

An Insider Trading Cocktail

- A Study on Gender Differences and the Implications of the Capital Insurance

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Abstract

This research paper analyzes gender differences in abnormal returns earned by insiders and possible implications of the Swedish capital insurance, "kapitalförsäkring", on insider trading. The sample data includes 288 company listings on the Stockholm Stock Exchange and the studied period is 1998-2010. 17,655 buy transactions and 9,163 sell transactions are analyzed of which 11.3% are carried out by females. The transaction data is analyzed on positions held within the company and on a sector level. We conclude that male insiders earn higher abnormal returns than female insiders on both buy and sell transactions. This can be explained by the information asymmetry between the genders. We also conclude that abnormal returns earned by insiders on buy transactions have decreased in the latter part of the studied period. This could partly be explained by the increased usage of the capital insurance among insiders.

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Table of contents

1. Introduction	4
2. Theoretical framework.....	5
2.1 The efficient market hypothesis (EMH)	5
2.1.1 EMH - weak form	5
2.1.2 EMH - semi strong form	5
2.1.3 EMH - strong form	6
2.2 Definition of abnormal return.....	6
2.3 Regulations.....	6
2.3.1 Definition of insider trading	6
2.3.2 Definition of an insider	6
2.3.3 Obligation to give notice and consequences of crime	7
2.3.4 The Swedish “kapitalförsäkring”	7
2.3.5 Direct implications of the capital insurance	8
2.4 Previous research on insider trading	8
2.4.1 Insider trading	8
2.4.2 Buy and sell transactions	9
2.4.3 Sectors and company positions	9
2.5 Previous research on gender differences within finance	10
2.5.1 Women in the business community	10
2.5.2 Effect on company performance	10
2.5.3 Access to information	11
2.5.4 Risk aversion and gender preferences.....	12
3. Data	13
3.1 Stock returns	13
3.2 Benchmark indices	13
3.3 Insider transaction data, gender specifics and GICS codes.....	14
4. Methodology.....	15
4.1 Hypotheses	15
4.2 Processing of insider trading data.....	15
4.3 Groups of interest.....	16
4.4 Change in insider behavior	17
4.5 Event study.....	17
4.6 Event window.....	18

4.7 Estimation window	18
4.8 Market Model	19
4.9 Transaction costs	23
4.10 Normality, skewness and kurtosis	23
4.11 Student's t-test	23
5. Results.....	24
5.1 Normality, skewness and kurtosis	24
5.2 Sample statistics.....	25
5.3 A comparison between genders	27
5.3.1 Graphical overview	27
5.3.2 Buy transactions.....	28
5.3.3 Sell transactions	32
5.4 A comparison before and after October 2005.....	35
5.4.1 Buy transactions.....	35
5.4.2 Sell transactions	40
6. Discussion and analysis of results	46
6.1 The choice of benchmark index	46
6.2 Gender specific abnormal returns	46
6.3 Implications of the capital insurance	49
6.4 Possible shortcomings.....	50
7. Conclusion	53
8. Future studies	55
9. References	56
10. Appendix	59

1. Introduction

This paper takes a new perspective on insider trading. The gender differences in insider trading behavior and returns on the US market have recently been studied by Bharath, Narayanan & Seyhun (2009). They conclude that male insiders earn higher abnormal returns than female insiders and four different hypotheses are tested in order to explain the difference in behavior between the genders. The number of women in management positions are increasing and a direct consequence of this is that the number of registered female insiders also grows larger. Furthermore, males and females are frequently compared regarding financial behavioral differences such as risk aversion, overconfidence, and investment strategies. As the number of female insiders increases the gender landscape of the business community changes. Thus we find it intriguing to study the gender differences within insider trading.

The capital insurance is a trading account that, contrarian to regular trading accounts, allows investors to trade without paying capital gains tax. Instead it imposes a yearly fee that in most cases is lower than the capital gains tax. Due to the substantial benefits that the capital insurance can offer, this trading account has gained in popularity during recent years. However, the capital insurance also increases the risk exposure for the investor, since it restricts the investor from using trading losses for tax deduction. Another characteristic of the capital insurance is that insiders can stay anonymous when trading, a feature which is not possible when using a normal trading account. This offers insiders a new dimension to trading which may to some extent change the behavior of the insider. With this in mind we are keen to examine whether the capital insurance have indeed imposed any change in behavior and returns among insiders.

The purpose of this research paper is to test whether there are any differences in the amount of abnormal returns earned by male- and female insiders. The research will build upon the paper by Bharath, Narayanan & Seyhun (2009) but also consider positions held within the company as well as sector belonging. Furthermore, we will study the effects of the capital insurance on the abnormal returns earned by insiders. The research questions are specified below.

- Are there any differences in insider trading behavior and returns between male- and female insiders?
- Does the capital insurance have any implications on the amount of abnormal returns earned by insiders on the Stockholm Stock Exchange?

To the best of our knowledge neither of the two subjects above have been addressed before using data from the Swedish market and the Stockholm Stock Exchange.

2. Theoretical framework

2.1 The efficient market hypothesis (EMH)

Statistical research shows that stocks follow a random walk and that “all available information” in the market regarding a specific stock should be incorporated in the stock price. The fact that stocks follow a random walk is said to be a proof of market efficiency (BMK, 2009).

“A market in which prices always ‘fully reflect’ all available information is called efficient” (Fama, 1970). Thus, stock prices should only change if there is new information revealed regarding the stock and no investor should be able to beat the average market return consistently. Fama also states a few criteria that will make markets more efficient.

1. No transaction costs in trading stocks
2. All available information is costlessly available to all market participants
3. All agree on the implications of current information for the current price and distribution of future prices of each security

In such a market the current share price would reflect all available information regarding the stock (Fama, 1970). Proof that insiders actually may obtain a return greater than average can then be seen as a violation of the EMH. The EMH appears in three different versions: the weak form, the semi strong form and the strong form. The different versions represent the level of information incorporated in current stock prices (BKM, 2009) (Fama, 1970).

2.1.1 EMH - weak form

The weak form of the EMH defines “all available information” as history of past prices, volumes and short interests. This form states that trying to pick a stock from looking at past returns will be fruitless. Thus technical and statistical analysis is pointless to execute since the information is public and all investors have the possibility to track buy and sell signals in the market (BKM, 2009).

2.1.2 EMH - semi strong form

The semi strong form of the EMH defines “all available information” as the weak form plus fundamental data of the firm’s product line, quality of management, balance sheet composition, patents held, earnings forecasts and accounting practices. The hypothesis expects all this information to be publicly available and thus incorporated in the current stock price. Given this level of information incorporated in stock prices, the investment bank activity of conducting equity research should be meaningless since all investors can carry out the analysis by themselves and thus track buy and sell signals (BKM, 2009).

2.1.3 EMH - strong form

The strong form of the EMH defines “all available information” as the semi strong form plus information only held by company insiders. Thus this version claims that company insiders should not be able to obtain returns higher than the market average (BKM, 2009). If insiders would in fact be able to obtain abnormal returns, this would be a clear violation of the strong form of the EMH.

2.2 Definition of abnormal return

An abnormal return ($AR_{i,t}$) is defined as the difference between the actual return ($R_{i,t}$) and the expected return ($E(R_{i,t})$) for a given stock i at time t . The actual return is the return observed by the market, i.e. the actual change in stock price over the investment period, while the expected return is the return that one could expect to gain given that the event (the transaction by an insider) did not take place. This will be further elaborated on in section 4.8 covering the methodology used for our research.

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Given a strong form of the EMH, abnormal returns could on average not exist since the actual return would be equal to the expected return. In reality, the strong form of the EMH does not hold true and company insiders do hold information that is not known to the rest of the market. The question is whether insiders use their information to trade and whether they are able to earn abnormal returns or not.

2.3 Regulations

2.3.1 Definition of insider trading

Illegal insider trading, where a person trades based on non-public information, is a subject that is very controversial. This kind of insider trading is however not the focus of this paper. When talking about insider trading we are henceforth exclusively referring to the kind of insider trading that is legal. This kind of insider trading takes place when a person based on public information carries out a transaction with securities of a company where he/she is listed as an insider. When carried out and reported correctly to the Swedish financial supervisory authority, Finansinspektionen (FI), this transaction is perfectly legal.

2.3.2 Definition of an insider

An insider is defined as a person that through his/her position within the company is considered to have access to non-public information about the company. All insiders are obligated to report any changes in their holdings within the company to FI. This kind of operation is regulated in Swedish law SFS 2000:1087 (SFS, Sveriges Riksdag) and supervised by FI. An insider is defined as:

1. The CEO or Vice CEO of the company or of its parent company
2. A member or an alternate member of the board of the company or of its parent company
3. An accountant or an alternate accountant of the company or of its parent company
4. A member of a general partnership when the general partnership is the parent company of the listed company
5. Any other person that has a high ranked position or is employed to work on a highly qualified and continuous project, within the company or within its parent company, that will allow him/her access to information that has not been made public and that has the potential to affect the share price of the company
6. Any holder of a position according to bullet point 1-3 and 5 within a subsidiary company that will allow him/her access to information that has not been made public and that has the potential to affect the share price of the company
7. Any shareholder within the company that by himself, or together with one or a number of closely related individuals, or through a company, controls more than ten percent of the shares or more than ten percent of the number of votes within the company

A person that falls into any of these categories is considered to be an insider and is also obligated to report any holdings, and any changes of these holdings, that can be referred to his/her closely related individuals. SFS 2000:1087 offers a detailed description of who is considered to be closely related. Transactions made by these individuals are according to SFS 2000:1087 comparable to transactions made by the insider himself. Thus we will not make any distinction between the two groups of transactions, but rather treat them all as insider transactions.

2.3.3 Obligation to give notice and consequences of crime

No later than five days after the actual transaction has taken place the information needs to be reported to FI. The consequences of breaking the law concerning insider trading are regulated in SFS 2005:377 (SFS, Sveriges Riksdag). Failure to comply with the regulations will result in a fine or imprisonment of a maximum of four years depending on level and degree of the crime.

2.3.4 The Swedish “kapitalförsäkring”

A direct translation of the Swedish “kapitalförsäkring” would in English be capital insurance. Any Swedish citizen of legal age is eligible to open up a capital insurance account with any of the Swedish banks (SEB, Handelsbanken, Nordea etc.) or online broker firms (Nordnet, Avanza). The capital insurance offers an alternative to the traditional trading account when trading with stocks, funds, bonds and other securities.

When trading securities through a capital insurance the investor does not own the securities directly. Thus he/she does not have to pay tax on the capital gains, which normally equals about 30%. Instead, the investor pays an annual fee on the total balance of the capital insurance as of January 1 every year. This fee is set to 27% of the average government borrowing rate of the preceding year. The fees paid on January 1, 2009 and 2010 respectively, were 1.05% and 0.84% (Avanza). This tax advantage is the major upside of the capital insurance and it is the number one argument used by the banking institutes when promoting this kind of trading account. One downside, among others, is that trading losses are not tax deductible (Skatteverket).

2.3.5 Direct implications of the capital insurance

If an insider chooses to trade through a capital insurance he/she is no longer required to report this transaction to FI (Finansinspektionen). The legality aspect of the trade is not affected and hence trading on non-public information is still an illegal activity. However, the lack of reporting obligation makes it very hard for FI to control the transactions that the insider carries out through the capital insurance.

Another consequence of the capital insurance is that an investor that uses this trading account does not get registered as the owner of the shares he/she trades with. It is rather the issuer of the insurance, usually an online broker firm such as Nordnet or Avanza, which is registered as the owner of the shares. The issuer of the insurance will also be listed as the one carrying out the transaction - hence not revealing the name of the insider.

2.4 Previous research on insider trading

2.4.1 Insider trading

A lot has been written in the field of insider trading and one of the more important studies is the one written by Jaffe (1974). Jaffe studied insider trades carried out on the American market during the period 1962-1968. He defined the different trades by the investor carrying out the transaction - large shareholders, management and directors respectively - and concluded that insiders actually have private information upon which they trade and earn abnormal returns. Finnerty (1976) conducted a similar study on the New York Stock Exchange (NYSE) for the period 1969-1972 and came up with the same conclusion as Jaffe, especially in the short term. Other studies carried out by Rozett & Zaman (1998) and Seyhun (1998) also conclude that insiders do gain abnormal returns. What is even more surprising is that studies have shown that investors actually can obtain abnormal returns by mimicking insiders (Alvén & Antbacke, 2010), which is a clear violation of the strong and semi-strong form of EMH.

On the other hand, there have been studies in the past that show evidence in the opposite direction. Lin & Howe (1990) found evidence that abnormal returns mainly was due to bid-ask spreads and that it would be impossible for both insiders and the investors mimicking insiders to gain abnormal returns due to transaction costs. Eckbo & Smith (1998) studied the Oslo Stock Exchange for the period 1985-1992 and found no evidence of insider transactions yielding abnormal returns. Eckbo & Smith (1998) did not use the conventional event study methodology but constructed portfolios that simulated insider holdings.

2.4.2 Buy and sell transactions

Insider trading is a well researched topic with studies not only covering whether insiders actually may gain abnormal returns or not but also concerning different dynamics within the insider transaction. Seyhun (1998), Cheuk (2005) and Li & Nogeman (2008) all conclude that there is a difference when looking at buy and sell transactions separately. All three studies find evidence that buy transactions yield greater returns than sell transactions. One reason to this may be liquidity issues with sell transactions. Lakonishok (2001) studied insider transactions on the NYSE, AMEX and NASDAQ for the period 1975-1995 and concluded that insiders gain abnormal returns on buy transactions but that sell transactions do not show any predictability in future stock returns.

Jeng, Metrick & Zeckhauser (2003) and Seyhun (1998) studied the size of the firm involved in the transaction and concluded that insiders in smaller firms yield higher returns than those in larger firms. These findings were supported in a Swedish study conducted by Hjertstedt & Kinnander (2000). They argue that one reason behind the findings is that insiders in smaller firms have access to more private information than those in larger firms and that smaller companies in general have lower liquidity in their traded stocks.

2.4.3 Sectors and company positions

Li & Nogeman (2008) studied the Stockholm Stock Exchange on a sector level and discovered that insiders in oil & gas sectors are those that yield the highest abnormal returns while insiders in the banking sector were the ones yielding the lowest. Bengtsson & Östersgård (2010) also studied the Stockholm Stock Exchange but tried to see whether insiders from large investment companies were able to gain larger abnormal returns than other insiders. Bengtsson & Östersgård (2010) concluded that insiders in large investment companies actually gain smaller abnormal returns on buy transactions but outperform other insiders on sell transactions.

Ravina & Sapienza (2009) constructed a study where they compared the trading performance of independent directors and other executives. They concluded that independent directors can gain

abnormal returns in buy transactions and that the difference in performance compared to executives within in the same firm is fairly small at most time horizons. Furthermore, Ravina & Sapienza (2009) found evidence that the weaker the governance is within the company the more likely the independent directors and executives are to gain higher returns. They also found that independent directors sitting in the audit committee earn higher returns than other independent directors within the same firm.

2.5 Previous research on gender differences within finance

2.5.1 Women in the business community

In the companies on the Stockholm Stock Exchange in February of 2009 an average of 23.0% of the board members were females. This holds true for the 50 (out of 269) Swedish listed companies that Governance Metrics International (GMI) included in its research. This number should be compared to a European average of 9.6% and a world average of 8.9%. Furthermore, the research concludes that on a worldwide basis there is a significant difference between sectors where females account for 13.5% of the board members of companies within the retail sector whereas only 4.9% within the automobiles & parts sector (Governance Metrics International, March 2009). Comparing these numbers to the 2002 figure of 6% females among the board members of Swedish listed companies gives a clear indication on the transition of female presence within the Swedish business community (Statistics Sweden, 2002). Further research shows that in 2010 4% (10 out of 269) of the chairmen of the boards of companies on the Stockholm Stock Exchange are females as well as 3% (8 out of 269) of the CEOs (Statistics Sweden, 2010).

2.5.2 Effect on company performance

Previous research concerning women's effect on company performance is quite extensive. The different conclusions deviate and the findings are inconsistent. A study conducted by Adams & Ferreira (2008) concludes that the average effect of gender diversity on company performance is negative. These findings are in line with the ones identified by Dudzik & Tarassiouk (2010) that study the companies on the Stockholm Stock Exchange. Their research shows a negative relationship between gender differences and company performance measured as return on assets.

On the contrary, a study made on the Danish market by Smith, Smith & Verner (2008) shows that female presence in top management positions have positive effects on company performance. The same results are found on the Swedish market where Wahlsten & Wåhlin (2009) conclude that gender diversity on a director and top management level indeed enhances company performance.

An interesting observation made by Ferrary (2009) was that performance of the companies from the French CAC 40 stock exchange index indicated that women in management positions had a

significant impact on how well the company handled the financial crisis in 2008. Ferrary (2009) argues that in situations of global financial turmoil the financial markets value companies that take fewer risks and are more stable. If a company has a larger proportion of female managers this seems to balance out the more risk-taking behavior of their male colleagues (Ferrary, 2009). Sullivan & Jordan (2009) also discuss the implications of female presence in management positions during the financial crisis and come to similar conclusions.

2.5.3 Access to information

Bharath, Narayanan & Seyhun (2009) studied the differences in insider trading behavior among female and male senior executives in the US for transactions carried out 1975-2008. Their research shows that both female and male executives do gain positive abnormal returns following insider transactions. However, they found that males can earn about twice as much as females and that males also trade more frequently. In order to explain their findings they offer four different hypotheses that are individually tested throughout the paper; the information access hypothesis, the overconfidence hypothesis, the risk-aversion hypothesis, and the propensity to use insider information hypothesis. Since their study is similar to the one we carry out we will approach the analysis of our findings in a similar manner and test two of these four hypotheses on our results – the information access hypothesis and the overconfidence hypothesis. Bharath, Narayanan & Seyhun (2009) finds that females are disadvantaged relative to males in accessing information. Males also have stronger networks than females, which further increases the information asymmetry. Overconfidence and risk-aversion are ruled out as being the sole explanatory factors to the differences in abnormal returns between the genders. Moreover, they do not find any evidence that supports the fourth hypothesis that female executives would be less willing to use insider information than males. The four hypotheses are discussed in more detail in section 6.2.

Van Staveren (2001) takes the discussion even further and claims that lower literacy level among women as well as limited access to transportation to reach banking institutions limits women's overall access to finance. It leads to information disadvantage regarding investment opportunities, saving schemes, market interest rates and other financial issues.

Another aspect of the information asymmetry is the one of homophily (i.e. inclination to form network relations with the same sex) among men that Ibarra (1992) addresses. Men tend to practice this kind of network building more frequently than women. Women obtain friendship and social support from other women, but are more inclined to obtain instrumental access through network relations to men. Ibarra can also conclude, like van Staveren, Bharath, Narayanan and Seyhun above, that men seem to benefit more from their network connections than women even when

holding the same position within the company. This could partly be explained by men's homophilous network building that refuses women the same access to information (Ibarra, 1992).

2.5.4 Risk aversion and gender preferences

The differences in risk taking between men and women have been studied extensively – both in business context as well as in activities carried out in everyday life. Bymes, Miller & Schafer (1999) concludes that in 14 out of 16 types of risk taking activities (e.g. smoking, sexual activity, driving etc.) men tend to be less risk averse than women. Activities involving intellectual risk taking and physical skills showed the largest gender differences. Moreover they conclude that the degree of risk taking tend to change with age for some of the activities studied.

Powell & Ansic (1996) conduct a research where they examine whether the differences in risk taking between genders can be explained by the framing of tasks and the level of task familiarity to the person. Their results show that men and women adopt different strategies in a financial decision environment and that women tend to be less risk seeking than men irrespectively of the familiarity or the framing of the task. Elsiad & Ursel (2009) did a study on 650 small, medium and large cap North American firms and concluded that both CEO gender and age of board members have an impact on the level of risk taking within the firm. Female CEOs and older board members tend to be associated with less risk taking.

Women's higher financial risk aversion holds true also in research conducted by Goetze & Pesti-Meier (2006) as well as Croson & Gneezy (2008). Furthermore, Goetze & Pesti-Meier (2006) can conclude that if the social environment is highly male dominated, females' propensity to take on more risk is likely to increase. Niessen & Ruenzi (2007) uses data from the US mutual fund industry and concludes that female managers are more risk averse, trade less and follow investment styles that are more consistent and less extreme than their male colleagues'.

3. Data

3.1 Stock returns

All stock data is retrieved from Thomson Datastream. The time period that is the focus of our study is 1998-01-01-2010-06-30 and the stocks included are the ones listed on the small-, mid-, and large cap on the Stockholm Stock Exchange. In total this includes 288 listings. Our data will suffer from survivorship bias including only the stocks listed as of today (2010-06-30) and excluding any stocks that have been delisted during the period 1998-01-01-2010-06-30. The survivorship bias and its implications on the results will be commented on throughout the thesis.

3.2 Benchmark indices

In order to conduct our research and estimate the different parameters of the market model (described in detail in section 4.8) we have to use a benchmark index. Since the choice of benchmark index can have a significant impact on the results we perform all calculations with one value weighted index (VW) and one equally weighted index (EW) respectively. The OMX Stockholm Benchmark Index¹ (OMXSB) is used as the value weighted index and the benchmark data for the period of interest (1998-01-01-2010-06-30) is retrieved from Thomson Datastream. One could argue that since the OMXSB only includes about the 100 largest and most frequently traded stocks it does not reflect the behavior of the smaller stocks on the stock exchange and thus distorts our results. However, using an index covering all shares is not possible since such an index adjusted for the free float does not exist. Furthermore, considering the survivorship bias discussed above an index including all stocks would not be representative throughout our research period. The OMXSB is constructed for the purpose of benchmarking and thus suffices for our purposes.

The equally weighted index is constructed as the average daily stock returns of all stocks covered in our sample. This sample includes all 288 listings in the end of the research period but includes less companies in earlier periods due to the survivorship approach of our sample. This index fully reflects the stocks of interest in each time period and is thus a perfect equally weighted benchmark. Contrary to the value weighted index including only about the 100 largest companies on the stock exchange, the equally weighted index rather gives too high of a weight to the smallest companies on the stock exchange. Thus, these two benchmark indices complement each other well and admit us to draw more justified conclusions.

¹ The OMX Stockholm Benchmark Index consists of the 80 to 100 largest and most traded stocks, representing the majority of sectors. The weight of the constituent stocks is based on the market value adjusted by the free float, which means that only the part of the share capital that is considered available for trading is included in the index. The index serves as an indicator of the overall trend on OMX Nordic Exchange Stockholm and is intended to offer a cost effective index that an investor can fully replicate. Thus OMXSB index is especially attractive for use in investment products and as a comparative index for investors. OMXSB is revised twice a year to ensure that it offers high investability and low transaction costs. The base date for OMXSB and OMXSB CAP indexes is December 30, 1995, with a base value of 100.

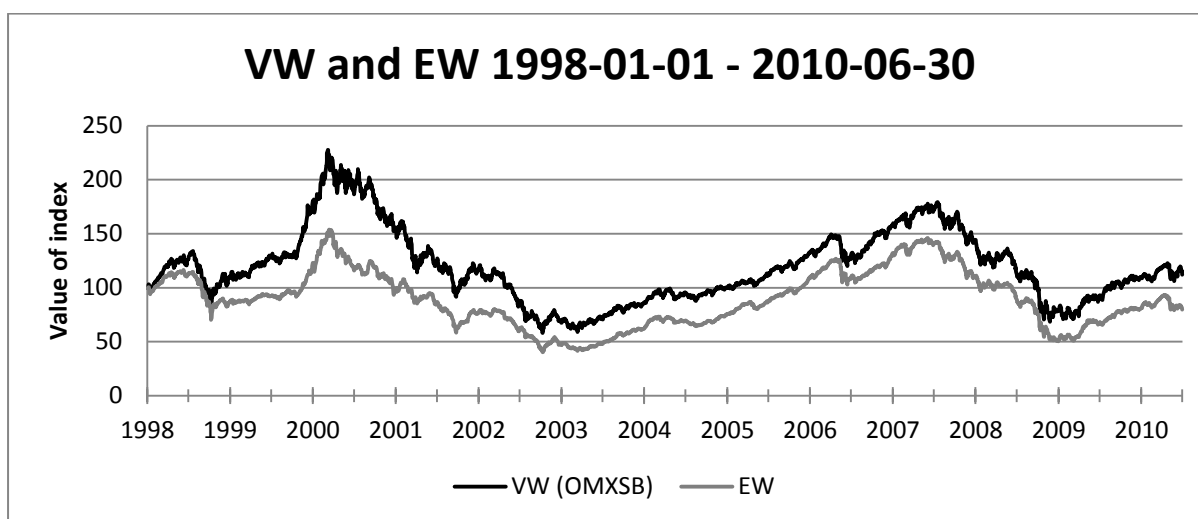


Chart. 1 Value weighted and equally weighted benchmark indices (1998-01-01-2010-06-30)

3.3 Insider transaction data, gender specifics and GICS codes

Information about all registered insider transactions 2001-01-01-2010-06-30 on the Stockholm Stock Exchange is obtained online from FI (Finansinspektionen). The oldest data (1998-01-01-2000-12-31) has been requested for specifically since it is not available online. The information from FI is very detailed and includes date of transaction; company name and ISIN code; name, identification code and corporate position of the insider; value and type of transaction among other things.

In order to categorize the insider transactions as male transactions or female transactions we download name lists covering the most popular male and female names from Statistics Sweden (Statistiska Centralbyrån). Moreover, GICS industry classification data for all companies listed on small- mid- and large cap on the Stockholm Stock Exchange is downloaded from NASDAQ OMX.

4. Methodology

4.1 Hypotheses

Continuously throughout the thesis the data is tested and evaluated given two hypotheses.

$H_0 =$ *The abnormal return earned by insiders is equal to zero*

$H_1 =$ *The abnormal return earned by insiders is not equal to zero*

4.2 Processing of insider trading data

The raw data covering the insider transactions, retrieved from FI, has to be processed further in order to fill the purpose of our research. We are exclusively interested in straight buy- and sell transactions carried out in companies listed on the large-, medium-, and small cap on the Stockholm Stock Exchange. Thus we have excluded any other transactions included in the sample retrieved from FI.

All male and female names, retrieved from Statistics Sweden, have to be matched with the name of each insider carrying out a transaction. The insiders that cannot be gendered using the names retrieved from Statistics Sweden is manually categorized. This is done by researching each insider individually online. This process allows us to create a dummy variable indicating the gender of the insider.

We categorize the insiders by positions held within the company and assign each position a dummy variable. In order to categorize the insider transactions into different industry sectors each transaction is matched with the GICS codes retrieved from NASDAQ OMX. Following the same approach as the gender and position classification, each industry sector gets its own dummy variable.

4.3 Groups of interest

The table below illustrates the different groups that are studied in this thesis. The coding shows if the group is included and discussed in the main thesis or not.

Groups of interest	VW/EW	VW/EW	VW/EW
	Whole Sample	Before Oct. 2005	After Oct. 2005
All (All)	X	X	X
Male (M)	X	X	X
Female (F)	X	X	X
CEO (All, M, F)	X	X	X
Vice CEO (All, M, F)	X	X	X
Board Member (All, M, F)	X	X	X
Large Shareholder (All, M, F)	X	X	X
Other (All, M, F)	X	X	X
Consumer Discretionary (All, M, F)	X	X	X
Consumer Staples (All, M, F)	X	X	X
Energy (All, M, F)	X	X	X
Financials (All, M, F)	X	X	X
Healthcare (All, M, F)	X	X	X
Industrials (All, M, F)	X	X	X
Information Technology (All, M, F)	X	X	X
Materials (All, M, F)	X	X	X
Telecommunications (All, M, F)	X	X	X
Utilities (All, M, F)	X	X	X
Consumer Discretionary (Position)* (All, M, F)	A**	-	-
Consumer Staples (Position)* (All, M, F)	A**	-	-
Energy (Position)* (All, M, F)	A**	-	-
Financials (Position)* (All, M, F)	A**	-	-
Healthcare (Position)* (All, M, F)	A**	-	-
Industrials (Position)* (All, M, F)	A**	-	-
Information Technology (Position)* (All, M, F)	A**	-	-
Materials (Position)* (All, M, F)	A**	-	-
Telecommunications (Position)* (All, M, F)	A**	-	-
Utilities (Position)* (All, M, F)	A**	-	-

Table 1. Overview of all groups of interest

For all groups of interest we consider buy and sell transactions separately

x = Included in main thesis

A = Included in appendix

- = Not included in thesis

** = CEO, Vice CEO, Board Member, Large Shareholder and Other*

*** = Only BUY transactions are considered*

4.4 Change in insider behavior

In order to study the implications of the capital insurance on abnormal returns earned by insiders, we have to decide upon a breaking point in time around which to conduct our comparative study. There is not only one obvious date that fulfills this purpose. The capital insurance has been available to investors for quite some time but has changed significantly in attractiveness. Before 2000 the fees related to the capital insurance were extensive and not attractive to investors looking for cost effective investing. One major change in attractiveness and accessibility of the capital insurance was made in July and September 2005 when the online broker firms Nordnet and Avanza made it possible for their clients to start investing through a capital insurance (Nordnet and Avanza press releases). Along with this the fees related to the capital insurance decreased. When the wealth tax was revoked in 2007 this further increased the attractiveness of the capital insurance. Now the disadvantage of having to pay wealth tax on 100% of the value of the stocks and funds in the capital insurance, compared to 80% of the value if invested through a normal trading account, was gone (Privata Affärer). Furthermore, another change was made in 2007 when the possibility to make use of capital losses for tax reduction was taken away (SFS, Sveriges Riksdag).

We intend to build this research around a structural change in the capital insurance. In order to incorporate the transition of investors towards the capital insurance, we want to study the point in time when the capital insurance starts to become attractive for investors. The attractiveness increased with better accessibility and lower fees when Nordnet and Avanza launched their capital insurances in July and September 2005. To incorporate this change we set the breaking point for our research to October 1, 2005. Thus the main sub samples compared throughout this study will be from the time periods 1998-01-01-2005-09-30 and 2005-10-01-2010-06-30 respectively. The choice of time periods will be further discussed in section 6.4.

4.5 Event study

The purpose of an event study is to see whether a certain event influences some outcome. A key component in event studies is dummy variables (Wooldridge, 2009). MacKinlay (1997) discusses procedures for an event study using five steps:

1. Define the event of interest and identify the event window
2. Determine the selection criteria for the inclusion of a given firm in the study
3. Decide which model to use to measure abnormal return
4. Define the estimation window
5. Design the test frameworks

One of the steps (#2) has been covered in the data section while the other steps will be discussed hereunder.

4.6 Event window

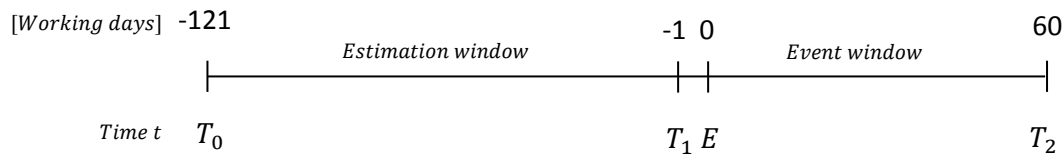
The actual event of interest is when a transaction carried out by an insider takes place. Since the daily stock prices retrieved through Thomson Datastream is the day-end closing prices for the specific stocks, we set the event date to one day before the day of the insider transaction. Thus we are able to incorporate any immediate change in stock price, occurring on the day of the transaction, and include this change in the event window.

The event window is set to 61 working days, equivalent to about three calendar months. A lot has been written concerning the length of event windows. An event window needs to be long enough to incorporate the change in stock price that the investor tried to anticipate when trading in the stock. At the same time, a longer event window will include more noise and thus lessen the relevance of the results obtained. Cohen, Malloy & Pomorski (2009) argue that abnormal returns caused by opportunistic trading by insiders continues to rise up to six months after the actual event. On the other hand, several studies have shown that the major adjustments of the stock price is over within a week after the event date. Bengtsson & Östersgård (2010), who studies abnormal returns for insider transactions, uses an event window of 183 days. Li & Nogeman (2008), who conducts similar research, uses an event window of 10 days while Bharath, Narayanan & Seyhun (2009) sets the event window to 50 days.

4.7 Estimation window

MacKinlay (1997) argues that when applying the market model on daily data an estimation window of about 120 working days prior to the event suffice. The estimation window is used to estimate the normal performance of the stock – how the stock price would have developed if the event (i.e. the insider trade) had not taken place. Thus the estimation window should reflect the way the stock is currently performing and not be influenced too much by older specific events. Moreover, the event date itself is not included in the estimation window in order to avoid the parameters estimated by the market model from being influenced by the event. In line with MacKinlay (1997) and in accordance with the arguments stated above we use an estimation window of 120 working days (i.e. about 6 calendar months).

Here follows a clarification, including denotations, of the different time periods used.



$$T_0 - T_1 = \text{Estimation window}$$

$$T_1 - T_2 = \text{Event window}$$

E = Event date (date of transaction)

4.8 Market Model

When estimating the expected return for each insider transaction we apply the market model shown below (MacKinlay, 1997). The market model has significant advantages over the constant mean return model. When using the market model the variance of the abnormal return is reduced since the portion of the return that is related to variation in the market's return is removed. Another commonly used model in event studies is the capital asset pricing model (CAPM). The drawback of this model is however that the event study may be sensitive to the fact that the CAPM assumes α_i to equal zero. By using the market model this sensitivity can be avoided (MacKinlay, 1997).

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

$$E(\varepsilon_{i,t}) = 0 \quad \text{Var}(\varepsilon_{i,t}) = \sigma_{\varepsilon_i}^2$$

$R_{i,t}$ = Return for stock i at time t

α_i = Alpha value for stock i

β_i = Beta value for stock i

$R_{m,t}$ = Market return at time t

$\varepsilon_{i,t}$ = Error term for stock i at time t

To calculate the **abnormal return for stock i at time t** we use the formula stated below. In the following paragraphs we describe how to calculate each of the two components – the actual return ($R_{i,t}$) and the expected return ($E(R_{i,t})$).

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

$AR_{i,t}$ = Abnormal return for stock i at time t

To calculate the **actual return for stock i at time t** we use the following formula. We could have calculated simple arithmetic stock returns, but by using the logarithmic approach we are able to sum the returns in order to create cumulative returns.

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)$$

$P_{i,t}$ = Price index on stock i at time t

$P_{i,t-1}$ = Price index on stock i at time $t - 1$

The **expected return for stock i at time t** is calculated according to the formula stated below. The approach is described in detail by MacKinlay (1997).

$$E(R_{i,t}) = \hat{\alpha}_i + \hat{\beta}_i R_{m,t}$$

$\hat{\alpha}_i$ = Estimated alpha value for stock i

$\hat{\beta}_i$ = Estimated beta value for stock i

The **beta value for stock i** is estimated using information from the estimation window.

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

where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{i,t}$$

$\hat{\mu}_i$ = Estimated return for stock i

L_1 = Number of days in the estimation window

and

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{m,t}$$

$\hat{\mu}_m$ = Estimated market return

The **alpha for stock i** is also estimated using information from the estimation window.

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m$$

We calculate abnormal returns for each of the 61 days in the event window for all the insider transactions in our sample. Thereafter, we sum the abnormal returns across time and thus obtain a **cumulative abnormal return** (CAR_i) for each insider transaction.

$$CAR_i = \sum_{t=T_1+1}^{T_2} AR_{i,t}$$

CAR_i = Cumulative abnormal return for stock i during event window

The variance of the abnormal return ($\sigma^2(AR_{i,t})$) has two components where the first component is the variance of the error term in the market model ($\sigma_{\varepsilon_i}^2$) and the second component includes variance that is due to sampling error in α_i and β_i . When the estimation window grows larger this sampling error diminishes and the second component of the variance formula approaches zero. An estimation window of 120 working days is large enough and thus we can set $\sigma^2(AR_{i,t})$ equal to $\sigma_{\varepsilon_i}^2$ (MacKinlay, 1997).

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

$\hat{\sigma}_{\varepsilon_i}^2 = \text{Estimated variance of the error term}$

Under the same assumptions the **variance of the cumulative abnormal return for stock i** ($\sigma^2(CAR_i)$) is calculated using the following formula.

$$\sigma^2(CAR_i) = (T_2 - T_1 + 1) \hat{\sigma}_{\varepsilon_i}^2$$

Thereafter, we aggregate the CAR_i s that belong to a specific group of interest. The groups of interest are listed in *Table. 1*. When aggregating the different CAR_i s we obtain the **average cumulative abnormal return (ACAR)**.

$$ACAR = \frac{1}{N} \sum_{i=1}^N CAR_i$$

Consequently we calculate the corresponding **variance of the average cumulative abnormal return** ($\sigma^2(ACAR)$).

$$\sigma^2(ACAR) = \frac{1}{N^2} \sum_{i=1}^N \sigma^2(CAR_i)$$

When aggregating the different CAR_i s one has to assume that there is no clustering present, i.e. no overlapping of the event windows of the different stocks included. When assuming no clustering one can set the covariance terms to zero and thus assume that $ACAR \sim N(0, \sigma^2(ACAR))$.

Corresponding to each calculation of $ACAR$ we test whether we can reject our null hypothesis or not. The minimum level of significance that is accepted is 5%, which corresponds to an absolute t-value of at least 1.96. Thus if the test renders a t-value > 1.96 or a t-value < -1.96 we are able to reject our null hypothesis on a 5% significance level. The test statistics is obtained using the following formula.

$$t = \frac{ACAR}{\sqrt{\sigma^2(ACAR)}} \sim N(0,1)$$

4.9 Transaction costs

The cost of trading has not been taken into account when calculating the abnormal returns. The reasons to this is first of all that the transaction costs hardly have any impact on the trading results. If one were to day trade it would be reasonable to take these costs into account, but since we evaluate the transactions over a 3 month investment period the costs are negligible. Moreover, the transaction costs vary significantly between different financial institutions and thus it is not fair to apply a fixed cost for each transaction.

4.10 Normality, skewness and kurtosis

Given the central limit theorem (CLT), the distribution of logarithmic returns should approach normal distribution over long periods of time. The approximately 26,000 different CAR_{it} s, built up by almost 13 years (1998-01-01-2010-06-30) of daily logarithmic returns, is large enough to accept the CLT and hence normality (Aczel, 1993). In section 5.1 we provide a graph showing the normal distribution of the CAR_{it} s in our sample. In order to determine if the sample data has any skewness or kurtosis we also perform a skewness and kurtosis test.

4.11 Student's t-test

To test whether the difference in abnormal returns between two groups of interest is statistically different from zero we perform a number of student's t-tests. The null hypothesis is that the means of the two normally distributed populations are equal. Thus, if we can reject the null hypothesis on a 5% significance level we can conclude that the difference in abnormal returns between the two groups of interest is statistically different from zero.

5. Results

In this section we start by presenting the normality and skewness- and kurtosis tests of our sample data (5.1) followed by sample statistics (5.2). In section 5.3 a comparison of abnormal returns between male- and female insiders is presented. Thereafter follows the results from the comparison before and after October 2005 (5.4).

5.1 Normality, skewness and kurtosis

Given the central limit theorem (CLT) and the theory provided by Aczel (1993) our sample data is normally distributed. Chart. 2 below shows the distribution of the CAR_i s using the VW- and the EW benchmark indices separately.

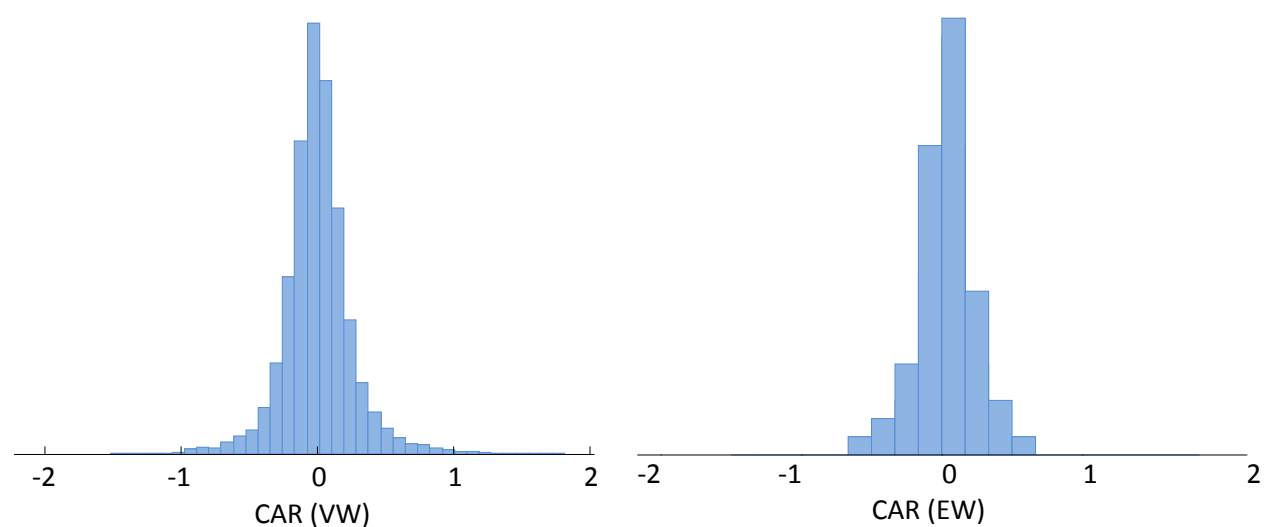


Chart. 2 Histograms showing the normal distribution of the CARs using VW and EW separately

Table. 2 below shows that the probability that our sample data suffers from any skewness or kurtosis is very low (less than 0.1%).

Skewness and Kurtosis test		
	Pr(Skewness)	Pr(Kurtosis)
Value Weighted	0.000	0.000
Equally Weighted	0.000	0.000

Table 2. Skewness and kurtosis test on CARs

5.2 Sample statistics

Statistics for the data used in the study is presented below. The total number of transactions in the sample is 26,818 where 17,655 (65.8%) are buy transactions and 9,163 (34.2%) are sell transactions. The sample has 3,712 unique insiders on the buy side and 2,283 unique insiders on the sell side. The average number of transactions (ANT) for each unique trader is slightly higher for buy transactions (4.76) than for sell transactions (4.01). Moreover, the volume as well as the value per transaction is considerably higher for sell transactions.

The fraction of female insiders is larger for buy transactions (17.0%) than for sell transactions (13.5%). The sample statistics also show that male insiders, considering the ANT, trade more frequently than female insiders (1.52x for buy transactions and 1.37x for sell transactions). Given the findings in section 2.5.4 these results were expected since males tend to be less risk averse, and thus trade more, than females. Males also tend to execute transactions that are larger in both volume and value. This holds true for both mean and median values.

Sample Statistics	BUY Transactions			SELL Transactions		
	All	Male	Female	All	Male	Female
No. transactions	17,655	15,561	2,094	9,163	8,228	935
No. insiders	3,712	3,080	632	2,283	1,975	308
Mean no. transactions (ANT)	4.76	5.05	3.31	4.01	4.17	3.04
Median no. transactions	2.00	2.00	2.00	2.00	2.00	1.00
Mean volume per transaction	120,899	124,994	70,887	242,128	243,279	174,208
Median volume per transaction	3,500	4,000	1,400	7,750	8,278	3,500
Mean value per transaction (MSEK)	9.4	9.2	5.2	12.8	12.7	9.5
Median value per transaction (TSEK)	132.5	144.1	69.6	306.6	324.4	127.4

Table. 3 Sample statistics

The yearly evolution of the average number of transactions is quite stable throughout the sample period. No drastic changes can be observed and it seems like the pattern is consistent for both buy- and sell transactions with the exception of the latter part of the sample period.

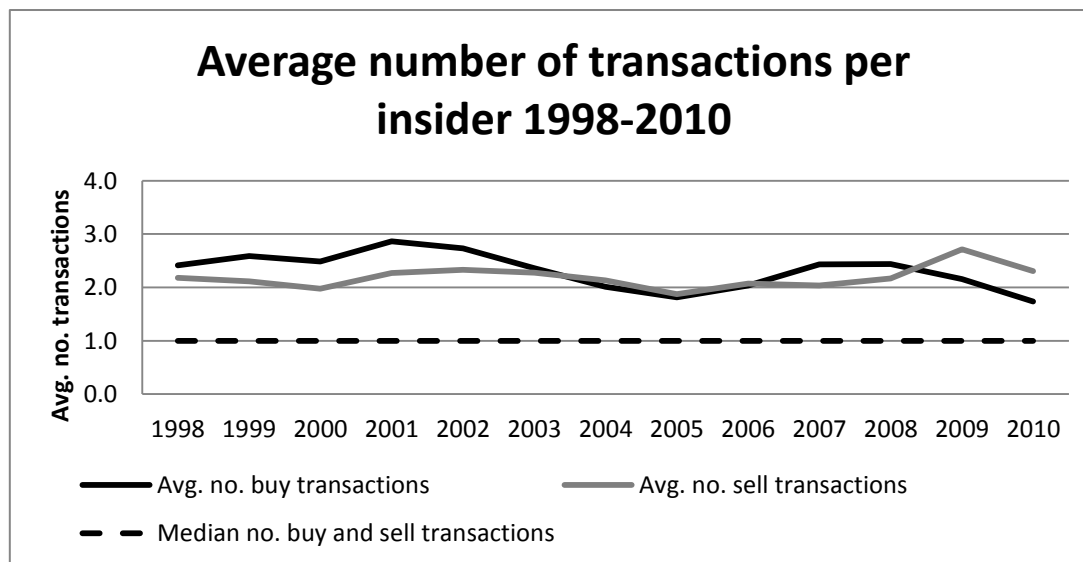


Chart. 3 Buy and sell transactions per insider

Considering the average value per insider transaction we see a spike in the value for buy transactions in 2003. Since then the general trend has been downwards sloping. Sell transactions on the other hand are more ambiguous but shows a spike in 2007 and 2008 representing large selling volumes related to the financial crisis.

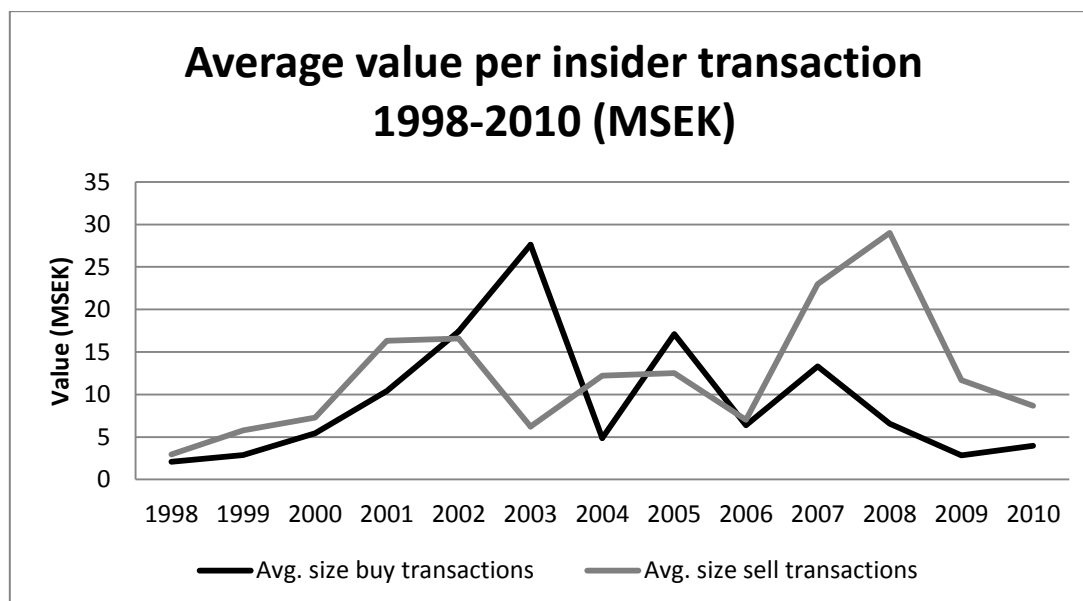


Chart. 4 Average value per insider buy and sell transaction

5.3 A comparison between genders

5.3.1 Graphical overview

The graphs below show the progression of *ACARs* for buy and sell transactions throughout the event window. The slope of the graphs become less steep the further away from origo, i.e. the closer to the end of the event window, one gets. This indicates that the biggest abnormal returns is observed right after the insider transaction. Moreover, the graphs clearly show that male insiders earn higher abnormal returns than female insiders for both buy and sell transactions. These results will be presented in detail in the following sections starting with buy transaction in section 5.3.2 and sell transactions in section 5.3.3.

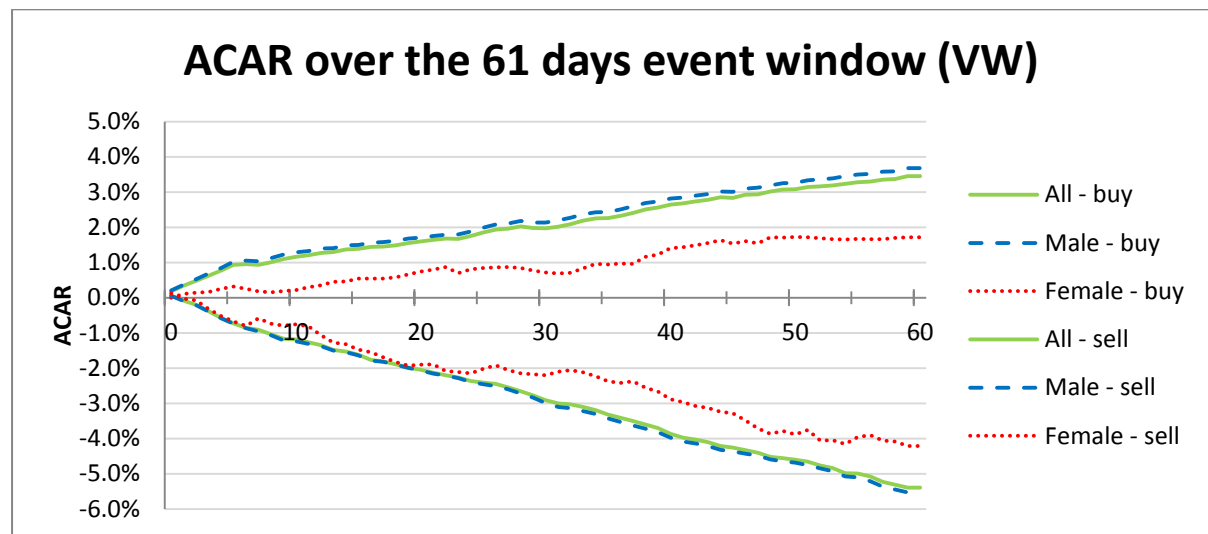


Chart. 5 The progression of ACAR throughout the event window of 61 days using a VW index

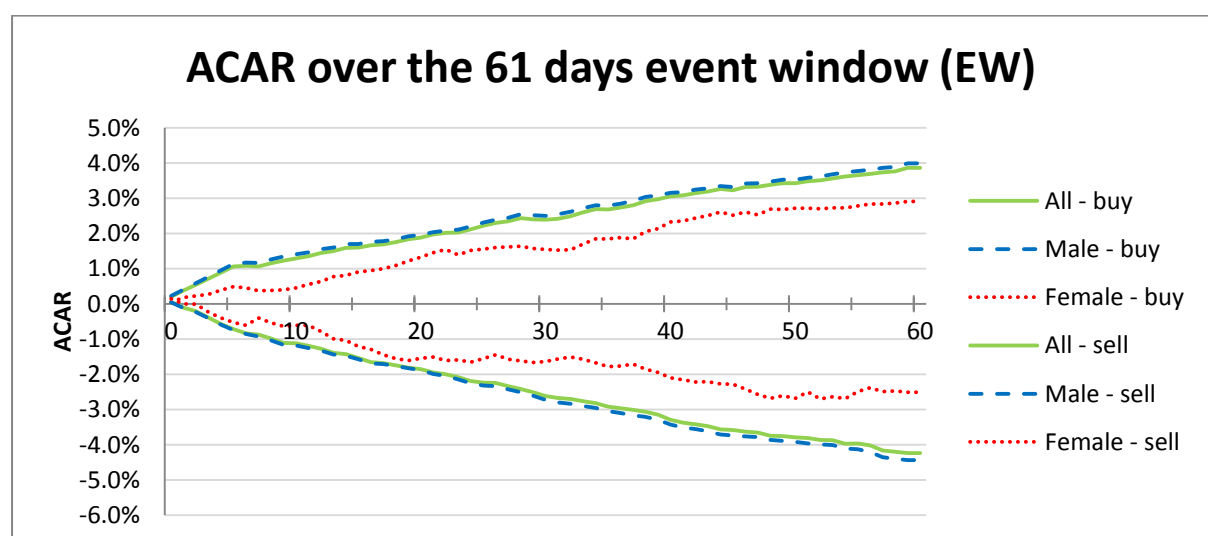


Chart. 6 The progression of ACAR throughout the event window of 61 days using a EW index

5.3.2 Buy transactions

In *Table. 4* the *ACARs* and the test statistics for all insider buy transactions as well as male and female buy transactions are presented separately. All values are statistically significant on a 5% significance level. That both male and female insiders earn abnormal returns is clear. Moreover, male insiders outperform female insiders by 1.96 percentage points (pp) using the VW benchmark index and by 1.09pp using the EW benchmark index. The differences in *ACAR* between the genders are presented in *Table. 6* and both values on a transaction basis are statistically different from zero on a 5% significance level. Moreover, as discussed in section 5.2, the *ANTs* in *Table. 4* show that male insiders trade more frequently than female insiders.

There is a difference between the results obtained using the VW- and the EW indices respectively. The *ACARs* obtained using the EW index are sometimes higher and sometimes lower than the ones obtained using the VW index and no consistency can be observed throughout the results section. This is due to the differences in construction of the two benchmark indices.

BUY Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
All	3.45%	18.61	3.86%	21.86	17,655	3,712	4.76
Male	3.68%	18.64	3.99%	21.27	15,561	3,080	5.05
Female	1.72%	3.21	2.91%	5.55	2,094	632	3.31

Table. 4 Buy transactions for whole sample using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

Insiders (BUY)	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
All	4.46%	11.96	4.95%	14.30	17,655	3,712	4.76
Male	4.65%	11.39	4.99%	13.24	15,561	3,080	5.05
Female	3.53%	3.86	4.78%	5.46	2,094	632	3.31

Table. 5 Buy transactions for whole sample using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

The results for all groups listed in *Table. 1* are presented on transaction basis, i.e. the *ACAR* for the average transaction. *Table. 5* illustrates the *ACAR* on an insider level, i.e. the *ACAR* earned by the average insider. The *ACARs* calculated on a transaction basis give equal weight to all transactions, while the calculation of the *ACARs* on an insider basis only includes the mean *ACAR* for each insider. Both methods generate results showing that male insiders outperform female insiders. However, shown in *Table. 6*, we fail to reject the null hypothesis that the difference in *ACARs* earned by the average male insider and the average female insider is equal to zero. A comparison between the *ACARs* in *Table. 4* and *5* further indicates that insiders earning lower *ACARs* trade

more frequently than other insiders. This finding is in line with the overconfidence hypothesis and is further discussed in section 6.2.

BUY Transactions	VW		EW	
	Diff. ACAR	t-value	Diff. ACAR	t-value
Male - Female (Transactions)	1.96pp	3.43	1.09pp	1.99
Male - Female (Insiders)	1.12pp	1.13	0.22pp	0.23
H ₀ : Male ACAR - Female ACAR = 0				

Table. 6 Student's t-test on buy transactions

Presented below is the breakdown of ACARs on the insiders' positions held within the company. CEOs outperform insiders on all other positions for both males and females (VW and EW). One of the most interesting findings is that female CEOs (12.17%) tend to considerably outperform male CEOs (5.31%). However, male CEO transactions represent 98.9% of all CEO transactions in the sample and only 20 transactions are carried out by the 12 unique female CEOs. Another interesting finding is that the Large Shareholders carry out the highest ANT (17.34) while earning the lowest abnormal returns (1.10%, EW), consistent with the overconfidence hypothesis.

As stated above, the results indicate that CEOs outperform insiders on other positions. This can be explained by differences in access to valuable information. The position that should offer the best access to valuable information is the CEO position, followed by Vice CEO, Board Member and Large Shareholder. The results shown in Table. 7 are consistent with the reasoning above.

BUY Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
CEO (All)	5.39%	9.38	5.00%	9.17	1,747	356	4.91
CEO (M)	5.31%	9.20	4.92%	8.99	1,727	344	5.02
CEO (F)	12.17%	2.01	11.20%	2.12	20	12	1.67
Vice CEO (All)	3.71%	4.33	3.55%	4.23	625	194	3.22
Vice CEO (M)	3.52%	4.09	3.33%	3.87	597	182	3.28
Vice CEO (F)	7.78%	1.41	8.32%	2.24	28	12	2.33
Board Member (All)	3.77%	13.20	3.78%	14.05	7,436	1,209	6.15
Board Member (M)	4.08%	13.37	4.00%	13.92	6,624	1,001	6.62
Board Member (F)	1.26%	1.57	2.07%	2.66	812	208	3.90
Large shareholder (All)	0.37%	0.72	1.10%	2.15	1,821	105	17.34
Large shareholder (M)	0.80%	1.41	1.20%	2.19	1,543	90	17.14
Large shareholder (F)	-1.99%	-1.56	0.50%	0.37	278	15	18.53
Other (All)	3.39%	10.22	4.50%	14.17	6,026	2,259	2.67
Other (M)	3.50%	9.73	4.59%	13.40	5,070	1,843	2.75
Other (F)	2.79%	3.27	3.98%	4.79	956	416	2.30

Table. 7 Buy transactions on a position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

Table. 8 illustrates that *ACARs* for buy transactions are the highest within the Information Technology and Telecommunications sectors. The lowest *ACARs* for buy transactions are observed within the Industrials sector. All but two of the *ACARs* (Energy and Materials (VW)) are statistically significant on a 5% significance level. Even though males tend to outperform females when considering the whole sample (Table. 4 and 6), females outperform males within the Consumer Staples sector and possibly also within the Healthcare sector. Some of the sectors, especially for females, include only a limited number of transactions.

BUY Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Consumer Discretionary (All)	1.94%	4.09	3.41%	7.88	2,311	596	3.88
Consumer Discretionary (M)	2.27%	4.41	3.58%	7.64	1,980	481	4.12
Consumer Discretionary (F)	-0.04%	-0.04	2.37%	2.10	331	115	2.88
Consumer Staples (All)	6.67%	5.55	8.67%	7.17	346	97	3.57
Consumer Staples (M)	5.80%	4.15	7.97%	5.71	278	80	3.48
Consumer Staples (F)	10.22%	4.75	11.53%	5.03	68	17	4.00
Energy (All)	-0.10%	-0.03	5.35%	2.08	131	37	3.54
Energy (M)	2.74%	1.01	7.54%	2.92	117	30	3.90
Energy (F)	-23.79%	-2.11	-12.95%	-1.33	14	7	2.00
Financials (All)	2.64%	8.28	2.52%	8.13	4,548	812	5.60
Financials (M)	2.78%	8.03	2.63%	7.79	3,889	639	6.09
Financials (F)	1.82%	2.22	1.93%	2.42	659	173	3.81
Healthcare (All)	5.35%	5.85	4.95%	5.90	978	334	2.93
Healthcare (M)	5.44%	5.61	4.92%	5.56	859	266	3.23
Healthcare (F)	4.70%	1.71	5.20%	1.98	119	68	1.75
Industrials (All)	1.28%	4.41	1.50%	5.64	5,213	1,207	4.32
Industrials (M)	1.43%	4.76	1.60%	5.78	4,760	1,031	4.62
Industrials (F)	-0.34%	-0.32	0.46%	0.49	453	176	2.57
Information Technology (All)	8.72%	15.41	8.86%	15.56	3,072	760	4.04
Information Technology (M)	9.21%	15.34	9.18%	15.35	2,744	656	4.18
Information Technology (F)	4.59%	2.75	6.22%	3.36	328	104	3.15
Materials (All)	1.44%	1.34	3.00%	3.38	799	258	3.10
Materials (M)	1.60%	1.40	2.91%	3.12	704	221	3.19
Materials (F)	0.30%	0.09	3.68%	1.29	95	37	2.57
Telecommunications (All)	8.77%	6.73	11.17%	7.04	257	97	2.65
Telecommunications (M)	9.30%	6.58	11.58%	6.74	230	78	2.95
Telecommunications (F)	4.28%	1.47	7.66%	2.10	27	19	1.42
Utilities (All)	-	-	-	-	0	0	-
Utilities (M)	-	-	-	-	0	0	-
Utilities (F)	-	-	-	-	0	0	-

Table. 8 Buy transactions on a sector level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

A more detailed and comprehensive breakdown on sector- and position levels is included in the appendix, *Table. 36*. Even though the results presented in *Table. 36* have low significance they still offer valuable insights. Only buy transactions are considered in this breakdown since they offer the most transparent analysis. Possible reasons to why the Information Technology sector has the highest *ACARs* seem to be that insiders, across all positions, have very high *ACARs* compared to other sectors. CEOs and Vice CEOs earn the highest *ACARs* while Large Shareholders earn the lowest. The Telecommunications sector is also one of the best performing sectors. This sector has no Large Shareholders, and also a very limited number of female insiders, which on average tend to reduce the overall *ACARs*. The Industrials sector offers the lowest *ACARs*, which holds true for all positions, indicating that there is a possibility of limited access to valuable information for insiders to trade upon within this sector.

The most interesting finding, that female insiders seem to outperform males within the Consumer Staples sector, may stem from the fact that our sample does not have any female Large Shareholders (only one male Large Shareholder with an *ACAR* of -18%). However, the sample also lacks female CEOs and Vice CEOs. Noteworthy of the Consumer Staples results is that female Board Members outperform male Board Members.

5.3.3 Sell transactions

The *ACAR* and test statistics for the sell transactions are presented in *Table. 9*. All values are statistically significant on a 5% significance level. Both male and female insiders earn negative abnormal returns in connection to sell transactions. Sell transactions that lead to negative abnormal returns are successful transactions since the insider then managed to avoid a loss. Thus, negative abnormal returns in connection to sell transactions give proof that insiders earn abnormal returns.

Male insiders outperform female insiders (-1.93pp (EW)). However, the difference in *ACAR* between males and females using the VW benchmark index is not statistically different from zero on a 5% significance level. Also for sell transactions male insiders trade more frequently than female insiders.

SELL Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
All	-5.40%	-18.49	-4.24%	-15.71	9,163	2,283	4.01
Male	-5.53%	-17.71	-4.44%	-15.39	8,228	1,975	4.17
Female	-4.21%	-5.31	-2.51%	-3.38	935	308	3.04

Table. 9 Sell transactions for whole sample using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

The *ACAR* for the average insider on sell transactions is presented in *Table. 10*. The comparison between *Table. 9* and *10* is similar to the one for buy transactions and illustrates that a higher frequency of trading in general leads to lower *ACAR*s.

Insiders (SELL)	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
All	-6.22%	-12.97	-4.70%	-10.91	9,163	2,283	4.01
Male	-6.38%	-12.28	-4.90%	-10.54	8,228	1,975	4.17
Female	-5.17%	-4.17	-3.44%	-3.00	935	308	3.04

Table. 10 Sell transactions for whole sample using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

SELL Transactions	VW		EW	
	Diff. ACAR	t-value	Diff. ACAR	t-value
Male - Female (Transactions)	-1.32pp	-1.37	-1.93pp	-2.16
Male - Female (Insiders)	-1.21pp	-0.86	-1.46pp	-1.16
H ₀ : Male ACAR - Female ACAR = 0				

Table. 11 Student's t-test on sell transactions

Contrarian to buy transactions there are no clear differences in the results for CEOs, vice CEOs and Board Members considering the *ACARs*. However, looking at the *ANTs*, Board Members tend to trade more frequently. Large Shareholders trade the most, consistent with buy transactions. Moreover, male insiders trade more than females for all categories except Large Shareholders.

The number of female CEO transactions is very limited and represents only 0.4% of the total number of transactions in our sample. The level of significance is also a predicament when studying females on a position level, leaving us with insignificant results for four out of five categories.

Sell Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
CEO (All)	-5.63%	-4.80	-5.46%	-5.24	680	182	3.74
CEO (M)	-5.57%	-4.74	-5.39%	-5.18	677	179	3.78
CEO (F)	-20.18%	-0.68	-22.16%	-0.64	3	3	1.00
Vice CEO (All)	-5.63%	-5.98	-6.77%	-7.51	459	143	3.21
Vice CEO (M)	-5.56%	-5.87	-6.78%	-7.48	450	136	3.31
Vice CEO (F)	-9.38%	-1.11	-6.21%	-0.76	9	7	1.29
Board Member (All)	-5.62%	-10.39	-4.20%	-8.34	3,119	657	4.75
Board Member (M)	-5.77%	-10.24	-4.30%	-8.20	2,948	594	4.96
Board Member (F)	-2.89%	-1.76	-2.48%	-1.56	171	63	2.71
Large shareholder (All)	0.54%	0.57	0.23%	0.26	1,147	109	10.52
Large shareholder (M)	1.02%	0.97	0.28%	0.27	957	93	10.29
Large shareholder (F)	-1.92%	-1.06	-0.02%	-0.01	190	16	11.88
Other (All)	-6.95%	-17.25	-5.10%	-13.84	3,758	1,406	2.67
Other (M)	-7.26%	-16.59	-5.44%	-13.62	3,196	1,178	2.71
Other (F)	-5.22%	-5.04	-3.20%	-3.33	562	228	2.46

Table. 12 Sell transactions on a position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

For sell transactions the insiders within the Financial sector are the ones that trade most frequently. Consistently insiders are able to obtain abnormal returns across all sectors (with the exception of the utilities sector where we do not have any registered transactions). Studying *Table. 13* we find that the *ACARs* in the Energy sector is the highest. The results are however ambiguous comparing the *ACARs* and t-values obtained using the VW and EW benchmark indices respectively.

Our data suggests that it is more difficult to find any significant patterns looking at sell transactions and a discussion regarding this is included in section 6.2. Once again the results for females have very low significance but we however find that females tend to outperform men within the Consumer Staples sector also for sell transactions. The results for females within the Energy sector seem odd but are completely irrelevant considering the low significance level as well as the very limited amount of observations.

SELL Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Consumer Discretionary (All)	-6.41%	-8.59	-3.97%	-6.03	1,166	334	3.49
Consumer Discretionary (M)	-6.67%	-8.36	-4.31%	-6.25	1,023	283	3.61
Consumer Discretionary (F)	-4.55%	-2.15	-1.60%	-0.75	143	51	2.80
Consumer Staples (All)	-5.42%	-2.26	-4.58%	-1.86	129	52	2.48
Consumer Staples (M)	-4.77%	-1.80	-3.90%	-1.43	115	45	2.56
Consumer Staples (F)	-10.70%	-3.13	-10.19%	-2.89	14	7	2.00
Energy (All)	-6.08%	-1.23	-11.18%	-2.60	47	21	2.24
Energy (M)	-3.38%	-0.71	-8.45%	-1.99	42	17	2.47
Energy (F)	-28.70%	-1.24	-34.11%	-1.99	5	4	1.25
Financials (All)	-4.08%	-7.76	-2.53%	-4.66	1,745	384	4.54
Financials (M)	-4.33%	-7.54	-2.66%	-4.45	1,508	325	4.64
Financials (F)	-2.50%	-1.95	-1.67%	-1.38	237	59	4.02
Healthcare (All)	-6.03%	-5.49	-3.62%	-3.80	765	210	3.64
Healthcare (M)	-6.75%	-5.80	-3.98%	-3.98	698	171	4.08
Healthcare (F)	1.50%	0.49	0.19%	0.06	67	39	1.72
Industrials (All)	-5.12%	-13.84	-4.78%	-13.97	2,676	739	3.62
Industrials (M)	-5.10%	-12.89	-4.84%	-13.27	2,424	645	3.76
Industrials (F)	-5.29%	-5.50	-4.12%	-4.47	252	94	2.68
Information Technology (All)	-6.17%	-6.98	-5.41%	-6.72	2,029	533	3.81
Information Technology (M)	-6.15%	-6.55	-5.66%	-6.60	1,849	481	3.84
Information Technology (F)	-6.36%	-2.57	-2.85%	-1.30	180	52	3.46
Materials (All)	-5.52%	-3.89	-3.81%	-2.89	462	133	3.47
Materials (M)	-5.89%	-4.13	-4.46%	-3.35	432	124	3.48
Materials (F)	-0.18%	-0.02	5.53%	0.83	30	9	3.33
Telecommunications (All)	-3.31%	-1.79	-2.81%	-1.48	144	52	2.77
Telecommunications (M)	-3.32%	-1.72	-2.71%	-1.37	137	46	2.98
Telecommunications (F)	-3.05%	-0.76	-4.79%	-1.18	7	6	1.17
Utilities (All)	-	-	-	-	0	0	-
Utilities (M)	-	-	-	-	0	0	-
Utilities (F)	-	-	-	-	0	0	-

Table. 13 Sell transactions on a sector level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

5.4 A comparison before and after October 2005

In the sections below the *ACARs* before and after October 2005 are presented. We will start by presenting the results for buy transactions in section 5.4.1 followed by sell transactions in section 5.4.2. This part of the research offers a comparison between time periods. As a consequence the survivorship bias of our sample data may have impacts on the findings and we will comment on this throughout the section.

5.4.1 Buy transactions

Table. 14 shows that insiders, both male and female, earned significantly higher abnormal returns related to buy transactions before October 2005 than after October 2005. All but one of the *ACARs* are statistically significant on a 5% significance level. The result differs somewhat depending on which index we use and an interesting observation is that females seem to earn higher abnormal returns than males in the period before October 2005 using the EW benchmark index. This is contradictory to the results presented earlier in section 5.3.2 when considering the whole sample (1998-01-01-2010-06-30). Moreover, the *ANT* decreases for male insiders while female insiders seem to trade more after October 2005. That both the *ACARs* and the *ANT* have decreased for male insiders after October 2005 contradicts the overconfidence hypothesis. This irregular finding may be explained by the increased usage of the capital insurance among the male insiders that earn the highest *ACARs*.

Raising the issue of survivorship bias the finding that insiders earn higher *ACARs* in the period before October 2005 than after may stem from the fact that the sub sample from before October 2005 is biased towards more successful companies.

BUY Transactions	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	4.96%	17.15	7,964	4.08	2.21%	9.23	9,691	3.88
Male	4.99%	16.59	7,233	4.31	2.54%	9.78	8,328	4.11
Female	4.61%	4.49	731	2.68	0.17%	0.28	1,363	2.86

Table. 14 Buy transactions before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

BUY Transactions	Before Oct 2005				After Oct 2005			
(EW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	4.78%	16.52	7,964	4.08	3.11%	14.35	9,691	3.88
Male	4.75%	15.81	7,233	4.31	3.33%	14.23	8,328	4.11
Female	5.11%	4.84	731	2.68	1.72%	3.03	1,363	2.86

Table. 15 Buy transactions before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

Below follows a chart illustrating the differences in *ACARs* before and after October 2005.

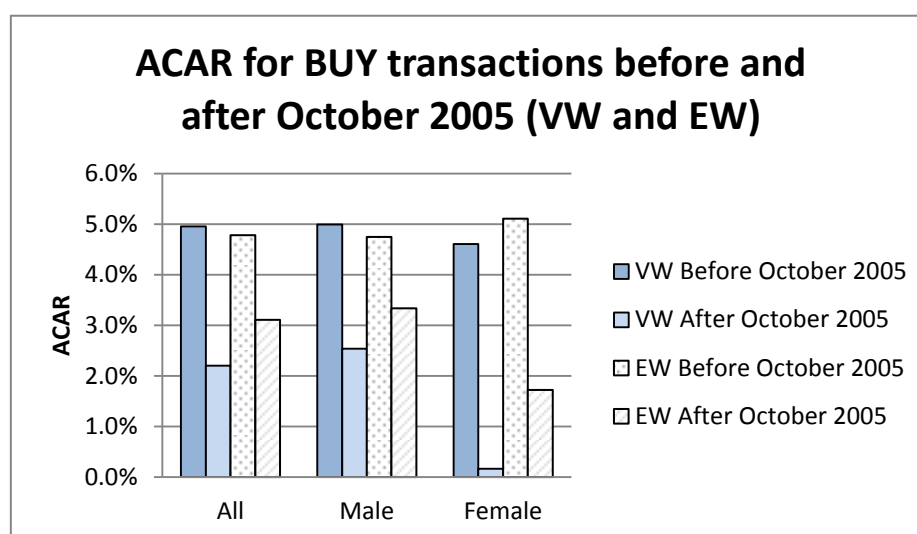


Chart. 7 *ACAR for buy transactions before and after October 2005 (VW and EW)*

A presentation of *ACARs* for the average insider, with results similar to section 5.3.2, is included below. Comparing *Table. 14 and 15* with *Table. 16 and 17* the results show that frequent trading in general leads to lower abnormal returns.

Insiders (BUY)	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	5.76%	10.83	7,964	4.08	2.40%	16.63	9,691	3.88
Male	5.73%	10.26	7,233	4.31	3.23%	7.20	8,328	4.11
Female	5.90%	3.63	731	2.68	0.51%	1.33	1,363	2.86

Table. 16 *Buy transactions before and after October 2005 using VW index*

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

Insiders (BUY)	Before Oct 2005				After Oct 2005			
(EW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	5.37%	10.60	7,964	4.08	4.03%	11.21	9,691	3.88
Male	5.29%	9.98	7,233	4.31	4.14%	10.25	8,328	4.11
Female	5.86%	3.71	731	2.68	3.57%	4.53	1,363	2.86

Table. 17 *Buy transactions before and after October 2005 using EW index*

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

The results from the student's t-tests are shown below in *Table. 18, 19 and 20*. All values on a transaction basis are statistically significant on a 5% significance level which allows us to reject the null hypothesis and conclude that the *ACARs* before October 2005 are statistically different from those after October 2005. This conclusion is valid for all three groups of interest (all, male and female) using both the VW and the EW indices respectively. Studying the average insider the results are consistent with the results on a transaction basis with the exception of the EW benchmark index which renders insignificant results for the average male and female insider.

BUY Transactions	VW		EW	
(All)	Diff. ACAR	t-value	Diff. ACAR	t-value
Bef.2005 - Af.2005 (Transactions)	2.75pp	7.40	1.67pp	4.72
Bef.2005 - Af.2005 (Insiders)	2.81pp	4.32	1.34pp	2.21
H_0 : ACAR before Oct. 2005 - ACAR after Oct. 2005 = 0				

Table. 18 Student's t-test on buy transactions

BUY Transactions	VW		EW	
(Male)	Diff. ACAR	t-value	Diff. ACAR	t-value
M. Bef.2005 - M.Af.2005 (Transactions)	2.45pp	6.21	1.41pp	3.76
M. Bef.2005 - M.Af.2005 (Insiders)	2.50pp	3.53	1.15pp	1.75
H_0 : Male ACAR before Oct. 2005 - Male ACAR after Oct. 2005 = 0				

Table. 19 Student's t-test on buy transactions

BUY Transactions	VW		EW	
(Female)	Diff. ACAR	t-value	Diff. ACAR	t-value
F. Bef.2005 - F.Af.2005 (Transactions)	1.72pp	3.97	3.38pp	3.09
F. Bef.2005 - F.Af.2005 (Insiders)	4.16pp	2.51	2.28pp	1.44
H_0 : Female ACAR before Oct. 2005 - Female ACAR after Oct. 2005 = 0				

Table. 20 Student's t-test on buy transactions

Consistently for all categories (with the exception of board members (EW)) we find a drop in *ACARs* in the period after October 2005. All values are statistically significant on a 5% significance level. CEOs earn the highest *ACARs* in both periods which indicates that CEOs have access to the most valuable information. Large Shareholders and Other insiders experience the largest differences in *ACARs*, where Large Shareholders on average are no longer able to earn positive abnormal returns after October 2005. The ANT for Large Shareholders increase significantly in the period after October 2005 and reach one of the highest numbers (17.65) observed in our study. The increase in ANT together with the decrease in *ACAR* is in line with the overconfidence hypothesis.

These findings could again be inflicted by the survivorship bias. However, the comparison between positions within each time period should not be effected since the survivorship bias affect all categories in a consistent manner. This holds true also for the sector comparison presented in *Table*.

23 and 24.

BUY Transactions	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
CEO (All)	5.97%	7.19	854	4.17	4.84%	6.07	893	4.13
CEO (M)	6.06%	7.29	848	4.24	4.60%	5.73	879	4.23
CEO (F)	-6.49%	-0.51	6	1.20	20.16%	3.53	14	1.75
Vice CEO (All)	4.89%	3.84	288	2.30	2.69%	2.33	337	3.15
Vice CEO (M)	4.91%	3.79	271	2.32	2.36%	2.06	326	3.26
Vice CEO (F)	4.63%	0.74	17	2.13	12.66%	1.21	11	1.57
Board Member (All)	4.14%	10.27	3,770	5.47	3.40%	8.38	3,666	4.71
Board Member (M)	4.21%	10.00	3,477	5.86	3.93%	8.88	3,147	5.13
Board Member (F)	3.21%	2.37	293	3.05	0.16%	0.16	519	3.15
Large shareholder (All)	4.47%	4.72	727	11.54	-2.35%	-4.14	1,094	17.65
Large shareholder (M)	4.82%	4.73	624	11.56	-1.94%	-3.09	919	17.67
Large shareholder (F)	2.34%	0.92	103	11.44	-4.53%	-3.42	175	17.50
Other (All)	6.08%	10.30	2,325	2.22	1.69%	4.35	3,701	2.46
Other (M)	5.96%	9.58	2,013	2.29	1.88%	4.36	3,057	2.53
Other (F)	6.88%	3.81	312	1.87	0.81%	0.89	644	2.15

Table. 21 Buy transactions on a position level before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

BUY Transactions	Before Oct 2005				After Oct 2005			
(EW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
CEO (All)	5.05%	6.23	854	4.17	4.95%	6.75	893	4.13
CEO (M)	5.09%	6.29	848	4.24	4.76%	6.43	879	4.23
CEO (F)	-1.52%	-0.10	6	1.20	16.66%	4.74	14	1.75
Vice CEO (All)	4.76%	3.42	288	2.30	2.52%	2.51	337	3.15
Vice CEO (M)	4.76%	3.27	271	2.32	2.13%	2.12	326	3.26
Vice CEO (F)	4.71%	1.20	17	2.13	13.90%	1.94	11	1.57
Board Member (All)	3.64%	9.15	3,770	5.47	3.93%	10.86	3,666	4.71
Board Member (M)	3.67%	8.84	3,477	5.86	4.35%	11.08	3,147	5.13
Board Member (F)	3.34%	2.37	293	3.05	1.35%	1.47	519	3.15
Large shareholder (All)	6.09%	6.16	727	11.54	-2.22%	-4.30	1,094	17.65
Large shareholder (M)	5.76%	5.45	624	11.56	-1.89%	-3.36	919	17.67
Large shareholder (F)	8.10%	2.91	103	11.44	-3.97%	-3.02	175	17.50
Other (All)	6.12%	10.34	2,325	2.22	3.48%	9.73	3,701	2.46
Other (M)	6.15%	9.89	2,013	2.29	3.57%	9.07	3,057	2.53
Other (F)	5.93%	3.22	312	1.87	3.04%	3.56	644	2.15

Table. 22 Buy transactions on a position level before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

Below follows the sector level results. On a 5% significance level we are unable to get any statistically significant results for the Energy (VW and EW), Materials (VW and EW) and Industrials (EW) sectors. This leaves us with all *ACARs* being higher in the period before October 2005 with the exception of Industrials (VW) and Consumer Discretionary (EW). Hence, the sector breakdown adds to the overall results that abnormal returns are lower in the period after October 2005. Moreover, male insiders outperform female insiders in all sectors after October 2005. Thus the previous results that female insiders outperform male insiders in the Consumer Staples sector and possibly also the Healthcare sector only holds true for the period before October 2005.

BUY Transactions	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
Consumer Discretionary (All)	2.66%	3.55	713	2.98	1.62%	2.70	1,598	3.40
Consumer Discretionary (M)	2.90%	3.37	632	3.19	1.98%	2.97	1,348	3.57
Consumer Discretionary (F)	0.78%	0.29	81	1.98	-0.31%	-0.23	250	2.72
Consumer Staples (All)	9.24%	4.09	165	3.44	4.33%	4.35	181	2.97
Consumer Staples (M)	7.21%	2.73	135	3.38	4.48%	4.11	143	2.92
Consumer Staples (F)	18.36%	5.62	30	3.75	3.79%	1.56	38	3.17
Energy (All)	-7.32%	-1.28	25	3.13	1.61%	0.51	106	3.53
Energy (M)	-7.22%	-1.21	24	3.43	5.31%	1.76	93	4.04
Energy (F)	-	-	1	1.00	-24.87%	-2.05	13	1.86
Financials (All)	3.89%	7.54	2,113	5.10	1.56%	3.98	2,435	4.46
Financials (M)	3.86%	7.28	1,904	5.60	1.76%	3.90	1,985	4.73
Financials (F)	4.18%	2.12	209	2.82	0.72%	0.93	450	3.57
Healthcare (All)	7.92%	5.82	513	2.70	2.51%	2.11	465	2.41
Healthcare (M)	7.78%	5.45	470	2.92	2.61%	2.07	389	2.61
Healthcare (F)	9.48%	2.06	43	1.48	1.99%	0.58	76	1.73
Industrials (All)	0.76%	2.01	2,378	3.80	1.71%	3.99	2,835	3.49
Industrials (M)	0.85%	2.17	2,230	3.98	1.94%	4.33	2,530	3.76
Industrials (F)	-0.55%	-0.36	148	2.31	-0.24%	-0.17	305	2.18
Information Technology (All)	11.74%	13.55	1,645	3.59	5.23%	7.63	1,427	3.51
Information Technology (M)	12.34%	13.32	1,450	3.62	5.70%	7.86	1,294	3.70
Information Technology (F)	7.31%	3.00	195	3.42	0.61%	0.30	133	2.33
Materials (All)	4.53%	3.90	305	2.35	-0.46%	-0.29	494	3.07
Materials (M)	4.62%	3.86	286	2.47	-0.47%	-0.27	418	3.17
Materials (F)	3.10%	0.65	19	1.36	-0.40%	-0.10	76	2.62
Telecommunications (All)	13.68%	5.15	107	3.34	5.27%	4.75	150	2.24
Telecommunications (M)	13.55%	4.91	102	3.78	5.91%	4.92	128	2.42
Telecommunications (F)	16.28%	1.93	5	1.00	1.56%	0.56	22	1.57
Utilities (All)	-	-	0	-	-	-	0	-
Utilities (M)	-	-	0	-	-	-	0	-
Utilities (F)	-	-	0	-	-	-	0	-

Table. 23 Buy transactions on a sector level before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

BUY Transactions		Before Oct 2005				After Oct 2005			
(EW)		ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
Consumer Discretionary (All)		1.65%	2.28	713	2.98	4.19%	7.83	1,598	3.40
Consumer Discretionary (M)		2.02%	2.67	632	3.19	4.31%	7.33	1,348	3.57
Consumer Discretionary (F)		-1.25%	-0.53	81	1.98	3.54%	2.78	250	2.72
Consumer Staples (All)		11.63%	5.39	165	3.44	5.97%	5.04	181	2.97
Consumer Staples (M)		9.64%	3.82	135	3.38	6.40%	4.92	143	2.92
Consumer Staples (F)		20.60%	6.72	30	3.75	4.36%	1.54	38	3.17
Energy (All)		-3.75%	-0.64	25	3.13	7.50%	2.64	106	3.53
Energy (M)		-3.75%	-0.61	24	3.43	10.46%	3.77	93	4.04
Energy (F)		-	-	1	1.00	-13.66%	-1.30	13	1.86
Financials (All)		3.48%	6.84	2,113	5.10	1.63%	4.52	2,435	4.46
Financials (M)		3.46%	6.53	1,904	5.60	1.83%	4.33	1,985	4.73
Financials (F)		3.73%	2.05	209	2.82	1.09%	1.37	450	3.57
Healthcare (All)		5.95%	4.78	513	2.70	3.85%	3.47	465	2.41
Healthcare (M)		5.82%	4.48	470	2.92	3.83%	3.29	389	2.61
Healthcare (F)		7.38%	1.67	43	1.48	3.97%	1.22	76	1.73
Industrials (All)		0.64%	1.80	2,378	3.80	2.21%	5.76	2,835	3.49
Industrials (M)		0.67%	1.80	2,230	3.98	2.41%	5.99	2,530	3.76
Industrials (F)		0.26%	0.20	148	2.31	0.56%	0.45	305	2.18
Information Technology (All)		12.31%	13.62	1,645	3.59	4.89%	7.74	1,427	3.51
Information Technology (M)		12.61%	13.26	1,450	3.62	5.32%	7.94	1,294	3.70
Information Technology (F)		10.03%	3.53	195	3.42	0.64%	0.36	133	2.33
Materials (All)		4.45%	4.01	305	2.35	2.10%	1.64	494	3.07
Materials (M)		4.61%	3.98	286	2.47	1.74%	1.29	418	3.17
Materials (F)		2.14%	0.54	19	1.36	4.06%	1.19	76	2.62
Telecommunications (All)		14.32%	4.33	107	3.34	8.93%	6.69	150	2.24
Telecommunications (M)		14.15%	4.12	102	3.78	9.54%	6.71	128	2.42
Telecommunications (F)		17.81%	1.74	5	1.00	5.36%	1.42	22	1.57
Utilities (All)		-	-	0	-	-	-	0	-
Utilities (M)		-	-	0	-	-	-	0	-
Utilities (F)		-	-	0	-	-	-	0	-

Table. 24 Buy transactions on a sector level before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

5.4.2 Sell transactions

In Table. 25 and 26 the results for sell transactions before and after October 2005 are presented. In both periods insiders are able to gain abnormal returns with all ACARs for both VW and EW indices being statistically significant on a 5% significance level. The differences between the two sub periods are very small and differ in direction. Hence the results for sell transactions are ambiguous. The survivorship bias is once again present and may be an explanatory factor to our ambiguous results.

SELL Transactions	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	-5.55%	-12.4	4,686	3.55	-5.24%	-14.11	4,477	3.29
Male	-5.68%	-12.06	4,302	3.65	-5.36%	-13.34	3,926	3.38
Female	-4.01%	-2.92	384	2.69	-4.36%	-4.6	551	2.76

Table. 25 Sell transactions before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

SELL Transactions	Before Oct 2005				After Oct 2005			
(EW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	-4.24%	-10.45	4,686	3.55	-4.24%	-12.01	4,477	3.29
Male	-4.39%	-10.26	4,302	3.65	-4.48%	-11.77	3,926	3.38
Female	-2.52%	-2.04	384	2.69	-2.50%	-2.72	551	2.76

Table. 26 Sell transactions before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

The following chart illustrates the change in ACARs for sell transactions before and after October 2005.

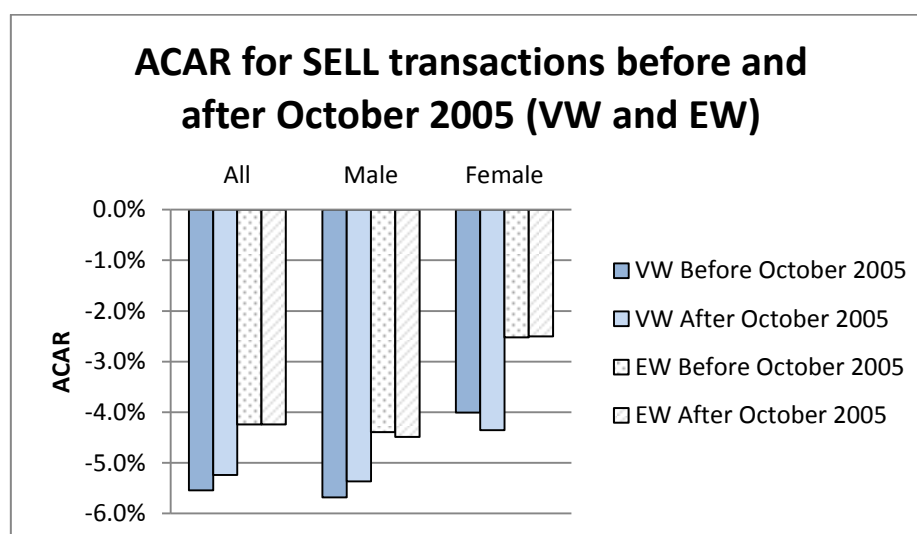


Chart. 8 ACAR for sell transactions before and after October 2005 (VW and EW)

Studying Table. 27 and 28 the ACARs for the average insider seem to be lower after October 2005. However, when performing the student's t-test we are not able to find any statistical difference between the two time periods for neither male or female insiders. Thus the sell transactions for the average insider render no meaningful results.

Insiders (SELL)	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	-6.86%	-10.29	4,686	3.55	-5.34%	-10.46	4,477	3.29
Male	-7.06%	-9.96	4,302	3.65	-5.36%	-9.69	3,926	3.38
Female	-5.23%	-2.68	384	2.69	-5.28%	-3.91	551	2.76

Table. 27 Sell transactions before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

Insiders (SELL)	Before Oct 2005				After Oct 2005			
(EW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
All	-5.18%	-8.74	4,686	3.55	-4.19%	-8.92	4,477	3.29
Male	-5.34%	-8.51	4,302	3.65	-4.33%	-8.56	3,926	3.38
Female	-3.87%	-2.14	384	2.69	-3.36%	-2.67	551	2.76

Table. 28 Sell transactions before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

In the student's t-tests below we test whether the ACARs for sell transactions before October 2005 are statistically different from the ones after October 2005. Also on a transaction basis we fail to reject the null hypothesis on a 5% significance level and are thus not able to determine whether the ACARs before and after October 2005 are statistically different from each other.

SELL Transactions	VW		EW	
(All)	Diff. ACAR	t-value	Diff. ACAR	t-value
Bef.2005 - Af.2005 (Transactions)	-0.31pp	-0.52	0.00pp	0.00
Bef.2005 - Af.2005 (Insiders)	-1.52pp	-1.81	-0.99pp	-1.32
H ₀ : ACAR before Oct. 2005 - ACAR after Oct. 2005 = 0				

Table. 29 Student's t-test on sell transactions

SELL Transactions	VW		EW	
(Male)	Diff. ACAR	t-value	Diff. ACAR	t-value
M. Bef.2005 - M.Af.2005 (Transactions)	-0.32pp	-0.51	0.09pp	0.16
M. Bef.2005 - M.Af.2005 (Insiders)	-1.70pp	-1.89	-1.01pp	-1.25
H ₀ : Male ACAR before Oct. 2005 - Male ACAR after Oct. 2005 = 0				

Table. 30 Student's t-test on sell transactions

SELL Transactions	VW		EW	
(Female)	Diff. ACAR	t-value	Diff. ACAR	t-value
F. Bef.2005 - F.Af.2005 (Transactions)	0.35pp	0.21	-0.02pp	0.00
F. Bef.2005 - F.Af.2005 (Insiders)	0.05pp	0.02	-0.51pp	-0.24
H ₀ : Female ACAR before Oct. 2005 - Female ACAR after Oct. 2005 = 0				

Table. 31 Student's t-test on sell transactions

Contrarian to the findings on buy transactions the sell transactions on a position level offer no clear direction in change between the two time periods. All but one (CEO after October 2005 VW) of the values are statistically significant on a 5% significance level. Large Shareholders experience the largest change in abnormal returns going from negative to positive abnormal returns.

SELL Transactions (VW)	Before Oct 2005				After Oct 2005			
	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
CEO (All)	-8.09%	-4.94	389	3.64	-2.34%	-1.43	291	2.77
CEO (M)	-7.97%	-3.87	388	3.66	-2.33%	-1.43	289	2.81
CEO (F)	-	-	1	1.00	-3.23%	-0.08	2	1.00
Vice CEO (All)	-7.23%	-4.79	222	2.47	-4.14%	-3.61	237	3.29
Vice CEO (M)	-7.11%	-4.70	216	2.51	-4.13%	-3.55	234	3.39
Vice CEO (F)	-11.56%	-0.90	6	1.50	-5.01%	-1.22	3	1.00
Board Member (All)	-5.05%	-7.00	1,926	4.56	-6.52%	-8.16	1,193	3.42
Board Member (M)	-5.28%	-7.01	1,825	4.69	-6.58%	-7.89	1,123	3.62
Board Member (F)	-1.05%	-0.48	101	3.06	-5.55%	-2.22	70	1.79
Large shareholder (All)	5.94%	2.94	399	5.54	-2.35%	-2.54	748	10.54
Large shareholder (M)	6.62%	2.90	333	5.37	-1.97%	-1.96	624	10.76
Large shareholder (F)	2.52%	0.62	66	6.60	-4.29%	-2.5	124	9.54
Other (All)	-7.93%	-12.53	1,750	2.38	-6.10%	-11.87	2,008	2.37
Other (M)	-8.05%	-11.92	1,540	2.42	-6.52%	-11.57	1,656	2.37
Other (F)	-7.03%	-3.87	210	2.12	-4.15%	-3.32	352	2.39

Table. 32 Sell transactions on a position level before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

SELL Transactions (EW)	Before Oct 2005				After Oct 2005			
	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
CEO (All)	-7.27%	-5.04	389	3.64	-3.04%	-2.06	291	2.77
CEO (M)	-7.12%	-4.95	388	3.66	-3.07%	-2.08	289	2.81
CEO (F)	-	-	1	1.00	0.59%	0.01	2	1.00
Vice CEO (All)	-9.02%	-5.98	222	2.47	-4.65%	-4.62	237	3.29
Vice CEO (M)	-8.94%	-5.86	216	2.51	-4.78%	-4.73	234	3.39
Vice CEO (F)	-11.86%	-1.10	6	1.50	5.08%	0.44	3	1.00
Board Member (All)	-3.53%	-5.27	1,926	4.56	-5.30%	-7.02	1,193	3.42
Board Member (M)	-3.63%	-5.22	1,825	4.69	-5.40%	-6.85	1,123	3.62
Board Member (F)	-1.56%	-0.73	101	3.06	-3.81%	-1.6	70	1.79
Large shareholder (All)	6.79%	3.79	399	5.54	-3.27%	-3.52	748	10.54
Large shareholder (M)	7.12%	3.00	333	5.37	-3.38%	-3.19	624	10.76
Large shareholder (F)	5.12%	1.47	66	6.60	-2.75%	-1.55	124	9.54
Other (All)	-6.26%	-11.20	1,750	2.38	-4.09%	-8.39	2,008	2.37
Other (M)	-6.46%	-10.83	1,540	2.42	-4.49%	-8.41	1,656	2.37
Other (F)	-4.80%	-2.98	210	2.12	-2.24%	-1.88	352	2.39

Table. 33 Sell transactions on a position level before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

The sector specific results are presented in *Table. 34 and 35*. On a 5% significance level we are unable to obtain any significant results for Consumer Staples (VW and EW), Energy (VW and EW), Materials (VW and EW) and Telecommunications (VW and EW). Studying the remaining sample, it is difficult to find any patterns in the *ACARs* before and after October 2005. This confirms the ambiguity for sell transactions observed in this section.

SELL Transactions	Before Oct 2005				After Oct 2005			
(VW)	ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
Consumer Discretionary (All)	-6.51%	-5.37	445	3.07	-6.35%	-6.69	721	3.18
Consumer Discretionary (M)	-6.79%	-5.19	405	3.16	-6.59%	-6.55	618	3.25
Consumer Discretionary (F)	-3.67%	-1.49	40	2.35	-4.89%	-1.76	103	2.78
Consumer Staples (All)	-0.68%	-0.22	80	2.50	-13.15%	-3.83	49	2.23
Consumer Staples (M)	0.15%	0.04	72	2.67	-13.01%	-3.38	43	2.15
Consumer Staples (F)	-8.11%	-1.85	8	1.60	-14.15%	-2.55	6	3.00
Energy (All)	-12.25%	-1.97	26	2.36	1.57%	0.20	21	1.62
Energy (M)	-11.48%	-1.79	25	2.50	8.53%	1.39	17	1.70
Energy (F)	-	-	1	1.00	-28.03%	-0.94	4	1.33
Financials (All)	-4.97%	-6.19	973	3.99	-2.96%	-4.75	772	3.66
Financials (M)	-5.26%	-6.29	883	4.15	-3.02%	-4.19	625	3.59
Financials (F)	-2.18%	-0.77	90	2.90	-2.70%	-2.35	147	3.97
Healthcare (All)	-5.90%	-3.95	505	3.63	-6.28%	-4.40	260	2.41
Healthcare (M)	-6.09%	-3.94	477	3.91	-8.17%	-5.31	221	2.63
Healthcare (F)	-2.57%	-0.46	28	1.65	4.42%	1.31	39	1.63
Industrials (All)	-4.98%	-9.92	1,217	2.88	-5.24%	-9.81	1,459	3.17
Industrials (M)	-4.94%	-9.19	1,113	2.91	-5.26%	-9.16	1,311	3.31
Industrials (F)	-5.65%	-4.30	104	2.54	-5.03%	-3.72	148	2.31
Information Technology (All)	-7.23%	-5.77	1,226	3.76	-4.56%	-3.96	803	2.87
Information Technology (M)	-7.55%	-5.69	1,117	3.77	-4.02%	-3.26	732	2.90
Information Technology (F)	-3.87%	-1.06	109	3.63	-10.17%	-3.73	71	2.54
Materials (All)	0.50%	0.33	116	2.00	-7.54%	-4.15	346	3.64
Materials (M)	0.46%	0.31	113	2.05	-8.14%	-4.42	319	3.58
Materials (F)	1.75%	0.16	3	1.00	-0.40%	-0.05	27	4.50
Telecommunications (All)	-0.37%	-0.15	98	3.77	-9.56%	-4.11	46	1.70
Telecommunications (M)	-0.13%	-0.05	97	3.88	-11.07%	-4.29	40	1.82
Telecommunications (F)	-	-	1	1.00	0.45%	0.20	6	1.20
Utilities (All)	-	-	0	-	-	-	0	-
Utilities (M)	-	-	0	-	-	-	0	-
Utilities (F)	-	-	0	-	-	-	0	-

Table. 34 Sell transactions on a sector level before and after October 2005 using VW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

SELL Transactions		Before Oct 2005				After Oct 2005			
(EW)		ACAR	t-value	NT*	ANT**	ACAR	t-value	NT*	ANT**
Consumer Discretionary (All)		-3.87%	-4.05	445	3.07	-4.03%	-4.55	721	3.18
Consumer Discretionary (M)		-3.97%	-3.89	405	3.16	-4.52%	-4.89	618	3.25
Consumer Discretionary (F)		-2.87%	-1.16	40	2.35	-1.10%	-0.40	103	2.78
Consumer Staples (All)		0.95%	0.31	80	2.50	-13.62%	-3.61	49	2.23
Consumer Staples (M)		1.93%	0.57	72	2.67	-13.66%	-3.22	43	2.15
Consumer Staples (F)		-7.86%	-1.77	8	1.60	-13.31%	-2.23	6	3.00
Energy (All)		-13.55%	-2.16	26	2.36	-8.25%	-1.43	21	1.62
Energy (M)		-12.81%	-1.97	25	2.50	-2.04%	-0.49	17	1.70
Energy (F)		-	-	1	1.00	-34.64%	-1.57	4	1.33
Financials (All)		-3.41%	-4.23	973	3.99	-1.41%	-2.07	772	3.66
Financials (M)		-3.60%	-4.24	883	4.15	-1.34%	-1.67	625	3.59
Financials (F)		-1.56%	-0.60	90	2.90	-1.74%	-1.53	147	3.97
Healthcare (All)		-3.28%	-2.55	505	3.63	-4.27%	-3.35	260	2.41
Healthcare (M)		-3.14%	-2.36	477	3.91	-5.81%	-4.34	221	2.63
Healthcare (F)		-5.75%	-1.07	28	1.65	4.45%	1.25	39	1.63
Industrials (All)		-4.56%	-9.65	1,217	2.88	-4.96%	-10.17	1,459	3.17
Industrials (M)		-4.59%	-9.10	1,113	2.91	-5.06%	-9.70	1,311	3.31
Industrials (F)		-4.20%	-3.52	104	2.54	-4.07%	-3.05	148	2.31
Information Technology (All)		-5.92%	-5.29	1,226	3.76	-4.63%	-4.21	803	2.87
Information Technology (M)		-6.51%	-5.47	1,117	3.77	-4.37%	-3.70	732	2.90
Information Technology (F)		0.08%	0.02	109	3.63	-7.36%	-2.80	71	2.54
Materials (All)		-1.42%	-0.94	116	2.00	-4.61%	-2.74	346	3.64
Materials (M)		-1.44%	-0.94	113	2.05	-5.53%	-3.22	319	3.58
Materials (F)		-0.75%	-0.06	3	1.00	6.23%	0.86	27	4.50
Telecommunications (All)		0.78%	0.32	98	3.77	-10.46%	-3.98	46	1.70
Telecommunications (M)		1.06%	0.44	97	3.88	-11.84%	-4.02	40	1.82
Telecommunications (F)		-	-	1	1.00	-1.21%	-0.53	6	1.20
Utilities (All)		-	-	0	-	-	-	0	-
Utilities (M)		-	-	0	-	-	-	0	-
Utilities (F)		-	-	0	-	-	-	0	-

Table. 35 Sell transactions on a sector level before and after October 2005 using EW index

*NT=No. of Transactions, **ANT=Avg. No. of Transactions

6. Discussion and analysis of results

6.1 The choice of benchmark index

Throughout the research we use two different benchmark indices. This provides us with more comprehensive results and prevents the findings from being dependent on one single benchmark index. The VW benchmark index is somewhat biased towards larger companies. However, due to the survivorship bias of our sample, the sample will also get a natural bias towards larger companies. The reason behind this bias is that larger companies are more resilient against defaulting in downturns than smaller companies. Thus our sample is biased towards larger companies especially in the beginning of the research period and hence the OMXSB index should be a good benchmark index. The EW benchmark index is created giving equal weight to all the companies in our sample regardless of size. It is, in contrast to the VW index, more biased towards smaller companies and should thus be a good second benchmark index which complements the VW index and enables us to conduct a more complete analysis. The two indices follow each other closely (*Chart. 1*) and we are therefore confident that they are both reasonable to use as benchmark indices.

6.2 Gender specific abnormal returns

Our results show that both male and female insiders do gain abnormal returns on buy and sell transactions. We can also conclude, using a student's t-test, that male *ACARs* on buy transactions are statistically different from female *ACARs*, implying that male insiders outperform female insiders (1.96pp VW, 1.09pp EW) on buy transactions. Moreover, male insiders outperform females (1.93pp) also on sell transactions using the EW benchmark index. For both buy and sell transactions male insiders trade more frequently and the volume as well as the value of the transactions are larger for males than females.

As discussed in the results section, the sell transactions in our sample frequently generate ambiguous results. One reason to this ambiguity is that sell transactions may be triggered by different issues such as liquidity constraints, tax issues etcetera. This makes it difficult to draw any conclusions regarding the *ACARs* generated by sell transactions. Buy transactions on the other hand are more "clean" to analyze since they rarely have any hidden motives. Thus the focus of the discussion hereunder will be on buy transactions.

The study conducted by Bharath, Narayanan & Seyhun (2009) was presented in section 2.5.3. Their research is similar to ours where they study the differences in abnormal returns earned by male and female insiders on the US market. The four different hypotheses that could serve as explanations to the differences between the genders are discussed below.

The first hypothesis, being the information access hypothesis, implies that male insiders have better access to valuable information than females. This is in line with previous research findings presented in section 2.5.3 regarding access to information and homophilous network building among males. If the information access hypothesis is to hold true male insiders will trade more frequently and also earn higher returns than females. We know that the ANT for male insiders over the sample period is 5.05 while the corresponding number for female insiders is 3.31. Thus male insiders trade more frequently than female insiders. Moreover we know that the average transaction size is larger for male insiders, implying that male insiders trade more and on a larger scale. We also know that male insiders earn higher *ACARs* than female insiders and hence the information access hypothesis holds true for our sample. Thus, a possible explanation to the fact that male insiders earn higher abnormal returns than female insiders on buy transactions is that males have better access to information than females.

The overconfidence hypothesis implies that male insiders are more overconfident, trade more, and earn lower abnormal returns than female insiders. If this is to hold true male insiders would need to trade more frequently than females and also earn lower returns than females. We know that males trade more frequently, but our results also show that males earn higher *ACARs* and thus the overconfidence hypothesis can be ruled out as explanatory factor for the differences in *ACARs* earned by the two genders.

The risk-aversion hypothesis assumes that male insiders are less risk-averse than female insiders and thus earn lower returns adjusted for trade size. The reasoning behind this hypothesis is provided by Bharath, Narayanan & Seyhun (2009) where the quantity of the risky asset demanded by an informed investor depends on the value of the information divided by the investor's risk-aversion. Thus, for a given value of the information, the more risk-averse gender will trade less. Moreover, for a given quantity of the asset demanded, the more risk-averse gender would need to have better information and thus earn higher returns. We are however not able to draw any conclusions regarding this third hypothesis since our research does not include a comparison where the quantity of the asset demanded is held constant.

The fourth hypothesis, propensity to use insider information, implies that female insiders are less willing to use insider information than males. In order to test this hypothesis one would need to categorize certain news events and test whether there are any differences in trading activity before and after the news events go public. Since we have not included a news variable in our study we are not able to draw any conclusions regarding this fourth hypothesis.

The breakdown on position level shows that CEOs are the insiders that earn the highest abnormal returns. The gender distribution among CEOs is not in line with the overall gender distribution of our sample (89% males). In fact, male CEOs constitute 96.6% of all CEOs in the sample. Given that CEOs tend to outperform insiders on other positions a possible explanation to why male insiders outperform female insiders is that the fraction of CEOs is considerably higher for males. However, female CEOs tend to considerably outperform male CEOs (*Table. 7*). Our findings suggest that if the fraction of female CEOs would be larger, female insiders would on average increase their *ACARs* and possibly outperform males given their outstanding performance within the CEO category.

Despite the better performance of female CEOs, male CEOs trade more frequently (5.02) than female CEOs (1.67) which is contradictory to the information access hypothesis. Male CEOs seem overconfident and earn lower returns as an effect of their behavior, consistent with previous theory that males are less risk averse than females. Female CEOs are present in four sectors (Consumer Discretionary, Financials, Healthcare, Information Technology) and significantly outperform male CEOs in the Consumer Discretionary and Financials sectors (*Table. 36* in appendix). The finding that female CEOs trade less than male CEOs holds true for all four sectors. Another conclusion from the position breakdown is that the Large Shareholders are the ones that earn the lowest *ACARs* while trading the most frequently. This holds true for both genders and confirms the second hypothesis of overconfidence among insiders.

An interesting observation is that females tend to outperform males in the Consumer Staples sector (the companies included in the Consumer Staples sector is listed in *Table. 43*). An explanation to this finding may be similar to the explanation to why males outperform females on buy transactions – the information access hypothesis. However, studying *Table. 36* other explanations to this irregularity may be the data composition in this sector which lacks female Large Shareholders as well as CEOs and Vice CEOs. Furthermore, male insiders outperform females in the period after October 2005 and thus the irregularity of the Consumer Staples results may be a result of data composition rather than females actually outperforming males. Hence, these findings do not contradict the overall result that male insiders outperform female insiders.

The sector analysis has generated results that are somewhat contradictory to the results presented in the research conducted by Li & Nogeman (2008). Li & Nogeman (2008) argues that the Oil & Gas sector offers the greatest abnormal returns while the Financials sector offers the lowest. According to our findings the sectors that yield the highest abnormal return is the Information Technology and Telecommunications sectors while the sector yielding the lowest abnormal returns is the Industrials sector. Explanations to these differences may stem from the fact that different benchmark indices as

well as different time periods are used in the two studies. An explanation to why the Information Technology and Telecommunications sectors offer the highest *ACARs* in our study may be that these sectors consist of a lot of small “make-it or break-it” companies. Given that we have excluded the companies that have defaulted up until 2010-06-30 the survivorship bias can to some extent be an explanation to this finding. Furthermore, the fact that the Information Technology and Telecommunications sectors include many small companies would suggest that there exist more private information within these sectors which can explain the high *ACARs* observed. The data composition addressed in section 5.3.2 may serve as another explanation. That the Industrials sector yields the lowest return may be explained by the Stockholm Stock Exchange having a substantial bias towards the Industrial sector. The major part of Sweden’s largest companies is industrial companies, implying that there is a high media attention around these companies. The media coverage reduces the level of information asymmetry and thus lowers the *ACARs*.

6.3 Implications of the capital insurance

There are several reasons to why we wanted to address the capital insurance in our thesis. First of all, it has become a custom and increasingly popular way of investing in securities. The capital insurance offers interesting dynamics that normal trading accounts do not, such as tax reliefs and the convenience of not having to report the trading activity to the tax authority. Furthermore, the possibility for insiders to remain anonymous when trading raises a few questions. Before conducting the thesis we expected to see a reduction in abnormal returns for insiders after October 2005. This due to the fact that insiders easily could access the capital insurance through the online broker firms Nordnet and Avanza and thus capture the tax relief on capital gains, but more importantly execute anonymous insider transactions in a legal manner. The fact that insiders can trade more or less anonymously through the capital insurance reduces the level of information revealed to the market and hence increases the information asymmetry between the insider and non-insiders. Moreover, the possibility for insiders to trade anonymously may give rise to temptations of carrying out grey zone transactions – transactions that are on the border line of being illegal.

We can conclude that insider transactions offered higher abnormal returns in the period before October 2005 than in the period after October 2005. This holds true for the whole sample as well as for males and females separately with all values being statistically significant on a 5% significance level. An explanation to these findings may be that the insiders that before October 2005 earned the highest abnormal returns now trade through the capital insurance instead. However, the results may also be due to the survivorship bias imposed on our sample data. Male insiders trade more

frequently and have higher *ACARs* than female insiders both before and after October 2005 (VW). Thus the information access hypothesis holds true for both time periods.

Considering sell transactions we are unable to prove that the *ACARs*, on a 5% significance level, before October 2005 are statistically different from the *ACARs* after October 2005. Thus we find it difficult to draw any conclusions regarding a possible change in sell transactions between the two time periods. As discussed earlier sell transactions contain more noise than buy transactions which may serve as an explanation to why these transactions do not follow the trend observed on the buy side. The survivorship bias may also have impacted the findings.

The largest drops in *ACAR* on buy transactions after October 2005 appear among Larger Shareholders and Other insiders. An explanation may be that these insiders are less exposed to the media and thus more inclined to start using the capital insurance. A CEO, Vice CEO or Board Member that stops buying or selling stocks in the company where he/she is listed as an insider would possibly raise more questions and media attention and may therefore be less likely to occur. An interesting observation is that female CEOs and Vice CEOs most likely perform better after October 2005 (*Table. 21 and 22*). Thus female CEOs and Vice CEOs seem to be less prone to use the capital insurance and reluctantly use this possibility to hide their transactions.

Furthermore, CEOs in general trade more frequently than the average insider and earn higher *ACARs* than insiders on other positions in both time periods. This is in line with the findings discussed in section 6.2 where CEOs' performance can be explained by the information access hypothesis and the overconfidence hypothesis. What also stays consistent with section 6.2 is that the results for Large Shareholders can be explained by the overconfidence hypothesis. The ANTs increase and the *ACARs* are significantly lower in the period after October 2005 for Large Shareholders.

The sector analysis indicates that the reduction in *ACARs* is present across most sectors. One interesting result for the buy transactions is that the Industrials (VW) sector show improving *ACAR* in the period after October 2005. One reason behind this finding may be the one discussed earlier regarding the Stockholm Stock Exchange being biased towards industrial companies and hence the Industrials sector. Industrial companies have been the main trigger behind the rebound observed on the Stockholm Stock Exchange following the recent recession. This may have an impact on the data and thus serve as an explanation to the findings.

6.4 Possible shortcomings

In this section we will discuss possible shortcomings with the research and the data used. The event study approach, using the market model to estimate the different parameters, is well recognized in

research papers concerning insider trading. One requirement when using this approach is that there is no overlapping of the event windows of the different stocks included, i.e. no clustering. If there is no clustering one can assume that the covariance terms are equal to zero. We do unfortunately have some presence of clustering which may distort the results of our research. However, considering that the purpose of this thesis is solely to show if there are any differences in abnormal returns between male- and female insiders, as well as whether the capital insurance has had any implications on the amount of abnormal returns earned, and thus not trying to calculate exact numbers, we do not believe that the presence of clustering have distorted the key findings of this thesis significantly.

The second point of discussion is the choice of benchmark indices. The benchmark index clearly has an impact on the results obtained and therefore needs to be chosen carefully. Considering the arguments provided in section 3.2 we believe that the indices used are the best possible given that it is very complex, if not impossible, to create a value weighted index that would be perfectly applicable to our sample data. However, it would be interesting to see results generated by other value weighted benchmark indices as well.

The results of our research showing a decrease in abnormal returns after October 2005 could of course have many possible explanations. The increased usage of the capital insurance among insiders is likely to be one of them. Another possible explanation that at least partly could explain the differences observed would be the effects of the recent financial crisis. There is no doubt that the financial crisis had a negative impact on stock returns overall. Having that said, this is something that the benchmark index would reflect which would diminish these effects. However, the occurrence of the financial crisis may have implied less fruitful investment opportunities for investors and thus the crisis could serve as a possible explanation to the lower abnormal returns observed. On the other hand the period following the financial crisis up until the end of the studied period (2010-06-30) have offered plentiful of rewarding investment opportunities and the Stockholm Stock Exchange has performed well. Moreover, the burst of the dotcom bubble in early 2000 should have affected the data sample before October 2005 in a similar way and thus the sub sample periods, 1998-01-01-2005-09-30 and 2005-10-01-2010-06-30, should serve well for a comparison.

Another important point of discussion would be the survivorship bias of our sample data. While this bias does not affect the gender comparison conducted over the whole research period, it does however have implications on the sub period comparison. Given that delisted companies have been excluded from the sample the *ACARs* obtained are somewhat distorted. The magnitude of the distortion is uncertain but should by all means be acknowledged.

The choice of breaking point in the research has been set to October 2005 when both Nordnet and Avanza had started to offer the capital insurance to their clients. As described earlier in section **4.4** the capital insurance have experienced many changes during its existence and one could definitely argue that another structural change could be of importance. In this paper we test one of these structural changes – the one that we believe is of greatest importance. Other breaking points, relating to other changes, could certainly prove to be of interest.

7. Conclusion

Our results show that insiders earn abnormal returns on both buy and sell transactions. Male insiders outperform female insiders on buy transactions by 1.96pp using a VW benchmark index and by 1.09pp using an EW benchmark index. Sell transactions generate similar conclusions where male insiders outperform female insiders by 1.93pp using an EW benchmark index. These differences can primarily be explained by the information asymmetry between the genders – i.e. the information access hypothesis. Another explanation would be the high fraction of male CEOs relative to female CEOs. The difference in abnormal returns between the genders for sell transactions using a VW benchmark index is not statistically significant on a 5% significance level. Moreover, we can conclude that male insiders on average trade more frequently and execute trades with higher volume and value than females.

The results of the breakdown on company position as well as the breakdown on sectors generate meaningful conclusions for buy transactions only. For buy transactions CEOs earn the highest abnormal returns and trade more frequently than the average insider which can be explained by the information access hypothesis. Female CEOs and Vice CEOs outperform their male counterparts. Nevertheless male CEOs and Vice CEOs trade more frequently which is proof of the overconfidence hypothesis and indicates that males are less risk averse. Furthermore, Large Shareholders earn the lowest abnormal returns while trading the most frequently, consistent with the overconfidence hypothesis. The results on a sector level shows that male insiders outperform female insiders across seven out of nine sectors. Female insiders outperform male insiders within the Consumer Staples sector and the Healthcare sector (EW).

Considering the comparison between before and after October 2005 we conclude that the average abnormal return for insiders on buy transactions decrease after October 2005 (-2.75pp VW, -1.67pp EW). Furthermore, the abnormal returns for both male insiders (-2.45pp VW, -1.41pp EW) as well as female insiders (-1.72pp VW, -3.38pp EW) decrease after October 2005. The increased usage of the capital insurance among insiders is likely to be one important explanation to these findings. Male insiders earn higher abnormal returns and trade more frequently than female insiders for both time periods, which is further evidence of the information access hypothesis. The results for sell transactions are inconclusive.

On a position level the average insiders from all categories show a decrease in abnormal returns for buy transactions after October 2005. CEOs outperform insiders on other positions for both time periods as a result of their superior access to valuable information. Large Shareholders increase their average number of transactions after October 2005 while experiencing the largest drop in abnormal

returns. This can again be explained by the overconfidence hypothesis but may also be a consequence of the increased usage of the capital insurance among the most profitable insiders. The overall trend on a sector level is decreasing abnormal returns for the period after October 2005. The sell transactions are once again ambiguous for both the position- and sector breakdown and these results are inconclusive.

8. Future studies

An interesting study that could serve as an extension of our research on gender differences in insider trading would be to classify different news events and test whether certain news events generate higher abnormal returns than others. Moreover, an interesting approach would be to test if there are any differences in the propensity to use insider information between genders. Such a study would follow the approach of the fourth hypothesis in Bharath, Narayanan & Seyhun (2009).

Having the implications of the capital insurance in mind, an interesting study would be to retrieve data from the online broker firms Nordnet and Avanza and test whether there are any significant differences in returns between trades executed through a capital insurance and trades executed using regular trading accounts. However, such a study is very dependent on the availability of data from the online broker firms.

With the shortcomings of our research in mind it would be interesting to conduct a similar study with focus on the capital insurance solely. The study should be based on data without survivorship bias and could also address the problem of clustering more specifically. Furthermore the choice of a breaking point other than October 2005, relating to structural changes in the capital insurance other than the ones focused on in this research, would be of great interest.

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10. Appendix

BUY Transactions	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Consumer Discr. (CEO - All)	0.81%	0.54	2.18%	1.46	202	48	4.21
Consumer Discr. (CEO - M)	0.75%	0.50	2.07%	1.37	200	46	4.35
Consumer Discr. (CEO - F)	7.18%	0.55	13.32%	3.02	2	2	1.00
Consumer Discr. (Vice CEO - All)	4.32%	2.09	6.21%	2.22	38	18	2.11
Consumer Discr. (Vice CEO - M)	3.92%	1.81	4.79%	1.73	36	17	2.12
Consumer Discr. (Vice CEO - F)	11.44%	9.22	31.61%	12.73	2	1	2.00
Consumer Discr. (Board Member - All)	3.90%	4.90	4.07%	5.91	940	202	4.65
Consumer Discr. (Board Member - M)	4.59%	5.46	4.55%	6.28	841	159	5.29
Consumer Discr. (Board Member - F)	-1.98%	-0.82	0.01%	0.01	99	43	2.30
Consumer Discr. (Larger Shareholder - All)	0.61%	0.52	3.86%	3.61	251	26	9.65
Consumer Discr. (Larger Shareholder - M)	0.08%	0.62	3.74%	3.04	207	23	9.00
Consumer Discr. (Larger Shareholder - F)	-0.50%	-0.23	4.43%	2.27	44	3	14.67
Consumer Discr. (Other - All)	0.38%	0.50	2.72%	3.77	880	333	2.64
Consumer Discr. (Other - M)	0.24%	0.28	2.72%	3.34	696	266	2.62
Consumer Discr. (Other - F)	0.09%	0.55	2.71%	1.73	184	67	2.75
Consumer Staples (CEO - All)	7.30%	2.75	9.68%	3.16	25	8	3.13
Consumer Staples (CEO - M)	7.30%	2.75	9.68%	3.16	25	8	3.13
Consumer Staples (CEO - F)	-	-	-	-	0	0	-
Consumer Staples (Vice CEO - All)	4.06%	0.60	3.39%	0.49	13	3	4.33
Consumer Staples (Vice CEO - M)	4.06%	0.60	3.39%	0.49	13	3	4.33
Consumer Staples (Vice CEO - F)	-	-	-	-	0	0	-
Consumer Staples (Board Member - All)	12.28%	7.02	13.71%	7.73	186	44	4.23
Consumer Staples (Board Member - M)	11.62%	5.43	12.93%	5.94	143	36	3.97
Consumer Staples (Board Member - F)	14.48%	5.60	16.32%	6.45	43	8	5.38
Consumer Staples (Larger Shareholder - All)	-18.00%	-1.62	-17.40%	-1.59	5	1	5.00
Consumer Staples (Larger Shareholder - M)	-18.00%	-1.62	-17.40%	-1.59	5	1	5.00
Consumer Staples (Larger Shareholder - F)	-	-	-	-	0	0	-
Consumer Staples (Other - All)	-1.04%	-0.63	2.14%	1.29	117	46	2.54
Consumer Staples (Other - M)	-2.10%	-1.11	1.83%	1.00	92	37	2.49
Consumer Staples (Other - F)	2.87%	0.85	3.29%	0.82	25	9	2.78

Table. 36 Buy transactions on a sector- and position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

BUY Transactions cont'd	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Energy (CEO - All)	4.28%	1.91	9.70%	4.17	50	4	12.50
Energy (CEO - M)	4.28%	1.91	9.70%	4.17	50	4	12.50
Energy (CEO - F)	-	-	-	-	0	0	-
Energy (Vice CEO - All)	-2.72%	-0.24	11.06%	0.97	6	2	3.00
Energy (Vice CEO - M)	-2.72%	-0.24	11.06%	0.97	6	2	3.00
Energy (Vice CEO - F)	-	-	-	-	0	0	-
Energy (Board Member - All)	-0.46%	-0.07	3.05%	0.52	39	16	2.44
Energy (Board Member - M)	0.08%	0.14	3.66%	0.64	37	15	2.47
Energy (Board Member - F)	-24.69%	-0.37	-8.28%	-0.14	2	1	2.00
Energy (Larger Shareholder - All)	-32.94%	3.84	-24.15%	-2.24	6	1	6.00
Energy (Larger Shareholder - M)	-32.94%	3.84	-24.15%	-2.24	6	1	6.00
Energy (Larger Shareholder - F)	-	-	-	-	0	0	-
Energy (Other - All)	0.18%	0.02	5.86%	0.93	30	15	2.00
Energy (Other - M)	16.05%	2.04	18.92%	2.58	18	9	2.00
Energy (Other - F)	-23.64%	-2.29	-13.73%	-1.57	12	6	2.00
Financials (CEO - All)	5.71%	8.17	4.74%	6.68	654	65	10.06
Financials (CEO - M)	5.62%	8.00	4.67%	6.52	646	62	10.42
Financials (CEO - F)	13.09%	1.84	9.74%	2.67	8	3	2.67
Financials (Vice CEO - All)	2.37%	1.73	2.62%	2.29	215	68	3.16
Financials (Vice CEO - M)	2.01%	1.48	2.32%	1.96	199	61	3.26
Financials (Vice CEO - F)	6.85%	0.93	6.39%	1.39	16	7	2.29
Financials (Board Member - All)	2.18%	4.41	2.11%	4.36	2,006	297	6.75
Financials (Board Member - M)	2.66%	4.71	2.47%	4.47	1,673	233	7.18
Financials (Board Member - F)	-0.27%	-0.31	2.67%	0.32	333	64	5.20
Financials (Larger Shareholder - All)	1.66%	1.53	-0.03%	-0.03	432	30	14.40
Financials (Larger Shareholder - M)	1.94%	1.58	0.70%	0.55	376	24	15.67
Financials (Larger Shareholder - F)	-0.25%	-0.16	-4.92%	-2.13	56	6	9.33
Financials (Other - All)	2.17%	3.46	2.91%	4.94	1,241	422	2.94
Financials (Other - M)	1.62%	2.47	2.23%	3.86	995	323	3.08
Financials (Other - F)	4.42%	2.56	5.19%	3.11	246	99	2.48

Table. 36 Buy transactions on a sector- and position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

BUY Transactions cont'd	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Healthcare (CEO - All)	6.74%	2.38	5.43%	2.07	121	41	2.95
Healthcare (CEO - M)	6.71%	2.34	5.48%	2.06	118	39	3.03
Healthcare (CEO - F)	8.19%	0.37	3.56%	0.19	3	2	1.50
Healthcare (Vice CEO - All)	2.39%	0.37	1.05%	0.17	25	10	2.50
Healthcare (Vice CEO - M)	3.24%	0.49	1.77%	0.28	24	9	2.67
Healthcare (Vice CEO - F)	-	-	-	-	1	1	1.00
Healthcare (Board Member - All)	3.63%	2.90	3.26%	2.90	483	138	3.50
Healthcare (Board Member - M)	4.11%	3.13	3.70%	3.13	441	113	3.90
Healthcare (Board Member - F)	-1.45%	-0.36	-1.38%	-0.38	42	25	1.68
Healthcare (Larger Shareholder - All)	11.74%	3.40	6.97%	2.15	53	8	6.63
Healthcare (Larger Shareholder - M)	12.15%	3.48	7.22%	2.19	52	7	7.43
Healthcare (Larger Shareholder - F)	-	-	-	-	1	1	1.00
Healthcare (Other - All)	6.69%	3.91	7.49%	4.67	296	151	1.96
Healthcare (Other - M)	6.06%	3.16	6.82%	3.86	224	110	2.04
Healthcare (Other - F)	8.65%	2.31	9.56%	2.62	72	41	1.76
Industrials (CEO - All)	2.78%	2.43	2.91%	2.71	384	95	4.04
Industrials (CEO - M)	2.78%	2.43	2.91%	2.71	384	95	4.04
Industrials (CEO - F)	-	-	-	-	0	0	-
Industrials (Vice CEO - All)	2.01%	1.61	1.45%	1.32	226	58	3.90
Industrials (Vice CEO - M)	2.13%	1.70	1.45%	1.32	224	57	3.93
Industrials (Vice CEO - F)	-	-	-	-	2	1	2.00
Industrials (Board Member - All)	1.88%	4.37	1.85%	4.58	2,186	370	5.91
Industrials (Board Member - M)	1.89%	4.34	1.84%	4.50	2,017	303	6.66
Industrials (Board Member - F)	1.79%	0.89	1.87%	1.04	169	67	2.52
Industrials (Larger Shareholder - All)	-2.19%	-2.83	-2.12%	-3.11	523	38	13.76
Industrials (Larger Shareholder - M)	-1.44%	-1.76	-1.52%	-2.80	462	32	14.44
Industrials (Larger Shareholder - F)	-7.85%	-3.61	-6.64%	-3.52	61	6	10.17
Industrials (Other - All)	1.14%	2.22	1.81%	3.91	1,894	739	2.56
Industrials (Other - M)	1.26%	2.29	1.87%	3.75	1,673	635	2.63
Industrials (Other - F)	0.20%	0.14	1.37%	1.10	221	104	2.13

Table. 36 Buy transactions on a sector- and position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

BUY Transactions cont'd	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Information Tech. (CEO - All)	10.01%	4.62	7.98%	3.84	245	75	3.27
Information Tech. (CEO - M)	10.03%	4.57	7.94%	3.77	239	71	3.37
Information Tech. (CEO - F)	9.60%	0.64	9.71%	0.69	6	4	1.50
Information Tech. (Vice CEO - All)	12.06%	3.69	10.95%	2.80	81	28	2.89
Information Tech. (Vice CEO - M)	11.48%	3.41	10.79%	2.57	74	26	2.85
Information Tech. (Vice CEO - F)	18.22%	1.32	12.50%	1.42	7	2	3.50
Information Tech. (Board Member - All)	8.36%	8.79	8.19%	8.96	1,118	263	4.25
Information Tech. (Board Member - M)	8.81%	8.85	8.46%	8.97	1,035	229	4.52
Information Tech. (Board Member - F)	2.69%	0.88	4.81%	1.32	83	34	2.44
Information Tech. (Larger Shareholder - All)	4.81%	4.46	6.23%	5.12	439	25	17.56
Information Tech. (Larger Shareholder - M)	5.03%	4.26	5.47%	4.12	344	22	15.64
Information Tech. (Larger Shareholder - F)	3.98%	1.55	9.01%	3.06	95	3	31.67
Information Tech. (Other - All)	10.01%	10.39	10.50%	10.67	1,189	433	2.75
Information Tech. (Other - M)	10.63%	10.44	11.26%	10.93	1,052	367	2.87
Information Tech. (Other - F)	5.26%	1.79	4.67%	1.47	137	66	2.08
Materials (CEO - All)	12.15%	2.35	11.38%	3.28	57	20	2.85
Materials (CEO - M)	12.15%	2.35	11.38%	3.28	57	20	2.85
Materials (CEO - F)	-	-	-	-	0	0	-
Materials (Vice CEO - All)	4.20%	1.14	2.79%	0.99	13	5	2.60
Materials (Vice CEO - M)	4.20%	1.14	2.79%	0.99	13	5	2.60
Materials (Vice CEO - F)	-	-	-	-	0	0	-
Materials (Board Member - All)	3.53%	2.33	3.42%	2.67	361	96	3.76
Materials (Board Member - M)	3.04%	1.94	3.01%	2.32	324	80	4.05
Materials (Board Member - F)	7.87%	1.45	6.94%	1.34	37	16	2.31
Materials (Larger Shareholder - All)	-13.51%	-4.74	-6.71%	-0.28	111	10	11.10
Materials (Larger Shareholder - M)	-12.16%	-3.89	-5.78%	-2.23	90	9	10.00
Materials (Larger Shareholder - F)	-19.30%	-2.78	-10.70%	-1.81	21	1	21.00
Materials (Other - All)	2.45%	1.33	4.75%	3.01	257	131	1.96
Materials (Other - M)	2.22%	1.10	4.10%	2.35	220	111	1.98
Materials (Other - F)	3.85%	0.86	8.58%	2.45	37	20	1.85

Table. 36 Buy transactions on a sector- and position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

BUY Transactions cont'd	VW		EW		NT*	NI**	ANT***
	ACAR	t-value	ACAR	t-value			
Telecom. (CEO - All)	10.41%	1.59	9.37%	1.13	9	6	1.50
Telecom. (CEO - M)	6.45%	1.09	4.22%	0.57	8	5	1.60
Telecom. (CEO - F)	-	-	-	-	1	1	1.00
Telecom. (Vice CEO - All)	7.82%	1.96	3.96%	0.68	8	3	2.67
Telecom. (Vice CEO - M)	7.82%	1.96	3.96%	0.68	8	3	2.67
Telecom. (Vice CEO - F)	-	-	-	-	0	0	-
Telecom. (Board Member - All)	10.86%	4.60	12.12%	4.28	117	32	3.66
Telecom. (Board Member - M)	11.44%	4.77	12.65%	4.37	113	28	4.04
Telecom. (Board Member - F)	-5.42%	-0.44	-3.05%	-0.25	4	4	1.00
Telecom. (Larger Shareholder - All)	-	-	-	-	1	1	1.00
Telecom. (Larger Shareholder - M)	-	-	-	-	1	1	1.00
Telecom. (Larger Shareholder - F)	-	-	-	-	0	0	-
Telecom. (Other - All)	6.74%	4.65	10.81%	5.92	122	57	2.14
Telecom. (Other - M)	7.27%	4.28	11.50%	5.48	100	43	2.33
Telecom. (Other - F)	4.33%	1.93	7.66%	2.27	22	14	1.57
Utilities (CEO - All)	-	-	-	-	0	0	-
Utilities (CEO - M)	-	-	-	-	0	0	-
Utilities (CEO - F)	-	-	-	-	0	0	-
Utilities (Vice CEO - All)	-	-	-	-	0	0	-
Utilities (Vice CEO - M)	-	-	-	-	0	0	-
Utilities (Vice CEO - F)	-	-	-	-	0	0	-
Utilities (Board Member - All)	-	-	-	-	0	0	-
Utilities (Board Member - M)	-	-	-	-	0	0	-
Utilities (Board Member - F)	-	-	-	-	0	0	-
Utilities (Larger Shareholder - All)	-	-	-	-	0	0	-
Utilities (Larger Shareholder - M)	-	-	-	-	0	0	-
Utilities (Larger Shareholder - F)	-	-	-	-	0	0	-
Utilities (Other - All)	-	-	-	-	0	0	-
Utilities (Other - M)	-	-	-	-	0	0	-
Utilities (Other - F)	-	-	-	-	0	0	-

Table. 36 Buy transactions on a sector- and position level using VW and EW indices

*NT=No. of Transactions, **NI=No. of Insiders, ***ANT=Avg. No. of Transactions

All		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Buy	0.47%	0.77	3.10%	4.91
1999	Buy	5.50%	8.21	1.67%	2.48
2000	Buy	5.30%	4.93	6.46%	6.59
2001	Buy	8.32%	8.94	8.13%	8.71
2002	Buy	8.50%	10.45	10.51%	12.13
2003	Buy	8.32%	10.02	3.89%	4.74
2004	Buy	0.20%	0.31	-0.66%	-1.05
2005	Buy	1.25%	2.32	2.43%	4.45
2006	Buy	0.64%	1.48	2.79%	6.91
2007	Buy	0.78%	1.89	2.57%	6.62
2008	Buy	1.64%	3.21	3.70%	8.19
2009	Buy	6.70%	9.79	0.99%	1.64
2010	Buy	0.59%	1.06	7.24%	12.75

Table. 37 Yearly buy transactions using EW and VW indices

Male		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Buy	0.11%	0.18	2.75%	4.37
1999	Buy	5.71%	8.52	2.07%	3.19
2000	Buy	6.29%	5.63	7.30%	7.20
2001	Buy	8.04%	8.14	7.72%	7.86
2002	Buy	8.55%	10.16	10.38%	11.57
2003	Buy	7.31%	8.83	2.76%	3.39
2004	Buy	0.60%	0.86	-0.24%	-0.35
2005	Buy	1.52%	2.54	2.59%	4.25
2006	Buy	0.82%	1.79	2.92%	6.86
2007	Buy	1.08%	2.39	2.80%	6.63
2008	Buy	1.82%	3.28	3.78%	7.77
2009	Buy	7.44%	9.95	1.44%	2.21
2010	Buy	0.82%	1.32	7.57%	11.91

Table. 38 Yearly (male) buy transactions using EW and VW indices

Female		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Buy	12.09%	2.44	14.10%	3.00
1999	Buy	-0.48%	-0.09	-10.01%	-1.39
2000	Buy	-7.40%	-2.06	-4.25%	-1.19
2001	Buy	11.62%	4.49	12.86%	4.50
2002	Buy	7.92%	2.54	11.96%	3.64
2003	Buy	16.52%	4.84	13.01%	3.84
2004	Buy	-2.32%	-1.32	-3.37%	-2.02
2005	Buy	-0.16%	-0.14	1.59%	1.34
2006	Buy	-0.69%	-0.53	1.82%	1.46
2007	Buy	-1.10%	-1.09	1.06%	1.12
2008	Buy	0.64%	0.48	3.23%	2.68
2009	Buy	2.14%	1.30	-1.82%	-1.16
2010	Buy	-0.64%	-0.56	5.51%	4.60

Table. 39 Yearly (female) buy transactions using EW and VW indices

All		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Sell	-4.09%	-4.35	-3.14%	-3.50
1999	Sell	4.14%	2.97	-8.35%	-4.84
2000	Sell	-21.91%	-12.04	-10.57%	-7.28
2001	Sell	1.47%	1.01	1.58%	1.10
2002	Sell	-6.83%	-6.35	-2.83%	-2.82
2003	Sell	-0.26%	-0.23	-3.75%	-3.41
2004	Sell	-10.79%	-9.52	-5.44%	-7.03
2005	Sell	-3.51%	-5.67	-2.83%	-4.64
2006	Sell	-4.79%	-7.42	-3.54%	-5.59
2007	Sell	-10.31%	-14.99	-6.08%	-9.40
2008	Sell	1.44%	1.21	2.00%	1.76
2009	Sell	-4.17%	-4.77	-7.70%	-9.20
2010	Sell	-10.49%	-11.74	-4.25%	-5.20

Table. 40 Yearly sell transactions using EW and VW indices

Male		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Sell	-3.79%	-3.96	-2.72%	-3.07
1999	Sell	3.89%	2.64	-8.83%	-4.82
2000	Sell	-22.19%	-11.53	-10.63%	-7.01
2001	Sell	1.20%	0.80	1.45%	0.98
2002	Sell	-6.79%	-6.06	-2.96%	-2.84
2003	Sell	-0.45%	-0.39	-4.03%	-3.56
2004	Sell	-10.68%	-8.81	-5.52%	-6.30
2005	Sell	-4.01%	-6.04	-3.34%	-5.12
2006	Sell	-4.93%	-7.39	-3.77%	-5.72
2007	Sell	-10.32%	-13.91	-6.24%	-8.89
2008	Sell	2.00%	1.56	2.63%	2.17
2009	Sell	-4.57%	-4.71	-8.47%	-9.18
2010	Sell	-11.71%	-11.73	-5.19%	-5.74

Table. 41 Yearly (male) sell transactions using EW and VW indices

Female		VW		EW	
		ACAR	t-value	ACAR	t-value
1998	Sell	-14.20%	-3.02	-15.00%	-2.94
1999	Sell	7.46%	2.03	-2.07%	-0.53
2000	Sell	-18.97%	-3.47	-10.00%	-1.95
2001	Sell	6.71%	1.00	4.22%	0.70
2002	Sell	-7.56%	-2.39	-0.56%	-0.15
2003	Sell	1.83%	0.42	-0.75%	-0.17
2004	Sell	-7.86%	-3.84	-4.98%	-3.75
2005	Sell	0.77%	0.49	1.56%	0.97
2006	Sell	-3.34%	-1.31	-1.06%	-0.45
2007	Sell	-10.25%	-5.57	-5.03%	-3.05
2008	Sell	-2.76%	-0.90	-2.78%	-0.87
2009	Sell	-1.67%	-0.92	-2.94%	-1.57
2010	Sell	-4.93%	-2.60	0.05%	0.03

Table. 42 Yearly (female) sell transactions using EW and VW indices

Consumer Discretionary	Financials cont'd	Industrials cont'd	Information Technology cont'd
VENUE RETAIL GROUP AB	HAVSFRUN INVESTMENT AB (PUBL)	ATLAS COPCO AKTIEBOLAG (PUBL)	AXIS AKTIEBOLAG (PUBL)
A-COM AB (PUBL)	HEBA FASTIGHETS AKTIEBOLAG (PUBL)	B&B TOOLS AB (PUBL)	BEIJER ELECTRONICS AKTIEBOLAG
AKTIEBOLAGET ELECTROLUX (PUBL)	HIQ INTERNATIONAL AB (PUBL)	BE GROUP AB (PUBL)	CONNECTA AB (PUBL)
AUTOLIV INC	HQ AB	BEIJER ALMA AB (PUBL)	CYBERCOM GROUP AB (PUBL)
BETSSON AB (PUBL)	HUFVUDSTADEN AB (PUBL)	BONG LJUNGDAHL AKTIEBOLAG (PUBL)	DIGITAL VISION AKTIEBOLAG (PUBL)
BILIA AB (PUBL)	INVESTMENT AB ÖRESUND (PUBL)	BTS GROUP AB (PUBL)	DORO AB (PUBL)
BJÖRN BORG AB	INVESTMENTAKTIEBOLAGET LATOUR (PUBL)	CARDO AB (PUBL)	ELEKTRONIKGRUPPEN BK AKTIEBOLAG
BORÅS WÄFVERI AB (PUBL)	INVESTOR AKTIEBOLAG (PUBL)	CISION AKTIEBOLAG (PUBL)	ENEA AKTIEBOLAG (PUBL)
CLAS OHLSON AKTIEBOLAG (PUBL)	KINNEVIK, INVESTMENT AB (PUBL)	CONSILIUM AKTIEBOLAG (PUBL)	EWORX SCANDINAVIA AB
DUNI AB	KLÖVERN AB (PUBL)	CTT SYSTEMS AB (PUBL)	FINGERPRINT CARDS AB (PUBL)
ELANDERS AB (PUBL)	KUNGSLEDEN AKTIEBOLAG (PUBL)	DUROC AKTIEBOLAG (PUBL)	HMS NETWORKS AB
ENIRO AB (PUBL)	L E LUNDBERGFÖRETAGEN AKTIEBOLAG (PUBL)	G & L BEIJER AB (PUBL)	INDUSTRIAL AND FINANCIAL SYSTEMS IFS AKT
FENIX OUTDOOR AB	LINKMED AB (PUBL)	GUNNEBO AKTIEBOLAG (PUBL)	INTOI AB (PUBL)
H & M HENNES & MAURITZ AB (PUBL)	MELKER SCHÖRLING AB	HALDEX AKTIEBOLAG (PUBL)	JEEVES INFORMATION SYSTEMS AB (PUBL)
HEMTEX AB	NAXS NORDIC ACCESS BUYOUT FUND AB (PUBL)	HEXAGON AKTIEBOLAG (PUBL)	KNOW IT AB (PUBL)
HUSQVARNA AB (PUBL)	NORDEA BANK AB (PUBL)	HEXPOL AB (PUBL)	LAGERCRANTZ GROUP AB (PUBL)
JM AB (PUBL)	NORDNET AB (PUBL)	INDUTRADE AB	MICRONIC MYDATA AB (PUBL)
KABE AB	RATOS AB (PUBL)	INTELLECTA AB (PUBL)	MOBYSON AB (PUBL)
KAPPAHL HOLDING AB	SKANDINAVISKA ENSKILDA BANKEN AB (PUBL)	INTRUM JUSTITIA AB (PUBL)	MODUL 1 DATA AKTIEBOLAG (PUBL)
MEKONOMEN AKTIEBOLAG (PUBL)	SWEDBANK AB (PUBL)	ITAB SHOP CONCEPT AB	MSC KONSULT AB (PUBL)
MODERN TIMES GROUP MTG AB (PUBL)	SVENSKA HANDELSBANKEN AB (PUBL)	LAMMHULTS DESIGN GROUP AB (PUBL)	MULTIQ INTERNATIONAL AB (PUBL)
NETONNET AB (PUBL)	SVOLDER AKTIEBOLAG (PUBL)	LINDAB INTERNATIONAL AB (PUBL)	NET ENTERTAINMENT NE AB
NEW WAVE GROUP AB (PUBL)	SÅKI AB (PUBL)	LOOMIS AB (PUBL)	NET INSIGHT AB (PUBL)
NOBIA AB	WALLENSTAM AB (PUBL)	MALMBERGS ELEKTRISKA AKTIEBOLAG (PUBL)	NOLATO AKTIEBOLAG (PUBL)
NORDIC SERVICE PARTNERS HOLDING AB (PUBL)	WIHLBORGS FASTIGHETER AB	MIDWAY HOLDING AKTIEBOLAG (PUBL)	NOTE AB (PUBL)
REZIDOR HOTEL GROUP AB (PUBL)	VOSTOK NAFTA INVESTMENT LTD	MORPHIC TECHNOLOGIES AB (PUBL)	NOVOTEK AKTIEBOLAG (PUBL)
RNB RETAIL AND BRANDS AB (PUBL)	Health Care	MUNTERS AB (PUBL)	ORC SOFTWARE AB (PUBL)
SKISTAR AKTIEBOLAG (PUBL)	ACTIVE BIOTECH AB (PUBL)	NCC AKTIEBOLAG (PUBL)	PARTNERTECH AB (PUBL)
SWEDOL AB (PUBL)	AEROCRINE AB	NEDERMAN HOLDING AB (PUBL)	PRECISE BIOMETRICS AB
VENUE RETAIL GROUP AB	ARTIMPLANT AB (PUBL)	NIBE INDUSTRIER AB (PUBL)	PRECISE BIOMETRICS AB
Consumer Staples	BIOGAIA AB (PUBL)	NISCAYAH GROUP AB	PRICER AKTIEBOLAG (PUBL)
AARHUSKARLSHAMN AB	BIOINVENT INTERNATIONAL AB	NOVACAST AKTIEBOLAG (PUBL)	PROACT IT GROUP AB (PUBL)
AXFOOD AKTIEBOLAG (PUBL)	BIOLIN SCIENTIFIC AB (PUBL)	OEM INTERNATIONAL AB (PUBL)	READSOFT AB (PUBL)
BLACK EARTH FARMING LTD.	BIOPHAUSIA AB(PUBL)	OPCON AKTIEBOLAG (PUBL)	SENSYS TRAFFIC AKTIEBOLAG (PUBL)
CLOETTA AB	BIOTAGE AB (PUBL)	PEAB AB (PUBL)	SIGMA AKTIEBOLAG (PUBL)
HAKON INVEST AB (PUBL)	DIAMYD MEDICAL AKTIEBOLAG (PUBL)	POOLIA AB (PUBL)	SOFTRONIC AKTIEBOLAG (PUBL)
MIDELFART SONESSON AB	ELEKTA AB (PUBL)	PROFFICE AKTIEBOLAG	TELEFON AB L M ERICSSON (PUBL)
SWEDISH MATCH AB (PUBL)	ELOS AB (PUBL)	REDERI AB TRANSATLANTIC (PUBL)	TILGIN AB
Energy	EPICEPT CORPORATION	REJLERKONCERNEN AB (PUBL)	TRADEDOUBLER AB (PUBL)
CONCORDIA MARITIME AKTIEBOLAG (PUBL)	FEELGOOD SVENSKA AB (PUBL)	SAAB AKTIEBOLAG (PUBL)	Materials
ALLIANCE OIL COMPANY LTD.	GETINGE AB (PUBL)	SANDVIK AB (PUBL)	BERGS TIMBER AB (PUBL)
LUNDIN PETROLEUM AB (PUBL)	KARO BIO AKTIEBOLAG (PUBL)	SAS AB (PUBL)	BILLERUD AKTIEBOLAG (PUBL)
PA RESOURCES AKTIEBOLAG	MEDA AKTIEBOLAG (PUBL)	SCANIA AKTIEBOLAG (PUBL)	BOLIDEN AB (PUBL)
Financials	MEDIVIR AKTIEBOLAG (PUBL)	SECO TOOLS AB (PUBL)	HOLMEN AKTIEBOLAG (PUBL)
AB NOVESTRA	OASMA PHARMACEUTICAL AB (PUBL)	SECURITAS AB (PUBL)	HÖGANÄS AKTIEBOLAG (PUBL)
AB SAGAX	OREXO AB (PUBL)	SEMCON AKTIEBOLAG (PUBL)	LUNDIN MINING CORPORATION
AB TRACTION (PUBL)	ORTIVUS AKTIEBOLAG	SINTERCAST AKTIEBOLAG (PUBL)	NORDIC MINES AB (PUBL)
AKTIEBOLAGET GEVEKO (PUBL)	PROBI AKTIEBOLAG (PUBL)	SKANSKA AB (PUBL)	PROFILGRUPPEN AB (PUBL)
AKTIEBOLAGET INDUSTRIVÄRDEN (PUBL)	Q-MED AKTIEBOLAG (PUBL)	STUDSVIK AB (PUBL)	ROTTNEROS AB (PUBL)
ATRIUM LJUNGBERG AB (PUBL)	RAYSEARCH LABORATORIES AB (PUBL)	SWECO AB (PUBL)	RÖRVIK TIMBER AB (PUBL)
AVANZA BANK HOLDING AB (PUBL)	SECTRA AKTIEBOLAG	SVEDBERGS I DALSTORP AB (PUBL)	SSAB AB (PUBL)
BRINNOVA FASTIGHETER AB	SWEDISH ORPHAN BIOVITRUM AB (PUBL)	SYSTEMAIR AB (PUBL)	SCA (PUBL)
BURE EQUITY AB (PUBL)	VITROLIFE AB (PUBL)	TRELLEBORG AKTIEBOLAG (PUBL)	Telecommunication Services
CASTELLUM AB (PUBL)	Industrials	UNIFLEX AB (PUBL)	ALLTELE ALLMÄNNNA SVENSKA TELEFONAB
CATENA AB (PUBL)	ABB LTD (PUBL)	VBG GROUP AB (PUBL)	DGC ONE AB
COREM PROPERTY GROUP AB (PUBL)	ACAP INVEST AB (PUBL)	XANO INDUSTRI AB (PUBL)	PHONERA AB (PUBL)
DAGON AB (PUBL)	ADDTech AB (PUBL)	ÅF AB (PUBL)	TELE2 AB (PUBL)
DIÖS FASTIGHETER AB (PUBL)	AKTIEBOLAG FAGERHULT (PUBL)	Information Technology	TELIASONERA AB (PUBL)
EAST CAPITAL EXPLORER AB	AKTIEBOLAGET SKF (PUBL)	ACANDO AB (PUBL)	Utilities
FABEGE AB (PUBL)	AKTIEBOLAGET VOLVO (PUBL)	ADDNODE AB (PUBL)	-
FAST PARTNER AB (PUBL)	ALFA LAVAL AB	ANOTO GROUP AB	
FASTIGHETS AB BALDER (PUBL).	ASSA ABLOY AB (PUBL)	ASPIRO AB	

Table. 43 All companies in our data sample categorized into GICS sector levels

Description of sectors

Consumer Discretionary: A sector of the economy that consists of businesses that sell nonessential goods and services. Companies in this sector include retailers, media companies, consumer services companies, consumer durables and apparel companies, and automobiles and components companies.

Consumer staples: The industries that manufacture and sell food/beverages, tobacco, prescription drugs and household products.

Energy: The sector includes companies involved in the exploration and development of oil or gas reserves, oil and gas drilling, or integrated power firms.

Financials: A category of stocks containing firms that provide financial services to commercial and retail customers. This sector includes banks, investment funds, insurance companies and real estate.

Healthcare: A category of stocks relating to medical and healthcare goods or services. The healthcare sector includes hospital management firms, health maintenance organizations (HMOs), biotechnology and a variety of medical products.

Industrials: A category of stocks related to the manufacture or distribution of goods. The sector is diverse, containing companies that manufacture machinery used to create capital goods, electrical equipment, aerospace and defense, engineering and construction projects.

Information technology: A category of stocks relating to the research, development and/or distribution of technologically based goods and services. This sector contains businesses revolving around the manufacturing of electronics, creation of software, computers or products and services relating to information technology.

Materials: A category of stocks that accounts for companies involved with the discovery, development and processing of raw materials. The materials sector includes the mining and refining of metals, chemical producers and forestry products.

Telecommunication services: A category of stocks concerning providers of communications and high-density data transmission services, operators of primarily fixed-line telecommunications networks and companies providing both wireless and fixed-line telecommunications services and providers of primarily cellular or wireless telecommunication services.

Utilities: A category of stocks for utilities such as gas and power. The utilities sector contains companies such as electric, gas and water firms and integrated providers.

Source: www.investopedia.com