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# The Effect of CEO Equity Incentives on Payout Policy

*An emperical analysis of the relationship between CEO equity incentives and payout decisions by firms listed on Oslo Stock Exchange from 2015-2020.*

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# Abstract

In this thesis, we have studied the role of CEO equity incentives in a payout decision, with a focus on agency cost, among firms listed on the Oslo Stock Exchange from 2015 to 2020. Firstly, we investigated the relationship between wealth performance sensitivity and total payout among firms with high agency cost, before analysing the effect of CEO stock options as a determinant of payout method, both in terms of propensity and level. Our first finding indicates that CEO wealth-performance sensitivity significantly affects the propensity and level of payouts for firms with high agency costs when agency cost is measured by low ownership and investment opportunities. Thus, there is evidence suggesting that CEO ownership incentives reduce agency costs. The effect is strongest for dividend payouts. We fail to find supporting evidence for the effect of CEO options on the level or propensity of any of the payout methods in contrast with other studies, especially from the US.

The key findings in the study are that the effect of CEO ownership incentive on payout decisions depends on how you measure agency costs. Our study suggests that investment opportunities are an accurate measure. Our research does not find an effect of CEO options on payout policy and suggests that this relationship is dependent on conditions such as tax rate and other market characteristics. In addition, it is challenging to distinguish the effect of the different equity incentives from each other, which might contribute to lack of supporting evidence.

**Keywords:** Agency costs, payout policy, CEO Compensation, equity incentives, Oslo Stock Exchange

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# 1. Introduction

As the head executive in a company, the CEO is the most influential management position and therefore bears most of the responsibility of acting according to shareholders' interests. The role of appointing the CEO lies with the board of directors, who represent the shareholders. A key aspect of such an appointment is how the company compensates the CEO to mitigate the agency conflict that arises when separating ownership and control. The relationship between the CEO and the shareholders is a complex aspect of the principal-agent issue, where someone makes decisions on behalf of someone else (Jensen & Meckling, 1976). There are several corporate governance mechanisms to mitigate agency costs, CEO compensation being one of them. To align the interests of the CEO and the shareholders, the firm often uses equity incentive tools in addition to salary compensation. These tools usually consist of stocks or stock options, as this reduces the costs of monitoring the actions of the CEO (Holmstrom & Milgrom, 1991). The CEO might also buy their own shares, regardless of any compensations scheme. Either way, such equity holdings could affect a CEO's decision-making, as their interest is more aligned with shareholders, reducing agency costs. Therefore, this study intends to examine how the CEO's equity holdings affect a firm's corporate actions. In particular, we are studying how payout policies for firms listed on the Oslo Stock Exchange are affected by a CEO's equity holdings.

The payout policy consists of a series of decisions made by the executive management, later voted on by the board of directors. The decisions are often complex, composed of many factors, such as free cash flow, growth prospects, leverage, taxes, and information signalling. A company could choose to retain excess cash due to financial constraints, high uncertainty, or possible investment opportunities. If a firm decides to pay out excess cash to its shareholders, there are two alternative payout methods: share repurchase or dividends (Berk & DeMarzo, 2014). Both methods transfer value to the shareholders. Dividends are conducted as a direct payment to the shareholder, and share repurchase increases the value of shares in the market, as it reduces the number of shares outstanding and signals undervaluation of the stock. While the dividend is often paid out regularly by companies, share repurchases are more of a flexible payout method. We find that most firms in Norway combine the methods in their payout policy, where the average yearly share repurchase represents 11.1% of total payouts among dividend-paying firms, and the average annual dividend payout among repurchasing firms is 51.9% of the total payout.

Agency theory suggests a misalignment between the CEO and shareholders regarding payout policy. The CEO could want to increase cash holdings, as paying out would decrease resources under the CEO's control and may lead to increased monitoring by the capital markets (Jensen, 1986). The CEO's attitude towards risk could suggest a preference for holding back cash to reduce the risk of financial distress. Jensen (1986) presents the free cash flow problem, where firms with limited investment opportunities and high free cash flow could increase the agency costs of the firm. This increase in agency costs is due to the increased risk of overinvesting or empire building by the CEO, which could destroy value for the shareholders. Therefore, the shareholder would prefer excess cash to be paid out. Equity holdings could also affect the CEO's preferences for payouts. Option holding gives the CEO and management an incentive to prefer share repurchase rather than dividend (Fenn & Liang, 2001; Lambert, Lanen, & Larcker, 1989). This preference is because dividends reduce the value of outstanding shares, which would reduce the value of any option holding, while share repurchase would have the opposite effect. All these fundamental aspects are critical for the motivation behind our study.

Specifically, this study will look at two critical managerial questions regarding corporate payout policy; (1) how much should the company pay out to their shareholders? (2) If paying out, which method should be used? The independent variables used to investigate these questions are related to the CEO's equity incentives, as we introduce two variables: the CEO scaled wealth-performance sensitivity and CEO options. These variables represent the compensation policies implemented by the companies with the intent to mitigate agency costs.

The thesis offers two contributions to previous literature. Firstly, to our knowledge, there is no existing literature on the CEO equity holdings and payout policy among the listed companies on Oslo Stock Exchange. Secondly, in general, there is limited research on the mechanisms of payout policy in the Norwegian market, with Skjeltorp (2004) and Baker, Mukherjee, and Pakelian (2005) being the few to our knowledge. These studies were conducted in a period with other tax regulations (Thoresen, Bø, Fjærli, & Halvorsen, 2011), while share repurchase was still a new phenomenon in Norway, hence there are reasons to believe that our study can contribute with new insights.

To conduct our study, we gather data from Refinitiv Eikon, NewsWeb, Holdings and financial statements of companies listed on the Oslo Stock Exchange, giving us a dataset consisting of 141 companies and a total of 725 observations in the six-year period of 2015-2020. With inspiration from research conducted by Fenn and Liang (2001), Opler and Titman (1993),

Weisbenner (2000) and Lambert, Lanen and Larcker (1989), we use this data to examine how CEO equity holdings affect the levels, likelihood and choice of payouts in the Norwegian market. Among the observations in our dataset, we observe 611 cases of CEO stock holdings and 234 cases of stock options holdings, which we use to compute the independent variables as we test two different hypotheses. In our first hypothesis, the key aspect is to examine how CEO equity holdings affect the level and propensity of total payouts for firms with high agency costs, whereas the second hypothesis investigates how the CEO option holding affects the composition of payouts, as option holdings might have a substitution effect on the choice of payout method.

Our main findings are that the scaled wealth-performance sensitivity of the CEO has a significant relationship with both the level and propensity of payouts for firms with limited investment opportunities and low CEO ownership. We do not find significant results for firms with high free cash flow and low CEO ownership. These results indicate that our conclusion is dependent on the measure of agency costs. In our analysis of the relationship between CEO option holdings and payouts, we fail to find any significant relationship for both the composition and likelihood of payouts. However, the composition of equity holdings among CEOs in the sample varies, as many hold both options and stocks, which can explain the lack of supporting evidence.

Our findings on CEO incentives and payouts are not in line with previous research done by Fenn and Liang (2001), as they find significant effect only for repurchase payouts for firms with the same characteristics. Similar research done by De Cesari and Neslihan (2015) on the European market suggests the same as our findings. They find that managerial ownership and stock-based pay-performance sensitivity have a significantly positive effect on total payouts. In contrast with our findings on CEO options and payout methods, research from the American market finds a more significant effect on the substitution effect between repurchase and dividend, indicating that option holdings might lead to a shift towards more repurchase payouts. Differences in market characteristics might lead to these deviating findings, as share repurchase has been legal for a more extended period in the US, and tax differences could have significantly affected the trade-off between payout methods (Grullon & Michaely, 2002; Fenn & Liang, 2001).

The theoretical framework of our study will be presented in section 2, which provides the foundation for the hypothesis development in section 3, where the study's independent

variables also will be disclosed. Section 4 presents the remaining variables, along with an introduction to our dataset, walking through the data selection and collection, as well as descriptive summary statistics. Section 5 provides the methodology behind our analysis before the results and analysis are presented in section 6. Lastly, we discuss the robustness of the study in section 7 before making some concluding remarks in section 8.

# 2. Theoretical Framework

This section will provide the theoretical foundation of our analysis. Firstly, it will introduce the fundamentals of payout policy and the dynamics of these corporate actions. Further, we will take a closer look at theory and empirical research regarding agency theory, signalling theory and CEO incentives, connecting these topics with the two main questions related to payout policy: how much should the company pay out, and which method should be used?

## 2.1 Modigliani and Miller

Before presenting the fundamentals of payout policy, we present a groundwork theory which is the basis for much of the research and empirical findings on the subject. In the perfect capital markets of Modigliani and Miller (1961), the two main questions above are irrelevant for corporate management and shareholders. This irrelevance theory is often used as a benchmark for studies of payout policies, as it shows the ideal results in a world without financial frictions.

According to the irrelevance theory, a company's dividend policy is irrelevant for an investor's valuation of the firm and its capital structure (Miller & Modigliani, 1961). This theory is explained by the fact that investors' only concern is high returns. Investors who receive higher dividends than expected can reinvest the extra cash in the company. In the opposite scenario, where investors receive less dividend than expected, the investor can easily replicate the dividend cash flow by selling shares. Both scenarios can have the same cash flow outcome to the investor, making the dividend policy irrelevant.

Modigliani and Miller (1961) conclude the same in the case of share repurchase. The stock price would be unchanged after an open market share repurchase because the cash used to repurchase shares is the same as the decrease in equity stakes in the open market. The theory is based on being in a perfect capital market, which involves some key assumptions: (1) There are no taxes for both the company and the investors, (2) no transaction costs, agency costs, or fees, (3) no asymmetric information between the management of the company and the investors, as well as complete certainty concerning future investments, and (4) all parties act rationally.

The theory does not hold in the real world, but the assumptions of a perfect capital market identify the issues that play a crucial part in the payout decision, which we will discuss in further detail.

## 2.2 Payout policy

The decision of payout policy is still not well understood, as there are several aspects to consider if the goal is to maximise firm value. The following sections will provide insight into the characteristics of the two payout methods and some additional considerations that should be addressed in the decision making.

### 2.2.1 Dividend payouts

The first method is dividend payouts. If the board of directors approves the management's proposal to go through with a dividend payout, it also decides the amount paid per share and the payment date. The date for the payment is known as the record date and, to receive the payment, investors need to have purchased the shares prior to the ex-dividend date. This date is two days prior to the record date. Such payments could be regular, quarterly or annually, but it can also be a one-time special dividend payment. These dividends are most often financed with surplus cash, but as the signalling effect of dividends reflects profitability and optimism, some dividend payouts may be financed using debt (Berk & DeMarzo, 2014). According to the life-cycle theory of dividends, public industrial firms are likely to pay dividends when retained earnings are a large portion of the total assets. High levels of retained earnings are related to a company's life cycle. Dividend-paying firms have several characteristics that support this theory, as they are usually large, mature, and profitable (DeAngelo, DeAngelo, & Stulz, 2006).

As presented above, dividend payments reduce the share price after the ex-dividend date in perfect capital markets (Miller & Modigliani, 1961). This dividend effect on stock price has been a topic of several studies. Campbell and Beranek (1955) find that even though the stock prices react negatively, the price drop is not as big as the dividend payment, which is supported by a more recent study conducted by Bali and Hite (1998). They find that the average drop in stock price after cash dividends is 76,53% of the total payment due to tax. The tax issue will be further addressed below.

There is also a possibility to pay a dividend to shareholders by using a stock split. This is when a company issue shares to the shareholder rather than paying out cash. This method is not common in Norway (NewsWeb, 2021), so this study focuses on cash dividends.

### 2.2.2 Share repurchase

The second payout method is through share repurchase, a transaction where the company buys back its own shares, reducing the total number of outstanding shares. Doing so causes two effects that both increase the value of the remaining shares. Firstly, a short-term effect is that as the supply of stocks is reduced, the price per share will increase. The second effect is the signalling effect of buying own shares, as repurchase signals the belief of undervaluation of the stock. Brav, Graham, Harvey and Michaely (2005) find in their study that one of the main motivations behind repurchases is that the stock is of good value relative to its true value. A study that looked at 1239 open market repurchases in the 1980s found that the average repurchaser earned 12% more over the next four years than similar firms (Ikenberry, Lakonishok, & Vermaelen, 1995). There are three common types of transactions for share repurchase; open market repurchase, a tender offer, or a targeted repurchase. Open market repurchase is the most common method and accounts for most of the Norwegian market's repurchases (NewsWeb, 2021). Such a repurchase could be done over a long period, and when announced, the firm does not have any obligations to complete the full repurchase as initially announced. Due to fear of price manipulation, share repurchase was implemented in the US in 1982, while it was not implemented before 1999 in Norway (Skjeltorp, 2004).

### 2.2.3 Payout policy: considerations

In general, investors perceive payouts as positive (DeAngelo, DeAngelo, & Stulz, 2006). There are several aspects to consider when choosing a method of payout. Investors like cash dividend-paying firms, as it generates a cash flow which is a significant component of the return on investments. A benefit of share repurchase is that it reduces the number of outstanding shares in the market. This affects per-share measures positively, such as earnings per share and cash flow per share and in addition to return on equity. This effect could be especially beneficial for firms with mediocre growth, which could drive up the share price due to growth in these accounting measures. On the other hand, dividend payouts are more visible for investors, as this payout information is more easily accessible than for share repurchase, strengthening dividends as a signalling tool. Overall, share repurchase is viewed as a more

flexible method, as the company has no obligation to complete repurchase programmes, giving the firm the option to adjust if unforeseen events occur that affect their capital needs. This option is much more limited for dividend payments, as this is not well received by investors (Brealey, Myers, & Allen, 2014; Berk & DeMarzo, 2014).

Taxes most certainly influences a firm's payout decision. In Norway, the tax rates for capital gains and dividend payments are equal (Regjeringen, 2021), which has not been the case in the US until more recently, as dividend has had a significantly higher tax rate (Berk & DeMarzo, 2014). Hence, tax levels might have affected older research on payout policy. The tax rates on dividends and capital gains might affect shareholders' preferences for dividends versus share repurchase. When dividend tax rates are higher than the capital gains tax rate, the optimal dividend policy is not to pay dividends, as shareholders will pay lower taxes if a firm repurchases shares. This would be value-enhancing for the firm. Firms must also consider the clientele effects, as they need to optimise the payout policy with consideration of their investor clientele's tax preferences, as these might vary across investor groups (Berk & DeMarzo, 2014). While dividends are taxed annually, share repurchase allows investors to compound their gains tax-free until they are realised, giving the shareholders more flexibility.

Regarding how much a company pays out, several determinants must be considered. The future prospect of a company's free cash flow is essential, as the cash surplus should be likely to continue or grow for payouts to be sustainable. The company's debt levels are also important, as high leveraged firms induce high risk, making paying down debt a priority rather than payouts to shareholders. Another consideration is whether the company's cash holdings are sufficient if a sudden setback arose or an investment opportunity presented itself (Brealey, Myers, & Allen, 2014). There is only cash available for payouts if all these considerations are accounted for. This cash surplus could be distributed to the shareholders through the two methods presented above.

When having surplus cash at hand to pay out to shareholders, a firm could also decide to retain its cash to increase the firm's cash holdings. Corporate taxes make cash retention costly, as it has the opposite effect to leverage when it comes to the tax effect. While increased leverage gives a tax advantage through a tax deduction on interests paid, known as the interest tax shield, increased cash holdings give a tax disadvantage, as the firm must pay taxes on the interest received (Berk & DeMarzo, 2014). Other considerations for the decision of cash retainment will be explained below.

## 2.3 Agency theory: conflicting goals and risk preference

A fundamental mechanism in modern business is the alignment of CEOs' and shareholders' interests. Such a relationship was first defined by Jensen and Meckling (1976) as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some services on their behalf which involves delegating some decision-making authority to the agent". In the case of a public company, the CEO acts as the agent, while the shareholders represent the principal, and both parties want to maximise their utility. The initial state would then be that the CEO would act only in accordance with its interests, which could be at the expense of the company's shareholders. That is the case of agency costs and needs to be approached wisely not to affect firm value.

According to Jensen and Meckling (1976), agency cost is the sum of three elements. The first two are the costs related to the two approaches that can be taken to reduce agency costs, either monitoring or bonding. The third element is the residual loss, which is the loss of firm value that is not mitigated through the monitoring and bonding measures that have taken place. Monitoring expenses are related to the actions taken by the agent to ensure that the agent is acting in accordance with the principal's interests, which involves the costs of establishing and continuously monitoring the principal-agent contract. It could also include any incentive systems in place (Jensen & Meckling, 1976). Theory regarding such incentive schemes will be provided below. The bonding expenses are related to the agent and the costs for signalling the willingness to act according to the principals' interests. These measures could be contractual guarantees or limitations put upon the agent to assure the agent's intentions.

The principal-agent problem is highly relevant in the case of corporate payout decisions. According to Eisenhardt (1989), two problems occur in an agency relationship. The first problem is conflicting goals between the agent and the principal, while the second is the problem of risk sharing and deviation in risk preferences. As a result, there could be widely different interests between the manager and the shareholders if the proper incentive schemes are not in place. The CEO might be reluctant to pay out cash to shareholders, as this reduces the resources under the CEO's control. Reducing resources may reduce the CEO's power and influence. It may force the company to increase the monitoring by the capital markets if the need for external financing would occur (Jensen, 1986). Excess cash holdings do not benefit the shareholders when the level of cash holdings exceeds the future liquidity and investment needs. If a firm is highly levered, debtholders could benefit from the retained cash due to the

debt overhang problem, which would be the case when there is a transfer of value from the shareholder to the debtholder due to high leverage. Hence, the shareholders would prefer to cash out the retained earnings. As a result, debt holders are likely to increase the cost of debt for companies with high payout ratios due to the increased risk of financial distress (Berk & DeMarzo, 2014).

From a shareholder's perspective, an increase in cash holdings could also increase the possibility of overinvesting. Overinvesting is the case if the company invests in negative NPV projects, as the CEO has increased cash on hand (Brealey, Myers, & Allen, 2014). The temptation to overinvest is highest with cash at disposal but few investment opportunities, and it is referred to as the free-cash-flow problem (Jensen, 1986). Free cash flow is excess cash of what is required for the firm to fund positive NPV projects after discounting for the cost of capital. When a company generates a greater amount of free cash flow, the conflict of interest increases between the CEO and the shareholders. A CEO might be tempted to do some empire building, where the incentive is to gain power by increasing the size of the business. Growing businesses are also related to growth in management compensation, as increasing sales are correlated with an increase in compensation (Murphy, 1985). This relationship could result in non-profitable acquisitions instead of payout to shareholders. Another symptom of overinvestment could be so-called entrenching investments. This is when an investment decision is made based on which investment is best equipped to enhance the CEO's position (Brealey, Myers, & Allen, 2014).

Another key element motivating the CEO to increase the company's cash holdings is risk aversion. While shareholders can diversify their investments, the CEO's wealth might be more exposed to the idiosyncratic risk of the company. With this risk exposure in mind, increasing cash holdings might be in the CEO's best interest. Higher risk exposure for the CEO could see the CEO forgo positive NPV projects if they are perceived as very risky (Coles, Daniel, & Naveen, 2006). Guay (1999) finds that firms with growth opportunities and risk-averse managers would gain if the CEO is incentivised to invest in more risky, positive NPV projects. Coles et al. (2006) provide evidence for this, as they show that CEOs with higher sensitivity to stock price volatility in the managerial compensation scheme give incentives to invest in riskier assets and implement a more aggressive debt policy. This shows that compensation schemes for the management could affect corporate policies. Fenn and Liang (2001) support this, as they conclude in their study that managerial stock incentives might mitigate agency costs connected to payout policies at companies with the most severe cash flow problems.

## 2.4 Signalling effects of payout policy

The information asymmetry between the agent and the principal contributes to speculations related to corporate actions, which could affect the stock price. The payout of dividends or through share repurchase is an action where the company, in a credible manner, conveys information to its shareholders to reduce asymmetric information. This is how Spence (1973) defines the signalling theory of economics.

Both dividend and share repurchase are perceived as a good proxy for how a company's management considers the company's prospects. In the case of share repurchase, when a company executes a share repurchasing programme, it signals that they believe the stock is undervalued and believe in future growth. It would not make any economic sense otherwise, which is why this action signals credible information.

Babenko, Tserlukevich, and Vedrashko (2012) research the credibility of open market share repurchases signalling. Their research strengthens the signalling theory, arguing that insider stock purchases constitute essential information regarding a stock's valuation. Evidence provided shows that the market responds more favourably to repurchase announcements where insiders recently bought stock, strengthening the credibility of the repurchase announcement. The paper also states that the link is more substantial for companies with higher information asymmetry.

Signalling through dividend payout happens whenever there is a change in the proposed dividend. A positive or negative change in dividends communicates a change in the company's future cash flow, which affects its stock price. A dividend increase could also signal a lack of investment (Leary & Michaely, 2011).

For a better understanding of how executives communicate through dividend payments, Brav et al. (2005) conducted in-depth interviews along with surveys sent out to 384 CFOs and Treasurers. They find that managers are very reluctant to cut dividends, that dividends are smoothed through time, and that keeping a target payout ratio is not the highest priority. Leary and Michaely (2011) find that companies with big cash holdings, low growth prospects, weaker governance, and greater institutional holdings smooth dividend payments more. A dividend increase is mainly tied to long-run sustainable earnings growth, but not as much as in the past. Firms find it more flexible to increase their payouts through share buybacks, allowing them to optimise investments (Jagannathan, Stephens, & Weisbach, 2000).

An additional finding of Brav et al. (2005) is that corporate managers are reluctant to deviate far from their competitors. This finding implies that companies look to their peers when making decisions on payout policies. Research has found that firms imitate peers' payout decisions regarding dividend, and to a lesser extent on repurchases (Adhikaria & Argawal, 2018). These findings are more pronounced among firms facing greater product market competition, operating in environments with better information. Adhikaria & Agrawal (2018) discuss signalling as a plausible explanation, as firms compete for positive attention, where payouts are an effective tool for signalling positivity. A study of mimicking repurchases by Massa, Rehman, and Vermaelen (2007) finds that firms copy repurchase decisions from other firms to strategically signal their competitiveness to the market. The incentive to follow peers is likely to be stronger among younger firms with a greater need to be comparable with others to obtain better valuations, or in an industry with high competitiveness where its product differentiation is more difficult (Adhikaria & Argawal, 2018).

Baker et al. (2005) find support among executives for companies listed on the Oslo Stock Exchange for the signalling hypothesis. Among the executives surveyed, 55.3% agree that dividend increase is ambiguous because it can suggest a lack of either investment opportunities or future growth. A related finding from Baker et al. (2005) shows that almost 70% of managers agree with the notion that investors mostly regard dividend changes as a signal about a firm's prospects.

## 2.5 CEO incentives and equity-based compensation

Our study includes two independent variables, a proxy for CEO ownership and CEO options, which are related to the incentives of the CEO. The proxy for ownership measures how the CEO's wealth is affected by the company's performance, based on the CEO's stock holdings representing the firm's share of CEO ownership. The CEO option measures the relative amount of stock options that the CEO holds. Holding a call option gives the CEO the right to buy the company's stock, where the firm holds the other side of the contract. This means that the company must sell stocks to the CEO at an agreed-upon price if the CEO chooses to exercise the option (Berk & DeMarzo, 2014). These variables contain two different equity incentives, which are popular tools to align the interests of shareholders and management to mitigate agency costs.

According to the agency theory presented above, there are monitoring and bonding measures to ensure that the agent's actions align with the principal's interests. As the complexity of the work done by the agent increases, the more demanding and costly is the monitoring process and the need for well-structured governance mechanisms increases. Corporate governance is the system of controls, regulations, and incentives designed to prevent agency conflicts (Berk & DeMarzo, 2014). Performance-based incentives are such a governance tool for the principal. A study by Holmström and Milgrom (1991) suggests that if more of the CEO's personal wealth depends on the company's performance, less monitoring is necessary. As CEOs' tasks are multidimensional, incentive pay could have several positive effects. It could allocate risk and encourage hard work, but it can affect the CEOs' attention, directing attention towards the various tasks that must be performed (Holmstrom & Milgrom, 1991). Such incentives are mostly through company stocks or stock options, making the value of these incentives dependent on the company's performance.

Granting stock options to the management may cause dilution of earnings per share (EPS). The dilutive EPS considers stock options and other convertible securities, leading to an increase in shares outstanding in the measure calculation. Hence, when dividing the firm's earnings on shares outstanding, options granted will dilute EPS. To counter this, a firm could repurchase shares to decrease the outstanding number of shares, at the same time as cash used on the repurchase is not deducted from earnings (Weisbenner, 2000). The Brav et al. (2005) survey shows that most CEOs motivate share repurchase by increasing EPS. EPS is viewed as an important accounting measure that is often used to evaluate firm performance and determine stock valuation. It could also be a measure tied to any bonus compensation for the CEO (Weisbenner, 2000).

As Jensen and Meckling suggest, finding the optimal level of equity incentives varies with the company's characteristics (1976). Characteristics such as firm size, growth opportunities, and proxies for monitoring cost are determinants that affect the optimal portfolio of equity incentives. A study by Smith and Watts (1992) hypothesises that a high level of growth opportunities makes it more difficult for shareholders to assess the manager's decisions, arguing that an increase in equity incentives would lower the monitoring costs. The study finds a positive relationship between the use of equity incentives and firms' growth opportunities. Demsetz and Lehn (1985) suggest that there is an optimal firm size and level of managerial ownership based on a firm's factor inputs and product market. This would make it more costly for large firms to require that managers have a certain level of ownership in the firm. This

relationship could also be explained by the assumption that larger firms require more skilled managers, who require higher compensation. Baker and Hall (1998) find this to be true, as a CEO's equity portfolio increases with firm size but at a decreasing rate. Too many equity-based incentives can cause the CEO to lower the company's overall risk due to high personal risk exposure, reducing shareholders' value (Benson & Davidson, 2009). The relationship between CEO ownership and firm performance is positive but decreasing (Morck, Shleifer, & Vishny, 1988) (McConnell & Servaes, 1990). This finding could indicate that managerial ownership is associated with an incentive alignment but, at high levels, ownership could have a risk aversion effect (Benson & Davidson, 2009). Overall, finding the optimal level of equity incentives is complex, as the optimal levels are dynamic over time. The optimal level can be misaligned with the equity holdings of the CEO over time, so firms use new grants of equity incentives to realign to the optimal level (Core & Guay, 1999).

The theoretical foundation provided throughout this section helps us connect the theories and how they interact. Equity holdings through stock and option holdings could mitigate the issues of agency costs if the firms manage to find the optimal level to motivate the CEO to make corporate decisions in accordance with shareholder interests.

# 3. Hypothesis Development

This section will present the reasoning behind the study's hypotheses. The prepared hypotheses are based on the above theoretical framework and related empirical findings. Nevertheless, the research on CEO incentives related to payout policy and the fundamental theories of corporate finance are not strictly aligned; hence, developing hypotheses on the topic is not necessarily straightforward. Our hypotheses aim to answer whether CEO equity incentives in terms of both ownership and options affect the two main questions in payout policy related to the level and choice of payout.

Empirical evidence on the correlation between ownership incentives and payout policy is mixed. Studies by Jensen, Solberg and Zorn (1992) and Rozeff (1982) find that managerial ownership correlates with decreasing payout levels, De Cesari and Neslihan (2015) with increasing payouts, while Fenn and Liang (2001) find correlation for a subset of corporations with high agency costs. In addition, Hu and Kumar (2004) do not find a correlation at all. On the other hand, researchers seem to be more consistent on the relationship between stock options and payout policy, by concluding with a positive relationship between stock options and repurchase (Grullon & Michaely, 2002; Fenn & Liang, 2001), as well as a negative relationship for dividend payouts (De Cesari & Neslihan, 2015; Weisbenner, 2000; Lambert, Lanen, & Larcker, 1989).

## 3.1 CEO Ownership incentives and payout decisions

The mixed conclusions on how CEO ownership incentives affect the payout policy may indicate that the relationship depends on circumstances and firm characteristics. Hence, in line with the topic of this paper, the hypothesis focuses on agency cost.

According to agency theory, increased CEO ownership leads to better alignment between the CEO decisions and the shareholder's interest, impacting the payout policy and mitigating agency costs. The free cash flow problem, as described in section 2, is, according to Jensen (1986), one of the most comprehensive agency conflicts between shareholders and management. Therefore, it is interesting to investigate whether CEO ownership incentives could contribute to mitigating the free cash flow problem, as Fenn and Liang (2001) did for the American market in the late 90s. Thus, we now want to test whether this applies to the Norwegian market.

A common measure of CEO ownership incentive is ownership percentage. However, it has some weaknesses. Dividend payout correlates with firm size, and firm size correlates with CEO stock holdings since CEO ownership percentage decreases firm size (Edmans, Gabaix, & Landier, 2009). Therefore, we will measure ownership incentive by applying a variable relative to wealth and stock price as a proxy for ownership. The variable represents the CEO scaled wealth-performance sensitivity. It is also referred to as "delta" and measures the NOK change in CEO wealth for a 1% change in firm value, divided by the annual compensation. The variable is inspired by a study conducted by Edmans et al. (2009). The more shares the CEO holds, the more they are affected by a change in stock price, and the higher the yearly compensation, the smaller the stock change affects the wealth. Delta is therefore associated with how exposed the CEO is to the idiosyncratic risk of the company. It is also uncorrelated with firm size and has an empirically appealing quality for measuring CEO incentives (Edmans, Gabaix, & Landier, 2009). Baker and Hall (1998) also argue that the money value of ownership to measure managerial incentives is more accurate than using ownership percentage. Fenn and Liang (2001) also find a relationship on payout when using the logarithm of dollar-value of shares as an independent variable instead of ownership percentage.

$$Delta = \frac{\big(Number\ of\ shares\ owned(0\ .01)(Share\ price)\big)}{Total\ annual\ compensation}$$

Payout decisions are highly dependent on the level of free cash flow and growth opportunities (Jensen, 1986). When the level of free cash flow is high, and the investment opportunities are limited, a high payout level is favourable to shareholders to avoid overinvestment, as described in section 2.3. Since CEOs with high delta aligns better with shareholders' interests, we expect the relationship between delta and level of payout to be positive for the subset of companies with high agency costs. The hypothesis we want to test is, therefore, the following:

***Hypothesis I:***

*For companies with high agency costs, payout to shareholders is increasing with CEO wealth-performance sensitivity*

The level of agency costs will be measured in different ways. As discussed above, increased CEO ownership leads to better alignment between CEO and shareholder, thus reducing agency costs. Therefore, companies with low CEO ownership are considered to have relatively high

agency costs. Agency cost will also be measured by high free cash flow and low investment opportunities.

## 3.2 CEO option holding and payout decisions

The second hypothesis focuses on CEO options and the choice of payout. Studies show that both the US and Europe have experienced significant growth in repurchase activity in recent years, suggesting a fundamental change in corporate payout policy, which potentially could be related to stock options (Grullon & Michaely, 2002; von Eije & Megginson, 2008). We expect to see the same increasing trend in the Norwegian market, both in option holdings and repurchase activity. Granting management stock options is, like stock ownership, a monitoring measure used by firms as an incentive alignment tool. As options are not direct ownership in the firm, it could enforce more short-term incentives, focusing on boosting the share price instead of long-term value creation.

Options give the CEO and management an incentive to reduce dividend payments (Fenn & Liang, 2001; Lambert, Lanen, & Larcker, 1989). The reason for this, as described in section 2.2, is that dividend payments reduce the ex-dividend stock price, as some of the firm's assets are paid out as dividends, which essentially reduces the value of outstanding options. Additionally, the EPS measure might encourage to increase share repurchase when stock options are granted to counter the negative effect that stock options have on the measure (Brav, Graham, Harvey, & Michaely, 2005). Thus, the EPS measure could have a negative effect on both management and shareholders (Weisbenner, 2000). Therefore, share repurchase is preferable if a significant amount of the CEO's equity incentives is through option holdings.

The CEO incentive related to stock options and payout policy is two-sided. While dividend payouts have a negative effect on the stock price, share repurchase has the opposite effect. In the short term, a reduction in the supply of a stock causes the stock price to increase. Additionally, the signalling effect, presented in section 2.7, causes an increase in stock price since a buyback of shares indicates that insiders believe that the stock is undervalued. Thus, a CEO with stock options has clear financial incentives to prefer share repurchases over dividends.

$$CEO\ options = \frac{Number\ of\ options\ held\ by\ CEO}{Total\ shares\ outstanding}$$

The stock option variable applied in the analysis is the number of stock options held by the CEO, scaled by the total number of shares outstanding. Since the number of options held by the CEO is divided by the shares outstanding, the variable is the percentage of the firm the CEO can acquire by exercising all options. When collecting the option data from the annual reports, there was no information about dividend protection from any of the firms in the sample. Thus, according to the theory, all CEOs in the sample should have the incentive to increase repurchase and reduce dividend. Due to the two-sided relationship, the hypothesis is divided into the following two hypotheses:

***Hypothesis IIa***

*Share repurchase is increasing with CEO options*

***Hypothesis IIb***

*Dividend payments are decreasing with CEO options*

The empirical findings presented above are based on research of firms in other financial markets and in different periods. There is no similar empirical evidence for the Norwegian market, motivating us to test the hypothesis. In the analysis, we are going to divide into paying and non-paying firms, as this increases the focus on the substitution between the two methods since the theory above does not indicate that the CEO options would affect the level of total payout.

# 4. Data

This section will present the dependent and control variables, as the explanatory variables are already presented under the hypothesis development. Furthermore, we will present the data collection process and give a descriptive overview.

## 4.1 Dependent variables

### 4.1.1 Dividend Payout

The first dependent variable in our research is dividend payout, measured by collecting the total cash payout to shareholders each company has completed every year. The total payout is scaled by the market capitalisation, which gives a relative variable and a ratio between payout and firm value. Thus, the variable is comparable between firms of different sizes. The same approach is used in similar research by Weisbenner (2000) and Fenn and Liang (2001).

$$Dividend\ payout = \frac{Total\ dividend\ payout}{Market\ capitalisation}$$

### 4.1.2 Repurchase payout

The second dependent variable is repurchase payout, which is measured by applying the same approach as for dividends. The total amount in NOK spent on share repurchase in the open market every year is scaled by the market capitalisation in the same year. As for the dividend, it gives a relative variable that is comparable between different firms. A company's market cap may change between years, changing the repurchase variable even though the amount repurchased is the same over several years.

$$Repurchase\ payout = \frac{Total\ amount\ spent\ on\ repurchase}{Market\ capitalisation}$$

### 4.1.3 Total Payout

The last dependent variable is the composition of the first two, total payout, including repurchase and dividend. When looking at the relationship between delta and payout, we are interested in the total paid out to shareholders. Similar research has used only dividends, but

there is an increasing trend in repurchase payouts, making it more relevant to include in this study.

$$Total\ payout = \frac{Total\ dividend\ paid + total\ amount\ spent\ on\ share\ repurchase}{Market\ capitalisation}$$

## 4.2 Control variables

As elaborated earlier, the payout policy is not solely dependent on stock holding, wealth and options holding. Control variables are variables we add to the regression in addition to the independent variables because we believe they have an impact on the dependent variable. The objective is to reduce error variance and get to the zero conditional mean (Wooldridge, 2020). This analysis includes firm size, leverage, free cash flow, investment opportunities.

### 4.2.1 Firm Size

Previous research related to the topic has found that firm size is an essential determinant of payout policy. Larger firms are often more established, and have less external financing cost, less variance in free cash flow and lower information asymmetry, which in most cases leads to higher payouts to shareholders (Weisbenner, 2000; Smith & Watts, 1992; Opler & Titman, 1993). Since firm size is an endogenous variable, we use the logarithm of assets to measure firm size (Smith & Watts, 1992). Firm size, measured by the logarithm of assets is therefore serving as a proxy for external financing, stability of free cash flow, and information asymmetry.

$$Firm\ size\ =\ Logarithm\ of\ assets$$

### 4.2.2 Free Cash Flow

Free cash flow is the cash flow a firm is generating after considering cash outflows supporting the operations expenses and capital expenditures (Berk & DeMarzo, 2014). A company can use its free cash flow to invest in new projects, repay debt, finance acquisitions, or payout to shareholders in the form of dividends or repurchases. Firms with low marginal financing costs and high level of free cash flow will have benefits from distributing cash to shareholders because of the risk related to overinvestment (Fenn & Liang, 2001). In other words, free cash flow is expected to have a positive relationship on dividend and repurchase, and therefore

needs to be added as a control variable in the model. To create a relative variable across the different firms in our sample, the free cash flow is scaled with total assets.

$$Free\ cash\ flow = \frac{Free\ cash\ flow}{Total\ assets}$$

### 4.2.3 Leverage

Companies with a high level of leverage have higher external financing costs and are more likely to experience financial distress. Thus, leverage could also be a determinant to a firm's payout policy. Leverage is an alternative method of disgorging free cash flow, and firms relying more on debt to disgorge free cash flow are expected to rely less on the distribution of cash to shareholders. As in previous similar research, leverage is measured as a ratio between total debt and total assets (Fenn & Liang, 2001).

$$Leverage = \frac{Total\ debt}{Total\ assets}$$

### 4.2.4 Investment opportunities

Another firm characteristic related to agency cost is investment opportunities. Several researchers have investigated the link between investment opportunities and payout to shareholders. The market-to-book asset ratio (MTB) is a common measure of investment opportunities (Smith & Watts, 1992; Opler & Titman, 1993). Agency cost theory predicts a negative relationship between MTB and payout since the payout to shareholders should be higher in times with low investment opportunities due to overinvestment issues. Thus, higher MTB, meaning more investment opportunities, is associated with lower payout to shareholders.

$$MTB\ = \frac{Market\ Capitalisation}{(Total\ assets - total\ debt)}$$

## 4.3 Data Collection

This thesis focuses on Norwegian companies listed on Oslo Stock Exchange (XOSL) and Euronext Expand Oslo. The period in focus is 2015-2020, with the motivation being that this recent period could provide new insights on payout policy in the Norwegian market. The access to older CEO data from annual reports would be significantly reduced prior to these years. There has been an increase in share repurchase over the last few years, which also motivated studying payout policy in this period. Much of the research and empirical findings on payout policy and agency theory are from the US financial markets, and these might not apply to our sample of firms. The Norwegian market has not been investigated thoroughly in recent years, which is why this study could shed some new light on the topic.

The variables presented above are all essential for the analysis, which has resulted in several comprehensive data collections. The most time-consuming data collection involved the CEO-specific data, such as equity holdings and remuneration, and share repurchase activity. CEO-specific data is collected from the selected companies' annual reports, while the repurchase data are collected from NewsWeb, Oslo Stock Exchange's announcement database. Collecting this data requires going through thousands of announcements, searching for keywords such as "Buyback", "Repurchase", "Program", and "Own shares". As a supplement, the announcements that we found were cross-checked with repurchase data from Holdings.se, as the data here was more organised, making it less time-consuming to collect.

The data for yearly cash dividend payments was collected from Refintiv Eikon. Additional company characteristics, such as end-of-year stock price, industry, free cash flow, total assets, leverage, and market capitalisation, were also gathered from the Refinitiv Eikon database.

## 4.4 Data Selection

The selection of companies on which we were to include in the analysis was based on four criteria. (1) No financial companies, (2) exclude companies listed on Euronext Growth and Euronext NOTC, (3) to provide at least one full year of data, hence must be listed before January 1st, 2020, and lastly (4) have adequate CEO data available to compute the delta.

The reasoning behind criterion (1) is that these institutions, such as banks, are driven by their return on financial investments and have other obligations to their investors. Therefore, their payout policies differ from other industries (Acharya, Le, & Shin, 2017; Dickens, Casey, & Newman, 2002).

We initially collected a sample of all listed firms in Norway, including all Norwegian marketplaces. The exclusion of companies on Euronext growth and Euronext NOTC is based on the characteristics of these companies. The criteria for getting listed on XOSL and XOAS are stricter, as it demands a higher degree of financial disclosure and a certain level of market capitalisation. Companies listed on Euronext Growth are early-stage firms with fewer shareholders, low market capitalisation, and limited-scope financial and legal due diligence before the listing (Oslo Børs, 2020). The companies listed on the NOTC-list are private companies, so the listing only serves as an information system, where investors reach out to buy or sell shares of private companies (Verdipapirforetakenes forbund, 2021). By excluding these companies, we have a dataset containing more comparable firms, which are in a position where payout decisions are relevant. This reasoning also applies to criterion (3), which excludes recently listed firms and firms that delisted in the sample period. Since the delta variable is essential for the analysis, all the CEO-specific data needed to be available to calculate the variable. If this data was available, the firm also disclosed option holdings. Such data is required to be disclosed by Norwegian standards. Even though they trade at a Norwegian exchange, some companies are registered in a foreign country, such as Bermuda, where the financial reporting regulations do not require disclosure of CEO remuneration. Table 4.1 presents an overview of the selection.

This leaves the dataset with 141 companies and 725 observations in total. There are 332 observations of annual cash dividend payouts and 171 observations of annual share repurchases among these companies. Of the 141 companies, 86 have paid dividends at least once during the period, while 63 have repurchased their own shares. Ninety-eight companies

have either paid dividends or repurchased shares, which shows that most dividend-paying firms have also repurchased shares. More descriptive information on the dataset will be provided in the next section.

**Table 4.1:** *This table presents the data selection process, which was conducted, and how companies were filtered out of the dataset based on the criteria listed below.*

| No | Criteria | Description | Firms remaining |
|---|---|---|---|
| 0 | All firms | All firms listed in Norway | 375 |
| 1 | Non-financial firms | Excluded financial firms according to GICS Industry | 302 |
| 2 | Listed on XOSL or XOAS | Excluded firms on Euronext Growth and NOTC | 180 |
| 3 | Listed before 2020 | At least one year of data as a listed firm | 156 |
| 4 | Adequate CEO data | Available CEO data | 141 |

## 4.5 Descriptive statistics

This section will provide some insight into the dataset that is the foundation of this study. Firstly, an overview of payouts in the sample period and some summary statistics of the variables to be used in the analysis. Further, we present tables splitting paying and non-paying firms of both dividend and repurchase. The split tables will include t-statistics from t-tests run on each variable, to give an insight into the significance of the differences between the subsets.

**Figure 4.1:** *Overview of payout activity among Norwegian firms in the period 2015-2020. Each column represents a payout method, and the number of each column indicates the number of firms for each method of payout per year.*

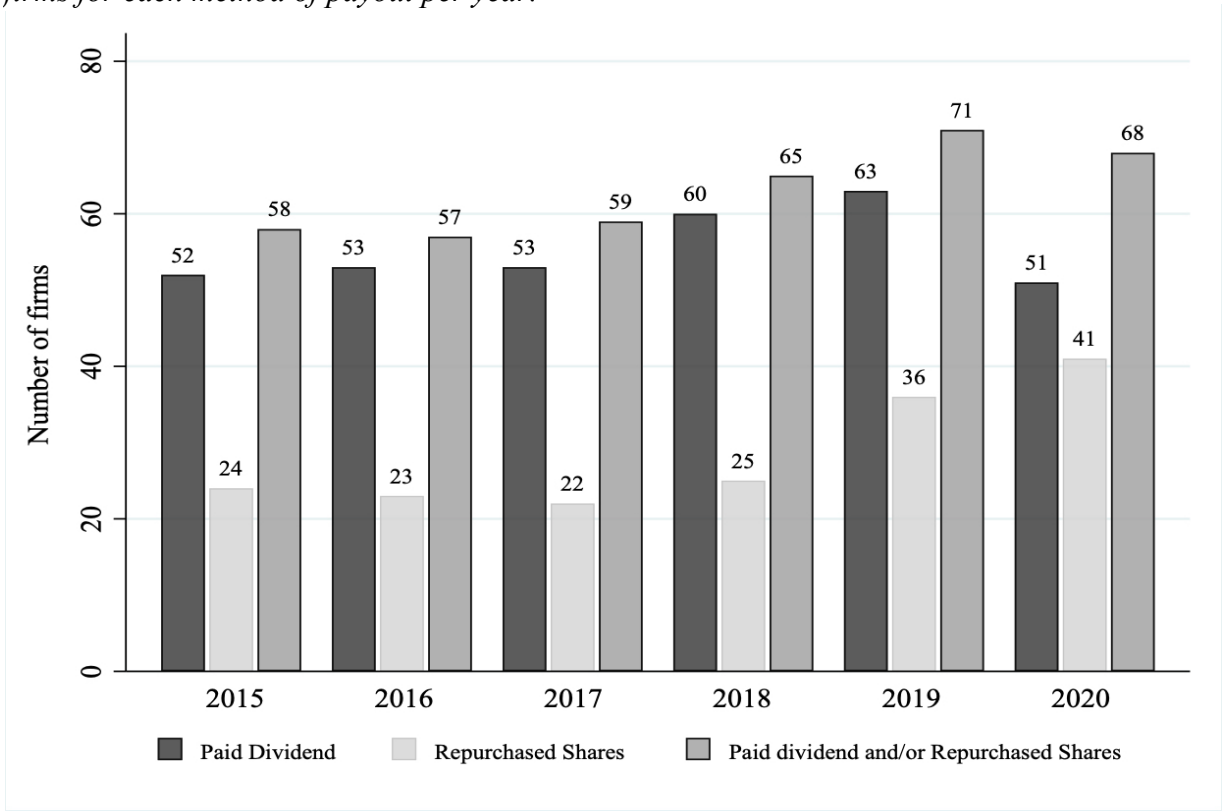
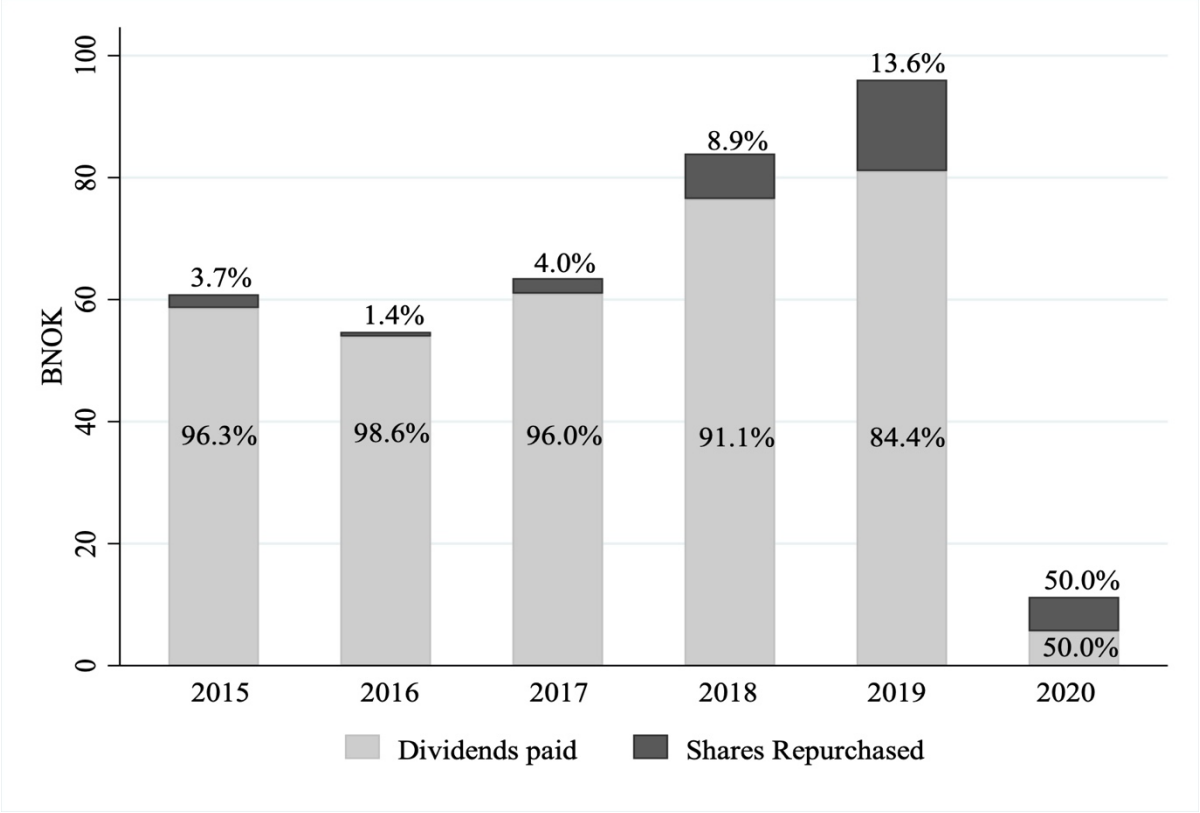



**Figure 4.2:** *Overview of total payout levels for the period 2015-2020. Each column represents a year's total payout, divided into the two payout methods. The percentages indicate the share of each payout method for each year.*



Figures Figure 4.1 and Figure 4.2 provide some interesting insight into the payouts among Norwegian firms in the sample period. Figure 4.1 presents the number of firms paying cash dividends and repurchasing shares. The number of paying firms in either category seems to increase during the period, but with a dip in 2020 for dividend-paying firms. There is a significant increase in share repurchasing firms, rising from 24 to 41 firms in the six-year period. The same trend could be seen in Figure 4.2, as there is an increase in total payouts during the period, but with a more substantial decrease in 2020. The total payout to shareholders from the companies in the sample was, in 2019, 96 billion NOK, while only 11 billion in 2020. The natural explanation for this decline is the Covid-19 pandemic. It shows that the pandemic had a significant effect on the amount paid out among Norwegian firms but that the propensity of the payouts was not affected. Figure 4.2 also shows that repurchase payouts have increased in size during the period, taking a more significant stake of the total amounts paid out.

**Table 4.2:** *This table presents the summary statistics for all the variables in the sample, grouped by the category for which it is used in our analysis. In the beginning of this section, there is a detailed description of all variables.*

| | Mean | St. Dev | Median | Min. | Max. |
|---|---|---|---|---|---|
| *Dependent Variables* | | | | | |
| Total Payout | 0.030 | 0.105 | 0.000 | 0.000 | 1.951 |
| Dividend | 0.027 | 0.104 | 0.000 | 0.000 | 1.951 |
| Repurchase | 0.002 | 0.012 | 0.000 | 0.000 | 0.217 |
| *Independent Variables* | | | | | |
| Delta | 0.713 | 8.677 | 0.006 | 0.000 | 220.349 |
| CEO Options | 0.003 | 0.008 | 0.000 | 0.000 | 0.072 |
| *Control Variables* | | | | | |
| Size | 21.759 | 2.009 | 21.739 | 16.112 | 27.676 |
| Leverage | 0.269 | 0.277 | 0.207 | 0.000 | 3.390 |
| Market-to-book | 1.731 | 2.371 | 0.936 | -3.484 | 21.424 |
| Free Cash Flow | -0.051 | 0.279 | 0.001 | -2.910 | 1.217 |

In the process of getting to know the dataset, we discovered some significant outliers of the delta variable among the observations. There are some characteristics of these observations that need to be addressed. The main reason for these outliers is the reported end-of-year stock prices for companies that have experienced economic restructuring. This restructuring has made the stock price reported by Refinitiv Eikon higher than it was at the time, as stock splits and change of capital structure have not been taken into account. An obvious example is

Norwegian Air Shuttle. At the end of the sample period, the company experienced a lot of financial distress, which made them restructure (Reuters, 2021). The reported stock prices for 2015 and 2016 are around 8000 NOK, which generates an abnormally high delta, together with CEO and founder Bjørn Kjos' high ownership during most of the sample period. Other such observation consists of companies such as Solstad Offshore and Prosafe. Some outliers result from high ownerships and low total remuneration, making the delta very high but still sensible. The outliers which are not viewed as economically reasonable are removed from the dataset for further study.

Table 4.2 is a descriptive overview of the data sample. Both dividend and repurchase have a minimum value of zero, which means that if a firm does not pay dividends or repurchase shares, these variables take the value of zero. The same applies to the total payout for the firms not paying anything. The mean value is 0.027 for dividend, and 0.002 for repurchase, meaning that the average dividend payout is 2,7% of the share value, while the average repurchase is 0,2%, and the total is 3%. The percentage is higher for total payout than for dividend, which implies that several companies do both dividend payouts and share repurchase. The median is zero for all payout variables because most companies do not pay out to their shareholders.

Considering the independent variables, the delta variable looks interesting. The median is 0.006, while the mean is 0.713. The main reason for the significant difference between mean and median is the maximum value of 220.349. Gustav Witzøe, the founder of Salmar, is also the company's CEO for most of the sample period. He had a stock holding in 2019 of almost 49%, which leads to an extremely high delta compared to the rest of the data sample. The minimum value of delta is zero because none of the components in the formula can be negative, and if a CEO does not hold stocks, the variable takes the value of zero. The same goes for options because a CEO cannot hold options negatively. The median is also zero because fewer CEOs hold options than those not holding options. The mean of 0.003 implies that the average option holding in the entire sample is 0.3% of the firm's shares outstanding. The number might seem small, but the significant number of zero-values decreases the average.

When it comes to the control variables, the mean leverage is 0.269, which means that the firms in the sample, on average, have a debt-to-total assets ratio of 26.9%. The minimum is zero because a firm cannot have negative debt, and the maximum is 3.390, which means one of the firms in the sample has a debt-to-assets ratio of 339%, which is considered an outlier. A debt-

to-asset ratio greater than 1 indicates that a considerable amount of the firm's assets is funded through debt. The sample has seven firm-year observations with a ratio above 1, including Ensurge Micropower ASA and Havila Shipping ASA. The mean and median of size are relatively close to each other, and the standard deviation of 10% implies that there are no outliers, which seems reasonable. With the free cash flow median of 0.1%, we observe more firms with positive free cash flow than negative. However, the mean is negative, partly explained by some negative outliers such as the minimum value of -291% represented by Ensurge Micropower in 2019. The last control variable is investment opportunities. A median MTB value of 0.9 makes economic sense since a distribution around one is predicted. This result means an approximately equal distribution between high and low investment opportunities.

***Table 4.3:*** *This table presents an overview of payout statistics across all sectors in the dataset in the period 2015-2020. The mean and median total payout indicates payout divided by market capitalisation. This number multiplied with 100 is total payout as a percentage of market capitalisation.*

| | Firms | Dividend Payments | Repurchase Payouts | Mean Total Payout | Median Total Payout |
|---|---|---|---|---|---|
| Energy | 36 | 49 | 41 | 0.035 | 0.000 |
| Materials | 8 | 28 | 13 | 0.030 | 0.024 |
| Capital Goods | 14 | 45 | 28 | 0.051 | 0.003 |
| Commercial & Professional Services | 6 | 18 | 12 | 0.019 | 0.017 |
| Transportation | 12 | 34 | 8 | 0.029 | 0.006 |
| Automobiles & Components | 1 | 1 | 3 | 0.004 | 0.001 |
| Consumer Services | 2 | 1 | 1 | 0.034 | 0.000 |
| Retailing | 4 | 20 | 7 | 0.043 | 0.026 |
| Food, Beverage & Tobacco | 10 | 39 | 10 | 0.029 | 0.029 |
| Health Care Equipment & Services | 5 | 4 | 0 | 0.004 | 0.000 |
| Pharmaceuticals, Biotechnology & Life Sciences | 9 | 2 | 1 | 0.001 | 0.000 |
| Software & Services | 7 | 22 | 12 | 0.034 | 0.043 |
| Technology Hardware & Equipment | 11 | 15 | 1 | 0.010 | 0.000 |
| Semiconductors & Semiconductor Equipment | 2 | 0 | 3 | 0.002 | 0.000 |
| Telecommunication Services | 1 | 6 | 3 | 0.053 | 0.056 |
| Media & Entertainment | 4 | 12 | 11 | 0.045 | 0.008 |
| Utilities | 3 | 11 | 2 | 0.020 | 0.010 |
| Real Estate | 6 | 23 | 14 | 0.041 | 0.028 |

Table 4.3 gives an overview of the 18 industries included in the dataset. As expected, the energy industry is most represented, with 36 out of the total 141 companies, and constitutes

83 of the 503 observed payouts in the six-year period. All industries have experienced payouts. The telecommunication services industry has both the highest mean and median payout, but the industry only consists of Telenor, which has had high and stable payouts during the whole period.

In the following tables, we run a t-test between the different subsamples presented in each table, as it could be interesting to compare different variables between different groups. These tests are not conducted to identify causal relationships, but to compare median and mean values between the subsamples to identify some characteristics.

In Table 4.4, the total sample has been divided into two subsets based on the total payout - one for the observations below the median and one for the observations above the median. The table also includes a t-test of the variables for the difference between the subgroups. The main objective is to test whether the mean delta is higher for the below/above median subset. We observe that the mean delta is higher for the firms below the median, 0.898 against 0.523, but the t-value is -0.579, hence not statistically significant. Free cash flow is significantly higher for the subset of above median payouts, while investment opportunities are significantly lower. This result aligns with the expectations. Size is significantly higher for the firms above the median, and leverage has a no-significant difference.

**Table 4.4:** *This table presents the summary statistics for relevant variables divided into two sub-samples, above and below median total payouts, in addition to a t-test for the difference between the samples. A greater t-statistic indicates a more significant difference between the two samples, where a positive t-statistic indicates that the below-median sample has a higher mean of the respective variable.*

| | *Below Median* | | | *Above Median* | | | *T-test* |
|---|---|---|---|---|---|---|---|
| | Mean | Median | St. Dev | Mean | Median | St. Dev | t-statistic |
| Delta | 0.523 | 3.736 | 0.004 | 0.898 | 11.644 | 0.007 | -0.579 |
| Size | 20.938 | 1.833 | 20.684 | 22.574 | 1.840 | 22.608 | -11.993 |
| Leverage | 0.277 | 0.341 | 0.184 | 0.260 | 0.193 | 0.226 | 0.857 |
| Market-to-book | 1.972 | 3.058 | 0.731 | 1.493 | 1.351 | 1.093 | 2.739 |
| Free Cash Flow | -0.132 | 0.364 | -0.012 | 0.029 | 0.107 | 0.029 | -8.128 |

Table 4.5 summarises the two subsets divided into firms paying and firms not paying a dividend. The observation in the subset for "yes" is all those who belong to a company that

has paid a dividend in at least one of the six years. The mean of CEO options is, as expected, higher for the non-paying firms. The difference is also significant as the t-test gives a t-stat of 4.435. Investment opportunities are higher for the non-paying firms, while size, leverage, and free cash flow are higher for the paying firms. All these differences are statistically significant.

**Table 4.5***: This table presents the summary statistics for relevant variables divided into two sub-samples, paying and not-paying dividend firms, in addition to a t-test for the difference between the samples. A greater t-statistic indicates a more significant difference between the two samples, where a positive t-statistic indicates that the non-paying sample has a higher mean of the respective variable.*

| | *No* | | | *Yes* | | | T-test |
|---|---|---|---|---|---|---|---|
| | Mean | St. Dev | Median | Mean | St. Dev | Median | t-statistic |
| CEO Options | 0.004 | 0.009 | 0.000 | 0.002 | 0.007 | 0.000 | 4.435 |
| Size | 20.736 | 1.714 | 20.520 | 22.304 | 1.942 | 22.439 | -10.774 |
| Leverage | 0.241 | 0.338 | 0.140 | 0.283 | 0.236 | 0.241 | -1.985 |
| Market-to-book | 2.271 | 3.317 | 0.853 | 1.444 | 1.592 | 0.956 | 4.535 |
| Free Cash Flow | -0.174 | 0.371 | -0.043 | 0.015 | 0.184 | 0.023 | -9.153 |

**Table 4.6:** *This table presents the summary statistics for relevant variables divided into two sub-samples, repurchase paying and not repurchase paying firms in addition to a t-test for the difference between the samples. A greater t-statistic indicates a more significant difference between the two samples, where a positive t-statistic indicates that the non-paying sample has a higher mean of the respective variable.*

| | *No* | | | *Yes* | | | T-test |
|---|---|---|---|---|---|---|---|
| | Mean | St. Dev | Median | Mean | St. Dev | Median | t-statistic |
| CEO Options | 0.003 | 0.008 | 0.000 | 0.002 | 0.006 | 0.000 | 2.598 |
| Size | 21.128 | 1.789 | 21.062 | 22.454 | 2.012 | 22.581 | -9.396 |
| Leverage | 0.287 | 0.329 | 0.218 | 0.248 | 0.202 | 0.195 | 1.917 |
| Market-to-book | 1.839 | 2.921 | 0.810 | 1.612 | 1.552 | 1.107 | 1.288 |
| Free Cash Flow | -0.099 | 0.333 | 0.000 | 0.002 | 0.192 | 0.016 | -4.970 |

Table 4.6 is a statistical overview of the two subsets of firms with and without repurchase activity in the period. Firstly, the CEO options mean is higher for the firms without repurchase activity, which is the opposite of what we initially expected. The t-stat is 2.598, which means the difference is statistically significant. For the control variables, the differences are similar to the observations in Table 4.5, but the difference in investment opportunities is not significant.

# 5. Methodology

In section 5, we introduce and describe the empirical analysis in the thesis to test the hypotheses. To investigate the relationship between wealth performance sensitivity and total payouts in the first hypothesis, and CEO stock options on payout method in the second hypothesis, we rely on different tests, regression methods and approaches. As the models are quite similar, with many of the same statistical characteristics and based on the same data, we will present the models and their reasoning for both hypotheses together.

## 5.1 Fixed effects model (FE)

Panel data sets are increasingly used for applied work and research and are well suited when analysing policies such as firm payouts (Wooldridge, 2020). As the dataset we are examining consists of samples of the same cross-sectional units observed over a period of one to six years, then it is natural to use panel data estimation. The cross-sectional units, in this case, are the firms, as well as the industries in which they operate. As these have unique characteristics and time effects, a pooled OLS regression model is not to be used. When choosing between random effect or fixed-effect models, some key aspects are to consider. FE allows for arbitrary correlations between the unobserved constant effects and the explanatory variables at any time. As our explanatory variable is time-varying, the FE model is preferred if the time-invariant characteristics do not correlate with other firm characteristics. We use the Hausman test to test this, concluding that FE is the preferred model (See Appendix 4). Further robustness will be discussed in section 7.

The FE models are constructed to measure how the independent variable affects payout policies among the sampled Norwegian companies. As we are analysing different companies, we need to include firm fixed effects to control for the differences between the firms in the data sample. By using FE, we only consider the variation within the firm and discard variable differences between firms. This effect also applies to industries. We will include both firm and industry fixed effects regressions in the analysis, as we wish to control for fixed industry characteristics as well. The choice to include both firm and industry effects in our regression models is mainly because we want to identify the differences.

The models include several firm characteristics as control variables, as presented in section 4.2. In addition, controlling for years is supported by similar studies as payout activity

fluctuates across time and will impact the dependent variables. Therefore, a time effect is included in all regressions by adding a year dummy for five of the six years in our dataset. As a result, the regression results' constant ($\beta_0$) can be interpreted as the intercept for the excluded year, which is 2015.

This gives us the following model:

**For hypothesis I:** CEO Ownership incentives and payout decisions

*Equation 1:*

$$Total\ Payout_{it} = \beta_0 + \beta_1 DELTA_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 FCF_{it} + \beta_5 MTB_{it} + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects + u_{it}$$

**For hypothesis II:** CEO option holding and payout decisions

*Equation 2:*

$$Repurchase\ Payout_{it} = \beta_0 + \beta_1 CEO\ Options_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 FCF_{it} + \beta_5 MTB_{it} + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects + u_{it}$$

*Equation 3:*

$$Dividend\ Payout_{it} = \beta_0 + \beta_1 CEO\ Options_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 FCF_{it} + \beta_5 MTB_{it} + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects + u_{it}$$

As these are linear models, the interpretation is as follows for hypothesis I: one unit change in delta, the effect on the dependent variable, total payout, is equal to $\beta_1$. The interpretation is similar for the models for hypothesis II.

## 5.2 Logistic regression model

In accordance with our hypotheses, we want to examine how our independent variables affect the level of payouts and the probability for payouts. To do so, we create a linear probability model where the dependent variables are binary. Such a model assumes that the response probability is linear in a set of parameters, which are the independent variables presented in section 3 (Wooldridge, 2020).

These binary response variables are either 1 or 0, depending on whether the payout variables are positive or not. In addition to the control variables, we also include year dummies to account for the aggregate time effects. This linear probability model will be estimated by firm and industry fixed effects like the previous model. When using fixed-effects estimations for a logit model, the groups of firms or industries that contain only positive or only negative observations are omitted. This is because FE models look at the variability within a firm or industry, and if there is no variability, then there is nothing to examine (Allison, 2009).

The coefficients of these logistic regressions are estimated as odds ratio, which is the probability of success over the likelihood of failure. In this case, it implies that the odds ratio estimates the likelihood of payout over no payouts. When transformed to odds ratios, a coefficient value above 1 means an increase in the likelihood of success.

The logit models that are run, in accordance with our hypotheses, are the following:

**For hypothesis I:** CEO Ownership incentives and payout decisions

*Equation 4:*

$$ln\left(\frac{Total\ Payout}{1-Total\ Payout}\right) = \beta_1 DELTA + \beta_2 Size + \beta_3 Leverage + \beta_4 FCF + \beta_5 MTB + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects$$

**For hypothesis II:** CEO option holding and payout decisions

*Equation 5:*

$$ln\left(\frac{Repurchase\ Payout}{1-Repurchase\ Payout}\right) = \beta_1 CEO\ Options + \beta_2 Size + \beta_3 Leverage + \beta_4 FCF + \beta_5 MTB + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects$$

*Equation 6:*

$$ln\left(\frac{Dividend\ Payout}{1-Dividend\ Payout}\right) = \beta_1 CEO\ Options + \beta_2 Size + \beta_3 Leverage + \beta_4 FCF + \beta_5 MTB + Year\ effects + Firm\ Fixed\ Effects + Industry\ Fixed\ Effects$$

Interpreting such logit regressions with odds ratios as coefficients is different from the FE model above. In the case of hypothesis II, one unit increase in CEO Options, the odds of the firms doing a repurchase payout are multiplied by $\beta_1$. For this regression, the CEO Options

has been converted to a percentage of total shares outstanding, so a unit increase means one percent increase of CEO option holdings of total shares outstanding. The same applies when interpreting the logit-regression in hypothesis I.

## 5.3 Method

When testing hypothesis I, we wish to enhance the characteristics of firms with high agency costs, as presented in section 2. This enhancement is done in our analysis by running our regression models, with subsets of companies with either above-median free cash flow or below median investment opportunities, measured by the market-to-book proxy. Both subsamples will only include firms with CEO ownership below 5%. This method is inspired by similar research done by Opler and Titman (1993). Excluding all observations of CEO ownership above 5% will also trim the data for outliers, giving a better basis for comparison. For the first subsample, the industry FE regression divides the observation into groups of 18, based on the four-digit GICS-code, while grouping 110 companies for the firm FE regression. For subsample two, the industry and firm groups consist of 16 and 89, respectively. This separation of subsets will be done for both the FE- and Logit-models.

For hypothesis II, we are running the models on both the entire sample and for paying firms, as well as separating between payout methods. This is because we want to explore the drivers of the choice of payout method among paying firms. When running the logit regression, we will use the entire sample, as it would exclude all positive or all negative observations in each subset, resulting in a very small subset for paying firms and a subset size of zero for non-paying firms.

# 6. Results

This section will disclose the results of our study, where we first will present the regression results, before moving on to a more thorough discussion of our findings. Firstly, we will present the findings and discussion of the relationship between CEO ownership and payout decisions, before moving on to the relationship between CEO option holdings and payout decision.

## 6.1 CEO Ownership incentives and payout decisions

When we examine the relationship between CEO ownership incentives and payout decision, we will test the following hypothesis:

*$H_0$: Payout to shareholders does not increase with CEO' s wealth performance sensitivity for firms with high agency costs*

*$H_A$: Payout to shareholders increase with CEO's wealth performance sensitivity for firms with high agency costs*

### 6.1.1 Level of payout

The initial regressions are presented in Table 6.1, where columns (1) and (2) are OLS regression on the entire sample. Both OLS regressions show a negative relationship but with no significance. The regressions in columns (3) and (4) are the FE-model presented in section 5 for the entire sample. Column (3) uses firm fixed effects, while (4) applies industry fixed effects. The two fixed effects regressions show opposite effects, as the firm fixed shows a positive relationship, while the industry fixed shows a negative relationship. Nevertheless, none of these relationships are statistically significant. The control variables seem to have a more significant effect when controlling for industry effects than firm fixed effects. Both FE-regressions show a negative relationship between level of total payout and size, which is unexpected. Free cash flow has a significant positive effect in both regressions, which is as expected. The results of the FE-regressions in Table 6.1 are not conclusive. Hence, we will scope the analysis further, focusing on firms with high agency costs.

**Table 6.1:** *This table provides the results of initial regressions for level of total payout on the full data sample. Column (1) is an OLS regression only including the independent variable for total payout. (2) is an OLS regression including all control variables. Columns (3) and (4) include all control variables as specified in equation 1, including firm-fixed and industry-fixed effects, respectively. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | -0.000<br>(-0.128) | -0.000<br>(-0.384) | 0.000<br>(0.507) | -0.000<br>(-0.627) |
| Leverage | | -0.012<br>(-0.824) | -0.007<br>(-0.265) | -0.012<br>(-0.831) |
| Free Cash Flow | | 0.040***<br>(3.082) | 0.052*<br>(1.817) | 0.039**<br>(2.420) |
| Size | | -0.002<br>(-0.746) | -0.026<br>(-0.955) | -0.004**<br>(-2.364) |
| Market-to-book | | -0.003**<br>(-2.032) | -0.004<br>(-1.358) | -0.001<br>(-0.886) |
| Intercept | 0.030***<br>(7.628) | 0.085<br>(1.377) | 0.605<br>(1.024) | 0.137***<br>(2.930) |
| *N* | 725 | 725 | 725 | 725 |
| Time Effects | *No* | *Yes* | *Yes* | *Yes* |
| Company Effects | *No* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *No* | *No* | *Yes* |

Table 6.2 presents four regressions for two different subsets. We apply one regression using firm fixed effects for each subset and one applying industry fixed effects. Regressions (1) and (2) show the relationship between delta and the level of total payout only for the subset of companies with above-median FCF. The coefficients indicate a small negative effect of the delta on the level of total payout, which is the opposite of what we expected. However, the effects are not significant, but the relationship seems to be a little stronger when controlling for industry effects than firm effects.

Columns (3) and (4) show regressions for the subsets with above-median FCF and CEO ownership below 5%. Hence, the number of observations is decreasing from 363 to 330. Columns (3) and (4) indicates a small negative effect between delta and the level of total payout. The results imply that the relationship between delta and total payout for the subset with high FCF is not different from when looking at firms with low CEO ownership in addition to high FCF. The effect is also not significantly different when controlling for industry instead of firm fixed effects. The effect of the control variables, on the other hand, seems to be stronger when controlling for industry effects. The overall results from the regressions in Table 6.2 do not support the hypothesis, and we cannot conclude that there is a positive relationship between delta and total payout for firms with high FCF and low ownership. Further investigation will test the propensity of payout in Table 6.4.

**Table 6.2***: This table provides the results of the regressions for level of total payout as specified in equation 1. Columns (1) and (2) are for the subsample of FCF above median, while columns (3) and (4) are for the subsample of FCF above median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | -0.000<br>(-0.536) | -0.000<br>(-0.453) | -0.006<br>(-0.348) | -0.001<br>(-0.727) |
| Size | -0.086<br>(-0.938) | -0.057<br>(-0.812) | -0.154<br>(-1.177) | -0.067<br>(-0.788) |
| Leverage | 0.045<br>(1.376) | 0.051<br>(1.561) | 0.042<br>(1.203) | 0.037<br>(1.440) |
| Free Cash Flow | -0.090<br>(-1.061) | -0.008*<br>(-1.778) | -0.106<br>(-1.123) | -0.010*<br>(-1.754) |
| Market-to-book | -0.003<br>(-0.724) | -0.005<br>(-1.489) | -0.002<br>(-0.432) | -0.006<br>(-1.453) |
| Intercept | 2.057<br>(1.087) | 0.242**<br>(2.214) | 2.447<br>(1.150) | 0.295**<br>(2.118) |
| *N* | 363 | 363 | 330 | 330 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

Table 6.3 contains four regressions on two different subsets and focuses on investment opportunities as a measure of agency cost. The first subset is the firms with below-median MTB, while the second is firms with below-median MTB in addition to low CEO ownership. Hence, a decrease from 357 to 325 observations. Regression (1) illustrates that delta's marginal effect on the level of total payout is positive for the subset of firms with MTB below the median when controlling for firm effects and negative for industry effects, which is the opposite of what we expect according to agency theory, and previous research. However, the effect is not statistically significant.

When looking at the firms with low CEO ownership in addition to low MTB in columns (3) and (4), we observe a positive effect of delta on the total payout. Column (3) with firm fixed effects is not significant, but when controlling for industry effects in column (4), the coefficient becomes statistically significant at a 5% level, with a t-stat of 2,7. It implies that the effect of excluding the 32 observations with CEO ownership above 5% from the initial subset has a significant effect. This result means that for firms with high agency costs, in the form of limited investment and growth opportunities, and low CEO ownership, an increase in delta is associated with a higher level of total payout. Hence, we have evidence to reject the null hypothesis. Further, we will apply a logit regression to analyse the probability of a firm conducting a payout.

**Table 6.3:** *This table provides the results of the regressions for level of total payout as specified in equation 1. Columns (1) and (2) are for the subsample of MTB below median, while columns (3) and (4) are for the subsample of MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | 0.000 | -0.000 | 0.129 | 0.108** |
| | (0.697) | (-0.591) | (0.701) | (2.743) |
| Leverage | -0.056 | -0.008 | -0.066 | -0.004 |
| | (-0.802) | (-0.506) | (-0.748) | (-0.273) |
| Free Cash Flow | 0.111 | 0.048** | 0.153 | 0.067** |
| | (1.099) | (2.610) | (1.036) | (2.220) |
| Size | -0.084 | -0.004 | -0.086 | -0.005 |
| | (-0.976) | (-1.162) | (-0.923) | (-1.228) |
| Market-to-book | 0.064 | -0.006 | 0.077 | -0.009 |
| | (1.173) | (-0.441) | (1.255) | (-0.553) |
| Intercept | 1.903 | 0.123* | 1.948 | 0.161* |
| | (0.995) | (1.817) | (0.937) | (1.789) |
| *N* | 357 | 357 | 325 | 325 |
| Industry Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

### 6.1.2 Propensity of payout

The logit model regresses the dependent variable total payout as a binary variable on different explanatory variables. The objective is to estimate the likelihood of a company conducting a payout to shareholders, either in the form of a dividend payment or as a share repurchase. For the high free cash flow and low ownership sample in column (1), a one-unit change in delta decreases the probability of a firm by multiplying the odds with 0.976. However, the effect is insignificant, together with the coefficients in columns (2) and (3), which are also not significant but positive. Column (4), on the other hand, indicates that for the firms with low MTB and low ownership, an increase in delta by one unit increases the probability of conducting a payout by multiplying the odds by 1.072 when controlling for industry effects. The effect is significant and implies supporting evidence for hypothesis I regarding the probability of payout.

**Table 6.4***: This table provides the results of the logit regressions for probability of payout as specified in equation 4. Columns (1) and (2) are for the subsample of FCF above median and ownership percentage below 5, while columns (3) and (4) are for the subsample of MTB below median and CEO ownership percentage below 5%. The first number is the log odds ratios, while the second entry (in parentheses) is the t-statistic. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | 0.976<br>(-0.583) | 1.014<br>(0.671) | 1.241<br>(0.836) | 1.072**<br>(2.503) |
| Size | 0.011<br>(-0.939) | 0.123**<br>(-2.178) | 0.023<br>(-1.323) | 0.071***<br>(-2.960) |
| Leverage | 299.189<br>(1.342) | 5.998<br>(1.306) | 2.062<br>(0.514) | 25.109**<br>(2.489) |
| Free Cash Flow | 2.058<br>(0.732) | 1.614***<br>(4.216) | 1.759<br>(0.872) | 1.940***<br>(5.741) |
| Market-to-book | 1.711<br>(1.029) | 1.194<br>(1.500) | 6.603<br>(1.039) | 14.852***<br>(3.419) |
| *N* | 84 | 293 | 142 | 302 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

### 6.1.3 Discussion of CEO ownership incentives and payout decisions

Whether we can reject the null hypothesis is dependent on how we measure agency cost. Some findings in the results support the hypothesis, while some do not. For the entire sample regressions there is no significant relationship between the CEO wealth-performance sensitivity and level or propensity of payout, which means that for an average firm in our sample, ownership incentive does not affect the payout policy. This finding is in line with our expectations when developing the hypothesis. The further analysis scopes out the firms with high agency costs, as these are the firms where such a relationship should be present according to our hypothesis development. We can reject the null hypothesis if high agency cost is measured by low investment opportunities and low CEO ownership. An increase in payout level is favourable for shareholders in a firm with low investment opportunities, meaning increased wealth performance sensitivity reduces agency costs. On the other hand, the same relationship is not significant for the firms with high FCF and low ownership. These results indicate that our conclusion is dependent on the measure of agency costs.

We do not find evidence to conclude that the scaled wealth-performance sensitivity is a determinant of either the level or the propensity of total payout for the subset of firms with high FCF and low CEO ownership. This finding is in line with Fenn & Liang (2001), concluding that CEO ownership does not significantly affect the total payout for the firms with dollar-value of management shares below median and high free cash flow. It is worth noticing that their study uses a different, yet comparable, proxy for ownership incentive, as they use the logarithm of dollar-value of shares as the explanatory variable. Their study finds a significant relationship when only looking at the effect on repurchase. Still, the relationship is not strong enough to be present for the total payout, as they find no significant relationship when only looking at dividend. When we distinguish between the payout methods as illustrated in Appendix 11, we observe a negative and significant effect on repurchase, while the effect on dividend is neutral, making the effect on total payout neutral, and the conclusions are therefore aligned. The reason behind the different observations on the effect on payout method might be the differences between our sample from Norway and their sample from the US. During the data sample period on the research from the US, capital gains had a tax rate of 28%, while it was 40% for dividend payments (Berk & DeMarzo, 2014). This difference in tax rates provides a clear incentive to repurchase in favour of paying dividend, which is not the case in our sample since dividend and repurchase are taxed at the same rate in Norway

during our sample period. These differences could contribute to the explanation of why we get different findings.

While failing to find a relationship for the firms with high free cash flow, we find supporting evidence for the firms with low MTB. We can conclude that the total payout, both level and propensity, is increasing in delta for the firms with limited investment opportunities and low CEO ownership. This finding contrasts with Fenn & Liang (2001), who conclude the same as they did on the FCF subset; significant positive effect on repurchase, and neutral effect on total payout. However, they find a significant positive effect on total payout when looking at a combined subset with high free cash flow *or* low investment opportunities, while we fail when using the same combined subset in Appendix 8 to Appendix 10. In our regression, the dividend represents the significant positive effect, while the effect on repurchase is neutral. As elaborated above, the reason behind the different findings might be differences in tax and other regulations.

The characteristic differences between Norway and the US makes it interesting to compare our sample to a more similar market. Another study by De Cesari and Neslihan (2015) looks at a similar relationship for firms in six European countries between 2002 and 2009. This sample has more similar characteristics to the firms in our sample, as the tax on capital gains and dividend is more equal in the European countries (Tax Foundation, 2021). Their study concludes that managerial ownership and stock-based pay-performance sensitivity significantly increase total payout, thus mitigating agency costs. Aligning with the result in our thesis, De Cesari & Neslihan (2015) find the effect of managerial ownership to be stronger for dividend than for repurchase, and that the significant effect on total payout largely can be explained by the dividend effect. In addition, a study by Renneboog and Trojanowski (2011) for a sample of firms in the UK finds that executive directors' share ownership has a significant and positive effect on the likelihood of dividend payments while the relationship is not significant on repurchase. These more recent studies amplify the argument that characteristic differences between Europe and the US could be a determinant of the different findings.

Another characteristic difference could be restrictions. A study comparing the accounting-based payout restrictions in the US, UK, and Germany shows that although there are similarities in restrictions, the origin of these is different. German firms payout restrictions are predominately mandated, while firms in the UK and US mostly are restricted through debt covenant or debt contracting (Leuz, Deller, & Stubenrath, 1998). This study indicates that

firms across countries have different constraints in determining payout policy. Another aspect related to constraints could be different requirements from institutional owners. Research suggests that institutional ownership correlates with both the level and likelihood of payout. Crane, Michenaud and Weston (2016) find this to be true, as they find that a one-percentage-point increase in institutional ownership increases dividend payments by 8%, and a 10% increase in institutional ownership increases the probability of dividend payment by 20%. These findings are based on samples of US firms in 1991-2006. However, the research on the topic is mixed as Grinstein and Michaely (2005) do not find supporting evidence to say that level of institutional ownership affects payout levels. Hence, we cannot conclude that institutional ownership is a determinant of the mixed findings.

Another observation in the regression results is the difference in the significance level between the firm and industry fixed effects. We are only observing a significance when controlling for industry effects. According to Zhou (2001), Firm fixed effects are not an accurate approach on this model because managerial ownership changes slowly across time, which might hide the significant ownership effect as the variation is much smaller within firms than between firms. Therefore, we rely on the industry fixed effects, which looks at changes within industries across time. The industry effect approach makes sense since research suggests that firms look to their peers related to payout decisions (Adhikaria & Argawal, 2018). Firms operating in the same industry face many of the same challenges and therefore have similar characteristics. There is also competition related to payout policy as the firms in the same industry are fighting for the same investors.

To summarise, different aspects could explain the mixed findings on this topic, both in our results and when compared to other research. The difference in our findings is mainly explained by the measure of agency cost and the difference between industry and firm fixed effects, while characteristic differences across countries are highlighted as an explanation for the different conclusions among empirical findings. Additionally, CEO equity incentives are complex, and wealth-performance sensitivity is not the only equity incentive affecting the payout policy. Therefore, it can be challenging to distinguish between the effects if a CEO also owns options, which will be further elaborated under the analysis on CEO option holdings and payout decisions.

### *Alternative specifications for CEO ownership incentives and payout decisions*

As the results are mixed in finding supporting evidence for the hypothesis, we consider some alternative specifications to the regressions as a robustness check and discuss other possible determinants of payout that are not considered in the models.

**Ownership incentive proxy**

Instead of wealth-performance sensitivity, ownership percentage could have been used as a proxy for ownership incentive. Appendix 15 implies that ownership percentage does not have a significant relationship for any subsets, indicating that the delta variable is a better measure of ownership incentive. We also do a regression using the logarithm of money-value of shares as Fenn and Liang (2001) and get the same significant result for the subset of low MTB and low ownership (see Appendix 14).

**Agency cost measure**

Assuming that the agency theory holds, our result indicates that high FCF might not accurately measure agency cost. Firms with high FCF could have unlimited investment opportunities, hence it might be in the interest of shareholders to invest the FCF in new projects. In other words, high FCF in isolation does not necessarily need to be associated with high agency costs. As Fenn and Liang (2001) did, we also tested the relationship for the combined subset of low MTB *or* high FCF but did not find any significant relationship (See Appendix 8). Another alternative specification could be to use cash holding to measure agency cost instead of FCF, as some research does (DeAngelo, DeAngelo, & Stulz, 2006).

**Payout history**

There is strong evidence that payout decisions are highly dependent on the payout history, mainly regarding dividends (Fama & French, 2001). Several researchers also agree that payout omissions are related to a negative reaction of the stock price (Grullon, Michaely, & Swaminathan, 2002; Healy & Palepu, 1988). The CEOs with high delta will have a significant loss in wealth due to the reduction of stock price. Hence it is reasonable to believe that increased wealth sensitivity to stock price increases the probability of the CEO continuing to pay. On the other hand, the CEO is less likely to omit payout. Hence, payout history might be an important determinant of payout, leading to a weakness in our model by omitting this variable. In Appendix 13 we included a dummy variable into the logit regression, which has the value of 1 if the firm paid out the previous year, 0 if not. When controlling for industry fixed effects, the control variable is positively statistically significant, which indicates that the

likelihood of payout increases if the firm paid out the previous year. It did not affect the independent variable significantly, showing the same results as we originally had.

## 6.2 CEO option holding and payout decisions

### 6.2.1 CEO option holding and repurchase payout

When examining the relationship between CEO options and repurchase, we will test the following hypothesis:

*$H_0$: Share repurchase does not increase with CEO options*

*$H_A$: Share repurchase increases with CEO options*

Table 6.5 shows four regressions on the level of repurchase payout as the dependent variable and CEO options as the independent variable, controlling for different firm characteristics. The first two regressions are with the whole sample, while the others are a sample of only the firms with repurchase activity in the period. Hence, the sample decreases from 722 to 344. For the entire sample, the CEO options have a small positive effect on repurchase, when controlling for company fixed effects, and a negative effect when controlling for industry effects. None of them are significant. When looking at the sample of repurchase paying firms, the effect is positive also with firm effects, and negative with industry effects. The effects seem stronger than for the whole sample, with higher t-stats for both coefficients. However, the effects are still not significant. Thus, no evidence to support the hypothesis, and we cannot reject the null.

Further, a logistic regression to test the probability of repurchase has been conducted. The results are presented in Table 6.7. The logit model looks at the entire sample, where repurchase payout is the dependant variable in columns (1) and (2). As CEO options in the regressions is a percentage of options relative to total shares outstanding, column (1) indicates that a 1% increase in option holding will increase the likelihood of share purchase, as we multiply the odds for share repurchase by 2.494 when controlling for firm fixed effects. There is also a positive relationship when controlling for industry effects, as the odds would be multiplied by 1.087. We fail to find evidence to support the hypothesis also in the logistic model, as none of

the effects are statistically significant. Therefore, we cannot conclude that firms with CEO options are more likely to conduct a repurchase.

**Table 6.5:** *This table provides the results of the regressions for level of repurchase payout as specified in equation 2. Columns (1) and (2) are for the whole sample, while columns (3) and (4) are for the subsample of paying firms. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Repurchases Payout | (4) Repurchases Payout |
|---|---|---|---|---|
| CEO Options | 0.036 | -0.028 | 0.157 | -0.131 |
| | (1.177) | (-1.086) | (0.945) | (-1.547) |
| Leverage | -0.005* | -0.005** | -0.021 | -0.016* |
| | (-1.689) | (-2.433) | (-1.118) | (-2.057) |
| Free Cash Flow | -0.001 | -0.000 | -0.004 | 0.003 |
| | (-0.727) | (-0.032) | (-0.549) | (0.919) |
| Size | -0.000 | 0.000 | -0.002 | -0.000 |
| | (-0.281) | (1.578) | (-1.115) | (-0.546) |
| Market-to-book | -0.001** | -0.000 | -0.002* | -0.002* |
| | (-2.067) | (-1.623) | (-1.710) | (-1.990) |
| Intercept | 0.008 | -0.005 | 0.065 | 0.017 |
| | (0.399) | (-1.041) | (1.306) | (0.979) |
| *N* | 722 | 722 | 344 | 344 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

### 6.2.2 CEO option holding and dividend payout

When examining the relationship between CEO options and dividend, we will test the following hypothesis:

*$H_0$: Dividend payment does not decrease with CEO options*

*$H_A$: Dividend payment decreases with CEO options*

Table 6.5 illustrates the results from the regressions related to the relationship between CEO option holdings and dividend payouts. The approach is the same as for repurchase: two regressions for the whole sample and two for the sample of dividend-paying firms. Column (1) indicates a positive effect of CEO options on the level of dividend when controlling for company effects, while the effect is negative while controlling for industry. None of the coefficients are significant. The results are less ambiguous and in line with the hypothesis when only looking at the firms with positive dividend payments during the period in columns (3) and (4). Even though the coefficients are negative, they are not statistically significantly different from zero, and we cannot conclude that the level of dividend payout is decreasing in CEO options. Hence, we cannot reject the null hypothesis.

We have also included dividend payout into the logit model to analyse the probability of making a dividend payment, as illustrated in Table 6.7. The results indicate a decreasing likelihood of making a dividend payment if the CEO options increase in columns (3) and (4). The relationship is stronger when controlling for industry than firm fixed effects, although none of the coefficients are significant. We cannot conclude that CEO options decrease the probability of making a dividend payment. Therefore, the logit model also does not give us evidence to reject the null hypothesis.

**Table 6.6:** *This table provides the results of the regressions for level of dividend payout as specified in equation 3. Columns (1) and (2) are for the whole sample, while columns (3) and (4) are for the subsample of paying firms. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Dividend Payout | (2) Dividend Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| CEO Options | -0.602 | -0.384 | -0.973 | -0.489 |
| | (-1.232) | (-1.109) | (-0.918) | (-1.062) |
| Leverage | -0.002 | -0.008 | -0.010 | -0.033 |
| | (-0.090) | (-0.587) | (-0.286) | (-0.961) |
| Free Cash Flow | 0.058* | 0.039** | 0.116* | 0.069*** |
| | (1.905) | (2.512) | (1.766) | (4.581) |
| Size | -0.026 | -0.005** | -0.050 | -0.011*** |
| | (-0.965) | (-2.399) | (-0.946) | (-3.355) |
| Market-to-book | -0.003 | -0.001 | -0.008 | -0.006 |
| | (-1.121) | (-0.724) | (-0.917) | (-1.608) |
| Intercept | 0.610 | 0.154** | 1.181 | 0.321*** |
| | (1.032) | (2.851) | (1.001) | (3.860) |
| *N* | 722 | 722 | 470 | 470 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

### 6.2.3 Propensity of payout method

**Table 6.7:** *This table provides the results of the logit regressions for probability of repurchase or dividend, as specified in equation 5 for columns (1) and (3) and equation 6 for columns (3) and (4). Regressions are done with firm and industry fixed for both samples. The first number is the log odds ratios, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicate statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| CEO Options | 2.494 | 1.087 | 0.895 | 0.780 |
| | (1.560) | (0.527) | (-0.363) | (-1.586) |
| Leverage | 0.057 | 0.202*** | 0.006** | 0.402* |
| | (-1.511) | (-2.766) | (-2.380) | (-1.683) |
| Free Cash Flow | 0.378 | 4.147* | 5.453* | 72.011*** |
| | (-0.634) | (1.909) | (1.851) | (5.468) |
| Size | 2.609* | 1.527*** | 1.978 | 1.667*** |
| | (1.867) | (6.476) | (1.520) | (7.082) |
| Market-to-book | 0.882 | 1.129* | 1.426** | 1.144** |
| | (-0.847) | (1.734) | (2.556) | (2.299) |
| *N* | 320 | 702 | 264 | 704 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

### 6.2.4 Discussion of CEO option holding and payout decisions

When analysing the effect of CEO options on the payment method, we cannot conclude that CEO options are related to an increase in level or propensity of repurchase payout either for the entire sample or the subset of firms with positive repurchase in the period. Therefore, we cannot reject the null hypothesis for the relationship between CEO options and repurchase payouts. The inability to reject the null hypothesis contrasts with previous research such as that of Grullon and Michaely (2002) and Fenn and Liang (2001). Both these studies look at a sample from the United States. Hence, one explanation for the lack of evidence in the Norwegian market might be differences in jurisdictions in Norway and the US. This also makes sense as De Cesari and Neslihan (2015) look at the same relationship for European firms, which might have more similar regulatory characteristics, without finding any significant effect.

Several factors could differentiate the payout policy in the US and Norway or Europe. The tax aspect is already discussed, where lower taxes on capital gains makes repurchase favourable. Another example is that repurchase was not implemented as a payout method in Norway before 1999, while it was implemented in the US in 1982 (Skjeltorp, 2004). Therefore, it could be a delay in the substitution from dividend to repurchase in Norway compared to the US. On the other hand, both findings from the US were published 20 years ago, and we see in Figure 4.2 an increase in repurchase relative to dividend in Norway in the last six years. Hence, the effect of the delay should not be of a significant character.

Some researchers also argue that CEOs might prefer to repurchase shares to boost the earnings per share, because of the increasing number of shares outstanding when stock options are granted. As the EPS measure is important for evaluating the performance and valuation of a firm, the EPS could be included as a bonus measurement for CEOs, which would further increase the motivation for share repurchase (Cheng, Harford, & Zhang, 2015). The EPS based incentive could explain the different findings as compensation policies are different across firms, industries, and countries.

After failing to find supporting evidence for the relationship between CEO options and repurchase, we also fail to find evidence for the effect of CEO options on dividend levels and propensity. Thus, we cannot conclude that dividend payment levels or propensity decrease in CEO options, neither for the entire sample nor the subset of dividend-paying firms. Our results

are in contrast to those of several researchers such as Lambert et al. (1989), Weisbenner (2000) and De Cesari and Neslihan (2015). Weisbenner (2000) concludes that CEOs are decreasing dividends because it destroys the value of the option holding. Geiler and Renneboog (2016) also find a significant negative effect of options on the propensity of dividend payments for a sample of firms on the London Stock Exchange, while Fenn and Liang (2001) conclude that stock options lead to a substitution away from dividend in favour of repurchase for firms in the US. There might be several reasons why we are concluding differently from other researchers. Jurisdictional differences in tax and other regulations might also be a factor for the dividend relationship.

A possible explanation for the deviating conclusions might also be the absence of a target payout ratio, meaning that firms may reduce dividends without necessarily increasing repurchases, thus reducing the total payout (Brav, Graham, Harvey, & Michaely, 2005). On the other hand, as Figure 4.2 illustrates, the level of total payout has an increasing trend in Norway during our sample period, except for 2020, and repurchase is increasing more than dividend. Therefore, we can conclude that a target payout ratio does not exist in our sample. Hence, a change in the dividend level does not necessarily lead to a change in the level of repurchase, indicating that there is no substitutional mechanism.

A final aspect that might have an impact on the overall result is the overlapping equity holdings, the fact that CEO equity incentive packages are complex, and differences in implemented governance mechanisms. If a CEO owns both stock options and shares, the CEO might be incentivised in different directions. In our sample, nearly no CEO are in possession of options without being in possession of shares. For the CEOs with option holding, 38.5% of the total equity holding is shares, making it difficult to separate the incentive effects on the payout decision. If a CEO's equity holding consists of 100% options, repurchase is favourable, as it positively affects the stock price. However, if the distribution is more equal, it does not automatically follow that repurchase is the best alternative. Differences in bonus policies across industries and countries may also be present. If a CEO receives a bonus based on an increase in EPS, repurchase will be favourable, and if the same CEO also owns options, we cannot distinguish the effect of the two incentives. Overall, this overlap and complexity in compensation policy makes it challenging to identify the separate effects of the different CEO equity incentives on payout policy. Therefore, this might contribute to our models' lack of supporting evidence. See Appendix 2 for the average equity holdings distribution across industries.

*Alternative specification for CEO option holding and payout decisions*

**Payout History**

Several alternative specifications discussed under section 6.1.3 could also apply here. The regression, including a dummy for payout out in the previous year, is illustrated in Appendix 17. The control variable is highly significant, indicating that payout one year increases the likelihood of payout the following year for each of the payout methods. Including this variable made the relationship between repurchase payout and options positively significant, but only when controlling for firm fixed effects. As previously mentioned, we rely more on the industry effects model. Hence, including payout history does not change our initial result.

# 7. Robustness

To test the robustness of our estimates, this section will analyse the exposure of statistical warnings in the models and discuss how we can approach them. A causal interpretation of the independent variables related to endogeneity will also be discussed. Robustness tests are included in appendix section 10.3.

## 7.1 Multicollinearity

Multicollinearity occurs when there is a high degree of correlation between two or more independent variables, which can give misleading results (Wooldridge, 2020). To test if the models are exposed to the issue of multicollinearity, a VIF-test is applied. This test is estimating how much the variance of the variables increases due to the correlation with other independent variables. For the models in this study, the VIF-test suggests a low degree of multicollinearity, as presented in appendixes Appendix 5 to Appendix 7 The results of the test can also be further investigated by correlation matrices, presented in Appendix 3.

## 7.2 Heteroscedasticity

Heteroscedasticity occurs when the variance of standard errors is not constant. The issue of heteroscedasticity might have an impact on estimating the standard errors and can lead to untrustworthy confidence intervals in relation to the hypothesis testing (Wooldridge, 2020). We conduct a Breusch-Pagan test to test if our models contain heteroscedasticity. The tests yield results suggesting that heteroscedasticity is present (see Appendix 4). This issue is handled by including robust standard errors in all the regression models.

## 7.3 Sample bias

The sample size used in the regressions varies across the models, whereby the full sample includes over 700 observations, while the subset where we find significance contains of 325 observations. Comparable studies as those of Fenn and Liang (2001) and Weisbenner (2000) do not use sample sizes of substantially more observations. However, our study might be biased due to the observations omitted in the selection process illustrated and explained in section 4. Examples are delisted companies which are excluded in our dataset, and companies

with lack of CEO data in their financial statements. By including these observations, our estimates could have been different, and we therefore have a sample bias.

## 7.4 Causal interpretation

Causal interpretation between an independent and dependent variable must always be done carefully. Whether CEO options and CEO delta can be interpreted as causal determinants on payout depends on some assumptions. There needs to be linearity in parameters, random sampling, sample variance in the Xes, and the error term should have an expected value of zero, given any value of X. The last assumption is the zero conditional mean assumption (ZCMA). It says that the explanatory variable cannot be endogenous, which means it cannot correlate with any unobserved determinant of payout, known as the error term. The fixed effect approach applied in our regressions has been getting rid of the unobserved heterogeneity, the part of the error term that does not change. The variation used to estimate the coefficients is changes within units over time. This increases the probability of the ZCMA to hold, which further leads to a less unbiased estimation, which again leads to a more causal interpretation compared to, for example, the pooled OLS. The biggest threat to the ZCMA and causal interpretation is endogeneity (Wooldridge, 2020).

### 7.4.1 **Endogeneity**

The challenge of casually interpreting the relationship between payout decisions and equity incentives is due to the endogenous determination between the variables. Rozeff (1982) argues that payout decisions and ownership incentives are alternative mechanisms for addressing potential agency problems. Because while CEO ownership aligns the interest with shareholders, payouts works as a bonding tool to convey that management do not intend to use internal funds on negative NPV investments. Even though we have handled some of the endogeneity issues related to unobserved heterogeneity, endogeneity issues related to omitted variables bias, reverse causality, and measurement error might also be present.

#### *Omitted variable bias*

Omitted variable bias occurs when one or several relevant variables are omitted from the regression model. The issue often occurs when the variable is challenging to quantify. The relatively low explanatory power of our models indicates that most of the payout decisions are determined by unobserved factors. However, it does not lead to endogeneity and biased

estimates unless it correlates with the independent variable. An example is the CEO's ability. It is nearly impossible to quantify, it correlates with both equity incentive variables, and it might have an impact on the payout policy. Another example is risk aversion. A CEO's risk aversion is also nearly impossible to quantify but is probably highly correlated with both the wealth-performance sensitivity and payout decision, as a risk averse CEO will, to a greater extent, keep the retain cash in favour of payout in times of uncertainty Figure 4.2 indicates this trend clearly since total payout in the COVID-19 year of 2020 is significantly lower than the previous years. This would be in line with Jagannathan, Stephens, & Weisbach (2000), stating that uncertainty increases the demand for precautionary cash holdings and reduces the level of payouts. The omission of risk aversion in the model therefore leads to an omitted variable bias.

### *Reverse causality*

The issue of reverse causality in empirical corporate governance also applies to our study. Reverse causality is when the dependent variable is causing a change in the independent variable, instead of the opposite, which we initially believed when approaching the model. In our study, there is reverse causality if we can argue that payout policy is causing a change in the wealth-performance sensitivity or CEO options. It is not unlikely that the payout policy of a firm is jointly or partly determining the annual compensation which is a part of the delta, or the number of CEO options. An example of reverse causality in our model is if a payout decision increases the stock price, which further causes the CEO to exercise more options.

A method to check for reverse causality in the model is to use the independent variable value from last year. Then the payout decision variables are regressed by last year's delta and option holding. We have done this for the model, including the CEO options variable, with the results presented in Appendix 18 for repurchase payout and Appendix 19 for dividend payout. By using this lagged independent variable, we find deviating results for share repurchase levels, as it shows that last year's option holdings have a significant effect on repurchase payouts. This indicates reverse causality, as discussed above.

### *Measurement error*

In addition to reverse causality and omitted variable bias, endogeneity problems related to measurement error might also be present. Measurement error means the difference between the value of the measurement and the true value of the variable. In our study, we apply proxies for several variables which are challenging to observe or quantify, as in most corporate

governance studies. One of the potential measurement errors is related to our main finding in the first hypothesis. Our conclusion is based on market-to book value as a proxy for investment opportunities but is not necessarily a perfect measure of investment opportunities, which further is not necessarily a perfect measure of agency cost. The explanatory variables might also contain some measurement error. The delta variable might not be a perfect measure of ownership incentive, but there are indicators suggesting it is better than ownership percentage as explained in section 3.1. Our measure of CEO options on the other hand, is a percentage number of the total shares outstanding, which means the variable is correlating with firm size which might lead to a measurement error (Edmans, Gabaix, & Landier, 2009). The measurement error becomes a part of the error term when variables are measured imperfectly.

### *Instrumental variable*

To handle the endogeneity problem, a common approach is to apply an instrumental variable (IV). IV is a third variable often referred to as Z and is a strategy for estimating causal effect of the independent variable on the dependent variable when the independent variable is endogenous (Wooldridge, 2020). This strategy is valid under three criteria. Z needs to be excluded, which means it cannot have a direct impact on the dependent variable. It also needs to be exogenous, meaning it cannot correlate with any unobserved determinant of the dependent variable. The last criterion is related to relevance. For the IV to be relevant, it must influence the independent variable. The IV approach to test for endogeneity issues can be valuable under the right circumstances. However, it is in practice challenging to find valid IV fulfilling the three criteria and is therefore not implemented in our models.

# 8. Conclusion

In this thesis, we have studied the role of CEO equity incentives in a payout decision, focusing on agency cost. Firstly, we investigated the relationship between wealth performance sensitivity and payout level and probability for firms with high agency cost, before analysing the effect of CEO stock options as a determinant of payout method, both in terms of propensity and level.

The first finding in our thesis indicates that CEO wealth-performance sensitivity has a significant effect on the propensity and level of payouts for firms with high agency costs when agency cost is measured by low ownership and investment opportunities. Thus, there is evidence suggesting that CEO ownership incentives reduce agency costs. The effect is strongest for dividend payout, which is the opposite of studies from the US and aligns with studies from Europe. When agency cost is measured as high FCF and low CEO ownership, we do not find any significant effects on total payout. We fail to find supporting evidence for the effect of CEO options on the level or propensity of any of the payout methods. This finding is in contrast with research from the American market, where share repurchase has been implemented for a more extended period, and tax differences could have significantly affected the trade-off between payout methods (Grullon & Michaely, 2002; Fenn & Liang, 2001).

The key findings in our study are that the effect of CEO ownership incentive on payout depends on how you measure agency cost. Our study suggests that investment opportunities is an accurate measure. Our research does not find an effect of CEO options on payout policy and suggests that this relationship is dependent on conditions such as tax rate and other market characteristics. In general, it is also challenging to distinguish the effect of the different CEO equity incentives from each other. For further research, it might be interesting to conduct the same study for the Scandinavian countries to compare across markets with more similar characteristics, as differences across markets can explain some of the differences related to other findings.

# 9. References

Acharya, V., Le, H., & Shin, H. (2017, March). Bank Capital and Dividend Externalities. *The Review of Financial Studies, Volume 30, Issue 3*, pp. 988-1018.

Adhikaria, B. K., & Argawal, A. (2018, February). Peer influence on payout policies. *Journal of corporate finance*.

Allison, P. (2009). *Fixed Effects Regression Models for Categorical Data.* SAGE Publications Inc.

Babenko, I., Tserlukevich, Y., & Vedrashko, A. (2012). The Credibility of Open Market Share Repurchase Signaling. *Journal of Financial and Quantitative Analysis, 2012, vol. 47, No. 5*, pp. 1059-1088.

Baker, G., & Hall, B. (1998, November). CEO Incentives and Firm Size. *Harvard Business School Working Paper No. 99-060*.

Baker, K., Mukherjee, T., & Pakelian, O. (2005). How Norwegian Managers View Dividend Policy. *Department of Economics and Finance Working Papers, 1991-2006, Paper 48*.

Bali, R., & Hite, G. (1998, February). Ex dividend day stock price behavior: discreteness or tax-induced clienteles? *Journal of Financial Economics: Volume 47, issue* , pp. 127-159.

Benson, B., & Davidson, W. (2009, December). Reexamining the managerial ownership effect on firm value. *Journal of Corporate Finance Vol. 15, No. 5*, pp. 573-586.

Berk, J., & DeMarzo, P. (2014). *Corporate Finance - 3rd Edition.* Standford University: Pearson.

Brav, A., Graham, J., Harvey, C., & Michaely, R. (2005, May). Payout policy in the 21st century. *Journal of Financial Economics, Vol. 77, No. 3*, pp. 483-527.

Brealey, R., Myers, S., & Allen, F. (2014). *Principles of Corporate FInance.* New York: McGraw-Hills Education.

Campbell, J., & Beranek, W. (1955, December). Stock Price Behavior on Ex-Dividend Dates. *The journal of finance, Vol. 10 No. 4*, pp. 425-429.

Cheng, Y., Harford, J., & Zhang, T. (2015, June). c. *Journal of Financial and Quantitative Analysis, Vol. 50, No. 3*, pp. 447-475 .

Coles, J., Daniel, N., & Naveen, L. (2006, September). Managerial incentives and risk-taking. *Journal of Financial Economics 79*, pp. 431-468.

Core, J., & Guay, W. (1999). The use of equity grants to manage optimal equity inventive levels. *Journal of Accounting and Economics, Volume 28, Issue 2*, pp. 151-184.

Crane, A., Michenaud, S., & Weston, J. (2016, June). The Effect of Institutional Ownership on Payout Policy: Evidence from Index Thresholds. *The Review of Financial Studies, Volume 29, Issue 6*, pp. 1377–1408.

DeAngelo, H., DeAngelo, L., & Stulz, R. (2006, August). Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics, Volume 81, No. 2*, pp. 227-254.

De Cesari, A., & Neslihan, O. (2015, June). Executive incentives and payout policy: Emperical evidence from Europe. *Journal of Banking & Finance, vol. 55*, pp. 70-91.

Demsetz, H., & Lehn, K. (1985, December). The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy Vol. 93, No. 6*, pp. 1155-1177.

Dickens, R., Casey, M., & Newman, J. (2002). Bank Dividend Policy: Explanatory Factors. *Quarterly Journal of Business and Economics, Vol. 41, No.1/2*, pp. 3-12.

Edmans, A., Gabaix, X., & Landier, A. (2009, December). A Multiplicative Model of Optimal CEO Incentives in Market Equilibrium. *The Review of Financial Studies, Volume 22, Issue 12*, pp. 4881–4917.

Eisenhardt, K. (1989, January). Agency Theory: An Assessment and Review. *The Academy of Management Review, Vol. 14, No. 1*, pp. 57-74.

Fama, E. F., & French, K. R. (2001). Dissapearing dividend: Changing firm characteristic, or lower propensity to pay? *Journal of Financial Economics, Vol. 60, No. 1*, pp. 3-43.

Fenn, G. W., & Liang, N. (2001, January 17). Corporate payout policy and managerial stock incentives. *Journal of Financial Economics Vol.60, No.1*, pp. 45-72.

Geiler, P., & Renneboog, L. (2016). Executive Remuneration and the Payout Decision. *Corporate Governance: An International Review, Vol. 24, Issue 1*, pp. 42-63.

Grinstein, Y., & Michaely, R. (2005, June). Institutional Holdings and Payout Policy. *The Journal of Finance Vol. 60, No. 3* , pp. 1389-1426.

Grullon, G., & Michaely, R. (2002, January). Dividends, Share Repurchase, and the Substitution Hypothesis. *The Journal og Finance Vol. 57, No. 4*, pp. 1649-1684.

Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are Dividend Changes a Sign of Firm Maturity? *Journal of Business, Vol. 75, No. 3*, pp. 387-424.

Guay, W. (1999, July). The sensitivity of CEO wealth to equity risk: an analysis of the magnitude and determinants. *Journal of Financial Economics Volume 53, Issue 1*, pp. 43-71.

Healy, P. M., & Palepu, K. G. (1988). Earnings information conveyed by dividend inititions and omissions. *Journal of Financial Economics vol. 21, No. 2*, pp. 149-175.

Holmstrom, B., & Milgrom, P. (1991). Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design. *The Journal of Law, Economics, and Organization, vol. 7*, pp. 24-52.

Hu, A., & Kumar, P. (2004). Managerial Entranchment and Payout Policy. *Journal of Financial and Quantitative Analysis, Vol. 39, No. 4*, pp. 759-790.

Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995, November). Market underreaction to open market share repurchases. *Journal of Financial Economics, Volume 39, Issues 2-3*, pp. 181-208.

Jagannathan, M., Stephens, C., & Weisbach, M. (2000, September). Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics Volume 57, Issue 3*, pp. 355-384.

Jensen, G. G., Solberg, D. P., & Zorn, T. S. (1992, June). Simultaneous Determination of Insider Ownership, Debt, and Dividend Policies. *Journal of Financial and Quantitative Analysis, Vol 27, Issue 2*, pp. 247-263.

Jensen, M. (1986, May). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review, Vol. 76, No. 2*, pp. 323-329.

Jensen, M. C., & Meckling, W. H. (1976, July). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, Vol. 3, No. 4*, pp. 305-360.

Lambert, R., Lanen, W. N., & Larcker, D. (1989, December). Executive Stock Option Plans and Corporate Dividend Policy. *Journal of Financial and Quantitative Analysis, 1989, vol. 24, issue 4*, pp. 409-425.

Leary, M., & Michaely, R. (2011, June). Determinants of Dividend Smoothing: Empirical Evidence. *Review of Financial Studies, Vol. 24, No. 10*, pp. 3197-3249.

Leuz, C., Deller, D., & Stubenrath, M. (1998). An International Comparison of Accounting-Based Payout Restrictions in the United States, United Kingdom and Germany. *Accounting and Business Research, Vol. 28*, pp. 111-129.

Massa, M., Rehman, Z., & Vermaelen, T. (2007, June). Mimicking repurchases. *Journal of Financial Economics, Volume 84*, pp. 624-666.

McConnell, J., & Servaes, H. (1990, October). Additional evidence on equity ownership and corporate value. *Journal of Financial Economics Vol. 27, No. 2*, pp. 595-612.

Miller, M. H., & Modigliani, F. (1961, October). Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business Vol. 34, No. 4* , pp. 411-433 .

Morck, R., Shleifer, A., & Vishny, R. (1988, March). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics, Vol. 20*, pp. 293-315.

Murphy, K. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics, vol. 7, No. 1-3*, pp. 11-42.

NewsWeb. (2021, October). *NewsWeb*. Retrieved from NewsWeb Oslo Børs: https://newsweb.oslobors.no

Opler, T., & Titman, S. (1993, December). The Determinants of Leveraged Buyout Activity: Free Cash Flow vs. Financial Distress Costs. *The Journal of Finance Vol. 48, No. 5*, pp. 1985-1999.

Oslo Børs. (2020, November 30). *Comparison between Oslo Børs, Oslo Axess and Merkur Market.* Retrieved from https://www.oslobors.no/ob_eng/layout/set/print/Oslo-Boers/Listing/Shares-equity-certificates-and-rights-to-shares/Comparison-between-Oslo-Boers-Oslo-Axess-and-Merkur-Market

Regjeringen. (2021, November). *Skattesatser 2022*. Retrieved from https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/skattesatser-2022/id2873852/

Renneboog, L., & Trojanowski, G. (2011). Patterns in payout policy and payout channel choice. *Journal of Banking & Finance, Vol. 35, issue 6*, pp. 1477-1490.

Reuters. (2021, May 21). *Norwegian Air raises fresh capital, set to exit restructuring.* Retrieved from Aerospace & Defense: https://www.reuters.com/business/aerospace-defense/norwegian-air-raises-fresh-capital-set-exit-restructuring-2021-05-21/

Rozeff, M. S. (1982). Growth, beta and agency costs as determinants of dividend payout. *The Journal of Financial Research Volume 5, Issue 3*, pp. 249-259.

Skjeltorp, J. (2004). *The market impact and timing of open market share repurchases in Norway.* Bankplassen 2, 0107 Oslo, Norway: Norges Bank.

Smith, C., & Watts, R. (1992, February). The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies. *Journal of Financial Economics, Vol. 32, No.3*, pp. 263-292.

Spence, M. (1973, August). Job Market Signaling. *The Quarterly Journal of Economics, Vol. 87, No. 3*, pp. 355-374.

Tax Foundation. (2021, November). *Capital Gains Tax Rates in Europe*. Retrieved from taxfoundation: https://taxfoundation.org/capital-gains-tax-rates-in-europe-2021/

Thoresen, T., Bø, E., Fjærli, E., & Halvorsen, E. (2011). Evaluating the redistributional effects of tax policy changes, with an application to the 2006 Norwegian tax reform. *Discussion Papers, No. 648, Statistics Norway, Research Department, Oslo*.

Verdipapirforetakenes forbund. (2021, November 16). *Om NOTC.* Retrieved from Euronext NOTC: https://www.notc.no/Om-NOTC

von Eije, H., & Megginson, W. (2008, August). Dividends and share repurchases in the European Union. *Journal of Financial Economics, Vol. 89, Issue 2*, pp. 347-374.

Weisbenner, S. J. (2000). Corporate Share Repurchases in the 1990s: What Role do Stock Options play? *SSRN Electronic Journal 2000, No.2*.

Wooldridge, J. (2020). *Introductory Econometrics - A modern Approach, 7th edition.* Michigan State University: Cengage.

Zhou, X. (2001, December). Understanding the determinants of managerial ownership and the link between ownership and performance: comment. *Journal of Economics; Vol. 62, No.3*, pp. 559-571.

# 10. Appendix

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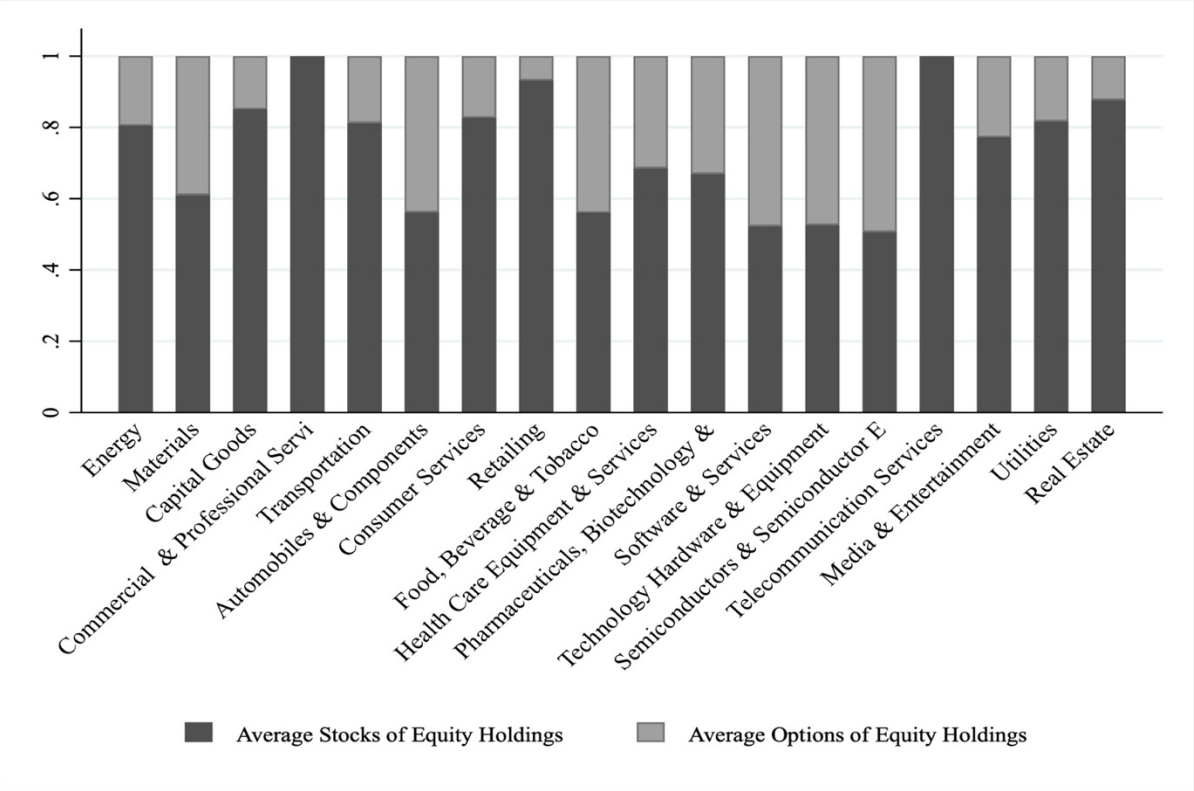
## 10.1 Variable description

**Appendix 1**

| Variable | Description | Source |
|---|---|---|
| Delta | $\frac{(Number\ of\ shares\ owned(0\ .01)(P))}{Total\ annual\ compensation}$ | Firm's annual reports |
| CEO Options | $\frac{Number\ of\ options\ held\ by\ CEO}{Total\ shares\ outstanding}$ | Firm's annual reports |
| Free Cash Flow | $\frac{Free\ cash\ flow}{Total\ assets}$ | Refinitiv Eikon |
| Leverage | $\frac{Total\ debt}{Total\ assets}$ | Refinitiv Eikon |
| MTB | $\frac{Market\ Capitalization}{(Total\ assets - total\ debt)}$ | Refinitiv Eikon |
| Size | $Logarithm\ of\ assets$ | Refinitiv Eikon |
| Dividend Payout | $\frac{Number\ of\ options\ held\ by\ CEO}{Total\ shares\ outstanding}$ | Refinitiv Eikon |
| Repurchase Payout | $\frac{Total\ amount\ spent\ on\ repurchase}{Market\ capitalization}$ | NewsWeb |
| Total Payout | $Dividend\ Payout + Repurchase\ Payout$ | Refinitiv Eikon + NewsWeb |

## 10.2 Additional descriptive




**Appendix 2**: *Overview of the distribution within CEO equity holdings for each industry in the sample. The bar plots are stacked, where the upper part represents the average stock holdings within the industry, while the bottom part represents the average CEO stock holding*

**Appendix 3**: *Correlation matrix including the main variables of the study. All variables are presented in Appendix 1.*

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| (1) Total Payout | 1.000 | | | | | | |
| (2) Delta | -0.001 | 1.000 | | | | | |
| (3) CEO Options | -0.046 | -0.028 | 1.000 | | | | |
| (4) Leverage | -0.037 | 0.027 | -0.104 | 1.000 | | | |
| (5) Free Cash Flow | 0.104 | 0.019 | -0.149 | -0.103 | 1.000 | | |
| (6) Size | 0.013 | 0.052 | -0.226 | 0.253 | 0.338 | 1.000 | |
| (7) MTB | -0.079 | 0.028 | 0.074 | -0.278 | -0.162 | -0.333 | 1.000 |

## 10.3 Regression diagnostics

As described in section 5, we have run our analysis with a panel dataset. The following are the classic formalities when deviating from normal OLS regressions, as we test the assumptions for OLS to verify that OLS is not the most reliable choice of model. The assumptions for OLS are: (1) Linear in parameters, (2) Random sampling of observations, (3) zero conditional mean, (4) no multicollinearity and (5) homoscedasticity and no autocorrelation.

In Appendix 4, we disclose the tests that are run to confirm that an OLS regression model is not suitable to be applied in our study. The tests are run on each of the three main regression models in the study, where (1) is the main model for the first hypothesis, while (2) and (3) are applied when testing the second hypothesis, in accordance with the models presented in section 5. Firstly, we run the Breusch-Pagan test to test for heteroskedasticity. The null hypothesis for the test is that there is constant variance in the error term. As we reject the null for all three models, we conclude that the assumption of homoscedasticity is violated.

**Appendix 4:** *Tests run to check for heteroskedasticity, autocorrelation and choice of FE/RE. (1) is test for the model run on hypothesis 1, while (2) and (3) are the two models run for hypothesis 2.*

| | | (1) Total Payout | (2) Dividend Payout | (3) Repurchase Payout |
|---|---|---|---|---|
| Breusch-Pagan test for heteroskedasticity | chi2 | 316.06 | 432.08 | 95.25 |
| | P>chi2 | 0.00 | 0.00 | 0.00 |
| Woolridge test for Autocorrelation | F | 0.96 | 0.86 | 1.96 |
| | P>F | 0.33 | 0.36 | 0.16 |
| Hausman test | chi2 | 19.45 | 12.10 | 12.92 |
| | P>chi2 | 0.00 | 0.03 | 0.02 |

Further, we test for autocorrelation in our models, using the Wooldridge test. We fail to reject the null of no first-order autocorrelation for all three models. This suggests that there is no there is no correlation in the error terms over time. Together with the characteristics of the dataset, this suggests that we should apply panel data regressions. As the time and individual firm and industry dimensions are relevant for the study, we cannot apply a Pooled OLS model. This leaves us with either a fixed effects or a random effects model, and the Hausman test can determine which is more the more applicable model. The null hypothesis is that the differences in the coefficients are not systematic. As we can reject the null, we can conclude that fixed

effect model is preferred. The variance inflation factor (VIF) test for multicollinearity. A mean VIF below 1 suggest no correlation, while between 1 and 5 is moderate multicollinearity. Above 5 suggests that the independent variables are highly correlated. The test suggests a moderate degree of multicollinearity, with all models having a mean just above 1, which is no concern for the reliability of our results.

**Appendix 5:** *Variance Inflation Factor for main regression model in hypothesis regarding CEO ownership and total payout*

| | VIF | 1/VIF |
|---|---|---|
| Size | 1.32 | 0.76 |
| MTB | 1.19 | 0.84 |
| Free Cash Flow | 1.19 | 0.84 |
| Leverage | 1.18 | 0.85 |
| Delta | 1.01 | 0.99 |
| Mean VIF | 1.18 | |

**Appendix 6***: Variance Inflation Factor for the regression model in hypothesis regarding CEO options and dividend payouts*

| | VIF | 1/VIF |
|---|---|---|
| Size | 1.35 | 0.74 |
| MTB | 1.20 | 0.83 |
| Free Cash Flow | 1.19 | 0.84 |
| Leverage | 1.18 | 0.85 |
| CEO Options | 1.07 | 0.94 |
| Mean VIF | 1.20 | |

**Appendix 7:** *Variance Inflation Factor for the regression model in hypothesis regarding CEO options and repurchase payouts*

| | VIF | 1/VIF |
|---|---|---|
| Size | 1.35 | 0.74 |
| MTB | 1.20 | 0.83 |
| Free Cash Flow | 1.19 | 0.84 |
| Leverage | 1.18 | 0.85 |
| CEO Options | 1.07 | 0.94 |
| Mean VIF | 1.19 | |

## 10.4 Additional regressions: Hypothesis I

**Appendix 8:** *This table provides the results of the regressions for level of total payout as specified in equation 1. Column (1) and (2) is for the subsample of FCF above median or MTB below median, while column (3) and (4) is for the subsample of FCF above median or MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | -0.000<br>(-0.110) | -0.000<br>(-0.470) | -0.002<br>(-0.069) | -0.001<br>(-0.972) |
| Size | -0.035<br>(-0.838) | -0.007<br>(-0.515) | -0.047<br>(-0.843) | -0.011<br>(-0.612) |
| Leverage | 0.063<br>(1.201) | 0.042**<br>(2.773) | 0.061<br>(1.008) | 0.040**<br>(2.727) |
| Free Cash Flow | -0.042<br>(-0.868) | -0.003<br>(-1.457) | -0.048<br>(-0.874) | -0.005<br>(-1.568) |
| Market-to-book | -0.002<br>(-0.581) | -0.004<br>(-1.445) | -0.002<br>(-0.569) | -0.005<br>(-1.640) |
| Intercept | 0.970<br>(0.907) | 0.112**<br>(2.334) | 1.126<br>(0.908) | 0.150**<br>(2.294) |
| *N* | 549 | 549 | 492 | 492 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 9:** *This table provides the results of the regressions for level of dividend payout as specified in equation 1, but where the dependent variable is dividend payout Column (1) and (2) is for the subsample of FCF above median or MTB below median, while column (3) and (4) is for the subsample of FCF above median or MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Dividend Payout | (2)<br>Dividend Payout | (3)<br>Dividend Payout | (4)<br>Dividend Payout |
|---|---|---|---|---|
| Delta | 0.000 | -0.000 | 0.006 | -0.001 |
| | (0.134) | (-0.146) | (0.295) | (-0.677) |
| Size | -0.026 | -0.003 | -0.036 | -0.005 |
| | (-0.672) | (-0.196) | (-0.671) | (-0.280) |
| Leverage | 0.064 | 0.042*** | 0.064 | 0.041*** |
| | (1.350) | (2.996) | (1.164) | (3.015) |
| Free Cash Flow | -0.040 | -0.004 | -0.046 | -0.005* |
| | (-0.868) | (-1.670) | (-0.855) | (-1.760) |
| Market-to-book | 0.000 | -0.004 | 0.000 | -0.004 |
| | (0.022) | (-1.266) | (0.039) | (-1.378) |
| Intercept | 0.934 | 0.118** | 1.059 | 0.153** |
| | (0.904) | (2.503) | (0.885) | (2.479) |
| *N* | 551 | 551 | 493 | 493 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 10:** *This table provides the results of the regressions for level of repurchase payout as specified in equation 1, but where the dependent variable is repurchase payout. Column (1) and (2) is for the subsample of FCF above median or MTB below median, while column (3) and (4) is for the subsample of FCF above median or MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Repurchase Payout | (4) Repurchase Payout |
|---|---|---|---|---|
| Delta | -0.000 | -0.000** | -0.009 | -0.000*** |
| | (-1.456) | (-2.496) | (-0.952) | (-2.902) |
| Size | -0.007 | -0.005*** | -0.009 | -0.006*** |
| | (-1.267) | (-2.913) | (-1.415) | (-3.279) |
| Leverage | -0.005 | -0.000 | -0.008 | -0.001 |
| | (-1.005) | (-0.170) | (-1.395) | (-0.416) |
| Free Cash Flow | 0.001 | 0.000 | 0.000 | 0.000 |
| | (0.607) | (1.655) | (0.072) | (0.979) |
| Market-to-book | -0.002 | -0.000 | -0.002 | -0.001 |
| | (-1.452) | (-1.036) | (-1.512) | (-1.623) |
| Intercept | -0.013 | -0.008 | 0.003 | -0.005 |
| | (-0.441) | (-1.228) | (0.088) | (-0.603) |
| *N* | 551 | 551 | 493 | 493 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 11:** *This table provides the results of the regressions for level of payout as specified in equation 1, but here we have divided the dependent variable into the two payout methods Column (1) and (2) checks for repurchase payout, with the subsample of FCF above median and CEO ownership percentage below 5%, while column (3) and (4) checks for dividend payout, with the subsample of FCF above median and CEO ownership percentage below 5%, The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| Delta | -0.008 | -0.000*** | 0.002 | -0.000 |
| | (-0.757) | (-4.485) | (0.224) | (-0.160) |
| Leverage | 0.005 | -0.011 | -0.160 | -0.055 |
| | (0.462) | (-1.570) | (-1.210) | (-0.653) |
| Free Cash Flow | 0.007 | 0.001 | 0.035 | 0.037* |
| | (0.678) | (0.105) | (1.148) | (1.827) |
| Size | -0.000 | 0.001 | -0.105 | -0.010* |
| | (-0.288) | (0.792) | (-1.111) | (-1.920) |
| Market-to-book | -0.002 | -0.001 | 0.000 | -0.005 |
| | (-1.319) | (-1.020) | (0.064) | (-1.269) |
| Intercept | 0.010 | -0.008 | 2.428 | 0.302** |
| | (0.359) | (-0.446) | (1.137) | (2.253) |
| *N* | 330 | 330 | 330 | 330 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 12:** *This table provides the results of the regressions for level of payout as specified in equation 1, but here we have divided the dependent variable into the two payout methods. Column (1) and (2) checks for repurchase payout, with the subsample of MTB below median and CEO ownership percentage below 5%, while column (3) and (4) checks for dividend payout, with the subsample of MTB below median and CEO ownership percentage below 5%, The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| Delta | -0.004 | 0.003 | 0.133 | 0.105** |
| | (-0.189) | (0.331) | (0.772) | (2.581) |
| Leverage | -0.011 | -0.005* | -0.055 | 0.001 |
| | (-1.285) | (-1.817) | (-0.635) | (0.081) |
| Free Cash Flow | -0.007 | -0.001 | 0.159 | 0.068** |
| | (-0.558) | (-0.374) | (1.128) | (2.298) |
| Size | -0.001 | 0.001* | -0.084 | -0.006 |
| | (-0.572) | (1.775) | (-0.907) | (-1.434) |
| Market-to-book | -0.001 | -0.000 | 0.078 | -0.009 |
| | (-0.122) | (-0.060) | (1.288) | (-0.580) |
| Intercept | 0.036 | -0.015 | 1.912 | 0.176* |
| | (0.637) | (-1.293) | (0.919) | (2.006) |
| *N* | 325 | 325 | 325 | 325 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 13:** *This table provides the results of the logit regressions for the likelihood of payout as specified in equation 4 + an alternative variable: Payout Last Year, a dummy variable which has the value of 1 of the company paid out the previous year, 0 if not. Column (1) and (2) is for the subsample of FCF and CEO ownership percentage below 5%, while column (3) and (4) is for MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| Delta | 0.974<br>(-0.654) | 1.022<br>(0.672) | 1.229<br>(0.832) | 1.069**<br>(2.294) |
| Size | 0.005<br>(-1.055) | 0.231<br>(-1.217) | 0.021<br>(-1.344) | 0.082***<br>(-2.669) |
| Leverage | 495.716<br>(1.443) | 4.107<br>(0.943) | 1.913<br>(0.460) | 25.626**<br>(2.557) |
| Free Cash Flow | 2.403<br>(0.862) | 1.264*<br>(1.669) | 1.857<br>(0.923) | 1.749***<br>(4.637) |
| Market-to-book | 1.688<br>(0.997) | 1.299**<br>(1.996) | 6.707<br>(1.049) | 11.406***<br>(2.976) |
| Payout Last Year | 0.637<br>(-0.649) | 20.144***<br>(7.539) | 0.672<br>(-0.813) | 3.988***<br>(3.710) |
| Intercept | 2.354<br>(1.136) | 0.292***<br>(2.997) | 1.756<br>(0.909) | 0.179***<br>(3.573) |
| *N* | 84 | 293 | 142 | 303 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 14:** *This table provides the results of the regressions for level of total payout as specified in equation 1, but here we have changed the independent variable from Delta to the logarithm of NOK value of ownership shares. Column (1) and (2) is for the subsample of FCF and CEO ownership percentage below 5%, while column (3) and (4) is for MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Total Payout | Total Payout | Total Payout | Total Payout |
| Log of Ownership Value | 0.000<br>(0.128) | 0.000<br>(0.466) | 0.001<br>(0.503) | 0.001**<br>(2.370) |
| Size | -0.154<br>(-1.160) | -0.066<br>(-0.789) | -0.060<br>(-0.731) | -0.006<br>(-0.408) |
| Leverage | 0.043<br>(1.200) | 0.038<br>(1.475) | 0.106<br>(1.075) | 0.049**<br>(2.571) |
| Free Cash Flow | -0.106<br>(-1.124) | -0.010<br>(-1.732) | -0.082<br>(-0.936) | -0.006<br>(-1.297) |
| Market-to-book | -0.002<br>(-0.441) | -0.006<br>(-1.480) | 0.077<br>(1.195) | -0.006<br>(-0.395) |
| Intercept | 2.446<br>(1.150) | 0.293*<br>(2.106) | 1.848<br>(0.951) | 0.168*<br>(1.798) |
| *N* | 330 | 330 | 326 | 326 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 15:** *This table provides the results of the regressions for level of total payout as specified in equation 1, but here we have changed the independent variable from Delta to % CEO ownership. Column (1) and (2) is for the subsample of FCF and CEO ownership percentage below 5%, while column (3) and (4) is for MTB below median and CEO ownership percentage below 5%. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1)<br>Total Payout | (2)<br>Total Payout | (3)<br>Total Payout | (4)<br>Total Payout |
|---|---|---|---|---|
| CEO Ownership | 0.600 | -0.252 | 1.420 | 0.641 |
| | (0.690) | (-0.434) | (0.919) | (0.321) |
| Size | -0.152 | -0.066 | -0.057 | -0.008 |
| | (-1.171) | (-0.812) | (-0.688) | (-0.466) |
| Leverage | 0.043 | 0.037 | 0.104 | 0.047** |
| | (1.217) | (1.453) | (1.048) | (2.325) |
| Free Cash Flow | -0.105 | -0.010 | -0.079 | -0.005 |
| | (-1.124) | (-1.615) | (-0.903) | (-0.794) |
| Market-to-book | -0.002 | -0.006 | 0.078 | -0.005 |
| | (-0.503) | (-1.499) | (1.197) | (-0.326) |
| Intercept | 2.430 | 0.301* | 1.794 | 0.146 |
| | (1.150) | (1.956) | (0.915) | (1.098) |
| *N* | 330 | 330 | 326 | 326 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

## 10.5 Additional regressions: Hypothesis II

**Appendix 16:** *This table provides the results initial OLS regressions for level of total payout on the full data sample. Column (1) and (3) are OLS regressions only including the independent variable for Repurchase and dividend payout, respectively., Column (2) and (4) includes all control variables as specified in equation 2 and 3., The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| CEO Options | -0.015 | -0.007 | -0.151 | 0.000 |
| | (-1.647) | (-0.730) | (-1.637) | (0.003) |
| Leverage | | -0.004*** | | -0.007 |
| | | (-2.851) | | (-0.478) |
| Free Cash Flow | | 0.001 | | 0.040*** |
| | | (1.216) | | (3.124) |
| Size | | 0.000** | | -0.002 |
| | | (2.311) | | (-0.942) |
| Market-to-book | | -0.000** | | -0.003* |
| | | (-2.142) | | (-1.810) |
| Intercept | 0.002*** | -0.006 | 0.028*** | 0.093 |
| | (5.716) | (-1.642) | (7.106) | (1.527) |
| *N* | 735 | 735 | 735 | 735 |
| Time Effects | *No* | *Yes* | *No* | *Yes* |
| Company Effects | *No* | *No* | *No* | *No* |
| Industry Effects | *No* | *No* | *No* | *No* |

**Appendix 17:** *This table provides the results of the logit regressions for the likelihood of payout as specified in equation 5 and 6 + an alternative variable: Payout Last Year, a dummy variable which has the value of 1 of the company paid out the previous year, 0 if not. Column (1) and (2) is for the subsample of repurchase paying firms and the additional variable is a dummy for repurchase payout the previous year. (3) and (4) is for the subsample of dividend paying firms and the additional variable is a dummy for dividend payout the previous year. The first number is the log odds ratios, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| CEO Options | 3.318* | 1.126 | 0.962 | 0.836 |
| | (1.722) | (0.726) | (-0.120) | (-1.028) |
| Size | 0.007** | 0.097*** | 0.005** | 0.294 |
| | (-2.075) | (-3.344) | (-2.333) | (-1.642) |
| Leverage | 0.154 | 2.418 | 3.874 | 35.050*** |
| | (-0.937) | (1.107) | (1.351) | (4.070) |
| Free Cash Flow | 2.529* | 1.433*** | 1.758 | 1.413*** |
| | (1.715) | (4.809) | (1.193) | (4.001) |
| Market-to-book | 0.856 | 1.115 | 1.352** | 1.162** |
| | (-1.000) | (1.424) | (2.156) | (2.319) |
| Payout Last Year | 1.314 | 2.905*** | 1.485 | 16.748*** |
| | (0.588) | (3.764) | (1.075) | (9.627) |
| *N* | 285 | 628 | 231 | 627 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 18:** *This table provides the results of the regressions for level of repurchase payout as specified in equation 2 and 3, but where the independent variable now is last year's CEO options holdings. Column (1) and (2) is for the whole sample, while column (3) and (4) is for the subsample of paying firms. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Repurchase Payout | (2) Repurchase Payout | (3) Repurchases Payout | (4) Repurchases Payout |
|---|---|---|---|---|
| CEO Options Last Year | -0.005 | -0.043 | -0.007 | -0.148** |
| | (-0.195) | (-1.545) | (-0.092) | (-2.467) |
| Leverage | -0.005* | -0.005** | -0.021 | -0.016* |
| | (-1.667) | (-2.420) | (-1.112) | (-2.019) |
| Free Cash Flow | -0.001 | -0.000 | -0.002 | 0.003 |
| | (-0.623) | (-0.099) | (-0.277) | (0.836) |
| Size | -0.000 | 0.000 | -0.002 | -0.000 |
| | (-0.284) | (1.603) | (-0.936) | (-0.565) |
| Market-to-book | -0.001** | -0.000 | -0.002* | -0.002* |
| | (-2.063) | (-1.645) | (-1.719) | (-1.990) |
| Intercept | 0.009 | -0.005 | 0.057 | 0.016 |
| | (0.407) | (-1.074) | (1.132) | (1.013) |
| *N* | 725 | 725 | 345 | 345 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |

**Appendix 19:** *This table provides the results of the regressions for level of dividend payout as specified in equation 2 and 3, but where the independent variable now is last year's CEO options holdings. Column (1) and (2) is for the whole sample, while column (3) and (4) is for the subsample of paying firms. The first number is the marginal effect, while the second entry (in parentheses) is the t-statistic of the marginal effect. Three stars, two stars, and one star indicates statistical significance at 1%, 5%, and 10%-level, respectively. All variables are presented in Appendix 1.*

| | (1) Dividend Payout | (2) Dividend Payout | (3) Dividend Payout | (4) Dividend Payout |
|---|---|---|---|---|
| CEO Options | 0.746 | 0.301 | 1.510 | 0.964 |
| Last Year | (1.406) | (0.626) | (1.408) | (1.521) |
| Leverage | -0.003 | -0.007 | -0.004 | -0.033 |
| | (-0.100) | (-0.499) | (-0.110) | (-1.014) |
| Free Cash Flow | 0.052* | 0.040** | 0.101* | 0.072*** |
| | (1.917) | (2.540) | (1.739) | (4.654) |
| Size | -0.026 | -0.005** | -0.053 | -0.010*** |
| | (-0.949) | (-2.169) | (-0.977) | (-3.172) |
| Market-to-book | -0.003 | -0.001 | -0.007 | -0.006 |
| | (-1.144) | (-0.681) | (-0.832) | (-1.608) |
| Intercept | 0.602 | 0.139** | 1.227 | 0.294*** |
| | (1.013) | (2.628) | (1.027) | (3.716) |
| *N* | 725 | 725 | 473 | 473 |
| Time Effects | *Yes* | *Yes* | *Yes* | *Yes* |
| Company Effects | *Yes* | *No* | *Yes* | *No* |
| Industry Effects | *No* | *Yes* | *No* | *Yes* |