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Market Reaction to M&A Announcements by State-owned Enterprises

An empirical analysis of the market's reaction when state-owned enterprises announce a merger or acquisition.

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ABSTRACT

In this thesis, we analyse implications of corporate state ownership. We use the Norwegian corporate state ownership as a basis for this analysis. One of the main problems regarding corporate state ownership is that the state participates in the market that it regulates and legislates. To circumvent this problem, the Norwegian State through the Government acts as an owner with a greater distance to the management of their firms by refraining from holding seats on the board of directors. Along with this refrainment and the Government's declared policies on ownership involvement, we argue that they act as a passive owner. Based on previous studies on ownership involvement, we hypothesize that the market values the decisions made by managers in state-owned enterprises (SOEs) more negatively than those of private-owned enterprises (POEs). To test this hypothesis, we analyse announcement returns to merger and acquisitions (M&As). The abnormal return surrounding the announcement reflects how the market values these decisions because M&A is one of the largest investment decisions that a firm can make. We find significant evidence that announcement return is lower for SOEs compared to POEs. After finding this difference, we hypothesize that an explanation for this lower announcement return can be related to a greater extent of managerial agency problems in SOEs because of the Government's policies on ownership involvement. We further hypothesize that this leads to managers of SOEs engaging in acquisitions that are motivated by their self-interest. We find that it is difficult to conclude whether or not there is evidence of managerial agency problems to a further extent in SOEs compared to POEs.

FOREWORD

This master thesis was written as part of our Master of Science degree in Economics and Business Administration at the Norwegian School of Economics (NHH). The thesis marks the end of our master studies with specialization in Financial Economics. In this thesis we have studied the market reaction when state-owned enterprises announce a merger or acquisition in addition to implications of state ownership.
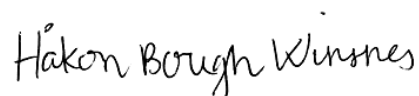
The topic of state ownership has been and still is an area of public discourse that is especially relevant in Norway due to the State's high share of ownership in business and industry. The relevance of state ownership has made working on our thesis motivating and inspiring. The process has given us valuable insight on how to conduct empirical research. It has been challenging, educational, and rewarding.

We would like to thank our thesis advisor Professor Karin S. Thorburn for her invaluable support and advice both before starting our research and during the process. Her interest in the topic, thoughts, and ideas have been of great importance.

Bergen, June 2018

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1. INTRODUCTION

This thesis analyses the implications of corporate state ownership by examining how the market values decisions made by state-owned enterprises (SOEs) compared to private-owned enterprises (POEs). We apply M&A announcements to test if the market values major investment decisions differently. Using a sample of 210 announcements extracted from Thomson Reuters SDC, we analyse the difference in announcement returns over a three-day event window.

As a basis for our analysis, we use the Norwegian corporate state ownership. The Norwegian State is the largest owner in five of the top six companies by market capitalization on the Oslo Stock Exchange (OSE), with at least 34% ownership in each company. The combined market value of these five companies constitutes just over 50 percent of the total value of the listed equity market in Norway. No other country in the OECD is close to this high share of state ownership.

One of the main problems with a large corporate state ownership is that the State is a participant in the market that it regulates and legislates. To circumvent this problem, the Government refrains from holding seats at the board of directors in its companies. This policy is stated in the Norwegian Government's white paper report regarding its ownership involvement. The report explains ownership involvement on a scale from active to passive. Based on the report and the policy on refraining from holding seats at the board of directors, we argue that its involvement is passive. Being a large active-owner-size investor while governing its ownership as a passive institutional owner may be seen as a paradox, following the arguments of Thomsen & Pedersen (2000). On the basis of studies on ownership involvement, we hypothesize that the market valuates decisions made by managers in SOEs more negatively than POEs.

To test this hypothesis, we employ an M&A-event study methodology. M&A is one of the largest and most important investment decisions that a company can make. Analysing the market's reaction surrounding the announcement of these events is a frequently used methodology of determining value creation or destruction for the shareholders of the involved companies.

We find that the abnormal announcement return for SOEs is 2.17% lower than for POEs. The finding indicates that the market values such a major investment decision as M&A made by SOEs more negatively compared to POEs.

Findings from previous studies on M&A establish that there are several deal and target characteristic variables that affect the announcement return. When controlling for such variables that are relevant for the analysis, we find that they do not change the outcome of the main result. In addition to the main findings, we detect that the difference in short-term return surrounding the announcement increases when a stricter criterion of relative size of the deal to the bidder is applied.

After confirming that SOEs experience lower return surrounding announcement than POEs, we hypothesize that greater managerial agency problems in SOEs can be a factor in explaining this difference. Based on previous studies on managerial agency problems and risk, we hypothesize that managers of SOEs engage in acquisitions that to a greater extent are affected by their preferences to reduce risk than the acquisitions managers of POEs engage in. When testing this hypothesis, we use target and deal characteristics that we relate to managerial agency problems. We find significant evidence suggesting that SOEs engage in M&As with different deal and target characteristics than POEs.

We define a state-owned enterprise in accordance with OECD (2015a), as *"any corporate entity recognized by national law as an enterprise, and in which the state exercises ownership."* In the academic literature there are a variety of definitions of the terms private, privately and public enterprises, according to Perry & Rainey (1988). For the purpose of this thesis however, we define a private-owned enterprise as an enterprise that is publicly listed and in which no state holds a stock share larger than 2%.

To our knowledge, no other academic papers have studied or tested the market reaction of M&A announced by Norwegian state-owned enterprises compared to private-owned enterprises.

The thesis is organized as follows. In the next chapter, we give an overview of the Norwegian State's ownership. In Chapter 3, we review theoretical aspects that concerns state ownership. Further, in Chapter 4 we present the main hypothesis. Next, data and methodology are

described in Chapter 5 and Chapter 6, respectively. Chapter 7 reports the results with regression tables and our interpretations. Our second hypothesis regarding different acquiring made by managers of SOEs and POEs, is presented in Chapter 8 followed by the data and methodology used to test the hypothesis in Chapter 9. In Chapter 10, we report the results of the test and our interpretations. Chapter 11 concludes the thesis.

2.   STATE OWNERSHIP

2.1   Background

Every third or fourth year since 2002, the Norwegian Government has presented a white paper report to the Norwegian Parliament, the Storting, called "The States Ownership Report" hereby abbreviated *OR*. The report is presented to the Storting to inform the representatives about the government's views and plans regarding the governance of the Norwegian State's ownership interests. The last report was presented in June 2014 and serves as information from The Government to the public until the next report is presented. The Norwegian state ownership in business is often up for public debate and this report usually prompts additional discussions surrounding the presentation. Questions about the ownership, such as why, what, and how the state should own, is elaborated and discussed in the report. What makes the report interesting is the magnitude of the State's ownership in Norwegian business and industry. The State is not just heavily invested in the listed equity market, but also in several other large corporations and business entities, either as a partial or sole owner, making up about 30 percent of the total non-listed equity in Norway (Government, 2014).

There are several aspects of a large state ownership that may be problematic. Among them is the conflict between the State as an owner and the other roles that the State has. As both legislator and regulator in a market where the State also participates as a major shareholder, there are legitimate concerns as to the State's ability to separate these roles effectively. Another aspect is that there is a danger of large concentration of power, which may weaken private ownership, according to Christensen (2015). Along with these arguments, critics assert that the state may not be the best suited value-creating owner because of the way the Government exercises its ownership, which is discussed in Section 2.4. The Norwegian Government named its last ownership report *"Diverse and value-creating ownership"* (Government, 2014). While the ownership may be value-creating, it is debatable whether the state is the best suited value-creator or not. A vast amount of academic literature has studied effects of state ownership on value creation. Several studies find that reduction in state ownership has led to increased value creation, however, the literature is not conclusive. This is further discussed in Section 3.2.

The Norwegian State has direct ownership in 74 companies, of which 49 are held with a 100 percent stake. The Government has categorized each company into one of four groups, defining the purpose and strategy behind each group in the following categories:

1. Commercial objectives
2. Commercial objectives and an objective of maintaining head office functions in Norway
3. Commercial objectives and other specifically defined objectives
4. Sectoral-policy objectives

In group 1, the Government has defined the objective for included companies to be only commercial. Companies that are publicly listed in this group are SAS AB, Entra Holding ASA and Mesta AS. All the five state-owned enterprises we have included in our analysis are in group 2. The objectives for the companies included in this group are commercial, and with an additional objective of maintaining head quarter functions in Norway. What separates group 3 from group 1 and 2, is that most of the companies operate in a competitive market but have certain specifically defined objectives. For instance, the Norwegian mail, Posten Norge AS, has certain defined delivery obligations that do not apply to its competitors. According to the OR, the primary objective of the ownership in group 1-3 is high return on invested capital over time. Companies in group 4 are generally not exposed to a high level of competition and serve what the government has defined as sectoral-policy objectives. Included in this group are public health service, cultural, agricultural, and other companies that in general exist with non-profit objectives.

The criteria for being included in the analysis narrows our scope to the companies in group 2 which is further explained in Section 5.2. Six of the eight companies in this group are listed on OSE. These companies are Equinor ASA (former Statoil ASA), Telenor ASA, DNB ASA, Norsk Hydro ASA, Yara International ASA and Kongsberg Gruppen ASA. As mentioned, the primary objective is return on investment, and the Government has added the objective of maintaining head quarter functions in Norway. This is secured by holding at least 34 percent of the outstanding shares of the company, which gives the holder a "negative control". Holding more than 1/3 of a company will, according to the Public Limited Liability Companies Act (1997), provide the holder with negative control over resolutions requiring a two-thirds

majority. A major decision like the relocation of a company's head office will require at least a two-thirds majority in the general assembly.

The Norwegian State holds a minimum of 34 percent in all the six above-mentioned listed companies, and the Government stated in the last OR that divestment from the one-third-level is not going to be undertaken in the near future.

In the following chapter, we give a brief overview over the historical background for the Norwegian state ownership.

2.2 Historical perspective

Lie, Myklebust & Norvik (2014) claim that the Norwegian state ownership was partially unplanned, and that natural resources and the banking crisis in the early 1990's made state ownership feasible.

The Norwegian State's ownership history started after the Second World War, when the State took over 44 percent of Norsk Hydro from German hands as part of the war settlement. Through the decades after the war, the State built several heavy industrial companies including the oil company Equinor, which was fully owned by the State. This development in state ownership is comparable to other Western European states after the war. War settlements or nationalization during the war, exploitation of natural recourses, and the need for large capital investment in heavy industry dramatically increased the level of state ownership in the decades after the war, according to Toninelli & Toninelli (2000).

Norsk Hydro ASA has been a listed company since it was first listed at the Kristiania Stock Exchange in 1909, later OSE, along with the exchanges in Brussels, Genève and Paris. The company was later listed on other foreign exchanges in the 1970s and 80s, with the listing on the New York Stock Exchange in 1986 as the most important. The combination of a dominating passive state owner along with private domestic and international investors became known as the *Hydro-Model*, according to Christensen, Espeli, Larsen & Sogner (2003). While many of the fully state-owned enterprises were struggling in the 70s and 80s and relying on government intervention, Norsk Hydro ASA was self-dependent. The disciplining effect on management of being a publicly traded company may be a contributing part of the company's success and in turn defining the Hydro-Model. The Hydro-model was later used as inspiration when the Government listed other SOEs, like Equinor ASA and Telenor ASA in the early 2000.

Today, the Norwegian corporate state ownership seems to be firmly established. Although there are public discussions regarding the State's ownership policies on a regular basis, the political consensus in the Storting about what and how much the State should own, is surprisingly large. The Government's plans for the State's ownership changed only slightly after the shift from the socialist Stoltenberg Government to the right-centred Solberg Government in 2013, confirmed by the OR presented in 2014, according to Lie et al. (2014).

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Figure 2.2.A shows the Norwegian State's ownership in percent of the five listed SOEs on OSE included in our analysis and its changes since 1995. The enterprises are Equinor ASA (67,00 %), Telenor ASA (53,97 %), Norsk Hydro ASA (34,26 %), DNB ASA (34,00 %) and Yara International ASA (36,21 %).
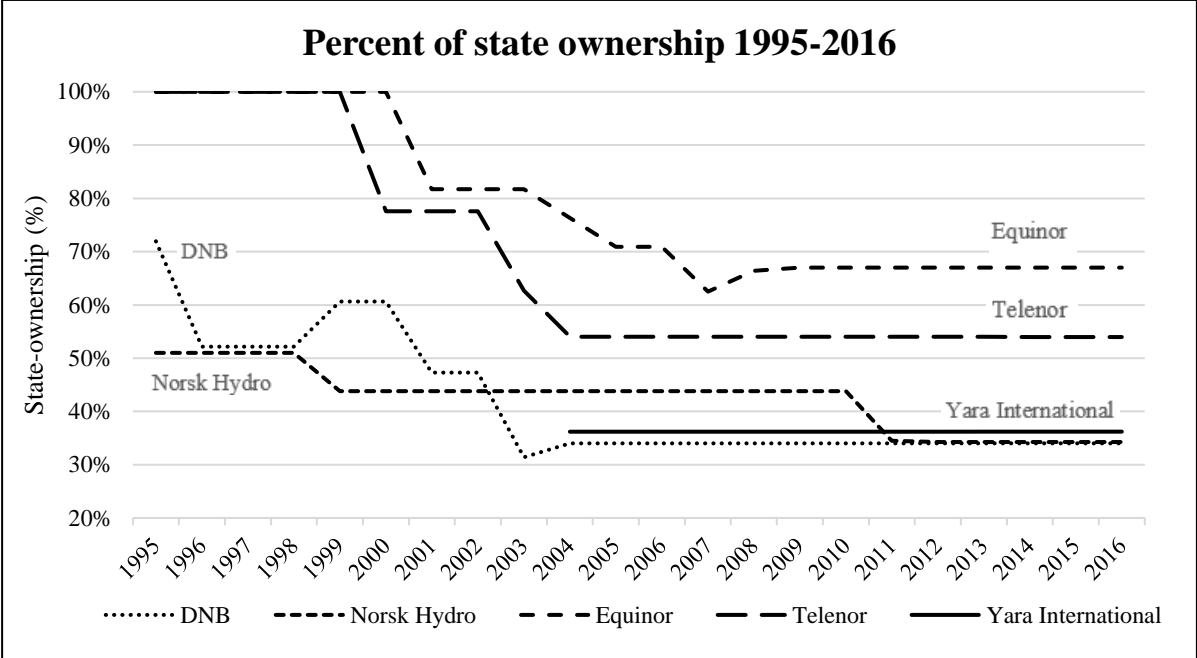
Figure 2.2.A: Development since 1995 and current share of Norwegian state-ownership in Equinor ASA (67,00 %), Telenor ASA (53,97 %), Norsk Hydro ASA (34,26 %), DNB ASA (34,00 %) and Yara International ASA (36,21%).

2.3   Defining ownership

In this and the following section, we rationalize the characterization of the Norwegian State as a passive owner of its corporate interests. There are several ways of classifying or defining corporate investment and ownership. The classification in the OR is based on three different types, spanning from passive to active ownership. In the passive end of the scale are owners focused on capital allocation. The middle consists of long-term strategic owners, and in the active end are owners focused on operational involvement.

Owners focused on capital allocation normally invest in well-diversified portfolios, seeking to achieve value creation through continuous adjustments in the portfolios to maximize return.

By holding positions in many different companies, with the possibility of a quick exit, their involvement in operations is limited.

Long-term strategic owners are similar to capital allocation owners because they also hold diverse portfolios of companies. The distinction is that they invest in fewer companies with larger stakes in each company. By holding larger stakes, they are able to influence the strategic direction of the companies, through board representation.

Owners focused on operational involvement try to increase value by supporting the companies in which they have invested with operational expertise. To be able to get their expertise involved they invest in a smaller number of companies, seeking sole or at least majority ownership. This is the most active form of ownership.

The Norwegian Government does not define its ownership management to be included in any of the three groups. Nor does it establish its location on the scale of being passive or active. It may not be possible to define the ownership in one of the three groups, due to its history and management. However, to what degree the state is a passive or active owner is interesting, considering its major share of ownership in each listed company, and the implications of ownership involvement.

We define shareholder activism as *"actions taken by shareholders with the explicit intention of influencing corporations' policies and practices"*, following Goranova & Ryan (2013). To what extent the Norwegian Government influences policies and practices may be debatable, but due to its own description in the OR, further described in <u>Section 2.4</u>, we argue that it leans towards a passive attitude and thereby is a passive owner. Even though the Government is reticent to label itself as a passive owner, it declares the following in the OR: *"the State refrains from exercising its authority as a public administrator in its corporate governance"*, thereby making it easier to argue that it is a passive ownership. Furthermore, in 2003 a government appointed committee defined the ownership as follows: *"The Norwegian state-capitalism is characterized by the fact that the state is a passive owner"* ("NOU 2003: 19," 2003).

2.4 Excercising ownership

How the State acts as an owner will affect the confidence investors and the public have in the SOEs. The prevailing political consensus is that state ownership shall be exercised professionally within the constraint of Norwegian corporate law, and based on generally accepted principles of corporate governance (Government, 2014). These principles are ownership principles as described in The Norwegian Code of Practice for Corporate Governance, OECD Principles of Corporate Governance and OECD Guidelines on Corporate Governance of State-Owned Enterprises (NCGB, 2014; OECD, 2015a, 2015b). In addition, in 2002 the Bondevik II-Government developed ten principles of corporate governance, defining how the Norwegian SOEs shall act and what the State expects of the companies. These principles are listed in Appendix 2.1, and further elaborated in the OR.

The different Norwegian governments over the last decades have been cognizant of the problem of being an owner with several regulatory roles in business. To address this issue, one solution has been to increase the distance between elected politicians and the SOEs. Formally and in practice, the State exercises its ownership through the Ministry of Economics and Ministry of Petroleum and Energy for the enterprises of interest in this thesis. For POEs it is normal that the owners are represented directly on the board of directors. The Norwegian Government, through the Ministries, does not hold any seats on the board in the SOEs, thus keeping the management of the companies at an arm's length from the elected politicians. The only direct involvement from the Ministries is by government representatives in the election committees of the boards, and participation at the general assembly. Not having government officials on the companies' boards distinguishes the Norwegian State from other countries with SOEs, according to Lie et al. (2014).

In sum, as a consequence the way the Government exercises its ownership and its own considerations regarding ownership, we consider the ownership as passive. In the next chapter, we present theoretical aspects regarding state ownership and previous studies about passive and active ownership.

3. THEORETICAL ASPECTS

In this chapter, findings and insights from studies on the topics of ownership involvement, privatization, agency-challenges, and M&A-theory are presented. These topics are relevant when explaining aspects of state ownership and its implications. Further, we relate these theoretical aspects to the question of interest in the hypothesis in Section 4.

3.1   Ownership involvement - active & passive

Owner's involvement in the governance of firms is an area of research that is well studied in the academic literature. Much of the literature applies the same categorization as elaborated in the OR, regarding ownership involvement on a scale from passive to active. In this section, we review previous studies on the subject of ownership involvement and its implications for firm performance.

In a summary of results from 73 studies that examined consequences of shareholder activism Denes, Karpoff & McWilliams (2017) concluded the following: *"Activism that adopts some characteristics of corporate takeovers, especially significant stockholdings, is associated with improvements in share values and firm operations"*. They find that this result is consistent with an argument made by Alchian & Demsetz (1972), that agency problems are controlled by coalescence of ownership and share votes to discipline management. Agency problems are further examined in Section 3.3. In addition, Denes et al. (2017) found that, *"shareholder activism has become more value increasing over time"*.

When examining ownership involvement Carlsson (2003) finds that active ownership is essential for value creating. Through a description of how the Swedish Wallenberg family helped a number of Swedish companies to exercise active management, the author highlights the family's entrepreneurial approach to active ownership: *"the need for incessant renewal"*. The thought behind this approach is to establish competencies and structures in a company to facilitate for active management. Furthermore, the author states that the quality of this active management affect the sustainable success of a company.

Although many academic papers find positive correlation between firm performance and active involvement by owners, it is not black-and-white. In a study of passive institutional

investors Appel, Gormley & Keim (2016) find that passive mutual funds influence firms' governance choices, resulting in more independent directors, removal of takeover defenses and more equal voting rights. In addition, they find that passive ownership is associated with improvements in firms' long-term performance.

There can according to Thomsen & Pedersen (2000) be several reasons for why institutional investors choose a passive attitude towards involvement in their investments by not holding large shares in their investments, even though they know that stronger pressure on managers would probably increase company performance. Some reasons for being reluctant to exercise active ownership by acquiring large stakes are legal constraints (e.g., ceilings on maximal ownership share), caution, performance measurements relative to other institutional investors, free rider problems, and a preference for liquidity.

This is not the case for the Norwegian State as an owner, as it has large shares in all its domestic investment position. Following the argument of Thomsen & Pedersen (2000), it may be seen as a paradox not being an active owner with its large positions. Thus, the Norwegian State's ownership may be viewed as something unorthodox, being an active-owner-size investor but governing its ownership as a passive institutional investor. Active-owner-size investor refers to owners focused on operational involvement, as defined in the OR and in <u>Section 2.3</u>.

3.2   State ownership & privatization

The relevance of state ownership in business is still present, even after the fall of the Soviet Union and several privatization waves over the last four decades. According to Megginson (2017), the global trend of reducing state ownership in the early 21st century, has at least been slowed and perhaps reversed. The rise of China as an economic power and rapid growth in Sovereign Wealth Funds (SWFs) have contributed to this trend. Even though China has been a leading privatizer, much of the privatization has been partial, by not selling, but raising private capital in IPOs, thereby diluting the state ownership. China has risen from 3.6 % of world GDP in 2000 to 17.25 % in 2015, making state ownership more relevant in the global economy.

Abramov, Radygin, Entov & Chernova (2017) conducted a study on the effect of state ownership by investigating the differences in efficiency between state-owned enterprises and private companies in Russia. Based on the financial indicators: return on equity, revenue per employee, profit margin and debt burden, they found that state-owned enterprises perform worse on average than private companies. However, Willner & Parker (2007) argue that support of private ownership is premature, and refers to numerous studies either backing state ownership, or that find no statistically significant differences between private ownership and state ownership.

State ownership and privatization are areas of research that have been thoroughly studied in academic literature during the past decades. Comparing the general performance of state ownership with private ownership can be difficult due to the different objectives that the owners may have. Thus, a commonly used method of measuring the effect of state-ownership is through a privatization process. Since the firm is the same entity before and after the privatization, performance is comparable. We will continue by presenting studies on privatization and look at its implications for firm performance.

Often used arguments for privatization are an increase in efficiency, that private owners have stronger incentives to keep cost low than politicians or bureaucrats, and that they more effectively monitor and/or motivate appointed managers, according to Willner (2001). Megginson & Netter (2001) did an extensive survey of the academic research regarding privatization and state ownership that had been conducted up until 2001. The survey examined 70 empirical studies where different questions were raised, and the focus was the question of whether private firms perform better than state-owned firms or not. They concluded that *"divested firms almost always become more efficient, more profitable, and financially healthier, and increase their capital investment spending"*.

Megginson (2017) published a similar survey in 2017 of the academic research made since 2004 regarding privatization and state ownership. A part of the survey reviewed seventeen empirical studies examining whether privatization improves the operating and financial performance of former SOEs. He found that all seventeen studies documented significant improvement of performance after companies had been divested from state-ownership. In his conclusion he stated that "*Privatization generally improves the financial and operating*

performance of formerly state-owned enterprises and enhances the capacity and efficiency of national capital markets. State ownership of business assets is inherently less efficient than private ownership, and this effect is especially damaging for financial institutions and in the global oil and gas industry".

Gupta (2005) examined whether partial privatizations of 47 Indian SOEs from 1991 to 2002, where the government remained in control after sale, made an impact on firm performance or not. She found significant improvement in profitability, productivity and investment after state divestment. Referring to agency theory, Gupta argues that managerial incentives made the firms perform better, having the stock market evaluating managers' performance.

While most of the empirical evidence worldwide show that privatization has a positive effect on firm performance, Nellis (1999) problematizes the privatization process in some institutionally-weak transition economies, economies that change from central planning to free market economies. Although Nellis (1999) shows that privatization has not worked optimally in these economies, he states that privatization is the right course of action.

Privatization in Norway occurred in different stages during the 1980's and 1990's, before Equinor ASA and Telenor ASA were publicly listed in the early 2000's, according to Sejersted (2017). Although the companies were privatized after the listing, the State kept more than two-thirds of Equinor shares and more than one-third of Telenor shares, making it a partial privatization. The only major divestment done by the Norwegian State, since this privatization, is the recent listing and partial sale of Entra ASA in 2014. In fact, the Norwegian State has been and still is a net investor, due to the Norwegian SWF, *The Government Pension Fund Global* (GPFG). We will not comment on the ownership involving the GPFG further, since this is a different form of state ownership than the investments in domestic companies, which are the focus of this thesis.

To our knowledge there is only one academic study that has been conducted regarding the performance of the Norwegian state ownership. Ødegaard (2009) examined how publicly listed enterprises were affected by direct state ownership between 1989 and 2007. He examined if there exist a "state rebate" or not, i. e. whether companies where the state is a major owner are priced lower than they would be had the state not been there as an owner. He found some indications of a "state rebate" on OSE, but only significant results during the first

period between 1989 and 1997. Looking at the Norwegian State's portfolio return on investment, he found no alpha, risk-adjusted excess return, significantly different from zero.

In summary, the key finding implies that a state ownership is less efficient than private ownership. As the literature above indicates, there may be several reasons for these efficiency differences. One of the reasons can be managerial agency challenges.

3.3   Agency problems

There are several issues related to being an owner and a regulator at the same time, as mentioned in Section 2.4. In addition, every company of a certain size will to some extent experience agency problems. Agency theory is a widely studied field of business research. According to Eisenhardt (1989), the theory addresses two main problems that may arise when an agent, typically the management of a firm, makes decisions on behalf of the principal, the owner. The first agency problem is that principal and agent may have different goals, whereas the second problem concerns the work that the agent is doing, which can be difficult or expensive for the principal to verify. Agency problems naturally apply to SOEs as well as POEs but may be even more relevant in the case of the Norwegian state-ownership due to its arm's length policy to management. In this thesis, the terms *Agency, Agency problem* or *Managerial agency problem* refer to the relationship as described above.

Agency problems caused by conflict of interest lead to costs for both agent and principal. According to Jensen & Meckling (1979), avoiding agency costs for the parties involved is generally impossible. They define agency costs as *"the sum of (1) the monitoring expenditures by the principal, (2) the bonding expenditures by the agent and (3) the residual loss."* The monitoring expenditures are the costs for the principal that stems from the control of the agent. The bonding expenditures are costs borne by the agent to assure that the agent is working in the best interest of the principal. The residual loss is the reduction in welfare experienced by the principal due to actions by the agent that diverge from the principal's best interest.

Studying governance challenges Milhaupt & Pargendler (2017), assert that there are two primary agency problems of listed SOEs: (i) the agency problem between managers and shareholders, and (ii) the agency problem between controlling shareholders and non-

controlling shareholders. They emphasize that these problems intensify when the state is a large shareholder, though the relative strength and implications of these problems will depend on how the state acts as an owner. In the OR, the Norwegian Government expresses awareness of this problem regarding the relationship between the State as the controlling majority owner and the minority interests. They state that a high concentration of ownership can make it more difficult for the minority shareholders to assert their interests.

Monitoring the management can be more difficult when the principal is not an individual, as suggested by Laffont (1993). This is the case for the Norwegian Government. Another issue that can create an agency problem for the Government is its arm's length policy by refraining from holding seats on the board of directors. Various academic research papers emphasize the importance of monitoring management through the board of directors, which in turn reduces agency costs, according to John & Senbet (1998). That being said, monitoring expenditures by the government is reduced when a SOE is listed, having to follow public regulation and reporting, as stated by Gupta (2005).

In <u>Chapter 8</u>, we hypothesize that acquisitions done by management in SOEs are affected by agency problems. These acquisitions may occur due to the conflict of interest as described in this section and further exemplified in <u>Section 3.5</u>.

3.4 Concluding remarks

In the three previous sections, we have presented areas of consideration regarding the management of the ownership of SOEs and its implications. In all the sections, we have included evidence from academic literature to gain insight on each topic. First, we conclude that the governance by the Norwegian Government is of a passive sort since they refrain from holding seats on the board of directors in their companies. Second, the vast majority of academic research seems to support the notion that privatization makes firms more efficient and perform better. Last, all firms experience agency problems and in the case of the Norwegian state ownership, these problems may be magnified because of its passive governance and distance to management. We want to test if these implications in state ownership can be reflected in the capital market by using M&A-event study.

3.5 M&A

In this thesis, we use M&A-events as an instrument to measure how the market assesses the difference between SOEs and POEs when conducting a major investment decision. Merger and acquisition is considered as one of the largest corporate decision firms can make. Analysing M&A-events is frequently used as a tool of measuring creation or destruction of value. In this way, we will examine if investors believe that the management of SOEs are less capable of creating value compared to management of POEs.

M&A research often investigate the announcement effect of takeovers by analysing the stock market response. A commonly used tool for this investigation is the event study methodology that we apply in the analysis and which is described in Chapter 6. In this section, we provide definitions of merger and acquisition and review reasons for why firms apply this as a strategy. In addition, we present previous studies on return to shareholders of bidding firms and variables that have an impact on short-term return.

3.5.1 Definitions

The term M&A refers to the process where two distinct business entities or more consolidate Distler (2018). According to the Financial Times, an acquisition is *"when a company purchases a second company, and the second company can either be continued as a separate legal entity or be integrated into the acquirer"* ("Definition of acquisition," n.d.). Merger refers to the case when two companies are combined. In an M&A there are usually two parts involved; the company that acquires is the acquirer or the bidder, and the company being acquired is the target. The Financial Times states that most deals are structured as an acquisition. Even though there is a slight difference between the terms "merger" and "acquisition", they are often used interchangeably, according to Distler (2018).

We define an M&A-event as the announcement that a company makes of a merger or acquisition of another company, either fully or partially. In our main analysis we are only interested in the short-term market reaction. Previous studies of the effect of M&A-events, either long or short-term, select transactions by certain criteria. The criteria may be size of the deal value, whether the deal is completed or not, if the acquirer goes from owning less than 50 percent to owning more, or just change in control. For our purpose, we restrict the events of

interest to deals where the relative size between the bidder and target is at least 2%. A 2% level is applied because the target needs to be of sufficient size to have an impact on bidder value. The relative deal size has been found to have an impact effect on the announcement return to the bidder by several researchers (Betton, Eckbo, Thompson, & Thorburn, 2014; Sara B. Moeller, Schlingemann, & Stulz, 2004). Further description of the announcement criteria is given in Section 5.2.

3.5.2 Why merge or acquire?

There are according to Berkovitch & Narayanan (1993) three main motives suggested in the academic literature that explain why managers engage in takeovers: synergy, hubris and agency. They find that synergy is the primary motive, which is supported by Porter (1985), who states that synergy is the most common justification for acquiring a firm.

Synergy is the notion that a two or more businesses will create greater value together than if they operate separately, according to DePamphilis (2015). He states that there are mainly two synergy effects of mergers and acquisitions: operating and financial. In addition, synergy gains can come from control by vertical integration, gaining monopolistic power, expertise in the acquired target, and possible tax gains as found by Berk & DeMarzo (2011).

Roll (1986) explains the second motive for M&A, hubris, as when managers make mistakes in evaluation of the target firm. The result of this misevaluation can be that firms make acquisitions achieving no synergistic gains and that the excess premium paid by the acquirer is transferred to the target. The hubris motive takes either an extreme or a more moderate form, ranging from an M&A without synergies, to M&A with some positive gains. Seth, Song & Pettit (2000) argue that although hubris initially tried to explain domestic acquisitions, hubris can also explain cross-border acquisitions. They state that the information asymmetry between bidder and target is likely to be greater when they are from different countries.

The agency motive suggests that managers embark on acquisitions to maximize their own utility at the expense of the shareholders according to Seth et al. (2000). As the assets under the managers' control increase, this hypothesis suggests that managers knowingly overpay in acquisitions since managerial compensation frequently is tied to the amount of assets under their control. Avery, Chevalier & Schaefer (1998) refer to the act of managers increasing firm

size through M&A beyond that which maximizes shareholder wealth as empire building. They found that CEOs have incentives to increase the assets under their control to gain prestige and standing in the business community. According to Mehran & Peristiani (2009), this agency problem arises when managers spend excess cash on empire building instead of paying dividend.

As discussed in Section 3.3, agency challenges related to the governance of the Norwegian SOEs can be more problematic relative to firms without a major state ownership. When management in the SOEs embark on M&A they can be motivated by empire building or choose target specific characteristics motivated by self-interest.

3.5.3 Previous studies

The evidence from M&A research suggests that the target firm experiences most of the gain from the transaction measured as the change in stock price on announcement. Regarding acquirer returns, the evidence is less clear. Empirical results show that the return to the acquirer usually lies around zero, according to Fuller, Netter & Stegemoller (2002). According to Berk & DeMarzo (2011), the target shareholders experience on average a 15% positive announcement reaction, whereas the acquirer shareholders only experience a 1% positive change.

Event study methodology of M&A-events often analyses the abnormal return which is defined as the actual return minus the normal return on announcement date, according MacKinlay (1997). The cumulative abnormal return (CAR) is the sum of the abnormal returns over an event window. The number of days in the event window differ from study to study, however, we employ a three-day event window as (e.g. (Hackbarth & Morellec, 2008; Sara B. Moeller et al., 2004)). Table 3.5.A displays an overview over previous studies that find 3-day CAR to the acquirer firms. The studies show that CAR is ranging from -1.31% to 0.86% over a three-day event window.

Table 3.5.A: Previous studies on 3-day CAR to acquiring firm's shareholders

Author(s)	N	Description	Period	3 day CAR to Acquiring Firm Shareholders
Moeller, Schlingemann and Stulz (2004)	5503	Acquisitions by small U.S. firms	1980-2001	0,23 %
Conn, Cosh, Guest and Hughes (2005)	705	Acquisitions of public targets by U.K. public firms	1984-1998	-0,82 %
Conn, Cosh, Guest and Hughes (2005)	3615	Acquisitions of private targets by U.K public firms	1984-1998	0,86 %
Bouwman, Fuller and Nain (2009)	1090	High-market* acquisitions	1979-2002	-0,40 %
Bouwman, Fuller and Nain (2009)	1004	Low-market** acquisitions	1979-2002	-1,31 %

*high-market refers to a market in boom, **low-market refers to a depressed market

In a study on the Chinese M&A-market that examines if state ownership drives M&A-performance, Zhou, Guo, Hua & Doukas (2015) finds that SOE bidders outperform POE bidders in terms of long-run stock- and operating performance. When examining short term returns, they use cumulative abnormal return (CAR) measurement with an event window of 5 days surrounding the announcement date. They find insignificant positive CAR for the SOE acquirers, and a significant 0.83% positive CAR when the acquirer was a POE. When they control for whether the target is a SOE or POE, the results are different. Acquirers have significantly better performance (1.36%) if the target is a SOE compared to POE targets (0.67%). Controlling for what they define as a hot-political period, dates surrounding the National People's Congress, they document a significant positive impact on M&A-event-returns, concluding that the value of political connections is positive in the Chinese M&A-market.

3.5.4 Determinants of performance in M&A

In a comprehensive review of empirical research explaining M&A performance, Das & Kapil (2012) finds that the explanatory variables which can explain variation in the short-term reaction of CAR are extensive. These variables can be categorized, among others, as deal and target characteristics. In this section, we present explanatory variables that the academic literature suggests have an impact on the return of the bidder.

The greater the relative size of the deal, measured as deal value to bidder's market value, the more impact it will have on the bidder and therefore influence the announcement return to a greater extent. Seth, Song & Pettit (2002) find a positive relationship between the acquirer's short-term market performance in the form of CAR and *relative size* of target to bidder. As mentioned in our definition of an M&A-event, Betton et al. (2014) find that relative size has a significant effect on the announcement return to the bidder.

Fuller et al. (2002) present empirical evidence on bidder returns when the *target is public*. The consistent results from the various research on acquisitions of public firms are that the bidder return is on average small, and in many cases insignificant negative. Further, research shows that acquisitions of private held targets are generating significantly positive returns for the bidder as found by Conn, Cosh, Guest & Hughes (2005) and Fuller et al (2002). In a research that compares acquisition of private and public targets, Hansen & Lott (1996) find that the bidders gain a 2% higher return when acquiring a private firm.

Another variable that is found to affect the bidder abnormal return is the method of payment, either cash or stock. In long-run performance research determining the effect of payment method, Andre, Kooli & L'Her (2004) and Loughran & Vijh (1997) find that acquisitions fully paid in cash has a positive effect on the value of the acquirer. Empirical research find that abnormal return at the bid announcement is higher for bidders paying with cash compared to stock paying bidders, according to Fuller et al. (2002). Eckbo, Giammarino & Heinkel (1990) argue that a mix of cash and stock payment generates higher return than a fully stock or cash bid.

Acquirer to target relatedness, is an often-used explanatory variable in M&A research. When a bidder acquires a target within the same industry, M&A research refers to this as a horizontal acquisition. It is hypothesized that M&A between industry related firms will lead to abnormal returns for shareholders of bidding firms, according to Barney (1988). However, empirical evidence is divided. Research overview from Das & Kapil (2012) shows that two papers analysing the short-term performance find no statistically significant relationship between CAR and a horizontal acquisition variable (Lien & Klein, 2006; Romero Gerbaud & York, 2007). There is only a positive relationship between the acquirer's long-term market return and the target and bidder relatedness.

Eckbo & Thorburn (2000) found that with greater competition among bidders comes better negotiating power for the target, and thus lower gains for the acquirer. The number of bidders can therefore explain parts of a negative abnormal return for the bidder. When analysing the effect of having an initial stake in a target, also referred to as *toehold*, Hamza (2011) finds strong evidence that announcements from toehold bidders generates significantly higher returns than announcements from bidders without any stake.

Mantecon (2009) finds that announcements of cross-border M&A is less favorable for the acquirer compared to domestic takeovers. In a study on Canadian targets, Eckbo & Thorburn (2000) find that the acquirers experience a positive average announcement period abnormal returns. For U.S. (foreign) on the other hand, the return to bidder is close to zero. Aw & Chatterjee (2004) and Moeller & Schlingemann (2005) find similar results. Using a sample of 30,783 acquisitions announced from 1985 to 2005 Mantecon (2009) finds evidence supporting the studies mentioned above, indicating that acquirers experience larger gains in domestic acquisitions than in cross-border acquisitions.

As the paragraphs above imply, there are several variables that have an impact on short-term abnormal return for bidders. Although there is not a consensus in empirical research for which direction the variables affect short-term returns, each variable has been found to have an impact on the acquirer's abnormal return on announcement. Taking this into account, we control for these variables when testing our hypothesis that is formulated in the next chapter.

4. HYPOTHESIS 1

In short, the main implications of state ownership discussed in this thesis are the passive ownership involvement by the Government, evidence that privatized firms perform better, and the possible risk of greater agency problems. These implications are elaborated in Section 3.1, Section 3.2 and Section 3.3, respectively.

We argue that the Norwegian State's ownership involvement is a paradox, being a passive owner even though it holds large positions in its companies. We consider performance improvements after privatization, as concluded by Megginson (2017), as a consequence of the state ownership. All firms experience agency problems, but in the case of the Norwegian state ownership, these problems may exist to a greater extent because of its passive governance and distance to management. To investigate if these implications of state ownership are reflected in the market, we use M&A-events as an instrument to examine how the market values major investment decisions. M&A is one of the largest and most important investment decisions that a company can make. Considering the above-mentioned implications of corporate state ownership, we hypothesize that the market values M&A decisions made by SOEs more negatively compared to POEs. Therefore, our first and main hypothesis is as follows:

H1: State-owned enterprises experience a significant lower cumulative abnormal return surrounding the announcement of an M&A than private-owned enterprises.

To test this hypothesis, we employ an M&A-event study methodology. This is a frequently used methodology for examining how the market values M&A decisions on announcement by measuring the abnormal stock return.

5.   DATA AND DESCRIPTIVE STATISTICS H1

5.1   Data

In this chapter, we present the data for the analysis. M&A data for 30 companies is extracted from the Thomson Financial SDC M&A database (SDC) from January 1, 1983 to November 16, 2017. SDC provides specific deal characteristics to each announcement and is easily linked to the financial time series database, Thomson Datastream (DS), which provides the firm characteristics. The following section describes the two steps required to reach the final sample. The first step is selecting the treatment and the control group, the second step is selection of M&A announcements. In the end of the chapter, we define key variables employed in the analysis.

5.2   Sample selection

5.2.1 Step 1 – Company selection criteria

The companies included in the analysis are selected based on several criteria. Our total sample consists of 30 companies. The treatment group consists of five SOEs that we test against the control group of 25 POEs. In Table 5.2.A, the sample selection criteria for SOEs are listed.

Table 5.2.A: Selection criteria SOE

Company selection criteria

1. State-owned*
2. Publicly listed
3. At least 30 announcement dates in SDC before sample filtration

*Norwegian state-ownership above 1/3 of outstanding shares

The first criterion is set to be only Norwegian companies with state ownership above 1/3 of shares. This ensures that the Norwegian State has a significant dominance among shareholders that allows the State to prevent resolutions in the general assembly requiring a 2/3 majority. By following Golubov, Yawson & Zhang (2015), criterion two states that the bidder has to be

a publicly listed company. This is applied because the event study methodology used in the analysis requires daily security prices to detect the market reaction of an M&A announcement. The last criterion requires the number of announcements from SDC to be at least 30. We have chosen this lower limit to ensure that the selected SOEs have a certain level of M&A-activity during the sample period.

Given these criteria the treatment group of SOEs consists of: Equinor ASA, Telenor ASA, DNB ASA, Norsk Hydro ASA, and Yara International ASA. As mentioned in the introduction, these five companies are in group 2 of the ownership categories in the OR. The only company not included from group 2 is Kongsberg Gruppen ASA. It is excluded due to the third criteria requiring the company to have at least 30 announcement dates.

Control group criteria are listed in Table 5.2.B:

Table 5.2.B: Selection criteria POE

Company selection criteria

1. Not state-owned*
2. Publicly listed
3. At least 30 announcement dates in SDC before sample filtration
4. Operate in the same sector or industry as a treated firm
5. Similar size by market capitalization as a treated firm

*No state-ownership above 2 % of shares

To test the hypothesis, it is important that there is no state ownership in the companies in the control group. Due to domestic and foreign pension or wealth funds, finding companies with zero state-ownership is challenging. Therefore, we set a limit of two percent state ownership so that POEs with this form of state ownership can be included and defined as a POE. Criteria two and three are applied similarly as in the sample selection of SOEs.

Criteria four and five are required for creating the peer control group. *Peer group analysis*, also referred to as benchmarking analysis, is a form of analysis that compares company performance with comparable companies. The method is applied in our analysis to test the

difference in announcement return for SOEs and POEs. When conducting a peer group analysis, companies of similar size and industry are selected.

To determine whether a company has been or is owned by the state, thorough examinations based on several sources are conducted. We use the different companies' official web page as a main source of information to determine the ownership of each company. For some of the companies, history and shareholder information from their web page is sufficient to confirm the ownership. However, in cases with missing information about ownership status and history additional sources are applied. Most of these sources are gathered through online research. All the sources are listed in the Appendix 5.6.

To identify the comparable companies, we use the Financial Morningstar's overview of industry peers. The overview contains information about the competitors' market value, financial multiples, and key figures. The classification of companies is separated into *sector* and *industry*. Morningstar defines sector as the company's general area of business, while industry is defined as the primary area of business ("Industry," n.d.; "Sector," n.d.). To create a peer group sample, we select five peer companies for each SOE adding up to a total number of 25 POEs.

Since all the SOEs operate in separate industries and are of different size, each SOE has a specific peer group. The peer companies are, to the greatest extent possible, selected from Morningstar. The criterion of no state ownership makes a significant number of the listed SOE peers on Morningstar unusable. Therefore, widening the search is necessary since some of the criteria for the POE sample selection are not fulfilled. In addition, some special considerations for each firm are made in the selection. These are summed up in the Appendix 5.4.

5.2.2 Step 2 – The announcements criteria

In this section, we describe the second step in the process of finding the final sample for H1. All M&A-events between 01.01.1983 and 16.11.2017 for the selected SOEs and POEs are extracted from the Thomson Reuters SDC Platinum Mergers and Acquisitions database (SDC). The database has M&A-deals back to 1979 and is widely used by industry professionals and academic researchers, according to Ma & Chu (2013). Table 5.2.C shows the selection criteria for announcement dates for the treatment group of SOEs.

Table 5.2.C: Selection criteria for the announcements of SOEs

Sample selection criteria	Source	Excluded	SOE
Announcements from SDC for the 5 SOEs from 01.01.1983 to 16.11.2017	SDC		373
Announcements when acquirer is listed	DS	70	303
Announcement with a complete estimation window	DS	27	276
Event windows not overlapping within each acquiring firm	DS	43	233
Deal value greater than USD 1 million	SDC	128	105
Repurchases excluded	SDC	10	95
Ratio of the deal value to the acquirer size* of at least 2%	SDC	67	28
Final sample of SOE announcements			**28**

SDC = Thomson Reuters SDC Platinum Mergers and Acquisition database, DS = Thomson Reuters Datastream
*Size measured as the market value two days before the announcement date

The total number of bids for the five SOEs extracted from SDC without filtration is 373. Bids that were announced before the acquirer became publicly listed, are excluded. Further, we exclude the deals that did not have a complete estimation window so that the estimation of normal return is the same for every announcement. To ensure that each event for a company is independent, we exclude announcement dates with an event window that overlap with other event windows. This is in line with the assumption of no clustering in event study methodology. More detailed description of estimation – and event window, and calculation of normal return in Chapter 6.

Of the 105 announcements that have a deal value greater than USD 1 million, there are 10 announcements categorized as repurchase. We decide to exclude these announcements in the analysis because it is difficult to isolate the effect of the repurchase announcements in Norway. When Norwegian SOEs request permission to buy back shares, this is announced through a meeting invitation and protocol from the general assembly. Since these announcements consist

of several potential news connected to different dates, we exclude the repurchases from our analysis.

The filtration criterion ratio of the deal value to the acquirer size, also known as the relative size, is applied. Following Betton et al. (2014) relative size has a significant effect on the announcement return to the bidder. The greater the relative size of the deal, the more impact it will have on a firm and therefore should influence the announcement return to a greater extent. Thus, the relative size of the announcements is set to be at least 2 percent. The description of how deal value and relative size are calculated is given in Section 0.

After applying the filtration criteria, the final SOE sample consists of 28 announcement dates. This is the SOE-group of announcements that is analysed when testing H1. The final sample of the control group of POE-announcements follows the same sample selection structure as for the SOEs and is found in Table A2 in Appendix 5.2. This table shows that the final sample of SOEs and POEs combined add up to 210 announcements.

5.3 Key variables

In this section, we present the key variables in the analysis. In the analysis of H1 in Section 7.1 the dependent variable is the cumulative abnormal return (CAR). The abnormal return is the actual return minus the normal return on date t. The cumulative abnormal return is the return over the three-day event window (t_{-1}, t_1), calculated with market model using MSCI World Index as the benchmark. For description of event window, market model and benchmark see the methodology Chapter 6.

The return is calculated by using the natural logarithmic of the price at time t divided by the price at time t-1, as shown in equation (1). We have used the adjusted closing price in Datastream defined as the daily closing price adjusted for any subsequent capital actions, like dividends or stock splits are extracted from Datastream (Ince & Porter, 2006).

$$Return = ln(P_t / P_{t-1}) \qquad (1)$$

The main independent variable in the analysis is the SOE variable. This is a dummy variable that takes the value 1 if the company is a state-owned enterprise, and 0 if the company is a private-owned enterprise. The SOE-variable is used in the regression analysis when testing H1; state-owned enterprises experience a significant lower cumulative abnormal return surrounding announcement of M&A than private-owned enterprises.

After testing H1, we include control variables in the regression analysis to test if these variables affect the coefficient of SOE. The first control variable is *relative size*. The same relative size variable is also used as a criterion in the sample selection for H1 in Section 5.2 The relative size variable is a percentage value, calculated as the deal value divided by the market value of the acquirer two days prior to the announcement, shown in equation (2):

$$Relative\ size\ (\%) = \frac{DV_t}{MV_{t-2}} \qquad (2)$$

where DV_t is the deal value at announcement date t, and MV_{t-2} is the market value of the acquirer two days prior to the announcement date calculated in equation (3) below.

In the following two paragraphs, the descriptions of the deal value (DV) and market value (MV) are given. Deal value is a SDC Platinum-variable that is defined as the total value of consideration paid by the acquirer, excluding fees and expenses. The dollar value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants, and stake purchases made within six months of the announcement date of the transaction. Liabilities are assumed in the value if they are publicly disclosed (Platinum, 2005).

Market value of the acquirer is collected from Datastream and is defined as the acquirer's share price multiplied by the number of shares outstanding. The value used is two days prior to the announcement date. In this way, the market value is close to the announcement date, but outside the event window. Here we assume the market to be uninformed without leakage of information to the market two days prior to the announcement, in accordance with the market efficiency theory. In the case where announcement information has been leaked in the run up period before the event, the stock price can be affected. Market value is calculated as shown in equation (3):

$$MV_{t-2} = P_{t-2} * SO_{t-2} \qquad\qquad (3)$$

where MV_{t-2} is the market value of the acquirer, P_{t-2} is the share price and SO_{t-2} is the shares outstanding, all values two days prior to the announcement day.

The remaining control variables tested for in Chapter 7 are widely used in M&A literature (e.g (Golubov et al., 2015; Sara B. Moeller et al., 2004)). The definitions of the variables are found in the variable description in Appendix 5.1.

5.4   Summary statistics

In this section, we present summary statistics for the variables used when testing H1. The purpose of this section is to give a basic understanding of the data used in the analysis.

Table 5.4.A displays the sample characteristics for the variables included in analysis of H1.

Table 5.4.A: Sample characteristics H1

Variable	SOE Mean	N	POE Mean	N	SOE=POE Δ	p-value	ALL Mean	N
Number of bids		28		182				210
Target is public	43 %	12	51 %	92	8 %	0,4509	50 %	104
Stock bids	4 %	1	11 %	20	7 %	0,2252	10 %	21
Cash bids	25 %	7	40 %	73	15 %	0,1265	38 %	80
Horizontal bids	86 %	24	77 %	140	9 %	0,2973	78 %	164
Toehold bids	29 %	8	33 %	60	4 %	0,6454	32 %	68
Crossborder bids	64 %	18	57 %	104	7 %	0,4781	58 %	122
Several bidderers	14 %	4	8 %	14	7 %	0,2480	9 %	18

Variables are target and deal characteristics. The table displays the mean and differences in mean between SOE and POE-sample.
p-values from t-test where H_0: mean SOE = mean POE. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The sample characteristics show that the number of bids in POE-group are more than six times larger than for SOEs. The means are the percentage share of the total number of bids in each group. When determining if there is a statistically significant difference in mean between SOE and POE, a t-test is conducted. The p-values in the table indicate that the mean is not statistically significantly different between the two groups for any variable in this sample. Thus, it appears that SOEs and POEs select relatively similar targets.

Table 5.4.B: Summary statistics for key variables H1

Variable	SOE Mean	sd	Median	POE Mean	sd	Median	SOE=POE Δ	p-value
Deal value ($m)	2437	5708	745	7338	23070	1028	4902	0,0164**
Bidder market value ($m)	17767	24458	11561	31465	48348	13165	13699	0,0222**
Relative size (%)	19,21	26,73	6,54	21,38	29,78	7,22	2,17	0,6965

sd = standard deviation, p-values from t-test where H0: mean SOE = mean POE. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5.4.B displays that the average deal value is larger in the POE-subsample than for SOEs. The average market value of the bidder two days prior to announcement is also larger in the POE-subsample. Both variables are significantly different between the two subsamples on a 5% significance level. An interesting finding of the key variables is that the relative size of the

transactions that SOEs and POEs engage in are not significantly different. An interpretation is that the two subsamples are engaging in deals with similar relative size which facilitate comparison between SOE and POE.
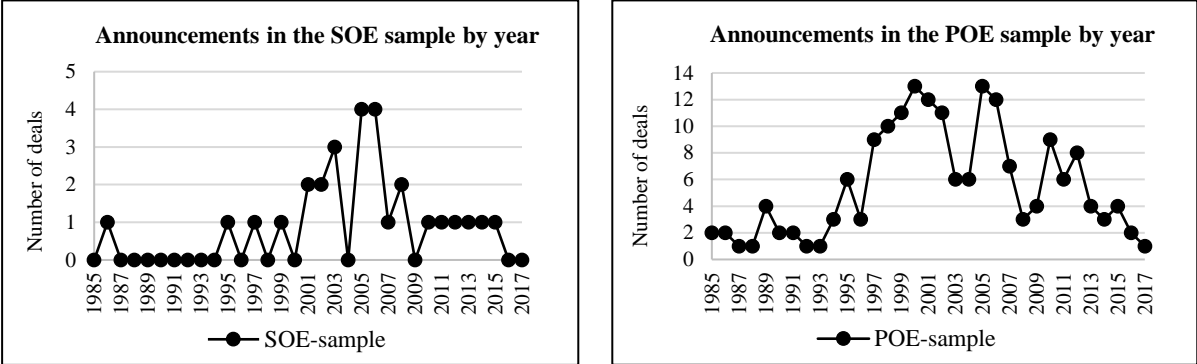
Figure 5.4.A and 5.4.B: The number of announcements over the period 1985-2017 for sample of SOE and POE in H1.

Figure 5.4.A and Figure 5.4.B illustrate the distribution of deals from 1985 to 2017 for the sample of SOEs and POEs, respectively. The M&A-activity for SOEs increases noteworthy at the start of the millennium. The activity remains high until the beginning of the financial crisis in 2007. For the POE sample, the number of M&As rises from the late 90's. The number of M&As POEs are engaging in is high until it starts to stagnate around 2007. In the aftermath of the financial crisis, the M&A-activity increases again before it decreases steadily until 2017.

In both samples, we observe a drop in the activity around 2003 before the activity again increases in the following years. M&As are known to have occurred in waves during the last century and the sixth merger wave lasted from 2003 to 2007 according to Alexandridis, Mavrovitis & Travlos (2012). The M&A-activity displayed in the figures may be influenced by this merger wave. However, drawing inference from this activity for SOEs can be misleading since the general level of announcements is low in the sample period. In addition, three of the five enterprises in the SOE sample were not listed until the beginning of the 2000s.

6.   METHODOLOGY H1

In this chapter, the methodologies applied to test H1 is described. A more detailed description is given in the <u>Appendix 6.2.</u> The primary objective of this study is to understand, identify and measure if M&A announcements generates any difference in abnormal returns to the shareholders of SOEs and POEs. To test H1, described in <u>Chapter 4</u>, we have used the event study methodology. This tool is frequently used in M&A research because of its ability to capture the effects of an event. Standard ordinary least square (OLS) regression methodology is used to determining a firm's normal return, to investigate differences in short-term market reaction, and allows us to control for other factors at the same time.

The event study methodology framework used in this paper is the framework presented by MacKinlay (1997) in the paper "Event studies in economics and finance". The method is frequently used because the effects of an event will be reflected immediately in the security prices, given rational expectations and a semi-strong form of market efficiency. The hypothesis of market efficiency assumes different degrees of information are reflected in the security prices in the market ranging from a weak form to a strong form. A semi-strong form efficiency is located between weak and strong form and implies that all publicly available information is reflected in the market. In our analysis, we assume a semi-strong form efficiency to draw inferences of an announcement of an M&A-event. Thereby, we assume the market to be uninformed, without leakage of information to the market before the event, one day prior to the announcement. In the case where announcement information has been leaked in the run up period before the event, the stock price can be affected.

6.1   Choice of event, estimation and event window

The first step in the framework by MacKinlay (1997) is to define the event of interest. Most event studies in M&A research focus on market reaction around the announcement of an acquisition and Andrade, Mitchell & Stafford (2001) argue that traditional short-term event study is a reliable measure of whether there is value creation in the M&A-event or not.

According to the selection criteria section, the events we are analysing for the two samples of SOEs and POEs are the M&A announcements where ratio of the deal value to the acquirer size is at least 2%. The announcement date is the event of interest at time t_0. The period before the event is the estimation window. This window of trading days is used for estimating the normal return of the firm when it is presumed an event will not occur. The estimated normal return is then used for calculations of the cumulative abnormal return in the event window illustrated in Figure 6.2.A below.
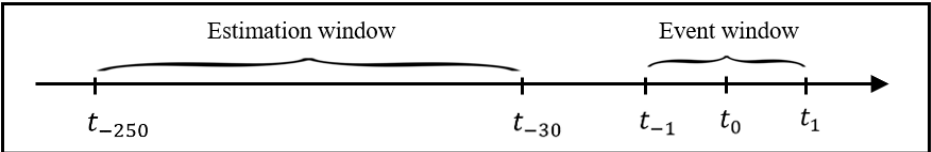
Figure 6.1.A: The estimation window and the event window used in the event study

We estimate the abnormal returns over the three-day window in the same way as Hackbarth & Morellec (2008) and Moeller et al. (2004) do in two highly recognized M&A papers. The three-day event window is from 1 trading day before the announcement to 1 trading day after the announcement. Choice of estimation period is ambiguously decided in event studies. MacKinlay (1997) and Mackbarth & Morellec (2008) employ an estimation window length of 250 trading days and 90 trading days, respectively. In our analysis, the estimation window extends over a 220 day-period; from 250 trading days prior to the announcement to 30 days prior to the announcement.

6.2 Calculation of abnormal return

The abnormal return is defined as the actual return of a security over the event window, minus the normal return of the firm over the event window, according to MacKinlay (1997). Calculations of normal return is thoroughly described in Appendix 6.2. When calculating normal return, a broad-based stock index is employed. We use the MSCI World Index as a benchmark index, market index, in our normal return estimation. This index is employed because we assume that international investors easily move capital across borders when optimizing their portfolio. For the return calculations, we employ the daily adjusted closing price retrieved from Datastream for all the firms, MSCI World Index and domestic stock

exchange. These prices are in turn converted into daily returns by using natural logarithmic return of the price at time *t*, divided by the price at time *t-1*. This is shown in equation (4):

$$R_{i,t} = \ln(P_{i,t} / P_{i,t-1})$$ (4)

$$R_{m,t} = \ln(P_{m,t} / P_{m,t-1})$$

where $R_{i,t}$ is the return of the firm *i* at time *t*. $R_{m,t}$ is the return of the market index *m* at time *t*.

When estimating abnormal return there are three statistical models that are normally used. These models are market model, constant mean return model and market adjusted return model.

6.2.1 Market model

We employ the market model in our event study. The market model is most commonly used in event studies for calculating the abnormal return. The abnormal return is calculated as in equation (5). For firm *i* in event window ϕ the abnormal return in the Market Model (MM) is:

$$AR_{i,\phi} = R_{i,\phi} - \hat{\alpha}_i + \hat{\beta}_i R_{m,\phi}$$ (5)

where $R_{i,\phi}$ is the actual return for firm *i* and $R_{m,\phi}$ is the market return in the event window ϕ.

The OLS estimators $\hat{\alpha}_i$ and $\hat{\beta}_i$ contribute to the normal return estimation for firm *i*. An important assumption in the MM is that there is a constant and linear relation between individual asset returns and the return of a market index. By using the estimation procedure ordinary least square (OLS), the stock's estimated parameters from linear regressions of daily stock returns on daily excess market returns in the estimation window is obtained.

To draw overall inferences for the event of interest, the abnormal returns have to be aggregated over the event window. This aggregation is the cumulative abnormal return notated as:

$$CAR(t_{-1}, t_1) = \sum_{t=t_{-1}}^{t_1} AR_{i,t} \tag{6}$$

where $CAR(t_{-1}, t_1)$ is the cumulative abnormal return between t_{-1} to t_1, and $\sum_{t=t_{-1}}^{t_1} AR_{i,t}$ is the sum of abnormal returns in the event window. The next step is to calculate the average cumulative abnormal return for the SOEs and POEs. The notation for cumulative average abnormal return is:

$$\overline{CAR}_\delta(t_{-1}, t_1) = \frac{1}{N} \sum_{i=1}^{N_\delta} CAR_i(t_{-1}, t_1) \tag{7}$$

where $\overline{CAR}_\delta(t_{-1}, t_1)$ indicates average cumulative abnormal return in event window for a sample $\delta = 1,2$. N_δ is the number of events in each sample.

6.2.2 Constant Mean Return Model and Market Adjusted Return Model

The two other statistical models are used in the robustness test of the main results in Section 7.2. The abnormal return equations for the models are shown in equation (8) and (9) below.

For firm i in event window ϕ the abnormal return in the Constant Mean Return Model (CMRM) is:

$$AR_{i,\phi} = R_{i,\phi} - \hat{\mu}_i \tag{8}$$

where $R_{i,\phi}$ is the actual return for firm i and $\hat{\mu}_i$ is the mean return of the stock of the acquiring firm in the estimation window.

For firm i in event window ϕ the abnormal return in the Market Adjusted Return Model (MARM) is:

$$AR_{i,\phi} = R_{i,\phi} - R_{m,\phi} \qquad (9)$$

where $R_{i,\phi}$ is the actual return for firm i and $R_{m,\phi}$ is the market return in the event window ϕ. The same method for calculating the average cumulative abnormal return, $\overline{CAR}_{\delta}(t_{-1}, t_1)$, described in the equations (6) and (7), is applied for CMRM and MARM.

MacKinlay (1997) argues that the MM represents a potential improvement over the CMRM in detecting the event effect. Cable & Holland (1999) studied different models for estimation of normal returns in event studies. They found a strong preliminary preference in favor of the MM. In addition, they also raised a note of caution over conclusions from previous work that are in favor of simpler models like CMRM and MARM, such as Brown & Warner (1985).

Regression methodology

Ordinary least square (OLS) regression is applied when estimating the normal return in the calculation of CAR and to test H1 in the following chapter. In addition, we use the OLS regression to control for deal and target characteristics that may affect our main result. Previous M&A studies have found that these control variables have an effect on announcement return for acquirer. OLS regression is one of the most commonly used multivariate analysis method. For more detailed description of OLS see (Wooldridge, 2008).

7. EMPIRICAL ANALYSIS AND RESULTS H1

In this chapter, we present our empirical analysis and results of testing H1. We begin with the main result of the analysis and then expand by including control variables to examine if deal or target characteristics affect the difference in CAR between SOEs and POEs. Next, we narrow down our scope by implementing a larger criterion of relative size to analyse the significance of deal size involving SOEs. Last, we examine if our main results are robust.

7.1 The Cumulative Abnormal Return Analysis

CAR regressed on SOE

The main finding in this thesis are the following regressions of CAR on the independent variable SOE for the total sample of SOE and POE with relative size larger than 2%. This sample is thoroughly described in Chapter 5. The independent variable is a dummy with the value of 1 if the bidder is a SOE, and 0 if the bidder is a POE.

Table 7.1.A: CAR regressed on SOE

	(1) CAR	(2) CAR
SOE (D)	-0.0217***	-0.0227***
	(0.00777)	(0.00818)
Control variables	NO	YES
Intercept	0.00280	0.0104
	(0.00374)	(0.00816)
N	210	210
Adjusted R^2	0.018	0.016

Heteroscedasticity-consistent standard errors in parentheses, $^* p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$
The dependent variable is the cumulative abnormal return (CAR) over the three-day event window (-1,1) measured using market model with MSCI World Index as the benchmark index. The independent variable is a dummy with the value of 1 if it is a SOE, 0 if a POE. Total sample with relative size greater than 2%. Variables included in the control variables: relative size (%), target is public (D), stock only (D), cash only (D), horizontal (D), toehold (D), cross border (D), several bidders (D).
The control variables are explained in Appendix 5.1.

The SOE coefficient in regression (1) in Table 7.1.A displays that SOEs can expect 2.17% lower cumulative abnormal return (CAR) when announcing an M&A-event compared to a POE. The result is significant at a 1% level. The dependent variable is the three-day cumulative abnormal return measured using the market model. This result confirms our main hypothesis

H1 that SOEs experience a significant lower cumulative abnormal return surrounding announcement date than POEs.

In regression (2), control variables are included. These variables have in previous studies been found to have an impact on announcement return for the acquirer. The variables are described in Section 3.5.4. The variables are included to test if they catch some of the effect from the announcement return which cannot be observed when only the SOE are included in the regression. When controlling for control variables the coefficient for SOE is reduced by 0.1 percentage point and remains significant at a 1% level which indicates that the main result is unchanged.

The confirmation of H1 leads us to consider the implications of state ownership as mentioned in Chapter 3. Those implications are the passive ownership involvement by the Government, evidence that privatized firms perform better, and the risk of greater agency problems. As mentioned in the hypothesis chapter, we believe that all these implications may affect the market's valuation of the decisions the managers of SOEs make. Since M&A is one of the largest and most important investment decision that a company can make, our results can be an indication of how the market value market decisions made by SOEs compared to POEs. The result may be affected by the implications of state ownership mentioned above. If these implications affect the difference in CAR between SOE and POE, it may be that they all affect the difference in CAR since they are probably all linked together to some extent.

The implications of state ownership are based on our research on state ownership and own assumptions that lead to the hypothesis that SOEs experience lower CAR than POEs when announcing an M&A. Consequently, this means that the difference in the market's valuation of decisions made by SOEs and POEs can be affected by other factors than those variables we have discussed in this thesis. Such factors can be that the market considers the acquisitions made by SOEs to be of a lower quality than acquisitions made by POEs or that there are other agency problems explaining the difference than those we have discussed.

CAR regressed on SOE and control variables

In the following regressions, we control for deal and target characteristics previously shown to affect CAR. By controlling for these variables, we can observe how the SOE coefficient varies to investigate if our main results are affected by other factors than state ownership.

Table 7.1.B: CAR regressed on SOE and control variables

	(1) CAR	(2) CAR	(3) CAR	(4) CAR
SOE (D)	-0.0228***	-0.0235***	-0.0227***	-0.0216***
	(0.00767)	(0.00798)	(0.00818)	(0.00764)
Relative size (%)	0.00488	0.00573	0.00667	0.00162
	(0.0174)	(0.0181)	(0.0184)	(0.0173)
Target is public (D)	-0.0154**	-0.0126*	-0.0111	-0.00893
	(0.00627)	(0.00647)	(0.00699)	(0.00771)
Stock only (D)		-0.0101	-0.0112	-0.0101
		(0.0169)	(0.0167)	(0.0186)
Cash only (D)		0.00198	0.00256	0.00119
		(0.00650)	(0.00653)	(0.00658)
Horizontal (D)		0.0000717	0.000878	0.00528
		(0.00659)	(0.00667)	(0.00717)
Toehold (D)		-0.00952	-0.0105	-0.00805
		(0.00749)	(0.00758)	(0.00836)
Cross border (D)			-0.00167	0.000176
			(0.00705)	(0.00738)
Several bidders (D)			-0.0103	-0.00717
			(0.0159)	(0.0159)
Decade FE	NO	NO	NO	YES
Acquirer industry FE	NO	NO	NO	YES
Intercept	0.00954**	0.0101	0.0104	-0.00690
	(0.00453)	(0.00683)	(0.00816)	(0.0202)
N	210	210	210	210
Adjusted R^2	0.031	0.022	0.016	0.013

Heteroscedasticity-consistent standard errors in parentheses, $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$
The dependent variable is the cumulative abnormal return (CAR) over the three-day event window (-1,1) measured using the market model with MSCI World Index as the benchmark index. Fixed effects (FE) for Decade and Acquirer industry are estimated using decade and industry dummies. All other variables are described in Appendix 5.1. All regressions are estimated using OLS.

In regression (1) in <u>Table 7.1.B</u>, CAR is regressed on the variables SOE, relative size, and target is public. The relative size variable is included in the regression to test if the relative size of the deal to the market value of bidder two days prior to the announcement over the whole sample affect the difference in CAR between SOE and POE. According to Moeller et al. (2004), the relative size is found to affect the short-term return in deals. Thus, we would expect the relative size coefficient to be significant and have an impact on CAR for the whole sample. However, in our regressions the relative size coefficients are insignificant. The coefficient when target is public is significant at a 5% level. This is consistent with the findings by Fuller et al. (2002) who find a significantly negative abnormal return when target is public.

In regression (2), more deal specific variables are included. The coefficient for target is public is less significant and can only explain the variation in CAR at 10% significance level. The SOE coefficient remains significant at 1% level with 0.7 percentage points lower coefficient than in regression (1).

Regression (3) and (4) include all control variables. Unexpectedly, none of the control variables are estimated to have a significant effect on the variation in CAR. As described in <u>Section 3.5.4</u>, several deal and target characteristics have been found to have an impact on the short-term return for bidder. We observe that the significance of target is public is no longer present when all control variables are included. In addition, decade fixed effects and acquirer industry fixed effects are included to further test if decades or industries have an impact on the difference in CAR between SOE and POE, thereby affecting the SOE coefficient. The results for regression (3) and (4) seem not to affect the main result for the difference in CAR between SOE and POE.

CAR regressed on SOE for sample with relative size over 5%

In Table 7.1.C, we analyse the CAR with a sample that only includes deals where the relative size is 5% or larger. The regressions are constructed in the same way as the regressions in Table 7.1.B. By increasing the criterion on relative size, we analyse the market reaction on larger deals that are expected to have a greater effect on acquirer return than when using a 2% level. The increased effect on the acquirer should therefore result in a greater impact on announcement returns.

Table 7.1.C: CAR regressed on SOE for sample with relative size over 5%

	(1) CAR	(2) CAR	(3) CAR	(4) CAR
SOE (D)	-0.0348***	-0.0368***	-0.0354***	-0.0327***
	(0.00923)	(0.00967)	(0.0102)	(0.0108)
Relative size (%)	0.00392	0.00591	0.00620	0.00268
	(0.0197)	(0.0205)	(0.0207)	(0.0205)
Target is public (D)	-0.0243***	-0.0223***	-0.0213**	-0.0188*
	(0.00877)	(0.00843)	(0.00927)	(0.0102)
Stock only (D)		-0.0118	-0.0135	-0.0116
		(0.0189)	(0.0186)	(0.0215)
Cash only (D)		0.000280	0.00195	0.00228
		(0.00909)	(0.00943)	(0.00984)
Horizontal (D)		0.00422	0.00685	0.0138
		(0.00877)	(0.00912)	(0.00946)
Toehold (D)		-0.0172	-0.0174	-0.0132
		(0.0111)	(0.0113)	(0.0129)
Cross border (D)			-0.00651	-0.00503
			(0.00975)	(0.0113)
Several bidders (D)			-0.00886	-0.00690
			(0.0181)	(0.0184)
Decade FE	NO	NO	NO	YES
Acquirer industry FE	NO	NO	NO	YES
Intercept	0.0182***	0.0175*	0.0189*	0.00966
	(0.00679)	(0.00916)	(0.0101)	(0.0152)
N	141	141	141	141
Adjusted R^2	0.062	0.050	0.041	0.013

Heteroscedasticity-consistent standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable is the cumulative abnormal return (CAR) over the three-day event window (-1,1) measured using the market model with MSCI World Index as the benchmark index. Fixed effects (FE) for Decade and Acquirer industry are estimated using decade and industry dummies. All other variables are described in Appendix 5.1. All regressions are estimated using OLS.

The output from regression (1) displays that the SOE coefficient is lower than when regressing the same variables as in Table 7.1.B, indicating that a SOE can expect a 3.48% lower CAR than a POE on announcement. This gives a 1.2 percentage points lower CAR compared to the sample of relative size greater than 2% with the same control variables. The coefficient of relative size is not significant even though we analyse a sample with larger relative deals. This indicate that relative size has no significant effect on the CAR for the whole sample but is affecting the difference in CAR between SOE and POE. In addition, the coefficient on target is public is significant at a 1% level and the coefficient is more negative compared to the regression including the same variables in Table 7.1.B.

When including the additional control variables in regression (2) and (3), the SOE coefficient is lower by only 0.2 and 0.06 percentage points, respectively. In regression (4), when all control variables and fixed effects are included, the SOE coefficient indicates that a SOE can expect 3.27% lower CAR than a POE with a significance level at 1%. The coefficients on target is public are estimated to have a lower impact on CAR as the number of control variables increases, in addition to its level of significance being reduced.

CAR regressed on SOE for a selection of sample sizes

In Table 7.1.D, CAR is regressed on SOE for samples with relative size at 1%, 2%, 5% and 10% level.

Table 7.1.D: CAR regressed on SOE for a selection of sample sizes

	(1) CAR (1%)	(2) CAR (2%)	(3) CAR (5%)	(4) CAR (10%)
SOE (D)	-0.0131[*]	-0.0217[***]	-0.0329[***]	-0.0413[***]
	(0.00739)	(0.00777)	(0.00939)	(0.00935)
Intercept	0.000137	0.00280	0.00586	0.00522
	(0.00306)	(0.00374)	(0.00534)	(0.00731)
N	298	210	141	88
Adjusted R^2	0.006	0.018	0.032	0.034

Heteroscedasticity-consistent standard errors in parentheses, [*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$
The dependent variable is the cumulative abnormal return (CAR) over the three-day event window (-1,1) measured using the market model with MSCI World Index as the benchmark index. All regressions are estimated using OLS without control variables.
Dependent variable CAR for a given relative size samples 1%, 2%, 5%, 10%.

The regressions from Table 7.1.D illustrate that when changing the criterion of relative size, the difference increases in estimated CAR between SOE and POE with a larger relative size. The coefficient of SOE decreases with larger relative size. This suggests that the market reacts more negatively when SOEs announce deals that are large relative to their market value compared to deals of a similar size undertaken by POEs. When drawing inference from the regressions it is worth considering that the number of observations decreases with the larger criteria on relative size. In regression (4), the number of announcements for SOE are only 10. The statistical overview of the samples analysed in the regressions in Table 7.1.D is displayed in Appendix 7.1.

Regression (1) estimates that differences in CAR between SOE and POE is -1.31% when the criterion of relative size is 1%. This coefficient is significant at a 10% level, whereas the other coefficients in the other regressions are significant at a 1% level indicating that the lower criterion on relative size the less confident we are on assuming that SOE experiences lower abnormal return than POE. Regression (2) displays the results from the main finding in Table 7.1.A. The coefficient on SOE in regression (4) with the largest criterion of relative size, estimates that SOE experiences 4.13% lower CAR than POE surrounding announcement.

The estimated increase in difference for CAR between SOE and POE indicates that as deals are relatively larger to the size of the acquirer and thereby affects the enterprise to a greater extent, the market considers these deals made by SOEs as increasingly worse than those of POEs.

CAR regressed on the percentage of state ownership

In addition to analysing the difference in CAR surrounding announcement between SOEs and POEs, we regress CAR on the percentage of state ownership.

Table 7.1.E: CAR regressed on the percentage of state ownership

	(1) CAR
Percent SOE (%)	-0.0383***
	(0.0143)
Intercept	0.00264
	(0.00370)
N	210
Adjusted R^2	0.018

Heteroscedasticity-consistent standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
The dependent variable is the cumulative abnormal return (CAR) over the three-day event window (-1,1) measured using the market model with MSCI World Index as the reference index. The independent variable is the percentage of shares held by the Norwegian State the last day of the year prior to the announcement date. All regressions are estimated using OLS without control variables.

The independent variable Percent SOE is the percentage of shares held by the Norwegian State on the last day of the year prior to the announcement date. The development of the share of state ownership is illustrated in Figure 2.2.A.

The regression result in Table 7.1.E indicates that an increase in state ownership by one percentage point decreases the expected CAR surrounding the announcement by 0.0383 percentage points. The coefficient is significant at a 1% level. This estimation indicates a negative relationship between the size of the state ownership and CAR relative to private ownership. The finding supports the results in Table 7.1.A and strengthens our assumption that state ownership has a negative impact on CAR.

7.2 Robustness of the results from the test of H1

One form of robustness test is examination of how core regression coefficient estimates react when the regression specification is modified by adding explanatory variables, according to Lu & White (2014). In our case, the core regression coefficients are the estimates on SOE. As mentioned in Section 7.1, the SOE coefficients do not change noteworthy when adding control variables. This may be an indication that our results on the SOE coefficients are robust in addition to the fact that they are significant at a 1% level.

Robustness regressions for the main finding

The robustness regressions in Table 7.2.A are for the main finding with control variables displayed in Table 7.1.A. In addition to the market model (MM), we have applied two other statistical models for modeling the abnormal return. These are the Market Adjusted Return Model (MARM) and the Constant Mean Return Model (CMRM), as described in Section 6.2. These statistical models are frequently used to measure abnormal return in event studies (Cable & Holland, 1999). We have also calculated the CAR using a different benchmark index. MSCI World Index is the benchmark index used in the main analysis. The index labeled Stock Index is the main stock exchange in their respective home country, as listed in Appendix 6.2.

Table 7.2.A: Robustness test of H1

| Benchmark | Model | | |
	MM	MARM	CMRM
MSCI World Index	-0.0227***	-0.0210**	-0.0262**
	(0.00818)	(0.00855)	(0.0104)
Stock Index	-0.0168**	-0.0162*	-0.0263**
	(0.00777)	(0.00821)	(0.0102)

Heteroscedasticity-consistent standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
MSCI World Index = Main benchmark in empirical analysis results, Stock Index = benchmark index home country where listed.
MM = Market model, MARM = Market adjusted return model, CMRM = Constant mean return model. The table shows the cumulative abnormal return (CAR) for different benchmark indices and normal return models. All results with control variables.

In Table 7.2.A, all models and benchmarks are listed with the SOE dummy as the reported coefficient. Our results are robust with all models using MSCI World Index as a benchmark index at a 5% significance level. When applying Stock Index, the home country benchmark

index, we observe that the results indicate the same relationship for CAR between SOE and POE. However, these results are significant at 10% and 5% level when applying MARM and CMRM, respectively.

There are shortcomings of using a home country-based stock index when comparing stock returns of companies in several countries. By assuming that an international investor easily can transfer capital between countries when optimizing their portfolio, a shortcoming is that the basis for comparison is weaker than when using a broad-based world index. Another shortcoming considering the sample of only Norwegian SOEs as a treatment group is because each SOE is heavily weighted on the Oslo Stock Exchange Benchmark Index (OSEBX). Therefore, causing an endogeneity problem when using the OSEBX as a benchmark index in calculation of the abnormal return.

7.3   Concluding remarks H1

The main result is that SOEs experience a 2.17% lower CAR surrounding the announcement than POEs, thereby confirming H1. The finding is robust when including control variables and when testing using other estimation models. This indicates that the market values the investment decisions made by SOEs more negatively than POEs. We have reviewed implications of state ownership that we believe can have an impact on the market's valuation of decisions made by SOEs. Those implications may be a contributing factor to the results found, however, other factors not discussed can affect the difference in CAR between SOEs and POEs.

In the following chapter, we hypothesize that the implications of state ownership we have reviewed can lead to the difference in CAR. Further, we test this hypothesis before concluding the thesis.

8. HYPOTHESIS 2

Considering the findings in the analysis of H1, we believe that the difference in abnormal announcement return between SOEs and POEs can be related to the implications of state ownership as reviewed in <u>Chapter 3</u>. To gain further insight and seek an explanation for this difference in CAR, we will in the following chapters use the same announcement data on M&A as extracted before testing H1 to analyse if there may be evidence suggesting a presence of the above-mentioned implications of state ownership. The implications we have discussed are the passive management by the government, evidence suggesting that privatized firms perform better, and the possibility of a larger extent of agency problems in SOEs than in POEs. They can all affect the markets valuation of the decisions that managers of SOEs make. Isolating one of these effects can be difficult as they are all probably linked together to some extent. The effect of privatization is difficult to analyse since there has been no divestment in several years. The passive management by the government is arguably closer linked to the problem of managerial agency problems. Therefore, we will focus on the subject of managerial agency problems that can arise when enterprises engage in M&A.

Our approach to analysing agency problems is inspired by Eisenhardt (1989) who states that a way of understanding agency problems is to look at differences in risk preferences between the principal and the agent. Eisenhardt (1989) advocates the use of incentive alignment between the agent and the principal to share risk and thereby reduce the difference in risk preference. Linking the agent's personal wealth to the performance of the firm is such an alignment, according to Hölmstrom (1979). However, sharing the risk can expose the agent to asymmetrical risk compared to the principal, as the agent is less able to diversify its human capital investment in the firm as suggested by Fama (1980) and Shavell (1979). An agent can therefore have a lower risk preference than the principal.

To simplify the relationship between managerial agency problems and risk preferences in our analysis, we make four assumptions. The first is that (1) the agent has a lower preference for risk than the principal. The second assumption is that (2) the difference in risk preferences between the agent and the principal is equal in both SOEs and POEs. We need this assumption to be able to compare the two types of ownership. The third is that (3) the monitoring of management is weaker in SOEs than in POEs because of the passive ownership involvement

by the Government by not holding seats on the board of directors. We make this assumption because the monitoring of management through the board of directors can reduce agency costs as suggested John & Senbet (1998). The fourth is based on the third assumption and is that (4) the agent in SOEs get to exercise its risk preferences to a greater extent than the agent in POEs because of the passive ownership involvement by the Government.

By applying these assumptions, we want to test if managers of SOEs exercise their risk preferences differently than managers of POEs motivated by self-interest. Therefore, we hypothesize that managers of SOEs acquire companies that are more in line with their risk preferences than managers of POEs do. This is what we consider exercising of risk preferences based on the four assumptions. To test this hypothesis, we use the same M&A-data extracted before testing H1. Hypothesis 2 is therefore as follows:

H2: Managers of SOEs engage in acquisitions that to a greater extent are affected by their preferences to reduce risk than the acquisitions managers of POEs engage in.

We will in the testing of this hypothesis apply two sub-hypotheses in order to exemplify the difference between managers SOEs and POEs regarding the exercising of their risk preferences. These sub-hypotheses consist of two variables that may indicate that managers of SOEs seek to reduce risk more than managers of POEs and are presented in the following paragraphs.

Unrelated diversification is when a firm diversifies by acquiring firms from different industries. According to Morck, Shleifer & Vishny (1990) this can be an action of managerial self-interest. Several scholars try to explain reasons for this diversification action. First, Amihud & Lev(1981) argue that the manager wants to diversify to reduce risk to their human capital. Second, Donaldson & Lorsch (1983) states that managers enter new businesses to assure the survival and continuity of the firm. Third, Shleifner & Vishny (1990) argue that the manager wants to enter a new business when the manager's job is threatened because of bad firm performance.

To test if managers in SOEs are able to exercise their preference to reduce risk to a greater extent than managers in POEs, we will use unrelated diversification as a proxy risk reduction. The term unrelated diversification can in M&A be related to non-horizontal deals, because the

target firms in non-horizontal deals are not in the same industry as the acquirer. Diversified firms may have less volatile cash flows because they are exposed to several industries, not only one. Non-horizontal takeovers may therefore be used by managers to reduce overall firm risk at the expense of shareholder value. Thus, we hypothesize that SOE managers who are subject to less monitoring tend to prefer non-horizontal acquisitions. Hypothesis 2.A is therefore as follows:

H2.A: SOEs engage in more non-horizontal acquisitions than POEs.

The firm specific risk of a company can be reflected in the capital structure. The greater the debt to total assets the greater the financial risk. Debt can be used as an instrument to discipline the managers as suggested by Jensen (1986), because the managers have to operate on a higher level of risk as the debt level increases. Thus, the managers have an incentive to reduce the level of debt to reduce the risk of bankruptcy, according to Jensen & Meckling (1979). Therefore, we hypothesize that the managers of SOEs seek a more comfortable capital structure with lower debt to reduce risk, thereby preferring to acquire firms with a lower debt ratio. Hypothesis 2.B is:

H2.B: SOEs acquire firms with lower debt ratio than the firms POEs acquire.

The two variables used when testing the hypotheses are defined in <u>Section 9.1</u>. In the following chapter, we describe the data sample and methodology applied for testing H2, before we present the empirical results.

9. DATA AND METHODOLOGY H2

In this analysis of H2, we use the same SOEs and POEs as selected in Section 5.2.1. The data for the analysis is the same as extracted before analysing H1 which is displayed in Appendix 5.2. In this analysis, we use one sample for H2.A and a different sample for H2.B, named *Non-horizontal deals* and *Debt ratio deals*, respectively. The following section explains the sample selection process. Next, summary statistics and key variables are given, before ending the chapter with a brief description of the methodology which is applied.

9.1 Sample selection and variables

In this section, we describe the sample selection process for H2. Other sample selection criteria are applied since we are not analysing the CAR around announcement when testing H2. Therefore, the final sample of announcements is much larger than the sample used in the test of H1. Table 9.1.A lists the sample selection criteria for H2.

Table 9.1.A: Selection criteria for the announcements in H2

Sample selection criteria	Source	Excluded	All
All announcements from SDC for the 30 companies from 01.01.1983 to 16.11.2017	SDC		2719
Announcements when the acquirer is listed	DS	129	2590
Announcements after POEs are privatized	VAR	153	2437
Repurchases excluded	SDC	141	2296
Final sample of announcements for *Non-horizontal deals (H2.A)*	SDC		**2296**
Final sample of announcements *Debt ratio deals (H2.B)*	DS		**385**

SDC = Thomson Reuters SDC Platinum Mergers and Acquisition database, DS = Thomson Reuters Datastream, VAR = Various sources listed in Appendix 5.6 that confirmed when the acquirer became private-owned.

Table 9.1.A displays that our final sample used in the test of H2.A is 2296 announcements. The final sample used in the test of H2.B consists of 385 announcements. This sample is smaller because data on the target characteristic debt ratio is limited to targets that were

publicly listed before the announcement. The first criterion is the same as in the selection of SOE announcements to facilitate the link between announcement data from SDC and firm data from Datastream. We only include announcements after POEs are privatized, since the ownership status of the acquirers has changed over the sample period, In addition, the repurchases are excluded since it is expedient only to look at announcements where the acquirer and the target are different firms.

Variables

The dependent variable in the analysis of H2 is the SOE variable used in the analysis of H1 and described in Section 5.3. It is a binary variable holding the value 1 if the acquirer is a SOE and 0 if the acquirer is a POE.

The independent variables are target debt ratio and horizontal deal. The *debt ratio* is a variable in percentage, defined as the target firm's total debt divided by the total assets of the target firm:

$$T\arg et\ debt\ ratio\ (\%) = \frac{Total\ debt}{Total\ assets} \qquad (10)$$

The variable *Non-horizontal* is a dummy variable that takes on the value 1 if the target is in a different industry as the acquirer and 0 if the target is in the same industry as the acquirer. If the value is 0, we assume the deal to be horizontal.

9.2   Summary statistics and methodology

Table 9.2.A summarizes the sample characteristics in H2.

Table 9.2.A: Sample characteristics H2

Variable	SOE		POE		SOE=POE		ALL	
	Mean	N	Mean	N	Δ	p-value	Mean	N
Number of bids	100 %	291	100 %	2005	0 %		100 %	2296
Deal characteristic								
Non-horizontal	43 %	126	37 %	747	6 %	0.0473**	38 %	873
Target characteristic								
Debt ratio	11 %	32	24 %	353	13 %	0.0408**	23 %	385

p-values from t-test where H0: mean SOE = mean POE. * p < 0.10, ** p < 0.05, *** p < 0.01.
Description of variables is listed in Appendix 5.1

Table 9.2.A. displays the total number of announcements and the means of each variable divided between the two sub samples SOE and POE. The difference in mean (Δ) between the two sub samples of the variables Non-horizontal and Debt ratio is 6% and 13%, respectively. Both are significant on a 5% level. The difference in the Non-horizontal variable indicates that SOEs engage in fewer Non-horizontal acquisitions than POEs. The difference in the Debt ratio variable suggests that SOEs acquire targets with a lower debt ratio than POEs.

Figure 9.2.A illustrates the distribution of deals through time from 1983 to 2017 for Non-horizontal deals and Debt ratio deals for the samples of SOE and POE.
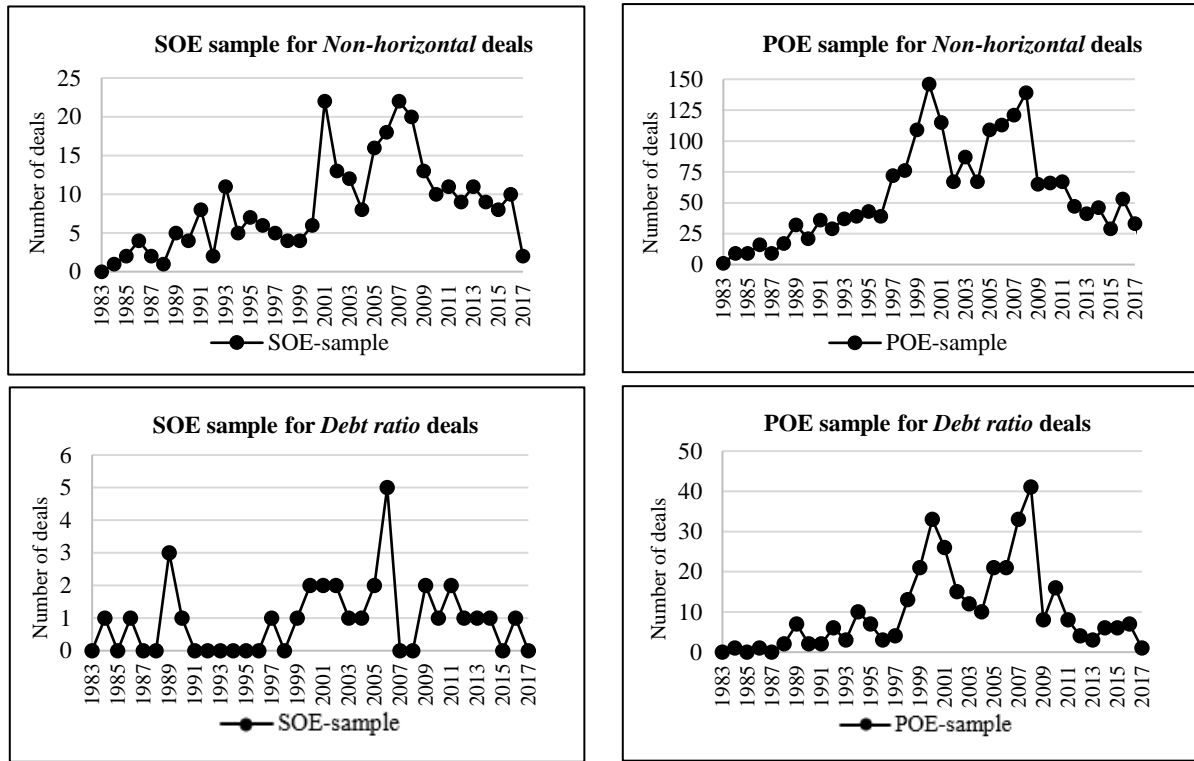

Figure 9.2.A: The number of announcements over the period 1983-2017 for samples of SOE and POE with Non-horizontal deals and Debt ratio deals in H2.

Figure 9.2.A. illustrates some of the same patterns of M&A activity as Figure 5.4.A and Figure 5.4.B. These patterns are a decrease in M&A activity before 2003 with following increase and high activity-level until the years surrounding the financial crisis in 2007 and 2009.

Methodology

We use Logisitc regression (Logit) to test H2. Logit is applied in the analysis because of the limitations of OLS when the dependent variable is binary. The limitation of the linear probability model OLS is that the model can predict values outside the range of 0 to 1. This limitation is avoided by using one of the nonlinear probability models, probit or logit, which force the predicted probabilities to range between 0 and 1. In practice, logit and probit regressions often produce similar results. The main difference is that probit uses the standard normal cumulative distribution function, and logit uses the logistic cumulative distribution function, according to Rodríguez (2007). For further descriptions of the logit regression model, see Wooldridge (2008).

10. EMPIRICAL ANALYSIS AND RESULTS H2

10.1 Analysis H2

In this chapter, we present our empirical analysis and results of testing H2; *managers of SOEs engage in acquisitions that to a greater extent are affected by their preferences to reduce risk than the acquisitions managers of POEs engage in.* To answer H2 we use two sub hypotheses:

H2.A: SOEs engage in more non-horizontal acquisitions than POEs.
H2.B: SOEs acquire firms with lower debt ratio than the firms POEs acquire.

The sub hypotheses are included to exemplify the difference between managers of SOEs and POEs regarding the exercising of their risk preferences. We test H2.A and H2.B by applying the probability model, logit. In the logit model, we interpret the sign of the coefficient but not the magnitude.

Table 10.1.A displays the regression output for the deal characteristic *Non-horizontal* and the target characteristic *Debt ratio*.

Table 10.1.A: Logit regressions on deal and target characteristic

	(1) SOE (Logit)	(2) SOE (Logit)
Deal characteristic		
Non-horizontal (D)	0.252**	
	(0.127)	
Target characteristic		
Debt ratio (%)		-3.334***
		(1.029)
Intercept	-2.031***	-1.885***
	(0.0828)	(0.222)
N	2296	385
Pseudo R^2	0.002	0.043

Regression (1) and (2) estimated using logit regression.
Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

H2.A is tested in regression (1) and is the binary variable SOE regressed on the variable Non-horizontal using the logit model. We observe that when the deal is non-horizontal it is more likely that the acquirer is a SOE than a POE. Since the coefficient is significant at 5% level, we conclude statistical significant relation between SOE and Non-horizontal. This result confirms H2.A that SOEs engage in significantly more non-horizontal M&As than POEs.

In regression (2) we test H2.B by regressing the SOE variable on the variable Debt ratio. The output from the regression shows that an increase in the target's debt ratio will decrease the likelihood that the acquirer is a SOE. The finding is significant at 1% level. This result confirms H2.B that SOEs acquire firms with lower debt ratio than firms POEs acquire.

In addition to the logit model test, the tests of differences in means for non-horizontal deals and deals with target debt ratio in Table 9.2.A support our findings in the empirical analysis. Means for both type of deals is significantly different for both subsamples of SOEs and POEs at 5% significance level. The tests of differences in means indicate that SOEs engage in more non-horizontal deals than POEs, and that SOEs acquire firms with lower debt ratio than the firms POEs acquire.

10.2 Concluding remarks H2

The intention of constructing H2 is to test if there are evidence in our data of M&A-events that can reflect managerial agency problems. By investigating possible managerial agency problems, we seek an explanation of the difference in CAR between SOEs and POEs found in the test of H1.

The confirmation of H2.A and H2.B gives support to H2. However, an overall confirmation of H2 requires a comprehensive investigation. Therefore, we do not confirm H2, but conclude that we have found evidence indicating support of H2 assuming that non-horizontal deals and acquiring targets with lower debt ratio are risk-reducing M&As.

Connecting H2 to potential managerial agency problems in SOEs requires that our four assumptions stated in <u>Chapter 8</u> holds. These assumptions are made to simplify the relationship between managerial agency problems and risk preferences in our analysis. The purpose of these assumptions is to link the investment decisions of managers in SOEs and POEs to potential managerial agency problems. Investment decisions are represented by M&As and the agency problems are related to reduction in risk.

As discussed in the paragraphs above, we find that it is difficult to draw conclusions on H2. A conclusion of H2 will require a comprehensive investigation. That in turn makes it difficult to connect the M&As made by SOEs to managerial agency problems. In addition, H2 and the link to managerial agency problems are based on several assumptions that in turn makes it difficult to conclude if there is evidence of managerial agency problems related to SOEs.

11. CONCLUSION

We have analysed the difference in market reaction when state-owned enterprises (SOEs) and private-owned enterprises (POEs) announce an M&A. Comparing a sample of 28 announcements made by SOEs with a sample of 182 announcements made by POEs, we find that the cumulative abnormal return is 2.17% lower for the SOEs.

In this thesis, we analyse implications of corporate state ownership. As a basis for the analysis, we use the Norwegian state ownership. To circumvent the problem of being a participant in the market that it regulates and legislates, the Norwegian State acts as an owner with a greater distance to the management of their firms by refraining from holding seats on the board of directors. We argue that the State acts through the Government as a passive owner because of this refrainment and its declared policies on ownership involvement. After a review of previous studies on ownership involvement and state ownership we hypothesize that the market values the decisions made by the managers of SOEs more negatively than those of POEs.

To test this hypothesis, we analyse the market reaction to announcement of M&A since M&A is one of the largest investment decisions a firm can make. As stated in the first paragraph of this conclusion, we find significant evidence that the market reacts more negatively to M&A announcements made by SOEs compared to POEs. After confirming the hypothesis, we conduct further investigation to seek an explanation for this difference in CAR.

As a consequence of the Government's policies on ownership involvement we believe that managers of SOEs are subject to less monitoring by their shareholders compared to managers of POEs. Therefore, we seek to investigate if the reason for the lower announcement return is related to a greater extent of managerial agency problems in SOEs. Based on assumptions regarding agency problems and risk, we hypothesize that managers of SOEs engage in acquisitions that are reflected by a preference for risk reduction. Given that our assumptions hold, we find evidence which support this hypothesis.

In summary, we have found a significant difference in the announcement return between SOEs and POEs. We have reviewed areas of ownership implications that possibly can have an impact on this difference. In addition, we tested if one of those implications of state ownership is

evident in our data. We find indications supporting our hypothesis given several assumptions. However, there may be other factors than the implications we have reviewed that are the reason for the difference in announcement return. Further research is therefore needed.

12. SUGGESTIONS FOR FURTHER RESEARCH

Using only the Norwegian state-owned enterprises in the analysis has both advantages and disadvantages. The advantage is that the ownership of all SOEs is governed in the same way according to the same practices and principles. The disadvantage is that making a generalization for SOEs disregarding country of origin is problematic. Therefore, a study that tests the market reaction of M&A announcements that includes more SOEs from different countries could be interesting and would shed further light on the topic of state ownership. In addition, that would facilitate a larger sample concerning both SOEs and POEs announcements.

With a larger sample of SOEs and POEs, the cumulative abnormal return for both acquirer and target could be analysed. This can be used to identify if managers in SOEs tend to overpay to a greater extent than POEs for target because they are less monitored by the principal which increases the agency problem.

Even though most studies on value creation regarding M&A-events focus on the short-term reaction, there are several studies on both the run-up before the announcement and the long-term effect. Further insight on the run-up and long-term effect of M&A-events comparing SOEs to POEs could be necessary if our assumption of semi efficient market does not hold.

Since we in H2 only have tested for two variables, more variables are needed to give a better indication of that acquisitions that managers of SOEs engage in are to a greater extent affected by their preferences to reduce risk. In addition, it would be interesting to study other agency problems involving SOEs. We have only focused on the agency problem related to managers in SOEs seeking to reduce risk, however it would be interesting to analyse other aspects of agency.

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E.

APPENDIX

TABLES IN APPENDIX

2.1 The Norwegian State's principals of Corporate Governance

The Norwegian state's principles of corporate governance:

1. All shareholders shall be treated equally.

2. There shall be transparency in the state's ownership of companies.

3. Ownership decisions and resolutions shall be made at the general meeting.

4. The board is responsible for elaborating explicit objectives and strategies for the company within the constraints of its articles of association; the state sets performance targets for each company.

5. The capital structure of the company shall be appropriate given the objective and situation of the company.

6. The composition of the board shall be characterized by competence, capacity and diversity and shall reflect the distinctive characteristics of each company.

7. The board assumes executive responsibility for administration of the company, including performing an independent supervisory function vis-à-vis the company's management on behalf of the owners.

8. The board should adopt a plan for its own work, and work actively to develop its own competencies and evaluate its own activities.

9. Compensation and incentive schemes shall promote value creation within the companies and be generally regarded as reasonable.

10. The company shall work systematically to safeguard its corporate social responsibility.

5.1 Variable description

Table A.1: Variable definitions

Variable	Definition
Hypothesis 1	
CAR	Cumulative abnormal return over event window (t-1, t+1), calculated with market model using MSCI World Index as benchmark. Criteria for relative size over 2%.
SOE (D)	1 if the acquirer is a state-owned enterprise, 0 if it is a private-owned enterprise.
Deal value ($m)	The total value of consideration paid by the acquirer, excluding fees and expenses.
Market value ($m)	The share price multiplied by the number of ordinary shares issue at time t-2.
Relative size (%)	Ratio of the deal value to the bidder's market value at time t-2.
Target is public (D)	1 if target is public, 0 if not.
Stock only (D)	1 if transaction is only paid with stocks, 0 if not.
Cash only (D)	1 if transaction is only paid with cash, 0 if not.
Horizontal (D)	1 if target is in the same industry[1] (SIC), 0 if not.
Toehold (D)	1 if acquirer had a stake in target before the announcement, 0 if not.
Crossborder (D)	1 if the target company (or assets being sold) in the deal is not located in the same country as the acquiror.
Several bidders (D)	1 if number of bidders are more than one, 0 if only one bidder.
Hypothesis 2	
Debt ratio (%)	The debt ratio of the target defined as total debt/total assets.
Horizontal (D)	1 if target is in the same industry[1] (SIC), 0 if not.

---

[1] Industry according to two-digit SIC code: 01-09 agriculture, forestry and fishing; 10-14 mining; 15-17 construction; 20-39 manufacturing; 40-49; transportation and public utilities; 50-51 wholesale trade; 52-59 retail trade; 60-67 finance, insurance and real estate; 70-89 services.

5.2 Selection criteria for SOE and POE sample

Table A.2: Selection criteria for SOE sample and POE sample

Criteria for sample selection	Source	Excluded	All	Excluded	SOE	Excluded	POE
All announcements from SDC for the 30 companies from 01.01.1983 to 16.11.2017	SDC		2719		373		2346
Announcements when the acquirer is listed	DS	129	2590	70	303	59	2287
Announcement dates where POEs have become privatized	VAR	153	2437	0	303	153	2134
Announcement dates with a complete estimation window	DS	55	2382	27	276	28	2106
Event windows not overlapping within each acquiring firm	DS	469	1913	43	233	426	1680
Announcements with benchmark index values from Datastream	DS	14	1899	0	233	14	1666
Deal value greater than USD 1 million	SDC	1082	817	128	105	954	712
Repurchases excluded	SDC	116	701	10	95	106	606
Ratio of the deal value to the acquirer size of at least 2 %	SDC	491	210	67	28	424	182
Final sample of both treatment group and control group			**210**		**28**		**182**

Table A.2 is an overview of sample selection criteria for the total sample which consists of SOE announcements and POE announcements. The sample selection criteria for SOE is thoroughly described in Chapter 5 and have the same criteria as POE except the criteria: *"Announcements when POEs are privatized"* and *"Announcements with benchmark index values from Datastream"*.

5.3 Overview of the companies in the analysis

Table A.3: Overview of the companies in the analysis

Company	Country	Private in period	Sector*	Industry*	Market value (bn US $)**
DNB ASA	**Norway**	**-**	**Financial Services**	**Banks - Regional - Europe**	**$ 32 841**
Credit Agricole SA	France	1989-	Financial Services	Banks - Regional - Europe	$ 51 748
Societe Generale SA	France	1988-	Financial Services	Banks - Regional - Europe	$ 47 300
Danske Bank A/S	Denmark	Always	Financial Services	Banks - Regional - Europe	$ 37 474
Deutsche Bank AG	Germany	Always	Financial Services	Banks - Regional - Europe	$ 35 577
Skandinaviska Enskilda Banken AB	Sweden	Always	Financial Services	Banks - Regional - Europe	$ 28 526
Norsk Hydro ASA	**Norway**	**-**	**Basic Materials**	**Aluminium**	**$ 15 049**
BHP Billiton Ltd	Australia	Always	Basic Materials	Industrial Metals & Minerals	$ 64 967
ArcelorMittal SA	Luxembourg***	Always	Basic Materials	Steel	$ 26 367
Nucor Corp	USA	Always	Basic Materials	Steel	$ 17 901
Alcoa Inc	USA	Always	Basic Materials	Aluminium	$ 8 594
Reliance Steel & Aluminum Co	USA	Always	Basic Materials	Steel	$ 5 553
Equinor ASA	**Norway**	**-**	**Energy**	**Oil & Gas Integrated**	**$ 66 152**
Exxon Mobil Corporation	USA	Always	Energy	Oil & Gas Integrated	$ 347 358
Royal Dutch Shell PLC	Netherlands	Always	Energy	Oil & Gas Integrated	$ 137 372
Total SA	France	1997-	Energy	Oil & Gas Integrated	$ 134 350
BP PLC	England	1988-	Energy	Oil & Gas Integrated	$ 126 838
Repsol SA	Spain	1998-2011	Energy	Oil & Gas Integrated	$ 28 151
Telenor ASA	**Norway**	**-**	**Communication Services**	**Telecom Services**	**$ 31 763**
Verizon Communications Inc	USA	Always	Communication Services	Telecom Services	$ 201 890
Vodafone Group PLC	England	Always	Communication Services	Telecom Services	$ 76 022
Telefonica SA	Spain	2000-	Communication Services	Telecom Services	$ 56 421
Tele2 AB	Sweden	Always	Communication Services	Telecom Services	$ 5 506
TDC A/S	Denmark	1999-	Communication Services	Telecom Services	$ 4 759
Yara International ASA	**Norway**	**-**	**Basic Materials**	**Agricultural Inputs**	**$ 12 243**
Monsanto Company	USA	Always	Basic Materials	Agricultural Inputs	$ 52 640
Ecolab Inc	USA	Always	Basic Materials	Specialty Chemicals	$ 37 217
Solvay SA	Belgium	Always	Basic Materials	Chemicals	$ 15 821
Koninklijke DSM NV	Netherlands	1997-	Basic Materials	Specialty Chemicals	$ 14 855
Agrium Inc	Canada	Always	Basic Materials	Agricultural Inputs	$ 14 774

*Sector and industry as defined by Financial Morningstar
**Market value by 01.10.2017
***ArcelorMittal SA has headquarter in Luxembourg, but since we retrieved prices in Datastream from the Amsterdam Stock Exchange for the company we do not use prices from Luxembourg

The overview of the companies selected tabulated in Table A.3 shows the year the company became private. For the purpose of this thesis we have excluded announcement dates that occurred before the company became private. In the special case of Repsol SA, announcement dates after 2011 have also been excluded from the sample.

ArcelorMittal SA has their headquarter in Luxembourg, but since Datastream has prices from the Netherlands, we use the prices from Amsterdam Stock Exchange (AEX) in our analysis.

Alcoa Inc. was split into two new entities: Alcoa Corp. and Arconic Inc. on November 1 in 2016. In the analysis, we only have announcement dates before this date, thus the company name used is Alcoa Inc. In Datastream the prices for Alcoa Inc is represented by Arconic Inc.

Royal Dutch Shell PLC is a British-Dutch company that has their headquarter in Netherlands, and registered office in England. The stock prices from Datastream is from the Amsterdam Stock Exchange (AEX).

5.4 Special considerations for peers selection

As mentioned in *Step 1* of <u>Section 5.1.2</u>, there are special considerations undertaken to find five peers for each SOE. The main consideration was done in the case of Norsk Hydro ASA and Yara International ASA. Since there were too few peers in the same industry for both SOEs, widening the search to involve peers in the same sector was necessary. In <u>Table A.3</u> in <u>Appendix 5.3</u>, the list of included companies in the analysis is given, and this table is useful when going through the other special considerations made for each peer group in the following:

<u>NORSK HYDRO ASA</u>

The extent of shortage of comparable companies in the same industry is greatest for Norsk Hydro ASA. The one company that operated in the same industry was Alcoa Inc. For the four other POEs, they operate in the same sector and meet the overall criteria for comparable companies listed in <u>Table 5.2.B</u> in <u>Section 5.2</u>. However, they operate in other industries than the *Aluminium industry*. To broaden our search, POEs in industries similar to Aluminium were detected. Arcelor Mittal SA, Nucor Corp and Reliance Steel & Aluminium Co are three steel companies, whereas BHP Billiton Ltd operates in the industry Industrial Metals & Minerals.

<u>YARA INTERNATIONAL ASA</u>

The POEs that operate in same sector and similar industry as Yara International ASA are Ecolab Inc, Solvay SA and Kroninklijke DSM NV. Because of lack of comparable companies in the *Agricultural Inputs industry* that do not fulfil the overall criteria in <u>Table 5.2.B</u>, we use three POEs that operate in the Chemical industry.

<u>EQUINOR ASA</u>

As mentioned in <u>Appendix 5.3</u>, announcements where the POE has been state-owned have been removed from the analysis. This is the case in the peer group selection of Equinor ASA.

For Repsol SA, we have excluded announcement dates after 2011 since the Argentine government in 2012 acquired 51 % of YPF, which was part of Repsol SA (Britannica, 2013).

Critics of the sample selection

According to Charifzadeh & Taschner (2017), the more homogenous a sample is, the more meaningful the peer analysis will be. It was difficult to find companies that all operated in the same *industry*. Thus, we expanded our search for peer POEs to *sectors*. As defined in Section 5.2, an industry is the primary business a company is operating in, whereas a sector is the general business that contains a larger span of companies. A consequence of this expansion is that the sample become less homogenous, which is a weakness in the sample selection process that is important to bear in mind when analysing the results.

5.5 Number of announcements for each enterprise

Table A.4: Number of announcements for each enterprise

Enterprise	SEDOL	SIC*	Number of announcements**	Total
DNB ASA	**4263304**	**60**	**12**	
Credit Agricole SA	7262610	60	9	
Societe Generale SA	5966516	60	19	
Danske Bank A/S	4588825	60	8	
Deutsche Bank AG	5750355	60	23	
Skandinaviska Enskilda Banken AB	4813345	60	6	77
Norsk Hydro ASA	**B11HK39**	**33**	**8**	
BHP Billiton Ltd	6144690	10	12	
ArcelorMittal SA	BYPBS67	33	10	
Nucor Corp	2651086	33	17	
Alcoa Inc	BD3D9G5***	33	22	
Reliance Steel & Aluminum Co	2729068	50	18	87
Equinor ASA	**7133608**	**13**	**8**	
Exxon Mobil Corporation	2326618	13/29	21	
Royal Dutch Shell PLC	B09CBL4	13/29/49	8	
Total SA	B15C557	13	7	
BP PLC	798059	13	11	
Repsol SA	5669354	29	7	62
Telenor ASA	**4732495**	**48**	**7**	
Verizon Communications Inc	2090571	48	23	
Vodafone Group PLC	BH4HKS3	48	17	
Telefonica SA	5732524	48	13	
Tele2 AB	B97C733	48	10	
TDC A/S	5698790	48	10	80
Yara International ASA	**7751259**	**28**	**14**	
Monsanto Company	2654320	28	13	
Ecolab Inc	2304227	28	18	
Solvay SA	4821100	28	9	
Koninklijke DSM NV	B0HZL93	28	11	
Agrium Inc	2213538	28	19	84

*SIC (Standard Industrial Classification) code is used to decide if the acquiror buys companies in the same industry

**Number of announcements of the sample with a ratio of the deal value to the acquiror size of at least 1 %

***For Alcoa Inc we have used the Sedol for Arconic Inc since the prices for Alcoa Inc is represented by Arconic Inc in Datastream

To secure that all of the deals registered on each company in SDC were extracted, we used a company code called SEDOL[2]. This is a permanent identification for a listed company that is beneficial to use since companies change their name over time. Another advantage using this code is that the code could be used in the database Thomson Reuters Datastream to download the financial information we needed for our analysis. Thomson Reuters Datastream was also used for downloading prices on stock market indices for calculating the abnormal return. This is described in more detail in Chapter 6.

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[2] Stock Exchange Daily Official List. A 7-character unique identifier used if the acquirer is traded on the London Stock Exchange or other exchanges in the U.K. (SDC Definition Database)

5.6 Sources for POE selection

Table A.5: Sources for POE selection

Enterprise	Web page - history	Various sources	
DNB ASA	dnb.no		
Credit Agricole SA	credit-agricole.com	Wikipedia	
Societe Generale SA	societegenerale.com	Encyclopedia	Britannica
Danske Bank A/S	danskebank.com	Finansministeriet Danmark	Wikipedia
Deutsche Bank AG	db.com	Britannica	Encyclopedia
Skandinaviska Enskilda Banken AB	sebgroup.com	Encyclopedia	Email from SEB
Norsk Hydro ASA	hydro.com		
BHP Billiton Ltd	bhp.com	Britannica	Encyclopedia
ArcelorMittal SA	corporate.arcelormittal.com	New World Encyclopedia	Britannica
Nucor Corp	nucor.com	Encyclopedia	
Alcoa Inc	alcoa.com	Britannica	Reference for Business
Reliance Steel & Aluminum Co	rsac.com	Reuters	
Equinor ASA	Equinor.com		
Exxon Mobil Corporation	corporate.exxonmobil.com	Oil & Gas IQ	Britannica
Royal Dutch Shell PLC	shell.com	Oil & Gas IQ	Britannica
Total SA	total.com	Britannica	
BP PLC	bp.com	Britannica	BP.com
Repsol SA	repsol.energy	Britannica	Wikipedia
Telenor ASA	telenor.com		
Verizon Communications Inc	verizon.com	Encyclopedia	Verizon.com
Vodafone Group PLC	vodafone.co.uk	Britannica	Encyclopedia
Telefonica SA	telefonica.com	Britannica	Funding Universe
Tele2 AB	tele2.com	Wikipedia	
TDC A/S	tdcgroup.com	Reference for Business	Wikipedia
Yara International ASA	yara.com		
Monsanto Company	monsanto.com	Britannica	Encyclopedia
Ecolab Inc	ecolab.com.cn	Encyclopedia	Funding Universe
Solvay SA	solvay.com	Solvay.com	Funding Universe
Koninklijke DSM NV	dsm.com	Book - "Transformation of DSM"	Email from DSM
Agrium Inc	agrium.com	Reference for Business	

Web page = all the links are hyperlinked directly to the company's own history page.
Various sources = supplement to the confirmation of the company to not be state-owned.

6.1 Benchmark indices

Table A.6: Benchmark indices from Datastream (DS)

Region/country	Benchmark index
Main benchmark	
World	MSCI WORLD INDEX
Stock indices	
Australia	Australian Stock Exchange 200
Belgium	Belgium 20
Canada	Toronto Stock Exchange Composite Index
Denmark	OMX Copenhagen (OMXC20)
France	France CAC 40
Netherlands	AEX Index (AEX)
Norway	Oslo Børs Benchmark Index
Spain	IBEX 35
England	FTSE 100
Switzerland	Swiss Market (SMI)
Sweden	OMX Stockholm 30 (OMXS30)
Germany	DAX 30 Performance
USA	Standard and Poor's 500 Composite

Table A.6 shows the benchmark indices used in this thesis. As described in Section 5.3, the main benchmark for calculating the normal return is the MSCI World Index. The other benchmark indices are used in the robustness test in Section 7.2. The *stock indices* are the home country index where the firm is listed. The country used for each firm is found in the overview of the companies in the analysis in Appendix 5.3 in Table A.3.

6.2 Choice of normal return model in event study methodology

Normal return is defined as the expected return without conditioning on the event taking place (MacKinlay, 1997). There are different models for calculating the normal return in an event study. MacKinlay (1997) groups the models into two main categories, statistical and economic models. In this paper, the economic models are only briefly discussed, since we concentrate on three statistical models widely used in event studies. Each of the three models examine the abnormal return by calculating the difference in actual return and predicted return for each event.

The main statistical models for measuring predicted return are the Market Model (MM) and Constant Mean Return Model (CMRM). In these two models, it is assumed that asset returns are jointly multivariate normal and independently, and identically distributed through time (MacKinlay, 1997). The last statistical model is the Market Adjusted Return Model (MARM), which is together with CMRM, only used to test robustness of the main result in this paper. The results from the robustness tests are presented in Section 7.2. When testing H1 we employ the MM. This is a one-factor model with parameters that are estimated from regression of the stock return and the market return over the estimation window. The CMRM is a simpler model, where the mean stock return over the estimation window is calculated. The normal return in the MARM on the other hand, is only the actual market return in the event window.

Normal return models normally use a broad-based stock index (MacKinlay, 1997). MSCI World Index is employed as a benchmark index in the three statistical models. The MSCI World Index consists of 1653 stocks from 23 developed market countries, it covers approximately 85% of the free float-adjusted market capitalization in each country and represents the market return for a global investor ("MSCI World Index," n.d.). The companies in the POE sample are publicly listed in 12 different countries, all of which are part of the MSCI index. In the robustness test in Section 7.2 we have tested the robustness of our main result by using the benchmark index *Stock Index*.

6.2.1 Market Model

In the Market Model, an important assumption is that there is a constant and linear relation between individual asset returns and the return of a market index (MacKinlay, 1997). This is to obtain the stock's estimated parameters from linear regressions of daily stock returns on daily excess market returns in the estimation window, by using the estimation procedure ordinary least square (OLS).

The estimated normal return in the Market Model is calculated using equation (11) below:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \qquad (11)$$

$$E(\varepsilon_{i,t} = 0) \; \mathrm{var}(\varepsilon_{i,t}) = \sigma^2_{\varepsilon_i}$$

where $R_{i,t}$ is the return of the stock of acquiring firm i on day t. $R_{m,t}$ is the return of the market benchmark index on day t. $\varepsilon_{i,t}$ is the error term for the stock i with an expectation zero and variance $\sigma^2_{\varepsilon_i}$. α_i and β_i are the regression coefficients that are calculated with ordinary least square regression, for the stock of the firm i in the estimation window. α_i is the excess return relative to the return of the benchmark index, while β_i is the measure of how sensitive R_{it} is to the return of the benchmark (MacKinlay, 1997).

Although the market model is the widely accepted standard model in event studies, it also faces criticism. Coutts, Mills & Roberts (1994) emphasize that given findings concerning misspecification in the market model and inappropriateness of OLS as an estimation technique, the results obtained from event studies should be interpreted with care, and tentative conclusions should be drawn.

MacKinlay (1997) argues that the market model represents a potential improvement over the constant mean return model in detecting the event effect. Cable & Holland (1999) studied different models for estimation of normal returns in event studies. They found a strong preliminary preference in favor of the market model. In addition, they also raised a note of caution over conclusions from previous work that are in favor of simpler models like CMRM and MARM (Brown & Warner, 1980; Stephen J. Brown & Jerold B. Warner, 1985).

6.2.2 Constant Mean Return Model

The estimated normal return in the Constant Mean Return Model is:

$$R_{i,t} = \mu_i + \zeta_{i,t} \tag{12}$$

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

where μ_i is the mean return of the stock of the acquiring firm in the estimation window and $\zeta_{i,t}$ is the error term for the stock i with an expectation of zero and variance $\sigma_{\zeta_i}^2$.

Brown & Warner (1980) find that the model often yields results similar to more complex models. This implies that this model is a strong model for the robustness test done in <u>Section 7.2</u>.

6.2.3 Market Adjusted Return Model

The estimated normal return in the Market Adjusted Return Model is:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} = R_{m,t} \tag{13}$$

$$\alpha_i = 0 \qquad \beta_i = 1$$

This is a simplification of the market model with the restrictions α_i equal 0, and β_i equal 1. Despite the similarities to the market model, the prespecified model coefficients give us a model without estimation period. Thus, the model is often used in research with limited data, e.g. studies of underpricing of initial public offerings where there is no available estimation window, according to (1991). It is only recommended to use such a restricted model if necessary.

6.2.4 Economic models

Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) are well-known asset pricing models, which in event study methodology are categorized as economic models. The models are more constrained normal return models compared to the statistical models,

and for different reasons they are not as preferred in event studies as they are in finance. As MacKinlay (1997) points out, CAPM has its drawbacks compared to the MM. The validity of the CAPM restrictions imposed by the CAPM on the market model is questionable, according to Fama & French (1996). This has led to the assumption that the results of the studies may be sensitive to the specific CAPM restrictions. This potential for sensitivity can be avoided by using the market model.

For APT on the other hand, the general findings from event study research tells us that the gains from using APT, instead of the MM, is small. That is because the most important factor behaves like a market factor in the multifactor model APT, while the other factors explain relatively little of the expected return of a given asset, according to (1997). Despite APT being a model that represents a better measure of normal return than CAPM, statistical models dominate the event study methodology since both models eliminate those biases associated with CAPM.

7.1 Different samples used in the empirical analysis in Section 7.1

Table A.7: Statistical overview of cumulative abnormal return for different sample sizes

Variable		SOE					POE					SOE=POE	
	N	Mean	p-value	sd	Median	N	Mean	p-value	sd	Median	Δ	p-value
CAR relative size > 1 %	42	-0,0129	0.0635*	0,0440	-0,0085	256	0,0001	0,9643	0,04883	0,0006	0,0131	0,0839*
CAR relative size > 2 %	28	-0,0189	0.0109**	0,0365	-0,0137	182	0,0028	0,4546	0,0503	0,0033	0,0217	0,0083***
CAR relative size > 5 %	19	-0,0271	0.0029***	0,0343	-0,0250	122	0,0059	0,2732	0,0053	0,0069	0,0329	0,0014***
CAR relative size > 10 %	10	-0,0361	0.0002***	0,0193	-0,0404	78	0,0052	0,4751	0,0642	0,0097	0,0413	0,0001***

p-values from t-test where H_0: mean of CAR = 0. * p < 0.10, ** p < 0.05, *** p < 0.01

p-values from t-test where H_0: mean SOE = mean POE. * p < 0.10, ** p < 0.05, *** p < 0.01

Table A.7 exhibits a statistical overview of the cumulative abnormal returns for four different subsamples. Each subsample is selected based on the relative size of the deal. What makes the table interesting is that the increased criteria of relative size increase the difference in CAR between SOEs and POEs.

The difference (Δ) in the average CAR between the sample of SOEs and POEs is displayed in Table A.7. T-test results show that the difference in means of CAR between SOEs and POEs are significantly different at 1% significance level for all the samples except the sample with a relative size greater than 1%.

In the t-test that tests if the mean in each sample is different from zero, the mean of CAR for all the samples sizes of SOEs are significantly different from zero on a 10% significance level. The results become more significant the larger the relative size. For the POE-samples, however, none of the p-values indicate that the means of the cumulative abnormal returns are significantly different from zero. Hackbarth & Morellec (2008) find that acquiring firms experience abnormal announcement returns around zero which are consistent with our findings.