

NHH



# Ownership Concentration & Acquiring Firm M&A Returns

*An empirical analysis of acquirer returns in Norway*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

“Invest in a business that even a fool can run, because some day a fool will.”

- Warren Buffett

## Abstract

This thesis studies the relationship between ownership concentration and acquiring firm M&A announcement returns. In agency literature, ownership concentration has been proposed as an effective governance mechanism. The main benefit of ownership concentration is improved corporate performance due to monitoring and intervention by large shareholders. However, large shareholders may impose costs if they act only in their self-interest. The net effect of ownership concentration is therefore unclear. While there are several studies that analyse the effect of ownership concentration on operating performance and valuation, to my knowledge, no previous study has examined its effect on acquiring firm M&A announcement returns. M&A announcements present a unique opportunity to examine the effect of ownership concentration as M&A's intensify the agency costs between managers and shareholders, and the valuation effects are easily observable.

Using an event study, I analyse a sample of 373 completed acquisitions by Norwegian public companies from 1997 through 2016. Different levels of ownership concentration are taken into consideration as the fraction of shares owned by the largest shareholder may affect the result. I find evidence of an insignificant relationship between large minority shareholders (shareholders that own more than 20% and less than 50% of firm's share) and acquiring firm announcement returns, and a significantly negative relationship between controlling majority shareholders (shareholders that own more than 50% of a firm's share) and acquiring firm announcement returns. The results indicate that extreme ownership concentration due to controlling majority shareholders is associated with a negative effect on acquiring firm announcement returns. To test if the negative relationship is related to the type of owner, I compare private controlling owners (active owners) with the state (passive owner). The results of this test indicate that there is no difference in announcement returns when the controlling majority owner is a private owner or the state. Overall, the results raise the question as to whether there are benefits of ownership concentration and I conclude that the negative relationship is a result of inadequate monitoring by self-serving, controlling owners.

**Note:** The terms "bidder" and "acquirer" are used interchangeably.

## Preface

This thesis was written as part of my Master of Science in Economics and Business administration at the Norwegian School of Economics (NHH). It marks the end of a challenging but rewarding experience. The topic reflects my interest in finance and M&A. I owe my gratitude to several individuals for their contribution to the thesis.

First and foremost, I wish to express my sincerest gratitude to my supervisor, Professor Karin S. Thorburn, for her counselling on the choice of topic, continuous feedback during the writing process and her support. Her inputs and constructive criticisms throughout the process have been extremely valuable for my progress. I would also like to thank Associate Professor Aksel Mjøs and Kellis Akselsen at SNF for providing access to SNF's data on ownership of Norwegian public companies. Finally, I would like to thank Emeritus Professor Thore Johnsen and Børsprosjektet for their help in collecting financial data.

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# 1. Introduction

A corporate takeover is one of the largest and most important investment decisions a company can make (Betton, Eckbo, & Thorburn, 2008). Yen & André (2010) note that the level of M&A activities that companies are involved in is one of the most important drivers of firm performance in the past twenty years. As a result, takeovers have attracted a large body of empirical research because they provide a unique opportunity to examine the value effects of managerial decisions (Betton et al. 2008). There are several ways through which M&A's can be value enhancing for acquiring firm shareholders such as synergies and growth (DePamphilis, 2015; Gaughan, 2007). Public announcements of M&A's are therefore made with enthusiasm and acquiring firm managers proclaiming huge gains of takeovers through cost and revenue synergies. The overwhelming empirical evidence, however, concludes that the main recipients of takeover gains are the target firm shareholders (Dessaint, Eckbo, & Golubov, 2019). Acquiring firm shareholders tend to experience small or negative announcement returns (Alexandridis, Petmezas, & Travlos, 2010; Andrade, Mitchell, & Stafford, 2001; Betton et al. 2008). These results have led to theories of agency costs in M&A decisions (Jensen, 1986; Roll, 1986; Shleifer & Vishny, 1989).

In modern corporations with diffuse ownership as described by Berle & Means (1932) and Jensen & Meckling (1976), the relationship between shareholders and managers fit the description of an agency relationship. Managers are hired to run the company on behalf of its shareholders, which leads to separation of ownership from control rights. As a result, managers decide how to use corporate resources that belong to the shareholders and there is a potential conflict of interest. The shareholders expect the manager to maximize the market value of the firm (Jensen, 2010) and receive cash flows through dividends (Jensen & Ruback, 1983). The managers, however, may seek to use corporate funds to enrich themselves at the expense of the shareholders (Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Agency costs arise as a result of the conflict of interest between managers and shareholders.



One of the most common governance mechanisms proposed to reduce agency costs arising from the separation of ownership and control in corporate governance literature, is ownership concentration. The problem with diffuse ownership is that shareholders are small and therefore lack the incentive to monitor managerial behavior (Maher & Andersson, 2000; Shleifer & Vishny, 1997). They also do not have enough control to influence managerial decisions. Concentration of ownership through the existence of large shareholders, aligns cash flow and control rights. Substantial cash flow rights give large shareholders the incentive to monitor managerial behavior and interfere when management make value destroying decisions (Shleifer & Vishny, 1997). Additionally, large shareholders have enough control rights which gives them power to influence corporate decisions. Large shareholders therefore address the agency problem because they have an interest in value maximization and have control over the firm, thus they can prevent managerial discretion (Shleifer & Vishny, 1997; Triole, 2006; Urban, 2015).

While the main benefit of ownership concentration is a reduction in agency costs due to monitoring, there are potential costs of ownership concentration that can lead to value destruction. The main cost of ownership concentration appears to be conflict of interest between majority and minority shareholders (Johnson, La Porta, Lopez-De-Silanes, & Shleifer, 2000; Shleifer & Vishny, 1997). Several researchers argue that controlling shareholders potentially make decisions that benefit themselves such as extracting private benefits or expropriating corporate funds (Johnson et. al, 2000; Bebchuk, 1999; Shleifer & Vishny, 1989; Shleifer & Vishny, 1997). Other costs associated with ownership concentration mentioned in the literature are reduced market liquidity (Holmstrom & Triole, 1993), low diversification benefits (Demsetz & Lehn, 1985), and lower management initiative (Burkart, Gromb, & Panunzi, 1997).

Because the effect of ownership concentration is a net result of costs and benefits, the relationship between ownership concentration and firm performance is unclear. *The purpose of this paper is to examine the relationship between ownership concentration and acquiring firm announcement returns in Norway.* To my knowledge, there are no papers that examine whether ownership concentration is related to acquiring firm announcement returns. M&A announcement returns present a unique opportunity to examine whether ownership concentration is an effective governance mechanism. According to Shleifer & Vishny (1997), the clearest evidence on agency problems comes from acquisition announcements. Additionally, M&A announcement returns instantly capture the effect of one investment

decision. Because M&A's intensify the agency problems between managers and shareholders, and the valuation effects are easily observable, they provide a unique venue to examine corporate governance mechanisms. The Norwegian market is an excellent research environment. There are three reasons for why the Norwegian market is an interesting research environment. Firstly, the Norwegian market is characterized by large ownership concentration compared to other countries (Døskeland & Mjøs, 2008; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998). Secondly, the Norwegian legal environment provides shareholders strong protection and should serve to minimize costs of ownership concentration. Thirdly, the government ownership in Norway is large compared to other countries. Theoretically, a directly involved large investor is considered to be better than an indirect and passive owner such as the state.

This paper complements the existing literature in two ways. Firstly, it adds to the literature examining the relationship between ownership concentration and firm performance. Most of the research on the relationship between ownership concentration and firm performance look at performance measures such as Tobin's Q and returns on assets (RoA). The problem of such measures is that they reflect several decisions over time and can be influenced by several factors. The results of this paper add to the literature on ownership concentration by examining its effect on a new performance measure. Secondly, it adds to the literature on acquiring firm announcement returns. To my knowledge, none of the studies examining bidder announcement returns have examined whether ownership concentration is a determinant of acquiring firm announcement returns.

Using a sample of 373 acquisitions by Norwegian public companies from 1997 through 2016, I find a significantly negative relationship between acquiring firm announcement returns and controlling majority shareholders (CMS). However, I do not find a significant relationship between large minority shareholders (LMS) and acquiring firm announcement returns. These findings indicate that the level of ownership concentration affects the relationship between ownership concentration and acquiring firm announcement returns. Extreme ownership concentration due to a controlling shareholder is associated with lower announcement returns while ownership concentration due to a large minority shareholder does not affect announcement returns. To test if the negative relationship is related to the type of owner, I compare private controlling owners with the state. The results of this test indicate that there is no difference in announcement returns when the CMS is a private owner or the state. While it is possible that the result is due to expropriation by controlling

owners, I do not believe that to be the case. Expropriation by large shareholders is most common in countries with weak legal protection of shareholders and increases with the use of control mechanisms such as dual-class shares, pyramid structures and intercorporate ownership. Norwegian law provides shareholders with strong protection, and there is no prevalent use of control mechanisms. Instead, I conclude that the negative relationship is a result of inadequate monitoring.

The rest of this paper is structured as follows. Section 2 presents a brief overview of the Norwegian regulatory environment for shareholder protection and the ownership structure of firms listed on the Oslo Stock Exchange (OSE). The aim of the section is to evaluate the level of protection afforded to shareholders by Norwegian law and to provide a description of the ownership structure of firms listed on the OSE. Section 3 presents theory and empirical evidence related to ownership concentration and its relationship with firm performance. It also presents theory and empirical evidence related to mergers & acquisitions and acquiring firm announcement returns. Section 4 describes the methodology while section 5 describes the data and sample used in the paper. Section 6 presents the main empirical results and section 7 concludes the paper.

## 2. Institutional framework

The aim of section 2.1 is to describe and evaluate the level of protection afforded to shareholders by law. There appears to be an agreement amongst researchers that the legal protection of shareholders is important for ownership concentration and that weak protection makes it easier for large shareholders to extract private benefits. Section 2.2 aims to describe the ownership of OSE listed firms and provide information on the use of corporate control mechanisms, ownership concentration and state ownership in Norway. According to several researchers the use of corporate control mechanisms such as dual-class shares, pyramid structures and intercorporate ownership is associated with higher risk of expropriation by large shareholders.

### 2.1 Legal environment

La Porta et al. (1998) note that the differences in capital structures and ownership of firms may vary between countries due to differences in legal protection of shareholders. According to La Porta et al. (1998), the two major systems for commercial law are common law of English descent and civil law of Roman origin. Within civil law, the three major traditions from which commercial law originate are French, German and Scandinavian. Norway belong to the Scandinavian law tradition and thus follow civil law (Bøhren & Ødegaard, 2001). La Porta et al. (1998) note that civil law countries have weaker investor protection than common law countries. Relatively speaking, common law countries give investors the strongest protection and French-civil-law countries give the weakest protection. The Scandinavian law tradition falls between common law and French civil law and has the highest quality of law enforcement (La Porta et al., 1998). The primary legal tools for regulation of corporate governance in Norway are Allmennaksjeloven (Public Companies Act), Verdipapirhandelsloven (Securities Trading Act), Børsloven and Børsforskriften (the listing requirements of the Oslo Stock Exchange (OSE)).

Norwegian listed firms use a two-tier board system which consists of bedriftsforsamling (supervisory board) and styret (board). Firms with more than 200 employees are required to have a supervisory board (bedriftsforsamling) which consists of at least 12 members of which 2/3 are elected by the owners and 1/3 by the employees. The supervisory board elect members of the board and the chairman of the board. Additionally, the supervisory board

supervise the board and make final decisions on significant investments. All votes in the board and the supervisory board are by majority. (Bøhren & Ødegaard, 2001; Jakhellin, 2009)

The main tool for shareholders to exercise authority is the general meeting and shareholders can vote over any issue but cannot overrule decisions made by the supervisory board. The voting rules apply to the attendees of the meeting and not all shareholders, which results in no power without presence. Most issues require a simple majority while changes in corporate charter require a 2/3 majority and the general principle is one share one vote. Any shareholder can put items on the agenda for the meeting and an extraordinary general meeting can be called by any shareholder who owns at least 5% of the cash flow rights (Bøhren & Ødegaard, 2001; Lovdata, 1997; Knudsen & Langseth , 2020).

Mechanisms for increasing voting power without buying more shares includes voting pacts through which shareholders establish pacts with other shareholders and proxy votes (Bøhren & Ødegaard, 2001). The regulation of voting pacts is limited as shareholders are not obligated to disclose such information, however if a firm is aware of voting pacts it is obligated to disclose the information to the stock exchange. In general, there are no limitations on intercorporate ownership, however there are caps on investments for the financial industry (Bøhren & Ødegaard, 2001). Bøhren & Norli (1997) find that on average, listed firms own 15% of the total equity market value. In their study, the average intercorporate ownership is 2.8% with a mean holding period of 1.7 years. They conclude that intercorporate investments are not motivated by control reasons but is a part of cash management.

Minority protection is based on the principle of equal proportional rights for every shareholder. The legal limitations on the authority of the majority is found in anti-abuse provisions in the Public Companies Act and they prohibit shareholders, directors and CEOs from providing unreasonable advantage to certain shareholders at the expense of other shareholders or the company. Additionally, the listing requirements of the Oslo Stock Exchange and the Securities Trading Act contain provisions on equal treatment of shareholders (Knudsen & Langseth , 2020).

Ownership disclosure are required to be filed with the OSE if a person's, entity's or group's holding of cash flow or voting rights reaches, exceeds or falls below the thresholds of 5%,

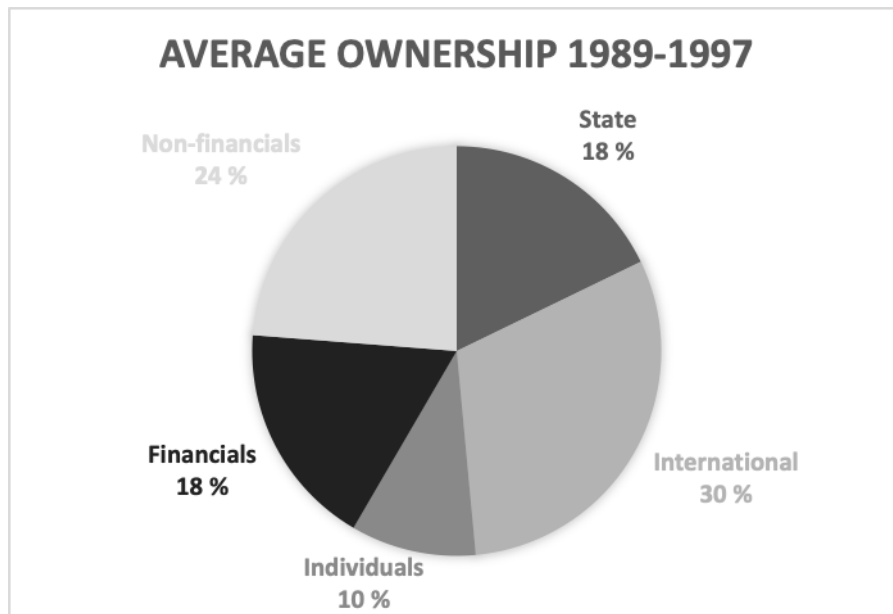
10%, 15%, 20%, 25%, 1/3, 50%, 2/3 or 90%. In addition, Norwegian take-over rules require a mandatory offer for the remaining shares in a company within four weeks, if a person, entity, or group reaches an ownership level of 1/3 of the voting rights. The mandatory offer is also triggered at 40% and 50% ownership (Oslo Børs, 2017).

In addition to the mandatory offer trigger, there is a squeeze-out right and a sell-out right at 90% ownership threshold. If a shareholder owns more than 90% of the number of shares issued and more than 90% total voting rights, the shareholder has a right to effect a compulsory cash acquisition for the remaining shares. Similarly, minority shareholders in such a company have the right to effect a compulsory cash offer for the remaining shares (Oslo Børs, 2017).

La Porta et al. (1998) compare the legal environment of 49 countries with respect to investor protection. Looking at seven investor rights including voting rights, one-share-one-vote principle, the right to call a general meeting and legal protection against oppression by directors, they rank the legal framework for investor protection. Their main findings are that investor protection varies between legal environment and that the strongest protection is provided in common law countries such as the US and the UK. However, in their study Norway achieves a similar score as the average of the common law countries. Within the countries following the Scandinavian law, Norway achieves the highest score for investor protection. Based on these findings, it seems reasonable to conclude that the Norwegian regulatory environment provides strong investor protection compared to other countries.

## 2.2 Ownership structure

Bøhren & Ødegaard (2001) provide an overview of the ownership of companies listed at the OSE based on data from 1989-1997. They group owners into five categories, State, International, Individuals, Financials and Non-financials. Figure 2.1 presents value-weighted aggregate ownership of the market cap of the OSE between 1987 and 1989 (Bøhren Ødegaard, 2001).

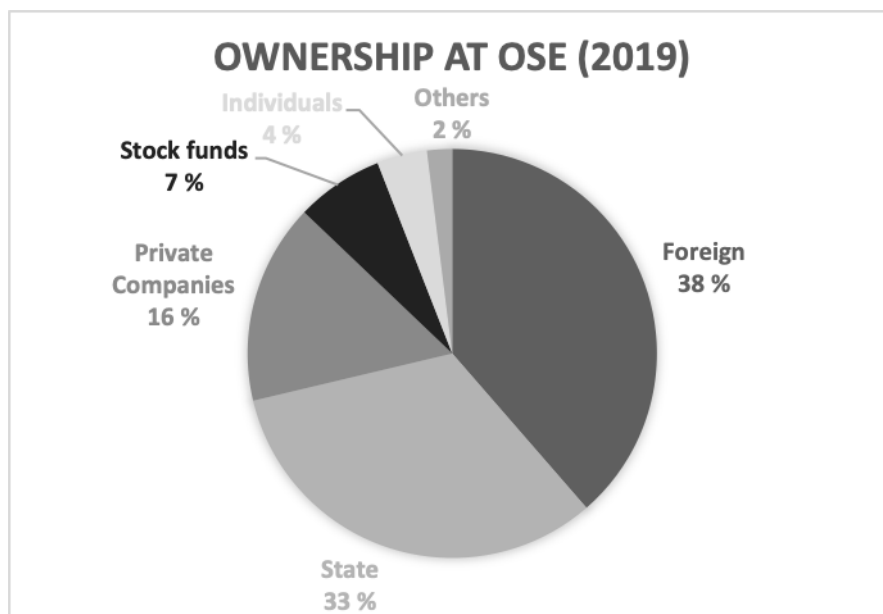


**Figure 2.1:** Aggregate ownership at OSE by investor type (1989-1997).

International investors held the largest fraction (30%) of the OSE followed by non-financial Norwegian companies (24%). State ownership of 18% was equal to the ownership of financial companies (banks, insurance, pension funds and mutual funds) while domestic individual investors owned only 10%. Based on these findings they conclude that there is little direct ownership of equities on the OSE and there is a widespread use of indirect holding. They also report that intercorporate ownership between listed firms is limited to an average 8%. However, there is a decline from 14% in 1989 to 4% in 1997 and they note that there is limited potential for increased voting power through intercorporate ownership. In addition, they find that approximately 14% of OSE firms have dual-class shares and that international investors own most of the non-voting equity (54%) while the state, domestic firms and individuals prefer shares with voting rights. Firms with non-voting shares, on average, have an approximate 30/70 split between B shares and A shares.

La Porta, Lopez-De-Silanes, Shleifer, & Vishny (1999) analyze the ownership structure of firms across the world. They report that for large publicly traded firms in Norway, only 25% are widely held. For medium-sized publicly traded firms in Norway only 20% are widely held. This is considerably lower than countries such as the US (80% of large and 90% of medium sized firms are widely held) and the UK (100% of large and 60% of medium sized firms are widely held). In a more recent paper analyzing the ownership structure of firms listed on the OSE, Døskeland & Mjøs (2008) find that ownership concentration in Norway has increased over time. They also find that the ownership concentration in Norway is large compared to international levels.

An updated overview of the current ownership, in percent of market value, is presented in Figure 2.2. The figure is based on a government report published November 22, 2019<sup>1</sup>.



**Figure 2.2:** Aggregate Ownership at OSE as of 2019.

While the ownership categories differ slightly from Bøhren & Ødegaard (2000), the largest shareholders are the same. International investors have increased their ownership to 38%, while the most striking increase in holdings is state ownership. Since 1997, the state has almost doubled its ownership from 18% to 33%. The current level of state ownership is, both in number of companies and value, greater than in many other western countries (Nærings- og fiskeridepartementet, 2019). The state ownership of listed firms is large compared to

<sup>1</sup> Meld. St. 8 (2019-2020). Available at <https://www.regjeringen.no/no/dokumenter/meld.-st.-8-20192020/id2678758/?ch=1>



other OECD countries (Riksen, 2018) and a study by Kowalski, Büge, Sztajerowska, & Egeland (2013) shows that Norway is amongst the ten countries in OECD with the highest share of state ownership.

The state has direct ownership in seven listed firms and indirect ownership in an additional three through its ownership of Aker Kværner Holding AS.

**Table 2.1: Direct state ownership at OSE (2019)**

|  |           |
|--|-----------|
| DNB ASA                                      | 34.00%    |
| Entra ASA                                    | 22.27%    |
| Kongsberg ASA                                | 50.001%   |
| Norsk Hydro ASA                              | 34.26%    |
| Telenor ASA                                  | 53.97%    |
| Yara International ASA                       | 36.21%    |
| Equinor ASA                                  | 67.00%    |
| Market value of holdings as of year-end 2018 | NOK 698bn |

The Norwegian state categorizes its ownership into the following four groups:

1. Commercial objectives
2. Commercial objectives and objective to maintain head office in Norway
3. Commercial objectives and other specific goals
4. Sectoral-Political objectives

All the listed companies owned by the state are classified as group 2 apart from Entra ASA (group 3). According to the yearly report on state ownership, the objective of the state ownership for companies in categories 1-3 is to maximize return over time. For group 2 an additional objective is to keep headquarters and headquarter functions located in Norway.

## 3. Theory & literature review

### 3.1 Ownership concentration

#### 3.1.1 Separation of ownership and control

The agency problem between owners and managers is widely discussed in finance literature and at the heart of the problem lies the separation of ownership and control. Jensen & Meckling (1976) define an agency relationship as a contract where one or more people (the principal(s)) hire a person (the agent) to perform services on their behalf. This process involves delegating authority and decision making to the agent. Assuming that both parties of the contract are utility maximizers, agents looking to maximize their own utility will not always act in the best interest of the principal (Jensen & Meckling, 1976). When the agent's decision diverges from what is in the best interest of the principal, the latter will experience a reduction in welfare.

In modern corporations with diffuse ownership as described by Berle & Means (1932), and Jensen & Meckling (1976), the relationship between shareholders and managers fit the description of an agency relationship. Managers are hired to run the company on behalf of its shareholders, this raises the issue of separating ownership from control rights. The firm is owned and financed by the shareholders but the control rights, the rights to make decisions, end up with the managers. The managers often have substantial control rights and therefore the authority to allocate the shareholders' funds as they decide (Shleifer & Vishny, 1997). This results in a separation of ownership and control where managers decide how to use corporate resources that belong to the shareholders and there is a potential conflict of interest. The shareholders expect the manager to maximize the market value of the firm (Jensen, 2010) and receive cash flows through dividends (Jensen & Ruback, 1983). The managers, however, may seek to use corporate funds to enrich themselves at the expense of the shareholders (Jensen & Meckling, 1976; Shleifer & Vishny, 1997).

Triole (2006) identifies four categories of managerial actions that conflict with the best interest of the shareholders. The first category is *insufficient effort*, which refers to managers allocating their time inefficiently between various tasks. The second category is *extravagant investments* and refers to managers engaging in pet projects and empire building at the expense of the shareholders. The most common example of extravagant investment are bad

acquisitions (Jensen, 1986; Shleifer & Vishny, 1997). The third category is *entrenchment strategies* and refers to management actions to secure their position at the expense of the shareholders. Examples include investment in lines of industries that make managers indispensable (Shleifer & Vishny, 1989), manipulation of performance measures and resisting takeovers. The last category is *self-dealing*, which includes consumption of perks such as private jets, expensive offices and club memberships. Self-dealing activities can also become illegal through actions such as theft.

There are many examples in the literature of managerial behavior that does not seek to serve the best interest of the shareholders. Using examples from the oil industry in the mid-1980's, Jensen (1986) argues that instead of returning free cash to investors managers choose to reinvest it, because they have incentives to increase the size of their firms as both their power and the resources they control increase. There are also several studies on M&A that find negative announcement returns for acquiring firms, which further suggests that managers make investment decisions that destroy shareholder value.

The field of corporate governance seeks to understand which constraints or actions shareholders, or even managers can impose to reduce costs associated with agency problems. While there are several governance mechanisms, this thesis focuses on ownership concentration.

### **3.1.2 Benefits of ownership concentration**

Monitoring refers to interfering with management to obstruct value destroying actions (Triole, 2006). Monitoring can be performed by many external stakeholders such as auditors, creditors, investors, investment banks and rating agencies. Active monitors collect information on strategies proposed or followed by managers and intervene to stop managers from following value destroying strategies. Active monitors intervene in matters such as strategic decisions, investment decisions, asset sales and managerial compensation (Triole, 2006).

In widely held companies with dispersed ownership, each investor has little incentive to monitor the management. Factors such as monitoring costs and lack of influence make effective monitoring difficult. A small investor only gains a fraction of any value increase of effective monitoring but must bear the entire cost. Therefore, small investors have the incentive to free-ride and hope that other shareholders will perform the monitoring (Maher &

Andersson, 2000). Small investors also do not have enough control through voting rights to influence decisions or put pressure on the management. Because the ownership of the company is dispersed across many shareholders, each shareholder cannot exercise real power to oversee the management (Demsetz, 1983).

Concentration of ownership aligns cash flow rights and control rights and happens when one or a few investors have substantial ownership stakes. Investors that own substantial stakes have the incentive to collect information and perform effective monitoring. Their cash flow rights ensure that they have the incentive to incur monitoring costs as they will receive a substantial part of any value increase associated with monitoring. Additionally, their substantial holdings give them voting control to influence decisions and put pressure or even oust the management. In cases where an investor owns more than 50%, he controls the firm and management outright (Shleifer & Vishny, 1997).

A large shareholder therefore has the incentive and power to monitor the management. The presence of a large shareholder who performs active monitoring, limits opportunistic behaviour by managers and increases the probability of being detected. In turn, the higher probability of being detected increases the costs of opportunistic actions and reduces the incentive for such behaviour. Large shareholders therefore help mitigate the agency problems and the agency costs. Therefore, the presence of a large shareholder is assumed to have a positive effect on firm value, performance, and decisions (Urban, 2015).

### **3.1.3 Costs of concentrated ownership**

Costs associated with concentrated ownership are reduced market liquidity (Holmstrom & Triole, 1993), low diversification benefits (Demsetz & Lehn, 1985), conflict of interest between majority and minority shareholder (Johnson et al., 2000; Shleifer & Vishny, 1997) and lower management initiative (Burkart, Gromb, & Panunzi, 1997).

When management is provided with decision making autonomy, they are more likely to take initiative such as actively seeking new investment opportunities. With active monitoring by controlling or large shareholders who may intervene or interfere, the autonomy is reduced. This makes managers less likely to take initiative because there is a constant threat of interference. A large shareholder also leads to a reduced liquidity in the firm's stock. When one large investor holds a large equity stake, it reduces the number of shares that can be traded and thus reduces the price informativeness (Urban, 2015).

In agency literature, managers are assumed to be very risk averse because they have a direct and large undiversified exposure to firm-specific risk. On the other hand, investors are assumed to be well-diversified and therefore less concerned about firm-specific risk. This may however not be true for large shareholders, and they may share the same risk aversion as the managers. Depending on their portfolio, a large stake in a firm can make investors undiversified. In this case, a large shareholder may become risk averse. Therefore, it is not necessary that monitoring performed by a risk averse blockholder is in the best interest of the small shareholders that are well-diversified and risk-neutral (Urban, 2015).

According to Dyck & Zingales (2004), the main agency problem outside the US and the UK is not between managers and shareholders but between dominant/controlling shareholders and minority shareholders. Concentrated ownership may induce large shareholders to expropriate corporate resources and/or funds at the expense of minority shareholders (Urban, 2015). Johnson et al. (2000) propose that large shareholders, through group structures such as pyramids and intercorporate ownership, transfer corporate resources to other entities they own. This is referred to as tunnelling, and amongst other comprises actions such as advantageous transfer prices, cheap loans, excessive compensations for positions or through mergers and acquisitions. Johnson et al. (2000) further suggest that there can be substantial tunnelling even in developed countries. However, they also conclude that much of the tunnelling is legal as it is consistent with statutes and basic principles followed by judges. Additionally, they note that illegal tunnelling is more prevalent in emerging markets. According to Dyck & Zingales (2004) there are also non-pecuniary private benefits of controls. These private benefits are defined as the “psychic” value of control for some shareholders (Dyck & Zingales, 2004).

The agency costs associated with large shareholders increase as voting rights are separated from cash flow rights (Bebchuk, 1999; Bebchuk, Kraakman, & Triantis, 2000). Separation of voting rights and cash flow rights allows large shareholders to retain full control of a firm without owning a majority of the cash flow rights imbedded in equity. Bebchuk (1999) describes three mechanisms for separating voting rights from cash flow rights; dual-class share structures, stock pyramids, and cross-ownership. Bebchuk (1999) suggests that a structure with a controlling shareholder is more likely when private benefits of control are large. These benefits do not depend only on legal system but also on industry parameters.

### **3.1.4 Empirical evidence on the effect of ownership concentration**

Holderness & Sheehan (1988) provide one of the first studies on the impact of concentrated ownership on firm performance. Using 114 firms with majority owners (shareholders owning more than 50% of equity) listed in the US between 1979 and 1984, they examine differences between widely held companies and companies with concentrated ownership. They find that investment decisions, number of mergers and acquisitions, rates of return and Tobin's Q are similar for both types of firms. Furthermore, they conclude that the evidence is inconsistent with the idea that majority shareholders expropriate corporate funds. They also find that the identity of large shareholders seems to be important, they separate owners into individuals and corporations and find that most of their empirical findings differ between the two groups.

La Porta et al. (1999) examine data from 27 developed economies to evaluate the influence of investor protection and ownership of the controlling shareholder on firm valuation, measured as Tobin's Q. They find that valuations are higher in countries with good shareholder protection and that higher cash flow ownership of the controlling shareholders leads to higher valuations, especially in countries with poor investor protection.

Bhagat, Black, & Blair (2004) examine the effect on firm performance of long-term outside blockholders who actively monitor management performance. They use a sample of more than 1,500 companies listed in the US between 1983 and 1993 and measure firm performance as market adjusted returns. They report a positive effect only during the sub-period 1987-1990 and an insignificant relationship in the other periods. Based on their findings, they conclude that there appears to be little support for the theory that large shareholders are better monitors and lead to better performance.

Cronqvist & Nilsson (2003) analyze the relationship between controlling minority shareholders and Tobin's Q using a sample of 309 listed firms between 1991 and 1997. They note that there is widespread use of dual-class shares, pyramid structures and cross-ownership in Sweden that allows shareholders to retain control without owning a majority of the equity. The legal protection of minority shareholders in Sweden is also relatively weak. Cronqvist & Nilsson (2003) find a robust negative relationship between ownership concentration and firm value (Tobin's Q) and conclude that controlling owners are associated with agency costs. They define a controlling shareholder as a shareholder that

owns at least 25% of a firm's shares. Additionally, they report that the negative relationship exists for all types of controlling owners. They also find that an increase in voting power does not lead to higher agency costs. The negative relationship between ownership concentration is also present when they use operating performance (RoA and RoE) instead of Tobin's Q. Cronqvist & Nilsson (2003) conclude that the lower operating performance is likely a result of suboptimal investments decisions.

Bøhren & Ødegaard (2006) also examine the relationship between ownership concentration and firm performance. Their study is focused on all non-financial firms listed on the OSE between 1989 and 1997. They use two different measures of ownership concentration, one is the Herfindahl index and the other is the fraction of equity owned by the  $n$ th or  $n$  largest shareholder with  $n$  varying between 1 and 5. Performance is measured by Tobin's Q, RoA and RoS, however the focus is on Tobin's Q. Bøhren & Ødegaard (2006) find a negative relationship between ownership concentration and all performance measures. It is also insensitive to whether ownership concentration is measured by the Herfindahl index or the fraction owned by the  $n$  largest shareholders ( $1 < n < 5$ ). Based on the results, they conclude that large outside shareholders seem to destroy value. They suggest that the reason for the negative relationship appears to be that large shareholders either do not perform active monitoring or that the monitoring does not benefit all shareholders if it is carried out.

## 3.2 Mergers & Acquisitions

The terms merger, acquisition and consolidation are often used interchangeably and usually the term takeover is broadly used to refer to a situation where one company assumes control of another. While I will use the terms interchangeably when referring to different types of deals, it is useful to know the difference between a merger, an acquisition and a consolidation.

Gaughan (2007) defines mergers as combinations of two entities where only one entity survives, and the merged entity ceases to exist. In mergers, the assets and liabilities of the merged entity are assumed by the acquiring entity. An example of a merger is the takeover of Mobil by Exxon through which the operations of Mobil were merged into Exxon to create the ExxonMobil Corporation. (Gaughan, 2007) suggests that mergers can be viewed as  $A + B = A$ .

In a consolidation, two or more companies are joined to create a new company. This process can be described as  $A + B = C$ . All entities that are involved in a consolidation cease to exist, while a new entity with a new name is formed. Usually, the shareholders of the consolidated entity exchange their shares for shares in the new entity (DePamphilis, 2015).

In an acquisition, on the other hand, one company acquires a controlling stake in another firm. This usually involves purchasing the stock of a company. The purchased company continues as a legally owned subsidiary (DePamphilis, 2015). Warren Buffet's Berkshire Hathaway is one of the most prominent acquirers, owning several subsidiaries.

### 3.2.1 Motives for M&A's

A corporate takeover is one of the largest and most important investment decisions a company can make. Yen & Andr  (2010) note that the level of M&A activities that companies are involved in is one of the most important drivers of firm performance in the past twenty years. In this section I describe the motives behind M&A decisions.



## *Growth*

Gaughan (2007) states that growth is one of the most fundamental motives for M&A. Firms seeking to grow can pursue two strategies for growth, one is organic internal growth and the other is growth through M&A. M&A can accelerate the growth of a firm for example when it is looking to expand to a new geographical area. In many cases it is a faster process to acquire an existing company in that region rather than establishing one's own operations. In other situations, internal growth may be difficult for example when an industry stagnates and demand for its products or services experiences a slowdown. In a competitive environment it may not always be optimal to implement slow organic growth and acquisition of an established company may be more favourable.

## *Synergy*

According to DePamphilis (2015) synergy is the notion that two or more businesses can generate greater value if they are combined rather than if they operate separately. For example, if the market value of two businesses is \$100m each and the market value of the combination of the two businesses is \$250m, the implied value of synergy is \$50 million. There are two types of synergies, operating synergies and financial synergies

Gaughan (2007) separates operating synergies into revenue-enhancing synergies and cost-reducing synergies. The revenue enhancing synergies refer to opportunities to increase revenues as a direct result of M&A. This can be achieved by cross-selling through which each company helps the other increase sales in their respective markets. Alternatively, revenue enhancement can happen due to an improvement in the distribution network of the combined company. While the sources of revenue synergies may be numerous, they are by nature very difficult to achieve and quantify. Which is why cost-reducing synergies are usually the main source of operating synergies. These synergies relate to efficiency and consist of economies of scope, economies of scale and acquisition of complementary technical skills and assets (DePamphilis, 2015). Gains in efficiency such as reduction in average costs, reduction in purchase costs, reduction in costs due to overlapping functions due to M&A can lead to wealth creation for shareholders (DePamphilis, 2015).

Financial synergies are related to a reduction in the cost of capital of the acquirer as a result of a merger or acquisition. This can happen, for example, if the cash flows of two firms involved in a takeover have relatively uncorrelated cash flows or if the combined firm

experiences cost savings from lower transactions costs and/or cheaper financing (DePamphilis, 2015).

### **3.2.2 Evidence on wealth effects for acquiring firm shareholders**

In one of the most cited reviews of M&A research, Jensen & Ruback (1983) report positive bidder returns for successful tender offers and mixed evidence on bidder returns in mergers. Two of the three reviewed papers reported positive but insignificant returns to successful bidders in mergers, while the last paper reported significantly negative returns. Thus, Jensen & Ruback (1983) conclude that mergers are zero net present value projects, suggesting further research on the subject.

Since the publication of Jensen & Ruback's review there have been numerous studies that have examined returns to bidding firms. Bradley, Desai and Kim (1988) study 263 successful tender offers over the period 1963-1984, announced in the Wall Street Journal and in which both the target and acquirer were listed in the US. They find significant bidder average cumulative abnormal return (ACAR) of 0.97% for the full sample with a (-5, 5) event window. Further, analyzing subsamples, they find significant ACAR of 4.09% from 1963-1968, insignificant ACAR of 1.30% from 1968-1980 and significantly negative ACAR of -2.93% from 1981-1984.

Jarrell & Poulsen (1989) study 770 successful tender offers from 1963-1986, announced in the Wall Street Journal, and find declining bidder returns in tender offers. For the full sample, including 556 targets and 462 acquirers listed in the US, they find significantly positive ACAR of 0.70% over a (-2, 1) event window. However, the ACAR declined from a significant 4.7% in the 1960s to an insignificant 1.2% in the 1980s.

Asquith, Bruner and Mullins (1990) examine 343 completed acquisitions announced in the Wall Street Journal from 1975-1983, between targets and acquirers listed on either the NYSE or ASE. Measuring cumulative abnormal return (CAR) over a (-1, 0) event window, they find a significantly negative ACAR of -0.85% for the full sample. They also report an insignificant ACAR of 0.20% for successful tender offers, and significantly negative ACAR of -0.64% for successful merger bids.

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Andrade, Mitchell and Stafford (2001) provide further evidence on bidder returns by examining acquisitions of public targets by public acquirers in the US from 1973 to 1998. For the full sample of 3,688 acquisitions, measuring ACAR over a (-1, 1) event window, they find insignificant bidder ACAR of -0.7%. Furthermore, analyzing bidder returns by decade, they report negative but insignificant returns in the 70's (-0.3%), 80's (-0.4%) and 90s (-1.0%). Similar results are reported by Officer (2003), who analyzed 2,511 successful and unsuccessful mergers and tender offers from 1988 to 2000 between U.S. public companies. Measuring bidder CAR over the (-3, 3) event window, he finds significantly negative ACAR of -1.16% for the full sample. The findings of Officer (2003) are supported by the research of Betton, Eckbo & Thorburn (2009) which analyzes bidder returns in 9,418 acquisitions (both mergers and tender offers) of US targets by US acquirers, between 1973 and 2002. They find significantly negative bidder ACAR of -1.24%.

Alexandridis, Petmezas and Travlos (2010) provide evidence on bidder returns outside of the US. Their sample of 4,577 transactions consists of acquisitions of public targets in the period between 1990 and 2007. With a (-5, 5) event window, they find significantly negative bidder ACAR of -0.91%. Analyzing CARs by region, they report significantly negative ACAR for US bidders (-1.34%), UK bidders (-1.58%) and Canadian bidders (-1.54%). However, they find positive and significant ACAR for European (excluding UK) acquirers (1.65%), Japanese acquirers (2.45%) and South American acquirers (2.32%). They also find positive but, insignificant ACAR for Asian (excluding Japan) acquirers (0.75%), Oceanic acquirers (1.04%) and South African acquirers (0.64%).

In a more recent article, Alexandridis, Antypas, & Travlos (2017) investigate bidder returns in US transactions over the period from 1990 to 2015. Using a sample of 4,194 acquisitions of public targets, they find significantly negative bidder ACAR of -1.08% between 1990 and 2009 and significantly positive ACAR of 1.05% between 2010 and 2015, over a (-1, 1) event window. Furthermore, the difference between bidder returns in the two time periods is significantly different from zero.

Based on the empirical evidence of negative, insignificant and small announcement returns for acquiring firms, researchers have proposed the existence of agency costs between managers and shareholders in M&A decisions.

Roll (1986) develops the hubris hypothesis of takeovers. He argues that hubris or pride of managers of acquiring firms play a large role in takeovers. The theory suggests that managers acquire firms for personal motives rather than value creation for shareholders. The essence of the hubris hypothesis is that managers are overconfident in their valuations of takeover targets because they overestimate the economic gains and thus overpay in acquisitions. Roll (1986) suggests that the pride or overconfidence of managers allows them to justify paying a large premium for takeover targets. As a result, the premium paid for targets overstates the economic benefits of takeovers and can often be a simple transfer from the bidding firm. The hubris hypothesis predicts that the price of a bidding firm declines when a bid is announced and is consistent with the negative or low announcement returns experienced by bidding firms.

The management entrenchment theory developed by Shleifer and Vishny (1989) also suggest that agency costs can explain low bidder returns. This theory argues that managers make manager-specific investments which makes them valuable and costly to replace. Thus, managers invest in businesses where they have experience, expertise or are related to their background even though the investments are not value-maximizing. The result of such investments is that managers become difficult and costly to replace. Additionally, managers can extract larger compensation through higher salary.

Other researchers suggest that managers use takeovers to increase their status or prestige, increase their level of influence, raise their compensation or protect their positions. DePamphilis (2015) notes that such agency problems are more likely in firms with dispersed ownership.

## 4. Methodology

The analysis in this thesis is based on estimating bidder announcement returns and performing regression analysis to examine the relationship between ownership concentration and bidding firm announcement returns. In this section I will explain the methodology used to estimate bidder announcement returns and describe the variables used in the regression analysis.

### 4.1 Bidder announcement returns

To estimate bidder announcement returns, I apply the standard event study methodology proposed by MacKinlay (1997). The method measures the effect of a specific event on a firm's stock price and is widely used in M&A literature. The aim of event studies is to estimate event induced abnormal stock returns,

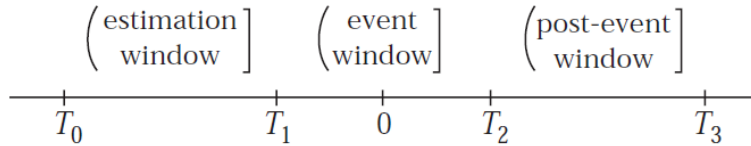
$$AR_{it} = R_{it} - E(R_{it}|X_{it})$$

where  $AR_{it}$ ,  $R_{it}$ , and  $E(R_{it}|X_{it})$  are the abnormal, actual and normal/expected stock return of firm  $i$  at the date  $t$ . The literature mentions several models to estimate normal returns, however both Brown & Warner (1985) and MacKinlay (1997) favor the market model and argue that there are limited benefits of more sophisticated models. Thus, I apply the market model to estimate abnormal returns. Using the market model, the normal return of firm  $i$  at date  $t$  is calculated as,

$$E(R_{it}) = \alpha_{it} + \beta_i R_{mt}$$

where  $\alpha$  and  $\beta$  are market model parameters and  $R_{mt}$  is the return on the market portfolio. I use the OSEBX index as a proxy for the market portfolio and the market model parameters are estimated with ordinary least squares (OLS) regressions for each stock  $i$  over an estimation period of 199 days, starting 205 days prior to the event ( $t=0$ ). It is common to use an estimation period prior to the event so that the estimation period does not overlap with the event (see fig. 5.1). This ensures that the normal performance is not impacted by the event. MacKinlay (1997) suggest an estimation period of 120 days when using daily data and the market model. Brown & Warner (1985) use an estimation period of 239 days. The estimation period of 200 days is similar to Moeller et al. (2004). Finally, to get stable estimates for the

market model parameters, each acquisition must have a minimum of 120 observations in the estimation period.



**Figure 4.1:** Event study timeline, Mackinlay (1997)

Using the market model, the abnormal return of stock  $i$  at date  $t$  is estimated as,

$$AR_{i\tau} = R_{i\tau} - \hat{\alpha}_{i\tau} - \hat{\beta}_i R_{m\tau}$$

Abnormal returns are usually aggregated over an event window surrounding the event date. It is possible that information about the event is leaked to the market prior to the event, or that it takes time for the market to fully incorporate the information of the event. Therefore, aggregating abnormal returns within an event window is more likely to capture the total effects of the event. The event window varies from study to study, and I test the daily abnormal returns for significance to determine the event window. For a given event window  $(\tau_1, \tau_2)$ , where  $T_1 < \tau_1 \leq \tau_2 \leq T_2$  (fig. 5.1), the cumulative abnormal return of each stock  $i$ , is calculated as,

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau}$$

The average cumulative abnormal return (ACAR) across  $N$  events can be calculated as

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

The significance of announcement returns can be tested with the test statistic proposed by Brown and Warner (1985).

## 4.2 Regression analysis

After estimating bidder announcement return for each acquisition, I use bidder CARs as the dependent variable in regression analysis to evaluate the relationship between ownership concentration and acquiring firm returns.

### 4.2.1 Independent variables

The announcement returns of acquiring firms have been shown to depend on numerous deal, target and acquirer characteristics. Consistent with prior research on both ownership concentration and bidder returns, the following variables are included in the analysis.

#### *Ownership Concentration*

The common measure of ownership concentration in academic literature is the ownership fraction of the largest shareholder. However, extant literature does not provide an exact level of ownership fraction at which ownership can be defined as concentrated. La Porta et al. (1999) state that there does not exist a theoretically appropriate measure of ownership concentration. They define a controlling shareholder as one that owns at least 20% of a firm's voting rights and argue that this level of ownership is usually enough to have effective control of a firm. Shleifer and Vishny (1997) also suggest that investors with substantial ownership stakes such as 10% and 20% have the incentive to perform active monitoring. In addition, studies such as Cronqvist & Nilsson (2003) use an ownership fraction of 25% to define ownership as concentrated. Another frequently used measure of ownership concentration is the Herfindahl index, which is the sum of all squared ownership fractions.

Based on this, I use the ownership fraction of the largest shareholder to define three levels of ownership concentration. I define a controlling majority shareholder (CMS) as a shareholder that owns more than 50% of a firm, I define a large minority shareholder (LMS) as a shareholder that owns less than 50% and more than 20% of a firm. These two types of large shareholders represent two different levels of ownership concentration. Lastly, I define ownership as dispersed when the largest shareholder owns less than 20% of a firm.

#### *Method of payment*

Several researchers have found a relationship between bidder CAR and method of payment. For example, Travlos (1987) reports that bidders using only stocks as payment method

experience significantly negative ACAR (-1.47%) while bidders using only cash experience insignificantly positive ACAR (0.24%). Travlos (1987) concludes that the market evaluates cash bidders and stock bidders differently. The findings of Travlos (1987) are supported by Asquith et al. (1990), who also find that bidders offering a mix of cash and stock experience significantly negative ACAR (-1.47%). Based on these findings, I control for method of payment by using dummy variables for stock financed deals and mix financed deals.

### *Acquirer size*

Moeller, Schlingemann & Stulz (2004) perform an extensive analysis on the relationship between size and bidder returns. They find that large (small) acquirers experience significantly negative (positive) ACAR of -1.68% (0.92%). These findings are supported by Betton et al. (2008) who also report significantly negative (positive) ACAR of -0.049% (4.04%) for large (small) acquirers. Following these findings, I control for acquirer size by including the variable Ln (assets) which is the natural logarithm of total assets. For each acquirer the value of total assets was retrieved from SNF's database.

### *Relative size*

Asquith, Bruner and Mullins Jr. (1983) suggest that there is a difficulty in correctly measuring abnormal returns when the relative size of two merging companies differ. They present this problem through an example:

Assume the net present value accruing to the bidding firm is equal to 10% of the target firm's equity value. If the bidder and target are equal in size, the acquisition should produce a 10% abnormal return for the bidder. However, if the bidder is twenty times the target's size, only a 0.5% abnormal return will be observed. The dollar gain from the acquisition is the same in both cases. Nonetheless, when measured as abnormal returns, relatively large bidders gains may appear statistically insignificant. (Asquith et al. 1983)

Asquith et al. (1983) find that a bid for a target that is half the size of the bidder results in 1.84% higher CAR than a bid for a target that is 1/10<sup>th</sup> the size of the bidder. These findings are supported by Jarrell & Poulsen (1989) who also find that relative size has a positive effect on bidder ACAR. However, Travlos (1987) reports that relative size coefficient is negative but insignificant.

Loderer & Martin (1990) present evidence that acquisitions equal to or larger than 30% of the bidder's market value add 2.6% to the announcement returns. Additionally, they report



that the absolute size of the bidder has a significant and negative effect on the announcement returns. Similar to Loderer & Martin (1990), Moeller et al. (2004) find that the relative size effect is different from the acquirer size effect and that both variables are significant.

To capture the relative size effect, I generate the variable relative size which is calculated as deal value/acquirer market value. Since the market value of the target is not readily available, I use the deal value as a proxy for the market value of the target. The acquirer market value is calculated by multiplying the acquirer's share price at the earliest date available within a week prior the announcement by the number of shares outstanding at that date.

### *Related and unrelated acquisitions*

Morck, Shleifer & Vishny (1990) argue that managers could be tempted to pursue unrelated, diversifying acquisitions, even if it negatively affects the shareholders. Morck et al. (1990) present three arguments for why managers would overpay for diversification at the expense of the shareholders. Managers that are not well-diversified themselves, could pursue diversifying acquisitions to reduce the risk of their human capital. In situations where reducing the size of the firm or even liquidation would maximize shareholder value, managers could be tempted to pursue new lines of business to survive. If the manager's position is threatened due to poor performance, he has incentive to enter a new line of business in which he might be better.

Morck et al. (1990) examine returns to bidders in related and unrelated acquisitions. To classify an acquisition as related or unrelated, they use two different measures of relatedness. One measure is based on SIC-codes. If the target and bidder have the same 4-digit SIC code for one of their three main lines of businesses (by sales), the acquisition is classified as related. Otherwise, the acquisition is unrelated. For related acquisitions they find positive but insignificant ACAR (2.38%), while for diversifying acquisitions ACAR is insignificantly negative (-1.89%). Akbulut & Matsusaka (2010) also examine bidder returns in related and diversifying acquisitions. They find significantly negative bidder ACAR of -0.6% for diversifying acquisitions and -1.3% for related acquisitions. Suggesting that diversifying acquisitions are less harmful than related acquisitions.

To control for differences in related and unrelated acquisition, I use a dummy variable that takes the value 1 if the bidder and target share the same 4-digit SIC-code and 0 otherwise.

### *Target public status*

When analyzing CARs by the public status of the target, Moeller et al. (2004) find significantly positive ACAR of 1.50% for private targets and significantly negative ACAR of -1.02% for public targets in the US. The findings of Moeller et al. (2004), are supported by Bradley & Sundaram (2006) who document positive and significant bidder ACAR of 1.95% for private targets and significantly negative ACAR of -0.71% for public targets. Faccio, McConnell & Stolin (2006) examine returns to acquirers of public and private targets across 17 Western European countries between 1996 and 2001 and report similar results as Moeller et al. (2004) and Bradley & Sundaram (2006). they find insignificant bidder ACAR of -0.38% surrounding acquisition announcements of public targets and significantly positive ACAR of 1.48% surrounding acquisition announcements of private targets. Furthermore, the difference in ACAR between public and private targets is significant at 1%-level and they label this difference “the listing effect”.

I control for the target’s public status by including a dummy variable which takes the value 1 if the target is a private company or a subsidiary and 0 otherwise.

### *Domestic & cross-border acquisition*

Eckbo & Thorburn (2000) examine gains to domestic (Canadian) & foreign (US) bidders acquiring targets in Canada. They use a sample of 1,846 acquisitions of 345 Toronto Stock Exchange listed target, in the period 1964-1983. Of the bidders, 394 are NYSE-listed (foreign) and 1,261 are listed on the TSE (domestic). They find that domestic acquirers earn significantly positive monthly announcement returns. They report that domestic acquirers earn significant average announcement month abnormal returns of 1.13%, using a pre-event estimation period. Using a post-event estimation period, the estimate is a significant 1.81%. Foreign acquirers earn insignificant abnormal returns regardless of estimation method. Using daily return data, domestic acquirers earn a significant ACAR over the window (-1, 0) of 0.81%. Foreign acquirers earn an insignificant 0.08% ACAR. Thus, the difference in bidder return between domestic and foreign acquirers in Canada seems to be robust.

To control for difference arising for domestic & cross-border acquisitions, I include a dummy variable which takes the value 1 if the target is foreign and 0 if the target is a domestic (Norwegian) firm.

## 5. Data

In this section, I explain how the sample was generated and present a descriptive summary of the sample.

### 5.1 Sample selection

The dataset on daily stock prices is provided by Børsprosjektet, which is a financial market database at the Norwegian School of Economics. The dataset contains daily closing prices and number of shares outstanding, for all publicly traded stocks in Norway from January 4, 1988 to December 28, 2018.

Børsprosjektet also provided the dataset which contains the daily closing price of the OSEBX index. The index contains a representative sample of all stocks traded at the Oslo Stock Exchange. Børsprosjektet's dataset on the index covers the period from January 1996 to December 28, 2018. Because stock returns and market returns are necessary to estimate the announcement induced abnormal returns, the sample of acquisitions is restricted to the time period 1997-2018.

The data related to ownership of listed companies was kindly provided by Aksel Mjøs and Kellis Akselsen at SNF (Samfunns- og næringslivsforskning AS), which is a leading research company within applied economic research in Norway. The SNF database provides comprehensive data for Norwegian companies (listed and unlisted), including ownership and accounting variables, and currently covers the period 1992-2016, with some missing values (Berner, Mjøs, & Olving, 2016).

The acquisition data in the sample is collected from the Securities Data Corporation Platinum database (SDC), by Thomson Reuters. The database covers 2,167 acquisitions by public listed firms in Norway from January 1, 1997 to December 31, 2016. To be included in the sample each acquisition must satisfy the following criteria:

- I. The acquirer must be a listed company in Norway
- II. The deal status is “Completed”
- III. The acquirer cannot own more than 50% of the target’s outstanding shares prior to the acquisition and acquires more than 50% of the target’s outstanding shares.
- IV. The deal value must be available
- V. The target public status is either public, private or subsidiary

Acquisitions where the deal value is not reported by SDC are excluded from the sample, as the deal value will be used in the analysis. The restriction on the initial stake and the post-acquisition stake is used to ensure that only acquisitions where the bidder gains control of the target are included in the sample. The initial sample consists of 672 acquisitions which is further reduced to a final sample of 373 acquisitions due to the following reasons.

A problem with the acquisition data is that some acquirers announce multiple acquisitions on the same date. Because of the research design presented in section 4.1, I am not able to distinguish the effects of two announcements at the same day. Consequently, these acquisitions are dropped from the sample. In total, there are 34 acquisitions where the same acquirer announces two deals on the same date. Additionally, 15 of the acquisitions in the initial dataset appear to be investments in assets such as acquisitions of properties, property portfolios, ships and equipment rather than a merger or acquisition. As this paper focuses on announcement returns of mergers & acquisitions, these 15 observations are also dropped from the sample.

To connect the event dataset to the stock price dataset I use security ISIN-numbers. The ISIN-number is included in the stock price dataset. However, some acquirers were not included in the stock price dataset. Further investigation revealed that several acquirers had changed their name and/or ISIN-number in the years following the acquisition. I was able to retrieve a list of changes from 1996-2019 at the Oslo Stock Exchange’s annual statistic web page<sup>2</sup>. After correcting for changes, there were still 14 acquisitions for which I could not

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<sup>2</sup> <https://www.oslobors.no/Oslo-Boers/Statistikk>

identify the ISIN-number of the acquirer. As a result, these acquisitions are dropped from the sample.

For several acquisitions SDC reports method of payment as “Unknown”. Initially, approximately 308 acquisitions had unknown method of payment. However, for some of these acquisitions I found the method of payment in the deal synopsis reported by SDC. For others I was able to find the method of payment by researching the acquisitions in financial press. After this process, there were still 100 acquisitions for which I could not identify the method of payment and these were dropped from the sample.

The event study methodology described in the previous section requires a minimum number of stock price observations for the acquiring company, prior to the acquisition date. There are 60 acquisitions for which there are not enough stock price observations and as a result they are not included in the sample. Finally, the SNF-database has several missing values for ownership data in the early years, this leads to a loss of a further 76 acquisitions.

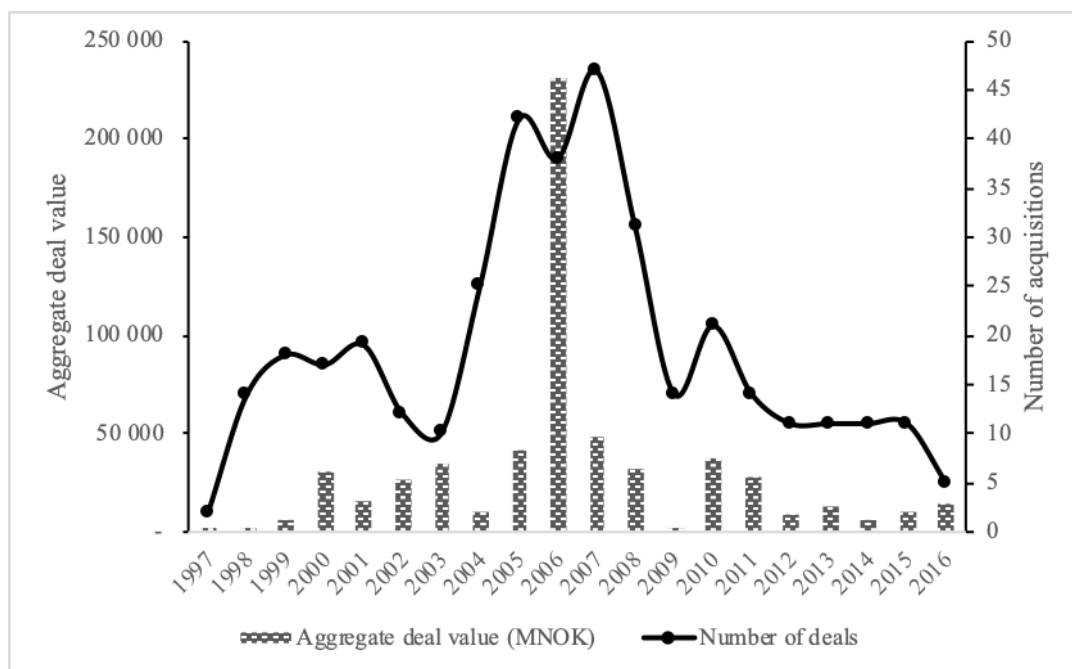
## 5.2 Descriptive summary

Table 5.1 presents a brief summary of the final sample which consists of 373 completed acquisitions by 168 unique bidders. Of the 373 targets acquired, 38 were public and 335 were private. In the period from 1997 through 2016 a total of NOK 594.02 billion was spent on mergers and acquisitions, with an average deal value of NOK 1.59 billion.

**Table 5.1:** Descriptive summary of sample

|   |        |
|---|--------|
| All acquisitions                                | 373    |
| Unique bidders                                  | 168    |
| Public targets                                  | 38     |
| Private targets                                 | 335    |
| Average deal value (in billion NOK)             | 1.59   |
| Aggregate deal value (in billion NOK)           | 594.02 |
| Average of bidder HHI                           | 14.53% |
| Average holding of bidder's largest shareholder | 27.50% |

As is shown in figure 5.1, the Norwegian market for corporate control was at its most active during the years preceding the financial crisis in 2007/2008. The activity peaked in 2007, with 47 acquisitions completed during the year. However, the aggregate deal value was at its highest in 2006.



**Figure 5.1:** Annual aggregate deal value (left) and number of acquisitions by year (right)

Following the financial crisis, the activity dropped and remained stable at 11 acquisitions per year from 2011-2015. A similar trend is seen surrounding the dot-com bubble, with the number of deals increasing and reaching a peak in 2001. Following the burst of the bubble the number of deals declined until the economy recovered. Thus, takeover activity in Norway, seems to be positively correlated with business cycles.

**Table 5.2: Sample characteristics by ownership structure based on the largest shareholder**

| <b>Panel A: Method of payment</b>                                     |          |      |                            |      |                                |      |                            |      |  |
|---|----------|------|----------------------------|------|--------------------------------|------|----------------------------|------|--|
|   | All      |      | Controlling majority (50%) |      | Controlling minority (20%-50%) |      | Dispersed ownership (<20%) |      |  |
|   | <i>N</i> | %    | <i>N</i>                   | %    | <i>N</i>                       | %    | <i>N</i>                   | %    |  |
| Cash  | 243      | 65.1 | 51                         | 82.2 | 90                             | 70.3 | 102                        | 55.7 |  |
| Stock   | 47       | 12.6 | 6                          | 9.7  | 18                             | 14.1 | 23                         | 12.6 |  |
| Mix   | 83       | 22.3 | 5                          | 8.1  | 20                             | 15.6 | 58                         | 31.7 |  |
| Total   | 373      |      | 62                         |      | 128                            |      | 183                        |      |  |
| <b>Panel B: Target public status</b>                                  |          |      |                            |      |                                |      |                            |      |  |
| Public  | 38       | 10.2 | 9                          | 14.5 | 10                             | 7.8  | 19                         | 10.4 |  |
| Private   | 335      | 89.8 | 53                         | 85.5 | 118                            | 92.2 | 164                        | 89.6 |  |
| <b>Panel C: Size, deal value &amp; relative size (values in mnok)</b> |          |      |                            |      |                                |      |                            |      |  |
| Mean bidder market value  | 19,518.4 |      | 62,121.6                   |      | 20,643.0                       |      | 4,298.0                    |      |  |
| Mean bidder total assets  | 36,406.6 |      | 82,002.7                   |      | 56,573.9                       |      | 6,852.7                    |      |  |
| Median bidder total assets  | 1,820.4  |      | 6,633.8                    |      | 4,320.8                        |      | 894.3                      |      |  |
| Mean deal value   | 1,592.6  |      | 5,035.4                    |      | 1,420.5                        |      | 546.5                      |      |  |
| Median deal value   | 110.8    |      | 270.8                      |      | 110.2                          |      | 92.2                       |      |  |
| Mean relative size  | 22%      |      | 16%                        |      | 19%                            |      | 25%                        |      |  |
| <b>Panel C: Related/Unrelated acquisitions</b>                        |          |      |                            |      |                                |      |                            |      |  |
| Unrelated acquisitions  | 255      | 68.4 | 44                         | 71.0 | 79                             | 61.7 | 132                        | 72.1 |  |
| Related acquisitions  | 118      | 31.6 | 18                         | 29.0 | 49                             | 38.3 | 51                         | 27.9 |  |
| <b>Panel D: Domestic and cross border acquisitions</b>                |          |      |                            |      |                                |      |                            |      |  |
| Domestic  | 174      | 46.6 | 29                         | 47.0 | 63                             | 49.2 | 82                         | 44.8 |  |
| Cross border  | 199      | 53.4 | 33                         | 53.0 | 65                             | 50.8 | 101                        | 55.2 |  |

Table 5.2 presents a summary of the variables used in the analysis and stratifies the sample into three different ownership levels. Based on the ownership of the largest shareholder, each acquirer in the sample is categorized into one of three different ownership structures. When the largest shareholder owns at least 50% of the shares of the acquirer, it is classified as a majority owned acquirer. For these acquirers, the largest shareholder owns the firm outright. Controlling minority refers to acquirers where the largest shareholder's ownership is between 20% and 50%. For these acquirers, their largest shareholder is a controlling

minority. Meaning that the largest shareholders has significant control over the firm. An acquirer is classified as having diffuse ownership if the largest shareholder owns less than 20% of the shares. The first column of table 5.2 shows data for the full sample, the second column shows data for majority-controlled acquirers, the third column shows data for minority-controlled acquirers and the last column shows data for widely held acquirers. Of the 373 acquisitions in the sample, 62 involve an acquirer with a controlling majority owner, 128 involve an acquirer with a controlling minority owner and 183 involve an acquirer with dispersed ownership.

Panel A shows the acquisition data based on method of payment. Cash is the most frequent method of payment with 65.1% of all acquisitions financed with cash. After cash, acquirers prefer financing acquisitions with a combination of cash and stock while stock-only financing is the least used method of payment. For acquirer's with a controlling majority shareholder, the fraction of cash acquisitions is higher (82.2%) compared to acquirer's with a controlling minority shareholder (70.3%) and those with dispersed ownership (55.7%). It is possible that this tendency to prefer cash acquisitions is due to a reluctance to dilute the majority ownership. Acquirer's with a controlling minority shareholder and those with dispersed ownership are more open to using some form of stock financing.

Panel B of table 5.2 stratifies the sample based on the public status of the target. Of the 373 acquisitions in the sample approximately 90% are takeovers of private targets. For acquirers with dispersed ownership, the fraction of acquisitions of private targets is similar to that of the full sample. Majority owned acquirers appear to have a slightly higher fraction of acquisitions of public targets (14.5%), while minority owned acquirers have a lower fraction of public targets (7.8%).

From panel C of table 5.2, the average (median) size of all acquirers is NOK 36,406.5 (1,820.4) million measured by total assets, while the average size of all acquirers measured by market value of equity is NOK 19,518.4 million. Interestingly, majority owned acquirers seem to be the largest with average total assets (market value) of NOK 82,002.7 (62,121.6) million and widely held acquirers seem to be the smallest with average total assets (market value) of NOK 56,573.9 (20,643.0) million. This does seem counterintuitive as it would probably be easier to establish a majority ownership in a small company rather than a large one.



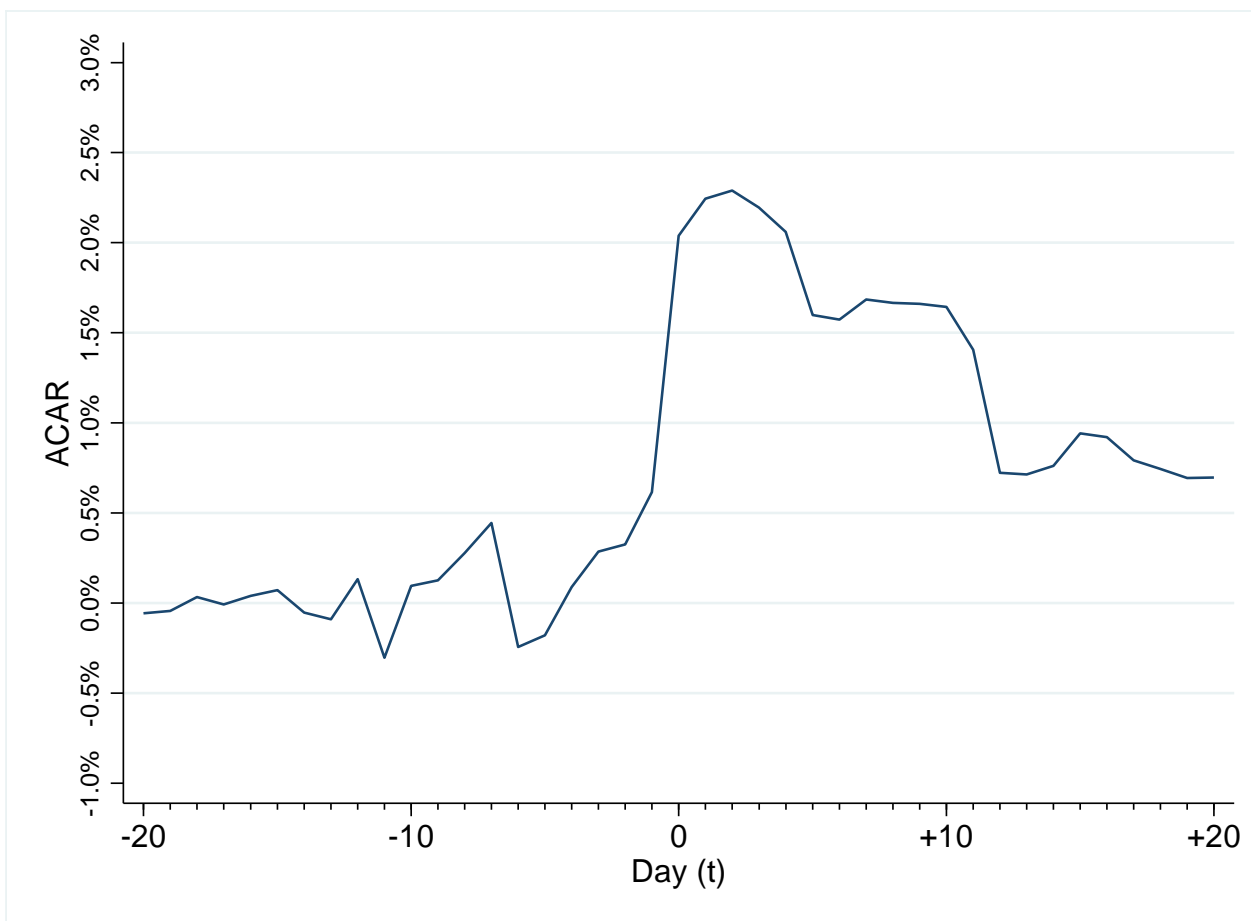
The average deal value for the entire sample is NOK 1,592.6 million with a median value of NOK 110.8 million. In absolute terms, majority owned acquirers make considerably larger acquisitions with an average deal value of NOK 5,035.4 million compared to NOK 1,420.5 million for minority owned acquirers and NOK 546.5 million for acquirers with dispersed ownership. However, the average deal values appear to be affected by extreme values as the median deal value for all three groups is considerably lower. The median deal values are 270.8 (mNOK), 110.2 (mNOK) and 92.2 (mNOK) for majority-owned, minority owned and dispersedly owned acquirers, respectively. In terms of relative size, majority owned acquirers appear to make smaller acquisitions with an average deal value to market value ratio of 16% compared to 19% for acquirers with a controlling minority and 25% for dispersedly held acquirers.

From panel C in table 5.2, 255 (68.4%) of the acquisitions in the sample are unrelated while 118 (31.6%) are related acquisitions. The relative number of related acquisitions is similar for acquirers with a controlling owner (29.0%) and acquirers with dispersed ownership (27.9%). Acquirers with a controlling minority owner, however, appear to make a higher fraction of related acquisitions (38.3%). According to panel D in table 5.2 the sample is almost equally split between domestic and cross border transactions. The 50-50 split between domestic and cross border transactions is also maintained for the three different ownership levels.

## 6. Empirical results

### 6.1 Bidder announcement returns

This section presents the result from the event study analysis on the price impact of takeover announcement on bidder stock. From figure 6.1, there seems to be a positive trend in the bidder announcement returns starting 5 days prior to the announcement. This suggest that there is a small run-up for bidders, however from panel A of table 6.1, the daily abnormal returns from day -5 to day 0 are insignificant, thus there does not appear to be a significant stock price run-up for the bidders.



**Figure 6.1:** Event window ACAR

**Table 6.1:** Abnormal returns surrounding takeover announcements.

I use the event study method with marked adjusted returns. The estimation period is 199 days, ending 6 days prior to the announcement day which is day 0. The sample consists of 373 acquisitions from January 1997 to December 2016. Test statistics are based on Brown and Warner (1985)

\*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% levels.

| <b>Panel A: Daily abnormal returns relative to announcement day</b> |           |             |
|---|-----------|-------------|
| Day   | AAR (%)   | t-statistic |
| -15   | 0.024     | 0.109       |
| -14   | -0.125    | -0.581      |
| -13   | -0.035    | -0.161      |
| -12   | 0.223     | 1.036       |
| -11   | -0.438**  | -2.040      |
| -10   | 0.399*    | 1.860       |
| -9  | -0.031    | -0.142      |
| -8  | 0.150     | 0.700       |
| -7  | 0.191     | 0.887       |
| -6  | -0.688*** | -3.192      |
| -5  | 0.065     | 0.301       |
| -4  | 0.269     | 1.246       |
| -3  | 0.171     | 0.797       |
| -2  | 0.064     | 0.297       |
| -1  | 0.267     | 1.246       |
| 0   | 1.495***  | 6.944       |
| +1  | 0.137     | 0.638       |
| +2  | 0.046     | 0.213       |
| +3  | -0.094    | -0.438      |
| +4  | -0.136    | -0.633      |
| +5  | -0.462**  | -2.149      |
| +6  | -0.019    | -0.086      |
| +7  | 0.111**   | 0.516       |
| +8  | -0.024**  | -0.113      |
| +9  | -0.004    | -0.016      |
| +10   | -0.018    | -0.081      |
| +11   | -0.238    | -1.102      |
| +12   | -0.685*** | -3.187      |
| +13   | -0.005    | -0.022      |
| +14   | 0.043     | 0.200       |
| +15   | 0.181     | 0.843       |
| <b>Panel B: CARs over different event windows</b>                   |           |             |
| Event Window  | ACAR (%)  | t-statistic |
| [-1, 0]   | 1.723***  | 4.790       |
| [-1, 1]   | 1.912***  | 5.467       |
| [-2, 2]   | 2.005***  | 4.411       |
| [-5, 5]   | 1.841**   | 2.925       |
| [+5, 20]  | -1.362    | -1.942      |

Table 6.1 presents abnormal stock returns surrounding takeover announcements for the full sample. Panel A shows daily abnormal stock returns over a  $[-15, 15]$  window relative to the event day (day 0). Looking at daily abnormal returns prior to the event day, there does not seem to be any pattern of information leakage to the market. For example, the daily abnormal returns 11 days prior to the event are significantly negative ( $-0.438\%$ ), while the daily abnormal returns 10 days prior to the event are significantly positive ( $0.399\%$ ). Suggesting that whatever information the market receives 11 days prior to the event which causes a negative price change is reversed the very next day. While there is a significantly negative abnormal return 6 days prior to the event, it is difficult to suggest that this is caused by information leakage because the announcement day abnormal returns are significantly positive.

Panel B of table 6.1 shows ACARs over different event windows with corresponding test statistics. The four short event windows are used to capture the immediate market reaction to takeover announcements and the  $[5, 20]$  event window is used to examine the market response following the event. As can be seen from panel B of table 6.1, for the event windows  $[-1,0]$ ,  $[-1,1]$ ,  $[-2, 2]$  the ACAR is positive and significant at the 1%-level. For the  $[-5, 5]$  event window the ACAR is positive and significant at the 5% level. Suggesting that bidders in Norway experience positive and significant announcement induced abnormal returns. From panel A, the abnormal returns are only significant on day 0 within the  $[-5, +5]$  window.

The analysis will focus on the  $[-2, 2]$  event window, as this window seems to capture the full announcement effect. The 2.00% ACAR over the  $[-2, 2]$  event window is also similar to the other short-term event window ACARs. Furthermore, the sign and significance of the  $[-2, 2]$  ACAR is consistent with other studies that use a  $[-2, 2]$  event window such as Fuller et al. (2002), Moeller et al. (2004), Faccio et al. (2006) and Bradley & Sundaram (2006).

Figure 6.1 shows that the abnormal returns seem to persist for some days following the event. However, testing the CARs over the  $[5, 20]$  window results in an insignificant ACAR of  $-1.362\%$ . This suggest that the market is fairly efficient, as the positive abnormal returns disappear following the event, suggesting that any information is fully incorporated in the stock price around the event.

## 6.2 Regression analysis

The findings of this paper are based on several regressions of bidder announcement returns against ownership concentration and a slew of control variables that have previously been shown to affect bidder announcement returns.

### 6.2.1 Controlling majority owners

Table 6.2 presents several regressions with bidder CAR over the [-2, 2] event window against ownership concentration. In table 6.2, ownership concentration is measured by the variable CMS. This is a dummy variable which takes the value 1 if the acquirer has a controlling majority shareholder who owns at least 50% of the shares and 0 otherwise. As described in section 3, a CMS has the ultimate incentive to perform active monitoring. Therefore, if there is a positive relationship between ownership concentration and bidder announcement returns, it is most likely to appear when there is a controlling shareholder in the acquiring firm.

The regression in column 1 is a pooled OLS without fixed effects, the regression in column 2 is an OLS with year fixed effects. Year fixed effects are estimated using dummy variables for years. The regression in column 3 includes industry fixed effects which are estimated using dummy variables for the acquirers' industry. In column 4, the regression includes both industry and year fixed effects.

**Table 6.2:** Regressions of bidder CARs against CMS

Regression results from several regressions with CARs over the [-2, 2] event window as the dependent variable. \*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors.

|                | (1)                  | (2)                 | (3)                 | (4)                 |
|----------------|----------------------|---------------------|---------------------|---------------------|
|                | CAR [-2, 2]          | CAR [-2, 2]         | CAR [-2, 2]         | CAR [-2, 2]         |
| CMS            | -0.30<br>(0.0143)    | -0.07<br>(0.0150)   | -4.45**<br>(0.0186) | -4.10**<br>(0.0183) |
| Acquirer size  | -0.56***<br>(0.0024) | -0.64**<br>(0.0027) | -0.64<br>(0.0062)   | -0.87<br>(0.0068)   |
| Relative size  | 4.93*<br>(0.0255)    | 4.86**<br>(0.0246)  | 5.59*<br>(0.0289)   | 5.18*<br>(0.0271)   |
| Private target | 1.09<br>(0.0134)     | 0.77<br>(0.0140)    | 2.22<br>(0.0135)    | 1.94<br>(0.0156)    |
| Stock          | 2.21<br>(0.0200)     | 2.13<br>(0.0199)    | 0.36<br>(0.0248)    | -0.25<br>(0.0275)   |
| Mix            | -1.06<br>(0.0110)    | -0.74<br>(0.0110)   | -1.67<br>(0.0144)   | -1.51<br>(0.0151)   |
| Cross-border   | 0.09<br>(0.00883)    | 0.41<br>(0.00912)   | -0.73<br>(0.0102)   | -0.86<br>(0.0105)   |
| Related        | 0.01<br>(0.00970)    | 0.03<br>(0.0104)    | 0.19<br>(0.0100)    | 0.49<br>(0.0110)    |
| Constant       | 8.14*<br>(0.0414)    | 13.6*<br>(0.0727)   | 12.5<br>(0.0983)    | 21.0<br>(0.131)     |
| Industry FE    | NO                   | NO                  | YES                 | YES                 |
| Year FE        | NO                   | YES                 | NO                  | YES                 |
| Observations   | 373                  | 373                 | 373                 | 373                 |
| R-squared      | 0.123                | 0.159               | 0.385               | 0.427               |

---

From the model in column 1 it appears that bidders with CMS experience an insignificant 0.30% lower announcement return than bidders without CMS. This suggests that there does not appear to be a positive effect of having a controlling shareholder. Because controlling shareholders in effect represent a large ownership concentration, it appears that there is no benefit of ownership concentration with regards to acquisition decisions. On the basis of the pooled OLS regression in column 1, the only possible conclusion is that ownership concentration does not improve acquisition decisions.

Of the other variables included in the regression, the coefficient of acquirer size is -0.56% and is significant at the 1%-level, which reflects that increasing acquirer size is associated with lower announcement returns. This is in line with previous findings such as Moeller et al. (2004) and Betton et al. (2008). In addition to acquirer size, the relative size variable has a significant (10%-level) coefficient of 4.93%, suggesting that an increase in relative size is associated with higher announcement returns. This is also in line with previous findings. The inclusion of both a size and relative size variable can lead to a collinearity problem. However, having ran several regressions to examine a potential collinearity problem, it appears that the inclusion of both variables has a minimal effect on the point estimate of the coefficients of both variables, but there does not appear to be an effect on the significance levels and thus the conclusions. Based on this, I include both variables in all regressions.

Interestingly, none of the other control variables are significant in column 1. Numerous studies have found a significantly negative affect of stock financing in M&A's. This result cannot be confirmed for the Norwegian sample. I find a positive but insignificant coefficient (2.21%) for stock-only financing and a negative but insignificant coefficient (-1.06%) for a combination of cash and stock financing.

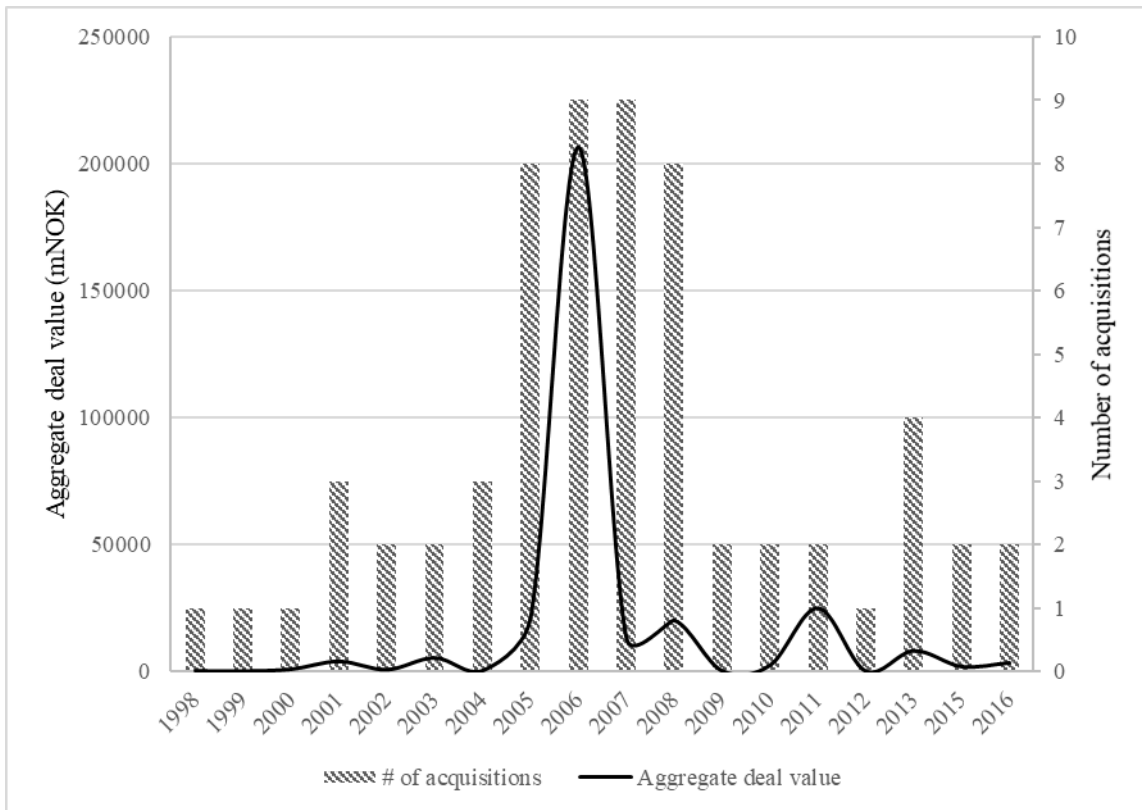
Furthermore, several studies have found a positive effect on bidder returns when announcing acquisitions of private targets. Studies such Faccio et al. (2006), Moeller et al. (2004), Bradley & Sundaram (2006) find a significantly positive announcement effect for bidders acquiring private targets. For example, Faccio et al. (2006) who examine announcement returns across several western European countries, report a significantly positive announcement return for bidders announcing acquisitions of private targets. The results in column 1 do not confirm these findings for bidders in Norway. Bidders in Norway experience an insignificantly positive effect (1.09%) when announcing acquisitions of private targets.

In column 2, after controlling for year fixed effects, the coefficient of the ownership concentration variable is -0.07% and insignificant. Similar to the results of the model in column 1, this does not warrant a conclusion either in favor or against ownership concentration as a determinant of acquisition performance. The inclusion of year fixed effects leads to a more negative effect of acquirer size (-0.64%) and the variable becomes less significant (5%-level). The relative size effect decreases to 4.86% and becomes more significant (5%-level). None of the other control variables change significantly.

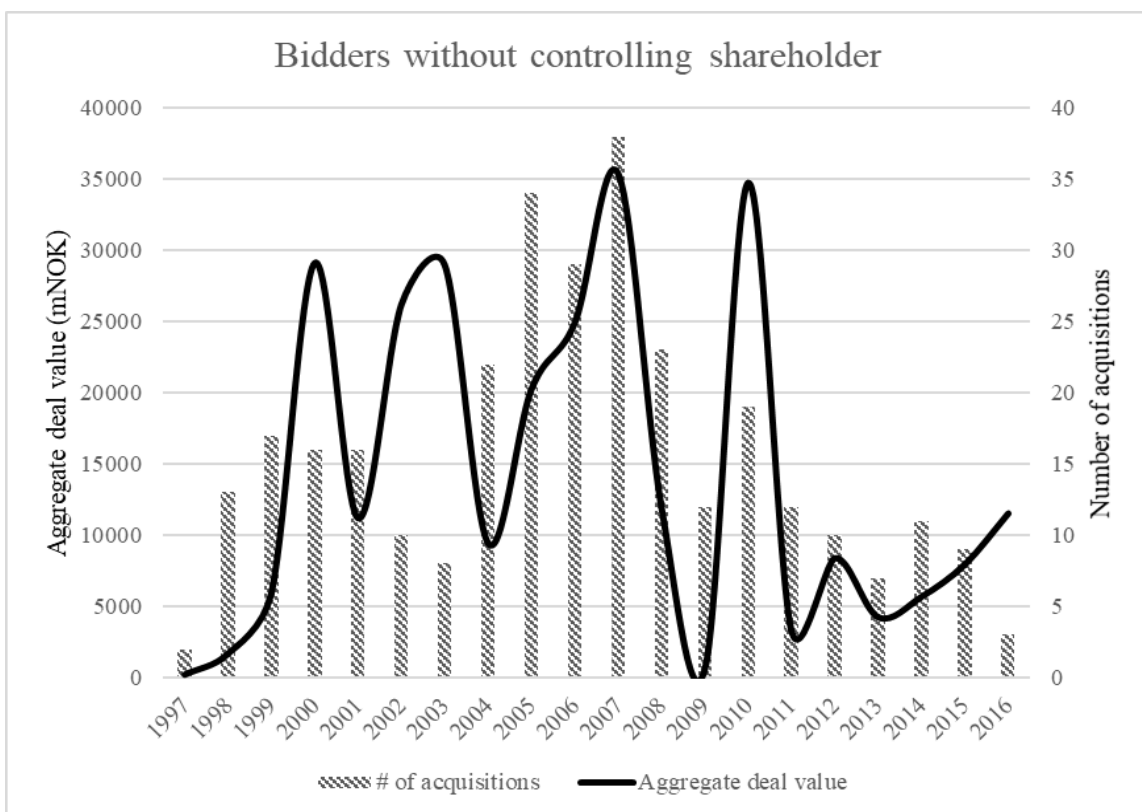
Figure 6.2 and figure 6.3 present takeover activity by year for the two subsamples of bidders. There does not appear to be large differences in yearly acquisitions between bidders with CMSs and bidders without. Both sets of acquirers have the highest activity between 2004 and 2009 and it seems that acquirers without a controlling shareholder were more active in the early years (1998-2001).

Table 6.3 shows average CARs by year for all bidders, bidders with CMS and bidders without CMS. There does not appear to be either a positive or negative time trend in announcement returns across the entire sample. However, bidders with CMS experience negative ACAR in 10 out of 20 years while bidders without CMS experience negative ACAR in only 3 out of 20 years. Looking at the entire sample, bidders experience negative ACAR in 3 out of 20 years. One interesting observation from table 6.3 is that bidders with CMSs, on average, experience negative yearly CARs in the years leading up to the dot-com bubble. On the other hand, bidders without controlling shareholders, on average, experience positive yearly CARs in those years.





**Figure 6.2:** Yearly distribution of takeovers by bidders with concentrated ownership



**Figure 6.3:** Yearly distribution of takeovers by bidders with dispersed ownership

**Table 6.3: Average CAR by year**

| <b>Year</b> | <b>All bidders</b> | <b>Bidders with<br/>CMS</b> | <b>Bidders without<br/>CMS</b> |
|-------------|--------------------|-----------------------------|--------------------------------|
| 1997        | 5.3                | -                           | 5.3                            |
| 1998        | 1.9                | -3.3                        | 2.3                            |
| 1999        | 3.0                | -4.5                        | 3.5                            |
| 2000        | 0.1                | -4.8                        | 0.4                            |
| 2001        | 0.7                | 5.0                         | -0.1                           |
| 2002        | 1.6                | 1.4                         | 1.6                            |
| 2003        | 4.4                | 5.3                         | 4.2                            |
| 2004        | -0.3               | -1.2                        | -0.1                           |
| 2005        | 1.5                | -0.4                        | 2.0                            |
| 2006        | 4.9                | 0.9                         | 6.2                            |
| 2007        | 1.3                | 4.8                         | 0.4                            |
| 2008        | 0.9                | -2.2                        | 1.9                            |
| 2009        | 1.3                | 3.5                         | 0.9                            |
| 2010        | 4.9                | 4.1                         | 4.9                            |
| 2011        | 2.9                | -0.5                        | 3.5                            |
| 2012        | 1.3                | -0.5                        | 1.4                            |
| 2013        | -0.3               | -0.2                        | -0.4                           |
| 2014        | 5.8                | -                           | 5.8                            |
| 2015        | -0.3               | -2.7                        | 0.3                            |
| 2016        | 3.5                | -3.6                        | 8.2                            |

Both regression models in column 3 and 4 of table 6.2 show a significantly negative coefficient on the CMS variable. Both models control for industry fixed effects using dummy variables. In column 3 the coefficient is -4.45% and in column 4 it is -4.10%. In both models the coefficient is significant at 5%-level. These findings suggest that bidders with controlling shareholders experience significantly lower announcement returns than bidders without controlling shareholders. The result is robust to the inclusion of several control variables that have been shown to affect bidder announcement returns. In both models 3 and 4, the only other control variable that is significant is relative size. Thus, it appears that the size of the acquirer becomes insignificant once industry is controlled for. The validity of the models including industry fixed effects appear to be somewhat justified by the Hausman test in exhibit A in the appendix. The test provides evidence in favor of an industry fixed effects model and indicates that model 1 and 2 do not capture the effect of CMS.

Assuming that a controlling shareholder represents ultimate ownership concentration and has the ultimate incentive to perform active monitoring, these findings reject the hypothesis that ownership concentration does not affect M&A performance. These findings also reject the notion that ownership concentration leads to better investment decisions in situations with high agency costs. More interestingly, the results instead suggest that ownership concentration leads to worse M&A performance. This indicates that either the costs of concentrated ownership are larger than the benefits of ownership concentration or that there are no benefits of concentrated ownership.

These findings warrant an examination of the distribution of bidders and bidder CARs across industries. Table 6.4 shows the distribution of bidders across industries. The industries are categorized based on the Global Industry Classification Standard (GICS) which uses 11 industry sectors. Bidders with CMS are mostly found in the energy, industrials, consumer staples, information technology and communication services industries. The industry with the highest concentration of bidders with CMS is the industrial sector with 27.4% followed by energy (17.7%), information technology (17.7%), communication services (17.7%) and consumer staples (11.3%). There are no bidders with controlling shareholders in the utilities and materials sectors and very few in the consumer discretionary, health care and financials sectors.

The highest concentration of bidders without CMS is found in the information technology sector (40.2%), followed by industrials (17.4%), energy (11.6%), financials (8.4%) and consumer staples (6.8%). The industry with the lowest concentration is communication services, with only 1 bidder.

**Table 6.4:** Bidders by industry

| GICS | Industry               | Bidders with CMS |         | Bidders without CMS |         |
|------|------------------------|------------------|---------|---------------------|---------|
|      |                        | # of bidders     | Percent | # of bidders        | Percent |
| 10   | Energy                 | 11               | 17.7    | 36                  | 11.6    |
| 15   | Materials              | 0                | 0       | 15                  | 4.8     |
| 20   | Industrials            | 17               | 27.4    | 54                  | 17.4    |
| 25   | Consumer discretionary | 1                | 1.6     | 14                  | 4.5     |
| 30   | Consumer Staples       | 7                | 11.3    | 21                  | 6.8     |
| 35   | Health Care            | 1                | 1.6     | 11                  | 3.5     |
| 40   | Financials             | 3                | 4.8     | 26                  | 8.4     |
| 45   | Information technology | 11               | 17.7    | 125                 | 40.2    |
| 50   | Communication services | 11               | 17.7    | 1                   | 0.3     |
| 55   | Utilities              | 0                | 0       | 8                   | 2.6     |

Table 6.5 presents CARs by industry, and there is a lot of variation in CARs between industries and within industries. In the industrial sector, bidders with CMS experience an ACAR of 4.53% compared to 2.81% for bidders without CMS. However, in all other industries bidders with CMS experience a lower ACAR than bidders without controlling shareholders. For example, in the information technology industry, bidders without CMS experience an ACAR of 1.35% while bidders with CMS experience an ACAR of -1.28%.

**Table 6.5:** CARs by industry and bidder type

| <b>GICS</b> | <b>Industry</b>        | <b>All bidders</b> | <b>Bidders with CMS</b> | <b>Bidders without CMS</b> |
|-------------|------------------------|--------------------|-------------------------|----------------------------|
| 10          | Energy                 | 3.48               | 2.38                    | 3.81                       |
| 15          | Materials              | 0.91               | -                       | 0.91                       |
| 20          | Industrials            | 3.23               | 4.53                    | 2.81                       |
| 25          | Consumer discretionary | 2.84               | -1.89                   | 3.18                       |
| 30          | Consumer Staples       | 1.45               | -0.65                   | 2.16                       |
| 35          | Health Care            | 9.78               | 10.35                   | 9.73                       |
| 40          | Financials             | 0.84               | -1.95                   | 1.17                       |
| 45          | Information technology | 1.14               | -1.28                   | 1.35                       |
| 50          | Communication services | -3.84              | -4.03                   | -1.68                      |
| 55          | Utilities              | 1.55               | -                       | 1.55                       |

### 6.2.2 CMS compared to LMS

Even though the regression analyses presented in table 6.2 indicate a negative relationship between ownership concentration and bidder returns, the result may be different for other levels of ownership concentration. While controlling shareholders have the ultimate control and represent an extreme level of ownership concentration, it is not the only type of ownership structure that leads to concentration. As mentioned in section 3, an ownership structure where at least one shareholder has a substantial ownership stake leads to ownership concentration. La Porta et al. (1999) argue that a 20% ownership level is usually enough to have effective control of a firm.

To analyse whether the negative relationship between bidder returns and ownership concentration is pervasive at all levels of ownership concentration, an additional regression is presented in table 6.6. Similar to La Porta et al. (1999), I define a large minority shareholder (LMS), that has effective control of a firm, as a shareholder that owns at least 20% but less than 50% of the bidder's shares. The LMS variable is therefore a dummy variable that takes the value 1 if the largest shareholder is an LMS and 0 if the largest shareholder owns less than 20% of the bidder's shares. The regression including control for LMS is presented in column 2 of table 6.6. As the column includes both the CMS variable and LMS variable, the base group for this regression is bidders with dispersed ownership. In this regression, a dispersed ownership structure is one where the largest shareholder owns less than 20% of the bidder's shares. The model in column 1 is the same as the model in column 4 of table 6.2. Columns 3 and 4 are the same models as columns 1 and 2 excluding year fixed effects.

**Table 6.6:** Regressions with control for LMS

Regression results after controlling for LMS, with CARs over the [-2, 2] event window as the dependent variable. \*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors.

|                | (1)                 | (2)                | (3)                 | (4)                |
|----------------|---------------------|--------------------|---------------------|--------------------|
|                | CAR [-2, 2]         | CAR [-2, 2]        | CAR [-2, 2]         | CAR [-2, 2]        |
| CMS            | -4.10**<br>(0.0183) | -3.87*<br>(0.0225) | -4.45**<br>(0.0186) | -4.15*<br>(0.0222) |
| LMS            |                     | 0.36<br>(0.0165)   |                     | 0.48<br>(0.0164)   |
| Acquirer size  | -0.87<br>(0.0068)   | -0.87<br>(0.0067)  | -0.64<br>(0.0062)   | -0.66<br>(0.0060)  |
| Relative size  | 5.18*<br>(0.0271)   | 5.17*<br>(0.0272)  | 5.59*<br>(0.0289)   | 5.68*<br>(0.0291)  |
| Private target | 1.94<br>(0.0156)    | 1.92<br>(0.0157)   | 2.22<br>(0.0135)    | 2.16<br>(0.0137)   |
| Stock          | -0.25<br>(0.0275)   | -0.22<br>(0.0277)  | 0.36<br>(0.0248)    | 0.35<br>(0.0249)   |
| Mix            | -1.51<br>(0.0151)   | -1.49<br>(0.0152)  | -1.67<br>(0.0144)   | -1.63<br>(0.0149)  |
| Cross-border   | -0.86<br>(0.0105)   | -0.85<br>(0.0105)  | -0.73<br>(0.0102)   | -0.73<br>(0.0102)  |
| Related        | 0.49<br>(0.0110)    | 0.50<br>(0.0109)   | 0.19<br>(0.0100)    | 0.18<br>(0.0100)   |
| Constant       | 21.0<br>(0.131)     | 21.2<br>(0.129)    | 12.5<br>(0.0983)    | 12.5<br>(0.0985)   |
| Industry FE    | YES                 | YES                | YES                 | YES                |
| Year FE        | YES                 | YES                | NO                  | NO                 |
| Observations   | 373                 | 373                | 373                 | 373                |
| R-squared      | 0.427               | 0.427              | 0.385               | 0.385              |

When controlling for LMS, the coefficient of the CMS variable is -3.87% and it is significant at 10%-level. The coefficient of the LMS variable is 0.36% and insignificant. For the remaining control variables, there is no difference between model 1 and model 2. These results indicate that ownership concentration resulting from a controlling shareholder is associated with lower announcement returns, compared to bidders with dispersed ownership. Furthermore, ownership concentration resulting from a LMS does not lead to a significant difference in CAR when compared to bidders with dispersed ownership.

The analysis suggests that bidders with concentrated ownership due to a CMS seem to make worse acquisitions. When the concentrated ownership is caused by an LMS, it appears to have no effect on announcement decisions. These results do not provide conclusive evidence either in favour or against ownership concentration as an effective governance mechanism. However, the evidence suggests that there is no significant effect of ownership concentration until a certain level. Above this level, further increase in concentration seems to have a negative effect on bidder returns. It appears that when there is an extreme ownership concentration, the costs associated with ownership concentration are greater than the benefits.

Other studies such as Cronqvist & Nilsson (2003), who analyse the effect of ownership concentration by examining the existence of large minority shareholders (LMS), report a significantly negative effect of ownership concentration. They conclude that there are higher agency costs associated with LMS. The results of LMS in this paper, on the other hand, suggest that there is neither an increase nor a decrease in agency costs associated with LMS. Cronqvist & Nilsson (2003) argue that large owners in Sweden usually employ structures that separate control rights from cash flow rights. Additionally, Sweden has relatively weak legal protection of minority shareholders. Therefore, the results of Cronqvist & Nilsson (2003) are consistent with theories presented by Bebchuk (1999), Bebchuk et al. (2000) and La Porta et al. (1999), that weak shareholder protection and the use of corporate control instruments can lead to expropriation by LMSs. The results of this paper also appear to be consistent with this theory. Norway has relatively strong legal protection of shareholders and the use of corporate control instruments is not widespread. Consequently, the existence of an LMS should not lead to higher agency costs. Furthermore, if large shareholders do not perform adequate monitoring one would not expect any benefits of ownership concentration.



The results of CMS, on the other hand, are puzzling. As mentioned, CMSs have the ultimate incentive to perform active monitoring. Additionally, there is strong legal protection of shareholders combined with restricted use of corporate control instruments that separate ownership from control support. Under these conditions, one would expect that if there were benefits of ownership concentration, a CMS would lead to a reduction in agency costs. The results, however, suggest that such ownership concentration resulting from CMSs leads to higher agency costs, and it is difficult to explain why this is the case. It is possible that the results are indicative of the fact that CMSs may expropriate funds through tunnelling. However, the restricted use of corporate control mechanisms and strong legal protection of shareholders in Norway, suggest that stealing is not likely the reason. A more plausible explanation seems to be that CMSs either do not perform active monitoring, are not good at monitoring or simply do not perform monitoring that benefit all shareholders. Such an explanation is consistent with both the result and theory. If the main benefit of ownership concentration is a reduction in agency costs through monitoring and if the monitoring is inadequate or non-existent, one would expect that ownership concentration does not reduce agency costs. Furthermore, if CMSs perform monitoring that only benefits themselves, it is possible that ownership concentration can be negative for other shareholders.

### **6.2.3 Private owners compared to the state**

To examine if the results are indeed caused by inadequate monitoring, I perform one final regression where I control for type of CMS. As mentioned in section 2, the state has a large ownership at the OSE and table 2.1 shows that the state is the CMS in several listed firms. Of the total 62 acquisitions completed by bidders with CMS, 23 involve a bidder where the state is the majority owner. The remaining acquisitions involve bidders where the majority owner is a private owner. The reason it is interesting to examine bidder type is that there are arguments that support the assumption that private owners could be better at exercising active ownership. In the latest white paper report on ownership policy, the government concedes that fundamental factors make private ownership well-suited to active ownership. Private owners can more directly look after their assets and more directly exercise personal ownership than the state. The decision-making structure also makes it easier for private owners to exercise ownership than the state. Furthermore, private owners have very strong incentives for high returns and operational efficiency, and they may be closer to markets and thereby, be better informed about markets (Nærings-og Fiskeridepartementet, 2015).

Columns 2 and 3 of table 6.7 present regressions where I control for state ownership. In column 2, I control for state ownership by including a dummy variable for state. The dummy variable takes the value 1 if the state is the largest shareholder and 0 otherwise. In column 3, I include the interaction variable CMS\*state. The interaction variable is included to make a more direct comparison between the type of controlling owner. It captures the difference in announcement returns for bidders with the state as the controlling owner and private controlling owner.

In column 2, the state variable has a coefficient of -0.53% and is insignificant, suggesting that bidders where the state is the largest shareholder do not experience significantly different announcement returns compared to bidders where the largest shareholder is a private owner. After controlling for state ownership, the CMS variable is -4.10% and significant at 5%-level. The interaction variable in column 3 has an insignificant coefficient of 2.53% and the CMS variable has a significant coefficient of -4.69%. This suggests that there are no differences in announcement returns caused by the type of controlling owners. The results show that the negative effect of CMSs persists after controlling for owner type.

Based on these results it does not appear that there are differences in announcement returns for bidders with CMS based on state or private ownership. These findings suggest that the negative effect of CMSs is not related to different types of CMSs. Thus, if there are any differences in the exercise of active ownership between the state and private owners, this does not seem to explain the negative effect of a CMS. Instead, it appears that regardless of how active ownership is exercised, bidders with CMSs underperform bidders without CMSs in M&A decisions. Thus, the results indicate that there is something inherent in CMS structures that cause the negative effect. It is possible that this is a result of extraction of private benefits, however I believe this is unlikely to be the case, especially considering that the state is a CMS in many companies. A more reasonable argument is that regardless of identity, CMSs result in agency costs because they may pursue goals or strategies which are not necessarily beneficial to all shareholders. For example, the state may be inclined to pursue political goals at the expense of shareholders, as demonstrated by the rebranding of Statoil to Equinor. Private owners may perform inadequate monitoring which benefits themselves but hurts other shareholders. Another problem with private controlling owners is that they may experience nonpecuniary private benefits such as prestige and glamour of being a controlling shareholder, while they may not be good owners.

**Table 6.7:** Regressions with control for type of owner

Regression results after controlling for state ownership, with CARs over the [-2, 2] event window as the dependent variable. \*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors

|                | (1)<br>CAR [-2, 2]  | (2)<br>CAR [-2, 2]  | (3)<br>CAR [-2, 2]  |
|----------------|---------------------|---------------------|---------------------|
| CMS            | -4.10**<br>(0.0183) | -4.01**<br>(0.0225) | -4.69**<br>(0.0192) |
| State          |                     | -0.53<br>(0.0523)   | -0.06<br>(0.0317)   |
| CMS*State      |                     |                     | 2.53<br>(0.0501)    |
| Acquirer size  | -0.87<br>(0.0068)   | -0.841<br>(0.0055)  | -0.95*<br>(0.0057)  |
| Relative size  | 5.18*<br>(0.0271)   | 5.19*<br>(0.0277)   | 5.14*<br>(0.0276)   |
| Private target | 1.94<br>(0.0156)    | 1.93<br>(0.0156)    | 1.96<br>(0.0158)    |
| Stock          | -0.25<br>(0.0275)   | -0.25<br>(0.0278)   | -0.30<br>(0.0274)   |
| Mix            | -1.51<br>(0.0151)   | -1.52<br>(0.0153)   | -1.56<br>(0.0152)   |
| Cross-border   | -0.86<br>(0.0105)   | -0.84<br>(0.0113)   | -0.85<br>(0.0110)   |
| Related        | 0.49<br>(0.0110)    | 0.48<br>(0.0109)    | 0.48<br>(0.0110)    |
| Constant       | 21.0<br>(0.131)     | 20.6*<br>(0.119)    | 22.5*<br>(0.119)    |
| Industry FE    | YES                 | YES                 | YES                 |
| Year FE        | YES                 | YES                 | YES                 |
| Observations   | 373                 | 373                 | 373                 |
| R-squared      | 0.427               | 0.427               | 0.428               |

## 6.3 Robustness

To test if the main findings of the analysis is affected by extreme CAR values, I repeat the regressions after winsorizing CAR at the 1<sup>st</sup> percentile and the 99<sup>th</sup> percentile. Exhibit B in the appendix shows the results of the regressions in table 6.2 without extreme values. The main results, regarding ownership concentration are unaffected by the elimination of extreme values. As in table 6.2, the CMS variable is insignificantly negative if industry fixed effects are not considered. In the models including industry fixed effects, the CMS variable is significantly negative. However, the point estimates are lower, and the significance level is also lower (10%-level). The results indicate that there is some influence of extreme values on the analysis, but the removal of extreme values does not change the main results. Interestingly, after removing extreme values, private target becomes significant in the industry fixed effects models. Suggesting that there is a positive effect of acquiring private companies, which is in line with international evidence.

The regressions in table 6.6 and 6.7 are repeated without extreme values in exhibit C in the appendix. The results for bidder type are unaffected. However, the regression including LMS no longer has a negative coefficient for the CMS variable. This suggests that the significant underperformance by bidders with CMS, disappears when removing extreme values. This result affects the conclusion that extreme ownership concentration is associated with lower announcement returns. However, it still does not affect the conclusion that there does not appear to be any benefits of ownership concentration.

An additional robustness test is performed by using the Herfindahl-Hirschman index (HHI) as a measure of ownership concentration. Exhibit D in the appendix presents the regressions in table 6.2 with ownership concentration measured by HHI. These results confirm the findings of table 6.2, that high ownership concentration is associated with lower announcement returns.

## 6.4 Analysis weakness

Eckbo, Maksimovic & Williams (1990) raise the issue of inconsistent OLS estimators in cross-sectional regressions of announcement effects on exogenous variables. They argue that when corporate events are voluntary, which acquisitions are, managers that are economically motivated can control the timing, type or magnitude of public announcements. They argue that rational managers only initiate an event if it generates some form of personal or corporate benefit and that outside investors know this. Furthermore, private managers possess valuable private information. Knowing managers' incentives and using the announcement of a voluntary event, outside investors infer that managers believe the event to have a positive impact on the stock price. This behavior truncates the residual term, and if it is ignored in cross-sectional regressions leads to inconsistent coefficients.

In this study, I have not performed adjustments to the regression model to account for the issue raised by Eckbo et al. (1990). However, Prabhala (1997) provides a further discussion on this topic. He develops conditional methods for event studies and compares them to traditional event study methods and states that even though traditional methods are misspecified, they allow significance testing for cross-sectional parameters even though they are inconsistent. Furthermore, Prabhala (1997) states that conditional models offer little value when one does not have a sample of "nonevent firms". These are firms that were partially anticipated to announce an event but, in the end, did not. He also argues that absent a nonevent firm sample, conditional models become burdensome and less powerful. In these situations, traditional event study methods are sufficient, and the regression coefficients obtained through traditional OLS are proportional to the true parameters. Furthermore, the standard errors are appropriate for significance testing.

## 7. Conclusion

The purpose of this paper was to add to the literature examining the effect of ownership concentration on firm performance by using acquiring firm M&A announcement returns as performance measure. The analysis covers 373 acquisitions by OSE listed firms from 1997 through 2016. Overall, the results raise the question as to whether there are benefits of ownership concentration.

Firstly, bidders with concentrated ownership resulting from large minority shareholders do not experience higher or lower announcement returns than bidders with dispersed ownership. The result suggests that the net effect of ownership concentration is insignificant, Secondly, bidders with concentrated ownership resulting from controlling majority shareholders experience lower announcement returns than bidders without concentrated ownership. This suggest that there is a negative relationship between extreme ownership concentration and M&A performance and that there are costs associated with very high levels of ownership concentration. The negative relationship between controlling majority shareholders and announcement returns persist after controlling for state ownership. This indicates that the negative relationship does not depend on owner type (passive or active).

While it is possible that the negative relationship is caused by expropriation by the CMSs, I believe it is unlikely to be the reason. Expropriation is most common when there is weak legal protection of shareholders and when control is maintained through instruments such as dual-class shares, pyramid structures and cross-holdings. The absence of widespread use of such control mechanisms, combined with the strong legal protection of shareholders in Norway, suggest that direct expropriation is not likely to be the explanation for the results. A more plausible explanation is that CMSs perform inadequate monitoring which is not beneficial to all shareholders, because they may pursue self-serving goals or strategies.

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## 8. Appendix

**Exhibit A:** Hausman test for industry fixed effects

| Variable       | Coefficients |        | Difference | S.E.  |
|----------------|--------------|--------|------------|-------|
|                | FE           | RE     |            |       |
| Majority owner | -0.044       | -0.010 | -0.033     | 0.124 |
| Acquirer size  | -0.006       | -0.007 | 0.001      | 0.002 |
| Relative Size  | -0.569       | 0.483  | -0.008     | 0.007 |
| Private target | 0.022        | 0.013  | 0.009      | 0.008 |
| Stock          | 0.004        | 0.014  | -0.011     | 0.005 |
| Mix            | -0.016       | -0.136 | -0.003     | 0.005 |
| Cross border   | -0.007       | 0.000  | -0.007     | 0.005 |
| Related        | 0.002        | 0.000  | 0.002      | 0.005 |

H0: Difference in coefficients not systematic

$\text{Chi2}(8) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 18.75$

Prob > Chi2 = 0.0162

Fixed effects model is preferred over random effects model

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**Exhibit B:** Table 6.2 repeated with winsorized sample

\*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors

|                | (1)                | (2)                | (3)                | (4)                |
|----------------|--------------------|--------------------|--------------------|--------------------|
|                | CAR [-2, 2]        | CAR [-2, 2]        | CAR [-2, 2]        | CAR [-2, 2]        |
| CMS            | -0.10<br>(0.0080)  | -0.87<br>(0.0083)  | -2.97*<br>(0.0153) | -2.75*<br>(0.0153) |
| Acquirer size  | -0.20<br>(0.0016)  | -0.24<br>(0.0018)  | -0.03<br>(0.0033)  | -0.11<br>(0.0037)  |
| Relative size  | 3.71**<br>(0.0181) | 3.85**<br>(0.0176) | 4.77**<br>(0.0222) | 4.57**<br>(0.0223) |
| Private target | 1.32<br>(0.0128)   | 1.14<br>(0.0131)   | 2.49**<br>(0.0127) | 2.54*<br>(0.0145)  |
| Stock          | 3.11**<br>(0.0157) | 3.21*<br>(0.0171)  | 2.09<br>(0.0191)   | 1.94<br>(0.0220)   |
| Mix            | -0.16<br>(0.0089)  | 0.10<br>(0.0089)   | -0.38<br>(0.0112)  | -0.08<br>(0.0114)  |
| Cross-border   | -0.54<br>(0.0069)  | -0.35<br>(0.0073)  | -0.96<br>(0.0097)  | -1.15<br>(0.0101)  |
| Related        | -0.72<br>(0.0071)  | -0.71<br>(0.0074)  | -0.47<br>(0.0087)  | -0.38<br>(0.0087)  |
| Constant       | 3.11<br>(0.0324)   | 7.76<br>(0.0658)   | 2.16<br>(0.0527)   | 7.26<br>(0.0880)   |
| Industry FE    | NO                 | NO                 | YES                | YES                |
| Year FE        | NO                 | YES                | NO                 | YES                |
| Observations   | 367                | 367                | 367                | 367                |
| R-squared      | 0.132              | 0.182              | 0.362              | 0.407              |



**Exhibit C:** Results of table 6.6 and 6.7 without extreme values

\*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors

|               | (1)<br>CAR [-2, 2] | (2)<br>CAR [-2, 2]  | (3)<br>CAR [-2, 2]  |
|---------------|--------------------|---------------------|---------------------|
| CMS           | -2.16<br>(0.0181)  | -3.16**<br>(0.0151) | -3.82**<br>(0.0166) |
| LMS           | 0.95<br>(0.0135)   |                     |                     |
| State         |                    | 2.58<br>(0.0254)    | 1.56<br>(0.0239)    |
| CMS*State     |                    |                     | 3.39<br>(0.0354)    |
| Acquirer size | -0.12<br>(0.0038)  | -0.26<br>(0.0040)   | -0.30<br>(0.0040)   |
| Relative size | 4.55**<br>(0.0224) | 4.49**<br>(0.0223)  | 4.46**<br>(0.0221)  |
| Private       | 2.49*<br>(0.0147)  | 2.53*<br>(0.0147)   | 2.55*<br>(0.0148)   |
| Stock         | 2.00<br>(0.0221)   | 1.94<br>(0.0221)    | 1.88<br>(0.0222)    |
| Mix           | -0.02<br>(0.0114)  | -0.05<br>(0.0115)   | -0.13<br>(0.0115)   |
| Cross-border  | -1.14<br>(0.0101)  | -1.27<br>(0.0103)   | -1.22<br>(0.0104)   |
| Related       | -0.35<br>(0.0088)  | -0.36<br>(0.0087)   | -0.38<br>(0.0087)   |
| Constant      | 7.59<br>(0.0864)   | 9.41<br>(0.0904)    | 10.06<br>(0.0910)   |
| Industry FE   | YES                | YES                 | YES                 |
| Year FE       | YES                | YES                 | YES                 |
| Observations  | 367                | 367                 | 367                 |
| R-squared     | 0.409              | 0.409               | 0.411               |

**Exhibit D:** Regressions in table 6.2 repeated with HHI

\*\*\*, \*\*, and \* denote significance at 1%, 5% and 10% levels. Standard errors in parentheses are based on White (1980) heteroskedasticity adjusted standard errors

|                | (1)                 | (2)                 | (3)                 | (4)                 |
|----------------|---------------------|---------------------|---------------------|---------------------|
|                | CAR3                | CAR3                | CAR3                | CAR3                |
| HHI >25%       | -0.11<br>(0.0132)   | 0.03<br>(0.0143)    | -4.20**<br>(0.0181) | -4.48**<br>(0.0193) |
| Acquirer size  | -0.57**<br>(0.0024) | -0.64**<br>(0.0027) | -0.65<br>(0.0061)   | -0.89<br>(0.0067)   |
| Relative size  | 4.93*<br>(0.0255)   | 4.87**<br>(0.0246)  | 5.64*<br>(0.0288)   | 5.04*<br>(0.0266)   |
| Private target | 1.09<br>(0.0134)    | 0.767<br>(0.0140)   | 2.30*<br>(0.0138)   | 1.91<br>(0.0157)    |
| Stock          | 2.21<br>(0.0200)    | 2.13<br>(0.0199)    | 0.37<br>(0.0249)    | -0.2<br>(0.0273)    |
| Mix            | -1.04<br>(0.0110)   | -0.73<br>(0.0110)   | -1.74<br>(0.0144)   | -1.55<br>(0.0151)   |
| Cross-border   | 0.09<br>(0.0089)    | 0.42<br>(0.0092)    | -0.93<br>(0.0102)   | -1.06<br>(0.0104)   |
| Related        | 0.00<br>(0.00973)   | 0.03<br>(0.0105)    | 0.15<br>(0.0100)    | 0.46<br>(0.0110)    |
| Constant       | 8.22**<br>(0.0411)  | 13.7*<br>(0.0723)   | 13.9<br>(0.103)     | 23.1*<br>(0.136)    |
| Industry FE    | NO                  | NO                  | YES                 | YES                 |
| Year FE        | NO                  | YES                 | NO                  | YES                 |
| Observations   | 373                 | 373                 | 373                 | 373                 |
| R-squared      | 0.122               | 0.159               | 0.385               | 0.430               |

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