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Superior Executive Incentives for Mergers and Acquisitions

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Preface

This thesis is written as the conclusion of the Master Program in Industrial Economics and Technology Management at the Norwegian University of Science and Technology (NTNU) during the spring of 2011. The authors have chosen to specialize in Financial Engineering and the theme of stock and option based incentive structures in M&A was therefore a suitable subject for the thesis. It has been an exciting learning experience for us to gain insight into the field of incentive structures and its impact on M&A decision making.

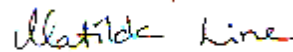
The report has been prepared in the different editors of the Microsoft Office 2010 suite. Numerical and graphical analysis has been performed primarily in Microsoft Excel. The regression analysis has been performed in the data analysis and statistical package framework, STATA. The data foundation for the thesis is primarily obtained from the Factset database and Dealogic Merger Database. The supporting literature is selected from the course syllabus for the Financial Engineering program as well as different acknowledged academic journals.

We would like to thank our supervisor, Associate Professor Einar Belsom at the Department of Industrial Economics and Technology Management, for his valuable advice and committed guidance. We would also like to thank Petter Ulset in the Boston Consulting Group and Ole Helliesen and Carl S. Sjölund in J.P. Morgan for helpful advice.

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Abstract

Using an event study approach on a sample of 72 acquisitions by Norwegian listed firms we study the effect of CEO stock and options based incentives on abnormal return and risk change associated with M&A activity. Our focus is on the bidder firms' pre-acquisition incentive structures and its effect on the abnormal return and risk change from the transaction.

The regression analysis we perform supports the hypothesis that cultural differences lead to different effects of equity based incentives in Norwegian compared to US firms. We find that CEO stock options decrease bidder shareholder returns in M&A, while CEO stock ownership has a non-significant negative influence. Both incentive structures have an insignificant impact on the CEOs' risk taking behavior. Accordingly, we cannot recommend that shareholders use stocks or options to reduce agency problems.

The thesis provides a platform on which shareholders in Norwegian firms can build their decisions regarding the optimal incentive contract for their CEO. However, our limited sample and the lack of supportive research for other markets outside the US, does not allow for generalizing our findings to markets outside Norway.

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1 Introduction

The last decades have seen a huge transformation in the M&A market. From the 1980s where M&A was largely a US phenomenon, Europe and the rest of the world embraced the trend as we entered the new millennium. Specifically, we have seen an explosion in the Norwegian M&A market from a total deal value of 1,1 mUSD in 1993 to a median value of 1143 mUSD in the period 2003-2009. The latter period also included the record year 2006, where the Statoil-Hydro merger contributed to a total deal value of 34 838 mUSD.

Low or negative bidder returns have been a worldwide issue since the birth of M&A, and researchers have labored to find explanations and solutions. Agency theory has been a popular choice to explain the motives of the CEO in M&A decision-making, but to the best of our knowledge, all research available on the field of agency theory in the M&A context focuses on US firms (Amland & Line, 2010). The shift in the M&A market has created a need for M&A research to broaden the perspective to other areas of the world than the US. Particularly in the area of CEO motives, where cultural differences are likely to cause significant differences, we see a need for more country specific research. We have chosen Norway as our country of focus both because of the great increase in M&A activity in recent years, but also because we expect that cultural differences will make Norway an interesting county to compare with the US. According to the Geert Hofstede Cultural Dimensions (2011), there are significant cultural differences between the two countries, particularly with regards to the masculine-feminine dimension, where the US is very masculine whereas Norway is one of the world's most feminine countries.

Our focus is to find the optimal incentive structure to minimize the agency problems between CEOs and shareholders in the decision to acquire another firm. In addition we have tried to discover cultural and regional differences between the US market and the Norwegian market in the light of M&A and CEO incentive structure. We have limited the scope of the thesis to concern the pre-acquisition incentive structures in bidder firms and we analyze the issue through consideration of two major areas in agency theory: value creation and risk taking. Agency theory predicts that any situation where the interests of the two parties diverge will lead to similar problems. We therefore believe that the recommendations for an optimal contract found in this thesis will reduce agency problems not only in the context of M&A, but for other investment decisions as well.

We have conducted a comprehensive literature review of US research, upon which we build our hypotheses. We then tested our hypotheses on a sample of 68 Norwegian public acquirers with a total of 72 transactions in the period between 1999 and 2009. We have used the event study methodology to gather information about the change in risk and return around the acquisition announcement, and have used annual reports to find data on incentive structures. We have analyzed the relationship between the variables we have found with a multivariate regression model. The methodology we have used is in line with the tradition in existent research; hence our main

contribution to the research area is our focus on another region than the US –Norway.

Based on the regression results we have not been able to establish a significant relationship between stock ownership, risk and return, but see a weak negative trend to both risk and return. This is in contradiction to what we hypothesized based on the US literature. Based on the reasoning that it is costly for shareholders to award stocks, our final recommendation is to refrain from rewarding shares to their CEO, as the effect of awarding them is uncertain. Stock options have a significant negative relationship to returns, and a non-significant impact on risk taking. Hence, we also recommend that shareholders refrain from awarding stock options to their CEO.

We do not find significant influence from long term incentive plans (LTIP) on abnormal returns and hence do not have a basis for giving clear recommendations with regards to this incentive mechanism. Size is only found to have a significantly negative impact on return and positively impact on risk through the sub-sample analysis for firms with stock ownership and stock options, respectively. Based on a sub-sample analysis of firms with stock options we find blockholders to be positively related to risk and can therefore conclude that shareholders that are active in designing incentive structures can expect reduced agency problems.

We have structured the thesis with Section 2 as an introductory section to the fields of M&A and agency theory and with a literature review in Section 3. Section 4 explains the methodology used in the thesis, while Section 5 presents the data on which we base our analysis. Section 6 presents the results of the regression analysis with a discussion of its implications in Section 7. At last, Section 8 is the conclusion of the thesis.

2 The Nature of Mergers and Acquisitions and the Reasoning behind Executive Compensation

2.1 Mergers and Acquisitions as Value Creators

Mergers, Acquisitions and M&A are used interchangeably to describe a transaction where two entities are combined, even though the terms actually have different meanings. A merger is defined as a transaction where two companies join together voluntarily and the merged company is commonly renamed to mark that the companies are equal. Acquisitions are traditionally perceived to be more hostile due to the fact that the bidder takes control over the target entirely. In practice, very few transactions are true mergers, but many acquisitions are masked as mergers to be perceived more positively by the target firm. However, we will not distinguish between mergers and acquisitions in this thesis, but rather follow in the footsteps of researchers before us that have studied the M&A as a unified concept.

2.1.1 Changes in the M&A market

According to Bodolica and Spraggon (2009) there have been six merger waves in the US market in the period 1897-2007, each characterized by different transaction trends. An overview of the characteristics of each merger wave can be seen in Figure 2.1. During the first wave (1897-1921), horizontal mergers dominated the scene and consolidated the market. The second wave (1922-1964) saw transactions that increased the vertical integration of merging companies. Conglomerate mergers characterized the third wave (1965-1969), but as many of these transactions failed, the fourth wave (1984-1989) took a turn towards higher specialization, hostile takeovers and leveraged buyouts (Holmstrom and Kaplan, 2001). In the fifth wave (1992-2001) acquisitions tended towards strategic deals and were dominated by the internet-bubble. The most striking features of the sixth wave (2004-2007) is the globalization of M&A, the record numbers of transactions and the size of the deals.

As the nature of the transactions has changed over the years, so has the geographic distribution. While the US accounted for about 80% of both the size and value of worldwide transactions in the beginning of the 1980s, it was down to 46% between 1997 and 2006. In the same period, Europe's market share rose from 10% to 30% (BCG, 2007). Norway also experienced a significant growth in its M&A activity in the period, with a rise in total deal value from 1,1 mUSD in 1993 to 6,8 mUSD in 1997 (Lovenskiold, 1998). As this change in the market composition is rather recent, most of the research on the M&A phenomenon has focused on the US.



Figure 2.1: Characteristics of the six merger waves. Source: Bodolica & Spraggon (2009).

2.1.2 Profitability of M&A

Throughout the waves, the abnormal returns have followed a relatively stable pattern. According to Loughran and Vijh (1997), researchers find three typical patterns regarding wealth gains from acquisitions: target shareholders earn significantly positive abnormal returns from all acquisitions, acquiring shareholders earn little or no abnormal returns from tender offers, and acquiring shareholders earn negative abnormal returns from mergers. An analysis by BCG (2007) of the worldwide cumulative abnormal returns (CAR) in the period 1996-2006 confirms this view. They find that the average acquirer CAR is -1,2%, while the average target CAR is 18,6%. For the combined sample the average CAR is 1,8%, showing that M&A create value on average, although it is at the expense of the acquirers. In the same study, BCG finds that there are regional differences between Europe and North America. While 47% of the deals in Europe created value for the bidding shareholders, only 38% did so in North America. However, still over 50% of the deals both in North America and Europe do not create value for the bidding shareholders. Scholtens and DeWik (2004) confirm the finding of higher returns for European than American bidders.

2.1.3 Motives for M&A

Different motives have been advanced in the literature aiming to explain the incessant occurrence of M&A in spite of the well-documented evidence of post-acquisition underperformance for bidding firms. Based on previous literature, Wright, Kroll, Lado and Van Ness (2002) presents four motives for M&A; the desire for synergies, the fact that acquirers can extract value because target companies have been managed inefficiently, managerial hubris, and anticipation that firm expansion will positively impact the compensation of top managers. The hubris hypotheses put forward by Roll (1986) predicts that bidding firms infected by hubris simply pay too much for their targets because they believe that their valuation of the firm is correct and that the market is wrong. While the two first motives are rooted in an attempt to create shareholder value, the last motives are based on the assumption that managers will exploit their position of power to pursue personal motives, rather than act on the behalf of the shareholders. This conflict between managers and shareholders is described by agency theory.

2.2 Executive Compensation in Light of Agency Theory

According to agency theory, an agency problem arises when two cooperating parties have different goals and the person delegating the work is different from the person performing the work (Eisenhardt, 1989). Agency theory aims to explain and resolve two problems related to an agency relationship. The first is the agency problem, stemming from the fact that the desires and goals of the cooperating parties are divergent and that it is difficult or expensive for the principal (the party that delegates the work) to monitor the actions of the agent (the party performing the work). The second is the problem of risk sharing that arises due to the agent being more risk averse than the principal. This difference in risk preferences can lead the agent to turn down positive NPV projects, that the principal would want them to take, if the agent deems the projects too risky. To solve these problems, agency theory focuses on the contract governing the relationship between the agent and the principal, and more specifically on the efficiency of behavior based contracts (salaries, hierarchies etc.) versus outcome-based contracts (stock options, market governance etc.).

The separation of ownership and control between the stockholders and managers in a corporation fits the definition of a pure agency relationship (Jensen and Meckling, 1976). The general assumption on CEOs being more risk averse than the shareholders is based on the reasoning that shareholders have access to a perfect market, where their unsystematic risk can be completely hedged. The CEO on the other hand, has all her human capital invested in the firm, without the ability to diversify her risk. To close this gap, agency theory proposes the use of incentive based contracts and governance structures (Eisenhardt, 1989). For a risk neutral CEO, the optimal contract is one that dictates a one-to-one relationship between company performance and CEO pay (Hall & Liebman, 1998). However, as CEOs are assumed to be risk averse, they would have to be compensated for the risk in such a contract. For a large firm facing annual standard deviations of several billion dollars, this contract would be extremely costly for the shareholders. As a consequence of this bonus schemes, stock based pay and other performance based remuneration are more popular.

Researchers have criticized the assumptions of CEO risk aversion and shareholder risk neutrality. Several find investors to be under diversified and therefore likely to care about firm specific risk (Barber and Odean, 2000; Benartzi, 2001; Goetzmann and Kumar, 2002). While others (Gervais, Heaton and Odean, 2003) argue that the overconfidence of some managers can lead them to be less risk averse than a fully rational manager would be. This prediction implies that an overconfident manager would require less economic incentives than generally assumed in agency theory, for her risk preferences to be aligned to those of the shareholders. The need for economic incentives would be further reduced if the shareholders' diversifications of their portfolios were suboptimal. Berle, Belsom and Strønen (2009) also argue that a reduction in the use of stock option contracts would be beneficial. They find that stock options are ill suited to align managers' and shareholders' interests, as managers rewarded with stock options have incentives to take excessive risk at a cost to the shareholders. Furthermore, Cheng and Warfield (2005) argue that equity incentives lead to incentives for earnings management.

Nevertheless, empirical studies show that outcome-based incentive contracts such as executive stock holdings (Agrawal and Mandelker, 1987) are effective in moderating agency problems. Monitoring of the CEO by the board of directors, debtholders, or institutional blockholders can also have an important impact on the economic performance of a firm and can be used to minimize agency problems (Fama and Jensen, 1983; Jensen, 1989). As it appears, the type of compensation offered to the executives is an important tool to resolve agency problems. The next section will give a more detailed view on the specific incentive effects of different forms of compensation.

2.2.1 The Effect of Different Stock Based Incentive Structures

The different incentive mechanisms presented here are stock ownership, stock options, equity based compensation and long-term incentive plans. Boards can use stock based compensation as an incentive to discourage managerial opportunism, promote shareholder-wealth-maximizing behavior, and achieve higher levels of firm performance (Jensen and Meckling, 1976). However, different types of stock based compensation will have different incentive effect on the receiving manager. The difference between the incentive effect of stock options and stock ownership can be understood by looking at how the value of the security changes with stock price in Figure 2.2. Stock ownership rewards the executive for creating shareholder value, but punishes the executive if the value of the stock declines, as the reward is directly related to the stock price. The theoretical incentive effect of stock ownership is thus twofold. On the one hand, stock ownership will tie the executive's incentives closer to the shareholders' and should therefore increase the risk taking behavior of the executive. On the other hand, the fact that the executive now has both her human capital and her financial wealth tied to the firm's performance could make her more risk-averse in her actions.

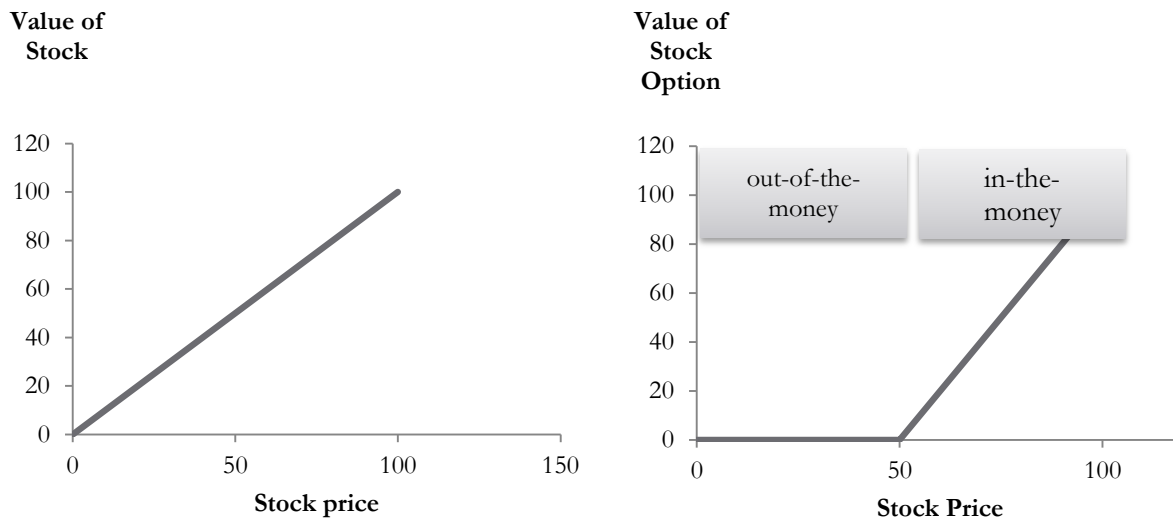


Figure 2.2: The value of stocks and stock options as the stock price changes.

As can be seen in Figure 2.2, an option that is out-of-the-money has a lower downside risk than a stock since the lowest value it can take is zero. Executives who hold out-of-the-money stock options will thus have a stronger incentive to increase their risk taking behavior than the executive who

holds stocks. However, the risk incentive of the option changes with the stock price. While a stock option that is out-of-the-money will have strong risk increasing properties, a deep in-the-money option will have the same risk incentives as a stock. Due to the varying risk incentives, the optimal level of option compensation is difficult to ascertain theoretically.

Several researchers use equity based compensation (EBC) as a group measure for stock option pay and stock grants. As seen in Figure 2.3, EBC captures the effect on managers of introducing stock based compensation into their incentive structure. However, the measure does not give insight into the difference in the incentive effects of stock options and stocks. Nor does it capture the incentive effect of the stocks or stock options that the CEOs themselves have purchased.

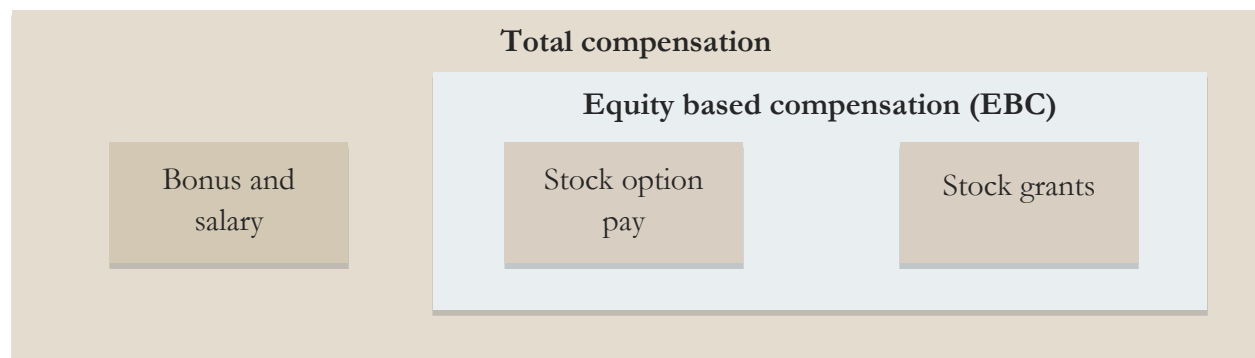


Figure 2.3: The relationship between total compensation and EBC.

Another incentive mechanism is the use of a Long-Term Incentive Plan (LTIP). This is an incentive contract between the board of directors and the CEO where the board of directors sets accounting performance targets for a period that is usually between 3 to 5 years, and the CEO is rewarded if these are met (Travolos and Waegelein, 1992). Another form of LTIP can be a stock based incentive scheme that has vesting periods of at least 3 years. LTIP can influence management to make decisions to maximize the firm's long-term earnings (Tehrainian et al., 1987). Short-term bonus plans, on the other hand, may motivate managers to select a transaction that yields positive effects on earnings and cash flows in the short-term, but negative effects in the long-term. This issue can be caused by board pressure for immediate book profits or by the manager's lack of concern for cash flows after retirement (Smith and Watts, 1982). Hence, LTIP seems to be well suited for the alignment of interests between managers and shareholders in the long run.

2.2.2 Development in Executive Compensation

As mentioned, the type of compensation offered to an executive can reduce the company's agency problems. It is therefore important to have an overview of the development in compensation contracts over the last couple of decades to understand the context of the studies we will look at later in the thesis. The market for M&A has changed over the years, and so have the trends in compensation. Looking at Figure 2.4, it is easy to see that while stock grants and stock option pay have been in use for several decades, it took off in the 1980s. Stock options reached a peak in the late 90's where stock option pay contributed to 37% of total CEO pay (Frydman & Saks, 2007).

Looking at the same sample, Anderson, Collins, Pizzigati and Shih (2010) find that CEO pay in 2009 is more than double of the CEO pay average for the 1990s and approximately eight times the CEO average for all the decades of the mid-20th century. Another example of the increase in the use of stock options can be seen in the pay-for-performance studies done by Jensen and Murhpy (1990) in the period 1969-1983 and Hall and Liebman (1998) in the period 1980-1994. The latter study finds a significantly higher pay-for-performance sensitivity than the former, and the authors believe the increase in stock option pay to be the reason for the divergence.

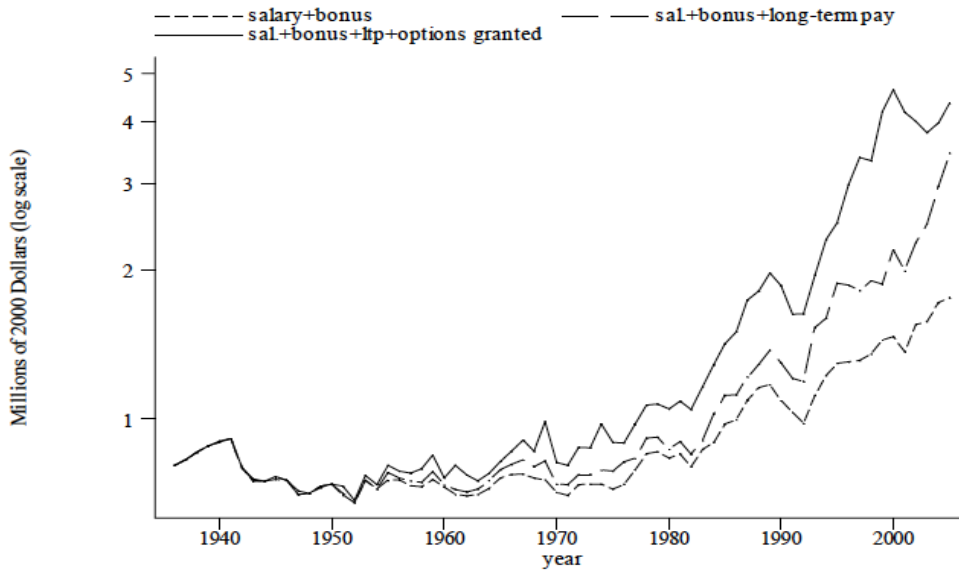


Figure 2.4: Development in executive pay in the period 1936 to 2005 for the 50 largest US firms in 1940, 1960 and 1980. Source: Frydman and Saks (2007).

Like the case for M&A, most studies on compensation have focused on the US. As our study will focus on Norwegian firms, we need an understanding of the differences between the two nations. A recent study compares CEO compensation across different countries. The study finds that the composition of pay differs greatly between the US and Norway. While Norwegian CEOs received 25% of their total compensation as bonus and 15% as stocks and options, US CEOs received 27% as bonus and 39% as stocks and options. (Fernandes, Ferriera, Methos & Murphy, 2010). The results are based on fiscal year compensation data for 2006 and the sample includes 90% of both countries' firms in terms of market capitalization.

3 Literature Review and Development of Hypotheses

The association between executive incentive structures and M&A has been studied since the early 1980's and most of the research focuses on how executive incentive structures influence risk taking and abnormal returns in M&A. These two themes are both suited to evaluate the alignment of goals between shareholders and CEOs, as emphasized by agency theory. Studies regarding risk taking and diversification show that effective use of incentive structures can contribute to align the actions of a risk averse CEO to the risk preferences of the firm's risk neutral shareholders. Furthermore, research on the impact of executive incentives on post-acquisition shareholder value demonstrates that incentive structures can increase the abnormal returns from an M&A transaction. CEO stock ownership and stock options appear to be the two most influential levers for affecting risk taking and abnormal returns in M&A by using executive incentive structures (Amland & Line, 2010). We have therefore chosen to focus on these mechanisms when we develop our hypotheses for our research on incentives in Norwegian M&A. Additionally, we see that the presence of blockholders and LTIP can be influential and we chose to include these as control variables for our study.

We have found relevant articles for the review by using the comprehensive review article on incentive structures in the M&A context by Bodolica and Spraggon (2009) as a starting point. They identify three main streams of research: studies on executive incentives of bidding firms in the pre-acquisition period, studies on executive incentives of target firms in the pre-acquisition period and studies on executive incentives of acquiring firms in the post-acquisition period. The focus in this study will be on the pre-acquisition incentive structure of bidding firms. The incentive structure of target firms and the incentives in the post-acquisition period is outside the scope of this study. In the review of pre-acquisition incentives in bidder firms, Bodolica and Spraggon (2009) consider the incentive effect on risk taking, abnormal returns and factors such as mode of payment and control premium. As our analysis will be based on agency theory, which main issues are connected to risk and maximization of shareholder value, the analysis will be focused on these two themes and exclude the incentive effect on mode of payment and control premium.

The literature review considers all of the empirical studies reviewed in the relevant section of Bodolica and Spraggon (2009). To ensure that we do not miss any articles that the former researchers may have omitted, we have also conducted through searches in the database BIBSYS as well as Google Scholar. Through these searches we have found some complimentary research that has been omitted (e.g. Sudarsanam & Huang, 2006) or published subsequent to their review (e.g. Yang, Unal & Minnik, 2010). With one exception (Shekar & Torbey, 2005), all the studies considered have based their sample on US firms. Although the current research gives us a solid basis of knowledge on the general relationship between CEO incentives and success in M&A, we can clearly conclude that there is a complete lack of studies that investigates this relationship in a Norwegian, Nordic or even European context.

3.1 Impact of Bidding Executive Compensation on Propensity to Acquire and Abnormal Return

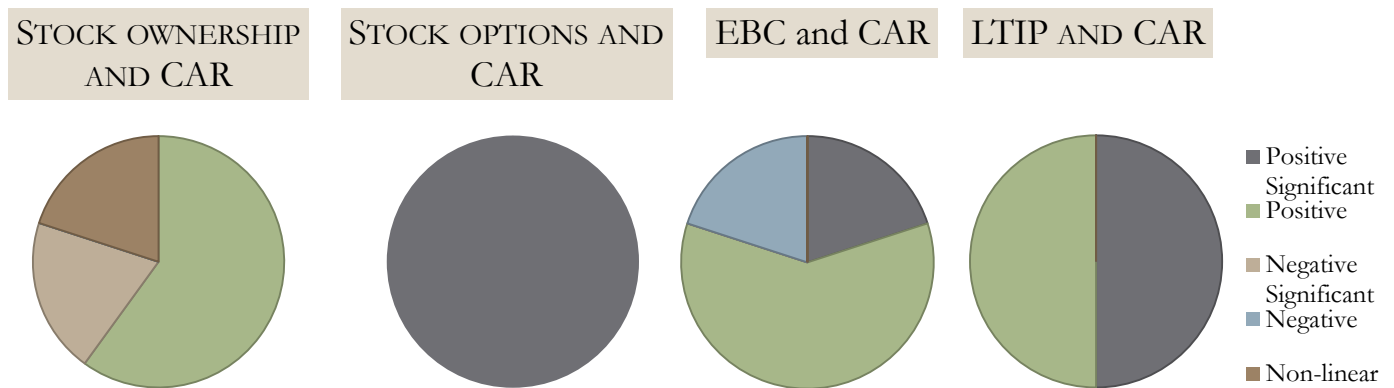
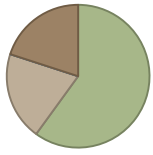


Figure 3.1: The collected research on the relationship between CEO incentive structures and CAR for bidding firms.

The relationship between different types of incentive contracts and abnormal returns in M&A transactions, gives a clear indication of how the different incentive structures contribute to alignment of goals between the principal and the agent. Some researchers that we consider in the literature review look at the propensity to acquire, rather than the return in the acquisition as a measure of their alignment between shareholders and CEOs. However, as CAR is the most widely used proxy for the alignment, we will primarily use this term in our discussion. We find that the relationship between stock ownership and CAR is the area of research where we find the most differentiated results in the collected research. As seen in Figure 3.1, the majority of researchers argue for a positive relationship, while others find non-linear and even negative relationships. For stock options on the other hand, the message is unanimous; stock options is positively related to abnormal returns. As mentioned, EBC combines stocks and stock options, and it is therefore not surprising that the research in this field provides somewhat diverging conclusions. Lastly, researchers on LTIP declare that they are, like stock options, positively related to abnormal returns. The following section will take a closer look at the different studies in each stream of research to try and find a summarizing conclusion and to form a basis for the hypothesis for our research on these relationships in Norwegian firms.

3.1.1 Stock Ownership is Non-Linearly related to Abnormal Returns



As seen in Figure 3.1, the majority of the research conducted on the effect of CEO stock ownership on abnormal returns from M&A indicates a positive relationship (Lewellen et al., 1985; Tehranian et al. 1987; Sanders, 2001). Lewellen et al.'s (1985) results suggest that substantial amounts of own-company share ownership help align the interests of stockholders and management. The reasoning is that the more stock they own, the more they stand to lose in the event of share price declines, and that this cost act as a counterweight to attempts to obtain other personal benefits through M&A. The study does not consider the potential trade-off the CEO will have to make between personal gains from risk reduction and stock related profits maximized by risk neutrality. Hence, it does not give a complete understanding of the incentive mechanism. A further weakness is found in the period for measurement of the abnormal returns. The CAR were measured from the time of the announcement of a merger bid through the stockholder approval date. This period was up to 286 days and this length of the measuring period will allow randomly generated unrelated news to influence the abnormal return measured.

Hanson and Song (1996) find a negative relationship, however this only applies for dual-class firms¹. This relationship is likely to be caused by the existence of shares with preferential voting rights, where they found a significantly negative relation between value of control and abnormal returns which is not transferable to single-class firms. When they control for single-class firms they also find a negative relationship between abnormal returns and stock ownership, but the sample size is too small for the results to be important. Hence, we do not weight these results heavily in our conclusions.

However, Wright et al. (2002) find results that unify the finding of both a positive and a negative relationship between stock ownership and abnormal returns. It seems that the positive relationship only applies when the amount of shareholdings constitutes a moderate portion of total CEO wealth. If the value of the shareholdings is larger than that the CEO is able to diversify some of the risk in his wealth portfolio, the relationship can turn negative. Figure 3.2 illustrates the non-linear relationship between stock ownership and the CAR from an acquisition that Wright et al. (2002) find in their research.

¹ Dual class firms have two types of shares with disparate voting rights with regards to control

CEO STOCK OWNERSHIP IS NON-LINEARLY RELATED TO CAR

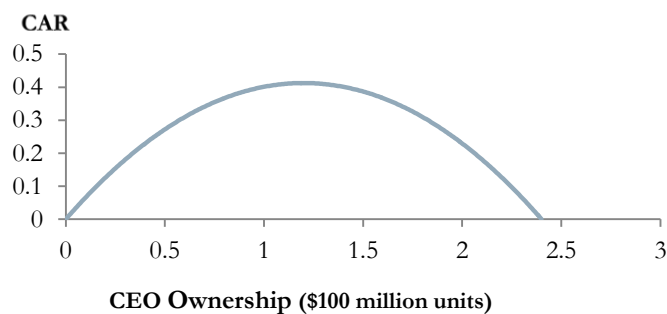


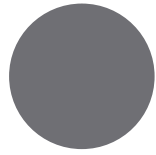
Figure 3.2: The non-linear relationship between CEO stock ownership and CAR. Source: Wright et al. (2002).

Based on this relationship, they introduce the idea that stock ownership is productive where managerial wealth portfolios are not concentrated in the enterprise. Our interpretation is that the different results of Lewellen et al. (1985) and Wright et al. (2002) can be explained by the fact that while the former study measures stock ownership by percentage of total shares, the latter measures the dollar value. Wright et al. (2002) argues that a dollar value measure gives a better indication of the ratio of the total wealth of the CEO that is invested in the firm, and thereby the level of diversification. Lewellen et al. (1985) probably fails to capture the non-linear relationship due to the inability of their measure of stock ownership to capture the level of diversification of the CEO wealth.

Based on this analysis, we conclude that the non-linear relationship seems to be the explanation that best explains the divergent results. This is in line with the findings in the risk focused stream of research, where a non-linear relationship also appears to be the cumulative finding. Consequently our hypothesis for stock ownership and abnormal returns is:

Hypothesis 1a: The relationship between CEO stock ownership and abnormal returns resulting from an acquisition announcement will be positive for low levels of stock ownership and negative for high levels of stock ownership

3.1.2 Stock Options are positively related to Abnormal Returns



Stock option holdings provide a greater risk increasing incentive for CEOs than stock ownership, and are also associated with higher abnormal returns. In the studies that focus on stock options as an incentive mechanism there is absolute agreement that stock option pay is significantly positively related to abnormal returns (Sanders, 2001; Wright et al., 2002; Williams and Rao, 2006) as shown in Figure 3.1. Hence, stock option pay seems to be effective for increasing shareholder returns.

Wright et al. (2002) find option values to promote corporate risk taking and enhance the abnormal returns of acquiring firms. They show that the CEO option holding variable is positive and significantly related to CAR, while the squared value of the same variable is insignificantly related to CAR. Rather than using percentage of ownership, they have used the actual values of shareholdings and/or options, because one percent of a \$100 billion firm is most likely a greater portion of a manager's wealth than one percent of a \$100 million enterprise.

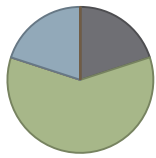
Sanders (2001) discuss the use of stock options in the light of divestiture activity. He believes option pay may serve as a useful tool for persuading executives to engage in more risk taking behavior than they would otherwise be willing to and hence act in line with the shareholders' interests. He finds a significant positive relationship between return on assets and CEO option pay.

Williams and Rao (2006) document a significant positive relationship between CEO stock options and subsequent equity return volatility. Their results support the notion that stock options are an effective means of motivating managers to increase their risk taking behavior. However, they find a considerable size effect to their results, were the risk incentive effect of stock options is larger for smaller firms. This emphasizes the importance of controlling for size. Williams, Michael and Rao (2008) did an additional study for the banking industry confirming results. In accordance with Wright et al. (2002), they also find a positive relation between stock options and abnormal returns.

The wide agreement seen in this line of research makes it easy to hypothesize that:

Hypothesis 1b: The relationship between CEO stock option holdings and abnormal returns resulting from an acquisition announcement will be linear and positive

3.1.3 Equity Based Compensation (EBC) is positively related to Abnormal Returns



As seen in Figure 3.1, the majority of the research finds that EBC is positively related to abnormal returns (Bliss and Rosen, 2001; Datta et al., 2001; Travolos and Waegelien, 1992; Yang et al., 2010). However, Swanstrom et al. (2006) diverge from the consensus and find a negative relationship.

Datta et al. (2001) and Yang et al. (2010) both find that high EBC is more effective in creating positive abnormal returns than low EBC. Datta et al.'s (2001) study 1,719 acquisitions in the period from 1993-1998, and we find their strong results with regards to sample size and consistency with previous articles. However, the testing was done in the time period leading up to the internet bubble which was characterized by explosive growth of stock option-based executive pay and an active market for corporate takeovers, which could exaggerate the results.

Supporting the notion that EBC increase shareholder value, Bliss and Rosen (2001) find that CEOs with more stock-based compensation were less likely to make an acquisition, and conclude that the CEO is accordingly less likely to reduce shareholder wealth. The study considers bank mergers and finds that recent mergers generally do not improve relative operating performance or produce positive abnormal returns to acquiring bank shareholders, and therefore that refraining from an acquisition is the shareholder value maximizing strategy.

Swanstrom (2006) is the only study that suggests that EBC has a negative relationship to abnormal returns, but when looking at the CEO wealth sensitivity, he finds a positive relationship to abnormal returns. This is supportive of the use of EBC in achieving positive abnormal returns as the sensitivity of CEO wealth to changes in stock price is related to the use of EBC. He finds the negative relationship between EBC and abnormal returns surprising and proposes that the change in tax law in 1993 (his sample was from 1994 through 1998) where salary and bonus deductibility got capped at 1 million dollar as an explanation for this result. Hence, the negative relationship does not seem to be generalizable to other periods of time.

The problem of using EBC instead of considering stock options and stock ownership separately is clearly illustrated in Figure 3.3. Instead of the clear picture of stock options as positively related to abnormal returns, the results from the EBC research would give imprecise conclusions on the relationship of both stock options and stocks with abnormal returns. We will therefore not use EBC in our research, but rather use separate measures for stocks and stock options.

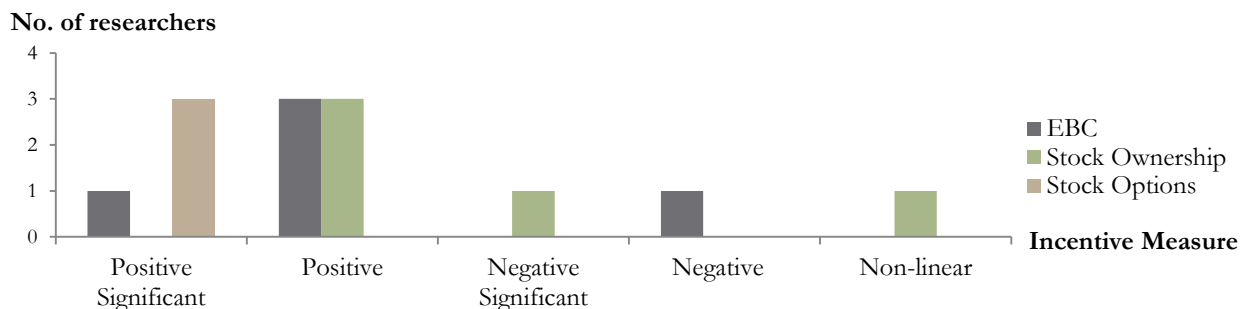
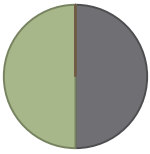


Figure 3.3: Comparison of the incentive effect of EBC, stock ownership and stock options on abnormal returns.

3.1.4 Long-Term Incentive Plans increase Abnormal Returns through Long-Term Alignment of Goals



Based on the research by Tehranian et al. (1987) and Travolos and Waegelein (1992), there does not seem to be a downside to implementing LTIP in the executive compensation. Accordingly, we believe that LTIP will be positively related to abnormal returns for acquisitions in Norway as well.

Tehranian, Travolos and Waegelain (1987) investigate the relation between LTIP and merger related abnormal returns and find evidence that bidding firms with LTIP experience a significantly more favorable stock market reaction at the announcement of acquisition proposals relative to firms without these plans. They thereby show that LTIP contribute to alignment of interests between executives and shareholders. In light of the findings of Lewellen et al. (1985), the study looks at managers' stock ownership as a control variable, and the results hold even when controlling for this. Tehranian et al. (1987) propose that LTIP might be better suited to solve agency problems than short-term incentive structures as LTIP solve the horizon problem described by Jensen and Smith's (1985).

Travlos and Waegelein (1992) support the result that firms with LTIP experience significantly higher abnormal returns at the announcement of mergers. Based on a correlation test, they find that firms with lower percentages of managerial stock ownership adopt LTIP to better align the interests of stockholders and managers. This is consistent with Tehranian et al.'s (1987) findings, but on further investigation they find that this does not hold when they look at the dollar value of stock ownership instead of percentages. As Travlos and Waegelein (1992) have not done a similar comparison, it is uncertain whether these results would also be insignificant if the percentage was replaced by the value of the stock holdings. It is apparent that LTIP are related to higher CAR, but as the form of LTIP vary greatly from one firm to another, we find it difficult to include specific information about LTIP in our research. We have therefore chosen to include LTIP as a control variable, rather than to develop specific hypotheses for this measure.

3.2 Impact of Bidding Executive Incentive Structures on Risk Taking and Diversification

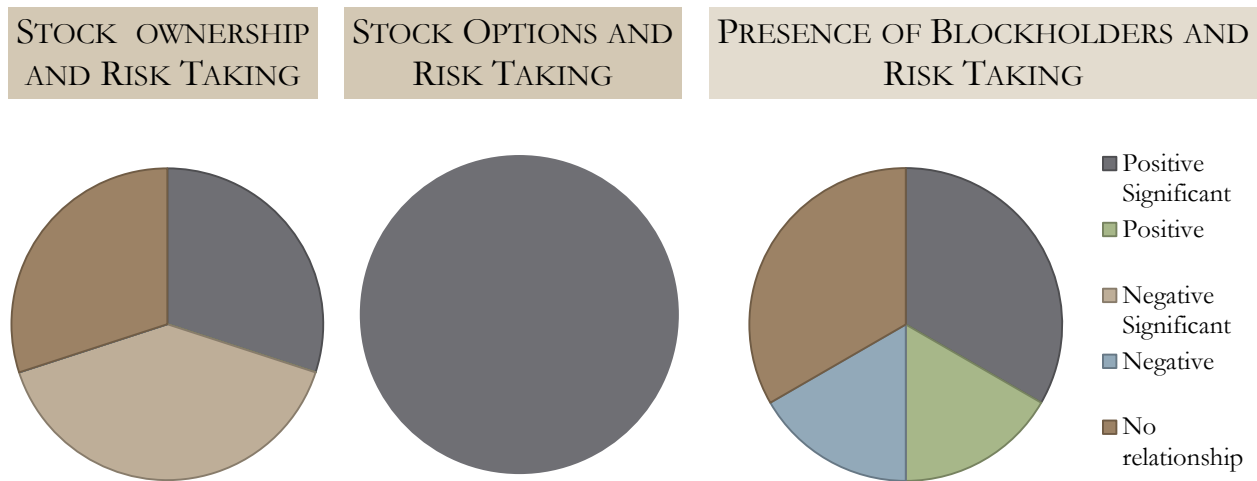


Figure 3.4: Summarized results from the collective research on the relationship between CEO incentive structures and risk taking.

The collective research up to the present time point to three main factors that affect the risk taking of managers: stock ownership, stock option holdings and degree of monitoring by blockholders. We find that the two stock based incentive structures are more important from a shareholder point of view, as these two factors can be controlled by the board, while the presence of blockholders cannot. Blockholders is therefore more of a factor to take into consideration when deciding on the level to award of the other two forms of incentives. We also find that the collective research lacks studies that give concrete advice to shareholders on how to construct an optimal compensation plan.

In Figure 3.4 we summarize the findings of the articles considered in this section of the literature review, separated into the three main incentive structures studied. In the following review we will look at the three main factors affecting risk taking separately to best assess the strengths and weaknesses of the research on each factor. Conclusively we will form a hypothesis for the relationship between each factor and risk taking in M&A for Norwegian firms.

We find that the main weakness in the risk focused stream of research is that there are almost as many measures for risk used, as there are researchers. Most studies in the 20th century have used diversification as a measure for decrease in risk taking, while most studies in the 21st century studies risk taking directly. To further complicate the matter, there are countless methods for measuring diversification. One commonly used measure is to compare the SIC-codes of the bidder and the target to establish if they operate in the same area of business. This method has a severe weakness in that SIC-codes are not consistent in reporting the similarity of business areas. This means that the categorization of diversifying vs. non-diversifying acquisitions can be flawed.

3.2.1 Stock Ownership is Non-Linearly related to CEO Risk Taking



In the research concerning the relationship between stock ownership and risk taking in M&A, Figure 3.4 shows us that there is an almost even number of articles that find a negative relationship (May, 1995; Shekar and Torbey, 1995; Sanders, 2001; Sudarsanam & Huang, 2006) and that find a positive relationship (Agrawal and Mandelker, 1987; Saunders et al., 1990; Denis et al. (1997). Additionally there are two articles that do not find the variables to be significantly correlated (Lewellen et al., 1989; Servaes, 1996).

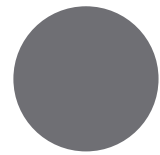
Within the branch that argues for a negative relationship May (1995) studies managers' desire for pursuing risk reduction and finds a significant negative relation between the ratio of CEO wealth vested in the firm and the level of risk taking sought in an acquisition. This is in line with the reasoning that CEOs with more non-diversifiable wealth in the firm will have stronger incentives to reduce firm risk. While this is in opposition to the conclusions drawn by Agrawal and Mandelker (1987), who find a significant positive relationship between the security holdings of managers and risk increasing acquisition decisions, the divergence can probably be partly explained by the different measures for CEO wealth vested in the firm used by the two studies. While Agrawal and Mandelker (1987) look at the ratio of equity holdings to total annual compensation, May (1995) studies the ratio of equity holdings to a proxy for the lifetime cash compensation accumulated by the CEO. This difference means that the same CEO will appear to have a larger ratio of her wealth in firm equity in the first study than in the latter. We believe this to be indicative of a relationship where managerial stock holdings increase risk-taking behavior if the ratio of CEO wealth vested in the firm is low, but decrease it when the ratio is high. This relationship would be in line with agency theory's prediction of two opposing effects of stock ownership on risk; increased diversification and value maximization. In light of this theoretical prediction, the divergent results from this stream of research can be interpreted as a result of a tradeoff made by the CEO. Our conjecture is thus that the effect of stock ownership on CEO risk taking is non-linear and dependent on the level of diversification of her wealth.

The other studies in this stream of research do not consider the effect of the ratio of CEO wealth invested in the firm, and thus give no further insight as to the level of diversification of the CEOs' personal wealth portfolio and their desire to diversify their portfolios. The relationship we outline in the previous paragraph is therefore neither strengthened nor weakened by these studies. However, Servaes (1996) show that the relationship between stock ownership and diversification varies with the diversification trends at the time. He finds that managers who have a high level of ownership are found to diversify only in the 1960's when diversification was not associated with a loss to the shareholders, while managers who do not have ownership in the firm will do so even in the 1970's when there was a shareholder cost. Lewellen, Loderer and Rosenfeld (1989) on the other hand find that stockholdings of managers have an almost insignificant impact on intensifying risk reducing mergers and that most mergers are risk increasing.

Based on the theoretical prediction in agency theory mentioned above and the conflicting results of previous studies, we reason that a non-linear relationship will most likely be the best explanation for the relationship between stock ownership and risk taking. This reasoning is further strengthened by the results of Wright et al. (2002), who find a non-linear relationship between stock ownership and risk taking in M&A. Our hypothesis is thus:

Hypothesis 2a: The relationship between CEO stock ownership and risk taking resulting from an acquisition decision will be positive non-linear

3.2.2 Stock Options increase CEO Risk Taking



The relationship between stock options and risk taking in M&A is unanimously found to be positive in the research considered (Sanders, 2001; Sanders & Hambrick, 2007; Sudarsanam & Huang, 2006). Focusing on the risk asymmetry between stock options and stock ownership of CEOs, Sanders (2001) finds a positive association between CEO stock option pay and firm acquisition activity, as opposed to the negative relation he finds for stock ownership. Sanders and Hambrick (2007) support the conclusion of a positive relation between stock option pay and firm acquisition activity. They also conclude that the high-variance investments undertaken by the firms with stock option pay, lead to more extreme gains and losses for them than for their competitors. The most controversial finding of Sanders and Hambrick (2007) is that the losses are generally larger than the gains, resulting in a net loss of the stock option policy. However, the authors do not conclude that stock options should be avoided; rather they advise that it should be used in moderation (20-50% of total CEO compensation) as this level is shown to increase risk taking without inducing big losses.

Sudarsanam and Huang (2006) find results that support Sanders' (2001) conclusion on both stock ownership and stock option pay. Their study focuses on two measures of managerial incentives: the sensitivity of the managers' wealth to stock return volatility (Vega) and the sensitivity of managers' wealth to stock price change (Delta). While increase in Vega is associated with increase in firm risk, increase in Delta is associated with a decrease in firm risk. With the additional information that restricted stock grants are solely related to Delta, while stock option compensation is related to both Delta and Vega, this shows that stock option compensation increases risk taking behavior more than stock grants.

Even though the risk increasing effect of stock options can be useful to counter a CEO's risk averse behavior, both Sanders (2001) and Sanders and Hambrick (2007) point out that the CEOs risk taking can easily become excessive, leading to decreased shareholder returns. It is therefore important to moderate the level of stock option compensation.

We can see from our analysis of the existing research that the relationship between stock options and risk taking is more clear-cut than the relationship between stock ownership and risk taking. This is also in line with the prediction in agency theory and the findings in abnormal returns. However, looking at the valuation formula for options by Black and Scholes (1973) it is clear that the option

value's sensitivity to changes in volatility changes with the price of the underlying asset. As we can see in Figure 3.5, the risk sensitivity of the option price is at its peak right when the asset price is just below the strike price. As the asset prices drops below or rises above the strike price, the option price sensitivity to risk decreases.

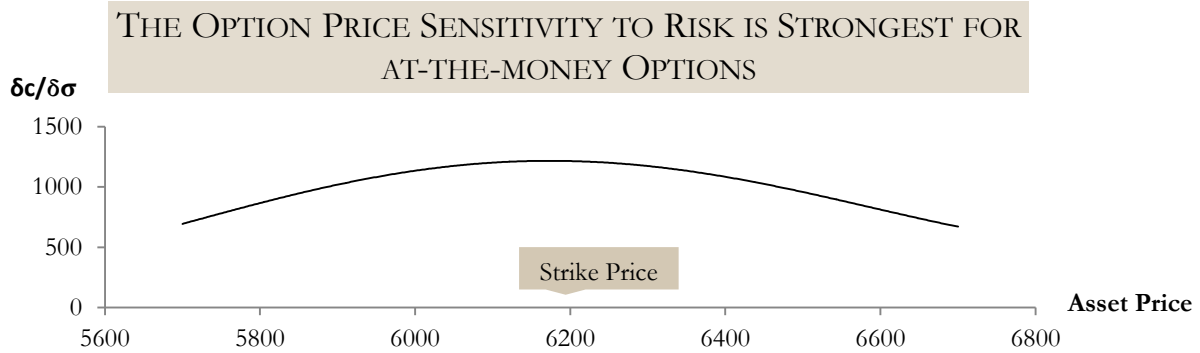


Figure 3.5: The relationship between asset price and the option price sensitivity to risk ($\delta c / \delta \sigma$) as given by the Black-Scholes Pricing Model.

If we assume that a typical CEO has a utility function that is proportional to the total value of the stock options she holds, the changing option price sensitivity means that for two CEOs holding the same monetary value of stock options, the CEO whose underlying asset is closest to the option strike price, will have the strongest risk increasing incentives. This relationship is illustrated in Figure 3.6.

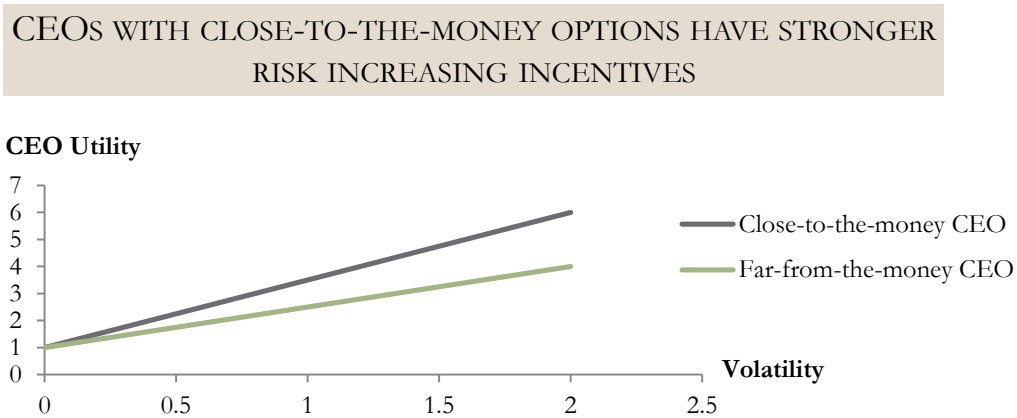


Figure 3.6: The relationship between the volatility of the underlying asset and utility of holding options.

As a consequence of the unequal strength of the risk increasing incentive of options, we find that the relationship between the value of stock options held and the risk change in a transaction is unlikely to be strictly linear, even though this seems to be the consensus in most of the previous research. As we cannot find a plausible suggestion for the type of relationship between the stock options held and the risk taken, we will use an open hypothesis and rely on our data to find the most likely relationship between the variables.

Hypothesis 2b: The relationship between CEO stock options and risk taking resulting from an acquisition decision will be positive

3.2.3 The Presence of Blockholders has a Monitoring Effect on CEO Risk Taking



As seen in Figure 3.4, the majority of the research that find a relationship between the presence of blockholders and risk taking in M&A, establishes a positive correlation (Amihud & Lev, 1981; Lloyd et al., 1987; Denis et al., 1997). However, there are researchers that claim the opposite and argue for a negative relationship (Andersen et al., 2000) and others again that report that there is no relationship between the variables (Lane et al., 1998 and Shekar and Torbey, 2005).

A widely cited study by Amihud and Lev (1981) sets the benchmark for other studies on the relationship between blockholders and risk taking in M&A. They find the presence of large blockholders to be a limiting factor for the diversification of managers, and interpret the results to mean that blockholders constrain the CEOs ability to pursue their private agenda of risk reduction. They find significant support for their hypothesis that managers in owner-controlled firms will engage in less risk reducing activities, such as conglomerate mergers, than managers in manager-controlled firms². Lloyd et al. (1987) confirm Amihud and Lev's (1981) conclusion that large blockholders have a monitoring effect on managers' risk reduction activity, using a similar sample and method. These two studies thus argue for a significant positive relationship between blockholders and risk taking.

Amihud and Lev (1981) was sharply criticized by Lane, Cannella and Lubatkin (1998) for the use of agency theory to make predictions about managers' choice of diversification strategies. The disagreement between the two camps is basically one of method, as Lane et al. (1998) are able to reproduce the findings of the research they attack when using the methods of Amihud and Lev (1981). However, when they use strategic management theory³, as opposed to the financial economics perspective offered by agency theory, Lane et al. (1998) find that ownership structure will have little or no association with corporate diversification strategy. As it is clear that the method used will affect the results, we find that Lane et al.'s (1998) criticism draw attention to the fact that this is a field that requires a broader perspective to be completely understood.

Research by Denis, Denis and Sarin (1997), Anderson et al. (2000) and Shekar and Torbey (2005) provide us with a broader perspective by considering several factors, as opposed to a selective focus on ownership structure, in the analysis on risk taking in M&A. The three studies all agree that equity based incentives is a factor worth considering in addition to ownership structure.

Denis et al. (1997) provide confirmation of the positive relationship found by Amihud and Lev (1981) and Lloyd et al. (1987). The additional contribution of this study is that it separates the monitoring effect of large blockholders from the incentive effect of the stockholdings of the

² Manager-controlled here refers to firms where no stockholder owns more than 10% of the total shares; owner-controlled firms have single stockholders with more than 30% of the shares while weak owner control applies to firms where the largest stockholder holds 10-30% of the total shares. There is no differentiation made between managers, directors or outside shareholders.

³ Lane et al. (1998) point out that strategic management theory has the difference among individual firms as it's area of focus, while financial economists dismiss this field with simplifying assumptions.

manager and thereby provides a more detailed view of the effects involved. The authors find both factors to be positively correlated to risk taking. These results differ from Shekar and Torbey's (2005) conclusions of a significant negative relationship between managers' shareholdings and risk taking, and no significant relationship of blockholders on risk taking. These differences are likely to be explained by the fact that the latter study uses a sample of Australian firms, while all other research is based on US firms. Board size is one example of a governance structure that is different in the two countries. In Australia the average board size is 9, versus an average of 12 in the US (Baxt, Ramsay and Stapledon, 2002). There is evidence for smaller boards having a stronger monitoring effect than larger (Hermalin and Weisbach, 2000). This can imply that, as a small board is already strong, the extra monitoring effect of blockholders on a smaller board can be less significant than on a larger board. The smaller board size in Australia can therefore be an explanation for the lack of relationship between blockholders and diversification in Shekar and Torbey's (2005) study. The divergence with respect to managerial ownership is not surprising given the results we found in the section dedicated to this field of research.

Anderson, Bates, Bizjak and Lemmon (2000) are in opposition to the previously discussed studies in that they find a negative relation between blockholders and risk taking. They argue that several factors need to be considered to understand the difference between diversifying and non-diversifying firms and find that diversified firms use more outside directors (blockholders) and have higher rates of management turnover, while firms that decrease their level of diversification have higher equity based compensation and lower insider ownership. In relation to these results it is worth noting that in their sample they find that equity-based pay constitutes an average of 46.7% and median 54.3% of total compensation. Due to the explosion in use of stock options in the 1980s, this is likely to be significantly higher than in the firms in the samples in the 1960's and 70's (Amihud & Lev (1981); Lloyd et al. (1987)) and can therefore provide a timeline explanation for why performance pay now seems like an important indicator for risk taking in addition to ownership structure.

We can conclude that the majority of research finds that the presence of blockholders to be a factor that is positively associated with risk taking. However, this effect was primarily studied in the diversification era of M&A during the 1960's and 1970's, while later studies have turned their attention to stock based incentives. As it appears that the presence of blockholders has become a less important factor influencing CEO risk taking in later years, we do not consider it as important as the stock based incentives. Additionally, the presence of blockholders is not something which the board can decide to have or not, and is therefore not possible to use as a tool for risk management. Nevertheless, the presence of blockholders is likely to influence the risk taking of the CEO and as risk taking and return is closely linked, it is likely to influence return as well. As this is a variable that shareholders cannot control, we will include it as a control variable rather than forming a specific hypothesis.

4 Methodology

4.1 The Event Study Approach

The event study has become the standard method in finance for measuring security price reaction to an announcement or event (Binder, 1998) and we will use this method both to measure the risk change and the abnormal returns stemming from a merger. MacKinlay (1997) presents a review and summary of the event study method where he presents the method divided into eight steps as presented in Figure 4.1. The different steps and specifications are discussed below.

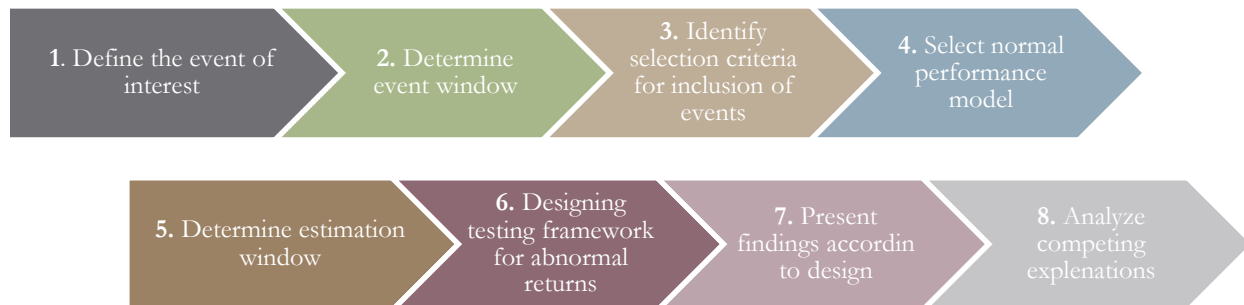


Figure 4.1: The eight steps in an event study.

- 1 The first step is to define the event of interest. In this study the event will be the announcement dates of the M&A in our sample.



Figure 4.2: The Event Periods T_0 - T_3 .

- 2 The second step is to identify the period over which the security prices will be examined (T_1 to T_2), defined as the event window (Figure 4.2). Two factors are important when choosing an event window. Firstly, the length of the window must be long enough to capture the market reaction, but short enough to minimize the effects of unrelated news on the share price. Secondly, the period over which the event is measured should not overlap with the estimation window for normal returns. To establish a point of reference for choosing the event window, we analyzed the event windows used in the studies considered in the literature review. The findings of this analysis are illustrated in Figure 4.3. Based on this analysis, we have chosen an event window that begins prior to the announcement date, to ensure that we capture the effect of any leakages, and that considers an equal number of days after the announcement. Initially, we chose the number of days for our event window based on an average of the studies we have reviewed (4 days prior the event to 4 days past the event), and then we adjusted it through trial and error to find the window with the strongest

results. Our final event window for CAR is the period 15 days prior to the event through 15 days past the event.

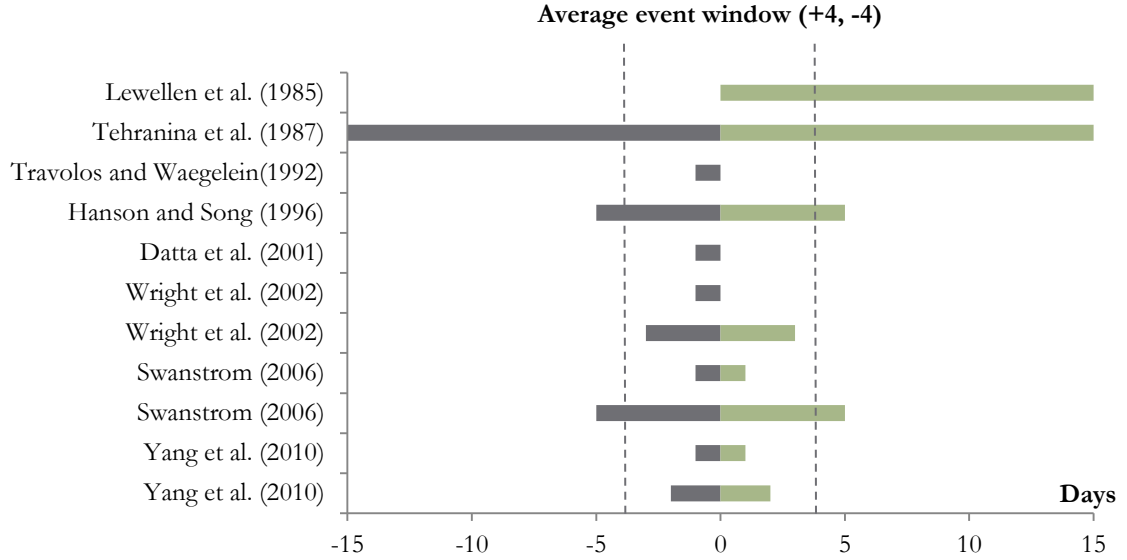


Figure 4.3: Overview of event windows from reviewed literature.

- 3 Next we will determine the selection criteria for the inclusion of a given firm in the study. This is described in detail in Section 5.
- 4 To be able to calculate CAR and volatility, it is necessary to model the normal performance. We have used the market model for this purpose

$$r_{ij} = \alpha_j + \beta_j r_{mi} + \varepsilon_{ij}$$

where r_{ij} is the return of firm j for day i and r_{mi} is the return of the Oslo Benchmark Index (OBX) for day i . To ensure consistency, we will use the same market index and β_j in the CAR calculations and the estimation of firm specific variance. Through the marked model we separate the portion of the daily return that can be explained from market returns ($\alpha_j + \beta_j r_{mi}$) from the firm-specific return ε_{ij} .

- 5 We will use the pre- and post-event windows to estimate the normal performance of each firm's stock. For the pre-event estimation window, we choose the period stretching from 150 to 50 days prior to the announcement date, and for the post-event estimation window we chose the period stretching from 50 to 150 days after the event. This window is chosen so that we will be far enough away from the actual event to avoid including the event-specific increase in return or volatility. We also wanted to ensure that we did not include periods that were too distant from the event to avoid other unpredictable disturbances. We

use the pre-event estimation window to calculate estimated values for α and β , which we then use to calculate our firm-specific returns.

To find the CAR of the event, we use the firm-specific return, ϵ_{ij} . The CAR is the sum of the firm-specific return terms over the event window.

$$CAR_j = \sum_{i=\tau_1}^{\tau_2} \epsilon_{ij}$$

To find an estimate for the change in firm specific risk we will estimate the annualized firm-specific volatility in the post-event window, and compare this to the annualized volatility in the pre-event window. For n trading periods, 100 days, with firm-specific returns $\epsilon_{j,t-1}, \dots, \epsilon_{j,t-n}$, whose average is $\bar{\epsilon}_j$, we will use the formula for realized volatility to calculate the sample standard deviation

$$s_j = \sqrt{\frac{1}{n} \sum_{i=1}^n (\epsilon_{ij} - \bar{\epsilon}_j)^2}$$

as an estimate for the standard deviation for the firm-specific return for firm j in the trading period considered. The annualized firm-specific volatility can be computed as $s_j \sqrt{N}$ where N denotes the number of trading periods in one year (Taylor, 2007) and is defined here as 252 days.

6

Further, we designed the testing framework for our hypotheses. We have constructed a multivariate regression model and tested it in the data analysis and statistical package framework, STATA. The first testing was done on the complete sample of 72 transactions, but we have also tested subsamples of the dataset. The sub-samples were divided into firms with stock option, firms with stock ownership, firms with both stock ownership and stock options and firms that do not have either. Stepwise regression was used to eliminate variables that had no significant impact on the dependent variables. Details of the regression is discussed in Section 4.3.

7

The last two steps consist of presenting the empirical results and diagnostics, and to analyze competing explanations. This will be discussed further in Section 6 and 7 where we present

8

our results and analyze the findings.

4.2 Hypothesis Testing

4.2.1 Definition of Variables

Dependent Variables

Our dependent variables are the change in risk and return as a consequence of the merger deal. Both changes will be measured using the previously described event study methodology. As a proxy for the change in risk, we will use the difference between the annualized volatility of the stock before the merger and the annualized volatility of the stock after the merger. In addition we will look at the squared difference to capture the absolute change in risk and not just the direction. We also tested a ratio measure for risk, calculated as the ratio of the post-event volatility to the pre-event volatility, but as this gave insignificant results in the regression analysis, we have excluded it from further analysis. As a proxy for the abnormal return of the acquisition we will use the CAR-value measured on our chosen event window (+15, -15 days).

*CAR_{*i*}*: Sum of abnormal returns for firm *i* over the event window.

*Vol_{*i*}*: Difference between the volatility over the post-event estimation window and the volatility over the pre-event estimation window for firm *i*.

*VolSquared_{*i*}*: Squared difference between the volatility over the post-event estimation window and the volatility over the pre-event estimation window for firm *i*.

Independent Variables

We have chosen to look at the different elements of the CEO incentive structure as our independent variables. Our review of the existent literature has made it clear that stock ownership and stock option holdings are the two most important factors that influence risk taking and abnormal returns in M&A. As previously argued, we will look at the two types of stock based incentives separately. We will not differentiate between stocks that are granted and stocks that the CEO has purchased himself. May (1995) suggests that the ratio of the stock based compensation to the total compensation is more important as a determinant for successful M&A than the value of the stock based incentives themselves. We will therefore consider both a measure of the ratio to CEO total compensation and a value measure for stock ownership and stock option holdings measured in NOK. The total compensation includes pensions, bonus and other remuneration, but does not include stock based pay. Additionally, as we expect a non-linear relationship to provide the best explanation for the relationship between stock ownership and risk taking and abnormal returns, we will include the square of both the ratio and value of stock ownership. We will also include a squared measure for the stock option holdings, as our theoretical reasoning has shown that this relationship can be non-linear as well. The list of our independent variables is as follows:

*VolS_{*i*}*: The total value of the own company stocks owned or controlled by the CEO of company *i*.

*RoS_{*i*}*: The ratio of stocks owned or controlled by the CEO of company *i* to her total compensation.

*VolSO_{*i*}*: The total value of the stock options held by the CEO of company *i*.

$R_{\Delta SO}_i$: The ratio of stock options held by the CEO of company i to her total compensation.

$V_{\Delta S}_i^2$: The squared total value of the stocks owned or controlled by the CEO of company i .

$R_{\Delta S}_i^2$: The squared ratio of stocks owned or controlled by the CEO of company i to her total compensation.

$V_{\Delta SO}_i^2$: The squared total value of the stock options held by the CEO of company i .

$R_{\Delta SO}_i^2$: The squared ratio of stock options held by the CEO of company i to her total compensation.

All values are taken from the end of year in the year of the M&A announcement and are measured in NOK.

We have valued the stock ownership of the CEO based on the number of shares owned by the CEO listed in the annual report for the year of the acquisition. We have then used the end-of-year share price to calculate the value of the shares owned. The number of options held, the time to maturity and strike price were found in the annual reports. We have found the value of the options by use of the Black-Scholes model. When the risk free rate was not given we have used Norwegian Bonds with time to maturity of 10 years for the year of the announcement. We have used the end-of-year share price as the input share price in the model and have assumed all options to be European. Volatility is measured as annual volatility for the year of the announcement, estimated from the pre-event window as described in Section 4.1.

Control Variables

Through our review of the literature, it has become clear that LTIP and the presence of blockholders are variables that will contribute to further insight into the relationship between stock-based incentives and the return and risk change from an acquisition. However, difficulty of measuring for LTIP and difficulty of controlling the level of blockholders lead us to include them as control variables rather than independent variables. We will measure the presence of blockholders by finding the average ownership percentage for the three largest shareholders. We have used the end-of-year ownership percentages listed in the annual reports. LTIP will be measured using a dummy variable, which is 1 if there is an incentive contract (stocks, options or bonuses) that has a perspective of at least 3 years at the time of the acquisition, and 0 otherwise. The information on incentive contracts are from in the annual reports.

Additionally, the reviewed research suggests that firm size has an impact on acquisition outcomes and on compensation. There is widespread use of firm size as a control variable when studying the relationship between the two (Tehrani et al. 1987; Datta et al. 2001; Wright et al., 2002; Bliss and Rosen, 2001; Williams and Rao, 2006; Denis et al., 1997; Sanders & Hambrick, 2007; Sudarsanam and Huang, 2006). Bajaj and Vih (1995) show that the market reaction to corporate announcements is larger for small firms since there is little information produced for such stocks during non-announcement periods. Sudarsanam and Huang (2006) find it to affect investment levels and

performance. We will test for its impact by defining the size variable as the acquirer’s market capitalization on the day prior to the investment date as used in Datta et al. (2001).

Although the method of payment for the deal has been a popular control variable in many of the reviewed articles, we have chosen not to include this in our regression model. Our decision is based on the finding that the method of payment (cash or stock) and the mode of acquisition (tender offer or merger) are not significantly related to the post-acquisition performance once the executive ownership and compensation structure of the acquirer has been accounted for (Datta et al., 2001).

Accordingly, our control variables are:

*Size_{*i*}*: The value of acquirer *i*’s market capitalization on the day preceding the announcement date.

*Block_{*i*}*: The average percentage of ownership held by the three largest owners in firm *i*

*LTIP_{*i*}*: Dummy variable, 1 if firm *i* has LTIP, 0 if not.

4.2.2 Regression Analysis

As mentioned under the event study section, we have chosen to test the correlation between the variables above through a regression analysis, in line with the standard method in existent literature. We hypothesize that the relationship between the variables will not be purely linear, but rather polynomial, and that there will be more than one factor explaining the relationship between CEO compensation and the risk and return of an M&A transaction. We have therefore constructed multiple polynomial regression models to test our hypotheses.

The regression models used are based on those used by Wright et al. (2002) in that we also expect a non-linear relationship between stock ownership and our risk and return measures. However, while the former use only the *value* of CEO Stock Ownership and Option Holdings, we have also included variables for the *ratio* of Stock Ownership and Option Holdings compared to the CEOs total compensation. Additionally we use a different set of control variables, as specified above. The variables for our regression models are listed in Table 4.1.

Dependent Variables	Independent and Control Variables
CAR (-15 to +15 days)	<i>Set 1: VoS, VoS², VoSO, VoSO², Block, Size, LTIP</i>
Difference of Variance of Returns	
Squared Difference of Variance of Returns	<i>Set 2: RoS, RoS², RoSO, RoSO², Block, Size, LTIP</i>

Table 4.1: Regression model variables.

We have used R^2 as a measure for the explanatory power of the model. We have used an exploratory approach to find the model that best fit our data. The process we have used is stepwise regression, and we have thereby tried to find the model that gives the strongest combination of high R^2 and low P-value for the entire regression model.

To test our hypotheses we have used a standard t-test and rejected the null hypothesis for P-values higher than 0,1.

Stepwise Regression Procedure

We have designed a stepwise regression procedure to find the model with the best explanatory power, combined with high significance. These 7 steps can describe the procedure we have followed:

- 1 For each dependent variable, perform two regression analyses, one for each set of independent and control variables.
- 2 Select the set of variables that gives significant results ($P < 0,1$).
- 3 Select the variables that are significant according to the results of the t-test ($(P > |t|) < 0,1$) from step 1.
- 4 Perform new regression analyses, one for each set selected in step 2, only including the variables selected in step 3.
- 5 Select the model with the best combination of high R^2 and low P.
- 6 Select the next variable with the lowest value of $P > |t|$, and include it in the next regression.
 - a. If the regression with the new variable gives higher R^2 without the relationship of the model losing its significance ($P > 0,1$), keep the included variable and repeat step 6.
 - b. If the regression with the new variable gives non-significant results ($P > 0,1$), reject the variable, and repeat step 6.
- 7 When all the variables have been tested in step 6, we are left with the regression models that have the best combination of high R^2 and low P-value for each dependent variable.

5 Data

5.1 Sample Construction

We have chosen to limit our sample to Norwegian acquirers to be able to capture the country specific effects that we expect to find in this market. We used the Dealogic database to produce a list of all acquisitions with Norwegian public acquirers and announcement date between 01.01.1999 and 31.12.2009. The limitation to public acquirers was necessary to ensure that we would have access to the share price of the firms around the announcement date, so that we could calculate CAR and the estimated volatility. We limited ourselves to study the last 10 years because it would be difficult to obtain annual reports with compensation data for earlier years than 1999. Additionally, the M&A market in Norway was very limited before this period. We only included acquisitions where the acquired share of the target is larger than 50% and where the deal value was at least 5% of the acquirers' market capitalization. We introduced the limitations for acquired share and ratio of market capitalization to ensure that we only included actual takeover bids and that the deals were large enough to affect the share price of the acquirer in a measurable way.

80 M&A fitted our selection criteria from the Dealogic database. Of these, there were 75 firms for which we could find annual reports with satisfactory compensation data, and of these there were 68 firms for which we found all the share price information we needed in the Factset database for share price information. These 68 firms have conducted 72 transactions and is hence our final sample.

The sample sizes in comparable studies are decidedly larger, with an average of 440 observations. This is mainly because our sample is so limited due to our limitation of Norwegian bidder firms, and we could therefore not have increased our sample without including a larger geographic area. The limited sample size can affect the generalizability of our results.

5.2 Sample Description

5.2.1 Statistical Properties of Return Data

The CAR values for all the bidders in our sample have an average value of 5,8%, which means that the overall outcome in our sample is that acquisitions give relatively high positive shareholder returns for bidder firms. Loughran and Vijn (1997) claim that acquiring shareholders earn negative abnormal returns from mergers, and according to an analysis by the Boston Consulting Group (2007) the average worldwide acquirer CAR is -1,2% for the period 1996-2006. Furthermore, we find that the average CAR for the studies considered in the literature review is -0,835%. Overall we see a negative trend for US bidder returns, which is in stark contrast to the high positive return that we have found in this Norwegian sample. Our median return of 0,86% is in line with the tendency for European acquisitions to give slightly positive returns to bidder firms. However, the average CAR in our sample is still substantially higher than the expectation for Europe.

As we can see in Figure 5.1, there are some very large positive outliers that cause the positive average. The maximum CAR in our sample, 82,3%, was for the acquisition by Altinex ASA of Denerco Oil A/S in 2006. This record-high CAR was closely followed by the returns from the acquisition by WiCom ASA of Photonyx Ltd in 2003 and by Pan Fish ASA of Marine Harvest International in 2006. We have not been able to identify a plausible reason for the high returns seen in the three high returns through analysis of possible outside factors that can have obscured the CAR values. We will therefore carefully consider the impact these transactions have on our regression analysis and consider to exclude them from the sample. Studying the sample we get when we exclude these three transactions, we observe a median CAR of 0,36% and a mean of 2,7%. These sample characteristics are closer to the findings in the literature review and the average worldwide CAR.

The minimum CAR is -22,1%, and the sample is negatively skewed with the mass of the observations found in the positive top. We can also see that the standard deviation is relatively high, which indicates high variance about the mean. Furthermore, the analysis shows that “the peakedness” of the results, the kurtosis, is very high. Accordingly, most of the values are found to be around the median, which could imply that the values that look like outliers in the graph, in reality are nothing more than rarely occurring variance.

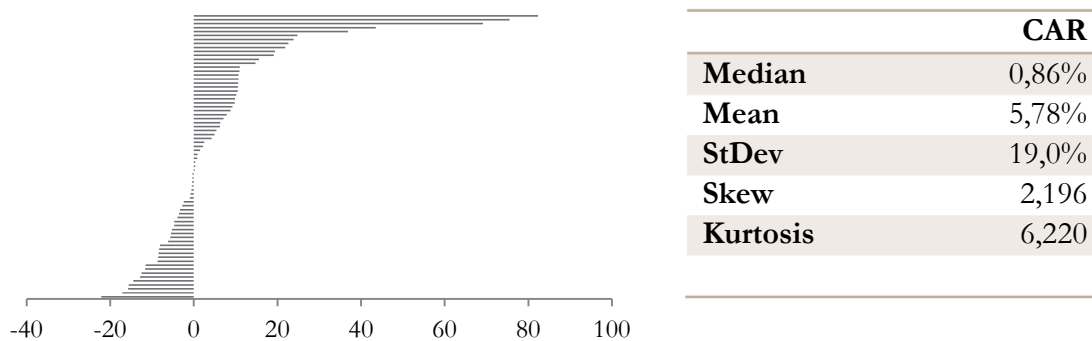


Figure 5.1: Distribution of CAR in the sample.

5.2.2 Statistical Properties of Volatility Data

As seen in Figure 5.2, the mergers in our sample are risk decreasing with a negative mean for volatility difference. However, when considering the median of -0,065% we see that most of the transactions are risk decreasing and that the extreme negative outliers further reduce the negative average. The three outliers are the acquisitions by WiCom ASA of Photonyx Ltd in 2003, WiCom ASA of Smartnet AS in 2003 and Det Norske Oljeselskap AS of Aker Exploration ASA in 2009. When excluding these transactions we find a median of 0,84% and a mean of 2%. Hence, without these extreme outliers our sample can be viewed as generally risk increasing, and in correlation to our expectations of acquisitions increasing risk. We will therefore consider the effect of removing the three outliers on our regression results discussed in Section 6. We see that, as for the CAR values, we have a high kurtosis. However, the standard deviation is much higher and the skew is negative.

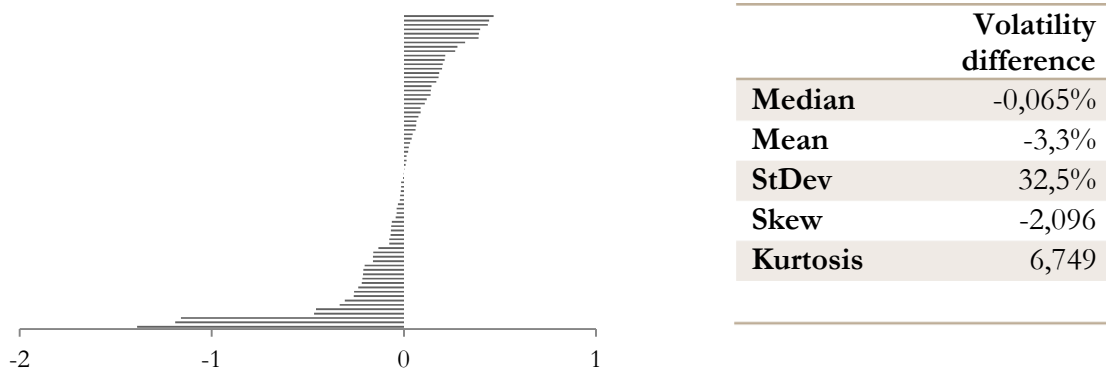


Figure 5.2: Distribution of volatility difference in the sample.

The volatility difference has a weakly positive correlation with CAR as seen in Figure 5.3. An example of this is that the extreme outliers for Volatility difference are not the same transactions as the extreme outliers for CAR, except for one transaction. The positive correlation is in line with the expectation for an efficient market.

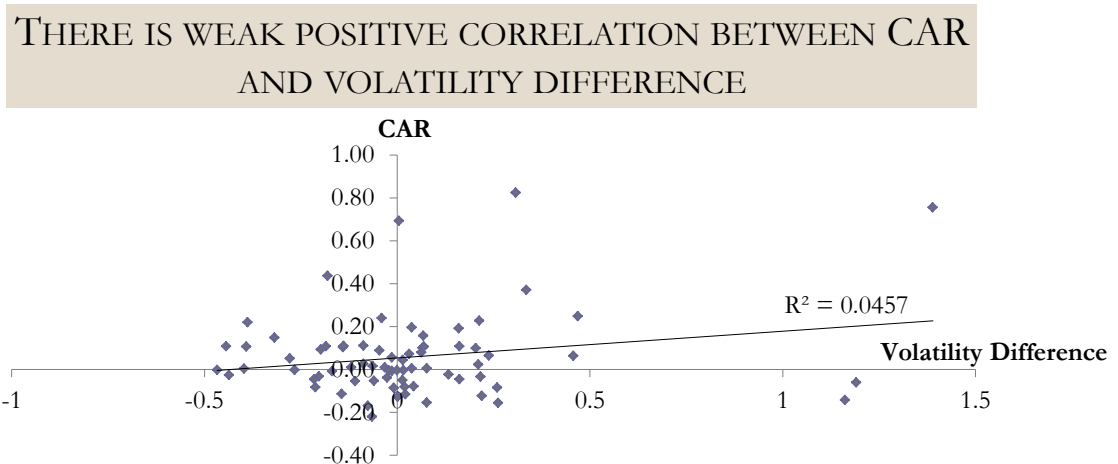


Figure 5.3: The correlation between CAR and volatility difference in the sample.

5.2.3 Control Variables and Sample Characteristics

We have mentioned earlier that the size of the average firm in our sample is significantly smaller than the average S&P 500 firm. This is to be expected considering that the Norwegian market is very small compared to the US market, but we still believe that this is a factor that could influence our results.

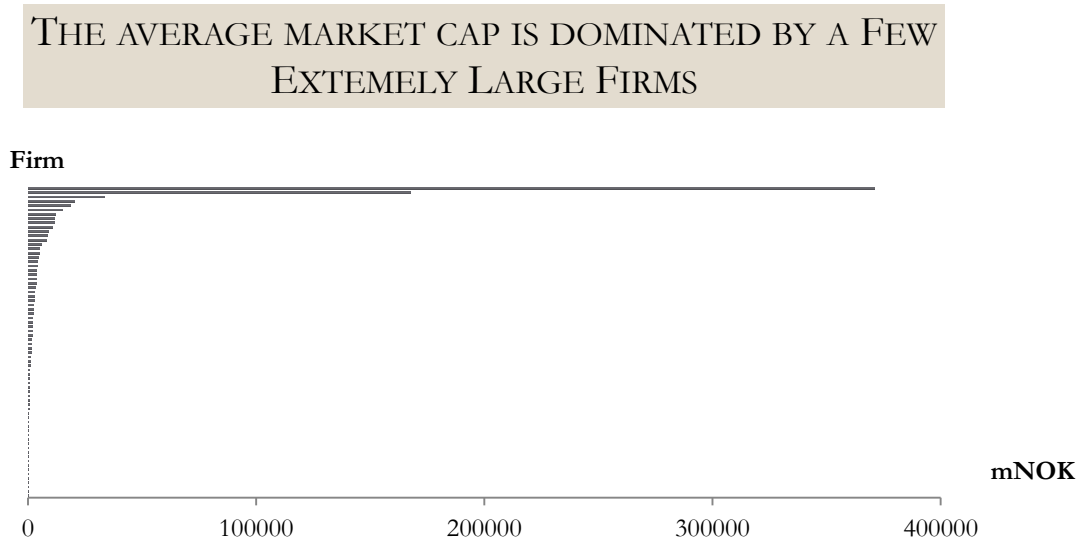


Figure 5.4: The market capitalization (mNOK) of the firms in the sample.

As seen in Figure 5.4, a few extreme firms have significantly higher market capitalization than the average. The sample has a span from the minimum value of 6,9 mNOK to the maximum of 371 041 mNOK, the median is at 1 724 mNOK, while the average is almost ten times higher at 10 999 mNOK. We also have an extremely high standard deviation of 47 517 mNOK. This distribution is typical for the Norwegian market where most firms are small, but with a few large international firms. The distribution does therefore not represent a bias when comparing with other samples of firms from the Norwegian market. However, the distribution is very different from an S&P 500 sample of firms, and therefore represents a significant bias on comparison to US research.

The average ownership level of the three largest shareholders is 12%. The firm with the largest blockholder ownership has 26,2%, whilst the smallest has 2,4%. The range of blockholder ownership is presented in Figure 5.5. As mentioned in Section 4.2.1, we estimated the presence of blockholders by taking the average of the three largest shareholders for each company. We have not differentiated between managers, directors or outside shareholders. Shareholder data were only available for 70 of 72 transactions in our sample; hence only 70 acquisitions are included in the control for this effect.

36% of the firms in our sample have LTIP, which is the same level that was seen in the US. research in the 1970's and 1980's. The plans are mostly based on options or stocks with vesting periods of at least 3 years. Some firms also have three-year plans where performance requirements are set and rewarded if met. Firms that have defined long-term plans with shorter perspectives than 3 years have not been included in our definition of LTIP. We have included two firms due to a very large portion of stock ownership of 30% and 50%.

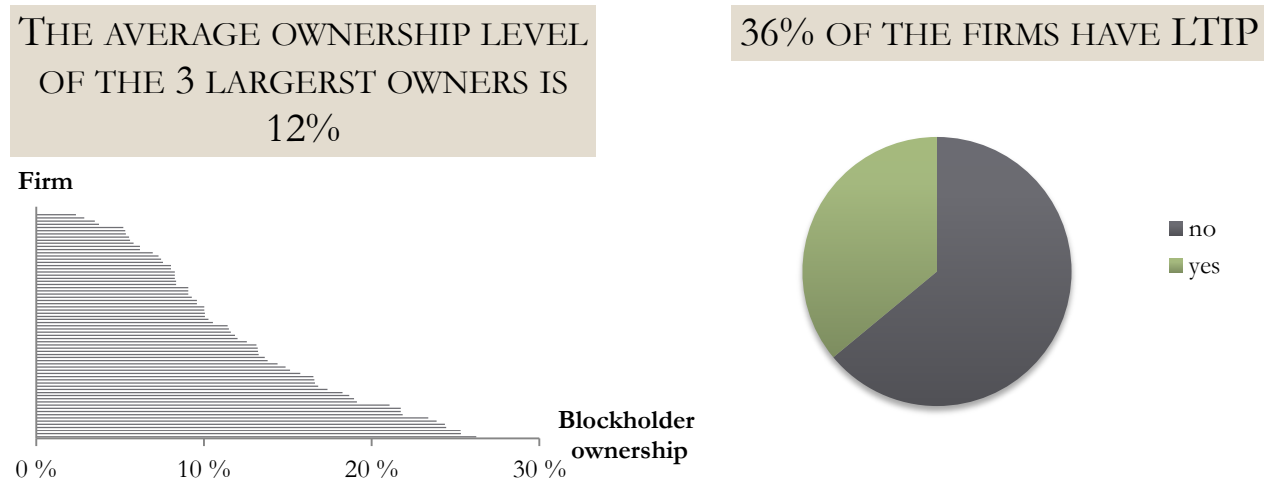


Figure 5.5: Overview of blockholder ownership and firms with LTIP in our sample.

The average CEO total compensations is 4,2 mNOK, and as we can see in Figure 5.6, there are some very high outliers in the dataset. The top two outliers have values of 7 times the average. However, as the compensation data are collected over the period from 1999 through 2009 it is natural that we find large variance in the nominal compensation value. The CEO's compensation is measured as total compensation and includes salary, bonuses, pension and other benefits as free phone, car etc. Whenever the CEOs employment commenced during the year of the acquisition announcement, her total compensation has been scaled to project the annual compensation.

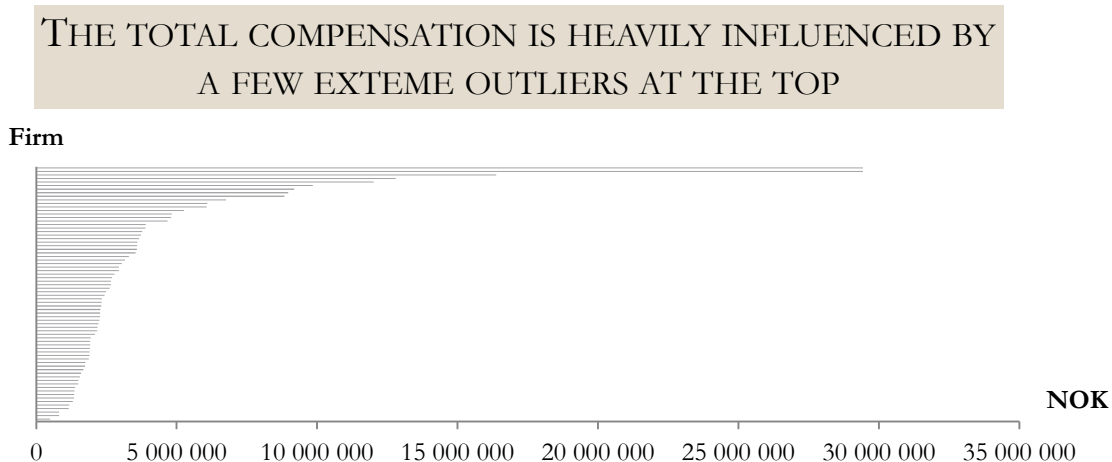


Figure 5.6: Overview of total compensation for CEOs in the sample.

The total value of stock ownership is three times that of stock options. This shows that use of options is not as widespread in Norway as in the US and this could represent a weakness in our analysis due to lack of data points. Firms that have CEOs with stock options make 32 transactions and firms where the CEO owns shares make 56 transactions in the period considered. Figure 5.7 displays the distribution of stock options and stock ownership values. The average value for stock ownership is as high as 68 mNOK, while the average for stock options at 5,7 mNOK, less than a tenth of stock ownership.

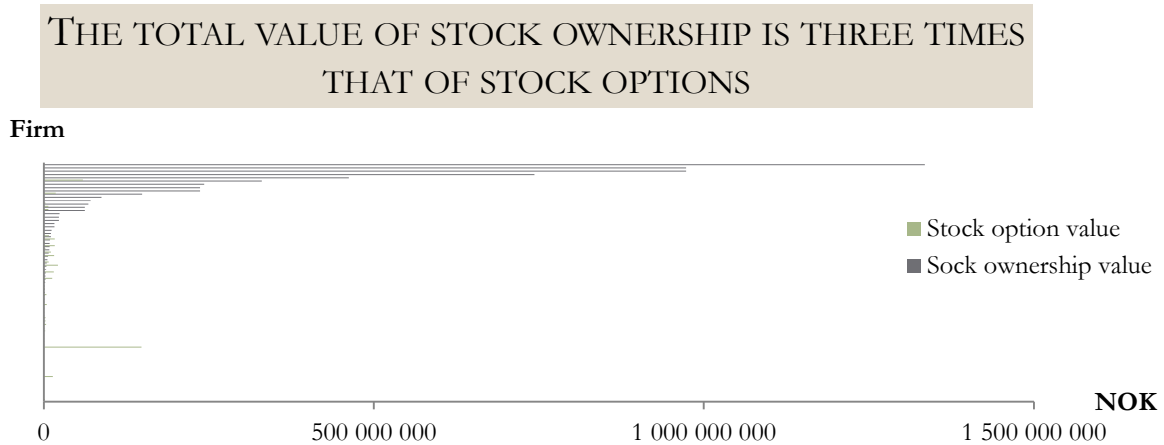


Figure 5.7: Distribution of stock ownership and stock options in the sample.

In the time period from 1999 to 2009 it is clear that both the number and the value of M&A transactions in Norway has increased. The data sample is hence more heavily weighted by the data from the last half of the period as seen in Figure 5.8. Our sample is from the fifth and sixth merger waves, which were dominated by more strategic and globalized deals. The globalized trend can also be seen in the explosion in the Norwegian M&A market, from a total deal value of 1,1 mUSD in 1993 to a median value of 1 143 mUSD in the period 2003-2009. The latter period also included the record year 2006, where the Statoil-Hydro merger contributed to a total deal value of 34 838 mUSD.

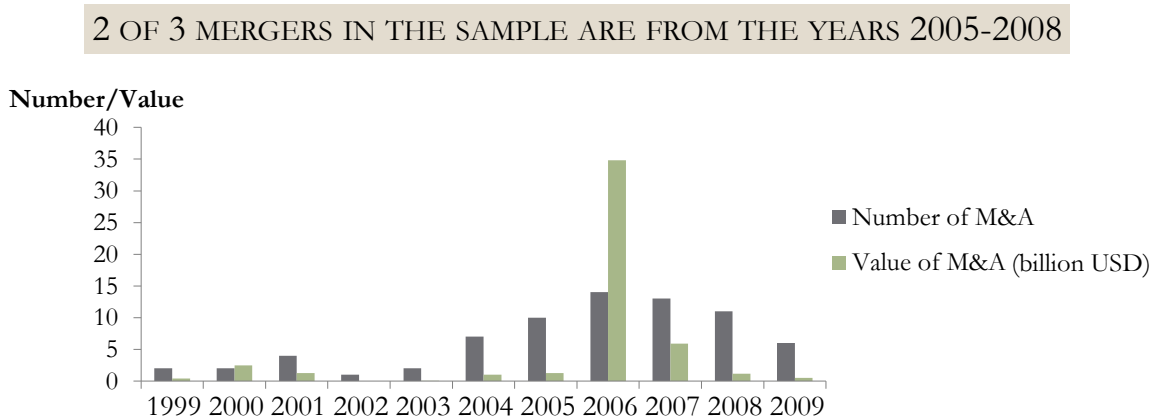


Figure 5.8: Overview of number of transactions through our ten-year sample period.

6 The impact of stock based compensation on risk and return from M&A

The results from the regression analysis offer several surprises in that none of the hypotheses we have formed based on US research can be confirmed when tested on this sample of Norwegian firms. Although we expected some cultural differences to influence our results, this is still a surprising result. Figure 6.1 displays a summary of our findings from the full sample when we have excluded the three extreme outliers for CAR and volatility difference. Our analysis shows that stock option is the only variable for which we can establish a significant relationship to CAR and we see that the relationship is negative. In the US literature there is a firmly established positive relationship between stock options and both CAR and volatility change. We therefore interpret this discrepancy as a sign of substantial differences between the two countries. To our surprise, we do not find any relationship between stock ownership and risk and return. However, we see a negative trend for both. The control variables, size, blockholders and LTIP are all found to have an insignificant impact on CAR and volatility in the full sample analysis, but we find trends that both support and reject our expectations for these variables. The results from the full sample analysis are summarized in the figure below and the findings will be analyzed further in this section. We will also discuss findings from the sub-sample analyses.

	CAR*	VOLATILITY DIFFERENCE**	VOLATILITY DIFFERENCE2**
STOCK OPTIONS	Negative Significant 1%	Negative Not Significant	Negative Not Significant
STOCK OPTIONS ²	Positive Not Significant	Positive Not Significant	Negative Not Significant
STOCK OWNERSHIP	Negative Not Significant	Negative Not Significant	Positive Not Significant
STOCK OWNERSHIP ²	Positive Not Significant	Positive Not Significant	Negative Not Significant
SIZE	Negative Not Significant	Positive Not Significant	Positive Not Significant
BLOCKHOLDERS	Positive Not Significant	Positive Not Significant	Positive Not Significant
LTIP	Negative Not Significant	Negative Not Significant	Negative Not Significant

Figure 6.1: Summarized results of the regression analyses for the full sample.

* based on sample excluding the three CAR outliers **based on sample excluding the three volatility outliers

6.1 Factors Affecting Return from M&A Decisions

Our analysis shows that our model for prediction of CAR for bidder firms in M&A based on CEO incentives has $R^2 = 0,15$ and $P = 0,19$. We can therefore not reject the null hypothesis of no relationship between stock based incentives and CAR. Table 6.1 presents the details of the regression results. Even though there are no significant relationships found in this model, we have found that stepwise regression leads us to a model with fewer variables that can confirm that there is a negative significant relationship between stock option ratio and CAR. We will discuss this relationship further in Section 6.1.2.

CAR	Coefficient	P> t	R ²	P
			0,1456	0,1898
MCap	-4,59e-07	0,148		
Stock Option Ratio	-0,0151	0,303		
Stock Option Ratio ²	0,000291	0,806		
Stock Ownership Ratio	-0,000486	0,328		
Stock Ownership Ratio ²	7,36e-07	0,475		
Blockholders	0,0652	0,787		
LTIP	-0,0192	0,544		
Constant	0,0569	0,119		

Table 6.1: Results from the regression analysis on CAR (full sample, excluding the three CAR outliers).

We have performed the analysis on a sample where we have excluded the three transactions that have the highest CAR values. As mentioned in the Section 5.2.1, the extreme CARs observed in the event windows seemingly cannot be explained by the transactions, and regression analysis has shown that they have a distorting impact on the relationships found in the regression model. When we include the outlier transactions, our regression analysis indicates a significant positive non-linear relationship between CEO stock ownership and CAR. However, as these results are not robust when we exclude the outliers, we cannot weight them in our further analysis. The results of the regressions on the sample including the outlier transactions are found in Appendix D.

6.1.1 Stock Ownership

The regression results in Table 6.1 show that there is no significant relationship between CEO stock ownership and the abnormal return from an acquisition. As mentioned, we do find a positive non-linear relationship between the variables when the three outlier transactions are included, but as we can see in Figure 6.2 a few extreme data points heavily influence the regression. When we exclude the three outlier firms, the regression results are dramatically changed, and we find the insignificant relationship we see in Table 6.1. The fact that the regression in Figure 6.2 is not robust to exclusion of outliers, means that we have to reject these results. While our dataset spans the entire range seen in the graph, with stock ownership ratios from a minimum of 0 to a maximum of 583, the vast majority of the data is on the lower end of the scale, with the median ownership ratio as low as 0,80.

The insignificant results are not strong enough for us to reject our hypothesis (1a) that the relationship between CEO stock ownership and abnormal returns resulting from an acquisition announcement will be positive for low levels of stock ownership and negative for high levels of

stock ownership. We can only conclude that we find no statistically significant relationship for the Norwegian market.

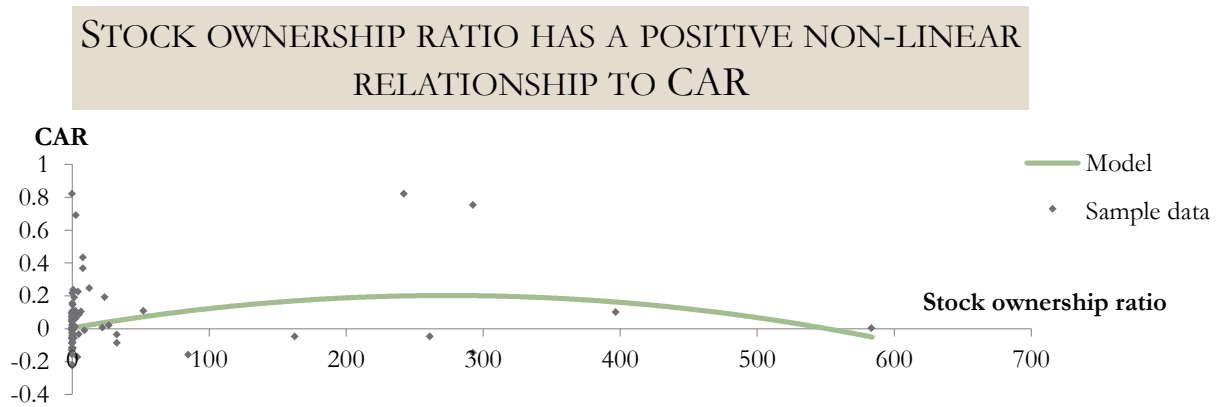


Figure 6.2: The relationship between Stock Ownership Ratio and CAR.

6.1.2 Stock Options

Surprisingly, we find stock option ratio to have a significant negative linear relationship to CAR. While our first regression model did not produce a significant negative coefficient for the relationship between stock options and CAR, we found stronger results through stepwise regression. By eliminating variables with low significance, we found that the model

$$CAR = a + RoSO_i(b1) + RoS_i(b2) + RoS_i^2(b3)$$

had $R^2 = 0,15$ and $P = 0,01$. The coefficient for stock option ratio is $-0,174$ ($P > |t| = 0,061$) and the relationship between stock option ratio and CAR is illustrated in Figure 6.3. This finding is robust even if we remove the outlier CAR transactions. As we can see in the figure, the sample values for stock option ratio only spans from 0 to 15,2. The majority is at the lower end of the scale with a 3rd quartile ratio as low as 1,1. The relationship to CAR is strictly decreasing and robust and we therefore conclude that stock options will contribute to decreased returns in M&A.

Based on existing research on incentive mechanisms in M&A we hypothesized (1b) that the relationship between CEO stock option holdings and abnormal returns resulting from an acquisition announcement would be linear and positive. Our analysis rejects this hypothesis and we deduce that, as our hypothesis was based on US research, the opposing results can suggest that there are substantial cultural and market differences between the two geographical areas.

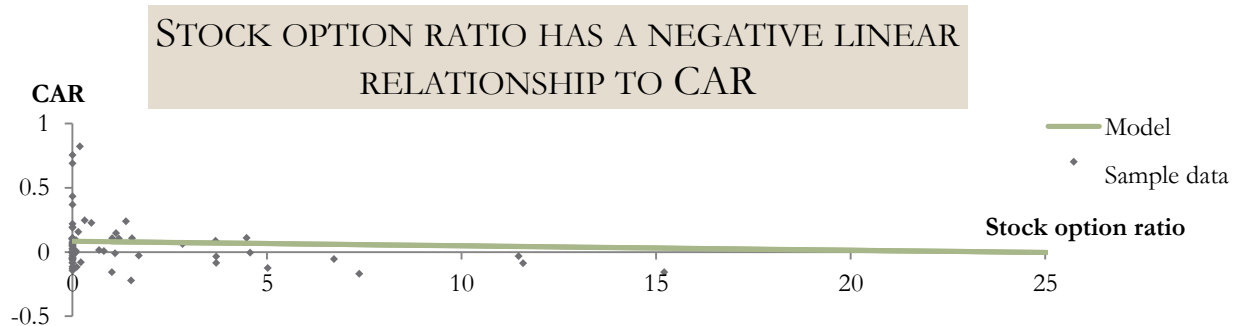


Figure 6.3: The relationship between stock option ratio and CAR.

6.1.3 Size, Blockholders and LTIP

Neither of the control variables we have tested have a significant impact on the return of an M&A transaction. However, looking at the coefficients from the regression analysis we can see that there is a tendency for size and LTIP in the bidder firm to be negatively related to the CAR of the transaction, while the presence of blockholders is positively related.

We find size of the firm to not influence the return of the transaction in any meaningful way. As previous research has shown, stock based incentives provide stronger incentives than the moderating effect of blockholders. Hence, we are not surprised to find that the level blockholders is not significant. For LTIP, on the other hand, we had expected a clearer relationship to CAR. The negative trend is in opposition to what we expected, and we find that LTIP does not appear to reduce agency problems. This is in line with the results for stock ownership and stock options, which also have surprised us with their negative correlations to CAR. However, the unexpected results can also be a consequence of the difficulty of measuring the LTIP. As mentioned in Section 4.2.1, we used a dummy variable to measure the effect of the plan, and the low level of detail of this measure can have obscured the results.

6.1.4 Sub-sample Analysis

When testing the regression model on the sub-sample of firms that have CEOs with stock ownership (53 transactions), we can confirm the negative significant relationship between CAR and stock options. In addition, we find a significant negative relationship between CAR and firm size. This is in line with our expectations of larger market reaction for smaller firms. Through stepwise regression we find that the strongest regression model for this sub-sample is the one that includes the following variables:

$$CAR = a + RoS_i(b1) + RoS_i^2(b2) + RoSO(b3) + Size_i(b4)$$

The regression model has $R^2 = 0,21$ and $P = 0,0216$. The stock ownership variables are not significant in the regression. The coefficient for the stock option ratio is $-0,01483$ ($P > |t| = 0,007$) and for size it is $-5,27e-7$ ($P > |t| = 0,093$).

The negative significant relationship between stock option ratio and CAR is confirmed for firms rewarding stock options (32 transactions). Size is not found to be significant for this sub-sample, but we see the same negative trend.

6.2 Factors Affecting Risk Change as a Consequence of M&A Decisions

To study the effect of stock based incentives on the risk change of an acquisition we have used the volatility difference (post-acquisition volatility – pre-acquisitions volatility) to study the direction of the change, and the squared volatility difference to study the magnitude of the change. The results of the two regression analyses can be seen in Table 6.2 and Table 6.3. Both regressions show that we cannot reject the null hypothesis of no relationship between stock-based incentives and risk change. We see some trends in the regression results that we will discuss below, but as we can see the explanatory power of the model is extremely low, and the model is not statistically significant.

Volatility Difference	Coefficient	P> t	R ²	P
			0,0553	0,8237
MCap	2,12e-07	0,702		
Stock Option Ratio	-0,00424	0,868		
Stock Option Ratio ²	0,0000145	0,994		
Stock Ownership Ratio	-0,000811	0,349		
Stock Ownership Ratio ²	1,36e-06	0,444		
Blockholders	0,331	0,438		
LTIP	-0,0430	0,436		
Constant	0,0108	0,864		

Table 6.2: Results from regression analysis on volatility difference (full sample, excluding outlier values for volatility difference).

Volatility Difference ²	Coefficient	P> t	R ²	P
			0,0449	0,8929
MCap	2,10e-09	0,990		
Stock Option Ratio	-0,000173	0,982		
Stock Option Ratio ²	-0,000112	0,855		
Stock Ownership Ratio	0,000155	0,539		
Stock Ownership Ratio ²	-6,34e-06	0,393		
Blockholders	0,00219	0,466		
LTIP	-0,0849	0,228		
Constant	0,0814	0,208		

Table 6.3: Results from regression analysis on volatility difference² (full sample, excluding outlier values for volatility difference).

As for the regression analysis on the relationship between incentive structures and CAR, we based the analysis on a sample where we excluded the transactions that had the most extreme values for the dependent variable. We saw in Section 5.2.2, that the three transactions with the lowest volatility differences appear to be outliers, and this suspicion is confirmed by the regression analyses we have done in this section. We will see in Section 6.2.1 that the three transactions have a distorting impact on the relationships found in the regression analyses. When we include the outlier transactions, our regression analyses indicates a significant negative non-linear relationship between CEO stock ownership and volatility difference and a significant negative relationship between stock ownership and squared volatility difference. However, as these results are not robust when we exclude the outliers, we cannot weight them in our further analysis. The results of the regressions on the sample including the outlier transactions are found in Appendix D.

6.2.1 Stock Ownership

We see in Table 6.2 and 6.3 that CEO stock ownership has no significant impact on either the direction or the magnitude of volatility change around an acquisition. This is in line with the finding of no relationship between stock ownership and CAR.

When we include the outlier transactions, regression analysis gives us the significant non-linear relationships we see in Figure 6.4 and 6.5. Again we see that the results are heavily influenced by a few outlier transactions, and we discover that when we remove the outliers, the relationships we found disappear completely. Therefore, we have to discard these results and rather build our further discussion upon the non-significant relationships we see in Table 6.2 and 6.3. The need to reject results because of lack of robustness is a further parallel to the relationship we have seen between stock ownership and CAR.

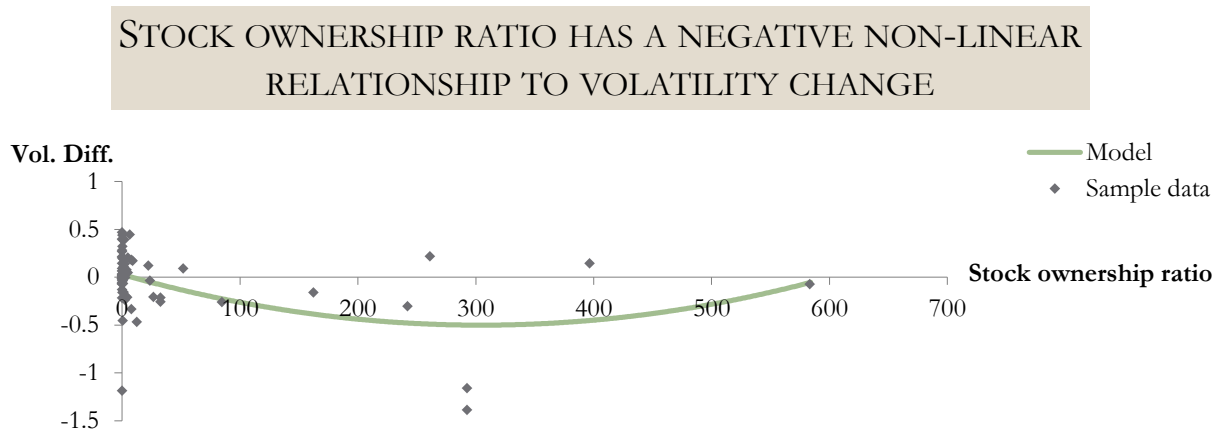


Figure 6.4: The relationship between stock ownership ratio and volatility difference (full sample).

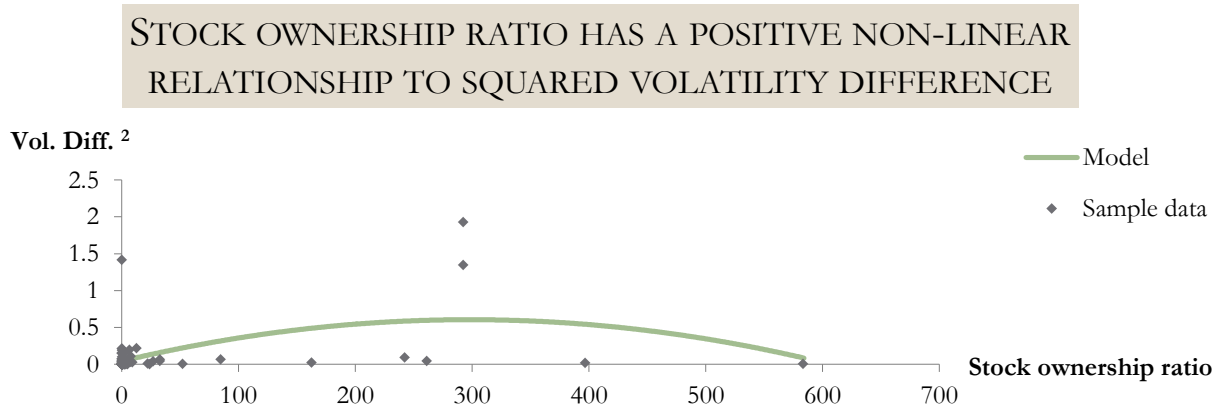


Figure 6.5: The relationship between stock ownership ratio and squared volatility difference (full sample).

The non-significant relationship between stock ownership and risk taking is not a strong enough result for us to reject our hypothesis (2a) that the relationship between CEO stock ownership and risk taking resulting from an acquisition decision will be positive non-linear. Instead we can conclude that we find no significant relationship between CEO stock ownership and risk taking.

6.2.2 Stock Options

We find no statistical support for a relationship between CEO stock options and risk taking and we cannot reject the null hypothesis of no relationship. There is a weak negative correlation between stock options and volatility difference. This is in contradiction to the relationship we expected to find and to the general expectation in agency theory. However, as we expect that risk and return are positively correlated, the negative relationship to risk change is consistent with the significant negative relationship we found between stock options and return.

The results are not strong enough to reject our hypothesis (2b) of a positive relationship between risk and CEO stock ownership, but we cannot confirm it either.

6.2.3 Size, Blockholders and LTIP

The regression model for the full sample shows that none of the control variables have significant impacts on risk change in M&A. For size and blockholders, we find weak trends of a positive relationship to risk taking, but for LTIP the relationship is negative. A positive relationship between blockholders and risk taking would be in line with the consensus in the US literature; however we cannot establish that there is such a relationship from the full sample analysis. We find that, in line with our expectation, the presence of blockholders seems to be less important than stock based incentives. LTIP negative correlation with volatility difference is in opposition to our belief that they can contribute to align the interests of the CEO and the shareholders. We cannot establish that there is a relationship between size and risk, but the results show that there is a tendency that larger firms take larger risks. We initially believed that the market reaction to corporate announcements would be larger for small firms since there is little information produced for such stocks during non-announcement periods. The tendency in the data is in opposition to this effect, as we see a negative correlation between size and squared magnitude of the risk change (squared volatility difference).

6.2.4 Sub-sample Analysis

The most interesting results from the sub-sample analysis are found for firms with stock options (32 transactions where 30 transactions also include stock ownership). The negative trend for stock ownership and risk found for the full sample is strengthened with a significant relationship for this sub-sample. Through stepwise regression, we find that a regression model on the form

$$\text{Difference of Variance of Returns} = a + \text{Size}(b1) + \text{ROS}(b2) + e$$

gives the strongest results for this sub-sample, with $R^2 = 0,23$, $P = 0,023$ and a positive significant coefficient for the size variable of $2,72e-06$ ($P > |t| = 0,047$). The negative significant coefficient for stock ownership ratio is $-0,00165$ ($P > |t| = 0,066$). The positive relationship between size and risk is in accordance with the positive trend we see for the full sample, but as the result is stronger we can reject the null hypothesis of no relationship for this sub-sample. We can therefore conclude that for firms where the CEO has stock options, larger firms take higher risks in their investment decisions.

The negative significant result between risk and stock ownership shows that stock ownership is connected to reduced risk for firms with stock options. According to agency theory, stock based

incentive mechanisms should help align the interests between shareholders and CEOs through the risk increasing properties of the incentives. As we see that stock ownership has a risk decreasing property, it is not a suitable incentive mechanism for reducing agency problems.

For the same sub-sample of option rewarding firms, we see that high ownership levels of blockholders are positively tied to the magnitude of the volatility change in a significant way. Again stepwise regression gives us the model with the strongest results. Surprisingly, blockholders is the only variable that is significantly related to the squared volatility difference in this sample and we have therefore only used this single variable in the regression model.

$$\text{Squared difference of Variance of Returns} = a + \text{Block}(b1) + \text{LTIP}(b2) + e$$

The model has $R^2 = 0,19$ and $P = 0,05$ with a blockholder coefficient of $0,475$ ($P > |t| = 0,042$) and no significant impact from LTIP. We find the same results in for the sub-sample that includes firms where the CEO has both stock ownership and stock options.

These sub-sample results indicate that in firms where the CEO has stock options or owns shares in the firm, the blockholders are more active in influencing the level of risk taken in M&A decisions. We further reason that it is probably not a coincidence that the same large shareholders that have decided to reward option- or share-based incentive programs to their CEOs, have a stronger influence on the large investment decisions in the firm.

6.3 Monetary Effect of Results

To illustrate the effect of the results we have found, picture a firm that has the average market capitalization, level of blockholders and LTIP and that is about to acquire another firm. If the bidder firm has constant stock ownership ratio set at the average and varies the ratio of the CEO stock options the effect on CAR would be as follows. The firm with the minimum level of stock options, 0, which also is the median, would expect a CAR of 8,07%, while the firm with an average stock option ratio (1,32) would expect a CAR of 5,78%. The firm with average market capitalization would then have a CAR in monetary value of 887,6 mNOK if it did not have stock options and 635,7 mNOK if it had the average level as its CEO stock option ratio. This shows that there is a substantial net expected loss for option rewarding firms.

As we have not found any clear relationship between stock ownership and CAR, we cannot expect a monetary effect for awarding stocks.

7 Discussion and Recommendations

The ambition of this thesis has been to provide a platform on which shareholders, particularly in Norwegian firms, can build their decisions regarding the optimal incentive contract for their CEOs. In this section we will discuss our findings about each incentive structure we have considered, and present our recommendations.

Stock Ownership

We have not found significant relationships between CEO stock ownership and the return and risk taking in acquisitions. The regressions we have done point to a negative trend to both return and risk taking, but we cannot find statistical support for these trends. However, sub-sample analysis shows that for firms that reward stock options, there is a significant negative relationship between stock ownership and risk taking.

The effect of CEO stock ownership on the return from acquisitions has been debated in the existent research. While most of the researchers agree that there is a positive relationship in US firms, Wright et al. (2002) find a positive non-linear relationship between the two variables. Our research cannot establish that there is a similar relationship in Norway.

The negative trend we see for the relationship between stock ownership and risk taking is supported by the significant negative relationship we find for the sub-sample of option rewarding firms. Furthermore, there are an almost equal number of US researchers that find a negative relationship between the variables as those that find a positive. This shows that this is a debated area and that our finding of no relationship is therefore not controversial.

Agency theory predicts that stock ownership can affect the CEO to increase both the risk taking and the return in an acquisition decision. Even though we cannot exclude the possibility that there is a relationship that our analysis has not been able to capture, we can conclude that stock ownership does not appear to be a very efficient tool for increasing risk taking and return in M&A. As it is costly for shareholders to award stocks to their CEOs, we cannot recommend awarding stocks as long as there is not a significant positive relationship to risk and return. As we have found weak negative correlations to both variables, we conclude that shareholders should not award stocks to their CEOs.

We recommend that shareholders refrain from rewarding shares to their CEOs.

Stock Options

We have found that CEO stock options are significantly related to decreased returns in M&A, and that there is no apparent effect of stock options on risk taking. This is in direct contradiction to the positive relationship we find in the collected US research and to the predictions of agency theory. Sanders and Hambrick (2007) are the only ones who to a certain extent support our notion that there is a net loss for shareholders with use of option compensation. They find that excessive risk taking leads CEOs with stock options to induce a net loss for the shareholders. However, they find that lower option ratios will not cause these excessive risks, and therefore they still recommend using stock options in CEO compensation as long as the ratio does not exceed 20-50% of the total compensation. For our sample, even these low levels appear to induce losses.

As our results are so definitely in opposition to the consensus in the US research, we have to consider if there is a weakness in our research that causes the divergence, rather than real differences between Norway and the US. The small sample size could be a factor that confounds the results, as firms where the CEO holds stock options only made 32 of the transactions in the sample. However, as our findings are in line with the relationships found for stock ownership, it could also be that stock-based incentives do not reduce agency problems in Norwegian firms. In any case, the significant negative relationship we have found between CEO stock options and return from M&A is strong enough evidence to convince us that the best advice to shareholders is to avoid the use of stock options.

We recommend that shareholders refrain from awarding stock options to their CEOs.

LTIP

Even though LTIP is not found to be significantly related to return and risk taking, we do find the results to be consistently negative and in contradiction to our expectation of a positive effect on both risk and return. The weak results might be explained by the difficulties in measuring the incentive. Based on the consistently positive results found in the US research from our literature review, we would have expected a positive relationship in Norway as well. However, our research shows that there is reason to believe that there are significant differences in the effect of incentives in Norway and the US. Therefore, we suggest further research on this mechanism with a more detailed measure of LTIP to capture its true effect.

Size and the presence of Blockholders

We find no significant impact of size on the risk taking in M&A with the exception of the sub-sample of firms that has stock options, where there is a significant positive impact on risk taking. We also find that size only has a significant impact on return in the sub-sample of firms that have stock

ownership, where size and CAR is significantly negatively related. This shows that there is a stronger size effect on risk and return for firms with stock-based incentives. However, it does not appear that these size effects have distorted the findings of the full-sample analyses we have conducted.

We cannot find a significant relationship between CAR and blockholders, but we do find a significant impact on risk for the sub-sample of option rewarding firms. For these firms we see that high ownership levels of blockholders are positively tied to the magnitude of the volatility change in a significant way. We interpret this result to indicate that firms where CEOs that have stock options compensation also have more active shareholders and hence a greater effect of large blockholders. Even though it can be difficult to control the shareholder structure, it illustrates that shareholders should get involved in constructing the CEO compensation contract in order to get the highest return from investments.

8 Conclusion

Our analysis show that there are substantial differences between Norway and the US both in the use of CEO incentive structures and in the effect these incentive structures have on the abnormal return and risk change stemming from M&A. The most substantial difference between the two countries is that while stock options is unanimously declared as a factor that affects both the risk change and the return from an M&A positively in US research, we see that in Norway the picture is completely reversed. CEO stock options are tied to a significant decrease in abnormal returns from M&A and have a slight risk decreasing tendency. These findings lead us to conclude that Norwegian shareholders must avoid using CEO stock options until we find evidence to the contrary. The divergence of our results from the collected US research imply that there are factors that separate Norway and the US, which lead CEOs to react differently to stock options. As mentioned, we believe that cultural differences can be such a factor.

The risk incentive of CEO stock ownership is a further point of divergence between the countries. We see that while there is a positive non-linear relationship between stock ownership and risk taking in the US, we have not been able to identify any relationship in Norway. The incentive effect of stock ownership on CAR follows the same pattern, with a cumulative finding of a positive non-linear relationship in the US, and no apparent relationship in Norway. Again we find that there could be that cultural differences cause the CEOs to react differently.

Although we do not find significant support for a relationship between LTIP and return, there is a negative trend, which is in opposition to the US research. One finding that is somewhat in line with US research is with regards to the presence of blockholders. We have found that blockholders increase risk taking in firms where the CEO owns options in the firm. The size effect we find is weak, and where we find it, it is negatively related to return and positively related to risk.

When we evaluate the totality of our results, we see that there are weak negative trends or a significant negative relationship to risk and return for all the incentive mechanisms we have considered in our research. Even though most of our findings are merely a lack of a significant relationship, the fact that this trend is so consistent leads us to consider if there could be an underlying difference between Norway and the US that causes this consistent divergence. We see that none of the incentives have a positive relationship to risk or return and this makes us question if the incentive mechanisms that have positive effects on agency problems documented in the US, have any positive effect on agency problems in Norway.

The apparent differences between the US and Norway confirm that there is a great need for more country specific research on the relationship between CEO incentives and bidder success in M&A. We believe that it would be very interesting to see similar studies as the one we have conducted with a regional focus on Europe and Asia-Pacific –the largest M&A markets aside from the US. Other emerging markets, such as Latin America, could also be interesting areas of focus. Additionally, there is a need for further research on incentive effects on M&A in Norway. Primarily, we see that the

measure we have used for LTIP is not strong enough to capture its effect on risk and return. We therefore advise that subsequent research construct a more detailed measure for LTIP to try and find a stronger relationship between these variables.

We have previously mentioned areas in our research that we believe act as restraints for the ability of our results to be generalized. The sample size of 72 transactions is small compared to comparable studies in this field and we see that there are several extreme observations in our sample, especially with regards to return and firm size. Although we have tried to control for the extreme outliers, these factors limit the extent to which we can generalize the results from our study to other regions. However, as both the limited size and the extreme observations are in line with the expectations for the Norwegian market, we still believe that our models have valid results within this market.

Our recommendation is that shareholders should refrain from awarding both stocks and stock options as incentives to CEOs, as these will either have no effect or a negative effect on shareholder returns. Neither do any of the incentives appear to increase CEO risk taking. LTIP appear to have a negative effect on M&A return, but our results are not strong enough to form a basis for a concrete recommendation. However, we do find that firms where the CEOs have stock based compensation also have more active shareholders and hence a greater effect of large blockholders. Even though it can be difficult to control the shareholder structure, it illustrates that shareholders should get involved in constructing the CEO compensation contract to better align the risk taking in investments with the risk preferences of the shareholders.

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Appendix A: Summary of Literature Review

Summary of the findings in the research on the impact of the bidding executive compensation structure on abnormal returns and acquisition propensity.

Article	Variable 1	Variable 2	Relationship	Sample
Lewellen et al. (1985)	Stock ownership	Abnormal returns	Positive	191 US deals (1963-1981)
Tehrani et al. (1987)	LTIP	Abnormal returns	Positive significant	164 US acquires (1972-1981)
Travolos and Waegelien (1992)	Stock ownership	CAR	Positive	266 US acquires (1972-1986)
	EBC	CAR	Positive	
Hanson and Song (1996)	LTIP	CAR	Positive	167 US deals (dual class) (1964-1990)
	Stock ownership (dual-class)	Abnormal returns	Negative significant	
	Stock ownership (Single class)	Abnormal returns	Negative significant	
Bliss and Rosen (2001)	Value of control (above average)	Abnormal returns		32 US banks (1986-1995)
	High EBC	M&A activity	Negative	
Datta et al. (2001)	EBC	CAR	Positive significant	1719 US deals (1993-1998)
Sanders (2001)	High EBC	Abnormal returns	Positive	250 US firms (1991-1995)
	Stock ownership	ROA	Positive	
		Acquisition propensity	Negative	
Wright et al. (2002)	Stock options	ROA	Positive significant	163 US firms (1993-1997)
		Acquisition propensity	Positive	
Swanstrom (2006)	Stock ownership	CAR	Quadratic	294 US deals (1994-1998)
	Stock options	CAR	Positive significant	
Williams and Rao (2006)	EBC	Abnormal returns	Negative	127 US firms (1994-1996)
	Wealth sensitivity	Abnormal returns	Positive	
Yang et al. (2010)	Stock options	Equity return volatility	Positive significant	64 US banks (1991-2005)
	PPS	CAR	Positive	

Summary of the findings in the research on the impact of the bidding executive compensation structure on risk-taking and diversification.

Article	Variable 1	Variable 2	Relationship	Sample
Amihud & Lev (1981)	Size of largest blockholder	Diversification (R^2)	Negative significant	309 US mergers (1961-1970)
Agrawal & Mandelker (1987)	Ratio of CEO annual compensation in equity holdings	Diversification (variance change)	Negative significant (PS)	209 US firms (1974-1982)
Lloyd et al. (1987)	Size of largest blockholder	Diversification (R^2)	Negative significant	371 US firms (1971-1980)
Lewellen et al. (1989)	Firm equity held by CEO (% and value)	Diversification (variance change)	Insignificant relationship (NR)	203 US firms (1963-1984)
Saunders et al. (1990)	Officers' and directors' stockholdings (%)	Unsystematic risk taking	Positive significant (PS)	38 US banks (1979-1982)
May (1995)	Ratio of CEO wealth in company stock	Diversification (covariance)	Positive significant (NS)	184 US deals (1979-1990)
Shekar & Torby (1995)	Equity ownership of outside blockholders	Diversification (industry segments)	No significant relationship	118 Australian firms (1994-2001)
Servaes (1996)	Level of manager ownership (%)	Diversification (industry segments)	Positive significant (NS)	218 US firms (1961-1976)
	Stock ownership (1961-70)	Diversification (industry segments)	Positive significant (NR)	
	Stock ownership (1973-76)	Diversification (industry segments)	Negative (NR)	
Denis et al. (1997)	Director and officer stock holdings (%)	Diversification (several measures)	Negative significant (PS)	933 US firms (1984)
Lane et al. (1998)	Equity ownership of outside blockholders	Diversification (industry segments)	Negative	289 US mergers (1980-1987)
	Size of largest blockholder	Diversification (Rumelt, 1974)	No relationship	
Andersen et al. (2000)	Outside directors (blockholders), higher rates of management turnover	Diversification	Positive	158 US firms (1985-1994)
Sanders (2001)	Equity based compensation, lower insider ownership	Specialization	Positive	250 US firms (1991-1995)
	Value of stocks held by CEO	Risk taking (acquisition activity)	Negative significant (NS)	
	Value of CEO stock options	Risk taking (acquisition activity)	Positive significant	
Sudarsanam & Huang (2006)	Sensitivity of CEO wealth to stock price (Delta)	Risk increase (standard deviation)	Negative significant (NS)	3069 US acquisitions (1993-2004)
	Sensitivity of CEO wealth to stock return vol. (Vega)	Risk increase (standard deviation)	Positive significant	
Sanders & Hambrick (2007)	Stock option pay/total compensation	Risk taking (acquisition activity)	Positive significant	950 US firms (1993-2000)

Appendix B: Comparison to earlier research

Article	CAR (%)	Volatility	Stock Ownership	Stock Options	Total Compensation	LTIP	Blockholders	Sample
Lewellen et al. (1985)	-2,88	X	Mean: 315,2 Median: 5,3	X	\$221,294	X	X	191 US deals (1963-1981)
Tehrani et al. (1987)	-1,16	X	X	X	X	0,28	X	164 US acquisitions (1972-1981)
Travolos and Waeglein (1992)	X	X	X	X	X	0,37	X	266 US acquisitions (1972-1986)
Hanson and Song (1996)	X	X	X	X	X	X	X	167 US deals (dual class) (1964-1990)
Bliss and Rosen (2001)	X	X	X	X	X	X	X	32 US banks (1986-1995)
Datta et al. (2001)	2,0	X	X	X	X	X	X	1719 US deals (1993-1998)
Sanders (2001)	X	X	\$4,840,000	\$924,000	\$1,335,000	X	0,12	250 US firms (1991-1995)
Wright et al. (2002)	-0,50	X	\$34 million	\$16 million	X	X	X	163 US firms (1993-1997)
Swanstrom (2006)	-2,71	X	X	X	X	X	X	294 US deals (1994-1998)
Williams and Rao (2006)	X	X	X	\$5.848 million	\$2.461 million	X	X	127 US firms (1994-1996)
Yang et al. (2010)	0,24	X	X	X	X	X	X	64 US banks (1991-2005)

Article	CAR	Volatility	Stock Ownership	Stock Options	Total Compensation	LTIP	Blockholders	Sample
Amihud & Lev (1981)	X	X	X	X	X	X	X	309 US mergers (1961-1970)
Agrawal & Mandelker (1987)	X	X	X	X	X	X	X	209 US firms (1974-1982)
Lloyd et al. (1987)	X	X	X	X	X	X		371 US firms (1971-1980)
Lewellen et al. (1989)	X	Ratio: 1,349	\$30,7 million	X	X	X	X	203 US firms (1963-1984)
Saunders et al. (1990)	X	X	X	X	X	X	X	38 US banks (1979-1982)
May (1995)	X	X	X	X	X	X	X	184 US deals (1979-1990)
Shekar & Torby (1995)	X	X	X	X	X	X	X	118 Australian firms (1994-2001)
Servaes (1996)	X	X	X	X	X	X	X	218 US firms (1961-1976)
Denis et al. (1997)	X	X	X	X	X	X	X	933 US firms (1984)
Lane et al. (1998)	X	X	X	X	X	X	X	289 US mergers (1980-1987)
Andersen et al. (2000)	X	X	X	X	X	X	X	
Sanders (2001)	X	X	\$4,840,000	\$924,000	\$1,335,000	X	0,12	250 US firms (1991-1995)
Sudarsanam & Huang (2006)	X	X	X	X	X	X	X	3069 US acquisitions (1993-2004)
Sanders & Hambrick (2007)	X	X	\$831 million	X	\$10 965 million	X	X	950 US firms (1993-2000)

Appendix C: Regression Results including Outliers

CAR	Coefficient	P> t	R ²	P
			0,1648	0,1018
MCap	-3,6e-07	0,447		
Stock Option Ratio	-0,018	0,424		
Stock Option Ratio ²	0,000069	0,969		
Stock Ownership Ratio	0,0014	0,027		
Stock Ownership Ratio ²	-2,6e-06	0,064		
Blockholders	-0,13	0,730		
LTIP	0,013	0,785		
Constant	0,084	0,127		

Results from the regression analysis on CAR (full sample).

Volatility Difference	Coefficient	P> t	R ²	P
			0,1953	0,0440
MCap	2,76e-07	0,732		
Stock Option Ratio	-0,0582	0,876		
Stock Option Ratio ²	0,000453	0,881		
Stock Ownership Ratio	-0,00346	0,002		
Stock Ownership Ratio ²	5,71e-06	0,018		
Blockholders	0,350	0,569		
LTIP	0,0496	0,616		
Constant	-0,0335	0,715		

Results from regression analysis on volatility difference (full sample).

Volatility Difference ²	Coefficient	P> t	R ²	P
			0,2350	0,0129
MCap	-4,08e-08	0,957		
Stock Option Ratio	0,00359	0,919		
Stock Option Ratio ²	-0,000813	0,777		
Stock Ownership Ratio	0,00376	0,000		
Stock Ownership Ratio ²	-6,34e-06	0,006		
Blockholders	0,00219	0,997		
LTIP	-0,0849	0,260		
Constant	0,0814	0,352		

Results from regression analysis on volatility difference² (full sample).

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
19.03.2007	19.03.2007	559.59	Property Portfolio (the Malon property portfolio, Sweden)	Sweden	Portfolio of properties.	Acta Holding ASA	Provision of investment and savings advice.	559.59
30.07.2004	30.07.2004	214.97	Olympia Capital ASA	Norway	A financial services group. Specialising in acquisition, reconstruction and management of under-performing loan portfolios.	Aktiv Kapital ASA	Collection agency. Collects past due and defaulted payments for banks and finance companies.	214.97
11.05.2006	16.06.2006	377.30	Denerco Oil A/S	Denmark	Up stream oil and gas group.	Altinex ASA	Provides equipment and services for the oil industry.	377.30
21.02.2007	31.07.2007	614.97	APL ASA (89.9%)	Norway	Supplier of production and loading systems to the offshore oil and gas industry.	Bergesen Worldwide Offshore Ltd	Oil and gas rig operator.	607.38
26.03.2007	26.03.2007	271.50	Prevesta AB	Sweden	Prefabricated houses manufacturer.	Block Watne ASA	Construction company.	217.06
15.04.2004	07.05.2004	4.31	FM-Kartta Oy	Finland	Provider of Geographic Information Systems, aerial photography, and digital mapping products and services.	Blom ASA	The company operates in lands surveying, industrial surveying, map production and maritime. They also provide navigation, hydrographic mapping, engineering and software services.	4.31
31.01.2005	31.01.2005	6.85	Simmons Aerofilm Ltd (66.667%)	United Kingdom	Map data provider.	Blom ASA	The company operates in lands surveying, industrial surveying, map production and maritime. They also provide navigation, hydrographic mapping, engineering and software services.	10.28

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
22.05.2006	22.05.2006	27.82	Scanrope AS	Norway	Manufacturer of fibre and steel wire rope.	Blom ASA	The company operates in lands surveying, industrial surveying, map production and maritime. They also provide navigation, hydrographic mapping, engineering and software services.	27.82
27.04.2006	26.06.2006	272.15	Fouquet Sacop SA	France	Shipping company which operates tankers carrying methane, oil and various chemical products.	Camillo Eitzen & Co ASA	Shipping company.	272.15
02.09.1999	31.10.1999	96.31	Fastighets AB Balder (Swedish Hotel Operations)	Sweden	Hotel operations.	Choice Hotels Scandanavia ASA	Manages hotels and restaurants, as well as offers consulting and administration services.	96.31
04.09.2006	30.09.2006	144.80	CTC Marine Projects Ltd	United Kingdom	Submarine cable installation.	DeepOcean ASA	Subsea support services provider for the oil- and gas-sector.	144.80
25.08.2009	22.12.2009	284.48	Aker Exploration ASA	Norway	Oil and gas exploration company.	Det norske oljeselskap ASA - DETNOR	Oil exploration company.	231.77
12.11.2009	12.11.2009	1.12	Best Media AS	Norway	Provider of telecommunication services.	Dolphin Interconnect Solutions ASA	Provider of solutions to interconnect servers and computer systems.	1.13
14.04.2005	14.04.2005	30.00	Oil & Gas Assets (producing oil and gas fields in Texas)	United States	undisclosed working interest in the producing oil and gas fields located in Polk and San Jacinto Counties in Texas	Ecuator ASA	Exploration and production company for oil and minerals.	30.00
22.04.2008		1 874.90	TietoEnator Oyj	Finland	Provides IT services.	EDB Business Partners ASA	Computer software and services firm.	1874.90
09.01.2008	11.02.2008	221.73	Is Partner AS	Norway	Software company.	EDB Business Partners ASA	Computer software and services firm.	221.73

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
29.05.2006	20.10.2006	314.76	Nera ASA	Norway	Supplier of satellite communications equipment and systems for terrestrial radio transmission.	Eltek ASA	Makes and markets products and systems for professional use within the areas of electric energy and fire safety	314.76
20.06.2005	19.07.2005	3.80	Pro Consulting AS (98.9%)	Norway	Develops internet software solutions for the financial sector.	Exense ASA	IT consultant and software company.	3.84
20.03.2002		440.36	Cermaq ASA	Norway	Fish feeding, farming and milling company.	Fjord Seafood ASA	Integrated salmon farming and wholesaler.	440.36
18.06.2008	15.01.2009	52.32	Fortum Oyj (Infrastructure Business Unit/ Norway)	Norway	Infrastructure business unit/ Norway	Hafslund Infratek ASA	Electrical and telecom infrastructure services company.	52.32
11.04.2005	24.01.2006	16.97	Vogon International Ltd	United Kingdom	Data recovery services.	Ibas Holding AS	Provider of solutions for data recovery.	16.97
14.02.2008	12.03.2008	137.90	Spectron Group plc	United Kingdom	Intermediary broker.	Imarex ASA	Operator of market places for commodities and their derivatives and conducts clearing and settlement of transactions.	137.90
03.06.2008	19.09.2008	19.54	Exense ASA	Norway	IT consultant and software company.	Inmeta ASA	Holding company focusing on software services companies.	19.54
03.04.2006	01.09.2006	97.28	NOS ASA (80%)	Norway	Clearing bank.	Imarex ASA	Central exchange for Freight Derivatives.	121.60
15.10.2007	28.12.2007	560.00	Teleflex Inc (Global Automotive Business)	United States	Global Automotive Business	Kongsberg Automotive ASA	Manufacturer of automobile parts, including brakes, steering and wheel systems, transmissions and stabilizers.	560.00

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
02.03.2007	02.03.2007	13.57	Genpoint AS	Denmark	Diagnostics company.	NorDiag ASA	Biotechnology company.	13.57
17.11.2008		20.51	NattoPharma	Norway	Exclusive sales and marketing rights to the natural Vitamin K2 from Natto, also biologically active molecules with clearly documented effects in major disease areas.	Nordic Health ASA	Health and body care company.	20.41
03.07.2006	03.07.2006	391.40	Hotels (15 hotel properties and 1 congress centre, Finland)	Finland	15 hotel properties and 1 congress centre, Finland.	NorGani Hotels ASA	Real estate investment company specializing in the hotel sector.	391.40
03.04.2000	28.07.2000	2 453.04	Fletcher Challenge Paper Ltd	New Zealand	Paper manufacturing and distribution, company that produces communication papers, market kraft pulp and related forestry products. Operator of 11 million paper mills in seven different countries.	Norske Skogindustrier ASA	Produces long and short fibre sulphate pulp, newsprint, bleached kraft paper and other papers as well producing sawn timber, chipboard, wallboard, parquet flooring and other building materials.	791.85
29.05.2001	21.11.2001	945.87	G Haindl'sche Papierfabriken KGaA (Paper mills Walsum and Parenco)	Germany	Manufacturer of paper.	Norske Skogindustrier ASA	Producer of long and short fibre sulphate pulp, newsprint, bleached kraft paper and other papers as well as sawn timber, chipboard, wallboard, parquet flooring and other building materials.	945.87
07.09.2005	17.11.2005	930.00	Pan Asia Paper Co Pte Ltd (50%)	Singapore	Manufacturer of newsprint.	Norske Skogindustrier ASA	Producer and supplier of paper and forest products.	1260.00
02.11.2007	02.11.2007	76.40	DSV A/S (Headquarter and main logistic hub)	Denmark	Headquarter and main logistic hub.	Northern Logistic Property ASA	Logistic property company.	76.40

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
06.03.2006	06.03.2006	1 596.00	Marine Harvest International BV	Netherlands	Fish farming and processing group.	Pan Fish ASA	Involved in fish farming and aquaculture.	1596.00
22.01.2001	31.03.2001	204.78	Nortrans Offshore Ltd	Singapore	Manufacturer of floating production vessels for oil and gas exploration.	Prosafe ASA	Owns, lesses and manages moveable accommodation platforms (flotels), oil platforms, drilling rigs, ships and related products.	204.78
16.04.2008	26.08.2008	68.08	CashGuard AB (74.95%)	Sweden	Develops and manufactures products aimed at increasing security when handling cash in any retail environment.	PSI Group ASA	IT company.	72.45
05.12.2007	27.02.2008	258.00	Palace Exploration Co UK Ltd	United Kingdom	Petroleum exploration.	Revus Energy ASA	Oil and gas company.	258.00
07.06.2006	14.07.2006	746.89	Trader Classified Media NV (Trading Operations in Spain, France, Italy, Switzerland and Latin America)	Netherlands	Trading Operations in Spain, France, Italy, Switzerland and Latin America.	Schibsted ASA	Media group.	746.89
20.12.2007	23.01.2008	10.87	Fire Eater A/S (51%)	Denmark	Developing and producing of fixed fire extinguishing systems.	Simtronics ASA	Gas and fire detectors for industrial use.	21.31
13.04.2007		312.27	REM Offshore ASA (63.42%)	Norway	Fishing and offshore services company.	Solstad Offshore ASA	Offshore supply vessel operator.	325.96
06.03.2006	06.03.2006	270.00	Mining Assets (Offshore oil rig Stena Dee, Norway.)	Norway	Offshore oil rig Stena Dee, Norway.	Songa Offshore ASA	Offshore oil drilling machinery provider.	270.00
17.06.2008	17.06.2008	428.50	Mining Assets (Oil mining assets)	Norway	Oil mining assets.	Songa Offshore ASA	Offshore oil drilling contractor.	428.50

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
27.04.2005	27.04.2005	117.61	Property Portfolio (Piresenteret Office Complex, Trondheim, Norway)	Norway	Piresenteret Office Complex, Trondheim, Norway.	Sparebanken 1 Midt-Norge ASA	Savings bank.	117.61
20.12.2004		164.86	Romsdals Fellesbank A/S (Bid No 2)	Norway	Commercial bank.	Sparebanken More	Savings bank.	164.86
05.12.2006	17.09.2007	35.89	Fokus Bank ASA (Operations in the Sogn og Fjordane County, Norway)	Norway	Five branches, their employees and all customer activities in the Sogn og Fjordane County.	Sparebanken Vest	Commercial banking services, securities management, insurance and other financial services.	35.90
18.12.2006	01.10.2007	30 464.19	Norsk Hydro ASA (Oil and gas activities)	Norway	Oil and gas activities.	Statoil ASA	Petroleum exploration, production, and marketing.	30464.19
01.12.2004	20.12.2004	214.70	Shopping Centers (Field's shopping centre in Copenhagen)	Denmark	Field's shopping centre in Copenhagen.	Steen & Strom Invest ASA	Real estate investment and management company. The company owns and manages shopping Centers in Oslo and other areas in Norway and Sweden.	429.41
03.09.2007	21.12.2007	2 642.74	SPP Livforsakring AB; Handelsbanken Life & Pensions Ltd; SPP Fonder AB	Sweden	Mutual insurance company.	Storebrand ASA	Holding company for insurance and banking group.	2642.74
02.02.2004		106.25	Norman ASA	Norway	Develops and markets data protection software. Sells total integrated data security solutions.	Tandberg Data ASA	The company manufactures data storage products, displays and keyboards, tape drives, data storage solutions and tape duplication and qualification systems.	106.25

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
31.08.2006	31.08.2006	28.00	Exabyte Corp	United States	Provider of data storage solutions	Tandberg Data ASA	Manufactures tape storage management solutions for businesses.	28.00
25.09.1999	25.09.1999	279.35	News Digital Systems Ltd (Digital Broadcasting Business)	United Kingdom	Digital Broadcasting Business	Tandberg Television ASA	Manufactures and sells products and systems for coded ,television signals.	279.35
30.07.2007		1 363.97	Wavefield Inseis AS	Norway	Marine geophysical company.	TGS-NOPEC Geophysical Co ASA	Offers geophysical consulting and contracting services to oil companies.	1156.99
30.04.2007	25.05.2007	100.76	Sense EDM AS	Norway	Industrial drilling equipment.	TTS Marine ASA	Designs, develops and supplies ships and shipyard equipment. Formerly known as TTS Technology ASA.	100.76
28.12.2001	28.12.2001	17.71	Hamworthy KSE AB	Sweden	Manufacturer of dry cargo handling equipment.	TTS Technology ASA	Manufacturer of shipping equipment, organised in three divisions: Marine & Offshore Cranes and Equipment, Cargo Handling & Cargo Access Equipment and Material Handling.	17.71

Announcement Date	Completion Date	Deal Value \$ (m)	Target	Target Nationality	Target Business Description	Acquirer	Acquirer Business Description	Equity Value \$ (m)
07.02.2001	26.07.2001	75.73	SPCS-Gruppen ASA	Norway	Company develops, markets and distributes financial business software systems for small and medium sized companies.	Visma ASA	Develops, manufactures and sells computer software and data processing systems for industry and ship management. Also provides outsourcing services in accounting and finance.	75.73
25.08.2003	23.10.2003	12.06	Photonyx Ltd	Norway	Research facility specialized in micro technology. Developer of optical telecom products.	WiCom ASA	Provides data base information retrieval and logistics systems and services. System integrator with competence within wireless communication network, IP based services and network infrastructure.	12.06
05.12.2003	05.12.2003	2.24	Smartnet AS	Norway	ICT infrastructure integrator.	WiCom ASA	Provides data base information retrieval and logistics systems and services. System integrator with competence within wireless communication network, IP based services and network infrastructure.	2.24
15.10.2009	15.10.2009	3.61	A-com Norge ASA	Norway	Marketing communication company.	Zoncolan ASA	Investment company.	3.61