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The stock market reaction to private placement announcements

An empirical study of private placements on the Oslo Stock Exchange during the time period 2012 to 2020

Marcel Oseremen Egbele & Lars Arne Rygg

Supervisor: Karin Thorburm

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Major in Financial Economics

NORWEGIAN SCHOOL OF ECONOMICS

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Preface

This thesis completes the Master of Science in Economics and Business Administration at the Norwegian School of Economics. The two authors of this thesis have majored in finance and share similar academical interests regarding capital markets and economics. In this thesis, we research private placements on The Oslo Stock Exchange (OSE). The topic was introduced to us through the media and quickly caught our interest as we are subject to its consequences through private ownership in public firms listed on the OSE.

Throughout this thesis, we address the importance of understanding the capital markets as a multi-faceted sphere that exists to serve both firms and shareholders. Our research contributes to the existing literature by investigating important variables in Norwegian private placements that, to our knowledge, have not previously been researched empirically. We attempt to approach the topic holistically, thus, including both legal, regulatory, and financial perspectives when interpreting the Norwegian equity market and our results.

Writing a master thesis whilst the global society experiences one of its most challenging periods in modern history might appear insignificant. Certainly, it has been challenging to write at times, but with an interesting topic and formidable guidance, it has also been highly rewarding. We would like to express our sincere gratitude to our outstanding counselor, Karin Thorburn. Not only for the advice in relation to this thesis but also as a remarkable and truly inspiring lecturer at the Norwegian School of Economics. Finally, we would also extend our gratitude to the investment banking professionals at Norne Securities for invaluable insights regarding the private placement process.

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Abstract

During the last decades, private placements have become the preferred approach for issuing equity on the Oslo Stock Exchange (OSE), despite its discriminatory nature. With a sample consisting of 95 events (private placements) across 73 different companies between January 2012 and January 2020, our introductory results show a statistically significant negative stock price reaction to a private placement announcement. This is contrary to former research explaining positive announcement returns with the monitoring and certification hypothesis. Our thesis contributes to the existing literature by primarily exploring two aspects of private placements. In the first part, we investigate whether the announcement returns align with the anticipated price depreciation based on the discount and dilution set in the offering. Any discrepancies between the two must signal other information from the market. We find that for every 1% increase in the implied price depreciation, the issuer on average reports an announcement return of -2.329%. This can be perceived as an indirect cost related to the offering. For the shareholders, and thus, the regulatory body (Oslo Børs), the results are important because they indicate an adverse effect on non-participating shareholders' returns. In the second part, we test whether the announcement of a subsequent repair issue impacts the issuer announcement returns. Repair issues are, to our knowledge, a Norwegian phenomenon that is not observed in other markets. It aims to compensate non-participating shareholders for the discrimination in the private placement and is deemed as an important element in the approval of the private placement by Oslo Børs. Our results show that when firms announce a private placement without a repair issue, cumulative abnormal return (CAR) is negative. When issuers announce a subsequent repair issue, CAR is negative but 2.68% higher. Indicating that the announcement of a repair issue might have value for all shareholders as it leads to higher announcement returns.

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1. Introduction

Raising capital is a crucial part of most firms' life cycles, and has extensive implications for management, shareholders, and other stakeholders alike. Thus, it is an interesting event that deserves proper research and scrutiny. The regulatory and financial landscape can vary greatly between countries. Subsequently, there is a demand for research adapted to specific equity markets. In the last two decades, a surge in private placements has emerged on Oslo Stock Exchange (OSE). In 2019, 94.7% of all seasoned equity offerings (SEOs) on OSE were conducted through a private placement. In contrast to other types of SEOs, private placements offer shares to specific shareholders and waive non-participating shareholders' preemptive rights. The extensive use of private placements on OSE has received some attention in the Norwegian media and is described as "unfortunate" by emeritus professor Thore Johnsen (Elvevold, 2019). However, in recent years, surprisingly little research has been conducted on the Norwegian equity market.

How firms should raise capital has been a widely discussed topic for several decades. One of the most influential theories argues that in perfect capital markets shareholders are indifferent to the firm's capital structure (Modigliani & Miller, 1965). Later research contradicts this perspective and claims that it is preferable for shareholders if the firm first uses retained earnings, thereafter debt, and, finally, new equity to finance investment opportunities (Myers & Majluf, 1984). Issuing equity can also be perceived as a signal of firm value, and thus, be an example of information asymmetries between shareholders and management. Implying that corporate management issues equity when the firm is overvalued (Ross, 1977).

In this thesis, we approach the decision to issue equity holistically, by accounting for Norwegian regulatory conditions, and the perspectives of both shareholders and corporate management. Our research contributes to understanding the premises that underpin the rationale for choosing private placements over rights and public offers in Norway. Furthermore, we investigate the regulatory and legislative environment that influences the choice of issuing equity through a private placement. To provide sufficient background, we discuss relevant literature in section two, combined with insights from a corporate finance professional at Norne Securities. Here we find that the regulatory framework in Norway contributes to making private placements an advantageous approach compared to rights or public offers. In section three we introduce our hypotheses, and the methodologies used to test

the hypotheses are depicted in section four. In section five we present descriptive statistics of our sample, consisting of 95 private placements across 73 different firms between January 2012 and January 2020. Of the 95 private placements, 43 include an announcement of a subsequent repair issue, while 52 do not announce a subsequent repair issue.

Our results are described in section six. Introductory, we investigate whether the announcement of a private placement is reflected in the market through the issuer announcement returns. We find that the private placements on average report negative announcement returns. The negative announcement returns hold true across two different estimation methods (The Single Index Model and The Constant Mean Model) and for different event window lengths. This result contradicts contemporary research that reports positive announcement returns for private placements (Wruck, 1989).

We further divide section six into two main parts. In the first part we test our first research question, that is, whether the observed return following a private placement announcement is different than the expected announcement return. This question is answered by performing cross-sectional regressions with the announcement returns as a dependent variable and the implied price change (hereafter referred to as the *theoretical price fall)* as an independent variable. We find that the announcement returns are lower than implied by the dilution and discount set in the offering. Hence, we argue that the negative market reaction can be perceived as an indirect cost related to the offering. For the shareholders, and thus, the regulatory body (Oslo Børs), the results are important because they indicate an adverse effect on non-participating shareholders' returns emanating from the characteristics of the offering.

Our second question investigates if an announcement of a subsequent repair issue impacts the issuers' announcement return. Again, we perform cross-sectional regressions, however, we now attempt to estimate the effect from the repair issue announcement. Thus, we design an interaction variable where the announcement of a repair issue (dummy variable) is multiplied with the *theoretical price fall*. We find that the firms that announce a repair issue report *higher* announcement returns than those who do not. Thus, our findings indicate that the repair issue has value for all shareholders since it influences the announcement return positively.

The results have important implications for shareholders, corporate management, and the regulatory body concerning Norwegian SEOs. Shareholders and regulators should be particularly observant of the inherent discrimination in a private placement, rather than if a

subsequent repair issue is announced. From a corporate management perspective, the negative announcement returns can be perceived as an indirect flotation cost that should influence both the choice of SEO approach and the offer price set in a private placement.

2. Background

The first section elucidates the scope and central concepts motivating the analysis. An understanding of fundamental corporate finance concepts is important in relation to the empirical research presented in this section. Thus, essential theories and legal characteristics regarding corporate equity issuance are elaborated on in the following sections. Moreover, the sections debate previous findings on private placements, their implications for shareholder returns, and their relevance and shortcomings with respect to the Norwegian equity market. Overall, the section attempts to present important concepts and relate them to the empirical research, exhibiting the importance of our research from a corporate, individual, and institutional perspective.

2.1 Capital structure

Private companies that intend to realize capital-intensive business plans are oftentimes dependent on raising capital through issuing equity or debt. The motives for a security offering (i.e., equity issuance) can vary but are commonly connected with new investment opportunities or capital expenditures. Alternative reasons explored in empirical literature are re-financing, M&A, and the exploitation of cheap financing through historically low costs (Eckbo, 2007). When a firm issues equity, the number of shares increases, consequently the existing shareholders face dilution. Isolated, the dilutive effect reduces the value per share, however, the proceeds from issuing equity increase the firm's cash balance and offset the dilutive effect. Thus, an existing shareholder is theoretically indifferent to whether a firm issues equity, if priced correctly.

Alternatively (to equity issuance), firms can raise debt, oftentimes through the issuance of a bond. By taking on debt, shareholders avoid dilution, but increasing debt levels may be associated with higher bankruptcy risk. Additionally, bondholders require priority over shareholders' claims on future cash flows to secure that the firm meets its debt obligation. Thus, according to the irrelevance theorem conceptualized by Modigliani and Miller (1965), shareholders are indifferent to the firm's capital structure, under a strict set of assumptions. However, the conditions underlying the irrelevance proposition typically do not hold, due to, e.g., tax shield on interests, bankruptcy risk, and information asymmetries (Berk & DeMarzo, 2017).

Information asymmetries are best described as a situation where corporate management (insiders) has superior information compared to investors (outsiders). Hence, the signaling hypothesis proposed by Ross (1977) argues that managers can signal firm value through capital structure decisions. In such instances, an adverse selection problem arises, where the offering of equity causes shareholders to believe that corporate managers perceive the firms as overvalued. Consequently, the share price drops if the firm issues equity. Thus, Myers and Majluf (1984) introduce the pecking-order theory, suggesting that investment opportunities should (if possible) be financed primarily by the retention of earnings (internal funds), secondly by debt, and last by issuing equity.

2.2 Agency issues

The corporate management and board of directors (agents) are representatives authorized to act on the behalf of their shareholders (principal). Thus, the motives for corporate managers should be to create value for all shareholders by, first and foremost, maximizing the firms' profitability. However, a contradictory view was introduced in 1976 with the principal-agent theory. It suggests that if an agent (managers) is engaged to perform certain activities on behalf of the principal (shareholder), misalignment of incentives might arise. Thus, if both parties are maximizing utility, there is reason to presume that the management does not necessarily act in the best interest of its shareholders. The costs arising from such relationships are defined as agency costs (Jensen & Meckling, 1976).

Regarding private placements, we find that a more relevant agency conflict is between large and small shareholders. Based on our discussion with Norne Securities, we are under the impression that most of the shares issued in a private placement are picked up by large, existing shareholders rather than outside investors. Thus, an agency conflict arises between small and large shareholders, as large shareholders are prioritized when management issues equity through private placements.

We find the principal-agent theory relevant since management is expected to act in the best interest of all shareholders when issuing equity, not solely the large shareholders. Thus, any agency conflict relating to a private placement would be of interest to both OSE and shareholders.

2.3 Seasoned Equity Offerings - SEOs

For privately-owned companies a common approach is to raise equity capital through a public listing, also known as an Initial Public Offering (IPO). Post-IPO, there are three predominant approaches to issue additional equity: Public offerings, rights offers, and private placements.

Figure 2.3 – Types of SEOs

Such offerings are delineated as a follow-on or SEO and the new shares are often subscribed to at a discount to the prevailing market price. In public offers, shares are sold to investors in the open market, including both existing and new shareholders. Rights offers, on the other hand, exclusively offer shares to existing shareholders on a pro-rata basis. Shareholders who do not want to participate in the rights issue can sell their rights. Finally, private placements earmark the issuance to a targeted group of existing shareholders and occasionally one or several new investors.

2.4 Flotation costs

Managers' rationale for choosing between different SEO approaches can vary amongst firms, industries, and countries. An intuitive motivation is however to minimize the costs related to SEO. Albeit important, the interpretation of costs related to equity issuance is not necessarily straightforward, particularly for public companies. Costs related to SEOs are described as

flotation costs, which are divided into direct and indirect flotation costs. The direct costs include financial (i.e., underwriting fees), legal and registration fees. Indirect costs, however, can be more challenging to measure. Empirically most indirect costs come from underpricing costs related to selling new shares at a discount compared to the current or prior trading day closing price. Another debated indirect cost is a potential negative stock price announcement effect from SEOs. Finally, management time and efforts, and the risk related to potential delays or cancellations are other indirect costs (Eckbo, 2007).

Figure 2.4 – SEO costs

However, flotation costs are not homogenous across countries. For instance, as the primary method for SEOs in the Norwegian market is private placements, guaranteed SEOs (by the investment bank) are seldom needed. Thus, there are rarely any underwriting fees related to SEOs in Norway, whilst in the US, underwriting fees are a major component of most SEOs. Furthermore, regulatory requirements and time horizons related to SEOs vary between countries (Eckbo, 2007).

There are also inherent differences between the regulatory requirements for distinct SEOs within Norway. For rights and public offerings, a listing and offering prospectus is required. This is usually drafted as one document and hereafter referred to as “the prospectus”. The prospectus must contain all relevant information about the issuer and the offering itself and is commonly drafted by a legal or financial advisor (or a combination of the two). Thus, the prospectus is the main direct flotation cost related to SEOs in Norway. In a rights offer, the subscription rights must be publicly available for a minimum period of 14 days (the

subscription period) when listing on the OSE. This creates a risk that the share price might decrease during the subscription period and makes the offering less attractive for investors. Thus, there are substantial direct and indirect costs related to rights and public issues, compared to private placements (Tønnesen, 2021). Due to the higher costs, rights and public offerings become less desirable, particularly if the issuer intends to raise the proceeds through an expeditious process with low costs.

Table 2.4 – Requirements for rights issues and private placements in Norway

Requirements	**Rights issue**	**Private placement**
Offering prospectus	✓ Yes	No – if < 150 participators
Listing prospectus	✓ Yes, but often a part of the offering prospectus	No - if < 20% shares outstanding is issued
Investor presentation	✓ Yes	Yes - usually
Subscription period	✓ Yes, 14 days subscription period	No – can be carried out within hours
Subscription rights	✓ Yes	No
Shareholder preferential rights	✓ Yes	No
Guaranteed issue	✓ Yes, usually shareholders	No, usually not necessary

Finally, costs and regulatory frameworks can vary significantly between markets. Thus, the empirical evidence from other markets should be interpreted cautiously before drawing conclusions regarding the Norwegian market. The specifics of the Norwegian equity market are further elaborated on in later sections.

2.5 SEOs - announcement returns

Share issues, and thus SEOs are primarily analyzed as a sale of shares at a pre-determined price, i.e., the subscription price. If the subscription price is equal to the observed market value, then there is no creation or depreciation of value, and existing shareholders are neither better nor worse off. If the subscription price is at a premium to the market value, then the firm benefits from cheap financing (Vernimmen & Dallocchio, 2014). However, oftentimes the subscription price is set at a discount to the prevailing market price to attract investors to participate in the offering, leading to a decrease in firm value and lower price per share for the existing shareholders. In this thesis, we define this effect as the *theoretical price fall*, which is further elaborated on in section 5.3.3.

Vast research has been conducted on equity issuance, and particularly on the stock announcement effects following SEOs. The observed announcement effect is oftentimes negative, but some researchers have argued that this is a US-related phenomenon (Eckbo, 2007). In fact, a recent meta-study finds that across 78 different event studies on SEO announcement returns, the average abnormal return is 0.82%. Regarding private placements, Holderness assesses 26 studies, and the average abnormal return is 3.1% (Holderness, 2018). Holderness relates the positive announcement returns to shareholder approval of private placements. However, another explanation could be that the private placement signals that the firm will invest in positive NPV projects or avoid financial distress.

Thus, the notion that SEOs cause negative announcement returns is debatable. Though interesting, we are skeptical to take this observation at face value since there are several methodological dissimilarities amongst previous event studies, such as event window length and number of observations. Additionally, the existing research is to a varying extent recent, thus, it is challenging to be conclusive as the regulatory frameworks from two-three decades ago might not be representative of the current environment in the respective markets.

As we will further elaborate on in section 2.7.4, Holderness (2018) identifies obvious inconsistencies across markets regarding shareholder approval and show that this decision has an impact on announcement returns. And herein lies one of the key implications for our research: As the framework for SEOs are different across markets, there is a need to understand the inherent legislative, regulatory, and practical structure that set the premise for SEOs when investigating announcement returns. Finally, one can draw implications from the

announcement returns and compare them with those in other markets if these premises are recognized.

2.6 Private placements

Compared to public and rights offers, private placements are a less expensive approach to raising capital in the Norwegian market. Firstly, a prospectus and listing of subscription rights are not required. Secondly, the time horizon is advantageous for private placements compared to the two other approaches.

In a private placement, the financial advisor (i.e., investment bank/brokerage firm) has placing power, and usually contacts large existing shareholders, customers, and other potential investors (Tønnesen, 2021). The financial advisor commonly has a network of investors that can participate in a private placement, which mitigates the risk related to securing desired proceeds (Bang-Hansen & Rogdaberg, 2012). Usually, the intention to raise capital through a private placement is announced after the market closes to avoid any market price disruption whilst placing the offering. The announcement typically contains certain details regarding the offer such as an estimated range of shares issued, subscription price, and the intended use of the proceeds. Before market opening the following trading day, the issuer posts a second stock exchange announcement with the final details of the completed private placement (Tønnesen, 2021). The number of individual investors participating in a private placement varies but is generally less than 150 to avoid the prospectus requirement.

To attract investors, the offering shares are usually subscribed at a discount to the prevailing market price. Thus, participators in private placements can increase their ownership in the firm at a lower price than existing shareholders who were not invited to participate. Hence, non-participating shareholders face dilution and a lower share price. Aligning with the irrelevance proposition, investors are conceptually indifferent to a private placement settled in cash at the market value since the proceeds offset the dilutive effect. However, since the subscription price is at a discount to the prevailing market price, the implied firm value should decrease as the relative size of the issue and discount increase.

2.6.1 Literature on private placements

The positive announcement reaction to private placements observed in several studies (Holderness, 2018) is interesting because it portrays an opposing reaction compared to our economic intuition. Assuming that the subscription price in most private placements is at a discount, we would expect (ceteris paribus) that the announcement reactions on average are negative due to the value reduction per share.

Researchers have argued that the positive announcement reactions are related to the investor(s) involved in a private placement. If the investor(s) subscribing to the offering becomes an active partner in the issuing company, this can increase monitoring which leads to reduced agency issues and improved allocation of corporate resources. Thus, the monitoring hypothesis suggests that private placements have a positive impact on firm value and a 4.5% abnormal announcement return (Wruck, 1989). A similar study on smaller firms also documents positive announcement returns, arguing that the certification of value provided by an investment from a professional investor (i.e., institutional investor) fuels the positive announcement return (Hertzel & Smith, 1993).

In a later study Hertzel et al., (2002) find that firms offering equity through a private placement significantly underperforms in the long run, despite the positive announcement return. They believe that the investors participating in a private placement are too optimistic about the long-term prospects of the issuing firm. Additionally, Krishnamurthy et al., (2004) find that non-participating shareholders experience long-term negative returns, while both the announcement- and long-term return are significantly higher for participating investors.

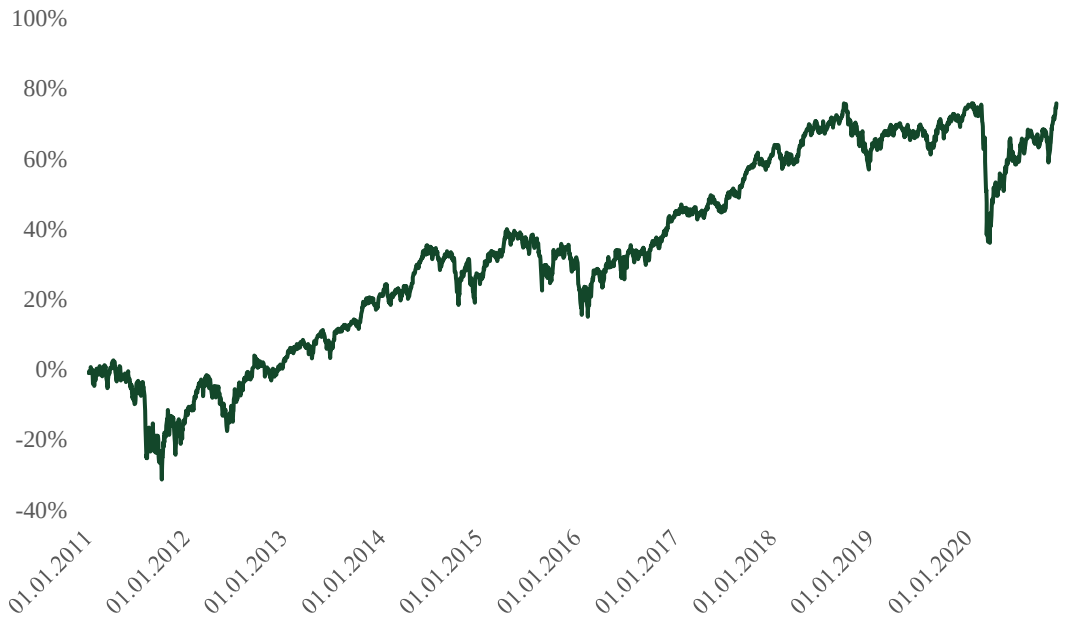
Furthermore, contemporary research has debated whether the monitoring and certification hypotheses in fact explain most private placements. By examining larger samples, Barclay et al., (2007) make the case that most private placements are made to passive investors. Thus, private placements might solidify managements' control of the firm, consequently enforcing management entrenchment (Barclay et al., 2007).

The aforementioned literature and its relevance for Norwegian SEOs are further discussed in relation to our results in section 6.

2.7 The Norwegian equity market

The OSE is a rather small marketplace compared to larger markets such as the New York Stock Exchange (NYSE) and London Stock Exchange (LSE). The large governmental ownership in individual companies distinguishes OSE from other markets. The government holds majority stakes in several of the largest firms, such as Equinor (67.0%), Hydro (34.3%), DNB (34.0%), and Yara (36.2%). Further, the dominance of energy and industrial firms is another observable trait of the OSE. These characteristics result in a market that is more sensitive to global sentiment, and especially changes in oil prices. However, during the last decade, Oslo Stock Exchange Benchmark Index (OSEBX) - the main index on the OSE – yield a cumulative return (log-return) of 75.85% with a compounded annual growth rate of 5.81%.

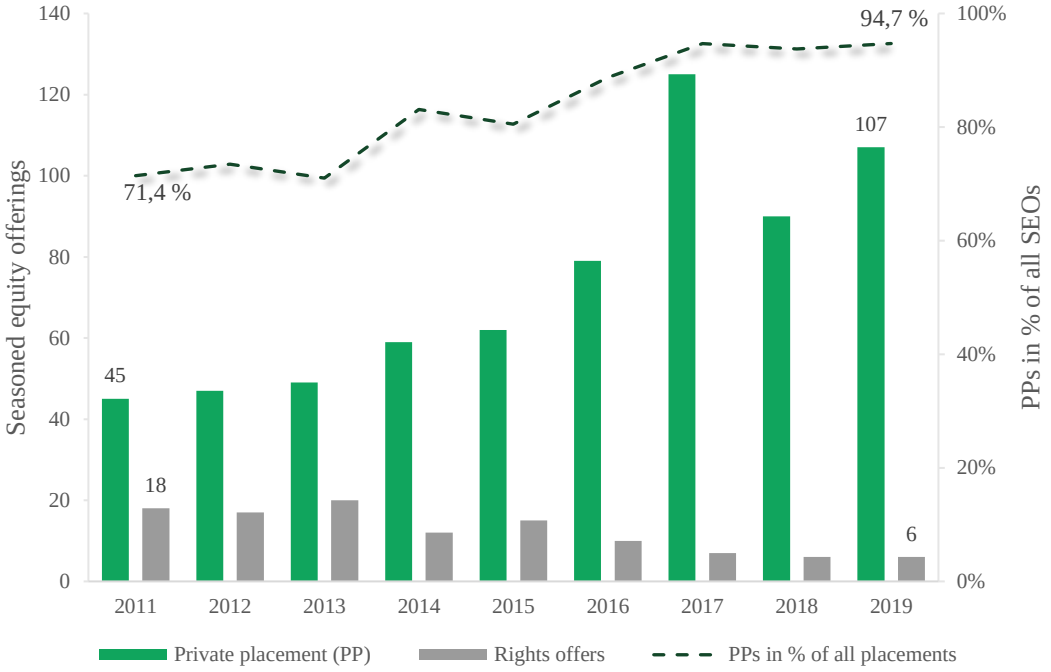
Figure 2.7 – OSEBX returns 01.01.2011 – 27.11.2020



2.7.1 Issuing equity on OSE

The predominant approach for equity issues in the Norwegian market is through private placements. As depicted in Figure 2.7.1, the dominance of private placements has increased in recent years and they comprise approximately 95% of all equity issuances in the Norwegian market in 2019. Further, we notice the large increase in the total number of equity issuances, depicting a definite rise in the level of activity and, thus, equity financing at Oslo Børs.

Figure 2.7.1 – Annual number of equity issuances in the Norwegian equity market



Source: Oslo Børs

Interestingly, the dominance of private placements in the Norwegian equity market is a divergence from comparable markets such as the Swedish market, where private placements in 2016 amounted to less than 15% of all SEOs (Holderness, 2016). This discrepancy between the Norwegian and the Swedish market is not the exception, but rather the rule. Hence, whilst in most markets, the dominant approach for issuing equity is through rights issues and/or public offers (Holderness, 2018), the Norwegian market is an abnormality where private placements are the preferred option for seasoned offerings.

2.7.2 The equal treatment principle

Critical for the equal treatment of all shareholders and the protection of minority shareholders' interests is the rule of equal treatment. According to section 5-14 of the Norwegian Securities Trading Act ("STA") all shareholders of public companies must be treated on an equal basis. Individual holders or third parties can therefore not be provided with any unreasonable advantage at the expense of other existing shareholders. However, Section 5-14 does provide a certain flexibility where differential treatment may be acceptable if the issuer can justify that it is in the common interest of the issuer and its shareholders. The issuing company is therefore obliged to justify the inherent differential treatment private placements have on shareholders, by weighing the disadvantages of dilution and change in ownership structure with the potential advantage(s) (*proportionality*) (Børs, n.d.).

Oslo Børs is the regulatory body that approves equity issuances and, thus, the issuers' approach for equity issuance. The documentation is on the other hand delegated to the issuer and then reviewed by Oslo Børs. This is primarily done because documentation and controlling of details are both time-consuming and associated with large costs. In addition, Oslo Børs relies on the issuers' more in-depth industry knowledge in its assessment of the equal treatment principle, which is also why Oslo Børs will typically not set their own judgment before the issuer's assessment. Interference and re-examination from Oslo Børs are only undertaken in cases where differential treatment clearly lacks a proper justification or complaints are received. Only on two previous occasions have Oslo Børs imposed sanctions for breaches of the equal treatment principle: Oslo Børs Board decision of 25 June 2003 and Stock Exchange Appeals Committee Case 2/2006 (Børs, n.d.).

The evaluation of proportionality goes back to the definition of common interest. Oslo Børs defines common interest as follows: "*a long-term interest in the company's financial performance, and the objective return for shareholders on their investment in the company*" (Børs, n.d.). Thus, to assess whether an action is of common interest, the long-term effects should be accounted for, including the purpose for raising capital.

As mentioned in section 2.1, private placements can take place as a consequence of an acute liquidity crisis, financial distress, a wish to finance a business opportunity, or in order to take advantage of favorable market conditions. These situations separate whether a company needs or wants to raise capital, and therefore also the risk incurred by existing and/or new

shareholders. As the risks are high in situations such as a liquidity crisis or financial distress, typically a higher discount is offered and, thus, a larger number of shares are issued to raise the required capital.

In concern to private placements, Oslo Børs has therefore stated a stricter requirement for a factual justification in situations where an issue is offered at a substantial discount relative to the market price and/or a large share issue representing a significant dilution. This is particularly relevant when the issue leads to a change in the balance of power. Issuing equity in a situation of financial distress will rationally lead to a stronger dilutive effect on its shareholders as a higher discount and larger issue size is necessary to attract the same amount of capital, and will, therefore, fall under stricter requirements for approval. However, offering equity when financially distressed is usually in the best interest of all shareholders as the alternative might be bankruptcy. It would be harder to justify an issue with a significant discount (or a discount at all) if the issuer seeks to finance a business opportunity or have no particular purpose to raise capital other than favorable market conditions. In these cases, typically a low discount and a small number of shares are issued to represent less than 20% of the issuer's capital in order to avoid the requirement of a listing prospectus.

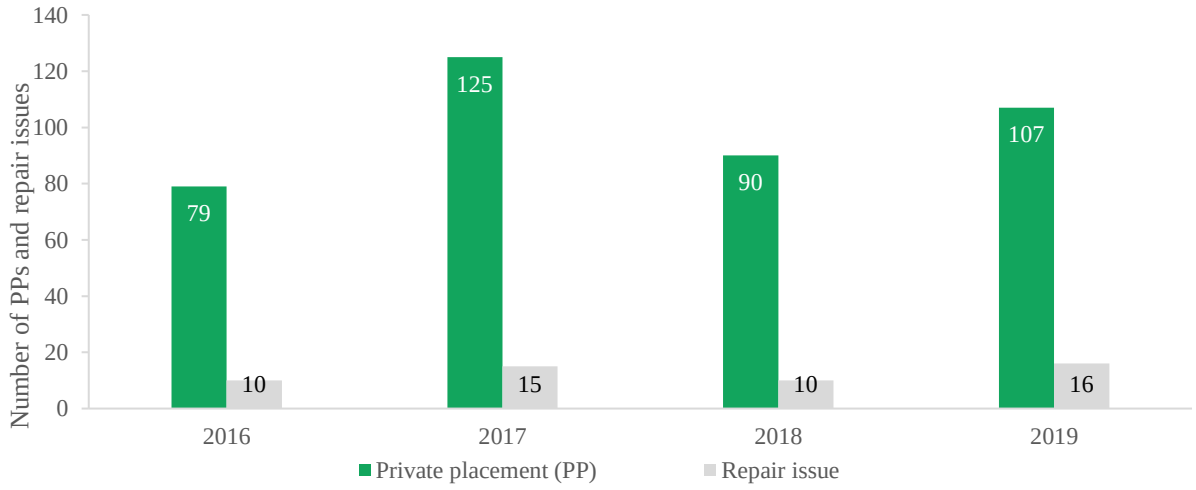
Regardless of the issuer's situation, Oslo Børs requires issuers to assess other alternatives, which potentially have less adverse effects on existing shareholders. If the same advantages of a private placement can be provided at a smaller expense of non-participating shareholders with an alternative approach, this approach should be executed. It is stated that this consideration plays a central role in Oslo Børs' decision to greenlight the issue.

2.7.3 Repair issues

Private placements can be followed up by a repair issue targeting non-participating shareholders to effectively reduce dilution. Repair issues are, to our knowledge, a Norwegian phenomenon that is not observed in other markets. Effectively, the issuer offers shares to existing shareholders who were not invited to participate in the private placement, in order to minimize the disadvantage of being excluded from the private placement. This typically takes place a few days after completion of the private placement. A repair issue is offered at the same discount but varies in their relative size to the number of shares issued in the private placement.

As issuers seek to minimize the differential treatment by offering a repair issue, it may be significant for the evaluation of factual justification, including the requirement of proportionality. Thus, following up on a private placement with a repair issue appears to be a requirement from Oslo Børs to get approval for the private placement. But as depicted in figure 2.7.3, there are extremely few repair issues completed relative to the number of private placements. On average, approximately 13% of private placements were followed up with a subsequent repair issue from 2016 to 2019 (there is no available data on repair issues before 2016).

Figure 2.7.3 – Annual number of private placements and repair issues, 2016-2019



On average, repair issues account for approximately 3.2% of the total gross proceeds. Considering the small size of repair issues compared to the size of the private placement, it raises a question of whether a subsequent repair issue serves its purpose in compensating non-participating shareholders in practice.

Based on conversations with practitioners within Norne Securities (Tønnesen, 2021), it was confirmed that many of the repair issues are canceled after completion of the private placement. Issuing companies have, therefore, at least by documentation, an intention to undertake a repair issue. However, in practice, it is often seen that market prices fall to, or below, the subscription price offered in the repair issue, suggesting that non-participating shareholders are better off if their ownership is rectified through buying shares in the market. Issuers can also defend their decision to cancel a repair issue by pointing out that a majority

of their shareholders were invited to participate in the private placement. Although, in many cases, this may solely relate to large shareholders of the issuing company (depending on how fragmented their shareholder base is) and not necessarily small shareholders.

In some circumstances, it may be the case that even a full repair issue at the same price will not be likely and/or sufficient to avoid breaching the equal treatment rule. For this reason, the issuer is still required to assess other alternatives to raise capital.

2.7.4 Shareholder approval

In most countries, by law or regulation, shareholders must vote to approve equity issuances undertaken by a certain approach or exceeding a specified threshold. As equity issuances can abruptly change the ownership structure of the issuing company, tight restrictions are usually set. In Norway, this is regulated by chapter 5 in the Norwegian Public Limited Liability Companies Act (Aksjeloven, 1997). Here, it is stated that the ordinary majority requirement for a resolution of the general meeting is by a majority vote (typically more than 50%), but, as we will see, the majority requirement for equity issuances diverges from the ordinary majority requirement. This varies across and within countries and can be classified according to a scale from 1 to 5, proposed by Holderness (2018):

1) No shareholder vote to approve the issuance within the last five years.
2) Shareholder vote occurs more than one year but less than five years before issuance.
3) Shareholders approve an issuance within one year through a general mandate from the annual meeting.
4) Shareholders must approve a specific issue by majority vote, and the issuance must occur within one year of the vote.
5) Shareholders must approve a specific equity issuance by a supermajority, and the issuance must occur within one year of the vote.

An overview of different countries and their classifications for each of the three approaches for equity issuance is presented in table 2.7.4.

Table 2.7.4 – Shareholder voting on equity issuances

Country	Shareholder voting requirements	Classification
United States		
Public	No vote required.	1
Rights	No vote required unless underwritten. If underwritten, placement rules could apply. A few nontransferable rights must be approved.	1
Placement	Vote required if issue is >20% equity and at a discount to the exchange price, issue is to insiders at any price, or there is a change in control.	4 or 1
Australia		
Public	Vote required if issue is >15% of equity.	4 or 1
Rights	No vote required.	1
Placement	Vote required if issue is >15% of equity.	4 or 1
Canada		
Public	No vote required.	1
Rights	No vote required.	1
Placement	Vote required if issue is >25% of equity and at a discount to the exchange price, if issue is >10% of equity and made to insiders, if issue is at a discount to the exchange price that exceeds exchange guidelines, or if firm is cross-listed on a US exchange and thus subject to those rules.	4 or 1
Finland		
Public	Vote required.	4
Rights	Vote required (although can be waived for weighty financial reason).	4
Placement	Vote required.	4
France		
Public	Vote required within three years.	2
Rights	Vote required within five years.	2
Germany		
Rights	Vote required within one year for ordinary issuance. Vote required within five years for an authorized share issuance, but cannot exceed 50% of capital. Most rights issues are authorized.	2
Greece		
Rights	Vote required.	4
Hong Kong		
Public	Vote required.	4
Rights	No vote required if offer is ≤50% of total share capital. If offer is >50%, shareholder approval required in some instances.	1
Placement	Vote required. Shareholders may give one-year general mandate approval for an issue of up to 20%. Shareholders must approve all conflicted placements.	4
India		
Public	Vote required with 75% approval.	5
Rights	No vote required.	1
Placement	Vote required with 75% approval.	5
Israel		
Public	No vote required.	1
Rights	No vote required.	1
Placement	Vote required if placement is to a substantial shareholder or causes someone to become a substantial shareholder.	4 or 1
Italy		
Public	Vote required.	4
Rights	Vote required usually given via one-year mandate.	3
Placement	Vote required.	4
Japan		
Public	No vote required.	1
Rights	No vote required.	1
Placement	Vote required with 66% approval if price of placement is particularly advantageous to the purchaser or lacks reasonable justification.	5 or 1
Korea		
Public	Vote required.	4
Rights	No vote required.	1
Placement	Vote required for conflicted placements	4 or 1
Malaysia		
Public	Vote required and must occur within one year. Any offer that is >10% of equity must be specifically approved by shareholders.	4
Rights	Vote required and must occur within one year. Any offer that is >10% of equity must be specifically approved by shareholders.	4
Placement	Vote required and must occur within one year. Any offer that is >10% of equity must be specifically approved by shareholders.	4

Table 2.7.4 *(continued)*

Country	Shareholder voting requirements	Classification
Netherlands		
Public	Typically delegated to board for up to five years.	2
Rights	No vote required unless part of an acquisition equal to at least 50% of firm value.	1
Placement	Typically delegated to board for up to five years.	2
New Zealand		
Public	Vote required.	4
Rights	No vote required if rights are transferable (most are).	1
Placement	Vote required on specific issue if it is >20% of equity (previously 10%).	4 or 1
Norway		
Public	Vote required either on specific issue or for a one-year authorization.	3
Rights	Vote required either on specific issue or for a one-year authorization.	3
Placement	Vote required either on specific issue or for a one-year authorization.	3
Singapore		
Public	Vote required.	4
Rights	Vote required.	4
Placement	Vote required. Shareholders may give a one year general mandate for a private placement of up to 20% of equity (previously 10%). Specific shareholder vote required for all conflicted private placements. Most private placements made pursuant to a general mandate.	3
Spain		
Rights	Vote required within five years.	2
Sweden		
Public	Vote required.	4
Rights	Vote required.	4
Placement	Vote required (66% to outsider; 90% to insiders).	5
Switzerland		
Rights	Vote required. Ordinary offers must be completed within three months. Authorized offers must be completed within two years. Most rights offerings are ordinary.	4
Taiwan		
Public	Vote required (book building).	4
Rights	No vote required (fixed-price).	1
Placement	Vote required with at least 66% of the votes in a meeting attended by at least 50% of all shareholders.	5
United Kingdom		
Public	Vote required. Shareholders may give one-year approval for issue of <5% of equity.	3
Rights	No vote required if offer is <66% of equity.	1

Source: Holderness (2018)

From table 2.7.4 we see that in Norway it is required to vote on specific issues or for a one-year authorization, placing Norway in class 3. In Norway, a vote on equity issuance is regarded as a resolution held in a general meeting (PWC, n.d.). Thus, according to section 5-18 of the Norwegian Public Limited Liability Companies Act, Norwegian companies need a two-thirds majority (> 66%) to pass a vote on equity issuance (Aksjeloven, 1997). Most offerings on OSE are conducted as private placements through board authorizations granted for 2-year periods. The authorization provides corporate management with the possibility to waive shareholders pre-emptive rights and raise proceeds equivalent to an amount specified in the authorization, regardless of the consequences for non-participating shareholders (Aksjeloven, 1997). Thus, we would argue that Holderness should have assigned Norway to class 2.

Interestingly, Norwegian law does not distinguish between voting requirements for a public offer, rights offer, or a private placement. This is an abnormality. In addition to Norway, Finland and Malaysia are the only countries listed in table 2.7.4 which do not distinguish

between the different approaches, but, on the other hand, they have a generally stricter classification (4). Generally, we see that rights offers have a lower shareholder vote requirement than both public offers and private placement, and not all countries undertake public offers and/or private placements at all. Private placements usually have the strictest requirement, except in the case of Singapore.

If Norwegian companies were to take full advantage of the current requirements, this means it could bring in a new large shareholder with a decisive say on management decisions, each year. This will dramatically change the ownership structure of the company and possibly the direction of the company without any input of one-third of the existing shareholders.

A lack of differentiation between requirements for shareholder approval for rights offers and, especially, private placements increase the likelihood of issuing equity through private placements. As we have debated in section 2.6, the process is cheaper, more efficient, and secures the necessary funds quickly. However, as mentioned, private placements have an inherent differential treatment, which is obviously of concern across a large majority of the countries in table 2.7.4. For example, in Sweden, a private placement must by law be approved by either 66% or 90% majority depending on whether outsiders (66%) or insiders (90%) are targeted in the issuance. Meanwhile, a rights offer requires a regular majority vote. This can in some part explain the dominance of rights issues in Sweden, and also shed light on why private placements dominate in the Norwegian equity market.

Holderness (2018) further finds a connection between shareholder approval and announcement returns on SEOs. Equity issuances that are shareholder-approved are associated with positive and higher announcement returns relative to issues approved only by management or board of directors; +2% and -2%, respectively. This holds for public offers, rights issues, and private placements.

The positive announcement returns increases with a higher required majority vote and the closer in time the vote is to the issuance. For instance, Holderness (2018) shows that in the US and Canada, shareholder approval is required for private placements if the issue is above 20% of the total shares outstanding, whilst approval is not necessary for public or rights offers. If shareholders have approved the issues, this is related to a positive abnormal return of 2%, compared to a negative abnormal return of -2% of managerial issues (no shareholder approval required). Furthermore, private placements to insiders in Sweden are related to 11.67%

positive abnormal announcement return, compared to -0.52% in the Netherlands where shareholder approval for private placements is not required. Positive announcement returns from private placements has also been found in Japan and the UK.

While we are inclined to accept that there is a relation between shareholder approval and market reactions to SEOs, the conclusion is from our perspective too simple. For instance, the abnormal announcement returns for Norwegian private placements have been shown to be +2.66% (Eckbo, 2007), this research is conducted on data from 1980 to 1996 and is contradictory to our research as introduced later in the thesis.

3. Hypotheses

The literature in the previous section presents some interesting findings which form the basis for our motivation and development of our two hypotheses. We know from the literature review that announcement returns on private placements are generally proven to be positive across countries, including Norway. But we start our analysis by investigating if this also holds for our more recent sample period. Secondly, we research characteristics of the event that potentially have a significant impact on the announcement returns. Lastly, with this as a foundation, we further examine the relationship between announcement returns and the theoretical price fall when private placements are announced. As depicted below, our first hypothesis is formulated around this matter.

Hypothesis 1*: The actual returns observed are not equivalent to the expected theoretical price fall after the announcement of a private placement.*

$$H0: CAAR^{1} = \beta_{\text{Theoretical price fall}}$$

$$H1: CAAR \neq \beta_{\text{Theoretical price fall}}$$

With Hypothesis 1 we aim to examine whether the market's reaction to private placement announcements suggests that the issuance signals information beyond the theoretical price fall. There may be other information inherent in the market that tends to either overstate or understate the economic impact of the discount and inherent dilution in private placements. Additionally, this research provides additional results for discussion of our second hypothesis.

[1] CAAR – Cumulative Average Abnormal Return, defined in section 4.2.2

Hypothesis 2: *The theoretical price fall with subsequent repair issues and without repair issues does not have an equivalent effect on CAR.*

$$H0: \beta_{\text{Theoretical price fall with repair issues}} = \beta_{\text{Theoretical price fall without repair issues}}$$

$$H1: \beta_{\text{Theoretical price fall with repair issues}} \neq \beta_{\text{Theoretical price fall without repair issues}}$$

Hypothesis 2 was motivated by Oslo Børs' requirement for issuing companies to compensate existing shareholders for any disadvantages caused by the private placement through a subsequent repair issue. We know from figure 2.7.3 that there are held very few and relatively small repair issues despite being an important aspect in the assessment for approval of the equity issuance. It would therefore be interesting to investigate if the market sentiment coincides with Oslo Børs' focus on repair issues. Hence, we believe the announcement of a subsequent repair issue holds information regarding shareholders' perception of the compensation as well as shareholder participation in SEOs.

4. Methodology

In this section, we present the methodologies used to test our hypotheses from the previous section. First, we will present the methodology of an event study and its nature and how we calculate cumulative average abnormal returns (CAARs). Second, we describe the methodology of our cross-sectional study. Lastly, we address how we approach significance testing to test our hypotheses.

4.1 Event Study

The event study methodology is one of the most frequently used empirical techniques in a variety of fields, such as finance, accounting, and law, to measure the effects of a given event that is hypothesized to affect the market value of firms (MacKinlay, 1997). To be able to examine any effects on firm values, the event itself should have a significant chance to impact either the firms' expected future cash flows or discount rate. Fundamental to the methodology is the efficient market hypothesis, stating that, given rationality in the market, information from an event will be reflected immediately in security prices (Fama et al., 1969). With a substantial amount of financial market data, an event study is highly suitable to reflect the market reaction to new information such as announcements.

Despite the fact that event studies do not have a unique structure, there is a general flow of analysis (MacKinlay, 1997). The initial step of an event study is to define the event of interest, which in our case is the public announcement of the specific private placement.

4.2 Event Window

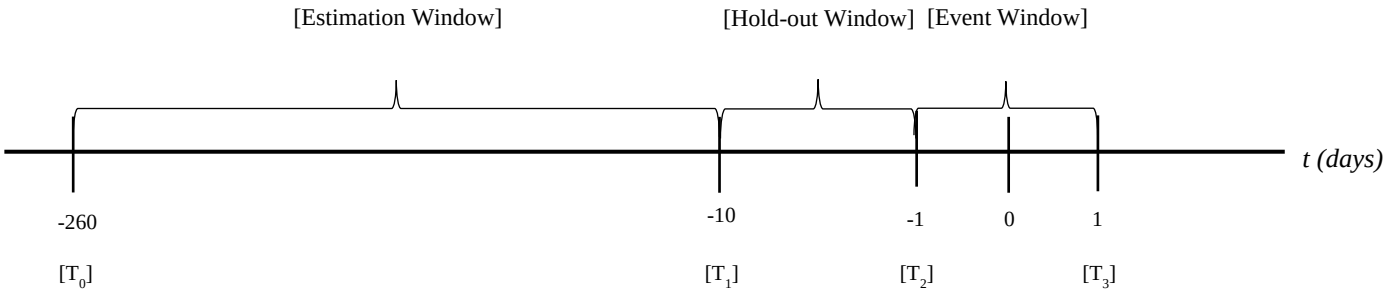
We need to identify the event window i.e., specify the period in which the event will be examined. It should be long enough for the market to absorb the information from the event, but short enough to exclude confounding effects (McWilliams & Siegel, 1997). MacKinlay (1997) argues that the event window commonly should include at least one day prior to and one day after the event date. This captures both potentially leaked information to the market before the event day and the price effects of announcements that occur after the stock market closes on the announcement day. The latter is especially important in our study because, as mentioned in previous sections, private placements are generally announced after market

close. It has been empirically demonstrated that a short event window will usually capture the effect of an event (McWilliams & Siegel, 1997). In addition, Brown and Warner (1985) argue that a long event window reduces the test statistics' power. Thus, to test our hypotheses, we examine the event over the event date itself and one day prior and one day after the event date, [-1, 1].

4.2.1 Estimation Window

Specifying the length of an estimation window is a more debated topic. Estimation windows are used to estimate the expected or normal return for each company without conditioning on the event in the event window (Henderson, 1990). There is a trade-off between including more days in the estimation period to increase the statistical accuracy, and the risk of shifting return-generating parameters (Strong, 1992). Furthermore, to prevent biased results, the estimation window must not overlap with the event window, as the normal return should not be influenced by the event itself (MacKinlay, 1997). When estimating the normal return in this study, we utilize an estimation period of 250 days (approximately one trading year); [-260, -10]. Equity issuances are often issued each year, thus, a longer estimation period would increase the risk of overlapping events, complicating our effort to isolate and measure the effect of each event. The timeline of our event study is illustrated in figure 4.2.1 where the event date is defined as $t = 0$.

Figure 4.2.1 – Event Study Timeline



A hold-out window starting ten days prior to the event and ending one day prior to the event is included to exclude any confounding events and information leakage outside the event window.

4.2.2 Abnormal Return

Assessing the event's impact on the security's return requires a measure of abnormal return. The abnormal return is the actual return of the security over the event window minus the normal return of the firm over the event window (MacKinlay, 1997). For firm *i* and event date *t* the equation for abnormal return is as followed:

$$AR_{it} = R_{it} - E\,(R_{it}|X_t) \qquad (4.1)$$

Where AR_{it} is the abnormal return, R_{it} is the actual return and $E(R_{it}|X_t)$ is the normal return conditioning on information from the event, X_t.

We apply the OSEBX for the market return. The OSEBX consists of a representative selection of all listed securities on the OSE.

To estimate the normal return for a firm, we use the market model using the Single Index Model (SIM). The market model assumes a linear relationship between the return of a given security and the market portfolio (MacKinlay, 1997). According to MacKinlay (1997), this is the preferred model as the model removes the part of the return that is associated with the market portfolio's return, increasing the ability to isolate the effect of the event. The use of the market model is also supported by Brown and Warner (1985). The equation for the market model is expressed in equation 4.2:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (4.2)$$

$$E\,(\varepsilon_{it} = 0) \qquad Var(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$$

Where R_{it} is the return of the given security *i* at time *t*, R_{mt} is the market portfolio's return at time *t*, and ε_{it} is the error term at time *t* with an expected value of zero and variance of $\sigma^2\varepsilon_i$. The market model uses ordinary least square regressions (OLS) to estimate the model's

parameters: $\widehat{\alpha_\iota}$ and $\widehat{\beta_\iota}$. The parameters are estimated for each event separately, as company characteristics may have changed during our sample period. In order to ensure robustness, we also examined our results by using the constant mean return model, which assumes that the mean return of a given security is constant through time (MacKinlay, 1997).

With the parameter estimates from the market model, the abnormal returns can be calculated by equation 4.3.

$$AR_{it} = R_{it} - (\widehat{\alpha_\iota} + \widehat{\beta_\iota} R_{mt}) \tag{4.3}$$

When aggregating the abnormal returns from each observation we get the average abnormal return (AAR). AAR_t is expressed in equation 4.4 for day *t* with *N* events.

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{it} \tag{4.4}$$

Finally, we can calculate the cumulative average abnormal return (CAAR) in the event window for all firms in the sample. The equation for CAAR is shown in equation 4.5, where *N* is the number of firms in the sample.

$$CAAR\ (T_2, T_3) = \frac{1}{N} \sum_{t=T_2}^{T_3} AAR_t \tag{4.5}$$

4.3 Cross-sectional Study

When there appear to be multiple characteristics of the event that are associated with the abnormal returns, it can be useful to conduct a subsequent cross-sectional study (MacKinlay, 1997). We use cross-sectional regressions by deploying cumulative abnormal return (CAR) as a dependent variable and variables of interest as independent or explanatory variables. Such an analysis can extract additional information from the sample by providing insight on which characteristics of the event are the strongest determinators of the abnormal returns. The cross-sectional regression is expressed in equation 4.6.

$$CAR = \delta_0 + \delta_1 X_{1i} + \ldots + \delta_M X_{Mi} + \eta_i \qquad (4.6)$$

$$E(\eta_i) = 0 \; Var(\eta_i) = \sigma^2_{\eta_i}$$

Where *CAR* is the cumulative average abnormal return and *X*s are the characteristics. The error term η_i is assumed to have a mean return of zero and is uncorrelated with the *X*s. The parameters of the regression model are estimated using the OLS method. Further, we use the Breusch-Pagan test to investigate the presence of heteroscedasticity (Breusch & Pagan, 1979; Wooldridge, 2012), as the OLS method assumes homoscedastic error terms, i.e., constant variance. This is advised by MacKinlay (1997) because the assumption of homoscedastic error terms is often violated. We have therefore applied heteroscedastic robust standard errors in cases where the assumption of homoscedasticity fails using the approach of White (1980). We also check for multicollinearity by computing correlation matrixes and performing VIF-tests, this is discussed in further detail in section 7.3.

Issues in interpreting the cross-sectional results can arise. It may be the case that investors anticipate an equity issuance conducted with a certain approach, especially for firms that announce scheduled future equity issuances or frequently issues equity in line with their growth strategy. To the extent of investors' anticipation of a private placement, abnormal returns can be reduced in the event window, as investors will react even before the

announcement is made. This introduces a selection bias. The assumption that the error term is uncorrelated with the *X*s fails and the OLS estimators are inconsistent (MacKinlay, 1997). However, Prabhala (1997) argues that, despite an incorrect specification, the OLS method can be used for inference and that the t-statistic can be interpreted as a conservative estimate of the significance level.

4.4 Significance Testing

To test our two hypotheses, we need to examine whether CAR is significantly different from zero and, thus, not a result of pure chance.

Commonly, the literature separates between parametric and nonparametric tests to examine the statistical significance of abnormal returns. Parametric tests assume that the abnormal returns are normally distributed, whereas nonparametric tests do not hold such an assumption (MacKinlay, 1997). Whether one test is preferable over the other is debated among researchers. Brown and Warner (1985) argue that there is evidence that mean excess returns in a cross-section of securities converge to normality with an increasing number of observations (*central limit theorem*). And, that parametric tests for significance of mean abnormal returns, therefore, could be well-specified. However, parametric and nonparametric tests are typically combined in order to reduce any suspicion of results being driven by outliers. Hence, in our analysis, we use both parametric and nonparametric tests to ensure robustness.

In our analysis, we test whether CAR significantly differs from zero by primarily applying the conventional *t*-test (parametric) and the Wilcoxon Signed-Rank Test (nonparametric).

A common assumption in the event study methodology is the assumption of constant variance (Brown & Warner, 1985). When this assumption is not valid, results are less reliable as statistical tests may overstate or understate the abnormal returns. Hence, if the securities' returns are very volatile before the announcement, the event might not be significantly different from earlier levels. In our case, this might not be as vital because private placements are by nature more secretive and, thus minimizes the likelihood for information leakage, and, lastly, by viewing announcement reactions in our sample, we can verify low volatility.

5. Data

In the following section, the aim is to clarify the selection and gathering process of the obtained data used to perform the analysis. Furthermore, we discuss the rationale for choosing specific variables and samples to conduct our research. The selection process contained several manual steps and subjective judgments. Thus, we underline the importance of understanding how we carefully selected and merged our dataset. Additionally, the section will describe the sample used to conduct the research.

We retrieved the statistics on equity issues from Oslo Børs' homepage. Details regarding the settlement (cash or stock) and how management intended to use the proceeds were found by reading the stock exchange announcement (NewsWeb, 2021). We extracted stock and OSEBX Index returns from the Amadeus database at NHH. Furthermore, stock returns and OSEBX Index returns were paired with the individual company's event date. A table depicting all private placements in our sample can be found in Appendices A.

5.1 Determining the sample

Available statistics on equity issues on Oslo Børs' homepage specifies the date, company, number of shares issued, share price, and total proceeds. The total number of equity issues across all floatation methods (including IPOs and issues to employees) was 1,471 between January 2011 and November 2020. Out of the 1,471 issues, there were 730 private placements. These are eligible for further research.

To eliminate the risk of misregistration, events of negligible size, and sample bias due to induced volatility, the following criteria for selection was introduced (reduction in the sample in parentheses):

1. Remove private placements that raised gross proceeds lower than NOK 10 million (225).
2. The private placement must be settled in cash and return data must be available (252).
3. Remove any private placement after 30.01.2020 to avoid increased volatility (due to the COVID-19 pandemic) in the estimates surrounding the events (51).

Furthermore, some shortcomings in the dataset had to be addressed before further research was conducted. Firstly, the date column in the Oslo Børs statistic reflected the date the equity issuance was filed in the Brønnøysund register. Since our research measures announcement returns, the date of filing is irrelevant. Instead, we extracted the announcement date from the issuing firms' stock exchange notices. Additionally, the dataset does not describe any further details concerning the issues, such as if the issue is settled in cash (or stock) or what the firms intend to use the proceeds for. Consequently, we read the stock exchange notices describing each private placement to clarify if the private placement entailed the necessary characteristics to be a part of our research.

To further isolate the effect of announcing a private placement, we initiated additional criteria for selection:

4. The private placement is excluded if another significant announcement is reported on the same day – such as a merger or acquisition (77).
5. The private placement is excluded if the company is in financial distress at the time of the announcement (30).

Our research concerns private placements where capital is raised through stock issues. Thus, any private placement without a cash settlement is irrelevant. Furthermore, to mitigate the risk of noise in our sample we have taken out private placements where a separate major stock exchange announcement is made on the same day. Oftentimes the announcement of a merger or acquisition. Finally, we have not included issues where the company (at the time of the offering) is in financial distress in such that the equity issue is necessary to restructure and potentially avoid bankruptcy. In such instances, we believe that the announcement effect would be disturbed by the alternative, the likelihood of bankruptcy. After this process, we are left with 95 private placements across 73 different firms. The final step entailed collecting stock and OSEBX index prices, computing log-returns, and merging the data.

Due to our strict selection criteria, we recognize that our sample of 95 private placements mainly represents equity issues with one of the two specific purposes: business opportunity (excluding M&A) and no special purpose other than favorable market conditions. Thus, after criteria 1-3 are applied, our sample consists of approximately 50% of the remaining events (95/202). Hence, the remaining 95 events may or may not present different characteristics than the sample otherwise would if all 202 events were included. But our aim was to isolate

the effect of the private placement as an approach for equity issuance as extensively as possible, and, thus, judged the strict criteria necessary for our study.

5.2 Sample description

As mentioned in the previous section, the final sample consists of 95 different private placements across 73 different companies where no company is represented more than 3 times. The sample covers a variety of industries, and all existing sectors at OSE are represented.

Figure 5.2 – Number of firms per sector in the sample (N = 95), 2012 - 2020

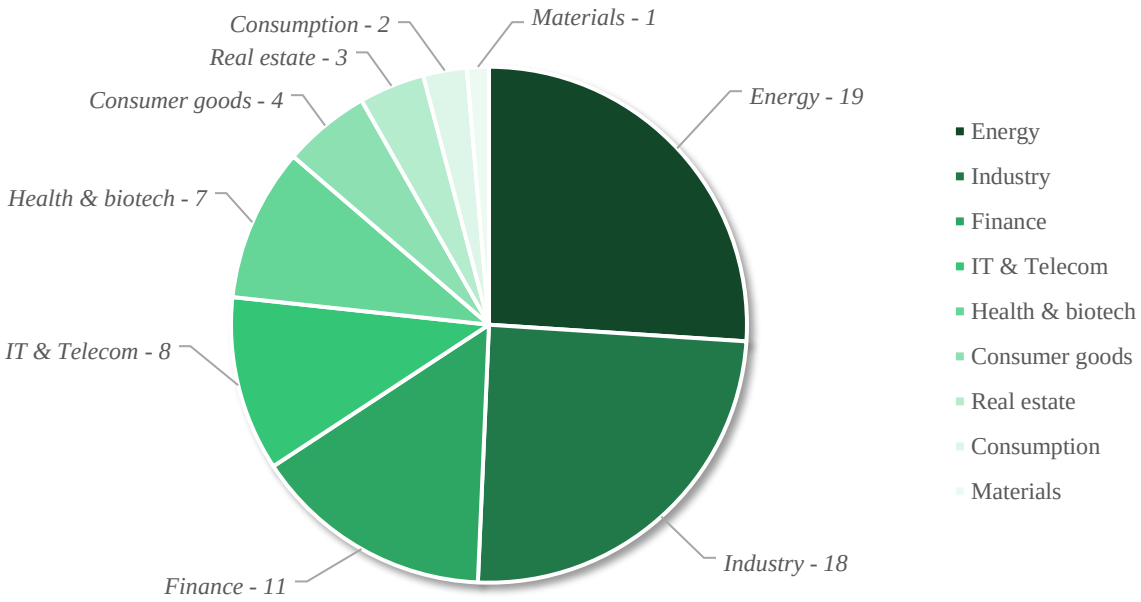
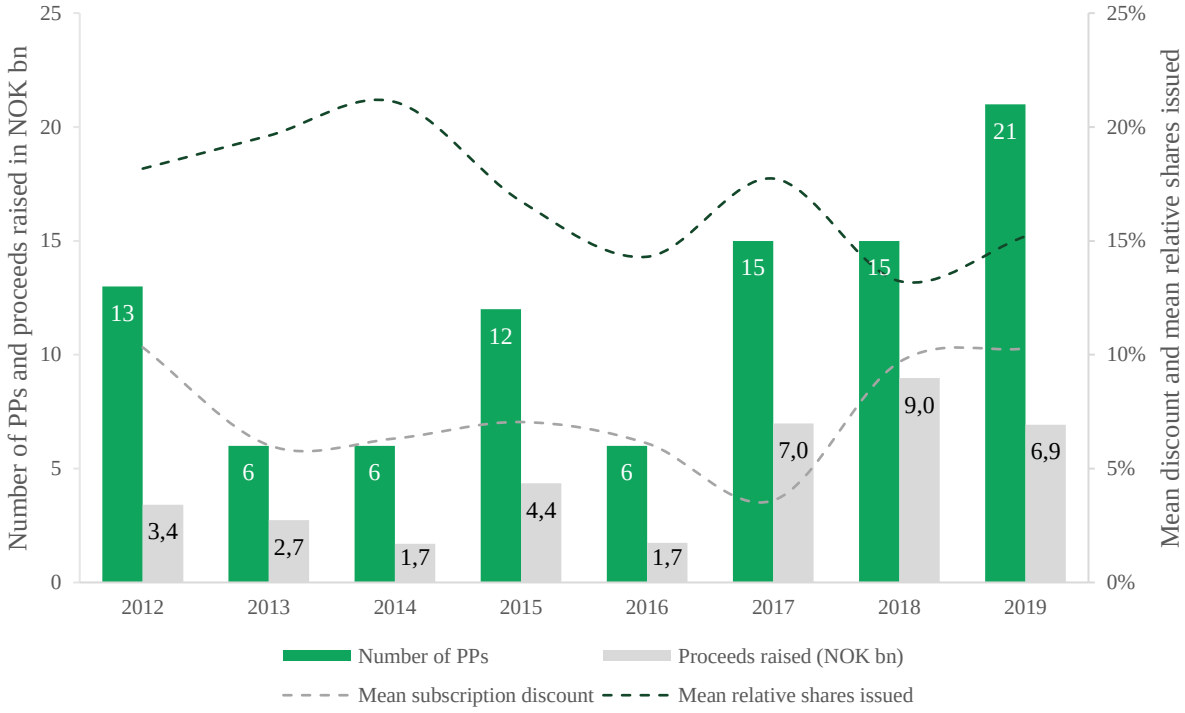


Figure 5.2 depicts the sector composition amongst the firms in our sample (e24, 2021). As expected, the industry and energy sector are highly represented as those sectors have dominated OSE in the last decades. Furthermore, the financial industry and IT & Telecom are represented with 11 and 8 firms, respectively. The sample is diverse and its overweight in energy and industry represents a fair picture of the firm composition on OSE.

Figure 5.2.1 shows how the private placements in our sample are distributed across time. There is an increase in recent years, aligning with the general development of private

placements on OSE. The average discount and relative number of shares issued are between 4-10% and 13-21%, respectively. A slight increase is observed in the average discount in later years, which might indicate that the firms issuing equity have become increasingly opportunistic over time, hence selling the shares cheaply relative to the observed share price.

Figure 5.2.1 – Distribution of events in the sample[2]



An overview of the statistical properties featured in the sample is presented in table 5.2. The mean and median proceeds raised are NOK 387.5 and 200 million, respectively. The skewed mean hints at outliers among the sample observations, which is further confirmed by the range between the minimum and maximum for gross proceeds raised. The observed standard deviation is higher for the shares issued (12.5%) than the subscription discount (9.9%). Indicating that the firms perceive the discount as less flexible than the relative number of shares issued in the offering.

[2] In our sample there is only one private placement that is announced in 2020. Thus, for illustration purposes in figure 5.2.1 this event is included in the 2019 column.

Table 5.2 – Descriptive statistcs for 95 private placements

Statistical properties for 95 private placements between 2012 and 2020

Statistic	N	Mean	Median	Min	Max	St. Dev.
Subscription discount (%)	95	8.2	5.5	-7.8	46.3	9.9
Relative shares issued (%)	95	16.8	9.7	4.1	65.3	12.5
* Theoretical pricefall (%)	95	1.9	0.5	-2.3	23.5	3.8
Proceeds raised (NOKM)	95	387.5	200.0	17	2 507	469.4
Market capitalization (NOKM)	95	3 214.4	1 346.4	96.0	27 087.3	4 383.7

**Theoretical pricefall is defined as Subscription discount x Relative shares issued*

Firm size (measured in market capitalization) ranges from NOK 96 million to NOK 27 billion. It is notable that the market capitalization of the largest firm in our sample is NOK 27 billion. This is significantly lower than the market capitalization of the largest firms on OSE. Implying that the largest firms do not issue equity through private placements. We propose two possible explanations for this: 1) The largest firms might have significant cash reserves and prefer to fund investments through retained earnings (or debt), aligning with the pecking-order theory. 2) Firms with high governmental ownership might be discouraged to waive the preemptive rights of their shareholders.

The first proposition is supported by observations in our raw dataset showing that there are few SEOs amongst the largest firms between 2012 and 2020. Except for Norsk Hydro, none of the large firms with significant state ownership (Equinor, DNB, Norsk Hydro, Yara) have undertaken SEOs during the sample period. Since SEOs are scarce amongst these firms, there is little data to support proposition two. However, we cannot reject the notion that firms with a high state ownership are reluctant to waive the shareholders preemptive rights.

5.3 Variables applied

To increase the understanding of the nature of private placements in Norway, select variables are used to divide the sample and analyze relations between announcement returns and the specific variables. In the following section, we discuss the motives and economic rationale behind the selected variables.

5.3.1 Subscription price discount

As described in section 2.6, the offering price in a private placement is often set at a discount to attract investors to participate in the offering. The subscription price depicts the implied value per share at which the firm can raise capital. Thus, any discount between the prevailing market price and the subscription price should, ceteris paribus, reduce the firm value of the issuing company. This variable is introduced to understand if the presumed relation between the discount and negative announcement effects is observed in our sample. The variable is computed as follows:

$$Subscription\ price\ discount = 1 - \left(\frac{Subscription\ price}{Share\ price_{Pre\ issue}}\right)$$

5.3.2 Relative shares issued

The second variable is the number of new shares issued, delineated as relative shares issued. We introduce this variable to understand if increased dilution influences announcement returns. Isolated, non-participating shareholders are diluted since the number of new shares issued increases, but the effect is offset by the cash proceeds as depicted in section 2.1. The variable is computed as follows:

$$Relative\ shares\ issued = \frac{Shares\ outstanding_{Pre\ issue}}{Shares\ outstanding_{Pre\ issue} + New\ shares\ issued}$$

5.3.3 Theoretical price fall

As previously discussed, any price depreciation on the issuers' share price (post-announcement) should be dependent on the combination of the subscription discount and the relative number of shares issued. Thus, we introduce this variable to investigate if there are any abnormalities in the relationship between the CARs and the anticipated *theoretical price fall*. All else equal, we would expect that there is a one-to-one relationship between the CARs and the theoretical price fall. Where the theoretical price fall is defined as:

$$Theoretical\ price\ fall = Relaitve\ shares\ issued \times Subscription\ price\ discount$$

A practical example of the *theoretical price fall* variable is presented in Appendices E.

5.3.4 Repair issue announcement

Whether or not the firm holds a repair issue is introduced to understand if compensating non-participating shareholders influences announcement returns. Holding a repair issue can be perceived as decent corporate governance as it compensates the non-participating shareholders for removing their preemptive rights. Although the offering price in the repair issue matches the subscription price set in the private placement, the intrinsic compensation from a repair issue is more complicated to determine. In isolated terms, it depends on the relative number of shares issued compared to the shares offered in the private placement. However, if the share price falls following the private placement, the subscription rights in the repair issue become less valuable.

By introducing a repair issue dummy variable, where it takes the value of one if a subsequent repair issue is announced and the value of zero if not, we get the following subsamples:

Table 5.3.4 – Descriptive statistcs of the repair issue and no repair issue samples

Statistical properties for 43 private placements with the announcement of a subsequent repair issue

Statistic	N	Mean	Median	Min	Max	St. Dev.
Subscription discount (%)	43	11.3	9.4	-6.7	46.3	11.0
Relative shares issued (%)	43	20.9	16.7	4.8	65.3	14.0
* Theoretical pricefall (%)	43	3.1	1.4	-0.7	23.5	4.9
Proceeds raised (NOKM)	43	280.7	175.0	28	1 368	308.8
Market capitalization (NOKM)	43	2 215.9	708.0	107.8	15 062.7	3 398.4

Statistical properties for 52 private placements without a subsequent repair issue

Statistic	N	Mean	Median	Min	Max	St. Dev.
Subscription discount (%)	52	5.6	4.6	-7.8	45.7	8.1
Relative shares issued (%)	52	13.3	9.1	4.1	51.4	9.9
* Theoretical pricefall (%)	52	0.8	0.4	-2.3	11.4	2.0
Proceeds raised (NOKM)	52	475.8	327.7	17.2	2 506.8	556.7
Market capitalization (NOKM)	52	4 040.2	2 007.8	96.0	27 087.3	4 936.8

**Theoretical pricefall is defined as Subscription discount x Relative shares issued*

There are several interesting differences between the two samples. First, the firms that do not hold a subsequent repair issue have a mean market capitalization of around NOK 4 billion, compared to NOK 2.2 billion for the firms that announce repair issues. The discrepancy in firm size between the samples can have an impact on the proceeds raised, as larger firms tend to raise more capital than smaller firms. This is supported by the observation of average proceeds raised of NOK 280 million and 476 million for the firms that announced a repair issue and those who do not, respectively. In section 7.3 we can also see that market capitalization and proceeds raised have an 84.2% correlation.

Additionally, we observe that the mean discounts and relative shares issued are higher for the sample with the announcement of a subsequent repair issue. Indicating that firms are more likely to hold a repair issue when the offering is increasingly unfavorable to non-participating shareholders because of a significant discount and dilution. In conclusion, we find that larger firms tend to hold less discriminatory offerings, and thus, disregard the repair issue. Whilst smaller firms undertake private placements with higher discounts and dilution, and thus, carries out the repair issue to compensate for the inherent discrimination imposed on non-participating shareholders.

5.3.5 Interaction variable (*Repair issue x Theoretical price fall)*

As explained in Hypothesis 2, we attempt to research whether the announcement of a subsequent repair issue influences CAR through the *theoretical price fall* variable. Thus, we introduce an interaction variable where the *repair issue announcement* variable is multiplied with the *theoretical price fall* variable.

The coefficient for the interaction variable represents any additional effect an announcement of a repair issue has on CAR if the *theoretical price fall* change, compared to a private placement which does not announce a subsequent repair issue.

5.3.6 Proceeds raised

The proceeds raised variable depicts the amount of capital raised in the offering before any costs are incurred. We compute the natural logarithm of the proceeds raised variable to improve the model's fit between the dependent variable (CAR) and proceeds raised.

The variable is introduced to investigate if there is any relation between the size of the offering and the announcement returns. For instance, investors might react more positively to a larger offering if this is perceived to increase the likelihood of undertaking new and large business opportunities. However, we anticipate that most investors have confidence in corporate managements' ability to decide an appropriate offering.

5.3.7 Market capitalization

Similar to the *proceeds raised* variable, market capitalization is also computed as the natural logarithmic value to provide a better fit to the regression model. We assume that firms with high market capitalization are likely to be sounder financially compared to smaller firms. Thus, investors might perceive business opportunities undertaken by larger firms as more likely to be successful. If this assumption holds, then the announcement returns should be positively associated with firm size. Thus, firm size measured as market capitalization is included as an independent variable to research if such a relationship is evident.

6. Results

In the following section, we present and discuss the results from the event study and the cross-sectional regressions. First, preliminary findings are introduced. Secondly, we discuss the results from the short-run event study for both the full sample and the subsamples. This will serve as a good background before we finally discuss our two hypotheses described in section 3. The analysis was conducted with the objective to test the hypotheses.

6.1 Initial observations

After completing the sample selection process, we computed the returns over a window corresponding to [-260, 260] as depicted in Figure 6.1.

Figure 6.1 – Accumulated stock returns (N = 95)

The motivation for illustrating the initial observations was to uncover any unexpected patterns in our data. Figure 6.1 gives a bird's-eye view of the development of the stocks' returns. First, it shows that the stock returns are on the average negative on the announcement date ($t = 0$). Secondly, we see that the returns are for the most part stronger prior to the announcement, with a markedly negative trend after the announcement of a private placement. Although long-term events are beside the scope of this thesis, it is interesting to see that the returns support the findings of Hertzel et al., (1993) of long-term underperformance after a private placement.

6.2 Short-run event study

In this subsection, we discuss the results of the event study. First, we will use our entire sample of 95 private placements to examine whether the announcement of private placements has a significant impact on stock returns within the event window. Then, we divide the sample based on whether the private placement was followed up by an announcement of a repair issue and examine the short-run results.

6.2.1 Short-run event study full sample

Table 6.2.1 depicts the abnormal announcement returns for the firms in our full sample that conducts private placements on OSE in the period between January 2012 and January 2020. The results show that the firms report between -4.04% and -5.9% CAAR post announcement. We find that the abnormal announcement reaction is consistent across different event windows, and for two different estimation models: The Single Index Model and Constant Mean Model. Additionally, the announcement returns are statistically significant at a 1% level, consistent across all event windows and for both estimation models. We also notice that the CAARs are both lower and more significant in the constant mean return model. Lastly, the CAARs hold when using the Wilcoxon Signed Rank Test at a 1% level (see Appendices H).

Table 6.2.1 – Results for the short-run event study

Statistical significance (T) and CAARs across different event windows (N = 95)

	[0,0]	[0,1]	[-1,1]	[-1,3]	[-3,3]
CAAR in % (Single Index)	-4.04	-4.10	-4.34	-5.08	-5.18
T-value (Single Index)	-3.41	-3.34	-3.29	-3.69	-3.70
CAAR in % (Constant Mean)	-4.38	-4.48	-4.88	-5.76	-5.90
T-value (Constant Mean)	-3.67	-3.65	-3.70	-4.18	-4.21

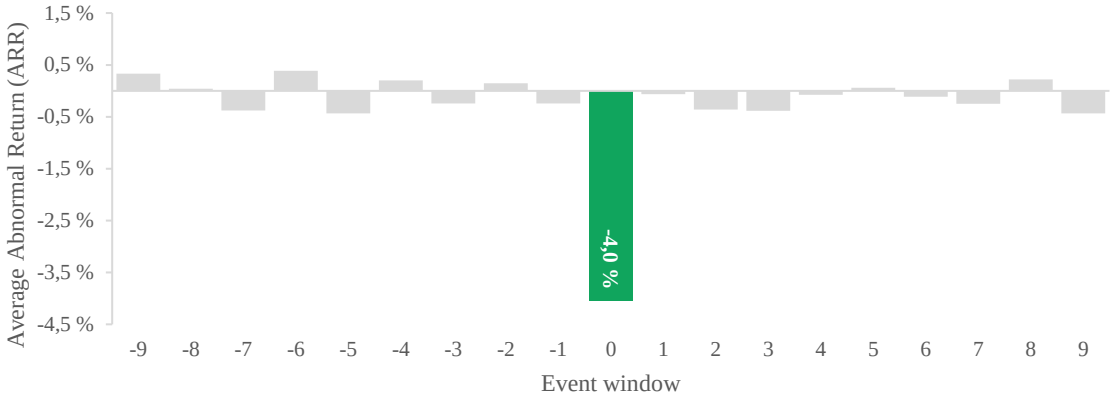
T-values > or < |2.63|,|1.98|,|1.67| are significant on the 1%, 5% and 10% level, respectively

Thus, the results support the theory of negative announcement returns following a SEO suggested by Eckbo (2007). However, our findings contradict several of the contemporary studies that find positive abnormal returns after the announcement of a private placement (Holderness, 2018). Making it less intuitive as to why private placements are the dominant approach on OSE. We, therefore, propose that our findings should be compared with studies researching the dominant approach in respective markets, commonly rights or public offerings. The laws and regulations in the respective markets must also be considered since issue methods that require a considerable level of shareholder protection tend to exhibit higher returns (Holderness, 2018). As discussed in section 2.7.4, undertaking private placements in Norway does not require a larger majority of shareholder approval than other approaches for equity issuances, providing shareholders with no additional protection for the differential treatment.

Additionally, the finding of negative announcement returns does not support the certification and monitoring hypothesis introduced in section 2.6.1. In contrast, we rather find evidence supporting the opposing proposition of asymmetric information. Stating that an equity issue signals firm value (Ross, 1977), and managers tend to issue equity when the firm's equity is overvalued, thus, the market penalizes the equity issuance (Myers & Majluf, 1984). In addition, it confirms that non-participating shareholders experience negative returns aligning with the research of Krishnamurthy et al., (2004). This is also in line with figure 6.1.

Furthermore, the results do support our economic intuition that on average, announcement returns after a private placement should be negative due to the subscription discount and dilution. As portrayed in figure 6.2.1, the negative returns are highly concentrated on the announcement day ($t = 0$), which is the only day that achieves statistically significant results with abnormal returns of -4.0%.

Figure 6.2.1 – Daily AAR across [-9, 9] days



6.2.2 Short-run event study subsamples

As depicted in figure 6.2.2 (1), the repair issue group obtains CAARs of -6.16% on the event day (*t* = 0) using the Single Index Model, compared to -2.34% for the no repair issue group. We can therefore see that the subsample undertaking subsequent repair issues reports a lower announcement return than the subsample without subsequent repair issues. We obtain statistical significance on the event day at a 1% level (see figure 6.2.2 (2)), but only for the subsample with repair issues and the full sample.

Figure 6.2.2 (1) – CAARs for the different samples in a [-9, 9] window

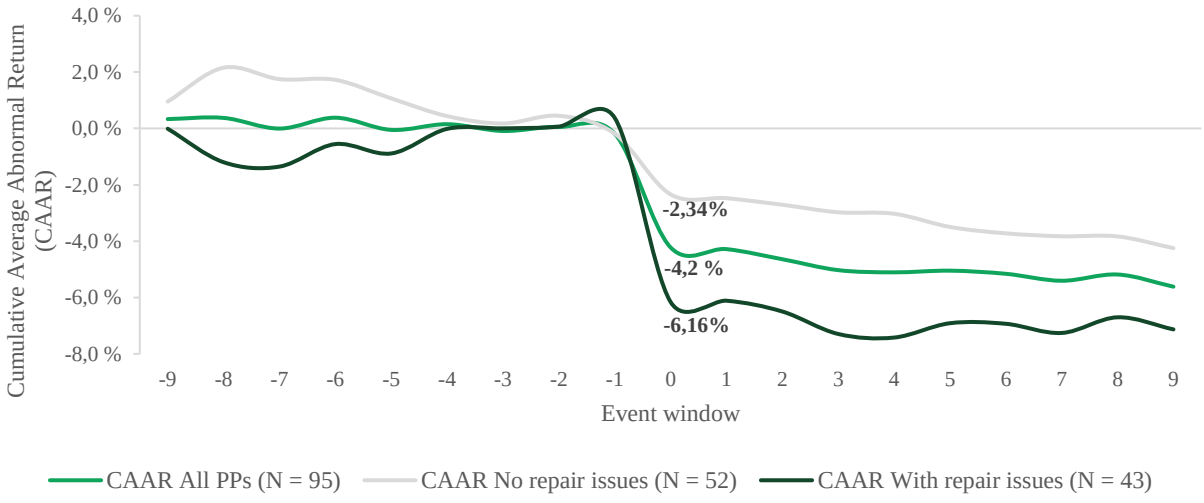
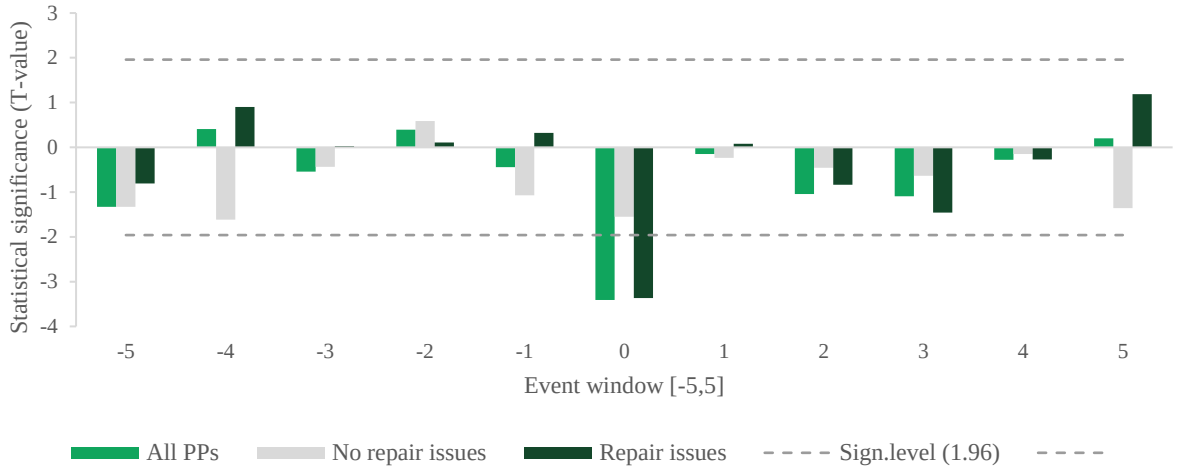


Figure 6.2.2 (2) – T-values for the different samples in a [-5, 5] window



At first, and in accordance with the requirements from Oslo Børs, we would expect that the market would react more positively towards issuing companies offering a repair issue to rectify their ownership. On the other hand, issuing additional shares in a repair issue at a discount will rationally reduce the effective pricing of the firm, as it strengthens the theoretical price fall. In addition, as depicted in the descriptive statistics in table 5.3.4, the *repair issue* sample has a larger mean discount and relative shares issued. Thus, solely regarding the economic value of the shares, the value is notably reduced when a private placement's characteristics require a subsequent repair issue.

Considering that we present the results of the market reaction, we can only consider the economic value in terms of the share price. Thus, we do not have grounds to conclude whether the repair issues are able to rectify the dilution on non-participating shareholders caused by private placements. However, there is reason to believe that this is not the case since non-participating shareholders often hold a substantial percentage of total shares outstanding, and the repair issues tend to be small compared to its relative size to the private placements (as depicted in section 2.7.3).

We propose two additional explanations for the observed CAAR inconsistencies between the repair issue and no repair issue group: 1) The repair issue offers firms an opportunity to hold private placements with higher discounts and/or dilution whilst complying with OSE regulations, which results in decreasing CAARs. 2) Some firms are not able to raise capital

without a high discount and/or dilution, and as a consequence the issuer holds a repair issue to compensate.

6.3 Cross-sectional regression full sample

To further understand the origin of the observed effects in the event study, we conduct cross-sectional regressions with CAR as a dependent variable and several variables of interest as independent variables (all outlined in section 5), within the event window [-1,1].

6.3.1 Announcement returns and the theoretical price fall

Aligning with our first hypothesis, we study the relationship between CAR and the *theoretical price fall* in more detail. The results of the regressions are presented in table 6.3.1.

Table 6.3.1 – Cross-sectional regressions based on 95 events

Cross-sectional regression - CAR from 95 observations

	Dependent variable: Cumulative Abnormal Return								
	lm1	lm2	lm3	lm4	lm5	lm6	lm7	lm8	lm9
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Subscription discount	-0.889***						-1.000***		
	t = -9.041						t = -4.978		
Relative shares issued		-0.159					0.096		
		t = -0.961					t = 0.809		
Theoretical pricefall			-2.015***					-2.329***	-4.594***
			t = -4.206					t = -4.470	t = -6.566
Repair issue dummy				-0.035			0.006	0.003	-0.031
				t = -1.320			t = 0.227	t = 0.118	t = -1.319
(ln) Proceeds raised					0.004				
					t = 0.377				
(ln) Market capitalization						0.005	-0.012	-0.020**	-0.022***
						t = 0.540	t = -1.273	t = -2.473	t = -2.798
Repair issue dummy x Theoretical pricefall									2.680***
									t = 3.576
Constant	0.029**	-0.017	-0.006	-0.028	-0.124	-0.151	0.269	0.416**	0.484***
	t = 2.314	t = -0.739	t = -0.572	t = -1.552	t = -0.579	t = -0.756	t = 1.256	t = 2.327	t = 2.833
Observations	95	95	95	95	95	95	95	95	95
R^2	0.468	0.024	0.346	0.018	0.002	0.003	0.502	0.386	0.462
Adjusted R^2	0.462	0.013	0.339	0.008	-0.009	-0.008	0.480	0.365	0.438
Significance levels									*p<0.1; **p<0.05; ***p<0.01

For the individual regressions, we find that the *subscription discount* (lm1) and the *theoretical price fall* (lm3) have a significant impact on CARs, both on a 1% level. The coefficients for lm1 and lm3 indicate that if these variables increase by 1%, then CARs will decrease by 0.889% and 2.015%, respectively. Further, we do not find a statistically significant relation between CARs and the *relative shares issued* (lm2), *repair issue dummy* (lm4), *(ln) proceeds raised* (lm5), or *(ln) market capitalization* (lm6) variables when regressed individually. In the multiple regression (lm8) the coefficient of the *theoretical price fall* variable has an even larger impact on CAR and a higher statistical significance. The *subscription discount, relative shares issued,* and *proceeds raised* variables are not included in the multiple regression because of multicollinearity which is further elaborated on in section 7.3.

Interestingly, in lm 8, we also observe that a 1% increase in the *market capitalization* variable is now associated with a 0.02% decrease in CARs with statistical significance on a 5% level. This implies that larger firms are more prone to negative announcement returns. Large firms might have more options to finance investments compared to smaller firms. Either with retained earnings or by taking on debt as they have a higher debt capacity. Higher debt is positive for shareholders since their return increase as long as the benefit from an increase in tax shield outweighs potential bankruptcy costs. Thus, aligning with the pecking-order theory (Myers & Majluf, 1984), the market could react more negatively when large firms issue equity since they realistically have other options compared to smaller firms.

From table 6.3, we can conclude that the predominant variable causing the negative CAR is *the theoretical price fall*, with a significant coefficient of -2.329. However, it must be pointed out that the subscription discount is the primary driver of the theoretical price fall. This is evident by their 0.861 correlation (see section 7.3) and the discount's dominance in explaining CAR in lm 7. Isolated, the number of shares issued does not decrease the value of a firm, only when shares are issued at a discount will the firm value be affected negatively. Thus, the discount decides the direction of CAR, but the number of shares issued determines how far the CAR goes in that particular direction. Thus, combined they are more able to explain the negative CAR.

The apparent relation between the *theoretical price fall* and CAR is not surprising since any rational investor would value a company lower as the discount increases, particularly if dilution increases as well. And, as previously mentioned, increased discount typically goes hand-in-hand with increased dilution as more shares must be sold to raise the targeted

amount of proceeds. All else equal, the relationship between the *theoretical price fall* and announcement returns should be one-to-one as our null hypothesis suggest. However, we find that the issuer CAR declines by 2.329% for every 1% of *theoretical price fall*. Hypothesis 1 is therefore valid, and the null hypothesis is rejected.

Our results depict a market where the shareholders are punishing the issuer more vigorously than expected. As described in section 2.7.4, most private placements on OSE are carried out through board authorizations, where the granted authorization is valid for two years. Thus, the details regarding the offering, such as the discount, number of shares issued, and the intended use of the proceeds are oftentimes not shareholder approved. Thus, the relationship between shareholder approval and announcement returns depicted in section 2.7.4 might in part explain why announcement returns are lower than the *theoretical price fall* would suggest.

Presuming that these results are representative of the population, i.e., all firms that undertake private placements on OSE, then the following should be considered: First, the indirect floatation cost might be higher than corporate management expect. After our conversations with Norne Securities, we suspect that the indirect flotation costs are of secondary concern compared to direct costs such as the prospectus. As depicted in section 2.3, the indirect costs are challenging to quantify, however, according to our findings they can be substantial. Finally, the results are perceived to support the pecking-order theory since it shows that the cost of offering equity has unfavorable consequences on the issuer's share price. Thus, firms might prefer other means of financing such as retained earnings or debt.

For the regulatory embodiment of OSE, it might be interesting to note that the stand-alone variable with the most persistent impact on CAR is the discount. Thus, we propose that regulators should be more worried about high discounts in private placements rather than dilution. However, as we multiply these variables to the *theoretical price fall* variable, it is evident that OSE must perform a holistic judgment as well.

6.3.2 CAR and repair issue announcements

By introducing a final regression in table 6.3.1 (lm9), we test if a change in the theoretical price fall has an equal effect on CAR based on whether a subsequent repair issue is announced (Hypothesis 2).

In lm 9, the variable of interest is the interaction variable "*Repair issue x Theoretical price fall*", which was explained in section 5.3.5. We find that the coefficient for the interaction variable has a value of 2.68, which is significant at the 1% level. This implies that a 1% increase in the *theoretical price fall* increases CAR by 2.68% if a subsequent repair issue is announced. Thus, the coefficient for theoretical price fall on private placements with repair issues is -1.91 (-4.59 + 2.68) (see table in Appendices G). That is, when a repair issue is announced, CAR drops, but less since all shares will now have a right to buy new shares at a discount when the repair issue is held on a later date. Hypothesis 2 is therefore valid, and the null hypothesis is rejected.

The validation of Hypothesis 2 is in line with Oslo Børs' view of repair issues, where a repair issue serves to rectify non-participating shareholders' ownership stake. However, as mentioned in section 2.7.3, we often see that market prices fall to, or below, the discounted price offered in the repair issue. This suggests that it is more favorable for non-participating shareholders to trade in the open market to rectify their ownership than to participate in the subsequent repair issue. This also provides an advantage for the issuing firm since there is no longer a need to issue additional shares, and thus cause more dilution to its shareholders or incur any other costs related to the repair issue. With this reasoning, the value in the right to buy shares at a discount drops to zero. Either way, the announcement of a repair issue is beneficial for both the issuing company and existing and new shareholders since the CAR is higher even though the repair issues are usually relatively small compared to the total proceeds raised, as mentioned in section 2.7.3. The benefit comes on top of the advantage participants in the private placement already had.

We further propose that the management, who hold superior information about its company (Myers & Majluf, 1984), choose to undertake a repair issue only in the case of high-value projects. This implies that managers want to protect smaller shareholders from missing out on valuable opportunities. Thus, for less valuable projects management do not protect smaller shareholders and allows large existing shareholders to fund the investment. Since

less valuable projects only provide a small increase in value for each shareholder (if everyone participates) management might feel justified to waive small shareholders' preemptive rights.

If managers only announce repair issues for high-value projects, it signals to the market that private placements without repair issues are less valuable. Thus, the announcement return would have a more negative reaction to a private placement that is not followed up with a repair issue. This could explain why the announcement returns react more negatively to a change in the *theoretical price fall* if the issuer does not announce a repair issue. On the other hand, large shareholders typically have a better understanding of the company than smaller shareholders. This is confirmed by the monitoring and certification hypothesis suggested by Wruck and Hertzel (1993; 1989) and the prospectus requirement by Oslo Børs. Thus, high participation from large shareholders or professional investors could legitimize the value of the project to the market.

Regardless, we believe that the aforementioned interpretations imply that there is an agency issue, where the management prioritizes large, or even new shareholders before small shareholders. All shareholders have the right to receive equal treatment, and the value of the project should therefore not matter.

The results discussed above may seem strange as results from the event study in section 6.2.2 depicts the opposite – private placements with repair issues have a lower CAAR compared to issues without a repair issue. Intuitively you will expect the two results to coincide. This emphasizes the importance of conducting cross-sectional regressions, where it is possible to isolate the effect of different variables of interest and control for omitted variable bias. Cross-sections enable us to better explain the importance of each characteristic in relation to CAR.

6.3.3 Determinants for holding a subsequent repair issue

We run a regression model with the announcement of a repair issue as a dependent dummy variable while we use the same independent variables. This allows us to examine which variable determines the decision of holding a repair issue following a private placement.

Table 6.4.1 – Cross-sectional regressions with repair issue as binary dependent

Cross-sectional regression - 95 observations

	Binary dependent variable: Repair issue						
	blm1 (1)	blm2 (2)	blm3 (3)	blm4 (4)	blm5 (5)	blm6 (6)	blm7 (7)
Subscription discount	1.458***					0.914*	
	t = 2.906					t = 1.674	
Relative shares issued		1.230***				0.672	
		t = 3.100				t = 1.388	
Theoretical pricefall			4.035***				3.115**
			t = 3.064				t = 2.180
(ln) Proceeds raised				-0.049			
				t = -1.135			
(ln) Market capitalization					-0.095***	-0.043	-0.061
					t = -2.652	t = -1.055	t = -1.589
Constant	0.334***	0.246***	0.377***	1.388*	2.444***	1.178	1.674**
	t = 5.203	t = 2.976	t = 6.845	t = 1.672	t = 3.247	t = 1.293	t = 2.046
Observations	95	95	95	95	95	95	95
R^2	0.083	0.094	0.092	0.014	0.070	0.136	0.116
Adjusted R^2	0.073	0.084	0.082	0.003	0.060	0.107	0.097
Significance levels					*p<0.1; **p<0.05; ***p<0.01		

From the cross-sectional regression, we notice a relationship between whether firms undertake a repair issue and the independent variables *subscription discount, relative shares issued,* and *theoretical price fall*. Here, a 1% increase in the *subscription discount, relative shares issued,* and *theoretical price fall* are associated with approximately 1.5%, 1.2%, and 4.0% increase in the likelihood of an announcement of a repair issue, respectively. All statistically significant at the 1% level. Hence, there is a combination of multiple variables which drive the decision whether to hold a repair issue, but we see that the theoretical price fall has the largest coefficient, and, thus, is the main driver.

More surprisingly, we report a statistically significant relation at the 1% level between the announcement of a repair issue and firm size. Thus, a 1% increase in firm size measured through the *market capitalization* variable is related to a 0.095% *decrease* in the likelihood of a repair issue. This aligns with the conclusion based on the descriptive statistics in section 5, that smaller firms are more likely to hold discriminatory private placements, and thus announces a subsequent repair issue to compensate existing shareholders and/or align with OSE regulations.

7. Assessment of robustness

In this section, we assess if our sample and results are consistent across various robustness tests. Debating the treatment of any outliers and the applied methods to secure that OLS-assumptions are met. The OLS-assumptions are specified in appendices B.

7.1 Treatment of outliers

In appendices, C plots of our variables of interest are depicted. As observed, there are some outliers in the dependent variable (CAR) and the *theoretical price fall* variable. However, removing outliers without sound reasoning can lead to an overstatement of the causal effects through omitted variable bias. We have used several criteria (as depicted in section 5) when determining the sample, thus we are reluctant to remove outliers as they are perceived to be part of a random sample and contains valuable information.

Thus, instead of removing the outliers, we report the cross-sectional regressions where outliers have been replaced using the winsorized mean method as suggested by Tukey (1962). The regressions using winsorized means are presented in appendices D. We note that our previous discussions in section 6 hold true after replacing the outliers with winsorized values. As such, we perceive this method as a contribution to ensuring the robustness in our regression models.

7.2 Heteroskedasticity

OLS-assumption nr.5 states that the error term in the regression must have a constant variance, i.e., that there is no presence of heteroscedasticity in our variables of choice. Thus, we test for heteroskedasticity using the Breusch-Pagan test. For any variables with p-values < 5% we compute heteroskedastic robust standard errors. Further details regarding the tests and computation are deferred to appendices F.

7.3 Multicollinearity

The presence of multicollinearity can be described as linear correlations between the independent variables. Such presence refers to OLS-assumption 3, and it is thus a prerequisite that there is no multicollinearity or perfect collinearity between our independent variables

(Wooldridge, 2012). OLS 3 does allow for correlation, but not a perfect correlation. In the case of perfect collinearity or high correlation between the independent variables, coefficients run a higher risk of inaccurate estimates. To elucidate any presence of correlation amongst the variables we computed a correlation matrix which is presented in table 7.3.

Table 7.3 – Correlation matrix for the independent variables of interest

Correlation matrix for the independent variables

	Subscription discount	Relative shares issued	Theoretical pricefall	Proceeds raised	Repair issue dummy	Market capitalization
Subscription discount	1	0.418	0.861	-0.196	0.289	-0.312
Relative shares issued	0.418	1	0.683	-0.005	0.306	-0.522
Theoretical pricefall	0.861	0.683	1	-0.145	0.303	-0.405
Proceeds raised	-0.196	-0.005	-0.145	1	-0.116	0.842
Repair issue dummy	0.289	0.306	0.303	-0.116	1	-0.265
Market capitalization	-0.312	-0.522	-0.405	0.842	-0.265	1

The table depicts a high correlation between the *market capitalization variable* and the *proceeds raised* variable. Additionally, there is a correlation between the *subscription discount, relative shares issued,* and *theoretical price fall* variables. This is anticipated since the *theoretical price fall* variable is derived from the *subscription discount* and *relative shares issued.*

To further investigate if the presence of multicollinearity is evident, we perform VIF-tests (Alauddin, 2010). As a conservative threshold, we remove variables with a VIF-score > 5. As depicted in Table 7.3 (1) we get VIF-scores above > 5 for several of the independent variables. Thus, for the second VIF test, we remove the *subscription discount, relative shares issued* and *the proceeds raised* variables. We retain the *theoretical price fall variable* since it is of particular interest. After removing the aforementioned variables there are no VIF-scores > 1.5. Thus, we conclude that there is no multicollinearity in the independent variables in our multiple regressions.

Table 7.3 (1) – VIF tests for the independent variables of interest

VIF tests on the independent variables		
	VIF1	VIF2
Theoretical price fall	9.699	1.258
Repair issue dummy	1.189	1.131
Market capitalization	79.714	1.229
Subscription discount	5.060	
Relative shares issued	32.489	
Proceeds raised	59.442	

7.4 Sample size and random sampling

A concern regarding our analysis is the size of the sample. For the analysis of the full sample, we have 95 observations. Thus, our sample is well above the central limit theorem of 30 observations.

However, the resilience of the statistical properties for both the event study and the cross-sectional regressions increases with larger sample sizes (Brown & Warner, 1985; MacKinlay, 1997). Thus, we would have preferred a larger sample, but due to our strict criteria depicted in section 5, this was not possible. Obviously, in our analysis, there is a trade-off between a larger sample and enforcing the desired characters of the individual events. The strict criteria might increase the risk for sample selection bias, i.e., that our sample is not selected randomly and is not a true representation of the population, that is all firms that undertake private placements on OSE. However, we believe that the criteria we have used are necessary to measure the isolated effect of the private placement as the chosen approach for equity issuance.

8. Conclusion and further research

The motivation for this thesis has been to research the effect private placements have on the issuer announcement returns on OSE and its implications for the OSE regulatory embodiment, corporate management, and shareholders. With a sample consisting of 95 events (private placements) across 73 different companies between January 2012 and January 2020, we have conducted an analysis by utilizing the traditional event study methodology and cross-sectional regressions. Our introductory results show a statistically significant negative stock price reaction to a private placement announcement. We find that firms on average display cumulative average abnormal return (CAAR) of -4.3% after the announcement of a private placement in a [-1, 1] event window using the Single Index Model as an estimation method. This is contrary to former research explaining positive announcement returns with the monitoring and certification hypothesis (Hertzel & Smith, 1993; Wruck, 1989). Further, our empirical research is primarily divided into two main parts.

In the first part, we investigate whether the announcement returns coincide with the anticipated price depreciation based on the discount and dilution set in the offering. We find that for every 1% increase in the implied price depreciation, the issuer on average reports an announcement return of -2.329%. Implying that the market reacts more negatively to a private placement than the implied price depreciation would suggest. Thus, we argue that the negative announcement return can be perceived as an indirect flotation cost that should be accounted for when managers consider issuing shares through a private placement.

In the second part, we research whether the announcement of subsequent repair issues influences the observed announcement returns. Our results show that when issuers announce a private placement without a repair issue, cumulative abnormal return (CAR) is negative. When issuers announce a subsequent repair issue, CAR is negative but 2.68% higher. We propose that the difference stems from the value of the right to buy shares at a discount in the repair issue, which shareholders do not have if there is no repair issue. This further indicates that the announcement of a repair issue has value for all shareholders as it leads to higher announcement returns. Additionally, we believe corporate leaders might be reluctant to waive shareholders preemptive rights for valuable projects, thus holding a repair issue could be a signal to the market that the offering is more valuable.

Based on our inferences it is paramount that corporate leaders and board of directors comprehend the indirect flotation costs relating to SEO announcement returns, and their implications for shareholders. Every private placement is different and there are certain situations where swift processes benefit both the issuer and all shareholders, such as in a situation of financial distress. Nevertheless, private placements on average appear to be negative for the non-participating shareholders in the short term. The OSE is seemingly unambiguous to the interpretation of the shareholders' *best interest* and only accounts for the long-term perspective. Considering contemporary research from accredited behavioral economists such as Kahneman (2011), it is not obvious that all investors commit to the long-term perspective. Nor does there exist any regulation securing that the participating investors are long-term shareholders.

Our understanding is that the decision to issue equity is seldom spontaneous, and as such, we question whether the removal of shareholders' preemptive rights is necessary. It is a paradox that diverging from the equal treatment principle has become the novel approach in Norway. The assumption that Norway possesses a capital market with equal treatment of shareholders is, based on our research, a misconception. Thus, we purpose that the OSE and the Norwegian Ministry of Finance consider regulatory changes to incentivize corporate leaders and board of directors to undertake SEOs that do not discriminate between shareholders. And, thus stop the continued liberalization of laws and regulatory requirements for private placements.

Regarding further research, it would both be interesting and valuable to research the wealth transfer that occurs between non-participating and participating shareholders in private placements. For candidates interested in undertaking this topic we would suggest Holderness's (2016) research as an excellent reference. In connection to the wealth transfer, it could also be interesting to investigate how often repair issues are canceled and the grounds for it.

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Sources

Aksjeloven. (1997). *Lov om aksjeselskaper*. (LOV-1997-06-13-44). Retrieved from https://lovdata.no/dokument/NL/lov/1997-06-13-44/KAPITTEL_5-4#%C2%A75-18

Alauddin, M. (2010). Do Instructional Attributes pose Multicollinearity Problems? An Empirical Exploration. *Economic Analysis & Policy*, *40*.

Bang-Hansen, V., & Rogdaberg, B. (2012). *Emisjoner i børsnoterte selskaper*. Advokatfirmaet Schjødt.

Barclay, M. J., Holderness, C. G., & Sheehan, D. P. (2007). Private placements and mangerial entrenchment. *Journal of Corporate Finance*, *13*, 461-482. www.elsevier.com/locate/jfi

Berk, J., & DeMarzo, P. M. (2017). *Corporate finance* (Fourth edition.; Global edition. ed.). Pearson.

Breusch, T. S., & Pagan, A. R. (1979). A Simple Test for Heteroscedasticity and Random Coefficient Variation. *Econometrica*, *47*(5), 1287-1294. https://www.jstor.org/stable/1911963

Brown, S. J., & Warner, J. B. (1985). USING DAILY STOCK RETURNS

The Case of Event Studies*. *Journal of Financial Economics*, *14*, 3-31. http://www-2.rotman.utoronto.ca/~kan/3032/pdf/TestsOfMarketEfficiency/Brown_Warner_JFE_1985.pdf

Guidelines on the rule of equal treatment, (n.d.). https://www.oslobors.no/ob_eng/Oslo-Boers/Regulations/Guidelines-on-the-rule-of-equal-treatment

e24. (2021). https://bors.e24.no/#!/list/norway/

Eckbo, B. E. (2007). Security Offerings. In B. E. Eckbo (Ed.), *Handbook of Empirical Corporate Finance* (First edition. ed., Vol. Volume 1, pp. 235-282). Elsevier.

Elvevold, E. (2019). *Norske selskaper hopper bukk over småaksjonærene*. e24. https://e24.no/boers-og-finans/i/LAXqQ9/norske-selskaper-hopper-bukk-over-smaaaksjonaerene-en-uggen-foelelse

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, *10*, 21. https://www.jstor.org/stable/2525569?casa_token=kp_7f8KAsVcAAAAA%3ASEG2OZ-uD6cujsNfwuWdTPglooG_DnbgztYx7Z5zXm4OZDhDFQvyyM9X2dZbC_slS5u_onuZfXdFzp_wcq-3qLZAcWJjqgb57izFMifTujpoqsy1tyUX_g&seq=1#metadata_info_tab_contents

Henderson, G. V. (1990). Problems and Solutions in Conducting Event Studies. *The Journal of Risk and Insurance*, *57*, 282-306. https://www.jstor.org/stable/253304?seq=1#metadata_info_tab_contents

Hertzel, M., Lemmon, M., Linck, J. S., & Rees, L. (2002). Lon-Run Performance following Private Placements of Equity. *The Journal of Finance*, *57*(6), 2595-2617. https://www.jstor.org/stable/3094538

Hertzel, M., & Smith, R. L. (1993). Market Discounts and Shareholder Gains for Placing Equity Privately. *The Journal of Finance*, *48*, 459-485. https://www.jstor.org/stable/2328908

Holderness, C. G. (2018). Equity issuances and agency costs: The telling story of shareholder approval around the world. *Journal of Financial Economics*, *129*, 415-439. https://www.sciencedirect.com/science/article/pii/S0304405X18301545

Holderness, C. G. P., Jeffrey. (2016). Shareholder nonparticipation in valuable rights offerings: New findings for an old puzzle. *Journal of Financial Economics*, *120*, 252-268.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, *3*, 305-360.

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Krishnamurthy, S., Spindt, P., Subramaniam, V., & Woidtke, T. (2004). Does investor identity matter in equity issues? Evidence from private placements. *Journal of Financial Intermediation*, *14*, 210-238. www.elsevier.com/locate/jfi

MacKinlay, C. (1997). Event Studies in Economics and

Finance. *Journal of Economic Literature*, *35*, 13-39. https://www.jstor.org/stable/pdf/2729691.pdf?refreqid=excelsior%3Af6c4c585591570fafb4971a3dc610b96

McWilliams, A., & Siegel, D. (1997). Event Studies in Management Research: Theoretical and Empirical Issues. *The Academy of Management Journal*, *40*, 626-657. https://www.jstor.org/stable/257056?seq=1#metadata_info_tab_contents

Modigliani, F., & Miller, M. H. (1965). The Cost of Capital, Corporate Finance, and the Theory of Investment. *The American Economic Review*, *55*, 524-527.

Myers, C. S., & Majluf, S. N. (1984). Corporate Financing and Investment Decisions when Firms have Information that Investors do not have *Journal of Financial Economics*, *13*.

NewsWeb. (2021). Oslo Børs. https://newsweb.oslobors.no/

Prabhala, N. R. (1997). Conditional Methods in Event Studies and an Equilibrium Justification for Standard Event-Study Procedures. *The Review of Financial Studies*, *10*(1), 1-38. https://www.jstor.org/stable/2962255

PWC. (n.d.). *Rettede aksjeemisjoner – når det haster å få på plass egenkapital*. https://www.pwc.no/no/tjenester/kapitalmarkedstjenester/rettede-aksjeemisjoner.html

Ross, S. A. (1977). The Determination of Financial Structure: The Incentive-Signalling Approach. *The Bell Journal of Economics*, *8*(1), 23-40. https://www.jstor.org/stable/3003485

Strong, N. (1992). MODELLING ABNORMAL RETURNS: A REVIEW ARTICLE. *Journal of Business Finance & Accounting*, *19*(4). https://doi.org/10.1111/j.1468-5957.1992.tb00643.x

Tukey, J. W. (1962). The Annals of Mathematical Statistics. *Institute of Mathematical Statistics*, *33*(1), 1-67.

Tønnesen, S. E. S. (2021). Rettede emisjoner. In (Interview with corporate finance department of Norne Securities ed.).

Vernimmen, P. Q., Pascal. , & Dallocchio, M. F., Yann L.

Salvi, Antonio. (2014). *Corporate Finance - Theory and Practice*. John Wiley & Sons Inc. .

White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica*, *48*(4), 817-838. https://www.jstor.org/stable/1912934

Wooldridge, J. M. (2012). *Introductory Econometrics - A Modern Approach* (5 ed.). Cengage Learning.

Wruck, K. H. (1989). Equity ownership concentration and firm value. *Journal of Financial Economics*, *23*.

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Appendices A

Full sample with all variables of interest

	Firmname	eventday (T0)	Subscription price	Market price (T-1)	Discount	Shares issued	Shares outstanding	Relative shares issued	Theoretical pricefall	Proceeds raised	Repair issue dummy	CAR
1	Algeta	2012-02-13	143	156.600	0.087	2,000,000	39,464,376	0.048	0.004	286,000,000	1	-0.063
2	Aqualis	2014-02-03	2.550	2.630	0.030	11,000,000	116,587,117	0.086	0.003	28,050,000	1	-0.055
3	AqualisBraemar	2019-06-06	3.960	3.850	-0.029	4,375,000	42,293,239	0.094	-0.003	17,325,000	0	-0.017
4	Archer	2013-02-07	6.667	6.780	0.017	212,500,667	366,397,622	0.367	0.006	1,416,741,947.000	0	-0.024
5	Asetek	2015-02-24	10	11	0.091	10,000,000	14,881,311	0.402	0.037	100,000,000	1	0.072
6	Aurskog Sparebank	2015-11-22	180	189	0.048	150,000	1,653,574	0.083	0.004	27,000,000	0	-0.001
7	B2Holding	2018-03-13	20.250	21.550	0.060	36,912,000	369,520,598	0.091	0.005	747,468,000	0	-0.052
8	BerGenBio	2019-06-13	13.500	13.220	-0.021	5,495,144	54,951,446	0.091	-0.002	74,184,444	0	-0.007
9	Bionor Pharma A	2012-06-14	3.200	3.420	0.064	18,000,000	180,526,348	0.091	0.006	57,600,000	0	-0.127
10	Bionor Pharma B	2013-09-12	2.750	2.910	0.055	19,800,000	180,526,348	0.099	0.005	54,450,000	1	0.083
11	Borgestad	2019-11-27	20	28.400	0.296	5,000,000	6,778,610	0.424	0.126	100,000,000	1	-0.296
12	BWG Homes	2012-02-14	11.500	12.800	0.102	34,782,608	98,276,000	0.261	0.027	399,999,992	1	-0.098
13	Codfarmers	2012-02-07	2	2.550	0.216	15,000,000	42,284,186	0.262	0.056	30,000,000	1	-0.196
14	Cxense	2017-08-24	40	37.500	-0.067	1,000,000	7,985,012	0.111	-0.007	40,000,000	1	-0.142
15	Data Respons A	2018-03-20	25	26.400	0.053	2,226,637	51,436,157	0.041	0.002	55,665,925	0	0.0001
16	Data Respons B	2019-05-13	27	29.800	0.094	12,000,000	60,380,669	0.166	0.016	324,000,000	1	-0.029
17	Deep Sea Supply	2014-06-02	9	9.380	0.041	134,000,000	126,863,861	0.514	0.021	1,206,000,000	0	0.052
18	DNO	2015-03-09	13.250	14.720	0.100	60,534,906	1,023,279,255	0.056	0.006	802,087,505.000	1	-0.168
19	Dolphin Group A	2012-03-06	4.600	4.810	0.044	50,000,000	171,312,704	0.226	0.010	230,000,000.000	1	-0.020
20	Dolphin Group B	2015-04-21	2.050	2.050	0	70,000,000	345,378,489	0.169	0	143,500,000	1	-0.020
21	FLEX LNG	2018-10-10	14.250	15	0.050	172,938,947	368,060,340	0.320	0.016	2,464,379,995.000	0	-0.045
22	Funcom	2012-06-19	15	15.900	0.057	4,000,000	53,187,991	0.070	0.004	60,000,000	0	-0.079
23	Gaming Innovation Group	2014-12-29	1.330	1.510	0.119	41,000,000	159,974,952	0.204	0.024	54,530,000	0	0.309
24	Golden Ocean Group	2017-10-16	67.070	67.600	0.008	7,764,705	132,372,992	0.055	0.0004	520,778,764.000	0	0.006
25	Havila Shipping	2012-12-10	24	33.500	0.284	8,333,334	21,410,109	0.280	0.079	200,000,016	1	-0.185
26	Helgeland Sparebank	2016-10-24	70	72	0.028	1,857,142	18,700,000	0.090	0.003	129,999,940	1	0.019
27	Hexagon Composites	2019-02-27	29.600	32.700	0.095	16,662,780	166,627,868	0.091	0.009	493,218,288	0	-0.070
28	Hoegh LNG Holdings	2015-09-09	122	128	0.047	6,920,000	69,902,597	0.090	0.004	844,240,000	0	-0.056
29	IDEX Biometrics	2019-11-17	0.750	0.760	0.013	120,000,000	597,988,732	0.167	0.002	90,000,000	0	0.112
30	Insr Insurance Group A	2017-02-01	7	6.850	-0.022	18,000,000	44,786,699	0.287	-0.006	126,000,000	1	0.031
31	Insr Insurance Group B	2019-10-10	7	8.080	0.134	13,468,750	134,698,516	0.091	0.012	94,281,250	0	-0.017
32	Interoil Exploration and Production	2019-04-29	3.550	3.420	-0.038	22,221,851	64,690,315	0.256	-0.010	78,887,571.000	0	0.060
33	Kongsberg Automotive	2018-06-27	9.500	9.210	-0.031	40,676,813	406,768,131	0.091	-0.003	386,429,724.000	0	0.029
34	Melhus Sparebank A	2013-10-28	110	120	0.083	545,455	800,000	0.405	0.034	60,000,050	0	-0.111
35	Melhus Sparebank B	2016-03-07	107.500	128	0.160	406,380	1,527,272	0.210	0.034	43,685,850	1	-0.031
36	Napatech	2018-07-10	5	9.200	0.457	8,000,000	23,923,220	0.251	0.114	40,000,000	0	-0.646
37	NEL A	2014-11-27	1.300	1.590	0.182	50,000,000	338,929,104	0.129	0.023	65,000,000	1	0.052
38	NEL B	2018-06-28	3.120	3.470	0.101	90,000,000	1,003,413,063	0.082	0.008	280,800,000	1	0.097
39	NEL C	2020-01-21	9.500	10.490	0.094	89,000,000	1,222,102,783	0.068	0.006	845,500,000	1	-0.070
40	NEXT Biometrics Group A	2017-02-06	134	139.500	0.039	1,167,000	15,158,980	0.071	0.003	156,378,000	0	-0.091
41	NEXT Biometrics Group B	2019-01-24	8	14.900	0.463	20,000,000	19,430,575	0.507	0.235	160,000,000	1	-0.503
42	Nordic Nanovector A	2016-12-06	114	120.500	0.054	4,374,244	44,600,374	0.089	0.005	498,663,816	0	-0.124
43	Nordic Nanovector B	2019-10-17	22	26.640	0.174	11,023,892	55,119,471	0.167	0.029	242,525,624	1	-0.240
44	Nordic Semiconductor	2018-04-24	50	53.300	0.062	16,300,000	163,481,600	0.091	0.006	815,000,000	0	-0.078
45	Norwegian Air Shuttle	2018-03-20	155	171.600	0.097	8,387,097	35,759,639	0.190	0.018	1,300,000,035	1	0.020
46	Norwegian Car Carriers	2012-02-12	1.850	1.840	-0.005	64,864,020	133,082,302	0.328	-0.002	119,998,437	1	0.031
47	Norwegian Energy Company	2012-09-27	3.700	4.930	0.249	108,108,108	243,038,047	0.308	0.077	400,000,000.000	0	-0.189
48	Norwegian Property	2012-11-05	8	8.430	0.051	49,850,000	498,596,832	0.091	0.005	398,800,000	0	-0.050
49	NRC Group	2015-06-21	27	28.500	0.053	3,111,111	22,635,985	0.121	0.006	83,999,997	1	0.154
50	Ocean Yield A	2016-08-31	64	67	0.045	13,462,857	134,748,575	0.091	0.004	861,622,848	0	-0.063
51	Ocean Yield B	2018-02-28	69	73	0.055	11,000,000	148,351,432	0.069	0.004	759,000,000	0	-0.048
52	Ocean Yield C	2019-11-21	45	46.400	0.030	15,935,143	159,351,432	0.091	0.003	717,081,435	0	0.025
53	Odfjell Drilling	2018-04-19	36	39.400	0.086	38,000,000	198,736,900	0.161	0.014	1,368,000,000	1	-0.072
54	Panoro Energy A	2016-02-09	0.420	0.570	0.263	166,666,666	243,545,786	0.406	0.107	70,000,000.000	1	-0.182
55	Panoro Energy B	2019-10-22	23.900	24.400	0.020	6,238,760	62,561,098	0.091	0.002	149,106,364	0	0.032
56	Pareto Bank	2019-06-05	37	38.100	0.029	10,810,810	58,619,688	0.156	0.004	399,999,970	1	-0.002
57	Petroleum Geo-Services	2015-11-11	39	39.940	0.024	21,779,999	217,799,997	0.091	0.002	849,419,961	0	-0.028
58	Petrolia	2018-06-07	3.200	4.060	0.212	5,375,798	53,757,988	0.091	0.019	17,202,554.000	0	-0.029
59	Polarcus A	2014-10-06	1.400	1.360	-0.029	162,592,500	507,221,179	0.243	-0.007	227,629,500	1	-0.118
60	Polarcus B	2017-02-09	0.330	0.400	0.175	1,000,000,000	530,472,947	0.653	0.114	330,000,000	1	0.107
61	Prosafe A	2013-03-14	58	60.800	0.046	13,000,000	229,936,790	0.054	0.002	754,000,000	0	0.050
62	Prosafe B	2015-12-03	25	23.900	-0.046	23,597,300	235,973,059	0.091	-0.004	589,932,500	0	0.002
63	Q-Free	2016-09-28	7.500	7.570	0.009	17,844,689	71,378,757	0.200	0.002	133,835,168.000	0	0.137
64	Questerre Energy Corporation A	2013-11-20	7.400	7.860	0.059	23,494,753	229,184,643	0.093	0.005	173,861,172.000	0	-0.073
65	Questerre Energy Corporation B	2019-04-23	2.400	2.800	0.143	38,900,000	388,956,200	0.091	0.013	93,360,000	0	-0.074
66	Reach Subsea B	2017-01-12	1.750	1.850	0.054	48,609,900	91,241,065	0.348	0.019	85,067,325	1	0.192
67	REC Silicon A	2015-07-15	1.550	1.600	0.031	230,000,000	2,147,483,647	0.097	0.003	356,500,000	0	0.137
68	REC Silicon B	2019-04-09	0.670	0.750	0.107	254,381,870	2,147,483,647	0.106	0.011	170,435,853.000	1	-0.075
69	SalMar	2012-02-29	30	32.700	0.083	10,299,999	103,000,000	0.091	0.008	308,999,970	0	-0.097
70	SAS AB	2017-11-08	23.500	25.400	0.075	52,500,000	330,082,551	0.137	0.010	1,233,750,000	0	-0.100
71	Scatec A	2017-03-23	40.500	42	0.036	9,380,000	93,816,230	0.091	0.003	379,890,000	0	-0.074
72	Scatec B	2018-06-13	60	62.100	0.034	10,000,000	103,412,432	0.088	0.003	600,000,000	0	-0.074
73	Scatec C	2019-09-24	116	120.600	0.038	11,375,000	113,753,672	0.091	0.003	1,319,500,000	0	-0.018
74	Schibsted ser. B	2017-11-21	211	228	0.075	11,880,397	118,803,976	0.091	0.007	2,506,763,767	0	-0.101
75	SeaBird Exploration A	2012-11-27	7.500	9.180	0.183	11,000,000	31,452,978	0.259	0.047	82,500,000	1	-0.167
76	SeaBird Exploration B	2018-07-11	0.190	0.220	0.136	632,000,000	2,044,955,145	0.236	0.032	120,080,000	1	0.010
77	Solon Eiendom B	2017-12-17	19.500	19.200	-0.016	4,859,358	48,595,056	0.091	-0.001	94,757,481	0	0.024
78	Solon Eiendom C	2019-05-19	38	37.800	-0.005	9,114,361	60,762,412	0.130	-0.001	346,345,718	0	0.011
79	Songa Offshore	2012-04-19	18	18	0	35,200,000	167,712,544	0.173	0	633,600,000	1	0.116
80	SpareBank 1 Ringerike Hadeland	2017-04-26	185	192	0.036	1,486,486	13,946,652	0.096	0.004	274,999,910	1	-0.059
81	SpareBank 1 SMN	2012-09-13	35.600	36.800	0.033	5,617,977	94,930,286	0.056	0.002	199,999,981.000	1	0.012
82	SpareBank 1 Østfold Akershus A	2015-05-20	105	146.500	0.283	1,666,666	1,472,600	0.531	0.150	174,999,930	1	-0.143
83	SpareBank 1 Østfold Akershus B	2017-11-20	187	194.500	0.039	1,121,111	11,267,449	0.090	0.003	209,647,757	0	-0.033
84	SpareBank 1 Østlandet	2018-11-08	86	89.800	0.042	8,139,534	107,179,987	0.071	0.003	699,999,924	1	-0.040
85	Sparebanken Møre	2013-06-12	185	206	0.102	1,486,487	7,841,116	0.159	0.016	275,000,095	1	-0.040
86	Spectrum	2015-06-01	32	36.100	0.114	10,000,000	43,326,625	0.188	0.021	320,000,000	1	-0.091
87	Targovax	2019-03-21	7	11.200	0.375	10,521,973	52,616,448	0.167	0.062	73,653,811	1	-0.340
88	Techstep A	2017-02-02	5.700	6.050	0.058	17,543,860	102,475,577	0.146	0.008	100,000,002	0	0.168
89	Techstep B	2018-06-26	3.150	3.100	-0.016	7,936,508	146,251,789	0.051	-0.001	25,000,000.000	0	0.026
90	Thin Film Electronics	2017-10-18	2.500	2.320	-0.078	352,500,000	819,371,617	0.301	-0.023	881,250,000	0	0.090
91	Voss Veksel- og Landmandsbank	2019-09-30	156	165	0.055	192,307	1,900,000	0.092	0.005	29,999,892	1	-0.033
92	Weifa	2014-09-09	0.800	0.830	0.036	144,000,000	1,442,603,446	0.091	0.003	115,200,000	0	0.015
93	Wentworth Resources A	2015-06-25	3.880	4.320	0.102	15,412,269	154,122,700	0.091	0.009	59,799,604.000	0	-0.022
94	Wentworth Resources B	2017-05-16	2.730	3.130	0.128	16,953,496	169,534,969	0.091	0.012	46,283,044.000	0	-0.099
95	XXL	2019-10-14	15	17.670	0.151	26,666,667	165,762,744	0.139	0.021	400,000,005	1	-0.206

Appendices B

Ordinary Least Squared Assumptions

I. Linear in Parameters

The regression must be linear in parameters, implying that a set of parameters (independent variables) and the error term can estimate the dependent variable of interest. The model allows for flexibility as the variables can be arbitrary functions such as natural logarithms (Wooldridge, 2012).

II. Random Sampling

The sample is arbitrarily chosen from the population and contains *n* observations.

III. No Perfect Collinearity

In the sample (and therefore in the population), none of the independent variables are constant, and there are no exact linear relationships among the independent variables. Thus, the independent variables of interest cannot be perfectly correlated.

IV. Zero conditional mean

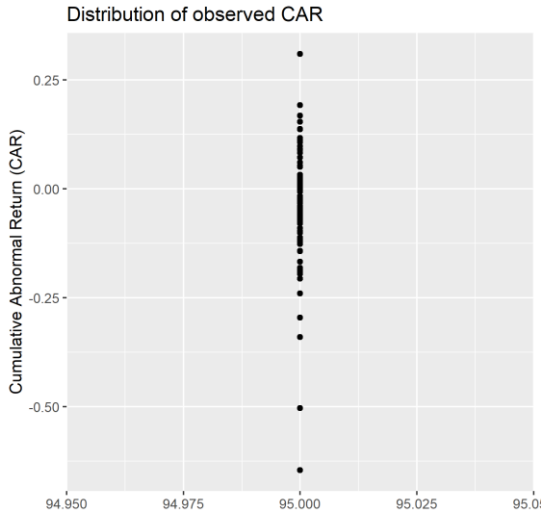
The error u has an expected value of zero given any values of the independent variables. One way that MLR.4 fails is misspecification of the functional form, for example using y instead of log y. Omitting an important factor that is correlated with the independent variables also causes MLR.4 to fail.

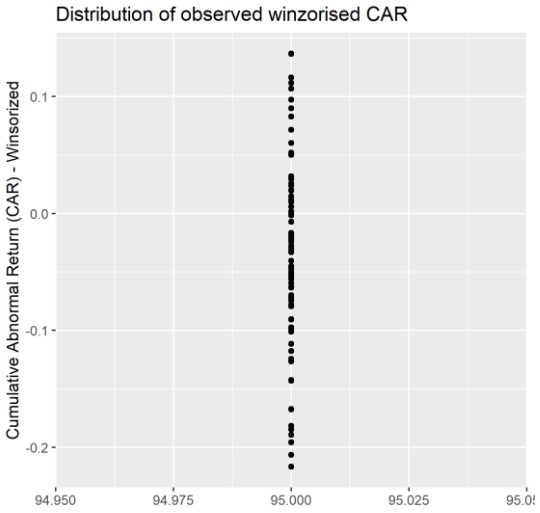
V. Homoskedasticity

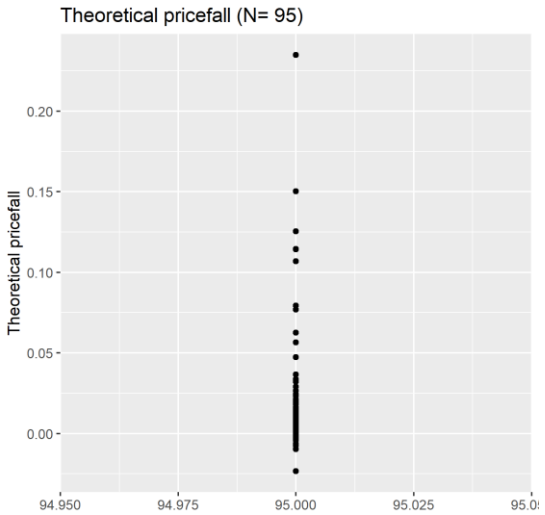
The error u has the same variance given any value of the explanatory variables. Thus, the variance in the error term is conditional on the independent variables and is the same regardless of the combination of outcomes for the explanatory variables (Wooldridge, 2012). If it fails, then heteroskedasticity is present. For instance, if the variance in the error term increases as one of the explanatory variables increases, there is a presence of heteroskedasticity, and the assumption fails.

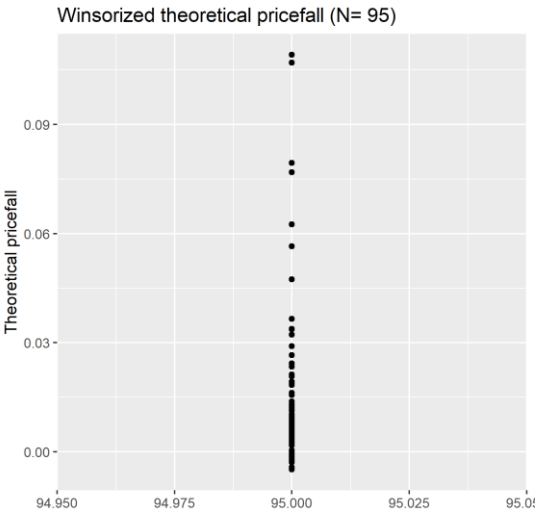
Appendices C

Assessment of outliers









Appendices D

Winsorized cross-sectional regressions for the full sample

Cross-sectional regression - 95 observations

	Binary dependent variable: Repair issue						
	blm1	blm2	blm3	blm4	blm5	blm6	blm7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subscription discount	1.968***					1.350**	
	t = 3.301					t = 2.080	
Relative shares issued		1.464***				0.755	
		t = 3.180				t = 1.341	
Theoretical pricefall			5.502***				4.262**
			t = 3.211				t = 2.237
(ln) Proceeds raised				-0.054			
				t = -1.187			
(ln) Market capitalization					-0.100***	-0.041	-0.059
					t = -2.688	t = -0.960	t = -1.453
Constant	0.299***	0.215**	0.359***	1.476*	2.548***	1.091	1.620*
	t = 4.442	t = 2.412	t = 6.293	t = 1.701	t = 3.262	t = 1.142	t = 1.862
Observations	95	95	95	95	95	95	95
R^2	0.105	0.098	0.100	0.015	0.072	0.152	0.120
Adjusted R^2	0.095	0.088	0.090	0.004	0.062	0.124	0.101
Significance levels							*p<0.1; **p<0.05; ***p<0.01

Winsorized cross-sectional regression - CAR from 95 observations

	Dependent variable: Cumulative Abnormal Return								
	lm1	lm2	lm3	lm4	lm5	lm6	lm7	lm8	lm9
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Subscription discount	-0.646***						-0.737***		
	t = -6.781						t = -6.252		
Relative shares issued		-0.097					0.052		
		t = -0.872					t = 0.538		
Theoretical pricefall			-1.519***					-1.883***	-4.821*
			t = -3.542					t = -4.057	t = -1.821
Repair issue dummy				-0.029			-0.003	-0.009	-0.029
				t = -1.472			t = -0.141	t = -0.516	t = -1.079
(ln) Proceeds raised					0.00004				
					t = 0.006				
(ln) Market capitalization						-0.001	-0.013*	-0.020***	-0.024***
						t = -0.111	t = -1.829	t = -2.952	t = -2.805
Repair issue dummy x Theoretical pricefall									2.382
									t = 0.856
Constant	0.014	-0.021	-0.010	-0.023**	-0.037	-0.019	0.289*	0.414***	0.531***
	t = 1.296	t = -1.292	t = -1.125	t = -2.113	t = -0.251	t = -0.120	t = 1.776	t = 2.826	t = 2.781
Observations	95	95	95	95	95	95	95	95	95
R^2	0.331	0.012	0.223	0.025	0.00000	0.0001	0.375	0.287	0.416
Adjusted R^2	0.324	0.002	0.214	0.014	-0.011	-0.011	0.347	0.264	0.390
Significance levels									*p<0.1; **p<0.05; ***p<0.01

Appendices E

A practical example of the *theoretical price fall* variable

To understand the computational nature of our *theoretical price fall* variable and the implications of issuing equity with a discount we provide the following example. This example assumes perfect capital markets, i.e., no asymmetric information. For simplicity, we also assume that the issuers' net debt (pre-issue) is zero, thus the firms' market value of equity is equal to the market value of its assets.

Consider a firm with a number of shares outstanding, $N = 1000$, and price per share, $P = 50$, where the market value of equity ("*ME*") is given by:

I. $$ME = N\ x\ P \rightarrow 1000\ x\ 50 = 50\ 000$$

Assume that the firm issues shares (settled in cash) of 10% of the shares outstanding at a discount of 20% to the current share price. The value of the offering (V) can be denoted as:

II. $$V = (1000\ x\ 10\%)\ x\ (50\ x\ [1 - 20\%]) = 4\ 000$$

The offering increases the firms' cash balance. As such the market value of the assets, and thus, its market value of equity is now equal to:

III. $$ME = 50\ 000 + V \rightarrow 50\ 000 + 4\ 000 = 54\ 000$$

Remember from equation I. that the market value of equity is a function of the shares outstanding and the share price. The new number of shares is equal to:

IV. $$N = 1000 + (1000\ x\ 10\%) = 1\ 100$$

Thus, the new share price must be given by:

V. $$ME = N\ x\ P \rightarrow P = \frac{ME}{N} = \frac{54\ 000}{1\ 100} = 49.091$$

The share price has decreased with an amount equal to the *theoretical price fall (T):*

VI. $$T = \frac{50 - 49.091}{50} = 1.818\% \quad \text{or} \quad T = 20\%\ x\ \left(\frac{100}{100+1000}\right) = 1.818\%$$

Appendices F

Breusch-Pagan test for heteroskedasticity

In the cross-sectional regressions, we have tested for heteroskedasticity by applying the Breusch-Pagan (BP) test as suggested by Breusch and Pagan (1979) and Wooldridge (2012).

The approach can be summarized by the following steps. First, the OLS is estimated by running the regression model. The R-squared values are preserved and used to test whether heteroskedasticity is present. If the reported p-values are below the 5% level, the null hypothesis of homoscedasticity is rejected, and heteroskedastic standard errors are computed. The computation is done through the function "BP-test" in R. Based on the results, we computed robust standard errors for lm2, lm3, lm5, lm7, lm8, lm9, and blm4.

We have reported the following values from our BP-tests:

Regression model	Breush-Pagan statistic	P-value
lm1	3,4070	0,0649
lm2	8,8815	0,0029
lm3	10,3680	0,0013
lm4	0,1194	0,7297
lm5	4,1707	0,0411
lm6	8,1827	0,0042
lm7	10,4790	0,0331
lm8	15,2500	0,0016
lm9	13,0550	0,0229
blm1	0,2517	0,6159
blm2	0,0816	0,7751
blm3	2,3059	0,1289
blm4	8,3048	0,0040
blm5	0,7703	0,3801
blm6	1,5761	0,6648
blm7	3,1632	0,2056

Appendices G

Individual regressions out-put for the subsamples

CAR from 43 observations with announcement of repair issue

	Cumulative Abnormal Return			
	lm1	lm2	lm3	lm4
	(1)	(2)	(3)	(4)
Subscription discount	-0.848***			
	t = -6.096			
Relative shares issued		-0.184		
		t = -0.686		
Theoretical pricefall			-1.646***	-1.919***
			t = -3.131	t = -5.070
(ln) Market capitalization				-0.023
				t = -1.643
Constant	0.033	-0.024	-0.011	0.463
	t = 1.522	t = -0.513	t = -0.596	t = 1.601
Observations	43	43	43	43
R^2	0.475	0.036	0.354	0.395
Adjusted R^2	0.463	0.013	0.338	0.365
Significance levels		*p<0.1; **p<0.05; ***p<0.01		

CAR from 52 observations without announcement of repair issue

	Cumulative Abnormal Return			
	lm1	lm2	lm3	lm4
	(1)	(2)	(3)	(4)
Subscription discount	-1.014**			
	t = -1.970			
Relative shares issued		-0.037		
		t = -0.212		
Theoretical price fall			-4.159*	-4.587*
			t = -1.780	t = -1.934
(ln) Market capitalization				-0.022**
				t = -2.112
Constant	0.029	-0.023	0.008	0.477**
	t = 1.293	t = -0.787	t = 0.503	t = 2.088
Observations	52	52	52	52
R^2	0.456	0.001	0.455	0.510
Adjusted R^2	0.445	-0.019	0.444	0.490
Significance levels		*p<0.1; **p<0.05; ***p<0.01		

Appendices H

Reported statistics from the Wilcoxon Signed-Rank Test (nonparametric).

	Trading days	Wilcoxon stat	Significance
1	-3	1,873	
2	-2	2,270	
3	-1	1,984	
4	0	1,286	* * *
5	1	2,371	
6	2	1,823	*
7	3	1,888	

, **, * are significant at the 10%, 5% and 1% level, respectively*