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School of Economics and Management

# **Private placements and investor involvement**

Examining the short-term abnormal returns to equity private placements depending on the investor's involvement in the issuing company

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## ABSTRACT

- Title:** Private placements and investor involvement
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- Key words:** Private placement, short-term abnormal return, discount, information asymmetry, information hypothesis, agency theory, monitoring hypothesis, managerial entrenchment hypothesis
- Purpose:** The purpose of this study is to investigate if there is a difference in the short-term announcement effects of equity private placements depending on the relationship of the investor with the issuing firms in terms of information asymmetry and agency conflicts.
- Methodology:** An event study is conducted to study if there are abnormal returns. The abnormal returns will be used as the dependent variable in a regression which allows us to include more variables of interest.
- Theoretical perspective:** Information asymmetry, information hypothesis, agency theory, monitoring hypothesis, managerial entrenchment hypothesis, signalling theory, convergence-of-interest
- Empirical foundation:** 59 Private placements issued in Sweden between 2009-2014 by listed firms.
- Conclusion:** We come to the conclusion that the investor type in a private placement has an effect on how the market reacts to the announcement of this issue. The announcement of an insider buyer results in a low positive abnormal return. There is weak support in our study that active buyers get the highest abnormal returns. The market reactions are therefore best supported by the managerial entrenchment hypothesis whereas the information and monitoring hypotheses gain weak support.

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# TABLE OF CONTENTS

<b>1. INTRODUCTION</b> .....	1
1.1. BACKGROUND.....	1
1.2. PROBLEM DISCUSSION.....	2
1.3. PURPOSE AND RESEARCH QUESTION.....	2
1.4. LIMITATIONS.....	3
1.5. OUTLINE.....	3
<b>2. THEORETICAL FRAMEWORK</b> .....	5
2.1. SEO MOTIVATIONS & ISSUE TYPES.....	5
2.1.1. Rights issue.....	5
2.1.2. Public offering.....	6
2.1.3. Private placement.....	6
2.2. PRIVATE PLACEMENT MOTIVATIONS.....	6
2.2.1. Information asymmetry.....	7
2.2.1.1. Signaling theory.....	7
2.2.1.2. Information hypothesis.....	7
2.2.2. Agency theory.....	8
2.2.2.1. Monitoring hypothesis.....	8
2.2.2.2. Managerial entrenchment hypothesis.....	9
2.3. EMPIRICAL IMPLICATIONS.....	10
<b>3. EMPIRICAL FINDINGS OF ABNORMAL RETURNS</b> .....	11
3.1. SEASONED EQUITY OFFERINGS.....	11
3.2. PRIVATE PLACEMENTS.....	11
3.3. PRIVATE PLACEMENT BUYERS.....	12
3.3.1. Insider buyer.....	12
3.3.2. Active buyer.....	13
3.3.3. Passive buyer.....	13
3.3.4. Mixed buyer.....	14
3.4. DEVELOPMENT OF HYPOTHESES.....	14

<b>4. METHODOLOGY</b>	16
4.1. RESEARCH APPROACH	16
4.2. RESEARCH DESIGN	16
4.3. LITERATURE STUDY	17
4.4. DATA COLLECTION	17
4.4.1. Data selection criteria	17
4.4.2. Categorization of the buyer type	19
4.5. EVENT STUDY	20
4.5.1. Normal return models	20
4.5.2. Market model	21
4.5.3. Event and estimation window	22
4.5.4. Abnormal returns	23
4.6. CROSS-SECTIONAL REGRESSION	25
4.6.1. Description of regression variables	25
4.6.1.1. Dependent variable	26
4.6.1.2. Independent variables	27
4.7. VALIDITY & RELIABILITY	28
4.7.1. Validity	28
4.7.1.1. Internal validity	29
4.7.1.2. External validity	29
4.7.2. Reliability	30
<b>5. EMPIRICAL RESULTS</b>	31
5.1. EVENT STUDY RESULTS	31
5.1.1. Abnormal returns for total sample	31
5.1.2. Categorization per buyer group	32
5.2. DISCOUNTS AND PREMIUMS	34
5.2.1. Pricing of total sample	34
5.2.2. Differences between market places	34
5.3. ADJUSTMENTS OF ABNORMAL RETURNS	35
5.3.1. Adjustment for discounts	35
5.3.2. Adjustment for outliers	36
5.4. DESCRIPTIVE STATISTICS AND TESTS OF REGRESSION VARIABLES	36
5.4.1. Normality test	36
5.4.2. Multicollinearity test	37

5.5.	REGRESSION RESULTS .....	38
5.5.1.	Initial regression output.....	38
5.5.2.	Heteroskedasticity test.....	39
5.5.3.	Regression robustness tests .....	40
5.5.3.1.	Excluding financial industry .....	41
5.5.3.2.	Excluding multiple SEO announcements.....	41
5.5.3.3.	Including outliers.....	41
5.5.3.4.	Excluding mixed buyers .....	41
5.5.3.5.	Change of the base group .....	42
5.5.3.6.	Other event window as dependent variable.....	42
5.5.4.	Regression for all significant event windows .....	42
<b>6.</b>	<b>ANALYSIS AND DISCUSSION .....</b>	<b>44</b>
6.1.	ABNORMAL RETURNS .....	44
6.1.1.	Event study results for total sample .....	44
6.1.2.	Private placement buyers .....	45
6.2.	DISCOUNTS AND PREMIUMS .....	46
6.3.	INTERPRETATION OF REGRESSION RESULTS .....	46
6.3.1.	Insider buyers show the lowest abnormal returns .....	46
6.3.2.	Active buyers have insignificant results.....	47
<b>7.</b>	<b>CONCLUSION .....</b>	<b>49</b>
7.1.	RESEARCH AIM AND RESEARCH OBJECTIVES .....	49
7.2.	FURTHER RESEARCH .....	50
	<b>REFERENCES .....</b>	<b>51</b>
	<b>APPENDICES .....</b>	<b>55</b>
	Appendix A: Seasoned Equity Offerings in Sweden 2008-2014 per issue type .....	55
	Appendix B: Detailed data about the gathered private placements 2009-2014 .....	56
	Appendix C: Abnormal return calculations.....	58
	Appendix D: Market model compared to market adjusted model.....	59
	Appendix E: Aggregated abnormal returns per buyer and day .....	59
	Appendix G: Calculation of Abnormal Returns adjusted for discounts.....	61
	Appendix H: Excluded outliers .....	62
	Appendix I: Correcting standard errors to mitigate heteroskedasticity .....	63

## LIST OF TABLES

<b>Table 1:</b> Empirical implications of abnormal returns predicted by the theory .....	10
<b>Table 2:</b> Cumulative abnormal returns for private placements in US & Sweden .....	11
<b>Table 3:</b> Private equity placements per buyer in Sweden between 2009 and 2014 .....	20
<b>Table 4:</b> Cumulative abnormal returns (CAR) for different event windows .....	32
<b>Table 5:</b> CAR per buyer over event window: $\pm 1$ day.....	33
<b>Table 6:</b> Discounts and premiums per buyer .....	34
<b>Table 7:</b> CAR <sub>adj</sub> for discounts and premiums over the event window: $\pm 1$ day .....	35
<b>Table 8:</b> CAR <sub>adj</sub> after adjustment for outliers over the event window: $\pm 1$ day .....	36
<b>Table 9:</b> Descriptive statistics of the main regression variables .....	37
<b>Table 10:</b> Correlation matrix .....	38
<b>Table 11:</b> Regression of abnormal returns for private placements in Sweden 2009-2014.....	39
<b>Table 12:</b> Heteroskedasity Test (White Test).....	39
<b>Table 13:</b> Regression of abnormal returns for private placements in Sweden 2009-2014.....	40
<b>Table 14:</b> Cumulative abnormal returns for two new event windows .....	42
<b>Table 15:</b> Cumulative abnormal returns for two new event windows.....	43
<b>Table 16:</b> Comparing our results to previous findings of short-term AR .....	44
<b>Table 17:</b> CAR after adjustment for outliers over the event window: $\pm 1$ day .....	45

## LIST OF FIGURES

<b>Figure 1:</b> Equity issue activities in Sweden between 2008 and 2014 .....	18
<b>Figure 2:</b> Mean CAR as a function of event windows .....	31
<b>Figure 3:</b> Abnormal returns aggregated per event day.....	33
<b>Figure 4:</b> Discount and premium per market .....	35

# 1. INTRODUCTION

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*This first chapter introduces the topic by explaining the background of the problem this study is based on. A detailed problem discussion and the identification of the research gap follows leading to the specific purpose and research question established for this study. A short overview of the limitations that set the frames for the data collection follows before ending this chapter with an outline, guiding the reader through the report.*

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## 1.1. BACKGROUND

In this thesis the short-term market reaction to equity private placement will be examined. Private placement is a sub-category to Seasoned Equity Offerings (SEO). Private placements are defined as equity issues which target only a small group of current or new shareholders of a public firm (Molin, 1996; Cronqvist & Nilsson, 2003). According to many studies the announcement of SEOs generates a negative stock price movement (Asquith & Mullins, 1986; Masulis & Korwar, 1986; Smith, 1986; Kim & Purnanandam, 2006). However, private placements generate a positive stock price effect as investigated by Wruck (1989) and Hertz and Smith (1993). It is interesting that a sub-category of SEOs result in a different market reaction than SEOs in general. The positive effect to private placements is captivating because one would expect that the market reacts negatively to dilution effects and discounts to private placement issues. The research community explains the positive market reaction to private placements mainly with two hypotheses: the information hypothesis and the monitoring hypothesis.

The information hypothesis is originated from Myers and Majluf's (1984) adverse selection model suggesting that management has superior information about the true value of a firm. Under the assumption that insiders know more, they can conceivably make decisions for their advantage such as issuing overvalued securities leading to a negative stock price reaction to SEOs. Myers and Majluf's (1984) hypothesis is later extended by Hertz and Smith (1993) in the private placement context to the information hypothesis. They add that private placements help to communicate some of management's private information. When a well-informed investor is willing to commit funds, it sends a positive signal to the market (Hertz & Smith, 1993). Wruck (1989) argues in the monitoring hypothesis, that private placement buyers monitor the management leading to reduced agency conflicts. When a private placement is purchased by an active investor, who is both willing and able to monitor management in order to make sure that the companies' resources are used more efficiently, a positive market reaction is generated (Wruck, 1989).

## 1.2. PROBLEM DISCUSSION

While the information hypothesis and the monitoring hypothesis are extensively investigated in the private placement context, Barclay et al. (2007) introduce an alternative hypothesis, the managerial entrenchment hypothesis. This hypothesis contrasts the two others in terms of market reactions to private placements since it states that the market reaction could be negative. According to the managerial entrenchment hypothesis, the management favors investors who do not want to get actively involved, allowing managers to solidify their control. As a result, the existing non-participating shareholders might be disadvantaged since the increased monitoring as argued in the monitoring hypothesis will not be realized (Barclay et al., 2007). The managerial entrenchment hypothesis introduces that the relationship the buyer has with the issuing company, could explain the different market reactions of private placements. As already mentioned, the monitoring hypothesis assumes that an actively involved buyer should generate a positive reaction. In contrast, the managerial entrenchment hypothesis predicts a negative market reaction. Considering this, the relevant question is how the private placement investor's relationship with the issuing company impacts the market reactions (Wruck, 1989; Barclay et al., 2007).

## 1.3. PURPOSE AND RESEARCH QUESTION

The research on the private placement buyer's relationship with the issuing company and its respective market reaction is limited so far. Barclay et al.'s (2007) study conducted for the US is one reference study in this research field. To our knowledge, only one study has been likewise done for Sweden. However, this study only investigates the insider's relationship with the issuing company and its impact on the market reaction (Molin, 1996). Barclay et al.'s (2007) study is based on US companies which usually have a low initial ownership concentration. In contrast to this study, Sweden has different institutional characteristics. In Sweden, the average initial ownership concentration is very high as stated by Molin (1996). The underlying assumption for the monitoring hypothesis is that the ownership concentration increases because of private placements. Since the initial ownership concentration is already high in Sweden, private placements will lead to a decreased ownership concentration (Molin, 1996). By considering the different market dynamics in the US and Sweden, it is interesting to investigate if Barclay et al.'s (2007) findings can explain the market reaction for a setting with initial high ownership concentration. This study will therefore investigate how the relationship of the private placement investors with the issuing company affects the short-term market reactions in Sweden. The information, monitoring and managerial entrenchment

hypotheses will be tested for the different buyer groups of a private placement in the Swedish market environment. To our knowledge, no study has been done so far investigating this topic. The findings of this study will therefore contribute to the existing research by answering the following research question:

**Is there a difference in the short-term announcement effects of equity private placements depending on the investor's involvement with the issuing firms in terms of information asymmetry and agency conflicts?**

In order to investigate this research question, we are going to do an event study followed up by a regression which allows us to include more variables of interest.

#### 1.4. LIMITATIONS

Since this study only investigates the equity private placements in Sweden, the number of events is limited but it is estimated by us to be sufficient. In order to get a large enough sample, both regulated and unregulated markets are included. By including several market places, a larger variety of companies will be included. The time range covers one business cycle namely 2008 to 2014. The start of the current business cycle is defined by Bergman (2011) to begin in 2008, measured as the classical cycle top-to-top. It is not investigated how the abnormal returns develop over time since this study investigates the short-term effects. The reason for this is that we want to have the most recent data and a large enough sample. By investigating long term-effects, too many private placements would have been excluded.

#### 1.5. OUTLINE

The thesis is divided into seven main sections: Introduction, theoretical framework, empirical findings on abnormal returns, methodology, empirical results, analysis and discussion and a conclusion. The first chapter, the *introduction*, describes the background of the study, the problem discussion and what the purpose of the study is. The second chapter, the *theoretical framework* section introduces the SEO topic and presents the main aspects of information asymmetry and agency theory related to private placements. The third chapter on the *empirical findings of abnormal returns* of private placements and in particular the different private placement buyers completes the theoretical framework. As a result, this serves as a basis for the development of the research hypotheses for this study. The fourth chapter, the *methodology*, contains the scientific methodological approaches that have been applied. Besides that, the data collection process, the event study methodology and the OLS regression

are presented. The fifth chapter, the *empirical results chapter* points out the results from the conducted descriptive tests, the event study and the OLS regression with a broad discussion. In the sixth chapter, the *analysis and discussion* chapter, the empirical results are set in a context in order to interpret the findings in a critical way. The purpose of the section is to answer the research question by referring to the theory and the empirical outcomes. The thesis finishes up with a *concluding discussion* to summarize what has emerged in the analysis and ends with suggestions for further research.

## 2. THEORETICAL FRAMEWORK

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*This chapter aims to present the relevant theories starting with a short overview of Seasoned Equity Offerings (SEO). The main focus is however on the equity private placements, the SEO issue type of interest. The respective theories of both the information asymmetry theory and the agency theory explaining the announcement effects to private placements will be likewise presented. Finally, an overview on the empirical implications the theories are suggesting is given.*

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### 2.1. SEO MOTIVATIONS & ISSUE TYPES

A company which is already listed on the stock exchange can raise supplementary capital by issuing additional shares through Seasoned Equity Offerings (SEO). The academic literature provides various issue motives for raising additional capital associated with the different SEO issue types. SEOs address different investors and can therefore be classified into three issue types: rights issues, public issues and private placements (Molin, 1996). These three different issue types and its respective issue motives will be presented in the following sections.

#### 2.1.1. Rights issue

There is a commonly accepted and used definition of rights issues among the research community. In rights issues, existing shareholders get the right or warrant to purchase new shares on a pro rata basis (Eckbo & Masulis, 1995; Molin, 1996; Cronqvist & Nilsson, 2005; Gao & Ritter, 2007). Thus, current shareholders can maintain their equity stake without sustaining damage from dilution. Sometimes, investors are allowed to sell their pro rata rights if they do not want to make use of it (Hillier & Ross, 2013). According to the information asymmetry theory, managers conduct rights issues since they consider the firm to be overvalued and take advantage of this over-valuation (Modigliani & Miller, 1958; Eckbo & Masulis, 1992, Kim & Weisbach, 2008).

The predominating SEO issue types on the Stockholm Stock Exchange are rights issues and private placements (Molin, 1996). This is supported by a more recent paper of Cronqvist and Nilsson (2003) and Bortoletti et al. (2008) who argue that SEOs are particularly conducted as rights offerings or private placements for stock markets outside the USA. In Sweden for instance the precedence right for current shareholders has traditionally had a strong position in the law and is still used in the majority of the SEOs (Skog, 2004).

### 2.1.2. Public offering

Public offerings, also known as public issues, are offerings to the investment public (Nasdaq, 2015). Since shares are not only sold to existing shareholders but also to new investors, this offering type leads to dilution. As far as the reasons for this issue type are concerned, Lee and Kocher (2001) state that public issues are done because of overvaluation. This is consistent with Myers and Majluf (1984) pointing out that managers might have incentives to sell overvalued securities because they want the existing shareholders to benefit at the expense of new shareholders.

Since public issue is the most commonly used issue type in the US, the research is extensive compared to Europe where private placements and rights issues are mainly used for protecting shareholders as it is the case for Sweden. Hence, public offerings are rarely used for SEOs on the Stockholm Stock Exchange. (Molin, 1996)

### 2.1.3. Private placement

Private placements target only a small group of current or new shareholders. That is why managers can significantly influence the ownership structure according to their preferences. (Molin, 1996; Cronqvist & Nilsson, 2003) Furthermore, it is assumed that smaller firms have higher information asymmetry than bigger companies and therefore are more likely to issue private placements (Wruck, 1989; Wu, 2004). Since private placement issues lead to dilution effects for existing shareholders, the board of directors and the shareholders have to approve the private placement issue in Sweden (Molin, 1996). The predominating issue types on the Stockholm Stock Exchange are either rights issues or private placements (Molin, 1996). This is supported by Cronqvist and Nilsson (2003) stating that SEOs are particularly conducted as rights offerings or private placements for stock markets outside the US. In the next section, the explicit motivations for private placements are explained extensively since this study only focuses on private placements.

## 2.2. PRIVATE PLACEMENT MOTIVATIONS

The main theoretical motivations explaining private placements, information asymmetry and agency theory, will be described in the following section. The information asymmetry section will focus on the different levels of information available to investors. The agency theory section concentrates on the investor's ability and willingness to monitor the management of the issuing firm.

## 2.2.1. Information asymmetry

Information asymmetry is one of the most important reasons for announcement effects besides agency theory according to the research community explaining an extensive corporate finance literature on this topic (Harjoto & Garen, 2003). In the following sections, information asymmetry as an explanation for the announcement effect to private placements is divided into two parts, signaling theory and information hypothesis.

### 2.2.1.1. Signaling theory

Leland and Pyle (1977) argue in their famous signaling model that positive signs of firm value are transferred to the market if insiders increase their equity stake in a firm. Since they base their model on all kind of equity issues and do not concentrate on private placements, their model has to be considered cautiously in the private placement context. In addition, recent studies challenge Leland and Pyle's (1977) signaling theory in general. Hull et al. (2010) cannot confirm Leland and Pyle's signaling model when investigating in particularly short-term abnormal returns to SEOs. They argue that the market reaction does not always depend on the level of insider ownership (Hull et al., 2010). Again, since Hull et al. (2010) investigate all SEO issue types, their findings have to be considered cautiously in the private placement context. However, Molin (1996) who particularly investigates private placements in Sweden, challenges the signaling model as well. He finds out that equity issues are not used as signaling devices since he does not find any significant announcement effect of private placements which are used for financing new projects. However, there is a large positive abnormal return if the private placement proceeds are used for financial restructuring. The signaling effect explaining positive abnormal returns to private placements are therefore not as sophisticated as believed. (Molin, 1996) Hertz and Smith (1993), have a greater focus on private placements with regards to information asymmetry. In the next section their information hypothesis will be presented.

### 2.2.1.2. Information hypothesis

According to the information hypothesis developed by Hertz and Smith (1993), private placements help to solve some of the information asymmetry about firm value between insiders and external investors. They explain this by extending Myers and Majluf's (1984) adverse selection model that management has superior knowledge about a company's true value compared to an external investor. Private placement investors can access at some cost the management's superior knowledge about firm value while negotiating with the

management team. In case a well-informed investor invests in a company through a private placement, the market considers this as a sign of undervaluation and it results in positive abnormal returns. (Hertzel & Smith, 1993) Private placements which are used as a source for external capital by well-informed managers also transfer a positive sign to the market because it can be assumed that a firm has favorable prospects due to investments financed through a capital increase (Hertzel & Smith, 1993; Lee & Kocher, 2001). However, Barclay et al. (2007) challenge the information hypothesis by stating that the information hypothesis together with the monitoring hypothesis only motivate a minority of the positive market reactions to private placements. They argue that managerial entrenchment is more important for motivating private placements than commonly believed (Barclay, et al., 2007).

### 2.2.2. Agency theory

In the following sections, agency theory further explains why firms issue private placements. Several researchers argue that private placements align interests between managers and shareholders (Wruck, 1989; Molin, 1996; Barclay et al., 2007). The presented theory hypotheses are the monitoring hypothesis and the managerial entrenchment hypothesis.

#### 2.2.2.1. Monitoring hypothesis

Wruck (1989) introduces the monitoring hypothesis in the private placement context stating that investors who buy private placements are both willing and competent to monitor management. Wruck assumes that these investors often purchase a significant equity stake giving them access to the firm's board. Thus, management can be monitored closely ensuring to some extent that resources are used efficiently. This in turn can lead to an increase in firm value. Assuming that agency costs are reduced, the market reacts with positive stock prices. Hence, shareholder's wealth is increased meaning that current shareholders are not penalized. (Wruck, 1989)

In contrast, the positive effect of the monitoring hypothesis is not been confirmed by Lee and Kocher (2001). They investigate that firms issuing private placements have lower free cash flows and higher managerial ownership than firms issuing public offerings. Considering that, agency problems between managers and shareholders might therefore not be aligned. (Lee & Kocher, 2001)

#### 2.2.2.2. Managerial entrenchment hypothesis

Dann and DeAngelo (1988) and Wruck (1989) were among the first researchers explaining managerial entrenchment as a reason for issuing private placements and how this could lead to negative abnormal returns. Dann and DeAngelo (1988) consider private placements as a manager's means for avoiding takeovers. As a result, existing shareholders do not have the chance to benefit from favorable takeover bids. Wruck (1989) relates managerial entrenchment more to the general fact of ownership concentration. Negative abnormal returns are generated through the fact that an investor gains a controlling ownership position or for middle range ownership stakes (Wruck, 1989).

Molin (1996) develops the managerial entrenchment hypothesis further and argues that solidified management control is linked to "insider opportunism". The opportunism is arising from self-serving private placement deals done by large existing shareholders or management. Since private placements only address a few investors, the existing non-participating shareholders may be disadvantaged concerning the pricing of the issue. This could lead to a wealth transfer from existing shareholders to new shareholders resulting in negative market reactions. Barclay et al. (2007) confirm Molin (1996) and add that the issuing firm's managers choose investors who do not aim to be actively involved in the company. As a result, the management can solidify their control which might not be positive for existing non-participating shareholders leading to a negative market reaction (Barclay et al., 2007).

In contrast to the managerial entrenchment hypothesis, which is associated with negative market returns, the convergence-of-interest hypothesis by Jensen and Meckling (1976) equity issues predicts positive market reactions. This is because an increase in the ownership concentration of insiders results in aligned interests between managers and shareholders. (Jensen & Meckling, 1976) It is important to mention that conclusions from this study have to be drawn cautiously since this study does not only relate to private placements but all SEOs.

After having presented the relevant theories related to information asymmetry and agency theory, the next section summarizes their predicted announcement effect to private placements.

### 2.3. EMPIRICAL IMPLICATIONS

The following table gives an overview of the previously presented theories and hypotheses and predicts the positive or negative market reaction to the announcement of private placements.

**Table 1:** Empirical implications of abnormal returns predicted by the theory

<b>Hypotheses &amp; mechanisms</b>	<b>Positive</b>	<b>Negative</b>
<b>INFORMATION ASYMMETRY</b>		
<b>Signaling theory</b>		
Leland & Pyle, 1977	✓	
Molin, 1996		✓
Hull et al., 2010		✓
<b>Information hypothesis</b>		
Hertzel & Smith, 1993	✓	
Lee & Kocher, 2001	✓	
<b>AGENCY THEORY</b>		
<b>Monitoring hypothesis</b>		
Wruck, 1989	✓	
Lee & Kocher, 2001		✓
<b>Managerial entrenchment hypothesis</b>		
Jensen & Meckling, 1976	✓	
Dann & DeAngelo, 1988		✓
Wruck, 1989		✓
Molin, 1996		✓
Barclay et al., 2007		✓

After this overview on the abnormal returns predicted by the theory, the exact empirical findings of abnormal returns to private placements are presented and discussed in the following chapter.

### 3. EMPIRICAL FINDINGS OF ABNORMAL RETURNS

*After having presented the most important theories related to private placements and their prediction on the abnormal returns, this chapter focuses on the exact empirical findings on the short-term abnormal returns to private placements. At the end of this chapter, the research hypotheses of this study will be presented. They are developed by combining both the theoretical framework and the empirical findings of abnormal returns.*

#### 3.1. SEASONED EQUITY OFFERINGS

Before focusing on the empirical findings for private placement, the empirical evidence for Seasoned Equity Offerings in general is shortly presented. The announcement effects of SEOs from publicly traded firms have been thoroughly investigated in the USA with an overall agreement on a negative market reaction. Asquith and Mullins (1986) were among the first researchers examining the announcement effects of SEOs from 1963 to 1981 and detect an average stock price decrease of 2% to 3% at the SEO announcement date. Both Masulis and Korwar (1986) and Eckbo and Masulis (1992) confirm an average equity price decrease of around 3% for the time range 1963-1981. These studies mostly focus on public issues since this has been and still is the most dominating issue type in the USA (Molin, 1996).

#### 3.2. PRIVATE PLACEMENTS

Despite dilution effects of private placements and large discounts, private placements in general generate a positive short-term stock price effect investigated by Wruck (1989), Hertz and Smith (1993) and Barclay et al. (2007) for the US and Molin (1996) and Nilsson and Cronqvist (2005) for Sweden as shown in table 2. The results of these studies are statistically significant, however small in magnitude.

**Table 2:** Cumulative abnormal returns for private placements in US & Sweden

Authors	Market	Sample period	Sample size	CAR (-3,0)	CAR (-1,1)	CAR (-1,0)
Wruck (1989)	US	1979-1985	99	4,5%**	-	1,9%*
Hertz and Smith (1993)	US	1980-1987	106	1,7%**	-	-
Molin (1996)	Sweden	1986-1994	76	-	3,2%***	-
Cronqvist & Nilsson (2005)	Sweden	1986-1999	136	-	7,3%***	-
Barclay et al. (2007)	US	1979-1997	594	-	-	1,7%***

The significance level is divided into three levels: \* -10% level; \*\* -5% level; \*\*\* -1% level.

As already shown in chapter 2, the research community explains these positive stock reactions with information asymmetry and agency theory. In addition, several researchers such as Wruck (1989) and Barclay et al. (2007) have proven that the stock price reactions depend on

the buyer's relationships with the issuing firm. Since this study investigates the private placement's relationship with the issuing firm and its effect on the abnormal returns, the empirical findings for the different buyer categories will be presented in the following section.

### 3.3. PRIVATE PLACEMENT BUYERS

The positive short-term stock reaction to private placements depends heavily on buyer type meaning how much the investor is involved in the issuing firm (Barclay et al., 2007). Information asymmetry is here an overall important explanation why there are differences in the stock price reactions depending on the buyer's relationships with the issuing firm. In other words the amount of information the buyer possesses of the true firm value compared to the information available to the market matters. (Wruck, 1989; Barclay et al., 2007) Krishnamurthy et al. (2005) find out that the short-term abnormal returns in private placements are higher when the shares are issued to insider investors compared to other investors. The authors refer to Leland and Pyle (1977) who have already explained that insider investors most probably know more about a firm's future cash flows and the true firm value. Therefore, such an investment can be considered firstly as a certification of firm value and secondly reduces agency problems (Krishnamurthy et al., 2005). This is consistent with Hertz and Smith (1993) who argue that managers have knowledge about investment projects with positive NPVs. In order to realize this investment opportunity, cash in form of an equity issue is raised (Hertz & Smith, 1993).

In this study, we will focus on three different buyer categories: insider; active and passive buyers. Besides these three main categories, for some private placements there is a mix between those buyer categories. In the following section, the three main buyer groups as well as the mixed buyer group are presented. In addition, the empirical findings in terms of abnormal returns are presented for each buyer category.

#### 3.3.1. Insider buyer

An insider buyer is characterized by Barclay et al. (2007) in the private placement context as an investor who is either a manager or a director of the issuing firm. Barclay et al. (2007) find out that insider placements or managerial placements show the lowest short-run abnormal returns (-0,7% but statistically insignificant) of all private placement buyers but the highest discounts.

It is not a surprise that insider buyers who have the highest amount of information available show the lowest positive abnormal returns since insider ownership is not always associated with positive aspects as it has been shown in the managerial entrenchment hypothesis section. Solidified management control can lead to possible self-serving private placement deals by large existing shareholders or management. By issuing private placements at a discount, insiders can especially benefit on private placement deals to themselves. Since the market is also aware of that, this in return leads to negative market reactions. It is therefore assumed that the overall positive market reactions to private placements is somewhat outweighed by this insider opportunism. (Molin, 1996; Barclay et al., 2007)

### 3.3.2. Active buyer

Active buyers are defined as external investors who are both willing and competent to monitor management. This is often another corporation buying a large-percentage of stocks in order to get involved in the firm. (Barclay et al., 2007) Wu (2004) shows that active investors are often institutional investors, such as funds or venture capitalists, who have a certain interest to monitor their portfolio companies.

As already presented in the monitoring hypothesis section, private placements are mainly associated with positive abnormal returns if investors want to monitor. This is consistent with Barclay et al. (2007) who investigate that an active investor is perceived more favorably by the market than passive buyers. They find out that active placements are associated with a positive abnormal return of 5% at a 1% significance level. Those buyers who become active in the issuing company pay more than passive buyers when it comes to discounts of private placements. However, active buyers only made up 12% of their sample and therefore their conclusions have to be considered cautiously. (Barclay et al., 2007)

### 3.3.3. Passive buyer

According to several researchers, private placement buyers are often passive (Wu, 2004; Barclay et al., 2007). Barclay et al. (2007) categorize a private placement as passive when the buyer does not have any reported activity with the issuing firm. Therefore, their amount of information is the most limited of the three buyer categories. Since passive buyers do not participate in the current management, this helps management to solidify their control. As presented in the managerial hypothesis section, this might not be positive for non-participating existing shareholders leading to a negative market reaction. As far as the exact market reaction to private placements of passive buyers is concerned, there are positive short-

term abnormal stock returns of 1,4% at a 5% significance level as investigated by Barclay et al. (2007). However, they challenge this result since only 51% of the returns are positive. It is interesting to mention that their sample consists of more than 80% of passive private placements. Subsequently, it can be concluded that both the monitoring hypothesis and the information hypothesis can only explain a minority of private placements. (Barclay et al., 2007)

### 3.3.4. Mixed buyer

Besides the above presented three main buyer categories, several buyer groups are mixed for some private placements. To our knowledge, there has not been much research on the mixed buyer group related to the private placement context. Yeh and Ma (2012) mention in their study that only main buyer categories should be included in order to obtain more accurate results. Furthermore, Barclay et al. (2007) also include the mixed buyer category in their study.

## 3.4. DEVELOPMENT OF HYPOTHESES

By referring to the previously presented empirical evidence and the theoretical framework of chapter two, the following research hypotheses are developed. The first hypothesis is based on the presented empirical evidence that private placements lead to positive short-term abnormal returns (Wruck, 1989; Hertzels & Smith, 1993) as presented in the following:

*H<sub>1</sub>: The announcement of private placements leads to positive short-term abnormal returns.*

The managerial entrenchment hypothesis motivates our second hypothesis. Private placements to insiders can lead to a solidified management control which is linked to “insider opportunism” (Molin, 1996). Molin explains that the opportunism is arising from self-serving private placement deals done by large existing shareholders or management negative market reactions. To weight up the negative reactions, the signaling theory of Leland and Pyle (1977) is used as an explanation. This is due to their assumption that a positive signal is sent to the market when insiders increase their equity stake. With an emphasis on the managerial entrenchment hypothesis, the second hypothesis is developed:

*H<sub>2</sub>: Insider buyers lead to lower abnormal returns than passive and mixed buyers.*

The third hypothesis is based on the monitoring and information hypotheses. The monitoring hypothesis states that the identity of the buyer influences the abnormal returns. For an active buyer, a high positive abnormal return can be expected as explained by the monitoring hypothesis assuming that active buyers are both willing and competent to monitor management (Wruck, 1989). In addition, the information hypothesis states that a well-informed private placement investor investing in a company, results in a positive market reaction because the market considers this as a sign of undervaluation. These theoretical assumptions lead us to the third hypothesis:

*H<sub>3</sub>: Active buyers are expected to lead to higher abnormal returns than passive and mixed buyers.*

## 4. METHODOLOGY

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*This chapter aims to provide a description of the procedure chosen for carrying out this study. Firstly, the research approach and research design are presented before moving on to the data collection. The used empirical models, the event study and the OLS regression are further presented. This chapter finishes with the validity and reliability sections.*

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### 4.1. RESEARCH APPROACH

The two most common methods in research are the inductive and the deductive research approach. The inductive approach is applied when the results are drawn from research whereas the deductive approach builds up on earlier theories. (Patel & Davidson, 2003) In this study, the deductive approach is used. According to Bryman and Bell (2011) the deductive approach is best suited for developing hypotheses to test the validity of several theories. Therefore, several hypotheses based on the theory have been developed as shown previously. These research hypotheses will be investigated through an event study and an OLS regression which will be later presented in more detail.

### 4.2. RESEARCH DESIGN

According to Lewis et al. (2009) a research can be conducted as exploratory, descriptive or explanatory design. Malhotra and Grover (1998) explain that the purpose of an exploratory research is to become more familiar with an area or problem. A descriptive research has the aim to describe a specific situation or problem, whereas an explanatory is devoted of finding a relationship between variables from theory based expectations (Malhotra & Grover, 1998). The explanatory research is usually used together with quantitative data collection (Lewis et al., 2009). We have chosen an explanatory design since we aim to explain the relationship between abnormal returns and the buyers' relationship with the firm issuing the security in a private placement.

Aliaga and Gunderson (2002) define the quantitative research method as an '*explaining phenomena by collecting numerical data that are analysed using mathematically based methods (...)*'. The quantitative method is chosen in this study since both an event study and a regression are done whereas a qualitative study is rejected since it often lacks objectivity which is highly relevant for statistical analysis than this study.

### 4.3. LITERATURE STUDY

Material has been collected by searching for articles in the journal databases. To get a deeper knowledge in the area being studied, scientific articles and books were selected. Scientific articles undergo a rigorous review process before they are published and can therefore usually be considered to be reliable. It is also important to consider where the article is published since the quality of the publisher can therefore vary. In general, articles get published faster than books and due to this articles contain more recent research. Due to the above mentioned arguments, the theoretical framework mainly consists of scientific articles. The search was performed by discussing key concepts of the topic and then key words were used to find relevant theories. The key words used are: SEO, Seasoned equity offer, Secondary equity offer, announcement effect, abnormal return, private placement, information asymmetry, buyer identity, managerial entrenchment hypothesis, information hypothesis, monitoring hypothesis. This literature review helped then to construct a theoretical framework and the empirical findings chapter on which the research hypotheses are based.

### 4.4. DATA COLLECTION

In this study data has been collected using existing literature, articles, data bases, press releases and annual reports. The specific data selection criteria are explained in the following section.

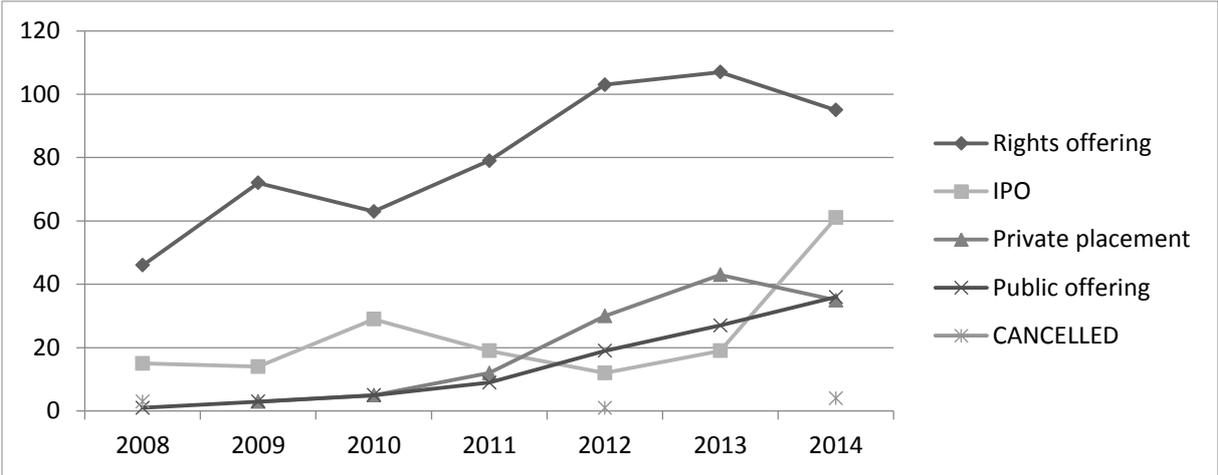
#### 4.4.1. Data selection criteria

Data is gathered from various databases to ensure data quality. There are several stock markets in Sweden. Some are regulated and some have less strict rules which are called Multilateral Trading Facilities (MTF). Our sample consists of observations from the regulated markets NASDAQ OMX Stockholm and NGM Equity, as well as the MTFs including First North, Aktietorget and Nordic MTF. We believe that it adds value and depth to our analysis to include companies from the smaller marketplaces since then we can collect a larger variety of firms. The MTF lists are often market places where companies first list before deciding to be listed on larger regulated markets. Smaller lists are also characterized by a greater SEO activity in the recent years which leads to a larger sample for this study. Transactions containing warrants or options are difficult to value and are therefore excluded in our sample.

We gathered all the SEO's from the mentioned lists above from Nyemissioner.se between 2008 and 2014 and put it into a table. This table served as a basis and then more issues were

added on by identifying SEOs from other sources. One of these was Thomson Reuters Eikon where only SEOs for the time range from 2011 onwards could be identified. Therefore, data was further gathered from the SDC database from Thomson Reuters, the standard database when it comes to equity transactions. Further information was gathered through press releases and annual reports to determine if the issue was cancelled, a public offering, rights offering, a private placement or an IPO. The IPO category also contains the transactions that included a list change. The development of the issue activity is shown in figure 1 and the exact numbers and definitions can be found in the appendix A.

Further information was gathered through press releases and annual reports to determine if the issue was cancelled, a public offering, rights offering, a private placement or an IPO. The IPO category also contains the transactions that included a list change. The development of the issue activity is shown in figure 1 and the exact numbers and definitions can be found in appendix A.



**Figure 1:** Equity issue activities in Sweden between 2008 and 2014

The total sample consists of 970 events. The biggest group is rights offering with 565 events, in second place are the IPO/list change activities with 169 events. The private placements are 128 in total, closely followed by public offerings with 100 events. A small number of the investigated issues were never completed, 8 in total. There are most certainly more issues that are cancelled during this period but they are not captured in our list.

This process produces a sample of 128 private placements. To determine if the issues could be included in our event study we gathered stock prices and announcement days. After that, all private placements with another event such as an IPO, list change or SEO happening within the previous 251 trading days of the announcement day were excluded. This was done to avoid that previous events affect the normal return calculation in the estimation window in the event study. According to MacKinlay (1997), it is important that the estimation window and event window do not overlap otherwise the estimators for the parameters of the normal return model

would be influenced by the returns around the window. By excluding private placement with other event windows in the estimation window we avoid normal return measurements to be biased. Some other events were excluded since the trading day data was not sufficient for creating an estimation window. After all these adjustments, the final event study sample consists of 64 events. This is comparable with the sample size in earlier studies of private placements such as Wruck (1989). Wruck's core analysis involves between 48 and 128 observations. Hertz and Smith (1993) have 106 observations. All the relevant data gathered for the private placements can be found in appendix B.

#### 4.4.2. Categorization of the buyer type

We divide the sample into four different categories: active buyer, insider buyer, passive buyer and mixed buyer. The definitions of the buyers are the same as used by Barclay et al. (2007) and as presented in chapter three.

*Active buyers* are defined as outside investors who are both willing and able to monitor management (Barclay et al., 2007). The words we searched for during the data gathering was: "strategic partner" or "long term commitment". Furthermore, we checked and these investors became larger shareholders with an ownership limit of 10% based on the post issue ownership percentage. *Insider buyers* are investors who are either involved in the management as managers, directors of the issuing firm or large shareholders with more than 10% ownership before the issue. The insider categorization is the strictest one where we have followed the classification drawn up by NASDAQ and Aktietorget. *Passive buyers* are investors, who are not currently involved in the issuing firm, and neither announce they are going to get involved. *Mixed buyers* are private placements including more than one of the abovementioned buyers. By introducing the mixed group, we create the possibility to have exclusive and exhaustive groups. Press releases and annual reports are used to categorize the buyers in the respective category. The categorization is distributed as it can be seen in the following table.

**Table 3:** Private equity placements per buyer in Sweden between 2009 and 2014

Year	All private placements		Active		Insider		Mix		Passive	
	Number	Proceeds	Number	Proceeds	Number	Proceeds	Number	Proceeds	Number	Proceeds
<b>All</b>	<b>64</b>	<b>3 563</b>	<b>27</b>	<b>1 106</b>	<b>8</b>	<b>43</b>	<b>7</b>	<b>84</b>	<b>22</b>	<b>2 330</b>
2009	3	243	2	200					1	43
2010	5	190	1	19	1	3	1	17	2	152
2011	7	109	1	17	2	22	2	41	2	30
2012	19	2 053	8	185	2	7	2	6	7	1 855
2013	17	528	9	369	1	3			7	156
2014	13	439	6	317	2	9	2	20	3	93

The active buyers are the largest group with 27 placements or 42% of the total sample. The passive buyer group is the second biggest group with 22 placements or 34% of the total sample. The insider buyers and the mixed group are the smallest categories.

#### 4.5. EVENT STUDY

After having gathered all relevant data, an event study has been chosen in order to analyse the announcement effect to private placements which relates to the first research hypothesis. According to Binder (1998), the event study methodology has become the standard methodology for measuring the security price reaction to events such as the issue of private placements. This is measured by calculating abnormal returns which is later explained in more detail. Fama et al. (1969) introduce the event study methodology in their paper which is considered as one of the reference methodologies among the research community. This event study methodology offers several advantages. Firstly, it allows testing if the market efficiently considers information as it has been developed by Fama et al. (1969). Secondly, event studies aim to examine the impact of the event on the share price or in other words event studies investigate the effect on the wealth of the firm's shareholders (Binder, 1998). The event study methodology has been developed constantly over time implying that there are different ways of proceeding. However, in the present event study, the approach of MacKinlay (1997) is used since it is considered as one of the most recent reference papers (Eckbo, 2006).

##### 4.5.1. Normal return models

MacKinlay (1997) suggests starting the event study methodology by calculating the abnormal returns. A normal return model is necessary for doing so. There are various approaches available how to calculate the normal return of a security. They can be divided in two categories, the statistical and the economic approach. The statistical models only incorporate statistical assumptions concerning the behavior of asset returns. The underlying assumption is that the asset returns are jointly normal and independently distributed through time. Even if

the distributional assumption is strong, it generally does not lead to problems in practice considering the fact that it is empirically reasonable. Examples for this category are the market model, the market-adjusted return model or the constant mean return model. In contrast to statistical normal return models, economic normal return models are based on both statistical and economic assumptions. Therefore, economic models offer on the one hand the opportunity to calculate the normal returns more precisely but on the other the underlying restrictions are more constrained. (MacKinlay, 1997) The economic normal return model is not further specified since a statistical model, the market model is used for the present event study. The market model is presented in the following section.

#### 4.5.2. Market model

Several event study methodology models have been assessed, but the market model has been chosen for various reasons. Firstly, the market model is known for its simplicity since it is a linear statistical model which assumes a linear relationship between the stock returns and the market returns. Secondly, the market model is the commonly used methodology for investigating stock price reactions to announcements of private placements as it has been used by Wruck (1989), Molin (1996) and Barclay et al. (2007). Thirdly, this model reduces the variance of the abnormal return by removing exactly that portion of the return that is related to the variation in the market's return. The benefit of this variance reduction depends on  $R^2$  since the higher  $R^2$  is, the greater the variation reduction of the abnormal return. (MacKinlay, 1997) The market model formula is presented below.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

$$E(\varepsilon_{it} = 0) \quad \text{var}(\varepsilon_{it}) = \sigma_\varepsilon^2$$

The market model in formula 1 above is for any security  $i$  where  $R_{it}$  is the observed arithmetic daily return for the private placement  $i$  at day  $t$ , whereas  $R_{mt}$  is the return on the market portfolio at day  $t$  (MacKinlay, 1997). Daily returns are said to to perform well with daily stock returns (Brown and Warner, 1985). Furthermore,  $\varepsilon_{it}$  is the zero mean disturbance term. The other variables of the market model namely  $\alpha_i$ ,  $\beta_i$ , and  $\sigma_\varepsilon^2$  are parameters of the market model. The intercept  $\hat{\alpha}_i$  and the coefficients  $\hat{\beta}_i$  are computed by OLS regressions of  $R_{it}$  on  $R_{mt}$ . In other words, both  $\alpha$  and  $\beta$  of each stock are calculated by regressing the return of the stock on every day in the estimation window to the return of the market. This, in turn, provides the

parameters for estimating the normal return for every stock and day in the event window. (MacKinlay, 1997) The parameters are calculated as following:

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_i)(R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_m)^2} \quad (2)$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \quad (3)$$

The market portfolio returns are estimated by means of a linear regression of the company's stock return on the Affärsvärldens Generalindex (AFGX). According to Molin (1996), AFGX is the oldest and most well-known value-weighted index of the Stockholm Stock Exchange. The AFGX has been extracted from Datastream using the OMX Affärsvärldens Generalindex with the shortcut OMXAFGX in Thomson Reuters Datastream.

#### 4.5.3. Event and estimation window

In order to apply the previously presented market model, both the event window and the estimation window have to be defined. The event window is the *'period of interest over which the security prices of the firms involved in this event will be examined (...) including the event announcement'* (MacKinlay, 1997). In other words, it is necessary to define the time period over which the abnormal returns are measured. MacKinlay (1997) further specifies that the event window is commonly defined to be larger than the period of interest including days before and after the event. He specifies that event windows which are too narrow do not fully capture the full effect of the event whereas too broad event windows might capture information and reactions which are not connected to the studied event. For the present event study, the event window is conducted from 1 day before the announcement of the private placement to 1 day after the private placement has been announced. By doing so, the possibility that some information have leaked before the announcement is taken into account. In addition, the possibility that the market needs some time to react is included as well. It is assumed that the event day and one day after the event day is sufficient taking into consideration today's speed of information. The same event window is used by relevant event studies in the private placement field done by Molin (1996) and Cronqvist and Nilsson (2005) in Sweden.

The estimation window, the time period on which the estimation of the normal return is based, has to be fixed as well. A balance in the trade-off between improved accuracy of the parameters ( $\beta$  and  $\alpha$ ) and the possibility of significant parameter shifts over time has to be found. On the one hand, a longer estimation window leads to more accurate parameters but on the other hand this increases the risk that structural breaks such as stock splits have caused the current parameters to be significantly different from the parameters in the past. (MacKinlay, 1997)

For the present event study, an estimation window of 251 days before the event up to 11 days before the event day is chosen. Observations are only included in the sample if the stock is traded during all of the days in the estimation window. This length corresponds approximately one calendar year and is further assumed to be large enough to neutralize any seasonality that could occur during a year and therefore effect the calculations. In addition, data quality checks have been done in order to identify possible structural breaks such as stock splits leading to biased parameters (Skatteverket, 2015). Skatteverket gathers all stock splits for listed companies and it has been used as a source to adjust the stock prices in the calculations. This is consistent with MacKinlay (1997) who insists on the fact that stock splits can influence the data heavily with a long estimation window. Mitigation was done by adjusting for stock splits and making sure that we used adjusted stock price data.

It is important that the event window and the estimation window do not overlap otherwise the estimators for the parameters of the normal return model would be influenced by the returns around the window. The normal return measurement would then be biased since both the returns of the estimation window and the event window would capture the event impact. Subsequently, one of the main assumptions of the event study methodology that the abnormal returns capture the event impact would be violated. (MacKinlay, 1997)

#### 4.5.4. Abnormal returns

After having identified the time windows allowing calculating the normal returns by means of the market model, the abnormal returns can be calculated for the event window. The abnormal return is defined as disturbance term of the market model which is the difference between the actual return and the expected return calculated with the market model. The formula to calculate it is presented in formula 4. (MacKinlay, 1997)

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad (4)$$

In order to draw inferences of the impact of the event, MacKinlay (1997) suggests that the individual abnormal returns have to be cumulated through time and across securities by means of appropriate techniques. This is necessary in order to examine whether the announcement of private placements has an effect on the stock price. The following formula is used for doing so

$$\overline{AR}_\tau = \frac{1}{N} \sum_{i=1}^N AR_{i\tau} \quad (5)$$

where  $N$  is the number of observations and  $AR_{it}$  are the abnormal returns for the individual securities. The variance of the abnormal returns is then calculated by means of the following formula

$$\text{var}(\overline{AR}_\tau) = \frac{1}{N^2} \sum_{i=1}^N \sigma_{\varepsilon_i}^2 \quad (6)$$

where  $\sigma_{\varepsilon_i}^2$  is the disturbance variance which is calculated with formula 7.

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1 - 2} \sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_{m\tau})^2 \quad (7)$$

With a large enough estimation window,  $L_1$  solves the sampling error arising from  $\alpha_i$  and  $\beta_i$  since the sampling error approaches zero meaning that the variance of the abnormal returns is  $\sigma_{\varepsilon_i}^2$  and the abnormal returns become independent through time. (MacKinlay, 1997) Since we use a large estimation window of 240 trading days this sampling error can be assumed to be marginal and can be neglected for our event study. The variance for each firm is then cumulated with formula 8 and the average Cumulative Abnormal Returns is calculated with formula 9.

$$\text{var}(\overline{CAR}(\tau_1, \tau_2)) = \sum_{\tau=\tau_1}^{\tau_2} \text{var}(\overline{AR}_\tau) \quad (8)$$

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2) \quad (9)$$

Finally, inferences about the cumulative abnormal returns,  $CAR$ , are drawn by testing the null hypothesis  $H_0$  that the abnormal returns are zero under the assumption that the daily abnormal returns are normally distributed. The  $H_0$  hypothesis can be tested by the following formula

$$\theta_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{\text{var}(\overline{CAR}(\tau_1, \tau_2))^{1/2}} \sim N(0,1) \quad (10)$$

The cumulative abnormal returns are significant if the  $H_0$  hypothesis can be rejected. It is commonly recommended to test the used normal return model for robustness. Molin (1996) uses the market-adjusted abnormal return model for testing if the private placement's market reaction is not biased by the model used. This can be tested by means of the following formula

$$AR_{it} = R_{it} - R_{mt} \quad (11)$$

The market-adjusted return model can be considered as a restricted market model since the parameter  $\alpha_i$  is zero whereas  $\beta_i$  is one. Since these restrictions could lead to biases, it is generally recommended to use such a restricted model only if necessary as for comparing the results of the market model to another model. (MacKinlay, 1997)

## 4.6. CROSS-SECTIONAL REGRESSION

In order to test the impact of the specific impact of the different buyer categories on the abnormal returns, a cross-sectional regression is done. This can be helpful when it is interesting to investigate how different variables affect an outcome, e.g. how abnormal returns are affected by the type of buyer. The basic approach is to run a cross-sectional regression with abnormal returns as the dependent variable and the characteristics of interest as independent variables. It can be estimated using the widely used Ordinary Least Squares (OLS) regression. In the following the regression and its respective variables are explained.

### 4.6.1. Description of regression variables

The focus is to investigate the effect of the buyer type on the abnormal returns. In this regression several control variables will be included in order to check if other variables also have an effect on the abnormal returns. The regression that will be tested is the following:

$$CAR_{adj} = \alpha_i + \beta_1 * \text{active buyer} + \beta_2 * \text{insider buyer} + \beta_3 * \text{firm size} + \beta_4 * \text{issue size} + \beta_5 * (\text{issue size} / \text{firm size}) + \beta_6 * \text{financial restructuring} + \beta_7 * \text{regulated market} + \varepsilon_i \quad (12)$$

Where  $\alpha_i$  is the intercept of the regression,  $\beta$  is the slope coefficient,  $\varepsilon_i$  is the error term and the rest of the variables are explained in the following text. In the categorization of the buyer type section we defined four different groups of private placement buyers: *active buyer*, *passive buyer*, *insider buyer* and *mixed*. To avoid the dummy variable trap in the regression, we drop the passive buyers and the mixed group and use these variables as our base group. The reasoning is that the abnormal return from the insider should generate the lowest result and the active buyer should generate the highest abnormal return which is consistent with the developed research hypotheses. By dropping both passive and mixed buyers, the regression results can be analyzed through the change from the base groups.

#### 4.6.1.1. Dependent variable

A discount-adjusted abnormal return variable,  $CAR^{adj}$ , is used as the dependent variable for the event window  $\pm 1$  day. The abnormal return from an announcement of a private placement consists of two components; the first is the abnormal return resulting from new information. The second component is the abnormal return representing the compensation of the purchaser for contributing positively to the firm value (Wruck, 1989). In other words, event study results are strongly impacted by pricing effects, which is called compensation to the buyer by Wruck (1989). Therefore, the abnormal return variable is adjusted for discounts. The pricing effects arise from the difference of the offer price of private placements and the market price of the stock on the announcement day. Discounts to private placement investors lead to dilution of current shareholders who do not participate in the private placements deal. The stock market reaction reflects such a dilution effect from the private placement discount. In contrast, premiums to private placements relative to the market price lead to a wealth transfer from new investors to non-participating shareholders (Molin, 1996). By adjusting AR for discounts, the abnormal return reactions without pricing effect can be isolated and we can study the abnormal part that is a result of new information released to the market. To calculate the adjustment the formula used by Molin (1996) is applied as it can be seen in the following:

$$AR_0^{adj} = AR_0 + \frac{\Delta S}{S_0} \cdot \frac{(P_0 - P_{offer})}{P_{-1}}, \quad (13)$$

where  $\Delta S$  is the number of securities of the private placement deal,  $S_0$  is the number of shares before the sale,  $p_{-1}$  is the market price on the day before the announcement,  $p_0$  is the event market price,  $p_{offer}$  is the price of the private placement offer.

The adjusted AR from the event day is added together with the day before and after to get  $CAR^{adj}$ .

$$CAR^{adj} = AR_{-1} + AR_0^{adj} + AR_1 \quad (14)$$

#### 4.6.1.2. Independent variables

In the following section, the chosen independent variables in the regression are explained. They have been chosen by examining respective private placement studies such as those of Wruck (1989), Hertz and Smith (1993), Molin (1996) and Barclay et al. (2007). The different buyers are the variables of interest whereas the other important variables are control variables.

*Active buyers* are outside investors who are both willing and able to monitor management. A dummy variable is used which equals one if the buyer of the private placement becomes active in the company or zero otherwise. *Insider buyers* are investors who are either involved in the management as managers, directors of the issuing firm or a large shareholder with more than 10% ownership. This variable takes a value of one if the buyer is a member of the management prior to the private placement or zero otherwise. In order to make sure that the regression only examines these variables of interest, control variables are included in the regression as explained in the following section.

Several *control variables* are included in the regression since it can be assumed that there are other factors affecting the short-term abnormal returns than the identity of the buyer. That is why control variables are included to check if there are other parameters that are important and if the abnormal results still hold.

*Firm size* is defined as the market value of equity 30 days prior to the announcement. The market value measured as market capitalization has been likewise used by prior studies as a proxy for information asymmetry (Molin, 1996; Barclay et al., 2007). As shown by Asquith and Mullins (1986), the firm size impacts the abnormal returns of an equity issue announcement. It is assumed that information asymmetry is larger in small firms leading to larger information effects (Freeman, 1987; Corwin, 2003).

*Issue size* is measured as the gross proceeds from the private placement offer and is an alternative proxy for size effects. Mikkelsen and Partch (1985) and Asquith and Mullins (1986) discover a significant relationship between issue size and abnormal returns on the

announcement day. This could not entirely be confirmed since other researchers only find a sporadic effect between issue size and announcement effects. They entirely reject any significant impact of issue size on announcement effects (Masulis and Korwar, 1986; Barclay & Litzenberger, 1988; Korajczyk et al., 1990; Barclay et al., 2007).

The relative offer size, defined as *issue size/firm size*, captures the issue size relative to the total market value of the firm prior to an equity offer. Hertz and Smith (1993) show that information effects are large when the degree of undervaluation is high. This is then captured by the relative issue size.

Since private placement offers can also be used for a firm's *financial restructuring*, announcement effects can result from restructuring reasons as it has been tested in previous studies such as those of Molin (1996). A dummy variable is therefore included which equals one if the private placement proceeds are used for a firm's restructuring and zero otherwise.

In this present study both regulated and non-regulated markets are included and we want to control for it. To do this, we include the variable *regulated market*. This is due to the fact that information asymmetry is greater on unregulated marketplaces such as First North; Aktietorget; NGM Nordic MTF. On the non-regulated markets, firms do not face as strict regulations as on regulated markets, Nasdaq OMX Stockholm and NGM Equity (Finansinspektionen, 2015). In case of a private placement offer is made on a regulated market, the dummy variable is one, otherwise zero.

## 4.7. VALIDITY & RELIABILITY

In the following section, validity is discussed for this study. After that the reliability section explains what has been done to ensure that the results can be repeated.

### 4.7.1. Validity

Validity concerns how the factors selected to study a phenomenon really describes the phenomenon (Bryman, 2004). According to Wiedersheim and Eriksson (1991), the term may be divided into internal and external validity. The internal validity is firstly presented making sure that the right phenomena has been investigated in our study. This is followed by the external validity section meaning the degree of which the results can be generalized.

#### 4.7.1.1. Internal validity

The internal validity ensures that the constructed model and gathered capture the reality that exists and if the researcher is studying what she or he believes to study (Wiedersheim & Eriksson, 1991). Our internal validity is mostly affected by the categorization of the buyers. We recognize that the categorization of buyers, as any categorization, has its limitations. The difficulty with repeating the exactly same classification is that the researcher can bias it. If another person would repeat the classification, they might classify some of the buyers in a different way. The insider categorization is the strictest one for which we follow the classification drawn up by NASDAQ and Aktietorget, i.e. to top manager, member of the board, auditor or a larger shareholder holding more than 10% before the private placement or related to one of the above. For the classification of an active buyer we have looked for words as: "strategic partner", "long term commitment" and if they become a larger shareholder with over 10% based on post issue ownership percentage. The definition between active and a passive buyer is heavily dependent on the communicated information. Unless we have misclassified some placements, the classification mistakes should be quite small since we followed strict rules while gathering the data and making the classifications.

#### 4.7.1.2. External validity

The external validity consists of the degree of which the results can be generalized, if the results of the work are applicable to more than one case (Wiedersheim & Eriksson, 1991). If the purpose of a research is to generalize the result over a population, the question is if the sample that is used is appropriate (Lewis et al., 2009). To mitigate this issue, several tests have been conducted on the gathered data to minimize faulty conclusions and generalizations.

In order to test data quality and the power of the results, several empirical results and diagnostics were done. In a study with limited number of observations, which is the case for the present study, the empirical results can be heavily influenced by a few observations only. To avoid skewness of data, any kind of outliers will be excluded. We define outliers as an issue that deviate more than two standard deviations (outside 95 percent of observations) from the mean of the sample. In the empirical results chapter, various tests are made to investigate whether the Ordinary-Least-Square assumptions hold: The Jaque-Berra test is conducted to investigate if the variables are normally distributed. Multicollinearity is checked by examining whether there are correlations between the independent variables. A test for

heteroskedasticity is likewise conducted. It has to be noted that if the underlying OLS assumptions do not hold, inferences on the standard t-test will be less certain (Brooks, 2008).

In empirical corporate finance studies, endogeneity is one of the most important and pervasive issues that have to be controlled for (Roberts & Whited, 2012). In this study we have identified two issues that could lead to endogeneity: omitted variables and selection bias. Regarding omitted variables, there are likely to be factors we have not controlled for leading to omitted variables. Since private placements are motivated by a various amount of reasons according to Barclay et al. (2007), this makes it difficult to include all relevant variables. Selection bias derives from the type of firms issuing a private placement. We assume that firms with specific firm characteristics, e.g. within a certain industry, are more likely to issue private placements leading a non-random selection. We acknowledge the possibility of selection biases and omitted variables and then try to mitigate the effects from them. The selection bias is mitigated to some extent by including all the stock markets in Sweden to get a great variety of companies. For the omitted variables we challenge our result in different regression scenarios to investigate if our variables should be included in our model based on the theory available for private placements.

#### 4.7.2. Reliability

Reliability is according to Merriam (1988) the extent to which the results can be repeated. To ensure the reliability, the work process consisted of thoroughly documenting the research process phases presented in the methodology chapter. This makes it possible to conduct the same study at a later time (Yin, 2003). Our data is collected from well-known databases which are reliable and updated such as Thomson Reuters Eikon, Thomson Reuters SDC, Thomson Reuters Datastream, Nyemissioner, NASDAQ OMX, NGM and Aktietorget. The gathered data is documented and put together in a systematic way in Excel. In order to ensure data quality the authors of this paper had it as a routine to double check each other's work during the whole process.

The methodology concerning the empirical part of this study is described in the following chapter presenting the empirical results of both the event study and the OLS regression.

## 5. EMPIRICAL RESULTS

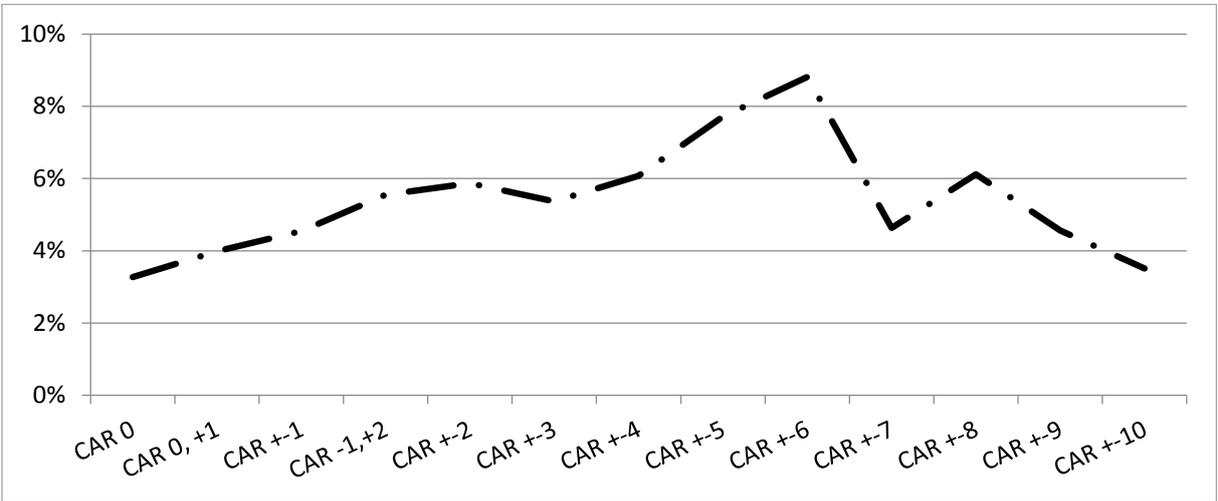
*This chapter provides the empirical results of the research conducted. It starts with the results from the event study meaning the calculations of the adjusted abnormal returns for both the total sample and respective sub-samples. Afterwards, the descriptive statistics and the regression results will be presented.*

### 5.1. EVENT STUDY RESULTS

The event study results are divided in two sections starting with the total sample and then followed by the different private placement buyer categories.

#### 5.1.1. Abnormal returns for total sample

The market-model was used as event-study methodology to study the stock price reaction to the announcements of private placements. The estimation period includes day -251 until day -11, which is approximately one calendar year. Day 0 is the trading day when the announcement actually affected the stock price, e.g. if the information was published after the stock exchange was closed, the next trading day is day 0. Several event windows were cumulated in order to investigate how the cumulative abnormal return (CAR) changes for a different time period. In figure 2, the average CAR is presented as a function of the different event windows.



**Figure 2:** Mean CAR as a function of event windows

The results indicate a positive average abnormal return following the announcement of private placements. In the table below, the average CAR and its respective significance levels are presented for different event windows.

**Table 4:** Cumulative abnormal returns (CAR) for different event windows

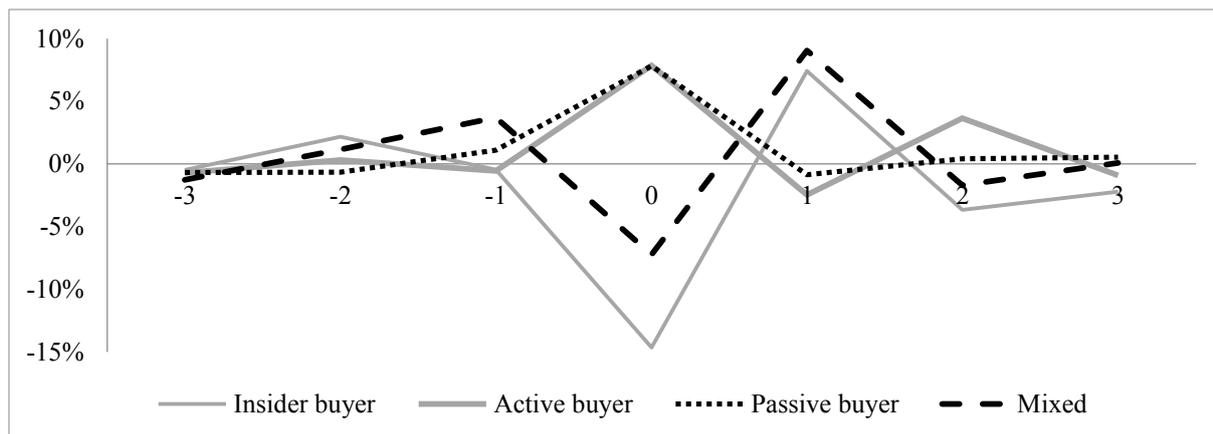
Event window	Variance (mean CAR)	CAR mean	T-statistics	Significance level
CAR 0	0,000	3,3%	1,48	
CAR 0, +1	0,000	4,0%	2,55	**
CAR +-1	0,000	4,5%	2,37	**
CAR -1,+2	0,000	5,6%	2,51	**
CAR +-2	0,001	5,9%	2,37	**
CAR +-3	0,001	5,4%	1,83	*
CAR +-4	0,001	6,1%	1,83	*
CAR +-5	0,001	7,7%	2,10	**
CAR +-6	0,002	8,8%	2,21	**
CAR +-7	0,002	4,6%	1,08	
CAR +-8	0,002	6,1%	1,34	
CAR +-9	0,002	4,6%	0,95	
CAR +-10	0,003	3,5%	0,69	

The significance level is divided into three different levels, t-statistics for 2-tailed test with 63 degrees of freedom in parenthesis: \* - 10% level (1,6706), \*\* - 5% level (2,0003); \*\*\* - 1% level (2,6603).

The null hypothesis tested in the event study is that the event has no impact on the firm value. The t-statistics is calculated by dividing the CAR mean by the root of the variance of CAR mean as described in the methodology chapter. The null hypothesis can be rejected for eight of the event windows because of significant results. When only including both the event day or  $\pm 7$  days and more, the event study results are no longer significant. All calculations of abnormal returns for the event study can be found in appendix C. To check the robustness of the event study results, we also use the market-adjusted abnormal return model to test if the market reaction is biased by the model used. The results from the market-adjusted abnormal return model are consistent with the results from the market model. A comparison is included in appendix D.

### 5.1.2. Categorization per buyer group

The aggregated results of all private placements hide considerable differences among the private placement buyers. Dividing the event study results in the different buyer groups gives more nuanced results. This helps to identify patterns which have not been recognized in the total sample. In figure 3 the aggregated abnormal returns per private placement buyer group is presented for three days before and three days after the event day.



**Figure 3:** Abnormal returns aggregated per event day

Aggregated, market-model abnormal stock returns for 64 private placements in Sweden between 2009 and 2014. Day 0 is the announcement day of the placement or the day after the press release was done after the stock exchange was closed.

The graph shows that insider buyer results in a very negative stock price reaction on the event day and the mixed group follows the same pattern. Both passive and active buyers show a positive stock price reaction on the announcement day. More details about the aggregated abnormal returns per day and buyer can be found in appendix E. For the event window  $\pm 1$  day the cumulative abnormal returns per buyer group and its significance levels are presented in the table below.

**Table 5:** CAR per buyer over event window:  $\pm 1$  day

Buyer	Insider buyer	Active buyer	Passive buyer	Mixed
Degrees of freedom	7	26	21	6
Var(meanCAR)	0,0031	0,0012	0,0004	0,0050
CAR mean	-7,68%	4,83%	8,06%	6,33%
T-statistics	-1,3874	1,4053	3,9507	0,8958
Significance level			***	

Degrees of freedom are calculated by taking the number of events -1. The significance level is divided into three different levels, t-statistics for 2-tailed test with different degrees of freedom: \* - 10% level \*\* - 5% level; \*\*\* - 1% level.

The passive buyer group is the only group showing a significant result with a mean of 8,06% at a 1% significance level. The announcement effect for the active and the mixed buyers is positive while it is negative for the insider buyers. Since the results for those three buyer groups are insignificant and small in number of events for both the insider and mixed buyers, no strong conclusion can be drawn.

## 5.2. DISCOUNTS AND PREMIUMS

Discounts and premiums can influence the abnormal returns heavily. To understand how much we will have a closer look at our sample. In the following sections the discounts and premiums will be presented, firstly for the total sample and then for the different market places.

### 5.2.1. Pricing of total sample

Firstly, the discounts and premiums are presented for the total sample. Table 6 gives an overview on the total sample by comparing the closing price of the event day with the issue price. A negative number (-) indicates a premium and a positive number (+) a discount.

**Table 6:** Discounts and premiums per buyer

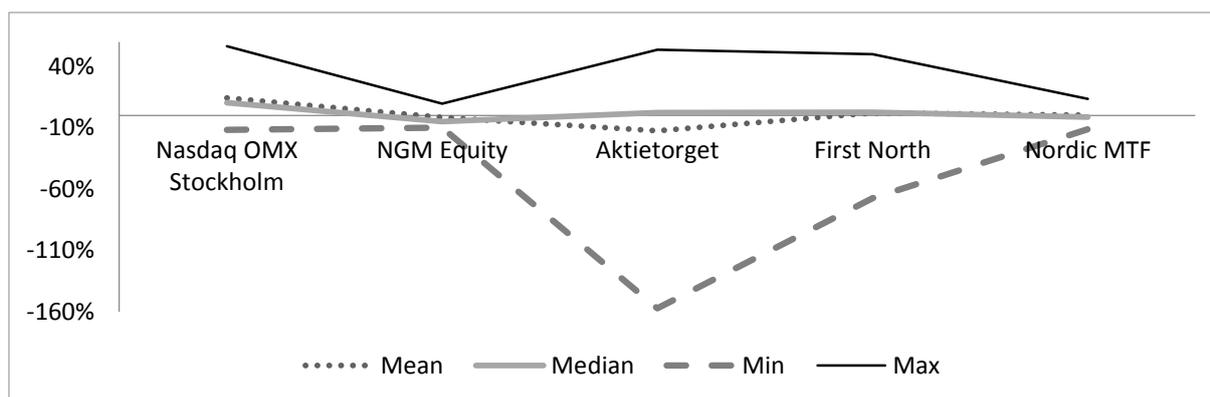
	All buyers (n=59)	Insider buyers (n=7)	Active buyers (n=25)	Passive buyers (n=21)	Mix buyers (n=6)
# Premium	25	5	9	8	3
# Discount	34	2	16	13	3
Mean	-2%	-2%	-3%	4%	-12%
Median	3%	-10%	5%	5%	2%
Min	-157%	-31%	-130%	-53%	-157%
Max	56%	56%	54%	44%	50%

Discount is the per share closing price of the placement on the announcement day minus the offer price and then put in relation to the announcement day price (Barclay et al, 2007).

The data in table 6 suggests that the pricing of private placements varies with the buyer category. This is yet another of several empirical findings that differ across the four categories of private placements. The passive buyer is the only group that on average gets a discount and the other groups have to pay a premium. Since there is a big difference between the minimum and maximum values, the average number might be a bit misleading. It is therefore necessary to consider both the median and the number of events. It can be seen that for most of the buyers the number of discounts is bigger than the number of premiums. About 60% of the total sample gets a discount. This is reflected in the median number which is higher than the average.

### 5.2.2. Differences between market places

The smaller market places are characterized by more illiquid stocks and prices under 1 SEK according to our sample. On smaller market places a small change in the price can result in a big premium or discount. The following figure shows the discounts and premiums for the five analysed market places. A detailed table with the discounts and premiums and divided per market can be found in appendix F.



**Figure 4:** Discount and premium per market

The discount is the per share closing price of the placement on the announcement day minus the offer price and then put in relation to the announcement day price (Barclay et al, 2007). A negative number (-) indicates a premium and a positive number (+) a discount. Total number of events is 59, divided per market the number is: 12 on NASDAQ Stockholm; 3 on NGM Equity; 24 on Aktietorget; 17 on First North; 3 Nordic MTF.

It can be seen that there is a big difference in the discounts or premiums for most of the market places. For Aktietorget these values are even more extreme. This market place has a lot of stock which is traded under 1 SEK, which means that a small difference between the stock price and offer price results in some extreme values. The most extreme minimum values are -130% and -157% as presented in figure 4. More details about the prices can be found in appendix F.

### 5.3. ADJUSTMENTS OF ABNORMAL RETURNS

This section explains how the data is adjusted for discounts and premiums. This is done to draw conclusions from the regression focusing on the information and not on the pricing effect.

#### 5.3.1. Adjustment for discounts

As described in the methodology chapter, the cumulative abnormal returns (CAR) from the event study within the event window  $\pm 1$  day will be adjusted for discounts and premiums. In the table below, the adjustments are presented and a more detailed calculation can be found in appendix G.

**Table 7:**  $CAR_{adj}$  for discounts and premiums over the event window:  $\pm 1$  day

	All buyers (n=64)	Insider buyers (n=8)	Active buyers (n=27)	Passive buyers (n=22)	Mix buyers (n=7)
Mean	6,29%	-9,18%	6,13%	9,84%	13,48%
Median	1,04%	-5,18%	5,50%	1,74%	2,12%
Min	-93,21%	-93,21%	-60,72%	-13,04%	-27,72%
Max	125,75%	40,93%	66,93%	125,75%	84,96%

The average CAR for the whole sample was 4,5% and after adjusting for discounts and premiums it changed a lot, to 6,29%.

### 5.3.2. Adjustment for outliers

The skewness of the event study data is minimized by excluding outliers in order to have a better dependent variable for the regression. We define it as an event with an abnormal return that deviates more than two standard deviations from the mean of the sample. When analyzing the data, this definition can be applied to five events. A more detailed description of the outliers can be found in appendix H. After excluding these outliers, the sample consists of 59 events and the adjusted data is presented in the table below.

**Table 8:** CAR<sub>adj</sub> after adjustment for outliers over the event window:  $\pm 1$  day

Buyer	All	Insider buyer	Active buyer	Passive buyer	Mixed
Degrees of free.	58	7	24	20	5
Var(meanCAR)	0,0004	0,0030	0,0013	0,0004	0,0056
CARmean	4,64%	2,87%	5,82%	3,94%	2,52%
T-statistics	2,3379	0,5258	1,6232	1,9289	0,3356
Significance level	**			*	

Degrees of freedom are calculated by taking the number of events -1. The significance level is divided into three different levels, t-statistics for 2-tailed test with different degrees of freedom: \* - 10% level \*\* - 5% level; \*\*\* - 1% level.

After adjusting for outliers, the CAR of the total sample changed a lot again. It changes from 6,29% to 4,64% after the adjustment and the total sample is still significant at a 5% level. The big change is within the different buyer groups. Insider buyer changes from a very negative CAR of -9,18% to a more modest one of 2,87% after adjustments. The CAR for the active buyers decreases from 6,13% to 5,82%. The CAR for both the passive buyers and the mixed buyers decrease heavily from 9,84% to 3,94% and 13,48% to 2,52%.

## 5.4. DESCRIPTIVE STATISTICS AND TESTS OF REGRESSION VARIABLES

In this section the main regression variables will be evaluated by examining the quality of the gathered data. A normality and multicollinearity test are conducted.

### 5.4.1. Normality test

Firstly, the mean, median, minimum, maximum and the distribution of the variables are examined as it can be seen in the following table.

**Table 9:** Descriptive statistics of the main regression variables

	<b>CARadj</b>	<b>FIRM SIZE (ms ek)</b>	<b>LN FIRM SIZE</b>	<b>ISSUE SIZE (ms ek)</b>	<b>LN ISSUE SIZE</b>	<b>ISSUE DIVIDED BY FIRM SIZE</b>	<b>LN ISSUE DIV FIRM SIZE</b>
Mean	4,73%	963,1	4,72	60,1	2,42	0,15	-2,30
Median	0,87%	106,4	4,67	8,8	2,17	0,10	-2,31
Maximum	48,04%	20 888,4	9,95	1 577,7	7,36	0,92	-0,08
Minimum	-27,72%	1,8	0,59	0,3	-1,39	0,00	-5,38
Std, Dev,	0,16	3 389,98	1,94	208,46	1,79	0,16	1,02
Skewness	0,82	4,99	0,42	6,73	0,21	2,53	-0,61
Kurtosis	3,43	27,40	3,33	49,29	2,82	11,47	3,92
Jarque-Bera	7,07	1 708,41	1,97	5 712,19	0,54	239,22	5,78
Probability	3%	0%	37%	0%	77%	0%	6%

The variables are: *CARadj* is the abnormal return adjusted for discount; *firm size* is the is firm size in millions of SEK measured by taking the stock price 30 days prior to the announcement times the number of outstanding shares; *ln firm size* is the is the logged firm size variable; *issue size* is the logged issue variable in millions of SEK; *issue size* is the proceeds from the private placements before deducting costs in millions of SEK; *ln issue size* is the logged issue variable in millions of SEK; *issue divided by firm size* is exactly what is says, the issue size divided by the firm value 30 days prior to the issue; *ln issue div firm size* is the logged variable of issue divided by firm size.

For  $CAR_{adj}$ , the mean value is much higher than the median which indicates that most of the events are negative or close to zero. The high mean is the result of some high values that push up the value. The Jarque-Bera test rejects the null of normality for all variables meaning that none of the variables are normally distributed in the original test. After logging firm size, issue size and the issue divided by firm size, the probability improved from zero to a higher number. Taking logs makes the extreme values in the right tail much closer to the main density of the distribution. The effect in the left tail is basically the opposite, so the distributions become more symmetric. By doing so, *ln issue size* is closer to being normally distributed but for *ln firm size* and *ln issue divided by firm size*, the Jarque-Bera test is still strongly rejected. Not having normally distributed variables is a limitation to the results but by using the logged variables instead, some of the problems will be mitigated.

#### 5.4.2. Multicollinearity test

Before running the regression, all the included independent variables should be investigated for multicollinearity issues. The multicollinearity test is done to make sure that the independent variables are not correlated. The result from this test is presented in the table below.

**Table 10:** Correlation matrix

Correlations	LN FIRM SIZE	LN ISSUE SIZE	LN ISSUE DIV FIRM SIZE	INSIDER BUYER	ACTIVE BUYER	FIN RESTR	REG MARKET
LN FIRM SIZE	1,00						
LN ISSUE SIZE	0,85***	1,00					
LN ISSUE DIV FIRM SIZE	-0,40***	0,13	1,00				
INSIDER BUYER	-0,18	-0,19	0,01	1,00			
ACTIVE BUYER	-0,03	0,05	0,15	-0,31**	1,00		
FIN RESTR	-0,17	-0,18	0,01	-0,05	0,08	1,00	
REG MARKET	0,54***	0,46***	-0,22*	0,15	-0,11	-0,19	1,00

The significance level is divided into three different levels: \* - 10% level \*\* - 5% level; \*\*\* - 1% level.

There is a high correlation of 85% between the logged variable of firm size and issue size which is significant at a 1% level. Given this high correlation, it does not make sense to include both variables in the regression since the regression can become very sensitive to small changes in its specification. Additionally, it makes it more difficult to make reliable overall inferences from the regression. We believe that issue size has a bigger explanation factor for the market reaction to the private placement announcement. Since issue size is also more normally distributed, this variable is kept.

## 5.5. REGRESSION RESULTS

After data adjustments and descriptive tests, in this section we will focus on the multiple regression results presented in table 11. This allows us to study more closely the variables and their effect on the abnormal returns. The dependent variable in this regression is the cumulative adjusted abnormal return,  $CAR_{adj}$ , taken from the event study. In addition to the insider and active buyer, we include several control variables to filter out any other information that is released in an announcement.

### 5.5.1. Initial regression output

As a result of adjustments to the normality and multicollinearity tests, the following regression specification is used. The regression results are presented in table 11.

$$CAR_{adj} = \alpha_i + \beta_1 * \text{active buyer} + \beta_2 * \text{insider buyer} + \beta_3 * \text{LN(issue size)} + \beta_4 * \text{LN(issue size/firm size)} + \beta_5 * \text{financial restructuring} + \beta_6 * \text{regulated market} + \varepsilon_i \quad (15)$$

**Table 11:** Regression of abnormal returns for private placements in Sweden 2009-2014

<b>Dependent variable: CARadj</b>	<b>Coefficient</b>	<b>t-Statistic</b>	<b>Prob.</b>
Insider buyer	-3,27%	-0,447	0,66
Active buyer	2,30%	0,504	0,62
LN (issue size)	-1,08%	-0,732	0,47
LN (issue size divided by firm size)	1,83%	0,805	0,42
Regulated market	4,91%	0,808	0,42
Financial restructuring	-0,30%	-0,066	0,95
Intercept	9,84%	1,248	0,22
R-squared	0,028		
Observations	59		

The dependent variable is the market-model cumulative abnormal stock returns from 1 day before to 1 day following the initial public announcement of the placement adjusted for discounts. The main variables of interest are insider buyer and active buyer. The omitted groups are passive and mixed buyers.

The output from the OLS regression indicates that the coefficient for insider buyers is negative compared to the base group consisting of mixed and passive buyers while it is positive for active buyers. The coefficient for the regulated market (4,91%) and for the issue size divided by firm size (1,83%) are positive while the coefficients for the issue size (-1,08%) and for financial restructuring (-0,30%) are negative. However, none of the variables in this regression are significant. This means that we should not pay too much attention on the exact numbers but instead we interpret if the coefficients are positive or negative. It can be seen that the fit of the regression to the data is very low since  $R^2$  is only of 2,8% meaning that only about 3% of the variations are explained by the regression.

### 5.5.2. Heteroskedasticity test

In order to challenge the regression, the heteroskedasticity test is done which investigates whether the variance of errors is constant. The test uses the squared residuals as a proxy for the variance of the error terms. The null hypothesis of homoskedasticity is that the coefficients for the independent variables are jointly zero. If the test statistics is greater than the critical value, the null hypothesis can be rejected. The following table shows our results.

**Table 12:** Heteroskedasity Test (White Test)

F-statistic	2,706	Prob, F(22,36)	0,0039
Obs*R-squared	36,766	Prob, Chi-Square(22)	0,0251
Scaled explained SS	40,057	Prob, Chi-Square(22)	0,0106

The test is rejected and due to this we can suspect that we have heteroskedasticity issues meaning that the standard errors could be too big or too small and therefore leading to incorrect inferences. To mitigate this, the variables can be logged or the standard errors can be corrected for heteroskedasticity. Since all non-dummy variables are already logged, the

standard errors will be corrected. When doing so, the results do not differ that much from the original regression. More details on this test can be found in appendix I.

### 5.5.3. Regression robustness tests

To further challenge the regression, since all the variables were insignificant in the initial regression, several scenarios will be tested. While constructing the model used for testing our hypotheses, several assumptions were made. In this section, multiple regressions are run with a slight modification in order to test the regression for robustness. The following table gives an overview on the different regressions.

**Table 13:** Regression of abnormal returns for private placements in Sweden 2009-2014

Dependent variable:	Initial regression		Excl financial industry		Multiple announcements		Including outliers		Excluding mixed buyers		Change base group		Another event window	
	Coefficient	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
<b>CARadj</b>														
Insider buyer	-3,3%	0,66	-7,1%	0,33	-10,9%	0,19	-20,6%	0,11	-6,0%	0,42	-4,4%	0,57	-9,0%	0,22
Active buyer	2,3%	0,62	0,0%	0,99	0,0%	0,99	-5,0%	0,54	0,7%	0,88	1,1%	0,82	4,4%	0,34
Mixed buyer											-4,5%	0,58		
LN (issue size)	-1,1%	0,47	-2,4%	0,12	-1,4%	0,34	-0,2%	0,93	-2,0%	0,19	-1,2%	0,44	-1,4%	0,33
LN (issue size divided by firm size)	1,8%	0,42	4,3%*	0,09	1,8%	0,43	0,9%	0,81	2,9%	0,25	2,2%	0,36	1,4%	0,53
Firm size														
Regulated market	4,9%	0,42	7,8%	0,20	8,0%	0,22	1,6%	0,88	6,8%	0,26	4,7%	0,45	7,6%	0,21
Financial restructuring	-0,3%	0,95	1,7%	0,70	0,4%	0,94	0,1%	0,99	0,9%	0,84	-0,1%	0,99	-1,2%	0,79
Intercept	9,8%	0,22	19,5%**	0,03	11,2%	0,16	13,2%	0,33	15,25%*	0,10	12,0%	0,18	7,6%	0,33
R-squared	0,03		0,09		0,06		0,05		0,06		0,03		0,08	
Adjusted R-squared	-0,08		-0,03		-0,07		-0,05		-0,07		-0,10		-0,03	
Prob(F-statistic)	0,956		0,616		0,824		0,819		0,828		0,967		0,635	
Observations	59		54		51		64		53		59		59	

The significance level is divided into three different levels and marked in the table with: \* for 10% level \*\* for 5% level; \*\*\* for 1% level.

Most of the regressions are consistent with the results from the initial regression. Three findings are noteworthy. Firstly, there are still no significant results for the buyers. The only result which is consistent for all regressions is the insider buyer, having a negative coefficient in relation to the base group. Secondly, using a different event window decreases the p-value for most variables and the results are similar to the initial regression. Thirdly, the results were heavily affected by the excluded outliers especially for the active buyer. Below follows a motivation for testing the different scenarios and a description per scenario of the results compared to the initial regression.

#### 5.5.3.1. Excluding financial industry

The first test excludes financial institutions since it is argued that financial institutions work under different business circumstances. In our sample, there are five events of financial institutions announcing a private placement. The result is mostly consistent with the initial regression. The most noteworthy finding is that the coefficient for active buyer is now 0% compared to 2,3% in the initial regression and that would indicate that there is no difference between the base group and active buyers. This regression has one significant variable which is the logged variable of issue size divided by company size.

#### 5.5.3.2. Excluding multiple SEO announcements

When the company announces a private placement, sometimes they publish that another issue type is done simultaneously. As explained in the empirical findings, SEO announcements lead in general to negative market reactions. In case that a rights issue or a public issue is announced at the same time as a private placement, the announcement effect of the private placements could be affected. By challenging our regression for such events, we exclude the events with multiple issue types at the same time. This is consistent with Wruck (1989) who does the same in her study. The results are very similar to the initial regression and still no significant variables. The active buyer coefficient is 0%, and the insider buyer coefficient is -10,9% compared to -3,3% in the initial regression.

#### 5.5.3.3. Including outliers

When excluding outliers, our assumption was that they would disturb the results of the regression and might lead to faulty coefficients. It can clearly be stated that including outliers leads to very different results. The biggest difference is that in this regression the active buyer category has a coefficient of -5% compared to the initial regression where it is 2,3%. This would lead to a different conclusion when testing the hypothesis.

#### 5.5.3.4. Excluding mixed buyers

According to Yeh and Ma (2012) only main buyer categories should be included in order to obtain more accurate results. The main categories are insider, active and passive buyers. To test if this changed our regression output, the six events with mixed buyers were excluded. Compared to our initial regression the results only changed for the intercept which is now significant at a 10% level.

### 5.5.3.5. Change of the base group

In our model we included both the mixed group and passive buyers in the base group of the regression. With this test we want to investigate whether there is a difference by only including passive investors in the base group. The result shows that the mixed group has a negative coefficient and would then result in a lower abnormal return than the passive buyers. For both insider and active buyers the results are consistent with the initial regression.

### 5.5.3.6. Other event window as dependent variable

The same event window, namely (-1,0), that was used by Barclay et al. (2007) will be applied to our regression. We will not test the event window of (-3,0) that Wruck (1989) and Hertz and Smith (1993) used since it does not produce significant results in our event study. The table with the different event windows can be found in the theoretical framework. Below the additional event study results are presented.

**Table 14:** Cumulative abnormal returns for two new event windows

Event window	Variance		T-statistics	Significance level	CARadj mean
	(mean CAR)	CAR mean			
CAR -1, 0	0,000	3,11%	1,92	*	3,20%
CAR -3, 0	0,001	2,29%	1,00		2,38%

The significance level is divided into three different levels: \* - 10% level \*\* - 5% level; \*\*\* - 1% level. The number of events is 59, i.e. the outliers identified earlier are excluded here as well.

The results of using a different event window are that the p-values are lowered. The coefficients generate roughly the same results as in the initial regression that had much higher p-values. The result tells us that it makes sense to run the regression with other event windows than the  $\pm 1$  day  $CAR_{adj}$  used in the initial regression. In the next section all significant event windows will be tested.

### 5.5.4. Regression for all significant event windows

In the table below the regression is presented for all the significant event windows from the event study. This is to investigate if the significance of the variables is changing depending on the number of days included. All dependent variables are adjusted for discounts.

**Table 15:** Cumulative abnormal returns for two new event windows

<b>Dependent variable:</b>	<b>CARadj (-1,1)</b>	<b>CARadj (0,1)</b>	<b>CARadj (-1,2)</b>	<b>CARadj (-2,2)</b>	<b>CARadj (-3,3)</b>	<b>CARadj (-4,4)</b>	<b>CARadj (-5,5)</b>	<b>CARadj (-6,6)</b>
	Coefficient	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Insider buyer	-3,3%	-0,2%	-8,1%	-8,4%	-3,2%	-16,64%*	-22,12%**	-22,71%*
Active buyer	2,3%	5,4%	3,7%	3,3%	8,1%	5,9%	5,6%	2,6%
LN (issue size)	-1,1%	-0,3%	-1,2%	-2,96%*	-1,1%	-2,5%	-3,49%*	-4,28%*
LN (issue size divided by firm size)	1,8%	0,0%	2,2%	3,9%	2,1%	3,0%	4,5%	3,4%
Regulated market	4,9%	3,6%	5,7%	11,13%*	5,8%	8,5%	8,9%	6,7%
Financial restructuring	-0,3%	-6,5%	-7,2%	-7,5%	0,1%	-3,0%	-6,4%	-10,9%
Intercept	9,8%	2,4%	11,5%	18,38%**	7,0%	15,72%*	24,20%**	26,76%*
R-squared	0,03	-0,06	0,07	0,11	0,07	0,13	0,16	0,11
Adjusted R-squared	-0,08	0,15	-0,04	0,01	-0,04	0,03	0,07	0,01
Prob(F-statistic)	0,956	0,373	0,678	0,399	0,719	0,287	0,143	0,373
Observations	59	59	59	59	59	59	59	59

The significance level is divided into three different levels: \* - 10% level \*\* - 5% level; \*\*\* - 1% level.

The results show that the insider buyer variable becomes significant for three of the larger event windows. The control variable, LN(issue size), generates significant results for the two largest windows and the intercept is also significant for some windows compared to the initial regression. By testing larger event windows the insider buyer variable shows statistically significant lower abnormal returns compared to passive and mixed buyers. By completing the description of the empirical results we can now move on to the analysis chapter.

## 6. ANALYSIS AND DISCUSSION

*In this chapter both the empirical results of the event study and the regression are analysed and set in a context. Similarities and differences of the results compared with the theoretical framework and previous empirical findings are identified and discussed. By doing so, the developed research hypotheses are either confirmed or rejected.*

### 6.1. ABNORMAL RETURNS

The first part of the analysis relates the empirical results of the event study to the theoretical framework. By doing so, the first research hypothesis is answered. For this purpose the total sample and the different buyer groups are analysed separately.

#### 6.1.1. Event study results for total sample

Our first research hypothesis  $H_1$  states that the announcement of private placements leads to positive short-term abnormal returns. As described in the empirical findings chapter, previous studies have resulted in positive short-term abnormal returns to private placements both in the US (Wruck, 1989; Hertzal & Smith, 1993) and in Sweden (Molin, 1996; Cronqvist & Nilsson, 2005). However, the stock price reactions of previous studies differ heavily in magnitude. The table below sums up previous findings compared to the result of the event study in this thesis.

**Table 16:** Comparing our results to previous findings of short-term AR

Authors	Market	Sample period	Sample size	CAR (-3,0)	CAR (-1,1)	CAR (-1,0)
Wruck (1989)	US	1979-1985	99	4,5%**	-	1,9%*
Hertzal & Smith (1993)	US	1980-1987	106	1,7%**	-	-
Molin (1996)	Sweden	1986-1994	76	-	3,2%***	-
Cronqvist & Nilsson (2005)	Sweden	1986-1999	136	-	7,3%***	-
Barclay et al. (2007)	US	1979-1997	594	-	-	1,7%***
Into & Treyer (2015)	Sweden	2009-2014	59	3,11%*	4,64%**	2,29%

The significance level is divided into three levels: \* -10% level; \*\* -5% level; \*\*\* -1% level.

Our event study results in the empirical results chapter show that there are positive abnormal returns for the event window (-1,1) of 4,64% for the whole sample which are statistically significant at a 5% significance level. Hypothesis  $H_1$  can thus be confirmed. By comparing the different event windows our cumulative abnormal returns can be compared to other studies to some extent. Nevertheless, it is difficult to compare the results since the different studies distinguish among other in sample size, firm characteristics and market settings. To improve comparability, the same methodology as the mentioned authors in table 15 has been applied to our sample. By doing so, the results become more comparable. Our findings for

CAR (-3,0) range between the previous studies which is likewise the case for CAR (-1,1). However, for CAR (-1,0) our findings are higher than those investigated by previous studies but also insignificant.

### 6.1.2. Private placement buyers

Information asymmetry and agency theory is explained by the research community to impact the short-term abnormal returns differently for each buyer group. By analysing the event study results and comparing them to the theories, a first step can be taken to investigate if the theoretical assumptions hold.

**Table 17:** CAR after adjustment for outliers over the event window:  $\pm 1$  day

Buyer	All	Insider buyer	Active buyer	Passive buyer	Mixed
Degrees of free.	58	7	24	20	5
Var(meanCAR)	0,0004	0,0030	0,0013	0,0004	0,0056
CARmean	4,64%	2,87%	5,82%	3,94%	2,52%
T-statistics	2,3379	0,5258	1,6232	1,9289	0,3356
Significance level	**			*	

Degrees of freedom are calculated by taking the number of events -1. The significance level is divided into three different levels, t-statistics for 2-tailed test with different degrees of freedom: \* - 10% level \*\* - 5% level; \*\*\* - 1% level.

Active buyers show the highest average CAR (5,82%) while insider buyers (2,87%) and mixed buyers (2,52%) show the lowest ones. According to Barclay et al. (2007), positive results are expected for active buyers who are perceived more favourably by the market than passive buyers which is consistent with our results. Comparing our results for the passive buyers with those of Barclay et al. (2007), we find likewise that passive buyers have higher average CAR than insider buyers. Both Barclay et al. (2007) and we find that the passive buyer group is the only group showing significant results.

Insiders together with the mixed buyers show the lowest abnormal returns among the different buyer categories. The low insider CAR is consistent with Barclay et al. (2007) which investigate for insiders a result of -0,7%, however statistically insignificant. The portion of insiders is about the same in both studies, we have 14% insiders in our sample which is likewise the case for Barclay et al.'s (2007) sample with 13%. There are no previous results for mixed buyers on abnormal returns. Since we have insignificant results and a small sample, it makes it difficult to draw any general conclusions. The average CAR for the mixed buyers are the lowest (2,52%) in the whole sample which is a bit surprising since one could expect that the average CAR for mixed buyers is close to the average CAR of the whole sample (4,64%).

Our results of the event study divided per buyer are a first indication that there are differences among the different buyer groups. In order to find out if the presented theories apply to this study, it is not enough to do only an event study. By analysing discounts and premiums, as well as regressions, more sophisticated insights can be gained.

## 6.2. DISCOUNTS AND PREMIUMS

Our results show that private placements are on average made at a premium to the stock price which contrasts previous studies such as those of Wruck (1989), Hertz and Smith (1993) and Barclay et al. (2007) who all find discounts. Our findings are not straightforward because the majority of the private placement buyers, 58% in our sample, gets a discount. When analysing the different buyer categories, Barclay et al. (2007) state that insiders can benefit from self-interested private placement deals by issuing private placements at a discount. However, our results do not confirm that since insiders pay on average a premium in our sample. Our results show that the active buyers pay more than the passive buyers which is however consistent with the theory.

The effect from the discount or premium on the abnormal returns is filtered out in order to enable us to study the effect from the information asymmetry and agency theories on the AR for the different buyers. This is also done by Molin (1996) and Wruck (1989) but not by Barclay et al. (2007). By doing so, we add another dimension to Barclay et al.'s paper, which is one of the reference papers for this study.

## 6.3. INTERPRETATION OF REGRESSION RESULTS

This section is divided in two parts, to reject or confirm the second and third hypothesis. The first section evaluates if insider buyers have the lowest abnormal returns. The second section discusses if the active buyers have the highest abnormal returns.

### 6.3.1. Insider buyers show the lowest abnormal returns

The second hypothesis  $H_2$  states that insider buyers have lower abnormal returns than passive and mixed buyers. In our regression, we find that insider placements have the statistically significant lowest adjusted abnormal returns for larger event windows. This is confirming the hypothesis. When running the original regression for a narrow event window we do not get significant results. We challenged if the  $\pm 1$  day event window was the most appropriate event

window to study the market's reaction to different private placement buyers. By doing so and testing larger event windows as the dependent variable, significant results were obtained.

The announcement effect to insider buyers is described in the theory as a mix between the positive reaction from the signalling theory from Leland and Pyle (1977) and negative reactions due to managerial entrenchment as described by Molin (1996) and Barclay et al. (2007). With our results in mind the market's reaction can best be explained by the managerial entrenchment hypothesis stating that there is a risk for insider opportunism when private placements are directed to insiders. The theory is that they are trying to benefit from deal on the behalf of the current shareholders leading to a wealth transfer (Molin, 1996). The positive effect from Leland and Pyle's (1977) signalling theory is weak. The theory highlights that when insiders increase ownership, it transfers a positive signal to the market. The negative impact in our regression of insider buyers compared to mixed and passive buyers does not support Jensen and Meckling's (1976) convergence-of-interest theory. They argue that increased insider ownership leads to more aligned interests between managers and shareholders and therefore results in positive market reactions.

### 6.3.2. Active buyers have insignificant results

This section relates to the third hypothesis  $H_3$  stating that active buyers are expected to lead to higher abnormal returns than passive and mixed buyers. We do not find any significant results for the active buyers in the initial regression and due to this the hypothesis is rejected. Due to the insignificant results from the regression some robustness tests are done to challenge the model. The rejection of the hypothesis after the initial regression is strengthened by the mixed results in the robustness test.

The third hypothesis is built on the monitoring hypothesis (Wruck, 1989) and the information hypothesis (Hertzel & Smith, 1993). The monitoring hypothesis (Wruck, 1989) states that the buyers in this category take an active role in the company, either by becoming a larger shareholder, a strategic partner or an investor with a long-term commitment. With these roles the buyer is in a position to monitor management (Wruck, 1989). The information hypothesis is when a well-informed investor invests in the company through a private placement, it transfers a positive sign to the market (Hertzel & Smith, 1993; Lee & Kocher, 2001). By rejecting our hypothesis, we conclude that these two theories provide weak evidence on the market's reaction to private placement announcement in the Swedish market environment. The weak support for the monitoring hypothesis and the information hypothesis is consistent

with Barclay et al.'s (2007) findings. Due to the high initial ownership concentration in the Swedish equity market, the private placement most likely will result in a decrease of ownership concentration rather than in an increase. This is why less weight should be put on the monitoring hypothesis as an explanatory hypothesis for the reaction of the market.

## 7. CONCLUSION

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*This chapter sums up the main conclusions of this study. The research aims and the research objectives are firstly presented. Suggestions for future research on the studied topic are finally proposed.*

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### 7.1. RESEARCH AIM AND RESEARCH OBJECTIVES

This thesis investigates the following research question: **Is there a difference in the short-term announcement effects of equity private placements depending on the investor's involvement with the issuing firms in terms of information asymmetry and agency conflicts?**

To answer this question, an event study methodology was used to get first findings on the abnormal returns for private placements for the total sample and for the investigated buyer groups: insider buyer, active buyer, passive buyer and mixed. We find positive abnormal returns for the total sample of the private placements. As a result, the first hypothesis that the announcement of private placements leads to positive short-term abnormal returns, can be confirmed. Different abnormal returns for the different buyer groups were investigated, among those the active buyers show the highest abnormal returns and the passive and mixed buyers the lowest ones.

To filter out the pricing effects from the abnormal returns we adjust the abnormal returns for discounts and premiums. This allows to better evaluate how the different theories explain the abnormal returns. The adjusted abnormal return is then used as the dependent variable in a cross-sectional regression. The regression is used to control how other variables, besides the buyers, affect the abnormal returns.

To answer our second hypothesis, stating that insider buyers have lower abnormal returns than passive and mixed buyers, we analyze the results from the regression. What we find is, that insider placements have the lowest abnormal returns compared to passive and mixed buyers. The second hypothesis can therefore be confirmed. The results are explained by the managerial entrenchment hypothesis pointing out that there is a risk for insider opportunism when private placements are purchased by insiders (Molin, 1996). Our findings show weak support for the signaling theory (Leland & Pyle, 1977) and for the convergence of interest theory (Jensen & Meckling, 1976).

The third hypothesis states that active buyers lead to higher abnormal returns than passive and mixed buyers to a private placement. We find conflicting results in our initial regression compared to the robustness checks and due to this the hypothesis is rejected. By not being able to confirm it, we consider that the monitoring hypothesis and the information hypothesis support weak evidence to the market's reaction to private placement announcement in the Swedish market environment. According to the monitoring hypothesis, a private placement increases the ownership concentration. The weak support for the monitoring hypothesis can be explained by the high initial ownership concentration for the Swedish market.

We come to the conclusion that the type of investor in a private placement has an effect on how the market reacts to the announcement. The announcement of an insider buyer results in a low positive abnormal return. We cannot confirm that active buyers result in the highest abnormal returns compared to the others. The market reactions are therefore best supported by the managerial entrenchment hypothesis whereas the information and monitoring hypotheses gain weak support.

This study investigates how the relationship of the private placement investors with the issuing company affects the short-term market reactions in Sweden. By rejecting that the active investor gets the highest abnormal returns we dismiss that the monitoring hypothesis explains the market's reaction when the initial ownership is high, which is the case for Sweden. Therefore the managerial entrenchment hypothesis is concluded to provide a better explanation to the abnormal returns in this specific market setting.

## 7.2. FURTHER RESEARCH

Further research is recommended for two different dimensions:

1. The different buyer categories of private placement buyers have not been much studied except by Barclay et al. (2007) in the US. According to Bortoletti et al. (2008), SEOs are particularly conducted as rights offerings or private placements for stock markets outside the USA. Therefore, further research would be interesting in order to test the theories for different market environments. By doing so, stronger evidence can be found for market reactions.
2. Our empirical data shows that companies do not only address one type of buyer in private placements. Since mixed buyers have not been investigated a lot, it is recommended to include this private placement buyer categorization in the research.

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## **Databases**

- Aktietorget
- NASDAQ OMX Stockholm
- NGM
- Thomson Reuters Datastream
- Thomson Reuters Eikon
- Thomson Reuters SDC

## APPENDICES

### Appendix A: Seasoned Equity Offerings in Sweden 2008-2014 per issue type

Issue type	2008	2009	2010	2011	2012	2013	2014	Grand Total
Rights offering	46	72	63	79	103	107	95	565
IPO	15	14	29	19	12	19	61	169
Private placement		3	5	12	30	43	35	128
Public offering	1	3	5	9	19	27	36	100
Cancelled	3				1		4	8
<b>Grand Total</b>	<b>65</b>	<b>92</b>	<b>102</b>	<b>119</b>	<b>165</b>	<b>196</b>	<b>231</b>	<b>970</b>

Definitions used for dividing the sample into the different issue types.

Definition	Description
Rights offering	To current shareholders with precedence right to the new issued shares
IPO	No trading of the stock have been performed on the mentioned market
Private placement	To one or a few new shareholders
Public offering	To current and new shareholders without precedence right for the current
Cancelled	Announced issues that later was cancelled

## Appendix B: Detailed data about the gathered private placements 2009-2014

Year	Company	Industry	Event day	Buyer	Firm size (mSEK)	Issue size (mSEK)	Issue size/ Firm size	Motivation for issue	Stock exchange	# shares issued	# shares before placement	Fraction placed	P-30 stock price 30 days prior event	P-1 price 1 day before event	PO - price on event day	Issue price	Discount	Rebate adjuster
2009	Heart of Brands AB	Fashion/Clothes	2009-05-11	Active	13	0	3%	Financial restructuring	Aktietorget	1 250 000	22 770 677	5%	0,57	0,36	0,36	0,30	17%	0,009
2009	Oasmia Pharmaceutical AB	Pharmaceutical	2009-11-05	Passive	941	43	5%	New Investments	NGM Equity	1 720 000	35 892 858	5%	26,23	24,51	23,85	25,00	-5%	-0,002
2009	Rottneros AB	Industrial	2009-10-12	Active	528	200	38%	Financial restructuring	Nasdaq OMX Stockholm	444 444 444	1 089 494 425	29%	0,49	5,94	6,79	4,50	34%	0,157
2010	Biolvent International AB	Pharmaceutical	2010-01-14	Passive	1 514	150	10%	New Investments	Nasdaq OMX Stockholm	5 434 800	55 660 889	9%	27,20	28,80	27,90	27,60	1%	0,001
2010	Clean Oil Technology AB	Industrial	2010-12-01	Mixed	44	17	38%	New Investments	Nordic MTF	20 000 000	56 907 158	26%	0,78	0,85	0,84	0,85	-1%	-0,004
2010	Cws Comfort Window System AB	Industrial	2010-11-23	Passive	10	2	20%	Financial restructuring	Aktietorget	300 000	5 688 200	5%	1,75	2,75	4,90	6,80	-39%	-0,036
2010	CybAero AB	Industrial	2010-10-11	Insider	28	3	9%	New partner	First North	2 500 000	26 964 238	8%	1,05	0,93	0,92	1,00	-9%	-0,008
2010	World Class Seagull International AB_2	Services	2010-11-23	Active	64	19	29%	Financial restructuring	First North	13 214 286	44 544 310	23%	1,43	1,14	1,12	1,40	-25%	-0,073
2011	Confidence International AB	Data/IT	2011-02-22	Insider	30	3	9%	New Investments	NGM Equity	414 815	4 203 846	9%	7,20	0,02	0,02	0,02	-10%	-0,010
2011	Cryptzone AB	Data/IT	2011-06-01	Active	44	17	39%	New Investments	First North	200 000 000	862 575 916	19%	0,05	44,43	50,77	85,00	-67%	-0,179
2011	Fingerprint Cards AB_1	Data/IT	2011-04-11	Passive	343	28	8%	New Investments	Nasdaq OMX Stockholm	4 000 000	39 669 586	9%	8,65	7,85	8,00	7,00	13%	0,013
2011	Selena Oil & Gas Holding AB	Energy	2011-07-15	Mixed	409	8	2%	New Investments	First North	1 600 000	41 347 500	4%	9,90	9,60	9,20	5,00	46%	0,017
2011	SRAB Shipping AB	Industrial	2011-01-20	Mixed	129	33	26%	Financial restructuring	First North	6 600 000 000	6 454 546 000	51%	0,02	20,00	10,00	5,00	50%	0,256
2011	TracTechnology AB	Data/IT	2011-12-22	Passive	64	2	2%	Financial restructuring	Aktietorget	806 130	37 702 269	2%	1,70	1,32	1,30	1,98	-53%	-0,011
2011	World Class Seagull International AB_1	Services	2011-12-20	Insider	39	19	49%	Financial restructuring	First North	23 750 000	57 758 595	29%	0,67	0,68	0,68	0,80	-18%	-0,073
2012	AdOperator AB	Media	2012-07-13	Active	4	0	11%	Financial restructuring	Aktietorget	262 069	1 755 000	13%	2,49	2,38	2,38	1,90	20%	0,030
2012	Africa Oil Corporation	Commodity	2012-11-28	Passive	15 808	1 578	10%	New Investments	First North	30 000 000	229 099 162	12%	69,00	56,25	55,50	52,59	5%	0,007
2012	Deflamo AB	Industrial	2012-03-26	Passive	36	3	7%	New Investments	Aktietorget	2 272 727	34 086 516	6%	1,05	9,69	10,15	11,00	-8%	-0,006
2012	EasyFill AB	Industrial	2012-11-26	Insider	36	6	16%	Financial restructuring	Aktietorget	3 138 889	38 784 329	7%	0,93	1,47	1,37	1,80	-31%	-0,024
2012	ExeoTech Invest AB	Telecomm	2012-11-12	Active	79	2	2%	Financial restructuring	Nordic MTF	400 000	16 137 018	2%	4,90	4,50	4,05	4,50	-11%	-0,002
2012	Fingerprint Cards AB_2	Data/IT	2012-12-12	Passive	255	36	14%	New Investments	First North	4 197 674	43 609 586	9%	5,85	8,60	8,85	8,60	3%	0,003
2012	Hammar Invest AB	Industrial	2012-01-05	Active	250	7	3%	Financial restructuring	Aktietorget	29 200 000	581 092 254	5%	0,43	0,27	0,31	0,25	19%	0,011
2012	Invisio Communications AB	Data/IT	2012-04-20	Passive	106	8	7%	Financial restructuring	First North	2 500 000	33 783 784	7%	3,15	3,00	2,90	3,10	-7%	-0,005
2012	Lynn AB	Data/IT	2012-09-10	Insider	21	1	5%	Financial restructuring	Aktietorget	2 000 000	23 374 357	8%	0,90	100,00	35,00	50,00	-43%	-0,013
2012	Mavshack AB	Media	2012-08-28	Mixed	1 719	5	0%	Financial restructuring	Aktietorget	199 900 000	148 149 206	57%	11,60	0,58	0,78	0,54	31%	0,558
2012	Melker Schörling AB	Finance	2012-11-19	Passive	20 888	125	1%	New Investments	Nasdaq OMX Stockholm	615 764	118 481 831	1%	176,30	182,50	181,90	203,00	-12%	-0,001
2012	Mineral Invest International MII AB	Commodity	2012-06-01	Active	124	115	92%	New Investments	Aktietorget	478 333 333	478 333 333	50%	0,26	0,32	0,31	0,24	23%	0,219
2012	Net Gaming Europe AB	Services	2012-01-03	Active	5	2	41%	New Investments	Aktietorget	6 666 667	12 514 802	35%	0,43	0,26	0,42	0,33	21%	0,183
2012	NFO Drives AB	Industrial	2012-02-03	Passive	44	6	13%	New Investments	Nordic MTF	18 500 000	138 250 210	12%	0,32	0,35	0,37	0,32	14%	0,019
2012	Skåne-möllan AB	Food	2012-09-19	Active	400	36	9%	New Investments	First North	100 000	1 000 000	9%	399,50	370,00	370,00	360,00	3%	0,003
2012	Tethys Oil AB	Commodity	2012-05-10	Passive	1 749	100	6%	Unknown	First North	2 500 000	32 543 750	7%	53,75	44,50	44,60	40,00	10%	0,008
2012	Thenberg & Kinde	Finance	2012-03-21	Mixed	2	1	50%	Financial restructuring	Aktietorget	2 934 000	15 890 982	16%	0,11	0,12	0,12	0,31	-157%	-0,290
2012	Fondkommission AB	Finance	2012-02-22	Active	34	8	25%	Financial restructuring	Aktietorget	127 250 000	708 000 000	15%	0,05	0,73	0,73	1,26	-72%	-0,129
2012	Trig Media Group AB	Media	2012-02-25	Active	137	14	10%	New partner	First North	4 362 640	43 626 400	9%	3,13	2,80	3,25	3,25	0%	0,000

## Appendix B: Detailed data about the gathered private placements 2009-2014 (cont.)

Year	Company	Industry	Event day	Buyer	Firm size (mSEK)	Issue size (mSEK)	Issue size/ Firm size	Motivation for issue	Stock exchange	# shares issued	# shares before placement	Fraction placed	P-30 stock price 30 days prior event	P-1 price 1 day before event	P0 - price on event day	Issue price	Discount	Rebate adjuster
2013	Active Biotech AB	Pharmaceutical	2013-03-06	Active	4 015	270	7%	Financial restructuring	Nasdaq OMX Stockholm	6 000 000	68 923 582	8%	58,25	48,80	54,00	45,00	17%	0,016
2013	Aerocrine AB	Pharmaceutical	2013-04-30	Passive	1 751	95	5%	Financial restructuring	Nasdaq OMX Stockholm	8 625 000	145 956 405	6%	12,00	11,35	12,00	11,00	8%	0,005
2013	Altero AB	Industrial	2013-02-08	Active	4	1	20%	Financial restructuring	Aktietorget	4 674 999	26 436 122	15%	0,13	0,12	0,17	0,15	12%	0,030
2013	Beowulf Mining plc_1	Commodity	2013-07-10	Active	148	42	28%	New Investments	Aktietorget	66 190 476	175 800 289	27%	0,84	0,68	0,67	0,63	6%	0,022
2013	Botnia Exploration AB	Commodity	2013-06-05	Active	33	6	19%	New Investments	Aktietorget	11 330 000	49 206 093	19%	0,68	0,57	0,58	0,55	5%	0,012
2013	Dignitana AB	Pharmaceutical	2013-09-18	Passive	185	14	7%	Financial restructuring	First North	900 000	10 778 645	8%	17,20	16,60	17,80	15,00	16%	0,014
2013	Episurf Medical AB	Pharmaceutical	2013-04-24	Passive	155	5	3%	New partner	First North	144 928	3 452 783	4%	45,00	61,50	61,25	34,50	44%	0,018
2013	Latvian Forest Company AB	Agriculture	2013-07-31	Passive	34	3	8%	New Investments	Aktietorget	412 037	5 061 649	8%	6,77	6,67	6,62	6,65	0%	0,000
2013	MedicPen AB	Pharmaceutical	2013-09-13	Passive	28	5	18%	Financial restructuring	Aktietorget	8 500 000	40 476 190	17%	0,69	0,90	1,94	0,60	69%	0,313
2013	Moberg Derma AB	Pharmaceutical	2013-07-02	Active	347	36	10%	New Investments	Nasdaq OMX Stockholm	1 080 000	10 812 572	9%	32,10	32,30	34,50	33,54	3%	0,003
2013	NeuroVive Pharmaceutical AB	Pharmaceutical	2013-11-21	Passive	372	35	9%	New Investments	Nasdaq OMX Stockholm	2 500 000	19 159 046	12%	19,40	19,80	18,10	14,00	23%	0,027
2013	New Equity Venture International AB	Finance	2013-02-14	Active	18	3	18%	New Investments	First North	165 000	1 276 507	11%	14,05	17,00	16,70	20,00	-20%	-0,025
2013	Paynova AB	Data/IT	2013-08-28	Insider	29	3	10%	New partner	NGM Equity	8 000 000	87 049 545	8%	0,33	0,39	0,41	0,37	10%	0,009
2013	Recytec Holding AB	Industrial	2013-11-29	Active	141	1	0%	Financial restructuring	Aktietorget	60 500	10 954 620	1%	12,90	10,10	10,05	10,79	-7%	0,000
2013	Star Vault AB	Data/IT	2013-05-23	Active	4	1	24%	New Investments	Aktietorget	4 169 859	33 704 690	11%	0,12	0,10	0,10	0,23	-130%	-0,161
2013	TrustBuddy International AB	Finance	2013-02-11	Active	72	9	12%	New Investments	First North	8 000 000	72 000 000	10%	1,00	0,96	1,00	1,10	-10%	-0,012
2013	VJ Since 1890 Sverige AB	Retail	2013-02-11	Passive	5	0	5%	New partner	Aktietorget	2 500 000	128 550 000	2%	0,04	0,12	0,17	0,10	41%	0,011
2014	Amnode AB	Industrial	2014-11-28	Insider	22	2	9%	New Investments	Aktietorget	666 667	4 951 717	12%	4,43	2,63	2,63	3,00	-14%	-0,019
2014	Beowulf Mining plc_2	Commodity	2014-08-21	Mixed	118	18	15%	Financial restructuring	Aktietorget	53 333 333	282 820 560	16%	0,42	0,37	0,36	0,34	6%	0,011
2014	Brighter AB	Pharmaceutical	2014-01-23	Active	121	25	21%	New Investments	Aktietorget	3 571 429	11 897 480	23%	10,18	15,97	15,13	7,00	54%	0,153
2014	Cavotec SA	Industrial	2014-09-12	Active	2 542	189	7%	New partner	Nasdaq OMX Stockholm	7 138 780	71 397 220	9%	35,60	22,00	27,30	26,50	3%	0,004
2014	Dome Energy AB	Commodity	2014-03-21	Active	203	23	11%	New Investments	Aktietorget	2 000 000	17 234 745	10%	11,80	11,90	13,00	11,50	12%	0,015
2014	Eurocine Vaccines AB	Pharmaceutical	2014-02-11	Active	85	8	9%	Financial restructuring	Aktietorget	1 176 371	11 899 539	9%	7,12	6,74	8,43	6,50	23%	0,028
2014	Karo Bio AB	Pharmaceutical	2014-03-18	Insider	342	7	2%	New partner	Nasdaq OMX Stockholm	15 000 000	495 947 367	3%	0,69	1,17	1,08	0,47	56%	0,016
2014	Karolinska Development AB	Pharmaceutical	2014-11-05	Active	697	63	9%	New Investments	Nasdaq OMX Stockholm	4 846 154	48 538 404	9%	14,35	13,60	16,10	13,00	19%	0,023
2014	Mobile Loyalty Holding AB	Data/IT	2014-09-25	Passive	33	6	18%	Financial restructuring	Aktietorget	14 750 000	77 105 542	16%	0,43	0,40	0,40	0,40	0%	0,000
2014	Precio Systemutveckling AB	Data/IT	2014-08-27	Passive	58	2	4%	New Investments	First North	400 000	7 489 546	5%	7,75	7,90	7,25	6,20	14%	0,007
2014	Rejlers AB	Services	2014-02-19	Passive	1 079	85	8%	New Investments	Nasdaq OMX Stockholm	900 000	11 421 721	7%	94,50	100,50	103,00	94,50	8%	0,007
2014	Respiratorius AB	Pharmaceutical	2014-01-30	Active	52	9	17%	New Investments	Aktietorget	15 000 000	106 708 423	12%	0,49	0,63	0,67	0,60	10%	0,016
2014	Xtranet Gruppen i Stockholm AB	Data/IT	2014-01-17	Mixed	5	2	39%	New partner	Aktietorget	1 860 000	5 212 692	26%	0,91	1,00	0,87	1,00	-15%	-0,046

Stock prices – all prices are the closing prices in SEK

Offer price – Have been adjusted for later stock splits after the issue so that discounts could be calculated

Discount = (Price on event day-issue price)/ Price on event day

Rebate adjuster =  $AR_0 + (\text{Issued shares}/\text{Shares before issue}) * ((P_0 - \text{Issue price})/P_{-1})$

## Appendix C: Abnormal return calculations

Company	Alpha	Beta	$\sigma_i^2$	CAR 0	CAR (0,1)	CAR (-1,1)	CAR (-1,2)	CAR (-2,2)	CAR (-3,3)	CAR (-4,4)	CAR (-5,5)	CAR (-6,6)	CAR (-7,7)	CAR (-8,8)	CAR (-9,9)	CAR (-10,10)
Active Biotech AB	0,00	0,88	0,001	11%	19%	<b>19%</b>	24%	23%	24%	23%	20%	<b>23%</b>	26%	23%	21%	22%
AdOperator AB	-0,01	-0,50	0,009	1%	-64%	<b>-64%</b>	2%	3%	-23%	-21%	-21%	<b>-21%</b>	-20%	-18%	-16%	-17%
Aerocrine AB	0,00	0,42	0,001	6%	4%	<b>2%</b>	2%	-1%	1%	-2%	-1%	<b>-14%</b>	-15%	-15%	-12%	-10%
Africa Oil Corporation	0,01	1,21	0,002	-2%	-7%	<b>-8%</b>	-9%	-33%	-40%	-42%	-45%	<b>-45%</b>	-50%	-52%	-57%	-65%
Altero AB	-0,01	2,51	0,072	31%	33%	<b>35%</b>	35%	36%	-6%	0%	10%	<b>19%</b>	17%	23%	58%	4%
Amnode AB	0,00	-0,41	0,003	0%	43%	<b>43%</b>	29%	29%	29%	-12%	-11%	<b>3%</b>	2%	-36%	-51%	-52%
Beowulf Mining plc_2	0,00	-0,04	0,002	-1%	-7%	<b>-13%</b>	-16%	-23%	-12%	-18%	-10%	<b>-13%</b>	-12%	-14%	-15%	-14%
Beowulf Mining plc_1	0,00	1,00	0,003	-1%	-7%	<b>-8%</b>	4%	4%	-1%	-4%	-4%	<b>-7%</b>	-10%	-7%	-1%	-7%
BioInvent International AB	0,00	0,49	0,000	-4%	-2%	<b>0%</b>	1%	-1%	-5%	-9%	-8%	<b>-1%</b>	7%	5%	6%	1%
Botnia Exploration AB	0,00	-0,29	0,005	1%	5%	<b>0%</b>	-19%	-25%	-24%	-3%	-9%	<b>-22%</b>	-20%	-22%	-28%	-40%
Brighter AB	0,00	0,52	0,004	-5%	-14%	<b>-2%</b>	5%	7%	35%	36%	45%	<b>40%</b>	51%	47%	31%	15%
Cavotec SA	0,00	0,63	0,001	21%	21%	<b>17%</b>	18%	16%	10%	8%	5%	<b>8%</b>	9%	10%	9%	5%
Clean Oil Technology AB	0,00	0,30	0,002	-2%	-1%	<b>3%</b>	-5%	3%	2%	4%	5%	<b>8%</b>	3%	23%	17%	17%
Confidence International AB	0,00	0,06	0,039	0%	13%	<b>13%</b>	11%	11%	7%	3%	0%	<b>9%</b>	7%	8%	-6%	6%
Cryptzone AB	0,00	0,05	0,004	13%	0%	<b>1%</b>	1%	1%	1%	2%	31%	<b>18%</b>	16%	32%	19%	4%
Cws Comfort Window System AB	0,00	1,48	0,011	61%	39%	<b>40%</b>	40%	43%	-7%	16%	50%	<b>111%</b>	74%	56%	39%	40%
CybAero AB	0,00	0,25	0,004	-1%	3%	<b>1%</b>	-2%	-3%	2%	9%	4%	<b>21%</b>	4%	33%	45%	24%
Deflamo AB	0,00	-0,01	0,003	5%	6%	<b>6%</b>	7%	4%	12%	16%	13%	<b>7%</b>	7%	10%	11%	7%
Dignitana AB	0,00	0,14	0,001	7%	0%	<b>-1%</b>	1%	2%	2%	3%	2%	<b>1%</b>	2%	0%	-6%	3%
Dome Energy AB	0,01	0,69	0,002	8%	7%	<b>8%</b>	8%	7%	3%	0%	-5%	<b>-9%</b>	-12%	-14%	-18%	-17%
EasyFill AB	0,00	0,06	0,005	-7%	-6%	<b>-3%</b>	-3%	-2%	-5%	-5%	-8%	<b>-23%</b>	-8%	-11%	-26%	-23%
Episurf Medical AB	0,00	0,14	0,002	-1%	-1%	<b>-3%</b>	0%	0%	1%	2%	1%	<b>-1%</b>	3%	4%	9%	-2%
Eurocine Vaccines AB	0,00	0,54	0,003	22%	22%	<b>26%</b>	41%	46%	71%	66%	47%	<b>49%</b>	54%	58%	58%	47%
ExeoTech Invest AB	0,00	0,70	0,003	-10%	-4%	<b>-4%</b>	-7%	-11%	-10%	-3%	-7%	<b>-3%</b>	-9%	-10%	-5%	6%
Fingerprint Cards AB_2	0,00	0,38	0,003	3%	8%	<b>6%</b>	11%	8%	8%	16%	22%	<b>47%</b>	35%	37%	42%	48%
Fingerprint Cards AB_1	0,00	1,30	0,001	2%	2%	<b>3%</b>	2%	3%	4%	3%	8%	<b>6%</b>	4%	2%	1%	-9%
Hammar Invest AB	-0,01	0,60	0,075	15%	16%	<b>-3%</b>	-16%	-16%	-19%	-6%	27%	<b>38%</b>	39%	23%	-7%	-10%
Heart of Brands AB	-0,01	1,24	0,022	3%	6%	<b>5%</b>	10%	11%	8%	11%	-5%	<b>-1%</b>	-6%	12%	11%	1%
Invisio Communications AB	-0,01	-0,19	0,004	-3%	-1%	<b>-1%</b>	0%	0%	7%	11%	15%	<b>12%</b>	9%	8%	7%	5%
Karo Bio AB	0,00	0,71	0,002	-9%	-11%	<b>-13%</b>	-18%	-20%	-24%	-33%	-32%	<b>-31%</b>	-33%	-22%	-19%	-9%
Karolinska Development AB	0,00	0,32	0,001	17%	17%	<b>23%</b>	26%	30%	37%	52%	52%	<b>42%</b>	45%	49%	33%	54%
Latvian Forest Company AB	0,00	0,31	0,001	-1%	3%	<b>0%</b>	-2%	-2%	1%	1%	0%	<b>-5%</b>	-4%	-6%	7%	7%
Lynn AB	0,00	-0,01	0,005	-105%	-92%	<b>-92%</b>	-95%	-95%	-52%	-52%	-42%	<b>-42%</b>	-42%	-42%	-51%	-51%
Mavshack AB	0,00	-0,36	0,014	29%	29%	<b>29%</b>	29%	29%	29%	28%	28%	<b>28%</b>	-1%	0%	-1%	0%
MedicPen AB	0,00	-0,38	0,006	77%	84%	<b>94%</b>	87%	92%	88%	78%	68%	<b>81%</b>	106%	107%	95%	91%
Melker Schöring AB	0,00	1,23	0,000	1%	1%	<b>1%</b>	1%	0%	0%	2%	4%	<b>6%</b>	5%	7%	10%	10%
Mineral Invest International MII AB	0,00	0,42	0,007	-2%	-1%	<b>0%</b>	0%	4%	13%	7%	12%	<b>4%</b>	-1%	-10%	-2%	-1%
Moberg Derma AB	0,00	0,76	0,001	7%	8%	<b>5%</b>	6%	5%	3%	2%	1%	<b>-1%</b>	2%	4%	3%	1%
Mobile Loyalty Holding AB	0,00	0,45	0,008	1%	-2%	<b>4%</b>	7%	7%	3%	3%	-6%	<b>-1%</b>	0%	-5%	-1%	-1%
Net Gaming Europe AB	0,00	-0,32	0,010	48%	48%	<b>49%</b>	49%	68%	65%	65%	66%	<b>67%</b>	-6%	-6%	-4%	-3%
NeuroVive Pharmaceutical AB	0,00	0,32	0,001	-9%	-9%	<b>-17%</b>	-11%	-12%	-16%	-15%	-15%	<b>-17%</b>	-21%	-25%	-24%	-19%
New Equity Venture International AB	0,00	0,28	0,005	-1%	5%	<b>-1%</b>	4%	7%	30%	18%	9%	<b>9%</b>	6%	-4%	-4%	-2%
NFO Drives AB	0,00	0,35	0,003	5%	8%	<b>2%</b>	0%	2%	1%	14%	11%	<b>15%</b>	16%	13%	12%	33%
Oasnia Pharmaceutical AB	0,00	0,12	0,002	-3%	-1%	<b>-2%</b>	-5%	-1%	-6%	-8%	-7%	<b>-11%</b>	-9%	-12%	-20%	-20%
Paynova AB	0,00	-0,67	0,006	5%	-3%	<b>-6%</b>	-9%	10%	5%	-1%	-2%	<b>-8%</b>	-5%	-4%	-1%	-8%
Precio Systemutveckling AB	0,00	0,34	0,000	-9%	1%	<b>1%</b>	-2%	-3%	-3%	-1%	-2%	<b>-5%</b>	-2%	-2%	-5%	-12%
Recyctec Holding AB	0,00	0,87	0,006	0%	-8%	<b>-9%</b>	-9%	-16%	-3%	-3%	-15%	<b>-14%</b>	-19%	-27%	-25%	-30%
Rejlers AB	0,00	0,43	0,000	2%	1%	<b>2%</b>	3%	4%	4%	12%	11%	<b>8%</b>	9%	5%	9%	8%
Respiratorius AB	0,00	0,33	0,003	6%	8%	<b>5%</b>	1%	-2%	-9%	-12%	11%	<b>7%</b>	4%	23%	15%	20%
Rottneros AB	0,00	0,71	0,003	13%	12%	<b>11%</b>	8%	7%	4%	10%	6%	<b>7%</b>	9%	16%	21%	23%
Selena Oil & Gas Holding AB	0,00	-0,40	0,011	-5%	-6%	<b>-7%</b>	-9%	-9%	-8%	-7%	-7%	<b>-7%</b>	-7%	-10%	-25%	-22%
Skåne-möllan AB	0,00	-0,10	0,001	0%	0%	<b>0%</b>	0%	-2%	-3%	-3%	-3%	<b>-3%</b>	-5%	-5%	-5%	-5%
SRAB Shipping AB	-0,01	1,67	0,034	-66%	3%	<b>7%</b>	9%	9%	10%	10%	13%	<b>16%</b>	-53%	20%	23%	26%
Star Vault AB	0,00	-1,28	0,030	-3%	-4%	<b>-3%</b>	17%	17%	22%	21%	46%	<b>46%</b>	46%	45%	44%	36%
Tethys Oil AB	0,00	0,56	0,001	0%	-3%	<b>2%</b>	5%	1%	-1%	-2%	-2%	<b>-4%</b>	-5%	-4%	-9%	0%
Thenberg & Kinde Fondkommission AB	0,00	0,37	0,013	0%	1%	<b>1%</b>	1%	1%	0%	16%	16%	<b>-2%</b>	-3%	-3%	-4%	-3%
TracTechnology AB	0,00	0,51	0,003	-2%	0%	<b>-2%</b>	2%	11%	-3%	-3%	-2%	<b>17%</b>	-1%	13%	1%	-19%
Trig Media Group AB	0,00	0,30	0,008	0%	0%	<b>0%</b>	0%	0%	-1%	-1%	-2%	<b>-2%</b>	-2%	16%	-19%	-1%
TrustBuddy International AB	0,00	0,31	0,003	4%	-1%	<b>-1%</b>	2%	-1%	8%	-1%	-5%	<b>-4%</b>	-13%	-6%	-13%	-14%
Vinovo AB	0,00	-0,25	0,005	15%	23%	<b>23%</b>	24%	23%	24%	24%	32%	<b>32%</b>	32%	20%	21%	39%
VJ Since 1890 Sverige AB	0,00	0,63	0,013	35%	29%	<b>47%</b>	47%	47%	34%	53%	87%	<b>92%</b>	58%	42%	101%	112%
World Class Seagull International AB_1	0,00	0,18	0,000	0%	-5%	<b>-4%</b>	-5%	-4%	-4%	-4%	-6%	<b>-10%</b>	-10%	-9%	-9%	-9%
World Class Seagull International AB_2	0,00	0,15	0,002	-1%	-1%	<b>-1%</b>	-1%	-2%	-4%	-5%	-5%	<b>-8%</b>	-6%	-1%	0%	-4%
Xtranet Gruppen i Stockholm AB	0,00	-0,57	0,006	-13%	-4%	<b>25%</b>	21%	29%	22%	24%	4%	<b>0%</b>	-1%	3%	4%	9%
Variance (mean CAR)				0,000	0,000	<b>0,000</b>	0,000	0,001	0,001	0,001	0,001	<b>0,002</b>	0,002	0,002	0,002	0,003
CAR mean				3,3%	4,0%	<b>4,5%</b>	5,6%	5,9%	5,4%	6,1%	7,7%	<b>8,8%</b>	4,6%	6,1%	4,6%	3,5%
T-statistics				1,48	2,55	<b>2,37</b>	2,51	2,37	1,83	1,83	2,10	<b>2,21</b>	1,08	1,34	0,95	0,69
Significance					**	**	**	**	*	*	**	**				

## Appendix D: Market model compared to market adjusted model

Model	Market model abnormal returns			Market adjusted abnormal returns*			Difference	
Event window	CAR mean	T-stat	Significance	CAR mean	T-stat	Significance	CAR mean	Significance
CAR 0	3,3%	1,48		3,2%	1,43		0%	
CAR 0, +1	4,0%	2,55	**	3,9%	2,52	**	0%	
CAR +1	4,5%	2,37	**	4,3%	2,24	**	0%	
CAR -1,+2	5,6%	2,51	**	5,0%	2,28	**	1%	
CAR +2	5,9%	2,37	**	5,2%	2,12	**	1%	
CAR +3	5,4%	1,83	*	4,2%	1,42		1%	Yes
CAR +4	6,1%	1,83	*	4,7%	1,41		1%	Yes
CAR +5	7,7%	2,10	**	6,3%	1,71	**	1%	
CAR +6	8,8%	2,21	**	7,2%	1,80	**	2%	
CAR +7	4,6%	1,08		2,8%	0,66		2%	
CAR +8	6,1%	1,34		4,1%	0,89		2%	
CAR +9	4,6%	0,95		2,1%	0,44		2%	
CAR +10	3,5%	0,69		0,9%	0,18		3%	

\*Market adjusted is the alternative model and around the event window it doesn't differ that much from the market model.

Difference in significance is indicated with a 'Yes' if it differs for the specified event window between the two models.

## Appendix E: Aggregated abnormal returns per buyer and day

Days	All placements	Insider buyer	Active buyer	Passive buyer	Mixed
-6	0,8%	1,3%	1,3%	1,1%	-2,4%
-5	0,6%	-0,1%	-3,4%	-0,7%	-5,0%
-4	1,2%	-4,8%	1,9%	2,3%	1,5%
-3	-0,8%	-0,5%	-0,7%	-0,7%	-1,3%
-2	0,3%	2,2%	0,3%	-0,7%	1,1%
-1	0,6%	-0,5%	-0,6%	1,1%	3,7%
<b>0</b>	<b>3,3%</b>	<b>-14,6%</b>	<b>7,9%</b>	<b>7,8%</b>	<b>-7,2%</b>
1	0,7%	7,4%	-2,5%	-0,9%	9,1%
2	1,0%	-3,7%	3,7%	0,4%	-1,7%
3	0,3%	-2,2%	-0,9%	0,5%	0,1%
4	-0,5%	4,5%	1,4%	-3,2%	1,7%
5	1,0%	0,2%	1,2%	1,1%	0,5%
6	0,3%	0,7%	-2,2%	3,2%	0,2%

## Appendix F: Discounts and premiums sorted per market

Stock exchange	Buyer	Year	Company	PO - price on event day	Issue price	Discount
Aktietorget	Active	2009	Heart of Brands AB	0,36	0,30	17%
Aktietorget	Active	2012	Hammar Invest AB	0,31	0,25	19%
Aktietorget	Active	2012	Mineral Invest International MII AB	0,31	0,24	23%
Aktietorget	Active	2012	Trig Media Group AB	0,73	1,26	-72%
Aktietorget	Active	2013	Altero AB	0,17	0,15	12%
Aktietorget	Active	2013	Beowulf Mining plc_1	0,67	0,63	6%
Aktietorget	Active	2013	Botnia Exploration AB	0,58	0,55	5%
Aktietorget	Active	2013	Recyctec Holding AB	10,05	10,79	-7%
Aktietorget	Active	2013	Star Vault AB	0,10	0,23	-130%
Aktietorget	Active	2014	Brighter AB	15,13	7,00	54%
Aktietorget	Active	2014	Dome Energy AB	13,00	11,50	12%
Aktietorget	Active	2014	Eurocine Vaccines AB	8,43	6,50	23%
Aktietorget	Active	2014	Respiratorius AB	0,67	0,60	10%
Aktietorget	Insider	2012	EasyFill AB	1,37	1,80	-31%
Aktietorget	Insider	2014	Amnode AB	2,63	3,00	-14%
Aktietorget	Mixed	2012	Thenberg & Kinde Fondkommission AB	0,12	0,31	-157%
Aktietorget	Mixed	2014	Beowulf Mining plc_2	0,36	0,34	6%
Aktietorget	Mixed	2014	Xtranet Gruppen i Stockholm AB	0,87	1,00	-15%
Aktietorget	Passive	2010	Cws Comfort Window System AB	4,90	6,80	-39%
Aktietorget	Passive	2011	TracTechnology AB	1,30	1,98	-53%
Aktietorget	Passive	2012	Deflamo AB	10,15	11,00	-8%
Aktietorget	Passive	2013	Latvian Forest Company AB	6,62	6,65	0%
Aktietorget	Passive	2013	VJ Since 1890 Sverige AB	0,17	0,10	41%
Aktietorget	Passive	2014	Mobile Loyalty Holding AB	0,40	0,40	0%
First North	Active	2010	World Class Seagull International AB_2	1,12	1,40	-25%
First North	Active	2011	Cryptzone AB	50,77	85,00	-67%
First North	Active	2012	Skåne-möllan AB	370,00	360,00	3%
First North	Active	2012	Vinovo AB	3,25	3,25	0%
First North	Active	2013	New Equity Venture International AB	16,70	20,00	-20%
First North	Active	2013	TrustBuddy International AB	1,00	1,10	-10%
First North	Insider	2010	CybAero AB	0,92	1,00	-9%
First North	Insider	2011	World Class Seagull International AB_1	0,68	0,80	-18%
First North	Mixed	2011	Selena Oil & Gas Holding AB	9,20	5,00	46%
First North	Mixed	2011	SRAB Shipping AB	10,00	5,00	50%
First North	Passive	2012	Africa Oil Corporation	55,50	52,59	5%
First North	Passive	2012	Fingerprint Cards AB_2	8,85	8,60	3%
First North	Passive	2012	Invisio Communications AB	2,90	3,10	-7%
First North	Passive	2012	Tethys Oil AB	44,60	40,00	10%
First North	Passive	2013	Dignitana AB	17,80	15,00	16%
First North	Passive	2013	Episurf Medical AB	61,25	34,50	44%
First North	Passive	2014	Precio Systemutveckling AB	7,25	6,20	14%
Nasdaq OMX Stockholm	Active	2009	Rottneros AB	6,79	4,50	34%
Nasdaq OMX Stockholm	Active	2013	Active Biotech AB	54,00	45,00	17%
Nasdaq OMX Stockholm	Active	2013	Moberg Derma AB	34,50	33,54	3%
Nasdaq OMX Stockholm	Active	2014	Cavotec SA	27,30	26,50	3%
Nasdaq OMX Stockholm	Active	2014	Karolinska Development AB	16,10	13,00	19%
Nasdaq OMX Stockholm	Insider	2014	Karo Bio AB	1,08	0,47	56%
Nasdaq OMX Stockholm	Passive	2010	Biolnvent International AB	27,90	27,60	1%
Nasdaq OMX Stockholm	Passive	2011	Fingerprint Cards AB_1	8,00	7,00	13%
Nasdaq OMX Stockholm	Passive	2012	Melker Schörling AB	181,90	203,00	-12%
Nasdaq OMX Stockholm	Passive	2013	Aerocrine AB	12,00	11,00	8%
Nasdaq OMX Stockholm	Passive	2013	NeuroVive Pharmaceutical AB	18,10	14,00	23%
Nasdaq OMX Stockholm	Passive	2014	Rejlers AB	103,00	94,50	8%
NGM Equity	Insider	2011	Confidence International AB	0,02	0,02	-10%
NGM Equity	Insider	2013	Paynova AB	0,41	0,37	10%
NGM Equity	Passive	2009	Oasmia Pharmaceutical AB	23,85	25,00	-5%
Nordic MTF	Active	2012	ExeoTech Invest AB	4,05	4,50	-11%
Nordic MTF	Mixed	2010	Clean Oil Technology AB	0,84	0,85	-1%
Nordic MTF	Passive	2012	NFO Drives AB	0,37	0,32	14%

\* A negative number indicates a premium and a positive number a discount

## Appendix G: Calculation of Abnormal Returns adjusted for discounts

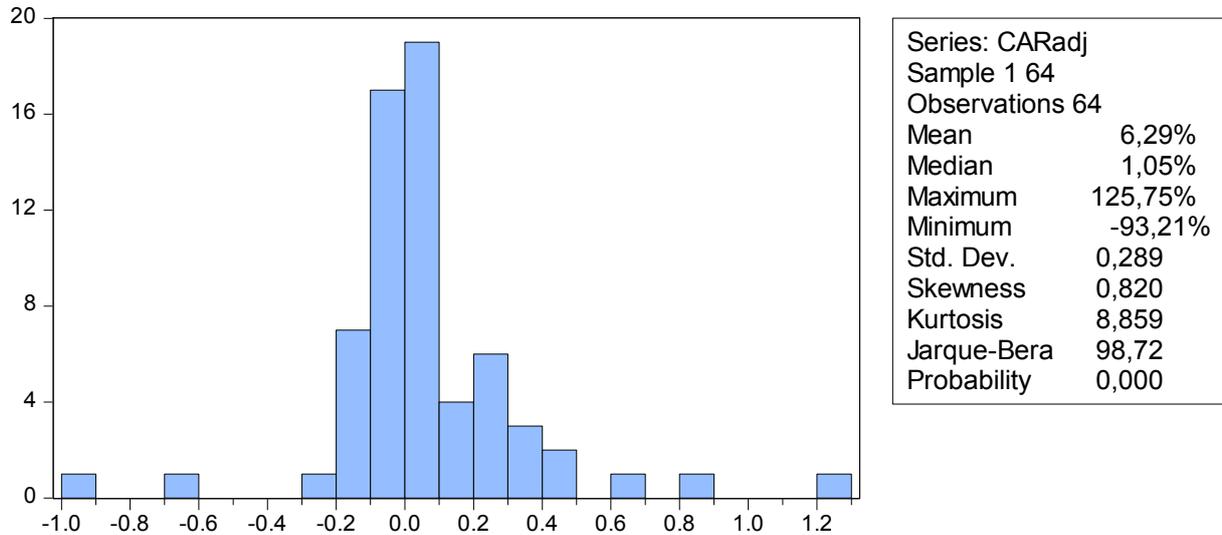
Company	Buyer	# shares issued	# shares before placement	P-1 price 1		Issue price	Rebate adjuster	CAR (-1,1)	CARadj
				day before event	P0 - price on event day				
Lynn AB	Insider	2 000 000	23 374 357	100,00	35,00	50,00	-0,013	-91,9%	-93,2%
AdOperator AB	Active	262 069	1 755 000	2,38	2,38	1,90	0,030	-63,7%	-60,7%
Thenberg & Kinde Fondkommission AB	Mixed	2 934 000	15 890 982	0,12	0,12	0,31	-0,290	1,3%	-27,7%
Star Vault AB	Active	4 169 859	33 704 690	0,10	0,10	0,23	-0,161	-2,9%	-19,0%
Cryptzone AB	Active	200 000 000	862 575 916	44,43	50,77	85,00	-0,179	0,5%	-17,4%
NeuroVive Pharmaceutical AB	Passive	2 500 000	19 159 046	19,80	18,10	14,00	0,027	-15,7%	-13,0%
Trig Media Group AB	Active	127 250 000	708 000 000	0,73	0,73	1,26	-0,129	0,2%	-12,7%
Beowulf Mining plc_2	Mixed	53 333 333	282 820 560	0,37	0,36	0,34	0,011	-13,0%	-11,9%
World Class Seagull International AB_1	Insider	23 750 000	57 758 595	0,68	0,68	0,80	-0,073	-4,5%	-11,7%
Karo Bio AB	Insider	15 000 000	495 947 367	1,17	1,08	0,47	0,016	-12,5%	-11,0%
Recyctec Holding AB	Active	60 500	10 954 620	10,10	10,05	10,79	0,000	-9,1%	-9,1%
World Class Seagull International AB_2	Active	13 214 286	44 544 310	1,14	1,12	1,40	-0,073	-1,1%	-8,4%
Africa Oil Corporation	Passive	30 000 000	229 099 162	56,25	55,50	52,59	0,007	-8,2%	-7,6%
Selena Oil & Gas Holding AB	Mixed	1 600 000	41 347 500	9,60	9,20	5,00	0,017	-7,3%	-5,6%
Beowulf Mining plc_1	Active	66 190 476	175 800 289	0,68	0,67	0,63	0,022	-7,5%	-5,3%
EasyFill AB	Insider	3 138 889	38 784 329	1,47	1,37	1,80	-0,024	-2,8%	-5,2%
Paynova AB	Insider	8 000 000	87 049 545	0,39	0,41	0,37	0,009	-6,1%	-5,1%
ExeoTech Invest AB	Active	400 000	16 137 018	4,50	4,05	4,50	-0,002	-4,0%	-4,3%
TracTechnology AB	Passive	806 130	37 702 269	1,32	1,30	1,98	-0,011	-2,4%	-3,6%
New Equity Venture International AB	Active	165 000	1 276 507	17,00	16,70	20,00	-0,025	-0,5%	-3,0%
Oasmia Pharmaceutical AB	Passive	1 720 000	35 892 858	24,51	23,85	25,00	-0,002	-2,1%	-2,4%
TrustBuddy International AB	Active	8 000 000	72 000 000	0,96	1,00	1,10	-0,012	-1,1%	-2,3%
Hammar Invest AB	Active	29 200 000	581 092 254	0,27	0,31	0,25	0,011	-3,1%	-2,0%
Episurf Medical AB	Passive	144 928	3 452 783	61,50	61,25	34,50	0,018	-3,1%	-1,2%
Invisio Communications AB	Passive	2 500 000	33 783 784	3,00	2,90	3,10	-0,005	-0,6%	-1,1%
Latvian Forest Company AB	Passive	412 037	5 061 649	6,67	6,62	6,65	0,000	-0,4%	-0,4%
Dignitana AB	Passive	900 000	10 778 645	16,60	17,80	15,00	0,014	-1,5%	-0,1%
Skåne-möllan AB	Active	100 000	1 000 000	370,00	370,00	360,00	0,003	-0,2%	0,1%
CybAero AB	Insider	2 500 000	26 964 238	0,93	0,92	1,00	-0,008	1,0%	0,2%
BioInvent International AB	Passive	5 434 800	55 660 889	28,80	27,90	27,60	0,001	0,3%	0,4%
Melker Schörling AB	Passive	615 764	118 481 831	182,50	181,90	203,00	-0,001	0,8%	0,7%
Botnia Exploration AB	Active	11 330 000	49 206 093	0,57	0,58	0,55	0,012	-0,3%	0,9%
Precio Systemutveckling AB	Passive	400 000	7 489 546	7,90	7,25	6,20	0,007	0,5%	1,2%
Clean Oil Technology AB	Mixed	20 000 000	56 907 158	0,85	0,84	0,85	-0,004	2,5%	2,1%
Aerocrine AB	Passive	8 625 000	145 956 405	11,35	12,00	11,00	0,005	1,7%	2,3%
Tethys Oil AB	Passive	2 500 000	32 543 750	44,50	44,60	40,00	0,008	2,1%	2,9%
Rejlers AB	Passive	900 000	11 421 721	100,50	103,00	94,50	0,007	2,3%	2,9%
Mobile Loyalty Holding AB	Passive	14 750 000	77 105 542	0,40	0,40	0,40	0,000	3,6%	3,6%
NFO Drives AB	Passive	18 500 000	138 250 210	0,35	0,37	0,32	0,019	2,3%	4,2%
Fingerprint Cards AB_1	Passive	4 000 000	39 669 586	7,85	8,00	7,00	0,013	3,3%	4,6%
Moberg Derma AB	Active	1 080 000	10 812 572	32,30	34,50	33,54	0,003	5,2%	5,5%
Deflamo AB	Passive	2 272 727	34 086 516	9,69	10,15	11,00	-0,006	6,4%	5,8%
Heart of Brands AB	Active	1 250 000	22 770 677	0,36	0,36	0,30	0,009	5,4%	6,3%
Respiratorius AB	Active	15 000 000	106 708 423	0,63	0,67	0,60	0,016	4,8%	6,4%
Fingerprint Cards AB_2	Passive	4 197 674	43 609 586	8,60	8,85	8,60	0,003	6,2%	6,5%
Dome Energy AB	Active	2 000 000	17 234 745	11,90	13,00	11,50	0,015	8,0%	9,4%
Confidence International AB	Insider	414 815	4 203 846	0,02	0,02	0,02	-0,010	12,6%	11,7%
Brighter AB	Active	3 571 429	11 897 480	15,97	15,13	7,00	0,153	-1,8%	13,5%
Cavotec SA	Active	7 138 780	71 397 220	22,00	27,30	26,50	0,004	16,9%	17,3%
Xtranet Gruppen i Stockholm AB	Mixed	1 860 000	5 212 692	1,00	0,87	1,00	-0,046	24,5%	19,9%
Active Biotech AB	Active	6 000 000	68 923 582	48,80	54,00	45,00	0,016	19,3%	20,9%
Mineral Invest International MII AB	Active	478 333 333	478 333 333	0,32	0,31	0,24	0,219	-0,4%	21,5%
Vinovo AB	Active	4 362 640	43 626 400	2,80	3,25	3,25	0,000	23,1%	23,1%
Karolinska Development AB	Active	4 846 154	48 538 404	13,60	16,10	13,00	0,023	22,6%	24,9%
Rottneros AB	Active	444 444 444	1 089 494 425	5,94	6,79	4,50	0,157	10,6%	26,4%
Eurocine Vaccines AB	Active	1 176 371	11 899 539	6,74	8,43	6,50	0,028	26,0%	28,9%
SRAB Shipping AB	Mixed	6 600 000 000	6 454 546 000	20,00	10,00	5,00	0,256	7,1%	32,6%
Cws Comfort Window System AB	Passive	300 000	5 688 200	2,75	4,90	6,80	-0,036	40,4%	36,7%
Altero AB	Active	4 674 999	26 436 122	0,12	0,17	0,15	0,030	35,0%	38,0%
Amnode AB	Insider	666 667	4 951 717	2,63	2,63	3,00	-0,019	42,8%	40,9%
VJ Since 1890 Sverige AB	Passive	2 500 000	128 550 000	0,12	0,17	0,10	0,011	46,9%	48,0%
Net Gaming Europe AB	Active	6 666 667	12 514 802	0,26	0,42	0,33	0,183	48,7%	66,9%
Mavshack AB	Mixed	199 900 000	148 149 206	0,58	0,78	0,54	0,558	29,2%	85,0%
MedicPen AB	Passive	8 500 000	40 476 190	0,90	1,94	0,60	0,313	94,5%	125,8%

Rebate adjuster =  $AR_0 + (\text{Issued shares} / \text{Shares before issue}) * ((P_0 - \text{Issue price}) / P_{-1})$

CARadj =  $CAR(-1,1) + \text{Rebate adjuster}$

## Appendix H: Excluded outliers

Histogram and descriptive statistics



The outliers are defined as an issue that deviates more than two standard deviations (outside 95% of observation) from the mean of the sample. The calculations for the limits are shown in the table below.

<b>Outlier calculation</b>	
Mean	6,29%
1 standard deviation	28,92%
2 standard deviations	57,83%
<b>Upper limit of CARadj</b>	<b>64,13%</b>
<b>Lower limit of CARadj</b>	<b>-51,54%</b>

Based in the CAR<sub>adj</sub> results in appendix F it results in that the following events are defined as outliers and due to that excluded from the sample.

<b>Company</b>	<b>CARadj</b>
Lynn AB	<b>-93,2%</b>
AdOperator AB	<b>-60,7%</b>
Net Gaming Europe AB	<b>66,9%</b>
Mavshack AB	<b>85,0%</b>
MedicPen AB	<b>125,8%</b>

## Appendix I: Correcting standard errors to mitigate heteroskedasticity

Dependent Variable: CARadj

Method: Least squares

Sample: 1 59 Included

observations: 59

White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INSIDER_BUYER	-0.032727	0.091013	-0.359584	0.7206
ACTIVE_BUYER	0.022972	0.046309	0.496062	0.6219
LN_ISSUE_SIZE	-0.010833	0.019384	-0.558887	0.5786
LN_ISSUE_DIV_FIR				
M_SIZE	0.018323	0.024291	0.754319	0.4541
REG_MARKET	0.049099	0.052341	0.938071	0.3525
FIN_RESTR	-0.002975	0.049397	-0.060222	0.9522
INTERCEPT	0.098440	0.107157	0.918649	0.3625
R-squared	0.028331	Mean dependent var	0.047309	
Adjusted R-squared	-0.083785	S.D. dependent var	0.155416	
S.E. of regression	0.161796	Akaike info criterion	-0.693971	
Sum squared resid	1.361247	Schwarz criterion	-0.447483	
Log likelihood	27.47214	Hannan-Quinn criter.	-0.597752	
F-statistic	0.252690	Durbin-Watson stat	2.129812	
Prob(F-statistic)	0.956029	Wald F-statistic	0.288879	
Prob(Wald F-statistic)	0.939622			