 217 acquisitions and 30 mergers between 2008 and 2017, where the acquiring firm is a listed Norwegian company. The information regarding the M&A deal characteristics is obtained through Zephyr and Oslo Stock Exchange Newsweb.

4 Empirical results

4.1 Descriptive statistics

In order to visually illustrate if and how the market reacts to announcements of M&As, we plot the cumulative average abnormal returns (CAAR) in Figure II. The figure shows the average CAR ten days prior to and ten days after the M&A announcements in our sample. The dotted lines represent a 95 % confidence interval. One might assume that information in relation to the events generally do not leak prior to the announcement based on the graph. This is illustrated by the average CAR being relatively stable from day -10 until day 0. However, the graph reveals a fairly strong positive reaction on day 0 and 1, meaning that the market reacts positively to announcements of M&As made by acquiring companies. As the market reaction is mostly within the short timeframe of day 0 and 1, we investigate this time frame more in depth.
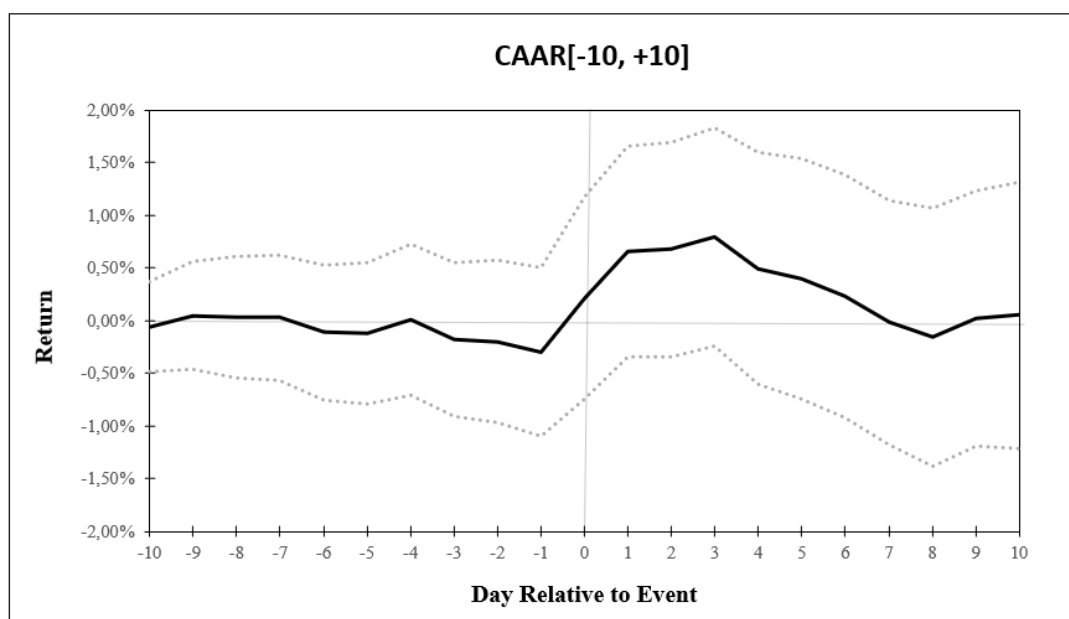
Figure II: The dark line in this figure shows the average cumulative abnormal returns (CAAR) 10 days before and 10 days after the M&A announcement date for the acquiring firms in our sample. The dotted lines represent a 95 % confidence interval. Event day 0 corresponds to the announcement date of the M&A deal. The abnormal returns are calculated using the market model. By cumulating the abnormal returns for each event and finding the average, we obtain the average CAR depicted in this figure. Our sample consists of 247 M&As between 2008 and 2017, where the acquiring firms are listed Norwegian companies.

We start with a brief look at the average CAR[0, +1] and its values across different M&A determinants. Table II shows that the average 2-day CAR for the acquirer in all M&As is 0.956 % and significantly different from zero at the 1 % level. Further, we see that mergers have an average CAR that is significantly higher than for acquisitions. For transactions

financed exclusively with shares, the average CAR is 2.769 % and significant at the 5 % level. Cash financing, on the other hand, has a nonsignificant and slightly negative average CAR. This is not in line with the general consensus in the literature where share financing, on average, is associated with more negative market reactions than cash financing (Hazelkorn et al., 2004; Andrade et al., 2001). We also see that the categories Combination and Other have a positive and significant average CAR of respectively 1.507 % and 1.821 %.

Table II
CAAR across deal types and methods of financing

This table shows how cumulative average abnormal returns (CAAR) varies across deal types and methods of financing. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. The variable definitions of the financing methods are presented in Table VIII in the appendix.

	N	CAAR [0, +1]	t-stat
All M&As	247	0.956 %***	3.132
Deal type			
Mergers	30	2.769 %**	2.616
Acquisitions	217	0.705 %**	2.258
Method of financing			
Cash	28	-0.065 %	-0.078
Shares	26	2.612 %**	2.292
Combination	26	1.507 %*	1.800
Other	55	1.821 %**	2.051
Unspecified	112	0.274 %	0.853
Note:		*p<0.1 **p<0.05 ***p<0.01	

Table II above reveals that the average CAR[0, +1] is significantly different from zero in our sample. It also reports some interesting information about how average CAR[0, +1] is affected by both the type of deal and the method of financing. Given the information in Figure II and Table IX in the appendix, showing that this event window is the most significant one, we use CAR[0, +1] as the dependent variable when testing our hypothesis.

The research hypothesis in our paper is that CEO power affects the M&A announcement returns for acquiring firms negatively. As such, our main variables of interest are those that measure CEO power. As there are numerous indicators of CEO power in the literature, we measure CEO power in different ways in order to get a broader picture. Our CEO power measures are excess pay, board size, CEO tenure and largest owner. We also construct a power index based on these four measures to capture the combined effect. These variables and other variables that should have an effect on M&A announcement returns are described in Table VIII in the appendix.

The descriptive statistics for all variables are presented in Table III. The table presents essential properties of the frequency distributions for each variable used in the main regressions. The dependent variable, CAR[0, +1] has a rounded median (mean) of 0.3 % (1 %). We see that the observations range from -24.5 % to 33.5 %, revealing that the variable has a relatively large spread. This spread indicates that investors do not react to all M&As in the same manner.

With regard to our CEO power indicators, we see that excess pay has a negative median (mean) of –0.174 (-0.136). This indicates that CEOs of listed Norwegian acquiring companies on average have an expected total compensation that is higher than the actual total compensation. When it comes to board size, the median (mean) is 8 members (7.8 members), indicating that the average board size in our sample can be characterized as healthy (Jensen, 1993). CEO tenure has a median (mean) of 3 years (4.883 years). The large spread between median and mean suggests that the variable is quite unevenly distributed toward higher values, indicating that some CEOs might have substantially more power as a result of their tenure than other CEOs. The variable Largest owner has a relatively high median (mean) value of 28.3 % (32.2 %), which is fairly similar to the findings of Bøhren and Ødegaard (2000). They find that the mean largest owner of firms on the Oslo Stock Exchange in the period 1989-1997 had an ownership stake of approximately 29 %. Further, the power index variable has a median (mean) value of 2 (1.903). As a consequence of the way we have constructed our power index, with values ranging from 0 to 4, it is natural that the average firm has an average power value around 2.

When it comes to acquirer characteristics, we see that the median (mean) of CEO ownership is 0.1 % (1.7 %). The median is vastly lower than the mean, indicating that the variable is unevenly distributed towards higher values. Furthermore, the mean value of the dummy variable CEO change reveals that 16.6 % of the deals in our sample were announced by firms that made a change of CEO in the year prior to the M&A announcement. The variable Log assets has a median (mean) of 15.669 (15.642), while ROA has a median (mean) value of 7.1% (5.9%). Furthermore, the variable Debt ratio has a median (mean) of 57.6 % (57.7 %), which indicates that creditors might have a significant interest in the firms in our sample, which in turn may give them incentives to monitor the company more thoroughly. Women % has a median (mean) value of 40 % (40.9 %). This is in line with the Norwegian Gender Balance Law that requires 40 % representation of each gender on the board of directors of

Table III
Descriptive statistics

Descriptive statistics of the variables in our data set. The sample consists of 247 completed mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. Variable definitions are presented in Table VIII in the appendix.

Variable	N	Mean	Median	SD	Min	Max
Dependent variable						
CAR[0, +1]	247	0.010	0.003	0.048	-0.245	0.335
CEO power indicators						
Excess pay $_{t-1}$	247	-0.136	-0.174	0.545	-1.400	2.241
Board size $_{t-1}$	247	7.798	8.000	1.870	4.000	12.000
CEO tenure $_{t-1}$	247	4.883	3.000	5.291	0.000	22.000
Largest owner $_{t-1}$	247	0.322	0.283	0.196	0.033	0.874
Power index $_{t-1}$	247	1.903	2.000	0.995	0.000	4.000
Acquirer characteristics						
CEO ownership $_{t-1}$	247	0.017	0.001	0.072	0.000	0.872
CEO change $_{t-1}$	247	0.166	0.000	0.373	0.000	1.000
Log assets $_{t-1}$	247	15.642	15.669	2.258	9.631	21.594
ROA $_{t-1}$	247	0.059	0.071	0.176	-1.753	0.398
Debt ratio $_{t-1}$	247	0.577	0.576	0.181	0.120	0.954
Women % $_{t-1}$	247	0.409	0.400	0.088	0.200	0.750
M&A deal characteristics						
Multiple acquisitions $_t$	247	0.393	0.000	0.489	0.000	1.000
Overlapping estimations $_t$	247	0.368	0.000	0.483	0.000	1.000
Same industry $_t$	247	0.328	0.000	0.470	0.000	1.000
Same country $_t$	247	0.506	1.000	0.501	0.000	1.000
Cash $_t$	247	0.113	0.000	0.318	0.000	1.000
Shares $_t$	247	0.105	0.000	0.308	0.000	1.000
Combination $_t$	247	0.105	0.000	0.308	0.000	1.000
Other $_t$	247	0.223	0.000	0.417	0.000	1.000
Unspecified $_t$	247	0.453	0.000	0.499	0.000	1.000

PLC companies (Norwegian Public Limited Liability Companies Act, 1997, § 6-11 a). However, there are some exceptions to this law, which might explain the minimum value being below 40 %.

The variables pertaining to M&A deal characteristics are exclusively dummy variables. We see that the variable Multiple acquisitions has a mean of 39.3 %, meaning that almost 40 % of the deals in our sample are announced by firms that have announced more than one M&A in

the same calendar year. Further, the table reveals that 36.8 % of the deals in our sample have an estimation or event window that overlaps with another estimation or event window for the same acquiring company. Moreover, 32.8 % of the deals in our sample involve firms in the same industry, while 50.6 % of the deals involve firms from the same country. The relatively low percentage of same-industry deals can be attributed to the fact that we use a strict definition, in that the acquirer and target must have the exact same SIC code. The fact that almost half of the deals are cross-border illustrates that a large portion of the firms in our sample are internationally oriented.

When it comes to methods of financing, we see that 11.3 % of the deals have cash as their sole financing method. Further, we see that shares and a combination of shares and cash are each represented in 10.5 % of the deals. The variable Other, which consists of deals that are neither exclusively cash-financed, exclusively stock-financed nor exclusively a combination of cash and share financing, consists of 22.3 % of the deals in our sample. Finally, 45.3 % of the deals in our sample have an unspecified method of financing.

4.2 Main analysis

Using the variables summarized in Table III, we investigate whether CEO power affects the cumulative abnormal returns related to M&A announcements negatively by running the following cross-sectional regression:

$$
\begin{aligned}
\text{CAR}\,[0,+1] \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (11)\\
= \alpha\ +\ \beta_1 CEO\ power_{it-1} + \beta_2 CEO\ ownership_{it-1} + \beta_3 \text{CEO change}_{it-1}\\
+ \beta_4 \log(\text{Assets})_{it-1} + \beta_5 \text{ROA}_{it-1} +\ \beta_6 \text{Debt ratio}_{it-1} + \beta_7 \text{Women \%}_{it-1}\\
+ \beta_8 \text{Multiple acquisitions}_{it} +\ \beta_9 \text{Overlapping estimations}_{it} +\\
+ \beta_{10} \text{Same industry}_{it} + \beta_{11} \text{Same country}_{it} + \beta_{12} \text{Cash dummy}_{it} +\\
+ \beta_{13} \text{Share dummy}_{it} +\ \beta_{14} \text{Combination dummy}_{it} + \text{Other dummy}_{it} +\ \varepsilon_{it}
\end{aligned}
$$

In our regressions, the main variables of interest are the ones measuring CEO power. Initially, we run four regressions with a different proxy for CEO power in each of them, controlling for important acquirer characteristics and deal characteristics. By doing so we get a broad picture of whether CEO power affects the market reaction when controlling for important explanatory variables. The definitions of all variables we include are presented in Table VIII in the appendix.

With regard to the assumption regarding homoscedasticity, Breusch-Pagan tests are run on each regression model in this chapter. We find that we cannot reject the null hypothesis of homoscedasticity at the 10 % level in any of the models. We also rule out potential collinearity problems by looking at the correlation matrix in Table XII. The table reveals that none of the variables correlate perfectly or highly enough for collinearity to be a problem. This is supported by running a variance inflation factor (VIF) test. The highest VIF indicator value of any variable is 2.8, which is arguably well below the threshold for problematic collinearity (Hair, Black, Babin & Anderson, 2010, p. 204).

We employ Ramsey's RESET test to test the assumption regarding linearity between the dependent and independent variables in all regression models. The null hypothesis of linearity is not rejected at the 10 % level in any of the models, and we therefore have no support for the violation of this assumption. Extreme observations or outliers can also affect the OLS estimates significantly, especially with small data sets (Wooldridge, 2014, p. 264). Our data set is relatively small and contains some observations that can be characterized as extreme. To reduce the effect of these extreme observations, the variables CAR[0, +1], Excess pay, CEO tenure, CEO ownership, ROA and Women % are winsorized at the 1 % and 99 % levels.

Table IV presents the results from our main regression models. The adjusted R^2 is relatively consistent at about 0.08 in all four models, and the F-tests are highly significant. We find that none of the four CEO power indicators are statistically significant when controlling for acquirer and deal characteristics. These results indicate that powerful CEOs do not systematically induce worse short-term market reactions in relation to mergers and acquisitions than less powerful CEOs in Norwegian acquiring firms. By looking at the adjusted R^2 of the baseline regression (5), we also see that none of the CEO power indicators add value in explaining the dependent variable. Thus, we have grounds to reject our research hypothesis regarding a negative relationship between CEO power and M&A announcement returns.

Our results are in contrast with the findings of Grinstein and Hribar (2004) who find that CEO power has a significant and negative effect on M&A announcement for acquiring companies. Our finding is also in contrast with Bebchuk et al. (2011) who find that CEO pay slice (CPS), which they use as a measure of CEO power, is associated with significantly

Table IV
Main regression

Cross-sectional OLS regression with CAR[0. +1] as the dependent variable. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. The variables CAR[0, +1], excess pay, CEO tenure, CEO ownership, ROA and Women % are winsorized at the 1 % and 99 % levels. Standard errors are presented in the parentheses. Variable definitions are provided in Table VIII in the appendix.

	Dependent variable				
	CAR[0,+1]				
	(1)	(2)	(3)	(4)	(5)
CEO power indicators					
Excess pay $_{t-1}$	0.004 (0.005)				
Board size $_{t-1}$		0.001 (0.002)			
CEO tenure $_{t-1}$			0.00004 (0.001)		
Largest owner $_{t-1}$				-0.0005 (0.014)	
Acquirer characteristics					
CEO ownership $_{t-1}$	0.084* (0.050)	0.089* (0.050)	0.083 (0.052)	0.085* (0.050)	0.085* (0.050)
CEO change $_{t-1}$	0.018** (0.007)	0.017** (0.007)	0.018** (0.007)	0.018** (0.007)	0.018** (0.007)
Log assets $_{t-1}$	-0.003** (0.001)	-0.003** (0.002)	-0.003** (0.001)	-0.003** (0.002)	-0.003** (0.001)
ROA $_{t-1}$	0.057*** (0.020)	0.059*** (0.020)	0.057*** (0.020)	0.057*** (0.020)	0.057*** (0.020)
Debt ratio $_{t-1}$	0.049*** (0.016)	0.045*** (0.016)	0.046*** (0.016)	0.046*** (0.016)	0.046*** (0.016)
Women % $_{t-1}$	0.003 (0.032)	0.002 (0.032)	-0.001 (0.032)	-0.001 (0.033)	-0.001 (0.032)
M&A deal characteristics					
Multiple acquisitions $_{t}$	-0.003 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.010)
Overlapping estimations $_{t}$	0.006 (0.010)	0.006 (0.010)	0.006 (0.010)	0.006 (0.010)	0.006 (0.010)
Same industry $_{t}$	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)
Same country $_{t}$	-0.004 (0.006)	-0.004 (0.006)	-0.005 (0.006)	-0.005 (0.006)	-0.005 (0.006)
Cash $_{t}$	-0.004 (0.009)	-0.004 (0.009)	-0.004 (0.009)	-0.004 (0.009)	-0.004 (0.009)
Shares $_{t}$	0.018* (0.010)	0.019* (0.010)	0.019* (0.010)	0.019* (0.010)	0.019* (0.010)
Combination $_{t}$	0.006 (0.010)	0.007 (0.010)	0.006 (0.010)	0.006 (0.010)	0.006 (0.010)
Other $_{t}$	0.013* (0.007)	0.013* (0.007)	0.013* (0.007)	0.013* (0.007)	0.013* (0.007)
Intercept	0.013 (0.026)	0.014 (0.026)	0.016 (0.026)	0.016 (0.026)	0.016 (0.026)
Observations	247	247	247	247	247
Adjusted R^2	0.081	0.080	0.078	0.078	0.082
Residual Std. Error	0.040	0.040	0.040	0.040	0.040
F Statistic	2.446***	2.426***	2.396 ***	2.395***	2.578***
Note:					*p<0.1; **p<0.05; ***p<0.01

lower acquisition announcement returns. Our results might indicate that investors react differently to CEO power when it comes to Norwegian listed companies.

When it comes to the sign of our CEO power indicators, we expected Excess pay, Board Size and CEO tenure to affect CAR negatively and Largest owner to affect CAR positively. As discussed earlier, these expectations are derived from corporate governance literature. Our results show the exact opposite sign compared to the expectations. However, all of these coefficients are highly insignificant, with p-values of 0.42 and above. Wooldridge (2014, p. 110) argues that high p-values are weak evidence against the null hypothesis. Further, he recommends that one should avoid interpreting coefficients with large p-values, regardless of their sign (Wooldridge, 2014, p. 114). Taking this into consideration, we avoid going into detail about the signs of the insignificant variables in our analyses. However, we examine possible reasons as to why none of our CEO power variables are significant in the subsequent discussion chapter.

Our control variables are relatively stable across the five different regression models, both in terms of statistical significance and the magnitude of the coefficients. We see that CEO ownership is significant and positive in four of the regressions at the 10 % level. In regression (3), the p-value of CEO ownership is 11 %, which makes the variable barely insignificant. These findings show that CEOs with a high stake in the company are on average associated with higher announcement returns, which is in line with our expectations derived from Jensen and Murphy (1990b). In addition, the table shows that the variable CEO change has a positive and significant coefficient. This indicates that the market reacts more positively to M&A announcements for companies with new CEOs. Our results are in line with the logic of Hermalin and Weisbach (1998) suggesting that new CEOs have incentives to perform well the first years in office.

Consistent with Moeller et al. (2004), we find that the variable Log assets is negative and statistically significant across all regressions. This confirms our expectations and indicates that the market reacts more negatively to M&A announcements by larger acquirers. In line with our expectations, we also observe a positive and significant ROA, which indicates that companies that have performed better in the past are more likely to achieve better market reactions when announcing M&As. The table further shows that debt ratio has a positive and significant effect on CAR. This result supports the free cash flow hypothesis of Jensen

(1986), which indicates that higher debt ratio has a disciplinary effect and thus affects shareholder value positively.

Using the category Unspecified as the reference variable, our regressions further show that Share financing and Other financing are positive and significant. However, for Cash and Combination financing, we find no significant effect on CAR. The fact that our regression analyses show that deals financed with shares provide the highest CAR is in direct contrast with Hazelkorn et al. (2004) who find that the market reacts significantly better to cash financing than share financing in both the long and the short run. Furthermore, the variable Overlapping estimations is not significant, suggesting that overlapping events in our data set do not significantly affect our results.

The main regressions in Table IV show no significant effect of any of our proxies of CEO power on CAR[0, +1] when controlling for important acquirer and deal characteristics. These results indicate that investors are not sensitive to CEO power when it comes to reacting to M&A deal announcements by Norwegian acquiring companies. We thereby have grounds to reject our research hypothesis regarding a negative effect of CEO power on M&A announcement returns.

To investigate our research hypothesis even more thoroughly, we construct a CEO power index based on the four CEO power indicators from the previous regressions. Table V shows how the cumulative average abnormal return (CAAR) varies with different levels of our CEO power index. When looking at all M&A deals, a low index score is associated with higher CAAR, and a high index score is associated with lower CAAR. The table generally shows a negative relationship between higher levels of CEO power and CAAR, with a fall of 2.81 percentage points from an index score of 0 to an index score of 4. This result indicates that as the CEO becomes more powerful, he/she on average engages in deals with lower announcement returns.

The table also shows a falling tendency for average announcement returns for both same-country and cross-border deals. Interestingly, the fall in CAAR is much more dramatic for cross-border M&A deals. Likewise, the fall in CAAR is bigger for cross-industry deals than for same-industry M&A deals. These results indicate that CEO power may be an intermediary variable explaining how abnormal returns vary for the acquiring firm. Additionally, the table indicates that the value-destroying effect is strong when the most powerful CEOs engage in cross-border or cross-industry M&A deals. However, for the CEOs

Table V
CAAR and the power index

This table illustrates how different levels of CEO power affect the 2-day cumulative average abnormal returns, i.e. CAAR[0, +1], of the acquiring firms. It also shows how the CAAR values are affected by the deal being a cross-border versus a same country deal, as well as the acquirer and target being in the same industry versus different industry. The index is constructed by making a dummy variable for each of the power variables, where a value of one indicates high CEO power and zero indicates low CEO power. The four variables included in the index are excess pay, board size, CEO tenure and largest owner. Excess pay has a value of one if the observation is positive. Board size has a value of one if there are more than 7 members on the board. CEO tenure has a value of one if the observation is greater than the median of the variable. Largest owner has a value of one if the observation is lower than the median of the variable. Thus, companies with a power index value of 4 have a positive excess pay, a board size of over 7 people, CEO tenure above 3 and no owners with more than 28.3 percent ownership. The sample consists of 247 completed mergers and acquisitions with an announcement date between 2008 and 2017, where the acquiring firms are listed Norwegian companies. Variable definitions are provided in Table VIII in the appendix.

Power index value	0	1	2	3	4
All M&As	2.00 %	1.06 %**	1.29 %***	0.43 %	-0.81 %
Same country	1.17 %	1.28 %*	0.73 %	0.48 %	0.15 %
Cross-border	3.07 %	0.65 %	1.83 %***	0.40 %	-1.78 %
Same industry	-1.84 %	1.66 %	1.76 %*	1.02 %	
Different industry	5.84 %	0.82 %	1.00 %	0.12 %	-0.81 %
Note:				*p<0.1 **p<0.05	***p<0.01

with the lowest power, cross-border and cross-industry deals are associated with the highest CAAR.

Table V provides some insight into the relationship between CEO power and abnormal returns. The patterns in the table gives us some suspicions regarding the existence of an inverse relationship between CEO power and announcement returns. However, the results can be affected by several other variables. In order to get a better understanding regarding the effect of the power index on CAR, we run a new regression where we use the power index as a proxy for CEO power.

Table VI shows that the power index does not significantly affect 2-day CAR when controlling for relevant control variables. These results are consistent with our findings in the main regression. As such, we have even better grounds to reject our research hypothesis. The conclusions regarding all of the control variables, as well as the adjusted R^2 and F-test, are also consistent with the main regressions.

Table VI
Power index regression

Cross-sectional OLS regression that looks at the total effect of power on 2-day cumulative abnormal returns by using our power index as the main independent variable. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. The dependent variable is the acquirer's 2-day cumulative abnormal return in percentage points. The variables CAR[0, +1], CEO ownership, ROA, Debt ratio and Women % are winsorized at the 1 % and 99 % levels. Standard errors are presented in the parentheses. Variable definitions are provided in Table VIII in the appendix.

	Dependent variable
	CAR[0, +1]
CEO power indicator	
Power index $_{t-1}$	-0.003
	(0.003)
Acquirer characteristics	
CEO ownership $_{t-1}$	0.086*
	(0.050)
CEO change $_{t-1}$	0.017**
	(0.007)
Log assets $_{t-1}$	-0.003**
	(0.001)
ROA $_{t-1}$	0.058***
	(0.020)
Debt ratio $_{t-1}$	0.046***
	(0.016)
Women % $_{t-1}$	-0.003
	(0.032)
M&A deal characteristics	
Multiple acquisitions $_{t}$	-0.004
	(0.010)
Overlapping estimations $_{t}$	0.007
	(0.010)
Same industry $_{t}$	0.005
	(0.006)
Same country $_{t}$	-0.005
	(0.006)
Cash $_{t}$	-0.005
	(0.009)
Shares $_{t}$	0.019*
	(0.010)
Combination $_{t}$	0.005
	(0.010)
Other $_{t}$	0.014*
	(0.007)
Intercept	0.018
	(0.026)
Observations	247
Adjusted R^2	0.082
Residual Std. Error	0.040
F Statistic	2.462***
Note:	*p<0.1; **p<0.05; ***p<0.01

4.3 Robustness

Table VII shows that our main results regarding the CEO power indicators continue to hold when we use CAR[-1, +1] as the dependent variable. The adjusted R^2 of the baseline regression (6) reveals that the CEO power variables have close to zero explanatory power. In addition to our main conclusions being robust with regard to different specifications of CEO power, Table VII shows that our main conclusions are also robust when using a different event window. We further see that, for the most part, the significance as well as the direction of the coefficients do not change when it comes to the control variables. However, we observe two exceptions when it comes to significance. Firstly, we see that the variable Log assets loses significance in five of the models. Secondly, share financing loses significance in one of the models. These discrepancies may be due to the excess noise added when looking at a longer event window. Table IX in the appendix supports this view, showing that CAR[0, +1] is the most significant event window and that the abnormal returns are only significant for day 0 and 1.

The adjusted R^2 changes from approximately 0.08 in the main model to roughly 0.1 in the robustness regressions. This change indicates that the same control variables explain a bigger portion of the variation in CAR for the longer event window. The conclusions of the F-tests, however, do not change.

As we have mentioned, a potential problem with our sample is that 112 of the transactions have a method of financing listed as unspecified. This means that we do not know what the actual financing method is in these M&A deals. It may well be that most of the deals in this category are financed with, for example, shares. The large number of unspecified deals might potentially distort our findings regarding the other categories of financing.

In order to ensure that the Unspecified category does not significantly distort our results, we run separate analyses where we omit all deals with unspecified financing. This alternative sample consists of 135 observations. CAR[0, +1] exhibits approximately the same skewness and significance in this sample. Additionally, the same tendencies regarding direction and magnitude as in the original sample are observed when running regression analyses. However, the significance of some coefficients is lower, which might be due to the smaller sample. Allison (1999, p. 57) argues that it is harder to obtain significant coefficients with small samples and that nonsignificance is very weak evidence for the absence of an affect when dealing with small samples. It therefore appears likely that the Unspecified category

Table VII
Robustness regression

Robustness check with CAR[1, +1]. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. The dependent variable is the acquirer's 3-day cumulative abnormal return in percentage points. The variables CAR[1, +1], excess pay, CEO tenure, CEO ownership, ROA and Women % are winsorized at the 1 % and 99 % levels. Standard errors are presented in the parentheses. Variable definitions are provided in Table VIII in the appendix.

	Dependent variable					
	CAR[-1,+1]					
	(1)	(2)	(3)	(4)	(5)	(6)
CEO power indicators						
Excess pay $_{t-1}$	0.006 (0.006)					
Board size $_{t-1}$		0.002 (0.002)				
CEO tenure $_{t-1}$			-0.0003 (0.001)			
Largest owner $_{t-1}$				0.017 (0.016)		
Power index $_{t-1}$					-0.003 (0.003)	
Acquirer characteristics						
CEO ownership $_{t-1}$	0.109** (0.054)	0.119** (0.055)	0.118** (0.057)	0.103* (0.054)	0.110** (0.054)	0.109** (0.054)
CEO change $_{t-1}$	0.028*** (0.008)	0.027*** (0.008)	0.027*** (0.008)	0.027*** (0.008)	0.027*** (0.008)	0.028*** (0.008)
Log assets $_{t-1}$	-0.002 (0.002)	-0.003* (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.002 (0.002)
ROA $_{t-1}$	0.076*** (0.022)	0.080*** (0.022)	0.076*** (0.022)	0.078*** (0.022)	0.076*** (0.022)	0.076*** (0.022)
Debt ratio $_{t-1}$	0.047*** (0.018)	0.041** (0.017)	0.043** (0.017)	0.042** (0.017)	0.042** (0.017)	0.042** (0.017)
Women % $_{t-1}$	0.032 (0.035)	0.033 (0.035)	0.031 (0.035)	0.035 (0.035)	0.025 (0.035)	0.028 (0.034)
M&A deal characteristics						
Multiple acquisitions $_t$	0.003 (0.010)	0.001 (0.010)	0.002 (0.010)	0.001 (0.010)	0.002 (0.010)	0.002 (0.010)
Overlapping estimations $_t$	-0.003 (0.011)	-0.004 (0.011)	-0.004 (0.011)	-0.003 (0.011)	-0.003 (0.011)	-0.003 (0.011)
Same industry $_t$	0.002 (0.006)	0.002 (0.006)	0.002 (0.006)	0.002 (0.006)	0.001 (0.006)	0.002 (0.006)
Same country $_t$	-0.009 (0.006)	-0.009 (0.006)	-0.010 (0.006)	-0.010 (0.006)	-0.010 (0.006)	-0.010 (0.006)
Cash $_t$	0.003 (0.009)	0.003 (0.009)	0.003 (0.009)	0.002 (0.009)	0.002 (0.009)	0.002 (0.009)
Shares $_t$	0.017 (0.010)	0.018* (0.010)	0.018* (0.011)	0.018* (0.010)	0.018* (0.010)	0.018* (0.010)
Combination $_t$	0.011 (0.011)	0.014 (0.011)	0.011 (0.011)	0.012 (0.011)	0.011 (0.011)	0.011 (0.011)
Other $_t$	0.018** (0.008)	0.020** (0.008)	0.019** (0.008)	0.020** (0.008)	0.020** (0.008)	0.019** (0.008)
Intercept	-0.010 (0.028)	-0.011 (0.028)	-0.008 (0.028)	-0.007 (0.028)	-0.004 (0.028)	-0.007 (0.028)
Observations	247	247	247	247	247	247
Adjusted R^2	0.102	0.103	0.098	0.102	0.101	0.101
Residual Std. Error	0.043	0.043	0.043	0.043	0.043	0.043
F Statistic	2.853***	2.890***	2.792***	2.862***	2.848***	2.982***

Note:	*p<0.1; **p<0.05; ***p<0.01

includes a diversified mixture of financing methods, and that including it does not significantly distort our results. In addition to this, this variable is relatively

Overall, the robustness check has illustrated that the alternative event window does not affect our main conclusions. We find no evidence supporting a negative effect of CEO power on M&A announcement returns for Norwegian acquiring companies. We thereby reject our research hypothesis regarding a negative relationship between CEO power and M&A announcement returns. We also find that the variables CEO ownership, CEO change, ROA and debt ratio have a significant, robust and positive effect on CAR. When it comes to deal characteristics, we have some unusual findings. We find that share financing and other financing also affect CAR positively, while cash financing does not affect CAR significantly. In the following, we discuss our main findings more in depth.

5 Discussion

Our analysis examines the effect of CEO power on the market reactions associated with the announcement of M&A deals for Norwegian listed companies. We find no evidence indicating that CEO power has an effect on the cross-sectional variation in announcement returns for Norwegian acquiring firms. An implication of our findings is that powerful CEOs in Norwegian acquiring companies do not necessarily put their self-interests ahead of the interests of the shareholders when engaging in M&A deals. Another implication is that investors are not sensitive to CEO power in relation to M&A announcements for Norwegian acquiring firms.

Andrade et al. (2001) argue that the most statistically reliable evidence on whether mergers create or destroy shareholder value originates from event studies with small event windows. They base this statement on the assumption that the capital market is efficient with response to public information. As such, they argue that the average abnormal stock market reaction at merger announcement can be used as an indicator when looking at the value creation or destruction of a merger deal. Given that the Norwegian market is adequately efficient, another implication of our study can be that more CEO power does not necessarily lead to lower quality M&As. Our results regarding CEO power are in contrast with several studies conducted in other countries (Grinstein & Hribar, 2004; Masulis et al., 2007; Bebchuk et al., 2011). Thus, a natural question is, why do we not find evidence of CEO power affecting Norwegian M&A announcement returns?

The values and the culture in Norway may be important factors explaining our findings. Norway is a country where equality and social justice are essential values. These values are ingrained in the legislation, the corporate environment, as well as the Norwegian society in general. In line with this, several laws have been passed that arguably decrease the power of CEOs and their ability to exploit their power.

One way for CEOs to exploit their power without falling victim to negative reactions from important stakeholders is by camouflaging their compensation (Bebchuk et al., 2002). Bebchuk and Fried (2004, p. 67) argue that camouflage is of high importance when it comes to the ability of the CEO to extract rents from the company. As we have mentioned, a law which was implemented in 2006 forces all listed Norwegian companies to report CEO compensation in detail in the annual report (Norwegian Public Limited Liability Companies Act, 1997, § 6-16 a). The legislation reduces camouflage opportunities and makes sure that

the stakeholders receive more correct information regarding CEO compensation. The US has similar laws demanding detailed compensation reports (U.S. Securities and Exchange Commission, 2014). However, compared to countries without adequate laws regarding transparency of executive compensation, Norwegian companies arguably have fewer camouflage opportunities, making it easier for market participants to observe the pay-performance relationship of CEOs in Norwegian companies. The result of an easily observable pay-performance relationship might be that Norwegian CEOs are more hesitant to put their own interests ahead of the interests of the shareholders when engaging in M&As.

Another important source of CEO power in the governance literature is CEO duality, where the CEO is also chairman of the board. A consequence of duality is that the decision-making power is heavily concentrated in one individual. CEO duality is common in many countries. When it comes to the US, more than half of the companies listed on the S&P 500 have a CEO who is also the chairman (Krause, Semadeni & Canella, 2016). Masulis et al. (2007) show that the market tends to react negatively to the power associated with CEO duality in US based M&As. §6-1 of the Norwegian Public Limited Liability Companies Act (1997) prevents the CEO from being a member of the board, which means that CEO duality is not allowed for listed Norwegian companies.

Additionally, Norway differs from most other countries by having a law that regulates the gender mix of the board of directors for listed companies. In general, the board must consist of a minimum of 40 percent of each gender, although the required percentage varies a bit depending on the size of the board (Norwegian Public Limited Liability Companies Act, 1997, §6-11 a). Adams and Ferreira (2009) find that boards with high gender diversity allocate more resources to monitoring. Levi et al. (2013) find that for each additional female director on the board of the acquiring company, the acquisition premium paid reduces by 15.4 %. They interpret their findings as proof supporting the concept that female directors help create shareholder value through their influence on acquisition decisions. The abovementioned laws regarding CEO duality and women on the board arguably reinforce the independence of the board and give less power to the CEO. As a result, the investors may have more trust in the board's ability to monitor the CEO and may therefore be less likely to react negatively to M&A announcements.

In addition to Norwegian legislation, the culture itself may also be an important factor explaining our lack of evidence regarding a relationship between CEO power and M&A

announcement returns. The Hofstede Model of Culture is common when analyzing a country's culture. The model rates countries on a comparable scale with six different dimensions: power distance, individualism, masculinity, uncertainty avoidance, pragmatism and indulgence (Hofstede, 2015). The two dimensions we deem most important when explaining power differences between countries are power distance and masculinity. Table XIII in the appendix reports the dimension scores of Norway and a few other countries. When comparing the Norwegian scores to, for instance the US, we see some interesting patterns.

Norway has a lower score than the US when it comes to the power distance. Power distance represents the degree to which the less powerful members of society accept and expect that power is distributed unequally. A lower power distance indicates that the society has a low threshold for public outrage when it comes to CEO power (Hofstede, 2015). Consequently, one can argue that Norwegian CEOs are less powerful, and they may also be less likely to use the power they have. This view is supported by several studies which find that Norwegian managers seem to value partnership, consensus, employee participation in decision-making, and power sharing (Lindkvist, 1991; Grenness, 2011).

Norway has a score of only 8 when it comes to the masculinity dimension, which makes Norway one of the world's most feminine cultures. According to Hofstede (2015), the use of power and the tolerance of it is very different in a feminine culture compared to a masculine. In masculine cultures, the use of power is encouraged and associated with admiration. People in masculine cultures tend to align themselves with powerful individuals. In feminine cultures, there is a much greater reluctance regarding the use of and the display of power. Feminine cultures are also associated with disapproval of authority when it is enforced in a powerful manner. As Hofstede's model classifies Norway as a highly feminine culture, we believe that CEOs are more likely to refrain from using their power to enforce self-interest at the expense of shareholders.

In the discussion above, we argue that the legislation and cultural distinctions of Norway cause CEOs of Norwegian companies to have limited power, or alternatively that it makes them more hesitant to use power to promote their self-interest. This claim is arguably strengthened by the fact that the level of Norwegian executive compensation is among the lowest in the world (Randøy & Skalpe, 2010), as governance literature indicates that there is a link between CEO compensation and CEO power (Bebchuk et al., 2002). The Norwegian

legislation and distinct culture can therefore be part of the reason as to why we do not find a statistically significant relationship between CEO power and M&A announcement returns.

Another interesting finding in our analyses is the effect of debt ratio on M&A announcement returns. We find a positive and significant relationship between debt ratio and CAR. Based on Jensen (1986), we interpret this result as evidence that debt ratio is associated with reduced agency problems. The reduction in agency problems, in turn, is associated with better market expectations. These results are in line with the findings of Harvey, Lins and Roper (2004). Their results indicate that higher debt ratio is associated with a positive CAR, especially for companies with high expected managerial agency costs. Additionally, our analyses show that CEOs with high ownership stakes in the company are on average associated with higher announcement returns. Based on Jensen and Meckling (1976), we interpret this as another evidence supporting the notion that lower agency problems are associated with a higher expected firm value. The implication of these findings could be that Norwegian companies should aim to increase CEO ownership and debt ratio. Additionally, this information can possibly be used in predicting the outcome of Norwegian M&A deals to a certain extent.

There are numerous studies examining the effects of CEO characteristics in relation to M&As. One such characteristic, which is investigated by multiple researchers, is CEO "hubris" or overconfidence. Studies like Malmendier and Tate (2008) find that investors react more negatively to M&A announcements by overconfident CEOs. Our study contributes by focusing on the effects of CEO power, which is an aspect that few studies have looked at in the past. Compared to the few studies on the effects of CEO power on M&A announcement returns, we also differ by incorporating more power proxies than most of these studies. Some of these measures have not been investigated in this context earlier. One of these proxies is a power index constructed based on the other CEO proxies we include. This index is meant to capture the combined effect of the other measures. Additionally, whereas most studies look at the effects of CEO power in the context of large countries like the US, our study also contributes to extant literature by looking at CEO power in a Norwegian setting.

5.1 Limitations

Even though our paper sheds some light on the relationship between CEO power and M&A announcement returns for Norwegian acquiring listed companies, we are aware of various limitations regarding our thesis. One limitation is that our analysis is based on 247 observations, which is a relatively small sample. In regressions with small samples, the p-values are only rough approximations of the true p-values (Allison, 1999, p. 58). The fact that small samples can induce poor approximations of test statistics is therefore a relevant problem. As we have mentioned, Allison (1999, p. 57) also argues that a nonsignificant coefficient is exceptionally weak proof for the absence of an effect in small samples. However, there is no clear-cut answer regarding what a small sample is.

Furthermore, a limitation regarding our data set is that we lack information about how the different payment methods are distributed for deals with multiple payment methods. This mainly affects our analysis through our variables Combination and Other. With more information, the variables could be coded to take the relative size of the payment methods into consideration. Zephyr does in fact report this information. However, because of a substantial amount of missing observations in their data set, we could not use this information to code the variables for a more correct analysis.

Additionally, it might be difficult to measure and quantify CEO power. Different researchers propose different proxies of CEO power depending on how they define power. As such, there are numerous variables that can be used as CEO power proxies, and it is possible that other proxies could give different results.

Other limitations include only looking at Norwegian listed companies and focusing on a relatively limited period of time. This means that our results may not be generalizable beyond our sample. We also solely focus on the short-term effects of CEO power on the market reactions. The short-term market reactions are an indicator of the expectations of the shareholders on future firm performance (Andrade et al., 2001). In practice, however, future performance can differ entirely from the expectations of the shareholders. This is means that we cannot be sure about how the acquiring firm or the investors are affected by CEO power in relation to M&As in the long run.

6 Conclusion and further research

The main purpose of this paper is to analyze the impact of CEO power on announcement returns related to mergers and acquisitions. Our sample consists of 247 M&A deals between 2008 and 2017 where the acquiring firms are listed Norwegian companies. When controlling for acquirer characteristics and deal characteristics, our regression analyses suggest that CEO power does not significantly affect the M&A announcement returns of Norwegian acquiring companies. These findings are robust across four CEO power measures, as well as a power index constructed on the basis of these four measures. Our results indicate that powerful CEOs do not necessarily use their power to put their own interests ahead of the interests of the shareholders when engaging in M&A deals.

Our findings are inconsistent with the findings of Bebchuk et al. (2011) and Grinstein and Hribar (2004) who find that CEO power affects the M&A announcement returns of US firms negatively. We therefore attempt to explain our contrasting results by pointing out several ways in which Norway differs from other countries. We argue that Norway has several laws that limit both the power of CEOs and the ability of CEOs to exploit their power. Based on Hofstede's cultural dimensions, we further argue that Norwegian culture discourages the use of excessive power. The legislation and distinct culture of Norway may therefore be important factors explaining why we do not find a statistically significant relationship between CEO power and M&A announcement returns.

To examine the relationship between CEO power and M&A announcement returns, we expand upon extant empirical research by using several measures of CEO power, some of which have not been examined in this context before. As few studies focus on the effect of CEO power on M&A returns, we also contribute by examining this further. Moreover, we do so by investigating this topic in a Norwegian setting. As far as we are aware, there are no studies that focus on the effects of CEO power on the M&A announcement returns of Norwegian acquiring firms.

Our research finds no significant relationship between measures of CEO power and the market reaction associated with M&A deals. We investigate measures of CEO power that we find satisfying according to theory. However, there are other measures and aspects of power that could be taken into consideration in future research. Additionally, in an attempt to explain our results, we argue that Norwegian legislation could be a key factor explaining why investors are not sensitive to CEO power when reacting to announcement of M&A deal. For

future research, we therefore propose looking at the effects of CEO power before and after the relevant laws are implemented. In addition, to investigate whether Norwegian culture affects the market reaction related to CEO power, researchers can examine whether the effect of CEO power is significant in countries with a different cultural identity. Following our discussion, the effect of CEO power may be different in these countries.

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Appendix

The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies.

Variable	Description	Exp. sign
Dependent variable		
CAR [0, +1]	Two-day cumulative abnormal returns calculated using the market model. The market model parameters are estimated over [-141, -21] with OSEBX returns as the market index.	
CEO power indicators		
Excess pay $_{t-1}$	Acquiring CEO's total compensation minus expected total compensation, in the year prior to the event. Calculated as described in chapter 4.2.	-
Board size $_{t-1}$	The number of directors on the acquirer's board in the year prior to the event.	-
CEO tenure $_{t-1}$	The number of years since the CEO of the acquiring company took office in the year prior to the event.	-
Largest owner $_{t-1}$	The percentage ownership of the acquirer's largest owner in the year prior to the event.	+
Power index $_{t-1}$	An index constructed to capture the total effect of our power variables on CAR in the year prior to the event. Higher index levels correspond to more CEO power.	-
Acquirer characteristics		
CEO ownership $_{t-1}$	Acquiring CEO's percentage ownership of the firm in the year prior to the event.	+
CEO change $_{t-1}$	Dummy with a value of 1 if the deal was announced by a firm that made a change of CEO in the year prior to the announcement, and 0 otherwise.	+
Log assets $_{t-1}$	The natural logarithm of the book value of total assets in the year prior to the event.	-
ROA $_{t-1}$	Net income divided by the book value of total assets in the year prior to the event.	+
Debt ratio $_{t-1}$	The book value of total debt divided by the book value of total assets in the year prior to the event.	+
Women % $_{t-1}$	The percentage of female directors on the acquirer's board in the year prior to the event.	-
M&A deal characteristics		
Multiple acquisitions $_t$	Dummy with a value of 1 if the acquiring firms has made multiple M&A deals in the same calendar year, and 0 otherwise.	-
Overlapping estimations $_t$	Dummy with a value of 1 if an M&A deal has an estimation or event window that overlaps with another M&A estimation or event window for the same acquiring company, and 0 otherwise.	±
Same industry $_t$	Dummy with a value of 1 if the acquirer and target have the same 4-digit SIC industry code, and 0 otherwise.	+
Same country $_t$	Dummy with a value of 1 if both the acquirer and target are Norwegian, and 0 otherwise.	+
Cash $_t$	Dummy with a value of 1 for purely cash-financed deals, and 0 otherwise.	+
Shares $_t$	Dummy with a value of 1 for purely stock-financed deals, and 0 otherwise.	-
Combination $_t$	Dummy with a value of 1 for deals with a combination of cash and share financing only, and 0 otherwise.	±
Other $_t$	Dummy with a value of 1 for deals that are neither exclusively cash-financed, exclusively stock-financed nor exclusively a combination of cash and share financing, and 0 otherwise.	±
Unspecified $_t$	Dummy with a value of 1 for deals with unspecified method of financing, and 0 otherwise. Used as a reference category.	±

Table IX
Significance of abnormal returns

Cumulative average abnormal returns, average abnormal returns and their statistical significance. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies.

Period	CAAR	t-stat
[0, +1]	0.956 % ***	3.132
[-1, +1]	0.931 % ***	2.796
[-2, +2]	0.906 % **	2.389
[-5, +5]	0.535 %	1.022

Day	AAR	t-stat
-5	-0.009 %	-0.051
-4	0.133 %	0.711
-3	-0.190 %	-1.439
-2	-0.020 %	-0.106
-1	-0.103 %	-0.635
0	0.516 % **	2.140
1	0.440 % **	2.036
2	0.023 %	0.143
3	0.121 %	0.778
4	-0.304 %	-1.310
5	-0.099 %	-0.638

Note:	$*p<0.1$ $**p<0.05$ $***p<0.01$

Table X
Excess pay regression

Cross-sectional OLS regression with the logarithm of total CEO compensation as the dependent variable. The coefficients from this regression are used in the calculation of excess pay. In line with Core et al. (2008) we relate pay to a set of important explanatory variables, which are meant to predict normal compensation for each CEO. The sample consists of 247 completed mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. The variables ROA, stock return, CEO ownership and chairman ownership are winsorized at the 1 % and 99 % levels. Standard errors are presented in the parentheses. Variable definitions are provided in Table XI in the appendix.

	Dependent variable
	Log total compensation
Log revenue $_{t-1}$	0.127*** (0.037)
Log assets $_{t-1}$	0.092*** (0.034)
ROA $_{t-1}$	-0.216 (0.316)
Stock return $_{t-1}$	0.113* (0.060)
CEO change $_{t-1}$	0.285*** (0.096)
Board size $_{t-1}$	-0.019 (0.025)
Log chairman pay $_{t-1}$	0.287*** (0.052)
Largest owner $_{t-1}$	-0.228 (0.196)
CEO ownership $_{t-1}$	-3.517*** (0.689)
Chairman ownership $_{t-1}$	-0.393 (0.278)
CEO age $_{t-1}$	0.006 (0.006)
Intercept	3.311*** (0.373)
Observations	247
Adjusted R^2	0.592
Residual Std. Error	0.534
F Statistic	33.402***
Note:	*p<0.1; **p<0.05; ***p<0.01

Table XI
Excess pay variable descriptions

Description of the variables used in the calculation of excess compensation and where the empirical justification for relating these variables to CEO compensation comes from.

Variable	Description	Empirical justification
Dependent variable		
Log total compensation	The natural logarithm of total CEO compensation, consisting of salary, bonus, other benefits, pension, share-based and option-based payments.	
Independent variables		
Log revenue $_{t-1}$	The natural logarithm of the book value of revenue for the acquiring firm.	Tosi, Werner, Katz & Gomez-Mejia (2000)
Log assets $_{t-1}$	The natural logarithm of the book value of total assets of the acquiring firm.	Tosi et al. (2000); Firth, Tang & Tam (1999); Randøy & Skalpe (2007)
ROA $_{t-1}$	Net income divided by the book value of total asset of the acquiring firm.	Tosi et al. (2000); Bhagat & Bolton
Stock return $_{t-1}$	The total stock return of the acquiring firm.	Tosi et al. (2000); Jensen & Murphy (1990)
CEO change $_{t-1}$	Dummy with a value of 1 if the firm made a change of CEO, and 0 otherwise.	Murphy (2002)
Board size $_{t-1}$	The number of directors on the acquirer's board.	Core et al. (1999); Jensen (1993); Bebchuk & Fried (2004)
Log chairman compensation $_{t-1}$	The natural logarithm of the acquirer's chairman compensation.	Oxelheim & Clarkson (2014)
Largest owner $_{t-1}$	The percentage ownership of the acquirer's largest owner.	Bertrand & Mullainathan (2000); Core et al. (1999)
CEO ownership $_{t-1}$	The percentage ownership of the acquirer's CEO.	Jensen (1993); Randøy & Nielsen (2002); Jensen & Murphy (1990b)
Chairman ownership $_{t-1}$	The percentage ownership of the acquirer's chairman.	Core et al. (1999)
CEO age $_{t-1}$	Age of the CEO in the acquiring firm.	Garen (1994)

Table XII
Correlation matrix

Pearson correlation matrix. The sample consists of 247 completed Norwegian mergers and acquisitions between 2008 and 2017, where the acquiring firms are listed Norwegian companies. Variable definition are provided in Table VIII in the appendix.

	CAR [0,+1]	Excess pay	Board size	CEO tenure	Largest owner	Power index	CEO ownership	CEO change	Log assets	ROA	Debt ratio	Women %	Multiple acquisitions	Overlapping acquisitions	Same industry	Same country	Cash	Shares	Combination	Other
Excess pay	-0.005																			
Board size	-0.045	-0.08																		
CEO tenure	0.004	-0.126	-0.083																	
Largest owner	-0.002	-0.037	0.254	-0.074																
Power index	-0.098	0.397	0.252	0.367	-0.342															
CEO ownership	0.096	0.044	-0.222	0.282	0.077	-0.023														
CEO change	0.117	-0.011	0.054	-0.289	0.008	-0.121	-0.061													
Log assets	-0.105	-0.041	0.605	0.089	0.335	0.218	-0.134	-0.128												
ROA	0.217	-0.024	0.097	0.101	0.081	0.119	-0.016	-0.183	0.305											
Debt ratio	0.125	-0.324	0.133	0.148	0.071	-0.034	-0.027	-0.084	0.262	0.023										
Women %	0.013	-0.183	-0.064	0.125	-0.155	-0.118	-0.027	0.018	0.023	-0.112	0.191									
Multiple acquisitions	0.024	-0.063	0.207	-0.117	0.057	0.079	-0.075	0.065	0.076	0.117	-0.139	0.08								
Overlapping acquisitions	0.048	-0.063	0.204	-0.132	0.001	0.083	-0.085	0.11	0.069	0.073	-0.091	0.157	0.829							
Same industry	0.035	-0.052	0.02	0.107	0.055	-0.079	0.061	-0.034	0.143	-0.048	0.095	0.109	-0.103	-0.122						
Same country	-0.01	-0.228	-0.164	0.11	0.085	-0.178	0.106	-0.016	-0.049	-0.095	0.288	0.134	-0.118	-0.135	0.086					
Cash	-0.076	-0.072	-0.064	0.122	0.047	-0.055	-0.035	-0.057	0.046	0.08	-0.001	0.051	-0.078	-0.114	0.049	0.072				
Shares	0.119	0.004	-0.111	0.053	0.014	-0.086	0.152	0.06	-0.133	-0.069	0.022	0.01	-0.168	-0.153	0.238	0.26	-0.123			
Combination	0.039	-0.037	-0.253	-0.1	-0.156	-0.152	0.011	0.166	-0.297	-0.112	-0.054	0.049	0.048	0.094	-0.015	0.049	-0.123	-0.118		
Other	0.097	0.114	-0.098	-0.119	-0.158	0.092	-0.035	0.023	-0.27	-0.115	-0.128	-0.06	0.128	0.096	-0.146	-0.211	-0.191	-0.184	-0.184	
Unspecified	-0.13	-0.029	0.347	0.051	0.189	0.105	-0.049	-0.122	0.461	0.157	0.127	-0.019	0.017	0.029	-0.047	-0.06	-0.326	-0.312	-0.312	-0.487

Table XIII
Hofstede Cultural Dimension Scores

This table shows the Hofstede cultural dimension scores of Norway and a few other countries (Hofstede Insights, 2019). We focus on how the first two dimensions, power distance and masculinity, affect CEO power and how they might affect the market's reaction to CEO power related to M&A announcements for Norwegian listed companies. Power distance represents the readiness in a society to accept power and status. People in countries with high power distance scores are more likely to obey powerful individuals. Masculinity represents an inclination towards competitiveness, assertiveness and admiration of power, among other things. Lower scores of masculinity are associated with cooperation, caring and disapproval of excessive power use (Hofstede 2015).

Dimensions	Norway	USA	UK	France	China
Power distance	31	40	35	68	80
Masculinity	8	62	66	43	43
Individualism	69	91	89	71	20
Uncertainty avoidance	50	46	35	86	30
Pragmatism	35	26	51	63	87
Indulgence	55	68	69	48	24