LUND UNIVERSITY

Informative Insider Trading

- An Investigation about whether Opportunistic Insiders Gain Abnormal Returns on the Swedish Stock Market

Master Thesis, BUSN89

Spring 2014

Lund University

Authors: Mattias Segerström and Raphael Dilger

Supervisor: Anders Vilhelmsson

Abstract

Title: Informative Insider Trading: *An investigation about whether Opportunistic Insiders Gain Abnormal Returns on the Swedish Stock Market.*

Seminar Date: 2014-06-03

Course: BUSN89, Degree Project, Master Level in Corporate and Financial Management, Business Administration Master Level, 15 University Credit Points (15 ECTS).

Authors: Mattias Segerström and Raphael Dilger

Advisor: Anders Vilhelmsson

Key Words: Insider Trading, Abnormal Returns, Event Study, Swedish Stock Market.

Purpose: The main purpose of this thesis is to investigate if trades done by opportunistic corporate insiders in Sweden can earn abnormal returns.

Methodology: This study uses a quantitative analysis with an event study approach. A categorization scheme for insider transactions is applied in accordance to Cohen et al. (2012). The statistical tests are performed on the Swedish stock market as a whole and in the sub-categories Small, Mid and Large Cap.

Theoretical Perspective: The theoretical foundation for this study originates in the fields of Information Asymmetry, Efficient Market Hypothesis, Random Walk and Signaling Hypothesis.

Empirical Foundation: Insider transactions from the period of 2004 to 2013 have been included in this study. In order to retrieve representative samples of the Swedish stock market, the stock lists from Avanza Bank have been utilized.

Conclusion: Informative transactions have been identified on the Swedish stock market. By comparing the results with the findings from Cohen et al. (2012), it was concluded that it is possible for the Swedish insiders, classified as opportunistic, to gain abnormal returns. Although, the predictive power on the Swedish stock market is not as clear as it is on the American stock market.

Table of contents

1. Introduction

The introductory chapter will explain for the reader the motives to the investigated subject. A background is presented as well as a problem discussion. The introduction chapter ends with a discussion regarding the limitations of the paper.

1.1 Background

Everyday new financial information is spread on the Internet. There is an abundance of information that an investor must navigate through to make sound investment decisions. Some people generate higher returns on the capital markets than others, for example Warren Buffett has been able to outperform the market every year by an average of 6.1% from 1976 to 2011 (CBS news, 2012). Warren Buffett is famous for using a fundamental analysis strategy to generate his returns. Fundamental analysis is not the only strategy that can be used to generate high returns; some people are arguing for a more technical analysis when investing in the stock market. The bottom line is that there are numerous of ways to invest in the stock market but what this thesis will investigate is the behavior of corporate insiders and use it as an indicator for future stock performances. According to Finansinspektionen, the Swedish regulatory authority, a corporate insider is someone who has access to corporate information (Finansinspektionen, 2014). This means that executives, board directors and any other beneficial owner can be classified as corporate insiders. What differentiates insiders (executives, board directors and owners) in comparison to outsiders (private investors) is that insiders tend to hold valuable information about the company they are involved in. The fact that insiders have valuable information that outsiders do not have access to, makes the behavior of insiders interesting for outside investors.

"*Insider trading*" is another term for corporate insiders buying and selling their own stock. However it should be mentioned that there are two ways to conduct insider trading. The first way is the legal and the second way is illegal. The legal version of insider trading is the focus of this study and the illegal version refers to insiders making use of non-public information and either buy or sell stocks in connection with informational advantages. In general, insider trading is a subject that has been studied for a very long time. Jaffe (1974) and Seyhun (1986) conclude that insiders compared to outsiders can use their non-public information in order to generate abnormal returns. Abnormal returns refer to the difference between actual returns and expected returns. However, in a publication by Eckbo and Smith (1998) they conclude that insiders could not generate abnormal returns. Whether or not insiders can gain abnormal returns is a debate that has been going on for a long time both internationally as well as in Sweden.

1.2 Problem Discussion

The topic insider trading has been chosen because an insider possibly possesses valuable information about a company that could impact the stock price. An insider can trade for many reasons, which could lead to different results when studying the insider trading field. There is an interesting aspect about insider trading because the results might have implications for both outside investors and regulators. Regulators are trying to prevent corporate insiders from gaining illegal profits due to their informational advantage and the existence of abnormal returns for corporate insiders would indicate that the market is not efficient (Finnerty, 1976). The field of insider trading has been covered by a lot of studies on the American stock market but there are however not many studies focusing on the Swedish market. It could therefore be motivating to study insider trading in Sweden especially since the transactions are publicly available.

One study that has been conducted on the Swedish stock market and that is relevant in terms of insider trading is Wahlström (2003). From his study, Wahlström concludes that insiders were gaining abnormal returns on Large Cap but not on the smaller lists. Apart from this study there have been several master theses on the subject as well. However the intention is to further analyze the Swedish stock market with a different approach. Since insiders often receive stock ownership in their own company, the wealth of the insiders can be tied to stock ownership. This means that not all transactions of insiders might be informative, since insiders also have other motives such as liquidity and diversification reasons.

By stripping away all uninformative “routine” transactions, makes it possible to identify the really informative “opportunistic” transactions. To demonstrate this further, imagine that the CEO “Anders” is working at company ABC and receives a bonus each March every year. Since bonus compensations are usually paid out in the same calendar month each year and since corporate insiders usually can access discounted stock offers they are likely to use the bonus payment and buy the stock. Buying the stock each March over several years is an example of someone who is doing a “routine buy“. Another example could be that Anders each December sells a part of his stock ownership in order to diversify his portfolio or due to tax reasons. Selling each December is another example of a “routine” sell from Anders.

After stripping away all the uninformative signals it is possible to isolate the important predictive trades that possess information about a company. The approach of classifying this type of trading is originating from Cohen et al. (2012). In their study the findings are that opportunistic traders on average yield abnormal returns of 82 basis point a month while routine traders earn abnormal returns of approximately zero basis point a month. Cohen et al. (2012) used American companies in their data sample. This perspective makes it interesting to

investigate if corporate insiders in Sweden that have been classified as "opportunistic" and "routine" can earn abnormal returns.

A similar master thesis has been found (Smith and Wickström, 2011) who attempted to replicate the methodology from Cohen et al. (2012) on the Swedish stock market. However there are some differences between the approaches of these two studies. Firstly, they applied a simplified classification scheme from Cohen et al. (2012), as will be explained further in chapter 4. From this standpoint this thesis will contribute with a more thorough classification scheme. Secondly, they looked at certain regulatory events and compared the trading before and after these events, while the focus of this thesis is not on regulatory events. Thirdly, the students combined every listed company into one group while the objective of this thesis is not only to analyze the Swedish stock market as a whole, but also to look at opportunistic and routine traders in the sub-categories Small, Mid and Large Cap. The reason behind investigating the subcategories is that according to Wong *et al.* (2000) and Seyhun (1988) it is easier to gain abnormal returns in small firms, because information asymmetry is greater in those firms. Since the mentioned master thesis and previous studies are limited in the aspects mentioned above this thesis will try to answer the following questions:

1. Can corporate insiders in Sweden classified as either opportunistic or routine earn abnormal returns?

2. Are there any differences in abnormal returns when comparing opportunistic and routine trades?

1.3 Purpose

The purpose of this thesis is to investigate if trades done by opportunistic corporate insiders in Sweden can earn abnormal returns.

1.4 Limitations

The thesis has the following limitations:

1. Only insider transactions in companies currently traded on NASDAQ OMX Stockholm Small, Mid and Large Cap are included.

2. The study period is between 2004.01.01 to 2013.12.31. This selected period has been chosen because economic cycles could have an impact on the data, so the longer the period the better data estimations will be received.

3. Only buy and sell transactions from corporate insiders are included. This means that for example option programs and gifts are excluded since the objective is to only look at buy and sell transactions in accordance to Cohen et al. (2012).

4. A corporate insider needs at least one trade in each of the three preceding years of a transaction to be included. This requirement is needed in order to classify the insider as either opportunistic or routine. A more detailed explanation of the insider classification scheme is given in chapter 4.

2. Regulatory Framework

The second chapter expands to who can be considered as an insider. A more detailed understanding of laws and regulations is also presented.

2.1 Finansinspektionen (FI)

Finansinspektionen plays a vital role in terms of handling insider transactions. To shortly describe what Finansinspektionen does, a citation has been taken from their website to present a better understanding of the organization.

> *"The Swedish Financial Supervisory Authority, Finansinspektionen, is a public authority. Our role is to promote stability and efficiency in the financial system as well as to ensure an effective consumer protection. We authorise, supervise and monitor all companies operating in Swedish financial markets. Finansinspektionen is accountable to the Ministry of Finance."*
>
> *(Finansinspektionen, 2014)*

All insider transactions on the Swedish stock market are regulated by SFS (2000:1087) "*The Act concerning Reporting Obligations for Certain Holdings of Financial Instruments*" as well as SFS (2005:377) "*Financial Instruments Trading*". If Finansinspektionen detects any illegal insider trading activities, they will be reported to the Swedish Economic Crime Authority (Ekobrottsmyndigheten). Insiders on the Swedish stock market are required to report their purchases, sales or changes in stock ownership to Finansinspektionen within five weekdays after the transactions have been made (Finansinspektionen, 2014). If an insider fails to report to Finansinspektionen within those five weekdays a fee has to be paid up to a maximum amount of 100.000 SEK. If a company is constantly failing to report their insider transactions in time, a reprimand or warning, possibly with a penalty, is taken as reactive action (Finansinspektionen, 2014). The public can easily access all information regarding insider transactions and penalties on the website of Finansinspektionen.

2.2 Who can be classified as an "Insider"?

According to Swedish regulation, it is the company's responsibility to report all information regarding insider transactions. This means that a company needs to understand who actually has to be classified as an insider. By looking at § 3 (2000:1087) "*The Act concerning Reporting Obligations for Certain Holdings of Financial Instruments*" it can be found what kind of persons are classified as insiders. The definition of an insider is what follows:

- Members of the Board of Directors
- CEO or Vice CEO
- Auditors or Deputy Auditors
- Partner of a trading company that is the parent of the listed company
- Possessor of a position that has exposure to non-public information of the company
- Beneficial owners with at least 10% ownership

It should be noted that beneficial owners are the only ones on the list that need to report their transactions by themselves. For anyone else, the responsibility of reporting lies on the company itself. Other insiders who also have to report directly to Finansinspektionen are husbands, wives, partners, minors or someone who is closely related and has been sharing the same household for at least one year according to § 5. This study is applying the same definition of an insider in accordance to Finansinspektionen.

3. Literature

In this chapter a selection of the most important studies in the area of insider trading from the 1970s and onwards is presented. The weight lies on the more recent publications, which mostly include concepts such as information asymmetry, efficiency market hypothesis, random walk and signaling hypothesis. Publications focusing on any of these four topics are presented, followed by the studies about insider trading in different markets and timeframes. Finally, hypotheses are presented as a result of an identified research gap.

3.1 Theories

Before elaborating on empirical studies in the field of insider trading, the fundamental theories relevant for this topic are presented: information asymmetry, efficient market hypothesis, random walk and signaling hypothesis.

3.1.1 Information Asymmetry

Akerlof (1970) developed the theory of information asymmetry by exemplifying the different levels of information between different market participants. This was done by introducing the scenario in which a seller offers an inferior product, a "lemon", to a buyer who does not know about its inferiority. This scenario illustrates the asymmetric relationship between a buyer and a seller in general since a buyer usually has to pay for a product without the opportunity to thoroughly check its quality. This puts him or her in a generally disadvantageous position. Akerlof's classical example can be transferred to the stock market, where a corporate insider holding relevant information could sell an overvalued stock to the uninformed remaining part of the market.

Hillier, Grinblatt and Titman (2008) state that revealing inside information can put firms in disadvantages that leaves them either vulnerable to competitors or compromises their business model by giving up informational advantages to their competition. Under this point of view, insiders are naturally careful about making public announcements about changes in their private portfolio in order to avoid competitive disadvantages.

On the contrary Michaely, Thaler and Womack (1995) are indicating that investors often underreact to news disclosures from firm insiders and corporate announcements in general. They point out that the market is often incorporating disclosure events such as dividend announcements slowly. Their quantitative study also shows that just by trading on these events and holding the security for a longer period, investors can gain abnormal returns, which can be counted as an indicator for information asymmetry.

Frankel and Li (2004) examine how information asymmetry is affecting the ability of insiders to generate abnormal returns. Companies are inclined to close the information gap between corporate out- and insiders by providing a better or more complete level of information. With their publications, such as the annual or quarterly reports, the ability of insiders to gain abnormal returns on possible information gaps is being cut back. They also detect that the volume of aggregated insider trading activity in general is lumping around these announcements, while a higher quality of information revealed in disclosures has a negative effect on these trading activities.

3.1.2 Efficient Market Hypothesis and Random Walk

By observing the American stock market, Samuelson (1965) was able to develop the hypothesis that prices fluctuate randomly. He concluded that it should therefore not be possible to predict price developments by analyzing historical stock prices.

This idea was further developed in one of the most prominent publications about the efficient market hypothesis, "*Efficient Capital Markets: A Review of Theory and Empirical Work*" authored by Fama (1970). He defines three categories regarding the level of efficiency in a market: The weak, semi-strong and strong form.

In the weak form of market efficiency, all historical information is already priced into a security. Analyzing historical data in order to get an advantage over other market participants is therefore an ineffective strategy. This can be explained by the example of a hypothetical situation where a security is under- or overpriced. The situation remains hypothetical since investors would immediately recognize mispricing and try to exploit this situation, which automatically corrects a possible divergence.

In the semi-strong market efficiency, prices are reflecting all currently publicly available information in addition to the historical information from the weak form. Corporate disclosures, such as earnings or dividend announcements, are already taken into account in the current security price levels. Investors are not able to derive a trading strategy that yields abnormal returns using information under the setting of a semi-strong efficiency form.

Strong market efficiency additionally includes all available information regardless of whether it is corporate inside information or publicly available disclosures. No market participants are able to develop superior trading strategies under this level of market efficiency.

For this degree project the semi-strong form of efficiency is the most relevant form, since under the assumption of a strong form of efficiency no corporate insider should ever be able to

generate abnormal returns with their trading activities. This point of view is supported by Jaffe (1974), Finnerty (1976) and Seyhun (1986), who all imply that firm insiders are able to outperform other market participants by exploiting their non-public information.

A very early publishment about the concept of random walk was made by Kendall (1953). In his study he is not able to find any systematic occurrences regarding price movements and fluctuations in the examination period. It is therefore not possible to predict future prices.

In harmony with his earlier publications described above on the efficient market hypothesis, Fama (1965) states that the effort to gain abnormal returns using historical data to predict future movements in the capital markets is futile if the random walk hypothesis holds true. He demonstrates his results by proving that observations done by other economists do not earn abnormal returns.

In 1991, Fama published an extension to his initial paper in which he discusses the developments of the efficient market hypothesis since the initial publication in 1970. He reflects on several studies by other authors and concludes that capital markets do not exhibit the strongest form of the efficient market hypothesis.

3.1.3 Signaling Hypothesis

Hillier, Grinblatt and Titman (2008) describe three different signaling options that companies can use. Firstly, increasing dividend payments is perceived as a strong positive signal by the capital markets, whereas a reduction of expected dividend payments is perceived as a signal of weakness. Secondly, increasing corporate leverage is usually interpreted as a signal of strength, since a company would not increase their credit obligation without being able to pay them off. Leverage is also used as an indicator for potentially good investments and therefore growth opportunities. The third type of signal is the raise of equity, which the authors consider to be a more negative signal since the markets usually react negatively to such disclosure, seeing that it often has been an indication that the management of a company believes its share price to be overvalued at the given time. Alternatively, the company can use share buyback programs in order to signal confidence to the capital markets. Eventually the paper is a confirmation of John and Lang's (1991) hypothesis that the combination of different kinds of signals is leading to the strongest signaling effect. The more relevant events or disclosures are, concurring in a relatively small time window, the better. Another more recent publication is re-approving this assumption: Firth, Leung and Rui (2010) are even specifying this hypothesis to insider trading activities combined with other signals. Their findings reveal that the trading activities by insiders are perceived as a stronger indication for a company's performance than alternative signals when they are occurring simultaneously.

Givoly and Palmon (1985) have taken a somewhat opposite direction and credit the potentially strong performance of insider trades to outsiders who are trying to mimic insider behavior. Therefore, those outsiders are amplifying the original signal. This can potentially increase the informational content of individual transactions that featured a routine motivation rather than an opportunistic transaction. Individual trades therefore have the potential to become self-fulfilling prophecies. The authors admit that the signaling effect of insider transactions contradicts the conventional efficient market hypothesis.

Ball and Kothari (1991) analyze the market behavior in general around earnings announcements. Their results show that the variances and betas of stocks increases the closer they get to the date of the disclosure, which could be a sign for transactions that yield higher than normal returns. They do not specify their study on insider trading, instead they use a more general analysis, but mention it as a possibility for future research on the topic.

Seyhun and Bradley (1997) find similar results by analyzing insider transactions in conjunction with bankruptcy filings. They are able to identify specific recurring trading patterns close to the point of bankruptcy. Corporate insiders tend to increase sell transactions the closer the companies get to default.

Dickgiesser and Kaserer (2010) confirm the results from Seyhun and Bradley (1997) and conclude that sales are exhibiting a stronger information signal than buy transactions. Opposed to this, Lakonishok and Lee (2001) find that buy transactions have a much stronger signaling effect than sell trades. They motivate their assumption by the informational content purchase transactions stand for. Sell transactions often have a straightforward liquidity reasoning, whereas buy transaction usually represent a certain motivation for an investment.

3.2 Empirical Studies

Listed below is a presentation of relevant studies on the topic of insider trading in chronological order.

3.2.1 Studies

In his study, Jaffe (1974) finds proof that insiders are able to outperform other market participants due to the insiders' trading behavior. He emphasizes on the signaling effect insider transactions might have to outsiders and conducts an analysis to learn if it is possible to use this information for a valid trading strategy that replicates those transactions. His findings state that outsiders are able to earn abnormal returns, in some cases even if transaction costs are taken into consideration.

Seyhun (1986) also tests if the efficienct market hypothesis holds true or if random investors are able to gain abnormal returns by replicating insider transactions. The author is especially interested in the position a corporate insider holds. His findings state that trades from individuals holding high-level positions, such as directors or the top-management team, have superior information quality connected to their transactions than mid- or low-level insiders. He also adds another perspective to the topic by connecting the size of individual transactions to their informational quality, meaning the bigger the volume the bigger the chance that they represent valuable indications for future stock price movements. However he states that his findings can not be replicated if transaction costs are taken into account. Ravin and Sapienza (2009) confirm these findings and discover that directors, especially from the audit committee, have especially strong prediction power in their transactions. Additionally, they are able to identify a negative correlation between the level of corporate governance in firms and abnormal returns of corporate insiders.

Two years later, Seyhun (1988) refreshes the findings described above, with a secondary paper on the topic of insider trading. He adds the so called “Lucas-effect“ which states that the advantages insiders were thought of having were actually a result of environmental effects. If an outsider would be able to identify situations where this is the case, they would be able to divide insider transactions into informed and uninformed, in order to build a trading strategy around this classification. He finds evidence that all aggregated insider transactions of a single month in one market, often feature strong correlations with the market return in the following two months. A situation where sell transactions were out-weighting purchase orders, was often followed by more negative market developments in the next two months. He also divides his analyzed data according to the size of the companies and concludes that corporate insiders of smaller firms have a higher probability of predicting future market developments.

Eckbo and Smith (1998) research the performance of corporate insiders on the Norwegian stock market. They construct virtual portfolios of the total aggregated holdings of all insiders in the market and compare them to the performance of mutual funds that are active in Norway. The aggregated results from their study suggest that insiders can not gain significant abnormal returns.

Lakonishok and Lee (2001) conduct an analysis about the informational quality of American insider trades in the period of year 1975 to 1995. Their results show that purchases can contain valuable information, whereas sale transactions do not yield any informative advantages. As stated in 3.1.3, they motivate their assumption by the informational content that buy transactions stand for. Sell transactions often have a straightforward liquidity reasoning, whereas buy transactions usually represent motivation for investments. They also identify inside

investors to often be active traders in smaller companies and motivate this with their assumption that larger companies tend to be priced more efficiently than smaller companies

The findings above are supported by Jeng, Metrick and Zeckhauser (2003) who state that corporate insiders in smaller companies are able to generate higher abnormal returns compared to insiders in larger firms.

Wahlström (2003) performs his study on the Swedish stock market by categorizing insider transactions by the indices they are listed in. He does not distinguish between purchases or sell transactions, which makes his results somewhat questionable. Nevertheless, his study shows that abnormal returns can be found in the Large Cap segment.

Dickgiesser and Kaserer (2010) find different results and conclude that sales are exhibiting a stronger information signal than buy transactions. They analyze the German stock market and as many other analyses, they are not able to find a valid trading strategy once the transaction costs are taken into account. They also focus on the development of certain indicators over their observation period, such as Market-to-Book or CAR. They also expect insiders of smaller firms to be more likely to gain more abnormal returns than their counterparts from larger companies.

Del Brio and De Miguel (2010) focus on the Spanish stock market in their analysis. They investigate the informative value of disclosures regarding changes in dividend payments and transactions of corporate insiders. They state that sale transactions tend to signal poor future stock performance. They rate dividend changes as a signal, which is not as strong as it was in older periods of observation and is therefore best used in combination with other signals as it has been described by John and Lang (1991). They are also able to identify certain timing patterns in insider trading activities, which they connect to regulatory requirements.

Jiang and Zaman (2010) consider a more aerial perspective in their analysis and only look at insider transactions as an aggregated bulk in order to test its ability to predict future aggregated market returns. They use unexpected cash-flow disclosures as a trigger for their analysis. Their findings reflect the results of Seyhun (1992), who states that the net purchases of insider transactions of one year are able to predict the market development of the following year's abnormal stock returns with a likelihood of around 60%. Additionally his results state that the transactions of insiders from smaller corporations have a higher probability for market prediction. Ke, Huddard and Petroni (2003) are even able to find evidence for predictive capabilities of insider transactions up to two years ahead of major accounting disclosures.

Inci, Lu and Seyhun (2010) analyzed how the trading activities of corporate insiders influence the intraday stock trading behavior. Their findings state that the disclosures of insider trades are usually followed by an immediate steep rise in transactions, which results in intraday stock movements that reflect the direction of the insider trade. The publication of an insider sell trade is many times followed by a short-term down movement in the stock price and the opposite holds true for stock purchases. They discover that this phenomenon is stronger for purchases than for sales and deduce that insider transactions therefore hold some informational content.

Korczak et al. (2010) focus their research on insider trades close to news events or severe corporate disclosures. Their conjecture is that opportunistic behavior is driven by the trade-off between secure profits, regulatory penalties and reputation loss. They argue that this phenomenon can be proven by the observation that sensitive disclosures are accompanied by far less trading activity than more common, less sensitive news events, since the risk of a reputation loss based on potentially illegal behavior is extra high. Further they assume that sell transactions mostly bear the risk of reputation loss, since the market often interpret them as a bad indicator for the company's future performance. They are able to find a correlation between the net direction of the insiders' transactions before a disclosure and the immediate performance of the stock and therefore confirm Inci, Lu and Seyhun (2010) in this aspect. Additionally they are able to find a correlation between the level of seniority of an insider and the perceived informational values his or her trading activity contains.

3.2.2 Decoding Inside Information

Cohen et al. (2012) extend the ideas presented by Lakonishok and Lee (2001) that insider transactions contain different levels of information quality. By classifying insider transactions as either opportunistic or routine, Cohen et al. (2012) explore a different approach in categorizing insider transactions. The authors examine 30 years of trading history on the American stock market by applying their categorization scheme. Their assumption is that when uninformative "routine" transactions have been stripped away, informative "opportunistic" transactions can be identified. By comparing the two groups of opportunistic and routine transactions they are able to find distinct proof for abnormal returns attached to the opportunistic transactions, while the routine trades are not able to generate abnormal returns. Cohen et al (2012) do a further analysis by investigating the level of news coverage in the context of the informative insider transactions.

The findings implicate that by generating a classification scheme to separate uninformative transactions, valuable information regarding market prediction power could be gained. The paper by Cohen et al. (2012) serves as the inspiration for this thesis, which applies the approach to the Swedish stock market.

3.3 Hypotheses

A research gap has been identified based on the literature, empirical findings and the problem discussion. The following hypotheses are tested:

> *Hypothesis (1): Insider transactions on the Swedish stock market that have been classified as opportunistic gain significant abnormal returns.*

Cohen et al. (2012) concluded that opportunistic transactions gain significant abnormal returns on the American stock market. The answer to this hypothesis might contribute with interesting findings since no other study has managed to classify the opportunistic transactions on the Swedish stock market in line with a thorough methodology developed by Cohen et al. (2012).

> *Hypothesis (2): Insider transactions on OMX Stockholm Large Cap classified as either opportunistic or routine do not gain significant abnormal returns.*

This hypothesis is based on the literature covering information asymmetry and efficient markets, such as Lakonishok and Lee (2001) Jeng, Metrick and Zeckhauser (2003) Dickgiesser and Kaserer (2010). Larger firms tend to have more analyst coverage compared to smaller firms. This has an impact on the available information to investors according to Wong *et al.* (2000) and Seyhun (1988), who argue that it is easier to gain abnormal returns in Small Cap firms because information asymmetry is greater in those firms.

> *Hypothesis (3): Insider transactions on the Swedish stock market that have been classified as opportunistic gain significantly more abnormal returns compared to routine transactions.*

According to Cohen et al. (2012) opportunistic transactions are informed while routine transactions are uninformed. It is therefore motivating to test if opportunistic transactions gain significantly more abnormal returns in comparison to routine transactions.

> *Hypothesis (4): Insider buy transactions on the Swedish stock market divided into either opportunistic or routine gain significantly more abnormal returns compared to sell transactions.*

Lakonishok and Lee (2001) or Inci, Lu and Seyhun (2010) are for example arguing that buy transactions are more informative compared to sell transactions. Based on this finding it is interesting to investigate whether or not this is the case for this thesis.

4. Method

In this chapter a detailed methodology is presented. The purpose with this chapter is to present the thesis in such a manner that enables the reader to replicate what has been done.

4.1 Approach

To investigate whether or not informative trades done by corporate insiders in Sweden can earn abnormal returns, a lot of financial data has to be analyzed. When analyzing large datasets a quantitative method is favorable (Holme & Solvang, 2007). The methodology section is divided into six sections. The first section describes what kind of data is included in the sample and how the datasets are filtered in order to find informative trades. The classification scheme is then presented in the second section of the methodology. In this section a detailed explanation is given of how the insiders are classified in order to help the reader understand how the datasets have been treated. The third section explains what an event study is and why the event study has been chosen in the methodology. The fourth section presents formulas and calculations while the fifth section dives into statistical analysis tools. The methodology chapter ends with a section of the validity and reliability of this report.

4.1.1 Firms in Sample

The sample is based on currently traded firms in Small, Mid and Large Cap. To find these companies, the stock list from Avanza Bank was utilized (Avanza Bank, 2014). Stocks that are not listed on the mentioned markets are excluded. For example markets such as NGM, Aktietorget or First North are not included in the sample. There are both A and B shares listed on Avanza stock list. If a company has both A and B shares, then these shares are combined and classified as one company. This thesis does not separate between these different share classes when analyzing insider transactions.

Exhibit 4.1 Firms in Sample

	Small Cap	Mid Cap	Large Cap
# Firms excluded	16	17	6
# Firms included	99	74	65
Total	115	91	71

Exhibit 4.1 presents an overview of the number of firms that are included in each market segment. The table is based on currently traded companies in each segment. Some companies have been listed and delisted; these companies are excluded from the sample. A company needs to have been listed for a minimum amount of time of four years. This requirement is used

because a corporate insider needs at least one trade in each of the three preceding years to be included and recognized as either opportunistic or routine. The approach is aligned with Cohen et al. (2012) and the excluded firms are assumed to not bias the sample since they only represent a fraction of the total population. A detailed list of companies included can be found in Appendix 2. Those who were excluded are listed in Appendix 3.

4.1.2 Insider Transactions

Insider transactions can be exported once the number of companies included in the sample is determined. The transactions are manually acquired from the database of Finansinspektionen, an excerpt of the datasets is presented in Appendix 1. Before filtering through the data, it should be mentioned that the number of transactions in each index are in total 18,318 insider transactions in Small Cap, 20,895 in Mid Cap and 33,350 in Large Cap. The data from Finansinspektionen covers every reported transaction done by corporate insiders for all listed Swedish stocks. The insider transactions are gathered for the maximum publically available time period of ten years, from 2004.01.01 to 2013.12.31. For this thesis, all stocks that are currently traded in Small, Mid and Large Cap indices have been used. In order to get good estimates many transactions during a long time period are preferable because economic cycles can have an impact on the data, so the longer the time period the better data estimates one gets. A requirement is a minimum coverage of four years, which resembles the smallest possible period for examination with the methodology used by Cohen et al. (2012).

Finansinspektionen include all sorts of transactions made by a corporate insider. For example options, heritage, bonuses, gifts, repurchases and dividends can be accessed through the database. However the focus here is solely on buy and sell transactions done by insiders, everything else is excluded. This filter requirement reduces the number of transactions by almost two thirds. Furthermore, since a corporate insider needs at least one trade in each of the three preceding years of a transaction to be included as either opportunistic or routine, this rule can exclude those insiders who have not done at least four buy and/or sell transactions.

There is no limitation of the size of each transaction. This means that any type of buy or sell transaction is included regardless of the value of the transaction. This thesis does not intend to analyze the impact of the size of each transaction, which means that there are no further limitations on insider transactions.

4.1.3 Security Prices

All historical share prices of the sample size from 2004.01.01 to 2013.12.31 are exported from Thomson Reuters Datastream. Only companies that have available share prices on Datastream

are included. To see which companies that are included, a complete table list is presented in Appendix 2.

The share prices from Thomson Reuters Datastream are per default adjusted for events such as dividends and splits in order to get real returns. Once all share prices are gathered, returns can be calculated for every single security. Instead of calculating discrete returns a natural logarithm is preferable when estimating cumulative returns, because there is a greater chance that the returns are normally distributed (Strong, 1992). The natural logarithmic equation is seen below:

Equation 4.1 - Actual Return of Stock *Source: Strong (1992)*

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

$P_{i,t}$ = Price of stock *i* at time *t*

$P_{i,t-1}$ = Price of stock *i* at time *t-1* where *t-1* is the day before

4.1.4 Index Values

Index values are used as a benchmark in order to calculate abnormal returns of the Swedish stock market. Exhibit 4.2 presents the indices used in this study.

Exhibit 4.2 Indices

List	Index
Small Cap	OMX Stockholm Small Cap
Mid Cap	OMX Stockholm Mid Cap
Large Cap	OMX Stockholm 30

All adjusted index values from 2004.01.01 to 2013.12.13 are exported from Thomson Reuters Datastream. Logarithmic returns are applied on every index list in order to be consistent in calculating the abnormal returns. The natural logarithmic equation for an index is demonstrated below:

Equation 4.2 - Actual Return of an Index *Source: Strong (1992)*

$$R_{m,t} = \ln\left[\frac{P_{m,t}}{P_{m,t-1}}\right]$$

$P_{m,t}$ = Price of the index *m* at time *t*

$P_{m,t-1}$ = Price of the index *m* at time *t-1* where *t-1* is the day before

4.1.5 Literature

The primary source for any studies, articles and publications relating to insider trading is LUBsearch. The database LUBsearch has been helpful to access readings online by using keywords such as *market model*, *insider trading*, *abnormal returns* and *event study*. Some books that have been used as student literature are also included. These books have been helpful in order to build the thesis. The quality of these books can be considered high because the authors have good reputations within the academic world. Articles from the Internet have also been used but not to a large extent. Only sources with good reputation have been chosen from the Internet to increase the reliability.

4.2 Classification

The lead document that is used as a paragon for the approach used in this degree project is "*Decoding Inside Information*" (Cohen et al., 2012). The goal is to divide insider transactions into informed and uninformed trades. Uninformed trades are recurring routine transactions such as the yearly investment of bonus payments into the corporate stock. Such trades are lacking an opportunistic motive and are therefore not informative. A hypothetical example is presented to further explain the year-to-year classification scheme for the reader. Assume that the CEO "Anders" who works at company ABC conducted trades in March of 2004, 2005 and 2006. Anders also traded in 2007 and 2008.

1. January 2007
2. March 2007
3. Dec 2007
4. Jan 2008

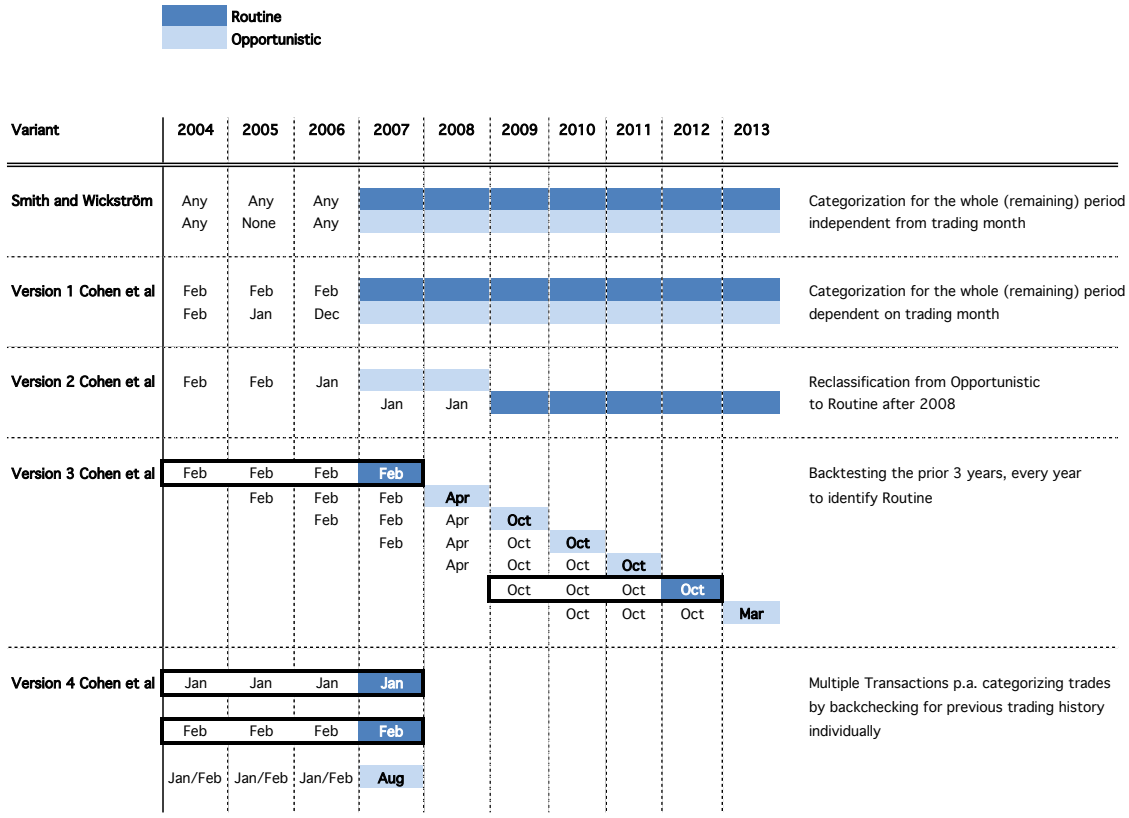
According to the year-to-year classification method by Cohen et al. (2012), the transactions of Anders are classified as both opportunistic and routine since he conducted trades in March 2004, 2005 and 2006 (three years in a row). The trade in March 2007 is considered routine while the transactions 1, 3 and 4 are considered opportunistic.

Exhibit 4.3 shows different alternatives for the determination process of routine insiders. As already mentioned, another master thesis from 2011 (Smith and Wickström) attempted to replicate Cohen et al. (2012) but used a simplified approach when classifying corporate insiders. According to the authors, an insider is not required to trade in the same calendar month to be

classified as a routine trader. A routine insider is defined as someone who has traded for three consequitive years followed by a fourth trading year. The authors disregard any patterns in the calendar months.

Cohen et al. (2012) cover four different variants of insider classifications where this thesis uses the most sophisticated one, version 4. The purpose with the classification scheme is to back-check for each individual transaction done by an insider and see if there have been transactions in the previous three years. If those previous trades fall into the same calendar month, the transaction is labelled as routine. If the previous trading history occurs in different calendar months it is labelled as opportunistic. The other alternatives (version 1 and 2) are more elementary and should therefore be more useful to be compared with the more sophisticated variants rather than to be the core method of investigation.

Exhibit 4.3 Variants of Insider Determination



4.3 Event Study

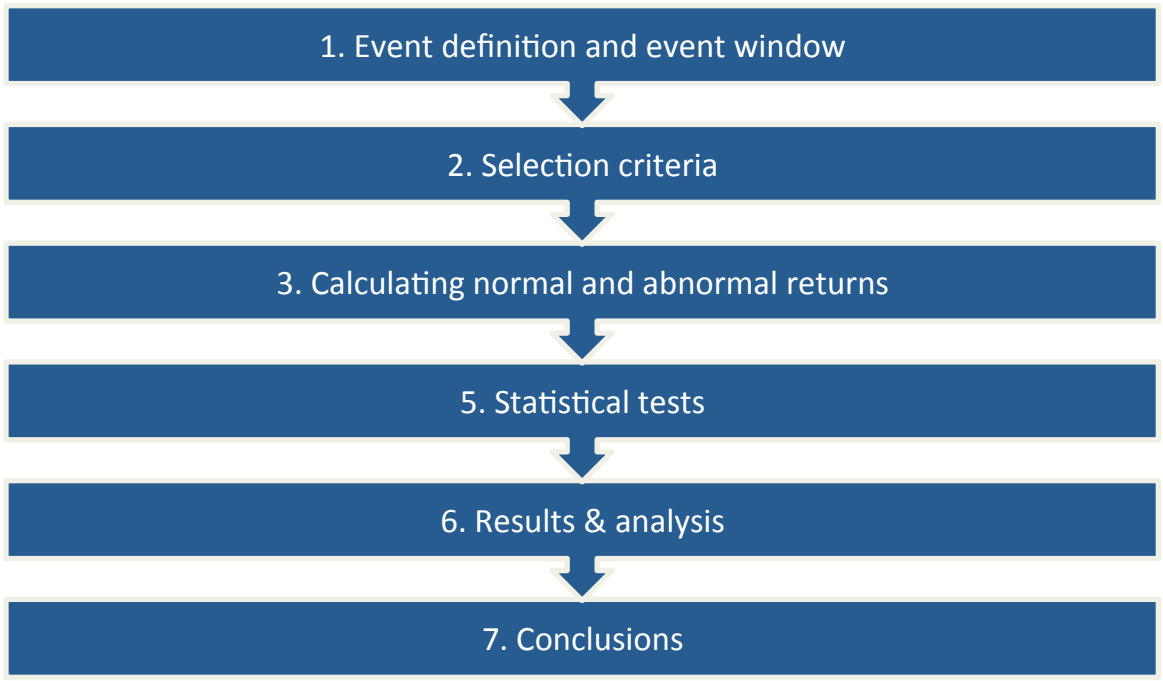
This study uses a quantitative method based on a large set of financial data. An event study is therefore preferable in this case, because it measures the effect of a certain event (Holme & Solvang, 1997). The benefit with an event study is that the impact of an event will be reflected

in the security price. The impact on the security price due to an event tends to be smaller if the market is efficient, compared to a non-efficient market that reacts more to new information about an event (MacKinlay, 1997).

Event studies have been frequently used in financial research. For example event studies have been applied on mergers and acquisitions, insider trading and macroeconomic events (MacKinlay, 1997). The approach has been used for many years, for example Dolly (1933) researched price changes of securities due to splits and event studies. Fama et al. (1969) and Ball and Brown (1968) presented an event study approach that is more or less still used today. The methodology that is used today has some statistical improvements. For example, daily returns are used instead of monthly returns when calculating abnormal returns (Kothari & Warner, 2006).

4.3.1 Procedure of the Event Study

The procedure of an event study can be generalized into the steps illustrated below (MacKinlay, 1997).



4.4 Event Definition and Event Window

The first step is to define the event of interest and to define the time period to be studied. In order to determine if insiders can earn abnormal returns from insider trading, an event window needs to be defined. Usually an event window has a longer time period than the defined event window, to capture anything of interest that is close to the investigated period (MacKinlay, 1997).

4.4.1 Event Definition

This study is investigating whether or not corporate insiders classified as either opportunistic or routine can earn abnormal returns. Any buy and sell transactions from corporate insiders are therefore of interest to observe in the event study.

4.4.2 Event Window

The event window is the time period used to measure if insiders can generate abnormal returns. An event window often includes a larger number of days compared to the event day in order to capture anything around the event. The number of days in the event window will vary depending on the purpose of the study (MacKinlay, 1997).

Exhibit 4.4 Definition of Event Windows

Short Term		Long Term	
E = 1 day	τ = t+1	E = 21 days	τ = t+21
E = 5 days	τ = t+5	E = 63 days	τ = t+63
E = 10 days	τ = t+10	E = 126 days	τ = t+126

The event of the transaction is equal to $\tau = 0$. In this thesis, event windows of 1, 5 and 10 days are used to capture any short-term abnormal returns. As mentioned before, a corporate insider has five calendar days to report the transaction to Finansinspektionen. An examination of a 1-day period is therefore interesting because the abnormal returns can be expected to have small signaling effects, since the information regarding the transaction may not be publicly available yet. Five days prior to the transaction, signaling effects are expected to be better incorporated in the security price. The 10 days event window will capture the publication of the transaction and can be assumed to incorporate even stronger signaling effects.

The long-term event windows of 1 month (21 days), 3 months (63 days) and 6 months (126 days) will capture the long-term abnormal returns from insider trading. The long-term event windows are especially interesting because Cohen et al. (2012) present their results from the American stock market in monthly returns. Using the same event windows enables a

comparison between the results from the Swedish stock market and the results from Cohen et al. (2012) on the American stock market. However there is a risk that the long-term event windows will capture other events that can impact the value of the company.

4.4.3 Selection Criteria

The selection criterias for this thesis are straightforward. As described in chapter 4.1.1, only currently traded companies on the stock lists Small Cap, Mid Cap and Large Cap are included. The criteria is that an insider needs at least four years of trading history in order to be classified as either opportunistic or routine. This criterion excludes every company that does not meet this requirement. The majority of the companies in the sample are listed during the whole time period 2004.01.01 to 2013.12.31. Some companies are only listed during a limited time within this investigated period. In order to mitigate survival bias, all companies are included even though they are only listed for a limited amount of time of the investigated period. Survival bias refers to a systematic error that can emerge when only companies that have survived during the whole time period are included. Companies with no available share prices on Datastream are excluded and companies with no available insider transactions on Finansinspektionen are excluded. Further details regarding companies included in the sample can be seen in Appendix 2.

4.4.4 Calculating Normal and Abnormal Returns

Normal returns are firstly calculated in order to obtain abnormal returns. All calculations are performed in Microsoft Excel with some automation to mitigate as much manual work as possible. There are two common models available when measuring normal returns: the constant-mean return model and the market model. The constant-mean return model assumes that an asset's return has a constant mean and a constant variance, while the returns in the market-model are a function of the return of an index (MacKinlay, 1997). In this case the market-model is used to measure normal returns and this choice is supported by the benefits of using the market-model when working with a very large dataset (Campbell et al., 1997). The explanatory power (R^2) is assumed to be higher in a regression analysis with a large dataset because the stock returns can be explained by the market model if (R^2) is high.

The market model is a single factor model and this means that the model does not include any other factors that can explain the behavior of the stock. According to Mackinlay (1997), there are very small gains of using the multifactor models such as Fama and French three-factor model. The market model seems appropriate when taking into account these findings and the fact that the market-model has been used in similar studies (Seyhun, 1986 & Wahlström, 2003).

The expected stock price in the market model is a function of the return of the market portfolio and the formula is expressed as:

Equation 4.3 - Expected Stock Price Using Market Model *Source: MacKinlay (1997)*

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

$R_{i,t}$ = Return of the stock price at time *t* of security *i*

$R_{m,t}$ = Return of market portfolio at time *t* of the market portfolio *m*

$\varepsilon_{i,t}$ = Mean disturbance that has an expected value equal to zero

α_i = Coefficient from OLS regression

β_i = Coefficient from OLS regression

4.4.4.1 Normal Return

To calculate the abnormal return, the normal return has to be defined first. The normal return refers to an expected return of a security that is not surrounded by a special event, for example an insider transaction. The formula for the normal return is as follows:

Equation 4.4 - Normal Return *Source: MacKinlay (1997)*

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

The coefficients $\hat{\alpha}_i$ and $\hat{\beta}$ have to be estimated in the OLS (Ordinary Least Squares) regression in order to calculate the normal return. To do this, an estimation period is created using 120 daily returns before each event. According to MacKinlay (1997), a period of 120 daily returns prior to an event is a sufficient estimation window to use, in order to calculate the expected rate of return. The event study is constructed in such a manner that separates the estimation window and the event window. This separation is important because any overlapping between these windows can affect the results. The coefficients are estimated according to formulas 4.5 and 4.6.

Equation 4.5 - Beta Calculation *Source: MacKinlay (1997)*

$$\hat{\beta}_i = \frac{\sum_{\tau=T0+1}^{T1}\left(R_{i,\tau} - \bar{R}_i\right)\left(R_{i,\tau} - \bar{R}_m\right)}{\sum_{\tau=T0+1}^{T1}\left(R_{m,\tau} - \bar{R}_m\right)^2}$$

Equation 4.6 - Alpha Calculation *Source: MacKinlay (1997)*

$$\hat{\alpha}_i = \bar{R}_i - \hat{\beta}_i \bar{R}_m$$

4.4.4.2 Abnormal Return

Once the actual and expected returns are calculated, it is possible to measure the abnormal return. The abnormal return is equal to the actual return less the expected return. See the formula below:

Equation 4.7 - Abnormal Return *Source: Benninga (2008)*

$$AR_{i,\tau} = R_{i,\tau} - E\left(R_{i,\tau}\right)$$

$AR_{i,\tau}$ = Abnormal return

$R_{i,\tau}$ = Actual return

$E\left(R_{i,\tau}\right)$ = Expected return for security *i* at time *t*

4.4.4.3 Cumulative Abnormal Return

The cumulative abnormal return (CAR) is equal to the sum of all the abnormal returns in a specific event window. This thesis uses six event windows, which means that each insider transaction will have different cumulative abnormal returns depending on the event window being used. The formula for (CAR) is:

Equation 4.8 - Cumulative Abnormal Return *Source: MacKinlay (1997)*

$$CAR_{i,\tau} = \sum_{\tau=T_{1+1}}^{T_2} AR_{i,\tau}$$

4.4.4.4 Cumulative Average Abnormal Return

The cumulative average abnormal return (CAAR) can be calculated with the sum of the cumulative abnormal returns (CAR), divided by the number of transactions in each event window. The CAAR is needed to perform the *Student's T-test*. More information regarding the Student's T-test is presented in chapter 4.5.2 The formula for cumulative abnormal return is given below:

Equation 4.9 - Cumulative Average Abnormal Return *Source: MacKinlay (1997)*

$$CAAR_{\tau} = \frac{1}{N}\sum_{\tau=T_{1+1}}^{T_2} CAR_{i,\tau}$$

4.4.4.5 Variance of CAAR

The variance of CAAR is also needed in order to perform the t-test. To calculate the variance for CAAR this formula can be used:

Equation 4.10 - Variance of CAAR *Source: MacKinlay (1997)*

$$\mathrm{var}\left(CAAR(\tau_1,\tau_2)\right) = \frac{1}{N^2}\sum_{i=1}^{N}\sigma_i^2(\tau_1,\tau_2)$$

4.5 Statistical Tests

There are several ways to test the significance of the data depending on its characteristics. The first step in this study is to test the data for normal distribution. A sample that is normally distributed has values close to its mean and seldom deviates with extreme values. A normal distributed sample is important to achieve in order to enhance validity and reliability of the study. If the sample is not normally distributed a non-parametric test should be used, whereas if the sample is normally distributed a parametric test is more appropriate (Körner & Wahlgren, 2006). Taken this into consideration, two complementing tests are used in this thesis.

The Student's T-test assumes that the data is normally distributed to be statistically significant. The complementing test is the *Wilcoxon Signed-Rank test* that is appropriate to use when the data is not normally distributed. According to Corrado and Zivney (1992), the Wilcoxon Signed-Rank test gives a better measurement on non-parametric tests in event studies focusing on abnormal returns. In general, non-parametric tests use less information in the data and can be less valuable compared to parametric tests. This means that the Student's T-test should be used only when the assumption of the parametric test is fulfilled. It is therefore an advantage to

complement the Student's T-test with the non-parametric Wilcoxon Signed-Rank test when the assumption of the parametric test is not fulfilled. By complementing the Student's T-test with the Wilcoxon Signed-Rank test, a more enhanced interpretation of the results can be achieved rather than just solely using the Student's T-test.

A two-sided t-test is applied in order to test for both positive and negative abnormal returns. The confidence interval is 95%, which is commonly used (Körner & Wahlgren, 2006). Each statistical significance test provides p-values that determine if the null hypothesis is rejected or not. All tests have been performed in the statistics program IBM SPSS.

4.5.1 Normality Test

There are several ways to investigate whether or not the sample is normally distributed. For example visual outputs such as Histograms, Q plots or Box plots can be used. However it is not a very accurate method to determine whether or not the sample is normally distributed just by looking at the sample visually. Therefore tests such as *Anderson-Darling*, *Kolmogorov-Smirnov* and *Shapiro-Wilk* are preferable. This thesis will use the Shapiro-Wilk test and if its results indicate that the sample is normally distributed, the Student's T-test results should be appropriate. However if the Shapiro-Wilk test indicates that the sample is not normally distributed, the Wilcoxon Signed-Rank should rather be used.

The Shapiro-Wilk test is applied on the data using the statistical software SPSS. In SPSS a hypothesis test is conducted to determine whether or not the specific sample is normally distributed. The hypotheses are as follows:

H_0: The data in the specific sample are normally distributed
H_1: The data in the specific sample are not normally distributed

The Shapiro-Wilk test provides p-values that are relevant in order to decide whether or not the null hypothesis should be rejected. The null hypothesis is rejected if the p-value is less than 5%.

4.5.2 Student's T-test

The parametric Student's T-test is applied when the sample is normally distributed. The equation for the test is presented below:

Equation 4.11 - Student's T-test *Source: MacKinlay (1997)*

$$t = \frac{CAAR(\tau_1, \tau_2)}{\sqrt{\text{var}(CAAR(\tau_1, \tau_2))}}$$

In chapter 4.4.4.4 and 4.4.4.5 the different parts in the Student's T-test are explained. The hypotheses below are used for both the Student's T-test and Wilcoxon Signed-Rank test.

H_0: Swedish corporate insiders do not earn significant abnormal returns
H_1: Swedish corporate insiders earn significant abnormal returns

4.5.3 Wilcoxon Signed-Rank Test

The non-parametric Wilcoxon Signed-Rank test is used when the sample is not normally distributed. What the test does is to rank the data from highest to lowest, or from lowest to highest. In this thesis the abnormal returns are ranked from lowest to highest starting from number 1 (lowest) to number *n* (highest). The sample is compared to a hypothetical value; in this case the hypothetical value is equal to zero. The null hypothesis for the Wilcoxon Signed-Rank test is stated in chapter 4.5.2.

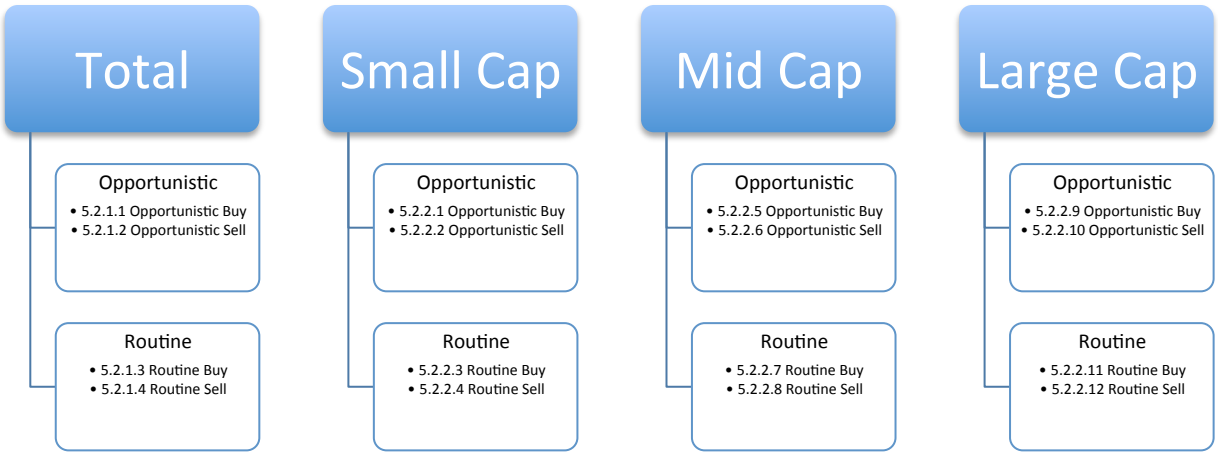
Equation 4.12 - Wilcoxon Signed-Rank Test *Source: Körner (2000)*

$$Z_W = \frac{\left[W - \frac{n(n+1)}{4} \right]}{\frac{\sqrt{n(n+1)(2n+1)}}{24}}$$

W = Sum of the signed ranks

The Student's T-test as well as the Wilcoxon Signed-Rank test are applied on a total of 16 subsamples. An illustration is presented in Exhibit 4.5 in order to understand where the tests as described above are applied.

Exibit 4.5 Overview of Tests Performed on the Data



4.5.4 Comparing Abnormal Returns

This thesis not only tests the significance of the opportunistic and routine traders but also compares the abnormal returns between these traders. One of the hypotheses of this thesis is that opportunistic traders will gain significantly more abnormal returns compared to routine traders. To test if the abnormal returns are significantly different from each other, two additional tests have been done: *Levene's T-test* and *Mann-Whitney test*.

4.5.5 Levene's T-test

Equality of variance is an assumption for some parametric and non-parametric statistical methods. The Levene's T-test is useful in situations when the sample sizes and variances are assumed to be unequal. Levene's T-test is a parametric test that assumes that the sample sizes are normally distributed. The test is performed on two independent samples and the null hypothesis is that the sample means for the two independent groups are equal (Martin & Bridgmon, 2012).

Equation 4.13 - Levene's T-test *Source: Martin and Bridgmon (2012)*

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\left(\frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

$\overline{X}_1 - \overline{X}_2$ = Mean difference between sample 1 and sample 2

N_1 and N_2 = Number of subjects in sample 1 and sample 2

S_1 and S_2 = Standard deviation of sample 1 and sample 2

4.5.6 Mann-Whitney Test

The non-parametric Wilcoxon Rank-Sum test is also called Mann-Whitney test. The test is more efficient compared to the Levene's T-test when the data is not normally distributed. The test is performed on two independent samples and the null hypothesis is that the sample means for the two independent groups are equal.

Equation 4.14 - Mann-Whitney Test *Source: Field (2005)*

$$Z = \frac{U - \mu}{\sigma}$$

$$\mu = \frac{n_1 n_2}{2}$$

$$\sigma = \sqrt{\frac{n_1 n_2 (n_1 + n_2 + 1)}{12}}$$

U = Sum of all the ranks

n_1 and n_2 = Number of data in sample 1 and 2

4.6 Reliability and Validity

The thesis is exposed to possible weaknesses, which are discussed in this chapter. The purpose is to achieve high reliability and high validity of the thesis. Reliability refers to at what extent one can rely on the results from the provided data. Validity refers to how valid the measurement process is and if the measurement process is able to answer the purpose of the thesis (Holme & Solvang, 1997).

4.6.1 Reliability

Firstly there can be potential weaknesses in the imported data from Finansinspektionen. The data from Finansinspektionen is assumed to be accurate and highly reliable but there can be some human errors in the excel files since all transactions have been manually combined and stacked together. All insider transactions from Finansinspektionen are affiliated with stock returns from DataStream. The stock returns from DataStream are considered very accurate. The returns from every company are aligned with the transaction dates from Finansinspektionen and this process has been automated with the help of excel functions in order to minimize human errors in the dataset.

Classifying insider transactions in accordance to Cohen et al. (2012) has been an important step and this classification scheme has been used on a year-to-year basis. The weakness with the classification scheme is that the work had to be done manually. To minimize this problem, an algorithm would have been preferable to use. Due to lack of programming experience and several special conditions in the dataset, the work had to be done manually.

Even though the market model is assumed to be the most appropriate model to use in this event study, possible weaknesses regarding the beta and alpha values are thinkable. Both beta and alpha values are measured using historical stock returns. However, the beta and alpha values are constant in the event windows in order to determine abnormal returns. The market model is still an appropriate model to use and gives a good proxy considering the mentioned weaknesses.

As can be seen from the literature section, there is a debate whether or not insiders can gain abnormal returns. The different results can be caused by different factors. For example, the regulation of insider trading is constantly changing and there is a chance that regulations have an impact on the abnormal returns. It is therefore challenging to compare results from different studies over a long period of time when taking this problem into consideration.

4.6.2 Validity

Event studies have been used for a long time as measurement tools in order to determine if insiders can generate abnormal returns. The methodology in this thesis can thus be considered as valid, since this thesis uses the same measurement tools as other similar studies (MacKinlay, 1997).

A disadvantage when using event windows over a long period of time is that external noise from macroeconomic uncertainty can have an impact on the abnormal returns. It is therefore preferable to use short event windows in this aspect because the risk of including noise is decreased. The purpose of the event windows in this study is to capture both short and long-term effects. However, very long event windows are not included in this study to decrease the risk of getting biased data.

5. Results and Analysis

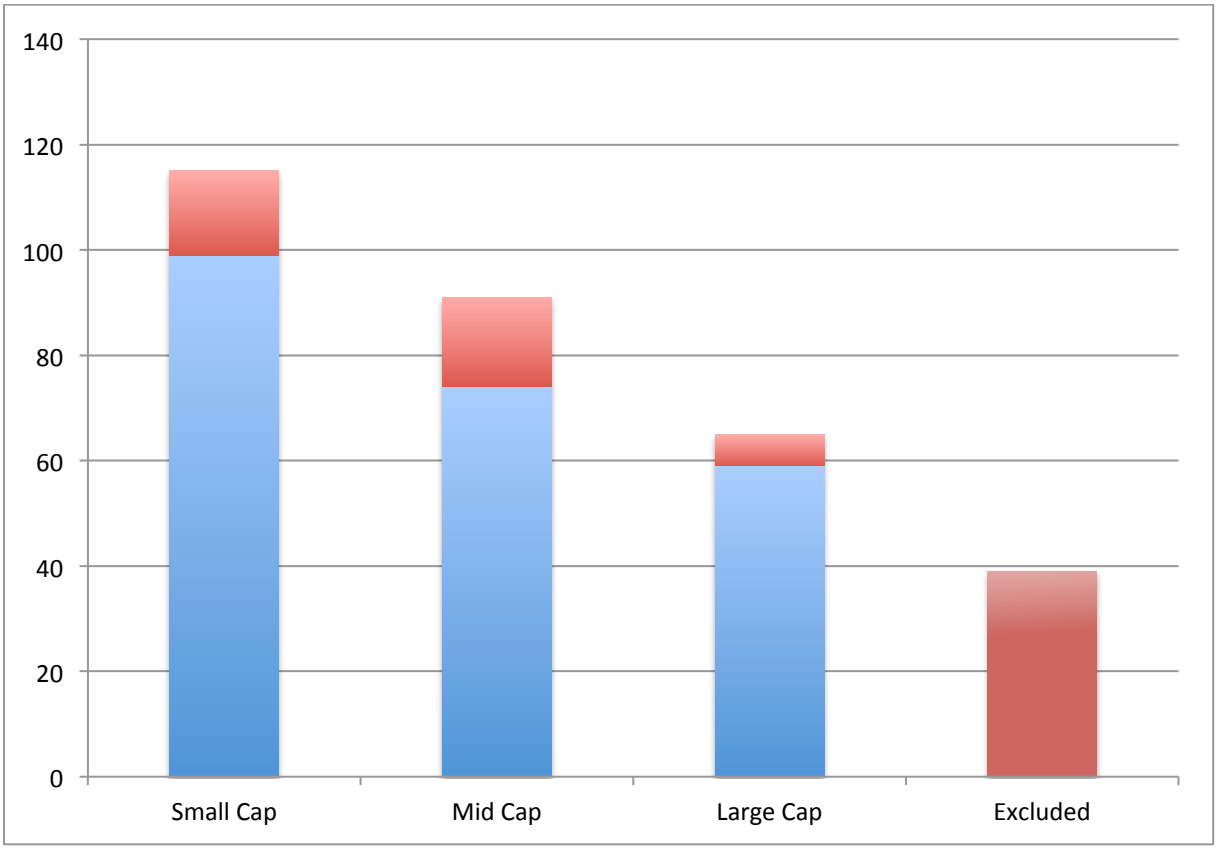
In this chapter the results of the event study are presented with tables and graphs. The purpose is to present the results in a way that makes the reader completely understand the findings. The results are analyzed together with the findings from relevant literature.

5.1 Descriptive Results

The first part of the results provides an intuition on the number of companies included in each subsample. By using graphs, the descriptive results illustrate the number of opportunistic transactions as well as the number of routine transactions.

5.1.1 Number of Companies Included and Excluded

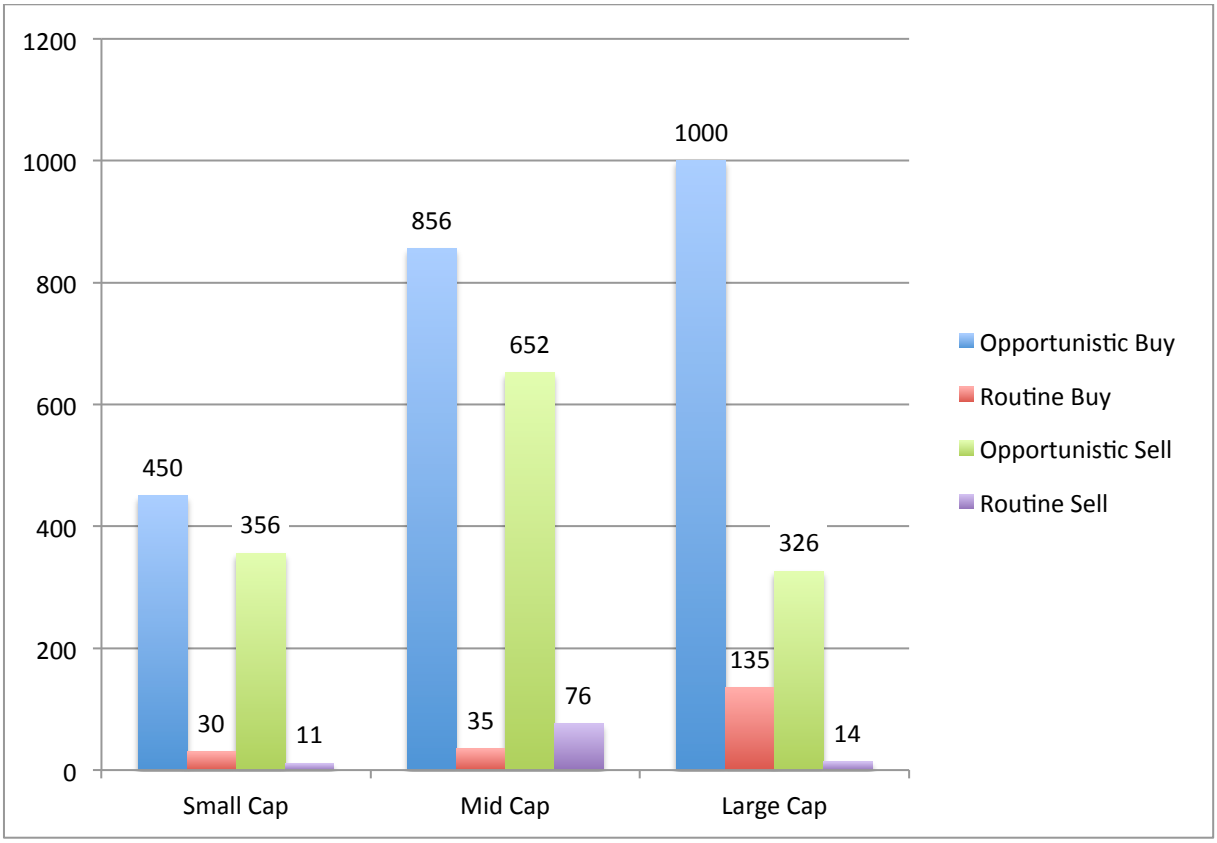
Exhibit 5.1 Number of Companies Included and Excluded



5.1.2 Number of Transactions

After the classification scheme as described in chapter 4.2 has been applied on the total set of transactions, the number of relevant transactions has been filtered to a total of 3,941. The distribution across the different categories of the final dataset can be seen below in Exhibit 5.2. The bigger part of the dataset falls into the Mid Cap category with 1,619 transactions, followed closely by Large Cap with 1,475 individual trades, while only 847 transactions could be attributed to Small Cap. Overall buy transactions were overweighting stock sales and more transactions emerged to be opportunistic than routine. The total amount of routine transaction turns out to be relatively low compared to the total number of opportunistic transactions. This can be attributed to the classification scheme that has been applied on the dataset.

Exhibit 5.2 Number of Transactions



5.2 Results

Chapter 5.2 is the second part of the results and this section determines whether or not corporate insiders on the Swedish stock market earn abnormal returns using the classification scheme from Cohen et al. (2012). The companies from the subcategories Small Cap, Mid Cap and Large Cap are in this section combined into one single group. The companies from this combined group are assumed to represent the Swedish stock market. This thesis includes both results from the Swedish stock market as a whole as well as results from the subcategories Small Cap, Mid Cap and Large Cap. The third part of the result section investigates whether or not there are any significant differences in the abnormal returns. The results for the third part are presented in chapter 5.3.

In order to interpret the results for the second part an explanation regarding the tables are presented for the reader. Each table has event windows ranging from 1 to 126 days and for every event window the following hypothesis is tested:

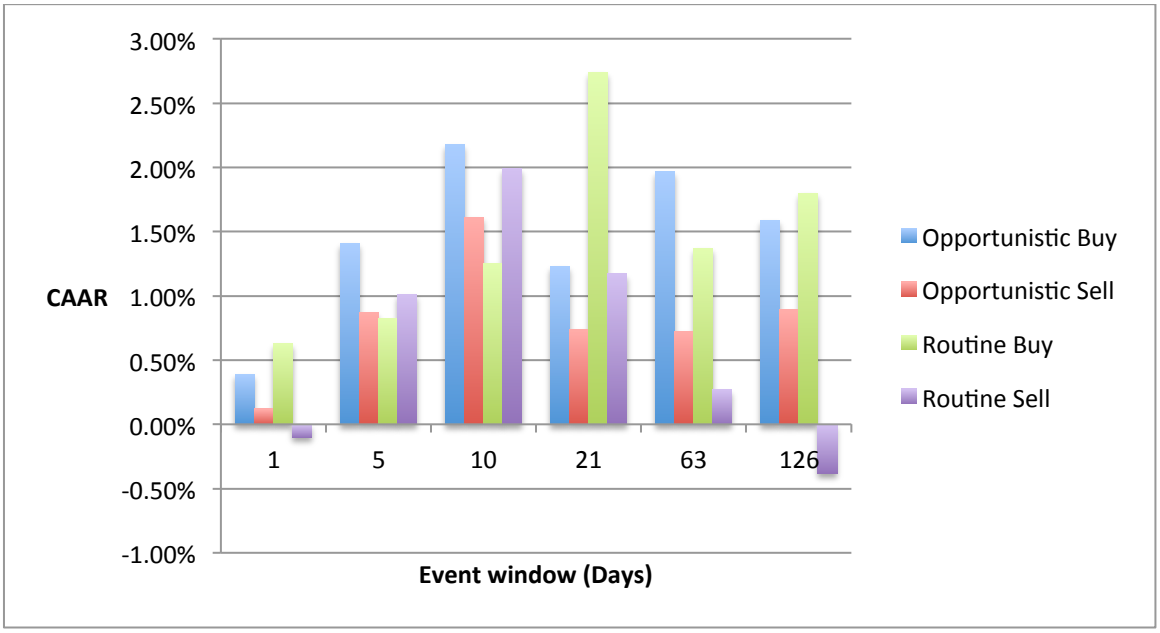
H_0: Corporate insiders in Sweden do not earn significant abnormal returns
H_1: Corporate insiders in Sweden earn significant abnormal returns

If the p-value from Shapiro-Wilk test is less than 0.05, the data is not normally distributed. This means that the non-parametric Wilcoxon Signed-Rank test should be used. If the p-value from Shapiro-Wilk is greater than 0.05, the Student's T-test should rather be used since the normality test indicates that the sample is normally distributed. For all event windows, p-values are presented for both Wilcoxon Signed-Rank test and Student's T-test. Corporate insiders in Sweden earn significant abnormal returns in the event windows where the p-values are less than 0.05.

5.2.1 Swedish Stock Market Total Sample

The results regarding the values for CAAR for the different event windows and transaction types are presented in Exhibit 5.3.

Exhibit 5.3 CAAR Values on the different Event Windows



5.2.1.1 Opportunistic Buy - Swedish Stock Market Total Sample

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Buy	2305	1	0.39%	3.644	.000	.000	.000
	2305	5	1.41%	7.622	.000	.000	.000
	2299	10	2.18%	10.280	.000	.000	.000
	2290	21	1.23%	5.976	.000	.000	.000
	2259	63	1.97%	9.059	.000	.000	.000
	2227	126	1.59%	6.903	.000	.000	.000

According to the Shapiro-Wilk test, every event window in the table above should use the Wilcoxon test because all p-values from the Shapiro-Wilk column are less than 0.05. The CAAR values range from 0.39% - 2.18% and every event window in this table is statistically significant since the Wilcoxon Signed-Rank tests' p-values are less than 0.05. The results from this table suggest that all insider transactions on the Swedish stock market classified as "opportunistic buy" earn significant abnormal returns.

5.2.1.2 Opportunistic Sell - Swedish Stock Market Total Sample

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Sell	1333	1	0.12%	0.731	.465	.571	.000
	1332	5	0.87%	3.283	.001	.000	.000
	1330	10	1.61%	5.246	.000	.000	.000
	1326	21	0.74%	2.395	.017	.000	.000
	1297	63	0.72%	2.254	.024	.000	.000
	1263	126	0.89%	2.758	.006	.000	.000

The normality test implies that the Wilcoxon Signed-Rank test should be used for all cases in the table above. According to the Wilcoxon test all event windows are statistically significant except the event window with the length of 1 day. This indicates that the insider transactions on the Swedish stock market classified as “opportunistic sell”, earn significant abnormal returns except for the event window with the length of 1 day.

5.2.1.3 Routine Buy - Swedish Stock Market Total Sample

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Buy	199	1	0.63%	1.385	.168	.417	.000
	199	5	0.82%	1.233	.219	.208	.000
	199	10	1.25%	1.772	.078	.167	.000
	199	21	2.74%	3.679	.000	.002	.000
	199	63	1.37%	1.875	.062	.061	.000
	196	126	1.80%	2.740	.007	.010	.011

The Wilcoxon Signed-Rank test is preferable to be used in the table above. The event windows with lengths of 21 days and 126 days are statistically significant since the p-values are less than 0.05. The table suggests that insider transactions on the Swedish stock market classified as “routine buy”, earn significant abnormal returns in the event windows with lengths of 21 days and 126 days.

5.2.1.4 Routine Sell - Swedish Stock Market Total Sample

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Sell	100	1	-0.10%	-0.238	.812	.137	.000
	100	5	1.01%	1.743	.084	.198	.000
	100	10	1.99%	3.146	.002	.006	.000
	99	21	1.17%	1.713	.090	.033	.000
	92	63	0.27%	0.261	.795	.772	.000
	87	126	-0.38%	-0.547	.586	.569	.029

The Shapiro-Wilk test indicates that the Wilcoxon Signed-Rank test should be used since the p-values are less than 0.05. The event windows with lengths of 10 days and 21 days are statistically significant since the p-values are less than 0.05. The table above implies that insider transactions on the Swedish stock market classified as “routine sell”, earn significant abnormal returns in the event windows with lengths of 10 days and 21 days.

5.2.2 Company Size

In the following sub segments the test results for the three categories Small Cap, Mid Cap and Large Cap are presented.

5.2.2.1 Opportunistic Buy - Small Cap

Trade	Df (N-1)	Event window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Buy	449	1	0.42%	1.496	.135	.073	.000
	449	5	0.87%	1.820	.069	.002	.000
	449	10	3.10%	5.426	.000	.000	.000
	448	21	1.05%	1.773	.077	.016	.000
	435	63	1.46%	2.545	.011	.016	.000
	421	126	1.08%	1.619	.106	.027	.000

The Shapiro-Wilk test indicates that all event windows have a p-value less than 0.05. This means that the Wilcoxon test should be used for all event windows. All event windows in the Wilcoxon test are statistically significant except the event window of 1 day. The table suggests that insider transactions on Small Cap classified as “opportunistic buy”, earn significant abnormal returns except for the 1-day event window.

5.2.2.2 Opportunistic Sell - Small Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Sell	355	1	-0.01%	-0.038	.970	.865	.000
	355	5	0.28%	0.414	.679	.621	.000
	355	10	1.45%	1.906	.057	.097	.000
	355	21	1.15%	1.574	.116	.108	.000
	346	63	0.26%	0.325	.746	.073	.000
	338	126	0.72%	0.862	.389	.002	.000

According to the normality test, all event windows suggest that the Wilcoxon Signed-Rank test should be used since the Shapiro-Wilk p-values are less than 0.05. The event window of 126 days is the only statistically significant event window in the Wilcoxon test. The table suggests that insider transactions on Small Cap classified as “opportunistic sell”, do not earn significant abnormal returns except for the 126-day event window.

5.2.2.3 Routine Buy - Small Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Buy	29	1	1.23%	0.585	.563	.328	.000
	29	5	1.08%	0.483	.632	.781	.002
	29	10	4.96%	2.181	.037	.318	.001
	29	21	7.87%	2.723	.011	.013	.000
	29	63	4.12%	1.873	.071	.280	.000
	29	126	2.24%	1.241	.225	.349	.020

The normality test suggests that the sample is not normally distributed for all event windows. According to the Wilcoxon Signed-Rank test the only event window that is statistically significant is the event window of 21 days. The table suggests that insider transactions on Small Cap classified as “routine buy” do not earn significant abnormal returns except for the 21-day event window.

5.2.2.4 Routine Sell - Small Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Sell	10	1	-1.09%	-0.760	.465	.424	.664
	10	5	0.24%	0.121	.906	.790	.010
	10	10	5.55%	1.829	.097	.110	.016
	10	21	3.97%	1.984	.075	.041	.133
	8	63	-2.53%	-0.844	.423	.374	.416
	8	126	2.06%	0.887	.401	.374	.340

According to the Shapiro-Wilk test, event windows with a length of 1, 21, 63 and 126 days are normally distributed. These event windows should use the Student's T-test. However none of the event windows 1, 21, 63 or 126 days are statistically significant since all the p-values exceed 0.05. Event windows with a length of 5 days and 10 days are not normally distributed and hence the Wilcoxon test should be used. It is worth noticing that none of these event windows are statistically significant. The table suggests that none of the insider transactions on Small Cap classified as "routine sell" earn significant abnormal returns.

5.2.2.5 Opportunistic Buy - Mid Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Buy	855	1	0.59%	3.175	.002	.014	.000
	855	5	1.56%	5.247	.000	.000	.000
	851	10	1.92%	5.457	.000	.000	.000
	848	21	1.33%	3.949	.000	.000	.000
	835	63	2.67%	6.936	.000	.000	.000
	820	126	1.82%	4.567	.000	.000	.000

The Wilcoxon Signed-Rank test should be used for all event windows judging by the normality tests. The Wilcoxon test reveals that all event windows are statistically significant since the p-values are less than 0.05. The CAAR ranges from 0.59% - 2.67% and the table suggests that all insider transactions on Mid Cap classified as "opportunistic buy" do earn significant abnormal returns.

5.2.2.6 Opportunistic Sell - Mid Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Sell	651	1	0.34%	1.543	.123	.105	.000
	650	5	1.31%	3.680	.000	.000	.000
	648	10	1.53%	3.655	.000	.000	.000
	644	21	0.06%	0.137	.891	.129	.000
	628	63	0.50%	1.141	.254	.032	.000
	605	126	0.85%	2.241	.025	.002	.000

According to the normality test, all event windows are considered not to be normally distributed. The Wilcoxon Signed-Rank test is applied for all the event windows. The event windows with lengths of 5, 10, 63 and 126 days are statistically significant. This table therefore suggests that insider transactions with an event window length of 5, 10, 21, 63 and 126 days on Mid Cap classified as “opportunistic sell”, do earn significant abnormal returns.

5.2.2.7 Routine Buy - Mid Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Buy	34	1	3.60%	2.983	.005	.002	.000
	34	5	4.07%	2.541	.016	.022	.177
	34	10	3.12%	1.462	.153	.064	.000
	34	21	2.37%	1.306	.200	.225	.000
	34	63	2.50%	1.349	.186	.302	.032
	34	126	1.47%	0.735	.467	.251	.145

The Shapiro-Wilk normality test indicates that the event windows with lengths of 5 and 126 days should use the Student’s T-test. From the Student’s T-test, only the event window of 5 days has a p-value below 0.05 and this event window is statistically significant. Event windows with lengths of 1, 10, 21 and 63 days are not normally distributed, hence the Wilcoxon Signed-Rank should be used in these cases. Only the 1-day event window in the Wilcoxon test is statistically significant. Taking these values into consideration leads to the finding that insider transactions, with an event window length of 1 and 5 days on Mid Cap classified as “routine buy”, do earn significant abnormal returns.

5.2.2.8 Routine Sell - Mid Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Sell	75	1	-0.12%	-0.243	.808	.089	.000
	75	5	1.15%	1.761	.082	.181	.000
	75	10	1.82%	2.888	.005	.014	.001
	75	21	0.68%	0.917	.362	.170	.000
	70	63	0.46%	0.381	.704	.805	.000
	65	126	-1.08%	-1.621	.110	.211	.014

In the table above, all event windows suggest to use the Wilcoxon Signed-Rank test due to the non-normally distributed data. The event window with a length of 10 days is the only statistically significant case in this table. This means that insider transactions with an event window length of 10 days on Mid Cap classified as “routine sell”, do earn significant abnormal returns.

5.2.2.9 Opportunistic Buy - Large Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Buy	999	1	0.21%	1.471	.142	.033	.000
	999	5	1.54%	5.710	.000	.000	.000
	997	10	1.98%	6.946	.000	.000	.000
	992	21	1.23%	4.601	.000	.000	.000
	987	63	1.61%	5.776	.000	.000	.000
	984	126	1.62%	5.727	.000	.000	.000

The normality test for the table above suggests that the Wilcoxon Signed-Rank test should be used for all event windows. The event windows have CAAR values ranging from 0.21% - 1.98% and all event windows are statistically significant since the p-values are less than 0.05. This means that insider transactions on Large Cap classified as “opportunistic buy” do earn significant abnormal returns.

5.2.2.10 Opportunistic Sell - Large Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Opportunistic Sell	325	1	-0.20%	-0.848	.397	.255	.000
	325	5	0.65%	1.781	.076	.089	.000
	325	10	1.95%	4.475	.000	.000	.000
	325	21	1.65%	3.648	.000	.000	.000
	321	63	1.67%	3.602	.000	.002	.000
	318	126	1.12%	2.037	.043	.045	.000

As can be seen in the Shapiro-Wilk normality test, all event windows should use the Wilcoxon Signed-Rank test due to the non-normally distributed data. The event windows with lengths of 10, 21, 63 and 126 days are statistically significant. The table above therefore suggests that insider transactions with event window lengths of 10, 21, 63 and 126 days on Large Cap classified as “opportunistic sell” do earn significant abnormal returns.

5.2.2.11 Routine Buy - Large Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Buy	134	1	-0.27%	-0.743	.459	.953	.000
	134	5	-0.09%	-0.120	.905	.550	.000
	134	10	-0.05%	-0.077	.939	.807	.025
	134	21	1.69%	2.287	.024	.074	.083
	134	63	0.47%	0.562	.575	.230	.000
	131	126	1.79%	2.467	.015	.043	.002

The normality test suggests that the Wilcoxon Signed-Rank test should be used in all cases except the event window with a length of 21 days. The only statistically significant event window in the Wilcoxon test column is the event window with a length of 126 days. The Student’s T-test is applied on the event window of 21 days since the p-value from the Shapiro-Wilk test is greater than 0.05. The event window of 21 days is statistically significant with a p-value of 0.024. This table implies that insider transactions with event window lengths of 21 and 126 days on Large Cap classified as “routine buy” do earn significant abnormal returns.

5.2.2.12 Routine Sell - Large Cap

Trade	Df (N-1)	Event Window	CAAR	Student's T-test		Wilcoxon	Shapiro-Wilk
				t-stat	p-value	p-value	p-value
Routine Sell	13	1	0.76%	0.627	.541	.778	.860
	13	5	0.83%	0.499	.626	.470	.947
	13	10	0.11%	0.062	.951	.730	.614
	12	21	1.71%	0.677	.511	.463	1.000
	12	63	1.18%	0.395	.700	.650	.834
	12	126	1.48%	0.525	.609	.600	.770

According to the normality test all cases in this table should be treated as normally distributed. The Student's T-test is therefore used in all event windows but there is not a single event window with a p-value less than 0.05. The table above proves that insider transactions on Large Cap classified as "routine sell" do not earn significant abnormal returns.

5.3 Comparing Abnormal Returns

This part of the result section investigates whether or not there are any significant differences in the abnormal returns. The section is divided into two subsections where the first subsection investigates whether or not opportunistic transactions are gaining significantly more abnormal returns compared to routine transactions. The second subsection investigates whether or not buy transactions divided into either opportunistic or routine are earning significantly more abnormal returns compared to sell transactions.

To interpret the results, explanations regarding the tables are presented for the reader. The tests are performed on the total sample using the Levene's T-test, Mann-Whitney test, and the normality Shapiro-Wilk test. If the p-value from the Shapiro-Wilk is less than 0.05 the data is not normally distributed. This indicates that the non-parametric Mann-Whitney test should be used. If the p-value from the Shapiro-Wilk test is greater than 0.05 the Levene's T-test should rather be applied. Each table has an expressed null hypothesis that is either accepted or rejected.

5.3.1 Opportunistic Buy vs. Routine Buy

Event	Levene's T-test			Mann-Whitney Test			Shapiro-Wilk
Window	t-stat	Mean difference	p-value	Opp. Buy mean rank	Routine Buy mean rank	p-value	p-value
1	-.632	-0.24%	.528	**1255.81**	1226.92	.588	.000
5	.908	0.60%	.364	**1258.21**	1199.19	.268	.000
10	1.235	0.92%	.217	**1257.05**	1175.21	.124	.000
21	-2.059	-1.51%	.040	1239.80	**1317.06**	.145	.000
63	.787	0.60%	.431	**1233.81**	1193.13	.438	.000
126	-.261	-0.21%	.794	1212.44	**1219.29**	.895	.000

* P-value < 0.05

** P-value < 0.01

*** P-value < 0.001

The Shapiro-Wilk test implies that the non-parametric Mann-Whitney test should be applied on the table above because the p-values for all event windows are less than 0.05. For each event window the largest mean ranks are marked in bold to illustrate what kind of trade generates more abnormal returns. The null hypothesis is that the abnormal returns for opportunistic buy transactions equals abnormal returns for routine buy transactions. If the null hypothesis is rejected opportunistic buy transactions gain significantly more abnormal returns in comparison to routine buy transactions. In this case the p-values in Mann-Whitney test are above 0.05 for all event windows. This means that the abnormal returns in opportunistic buy transactions are not significantly different from the abnormal returns in routine buy transactions.

5.3.2 Opportunistic Sell vs. Routine Sell

Event	Levene's T-test			Mann-Whitney Test			Shapiro-Wilk
Window	t-stat	Mean difference	p-value	Opp. Sell mean rank	Routine Sell mean rank	p-value	p-value
1	.371	0.22%	.634	**722.34**	660.67	.149	.000
5	-.211	-0.13%	.833	717.20	**721.42**	.921	.000
10	-.535	-0.38%	.594	**716.55**	715.90	.988	.000
21	-.570	-0.43%	.570	712.12	**739.01**	.529	.000
63	.366	0.45%	.715	**697.72**	672.01	.551	.000
126	1.659	1.26%	.100	**682.12***	595.85	.045	.000

* P-value < 0.05

** P-value < 0.01

*** P-value < 0.001

The normality test suggests that the Mann-Whitney test should be used in this table for all event windows. The null hypothesis is that the abnormal returns for opportunistic sell transactions equals abnormal returns for routine sell transactions. In this case one event window with the length of 126 days is statistically significant. Therefore, opportunistic sell transactions can be assumed to earn significantly more abnormal returns in comparison to

routine sell transactions in the 126 days event window. All the other event windows are statistically insignificant.

5.3.3 Opportunistic Buy vs. Opportunistic Sell

Event	Levene's T-test			Mann-Whitney Test			Shapiro-Wilk
Window	t-stat	Mean difference	p-value	Opp. Buy mean rank	Opp. Sell mean rank	p-value	p-value
1	1.431	0.27%	.152	**1843.34**	1781.02	.085	.000
5	1.708	0.54%	.088	**1845.71**	1775.53	.052	.000
10	1.544	0.56%	.123	**1821.59**	1806.34	.673	.000
21	1.309	0.49%	.191	**1816.26**	1797.83	.609	.000
63	3.316	1.25%	.001	**1804.18**	1736.53	.059	.000
126	1.812	0.71%	.070	**1758.35**	1725.61	.356	.000

* P-value < 0.05
** P-value < 0.01
*** P-value < 0.001

The Mann-Whitney test is appropriate to apply in this table according to the Shapiro-Wilk test. As can be seen in the table above, all mean ranks for opportunistic buy transactions are greater than the mean ranks for opportunistic sell transactions. However, since all p-values are greater than 0.05 the null hypothesis is accepted. This means that the abnormal returns for the opportunistic buy transactions are not significantly different from the abnormal returns in opportunistic sell transactions.

5.3.4 Routine Buy vs. Routine Sell

Event	Levene's T-test			Mann-Whitney Test			Shapiro-Wilk
Window	t-stat	Mean difference	p-value	Rout. Buy mean rank	Rout. Sell mean rank	p-value	p-value
1	1.033	0.74%	.303	**155.86**	141.39	.173	.000
5	-.218	-0.19%	.827	150.59	**151.81**	.908	.000
10	-.778	-0.74%	.437	147.10	**158.72**	.274	.000
21	1.548	1.57%	.123	**153.39**	144.73	.415	.000
63	.852	1.10%	.395	**148.71**	143.33	.613	.000
126	2.286	2.18%	.023	**149.03**	129.51	.065	.001

* P-value < 0.05
** P-value < 0.01
*** P-value < 0.001

The normality test suggests that the Mann-Whitney test should be used. However since all p-values are above 0.05 the null hypothesis is accepted. This means that the abnormal returns for the routine buy transactions are not significantly different from the abnormal returns in routine sell transactions.

6. Analysis

In the first section the total sample of the Swedish stock market is presented, followed by the interpretation of the results in Small Cap, Mid Cap and Large Cap. In the third part of the analysis an interpretation of the test results regarding the comparison between abnormal returns is given.

6.1 Swedish Stock Market Total Sample

The findings from the total sample show a statistical significance of opportunistic transactions on the Swedish stock market. All event windows of opportunistic buy transactions are statistically significant and only one event window in the opportunistic sell transactions is insignificant. The insignificant event window has a length of 1 day. The reason why this particular event window is insignificant could be due to the fact that Swedish corporate insiders have five calendar days to report their transactions to Finansinspektionen. This means that the transactions in the event window with 1 day, are potentially not incorporated by the market, depending on when the insider transaction has been published.

The results for the opportunistic sell transactions can further be analyzed using the argumentation made by Akerlof (1970). According to his article, an insider should be able to sell "lemons" to the market and in this case the lemons can be translated into stocks. If the market knows that the insider is having informational advantage and has the opportunity to sell lemons, this can result in signaling effects when selling a stock. This is because sell transactions are indicating poor future stock performance according to Del Brio and De Miguel (2010). The results from opportunistic sell transactions confirm the findings by Del Brio and De Miguel (2010), since the majority of the event windows are statistically significant. However, it can be very difficult for an investor to identify which sell transactions that actually are "lemons". An insider can claim that the motivation behind a sell transaction is for liquidity or diversifying reasons. Getting to know the true motivation behind an insider's sell transactions is not easy.

In sum, the results suggest that opportunistic transactions contain valuable information that the market has not yet received at the time when the transactions have been made. The results found in this thesis, confirm the findings by Korczak et al. (2010) as they have found similar results in their study on the British stock market. According to their paper, insider transactions hold predictive power, both for buy and sell transactions. The findings from this study are also in line with Inci et al. (2010) who argue that informed insiders have predictive power and gain abnormal returns based on the insider informational advantages. The inspirational paper from Cohen et al. (2012) support the findings of the thesis as well, since the opportunistic transactions on the American stock market also gain significant abnormal returns. The Swedish, British and American stock markets are in this particular aspect assumed to be similar

considering the equivalent results of the different studies. However the results are not confirmed by Eckbo and Smith (1998) who studied the Norwegian stock market. According to their paper insiders do not gain significant abnormal returns. One could expect the results from the Swedish and Norwegian stock market to be similar. A possible reason for the divergence in the results could be explained by the choice of method. In comparison to previous papers that used event studies, Eckbo and Smith (1998) developed their own method to calculate abnormal returns.

The results of the opportunistic buy and sell transactions can be compared with the routine transactions where routine buy transactions earn abnormal returns only in the 21-day event window. Routine sell transactions on the other hand, earn abnormal returns in the event windows with lengths of 10 and 21 days. The significant event windows of routine transactions are an unexpected outcome. This is because the findings are not consistent with Cohen et al.'s results, especially since the CAAR values are greater than the opportunistic ones. However, one can argue that the classification scheme has been successfully applied on the Swedish stock market, considering that opportunistic transactions produce more significant results. The tables in chapter 5.2.1 do not determine whether or not the differences in abnormal returns between these groups are significant. However, the results point towards the findings of Cohen et al. (2012) who state that the routine transactions do not gain abnormal returns. In this study the percentage of routine transactions relative to the total sample, corresponds to 7,6% in contrast to Cohen et al. (2012) who calculated the routine transactions to be 14.35%. Possible reasons why more routine transactions can be identified on the American stock market could for example be differences in the regulatory definition of an insider. This study uses the insider definition from Finansinspektionen (2014) and there is a possibility that American corporate insiders are classified differently. Another reason could be that American corporate insiders trade more frequently. By trading more frequently there is a higher likelyhood to fall under the "routine" classification. From this point of view, one can argue that uninformed routine transactions have been identified and classified accordingly on the Swedish stock market. The information the routine transactions possess, does not seem to be as powerful as the opportunistic transactions.

Based on the efficient market hypothesis developed by Fama (1970), the Swedish stock market was not efficient during the investigated time period since corporate insiders were able to earn abnormal returns. The strong form of market efficiency can therefore be rejected. Event windows of 21, 63 and 126 days are significant according to the results from opportunistic buy and sell transactions. These event windows can be considered to be fairly long time periods. However, the findings are not consistent with the efficient market hypothesis in the semi-strong form. The abnormal returns in the long time periods can be explained by Michaely et al. (1995), who argue that the markets react slowly in regards to news disclosure.

6.2 Firm Size

A potential reason for the existence of abnormal returns especially in the Small Cap segment could be a higher level of information asymmetry according to Lakonishok and Lee (2001). The results show that insider buy transactions that have been categorized as opportunistic, are earning significant abnormal returns except for the shortest event window of 1 day. If insiders were gaining significant abnormal returns during the shortest event window, one could expect a leakage of information since the transaction most likely would not have been publicly available. This information gap can be closed once the transaction has been made public.

For opportunistic sell transactions only the longest event window of 126 days features statistical significance. This event window stands in contrast to the overall impression of this category and can therefore be valued as an exception, especially since the longest event window includes the most amount of noise.

The implication that opportunistic buy transactions yield significant abnormal returns, opposed to opportunistic sell transactions, can be explained by the motivations an individual might have for conducting a transaction. A sell transaction could for example be motivated by liquidity reasons of the individual who is performing a trade. This could explain the high amount of abnormal returns for the opportunistic stock purchases, since those are lacking this specific reason, a conclusion that is also being drawn by Lakonishok and Lee (2001).

Overall the findings from Small Cap are a bit surprising since one could expect that the CAAR values should be the highest in this category, still the results are pointing to another direction. For the opportunistic transactions the majority of the event windows have the lowest CAAR values compared to Mid Cap and Large Cap. These findings are therefore not aligned with Jeng, Metrick and Zeckhauser (2003) and Dickgiesser and Kaserer (2010) who argue that abnormal returns should be higher for smaller companies.

In the Mid Cap segment insider buy transactions that have been categorized as opportunistic, feature significant abnormal returns across all event windows. The same holds true for opportunistic sell transactions except for the 1 and 21 days event windows,. Since Swedish corporate insiders have five calendar days to report their transactions to Finansinspektionen, the transactions in the event window with 1 day, are potentially not yet incorporated by the market, depending on when the insider transaction has been published. The statistical insignificance in the 21 days window for the opportunistic sell transactions is an unexpected outcome, but it does not change the overall result that opportunistic trades are largely statistically significant. In general the Mid Cap segment confirms previous findings by Seyhun (1992), Lakonishok and Lee (2001) that corporate insiders are able to earn abnormal returns, especially with their purchase transactions. It can be argued that Mid Cap firms experience a

similar level of coverage and market attention as the Large Cap segment. Therefore it can be assumed that the two segments exhibit similar characteristics, regarding size for example.

In the Large Cap segment insider transactions that have been categorized as being opportunistic, exhibit significant abnormal returns except for the 1 and 5 days event windows for sell transactions. The insignificant event windows make sense considering that insiders have five days to report their transactions to Finansinspektionen. After five days, one could expect the insider transaction to be incorporated into the stock price.

According to Dickgiesser and Kaserer (2010) the Large Cap segment is expected to have the least amount of information asymmetry and therefore the lowest CAAR values in the market. Seyhun (1988) assumes that abnormal returns should be lower in general since bigger companies tend to be influenced stronger by the general market environment than smaller firms. Large Cap companies often tend to experience high levels of corporate governance, which is according to Ravin and Sapienza (2009) negatively correlating with abnormal returns. Because of the increased amount of coverage by multiple gatekeepers, such as the press or financial analysts, Lakonishok and Lee (2001) assume that insider trading activity is usually concentrated more on the smaller firms. This high level of coverage could lead to potential reputation loss in case of questionable inside transactions, which affects especially corporate insiders in senior positions according to Korczak et al. (2010).

Surprisingly the CAAR values for Large Cap are not the lowest but rather relatively high compared to the other segments. This finding can be interpreted as a noteworthy distinctiveness in comparison to the American (Seyhun, 1988), the German (Dickgiesser & Kaserer, 2010) and the UK stock market (Korczak et al. 2010). The significant CAAR values in Large Cap are also confirmed by Wahlström (2003). One aspect that should be considered, is the fact that the studies investigate different time periods and different lengths in their observation periods, depending on their publication dates. It also remains uncertain if different capital markets can be considered to be comparable in every aspect, since the absolute size of a Swedish Large Cap firm will probably differ from its American counterpart. A Swedish firm listed on OMX Stockholm Large Cap may be considered as a “small“ firm on the American stock market. This has implications when comparing the results between the mentioned studies.

A possible explanation why the CAAR values are high in Large Cap and Mid Cap segments could lie in the Swedish reporting system for insider transactions. Since corporate insiders have up to five days to report their trading activities, the market as a whole can not price the information about those activities into the respective stock prices until the transactions have been public. As mentioned above, larger companies experience the highest level of coverage and market attention, which could lead to relatively drastic price movements as soon as the information about the insider trades are made public. Those rather fierce price corrections, found in of

Givoly and Palmon's (1985) study, are in favour of the corporate insider, who has already completed his or her transactions at this point in time. Therefore the level of abnormal returns increases even further for the event windows that exceed the reporting period. This imbalance could possibly be avoided if a corporate insider had to report his or her trading intentions in advance, so the market would be able to factor the signaling effect into the stock price. Instead of rejecting the strong form of the efficient market hypothesis, it would presumably be possible to confirm it.

Overall routine transactions, both buy and sell, are in most cases statistically insignificant. This includes some event windows that seem to be significant, but they do not change the overall picture of statistical insignificance. This is true for all three segments: Small, Mid and Large Cap.

6.3 Comparing Abnormal Returns

The findings from chapter 6.1 indicate that both opportunistic buy and opportunistic sell transactions contain strong predictive power for future stock performance. The results imply that routine transactions on the other hand do not have the same predictive power. The Mann-Whitney test complements the tests already done in chapter 6.1 and suggests that the difference between the abnormal returns in opportunistic buy transactions and the routine buy transactions, are not statistically significant. However, the 126-day event window is statistically significant when testing the difference between the abnormal returns in opportunistic sell transactions and the routine sell transactions. The Mann-Whitney test suggests that there are no significant differences in abnormal returns when comparing buy and sell transactions. The overall interpretation of the complementing tests is that they can not strengthen the results from chapter 6.1. This leads to the insight that the opportunistic transactions have predictive power, but the gained abnormal returns are not statistically different from the abnormal returns gained in routine transactions.

7. Conclusion

In this chapter a concluding discussion is presented of the results. The chapter explains the main findings as well as implications of the results. The chapter ends with proposals for future research.

7.1 Concluding Discussion and Implications

By understanding that insiders trade for many reasons, uninformative "routine" transactions can be stripped away so that only informative transactions are left. These informative transactions have been identified on the Swedish stock market by implementing the year-to-year classification scheme of Cohen et al. (2012). The abnormal returns for the opportunistic buy and sell transactions are significant. This finding confirms the expectation that opportunistic transactions hold predictive power of a company's future stock performance. The signaling hypothesis can explain this finding since the theory states that information is considered to be the richest for the insiders who possess the most valuable information.

According to the results from the Mann-Whitney test, the differences between the abnormal returns in opportunistic transactions and the routine transactions are not statistically significant. The same results are apparent when comparing buy and sell transactions using the same test. Even though the abnormal returns are not statistically different from each other, one could argue that the opportunistic transactions have predictive power while routine transactions do not, considering that opportunistic transactions have more significant results. This is also true for opportunistic buy transactions that seem to achieve higher CAAR values compared to opportunistic sell transactions. By comparing the results with the findings from Cohen et al. (2012), one can conclude that it is also possible for the Swedish insiders, classified as opportunistic, to gain abnormal returns. Although, the predictive power on the Swedish stock market is not as clear as it is on the American market.

The results for the different firm sizes are not in line with the original expectations because the larger firms have relatively higher CAAR values compared to the smaller firms. From this aspect, the findings contradict the literature by Lakonishok and Lee (2001), Jeng et al. (2003), Dickgiesser and Kaserer (2010), considering that information asymmetry is assumed to be lowest for bigger firms.

According to the findings, insiders tend to earn higher CAAR values after the publication of their trading activities. This can be explained by the regulatory reporting system corporate insiders are liable to. A suggestion in order to eliminate abnormal returns for corporate insiders is to change the reporting system in a way that they have to announce their trading activities in

advance. The announcement can be made at least one week in advance, since Michaely et al. (1995) argue that the market tends to react slowly in regards to news announcements.

This reporting system would give the market some time for reaction to factor in the signaling effect of the insiders' transactions and could possibly lead to a more efficient market environment.

7.2 Proposals for Future Research

Although corporate insiders in Sweden classified as opportunistic earn abnormal returns, it does not necessarily mean that it is possible for an outsider to mimic their trading behavior and earn abnormal returns. However, it is possible to investigate whether or not the corporate insiders in Sweden classified as opportunistic, earn abnormal returns considering transaction costs and the publication dates of the transactions. Such an investigation should provide an aswer to if it is possible for an outsider to generate abnormal returns using the classification scheme of Cohen et al. (2012).

Considering all research aspects Cohen et al. (2012) incorporated in their study, several possibilities for further investigation of the Swedish stock market are thinkable. For instance, they have broadened their analysis by adding the aspect of the level of news coverage in the context of insider trading. It would be interesting to look at news coverage about a certain company, that might have an impact on the stock price and see if insider transactions have been done close to the disclosures. Another aspect that could be added on the Swedish stock market is a comparison between the different classification methods Cohen et al. (2012) present.

Finansinspektionen.se includes more transaction types than "Buy" and "Sell". By including other transaction types in future studies, the approach by Cohen et al (2012) could be extended further.

8. References

8.1 Journals

Akerlof, G. A., (1970), The Market for "Lemons": Quality Uncertainty and the Market Mechanism, *The Quarterly Journal of Finance*, 84 (3), 488-500.

Ball, R. & Brown, P., (1968), An Empirical Evaluation of Accounting Income Numbers, *Journal of Accounting Research*, Vol. 6, No. 2. pp. 159-178.

Ball, R. & Kothari, S. P., (1991), Security Returns around Earnings Announcement, *The Accounting Review*, 66, (4), 718-738.

Cohen L., Malloy C. & Pomorski L., (2012), Decoding Inside Information, *The Journal of Finance,* 67, 1009-1044.

Corrado, C. J. & Zivney, L. T., (1992), The Specification and Power of the Sign Test in Event Study Hypothesis Tests Using Daily Stock Returns, *The Journal of Financial Quantitative Analysis*, 27, (3), 465-478.

Del Brio, E. B. & De Miguel, A., (2010), Dividends and Market Signalling: an Analysis of Corporate Insider Trading, *European Financial Mangement*, 16, (3), 480-497.

Dickgiesser, S. & Kaserer, C., (2010), Market Efficiency Reloaded: Why Insider Trades do not Reveal Exploitable Information, *German Economic Review*, 11 (3), 302-335.

Dolly, J.C., (1933), Open Market Buying as a stimulant for the Bond Market, *The journal of Political Economy,* Vol. 41, No. 4 p. 513-529.

Eckbo, E. B. & Smith, D. C., (1998), The Conditional Performance of Insider Trades, *The Journal of Finance,* 53, (2), 467-498.

Fama, E.F., (1965), Random Walks In Stock Market Prices, *Financial Analysts Journal*, 21, (5), 55-59.

Fama, E.F. et al., (1969), The Adjustment of Stock Prices to New Information, *International Economic Review*, Vol. 10, No. 1. p. 1-21.

Fama, E.F., (1970), Efficient Capital Markets: A Review of Theory and Empirical Work, *The Journal of Finance*, 383-417.

Fama, E.F., (1991), Efficicent Capital Markets II, *The Journal of Finance*, Vol. 46, No.5 , 1575-1617.

Fama, E.F. & French, K., (1992), The Cross- Section of Expected Stock Returns, *The Journal of Finance*, Vol.47, No. 2 , 427-465.

Field, A., (2005), Discovering statistics using SPSS, (2nd edition), p. 532

Finnerty, J., (1976), Insiders and Market Efficiency, *The Journal of Finance*, 31 (4), 1141-1148.

Firth, M., Leung, T. Y. & Rui, O. M., (2010), Double Signals or Single Signal? An Investigation of Insider Trading Around Share repurchases, *Journal of International Financial Markets, Institutions & Money*, 20, (4), 376-388.

Frankel, R. & Li, X., (2004), Characteristics of a firm's information environment and the information asymmetry between insiders and outsiders, *Journal of Accounting and Economics*, 37, (2), 229-259.

Givoly, D. & Palmon, D., (1985), Insider trading and the exploitation of inside information: Some empirical evidence, *Journal of Business*, 58, 69–87.

Inci, A. C., Lu, B. & Seyhun, H. N., (2010), Intraday Behavior of Stock Prices and Trades around Insider Trading, *Financial Management*, 39, (1), 323-363.

Jaffe, J. F., (1974), Special Information and Insider Trading, *Journal of Business*, 47, (3), 410- 428.

Jeng L., Metrick A. & Zeckhauser R., (2003), Estimating the Returns to Insider Trading: A Performance-Evaluation Perspective, *Review of Economics and Statistics,* 85, 453-471.

Jiang, X. & Zaman, M. A., (2010), Aggregate Insider Trading: Contrarian Beliefs or Superior Information?, *Journal of Banking & Finance*, 34, (6), 1225-1236.

John, K. & Lang, L.H.P., (1991), Insider Trading around Dividend Announcements: Theory and Evidence, *The Journal of Finance*, 46, (4), 1361-1389.

Ke, B., Huddard, S. & Petroni, K., (2003), What insiders know about future earnings and how they use it: Evidence from insider trades, Journal of Accounting and Economics, 35, 315-346.

Kendall, M., (1953), The Analysis of Economic Time-Series-Part I: Prices, *Journal of the Royal Statistical Society, Series A (General)*, 116, (1), 11-34.

Korczak, A., Korczak, P. & Lasfer, M., (2010), Trade or Not to Trade: The Strategic Trading of Insiders around News Announcements, *Journal of Business Finance & Accounting,* 37 (3 & 4), 369-407.

Kothari, S & Warner, J., (2006), Econometrics of Event Studies, in Espen Eckbo, Ed., *Handbook of Empirical Corporate Finance*, Elsevier-North-Holland, Working paper.

Lakonishok, J. & Lee, I., (2001), Are Insider Trades Informative?, *The Review of Financial Studies*, 14, (1), 79-111.

MacKinlay, C., (1997), Event Studies in Economics and Finance, *Journal of Economic Literature*, 35, 13-39.

Michaely, R., Thaler, R. H. & Womack, K. L., (1995), Price Reactions to Dividend Initiation and Omissions: Overreaction or Drift?, *The Journal of Finance*, 50, (2), 573-608.

Ravina, E. & Sapienza, P., (2009), What Do Independent Directors Know? Evidence from Their Trading, *Oxford University Press* , 963-1003.

Samuelson, P. A., (1965), Proof That Properly Anticipated Prices Fluctuate Randomly, *Industrial Management Review*, Vol. 6, p. 41-9.

Seyhun, H. N., (1986), Insiders Profits, Costs of Trading, And Market Efficiency, *Journal of Financial Economics,* 16, 189-212.

Seyhun, H. N., (1988), The Information Content of Aggregate Insider Trading, *Journal of Business,* 61, (1), 1-24.

Seyhun, H. N. & Bradley, M., (1997), Corporate Bankruptcy and Insider Trading, *The Journal of Business*, 70, (2), 189-216.

Strong, N., (1992), Modelling abnormal return: a review article, *Journal of Business, Financing & Accounting*, Vol. 09, Issue 4, p. 533-553.

Wahlström, G., (2003), Legal Insider Trading and Abnormal Returns: Some Empirical Evidence from Sweden, *Financial Forum / Bank– En Financiewezen*, 2003 p. 348-355.

Wong, M., Cheung, Y. & Wu, L., (2000), Insider trading in the Hong Kong stock market, *Asia–Pacific Financial Markets*, 7, 275– 288.

8.2 Books

Campbell, J. Y., Lo, A. W. & MacKinlay, A. C., (1997), *The Econometrics of Financial Markets*, Princeton: Princeton University Press.

Hillier, D., Grinblatt, M. & Titman, S., (2008), *Financial Markets and Corporate Strategy*, Berkshire: McGraw-Hill.

Holme, M. & Solvang, B., (1997), *Forskningsmetodik, Om kvalitativa och kvantitativa metoder*, Lund: Studentlitteratur.

Körner, S., (2000), *Tabeller och former för statistiska beräkningar*, Lund: Studentlitteratur.

Körner, S. & Wahlgren, L., (2006), *Statistisk dataanalys*, Studentlitteratur, Lund.

Martin, W. E. & Bridgmon, K. D., (2012), *Quantitative and Statistical Research Methods: From Hypothesis to Results*, Somerset, NJ: Wiley.

8.3 Internet

Avanza Bank. Aktielista. Retrieved April 3, 2014 from https://www.avanza.se/aktier/lista.html

CBS News (October 2, 2012). How Warren Buffett beats the market. Retrieved April 13, 2011 from http://www.cbsnews.com/news/how-warren-buffett-beats-the-market/

Finansinspektionen. Insiders' Reporting Duty. Retrieved April 5, 2014 from http://www.fi.se/Folder-EN/Startpage/Reporting/Insider-trading/Insiders-reporting-duty/

Finansinspektionen. Insiders Supervision. Retrieved April 5, 2014 from http://www.fi.se/Folder-EN/Startpage/Register/Insider-trading/Insider-supervision/

Finansinspektionen. Ordlista. Retrieved April 5, 2014 from http://www.fi.se/Ordlista/#I

8.4 Regulations

SFS 2000:1087 - The Act concerning Reporting Obligations for Certain Holdings of Financial Instruments

SFS 2005:377 - Financial Instruments Trading (Market Abuse Penalties Act)

8.5 Databases

LUBsearch. Retrieved from http://www.lub.lu.se/soeka/lubsearch.html

The Swedish Financial Supervisory Authority´s Insider Trading Register. Retrieved from http://insynsok.fi.se/

Thomson Reuters Datastream. Accessed by LINC (Lund University Finance Society)

8.6 Software programs

IBM SPSS

Microsoft Excel

8.7 Theses

Smith, A. & Wickström, H. (2011), Decoding Insider Information on the Swedish Stockmarket: A Comparison of the Abnormal Returns Gained by Routine and Opportunistic Iniders, Master Thesis, School of Bussiness and Economics, Lund University.

9. Appendices

Appendix 1: Spreadsheet of Transactions

O/R	Category	Company	Trading Date	Insider person (name	Transaction	Alpha	Beta	CAR 1	CAR 5	CAR 10	CAR 21	CAR 63	CAR 126
o	MID CAP	FENIX OUTD(	08/01/07	Nordin, Åke	Köp	-0.0011	0.4477	2.46%	5.30%	4.11%	6.57%	3.30%	2.31%
o	MID CAP	FENIX OUTD(	10/01/07	Nordin, Åke	Köp	-0.0010	0.4447	0.41%	1.64%	0.00%	0.42%	1.24%	0.89%
o	MID CAP	FENIX OUTD(	10/01/07	Nordin, Åke	Köp	-0.0010	0.4447	0.41%	1.64%	0.00%	0.42%	1.24%	0.89%
o	MID CAP	FENIX OUTD(	11/01/07	Nordin, Åke	Köp	-0.0009	0.4293	0.81%	-2.41%	0.01%	0.39%	2.41%	1.93%
o	MID CAP	NEW WAVE (	15/01/07	Härstedt, Göran	Köp	-0.0029	1.0640	5.27%	15.40%	17.82%	9.82%	15.39%	19.18%
o	MID CAP	SWECO 'B'	24/01/07	Nordström, Gunnar	Köp	0.0006	0.6701	0.56%	2.69%	4.55%	-2.32%	-0.69%	-1.81%
o	MID CAP	INDL.& FINL.	07/02/07	Nilsson, Bengt	Köp	0.0001	0.4195	1.92%	0.45%	2.93%	-4.40%	7.24%	0.11%
o	MID CAP	SAS	12/02/07	Stölen, Sture	Köp	0.0023	0.6716	-2.40%	-0.90%	-3.30%	1.28%	3.79%	-2.89%
o	MID CAP	FENIX OUTD(	27/02/07	Nordin, Åke	Köp	-0.0005	0.4150	-7.40%	-5.06%	-2.28%	-0.72%	-3.10%	-9.31%
o	MID CAP	BILIA 'A'	28/02/07	Pettersson, Jan	Köp	0.0010	0.9097	-7.53%	0.18%	6.64%	6.82%	-1.27%	5.24%
o	MID CAP	FENIX OUTD(	28/02/07	Nordin, Åke	Köp	-0.0007	0.5181	1.07%	3.84%	6.25%	7.02%	14.13%	-0.58%
o	MID CAP	FENIX OUTD(	05/03/07	Nordin, Åke	Köp	-0.0007	0.4715	0.09%	3.66%	2.84%	4.02%	11.35%	3.09%
o	MID CAP	FENIX OUTD(	06/03/07	Nordin, Åke	Köp	-0.0006	0.4479	0.02%	2.04%	1.62%	0.43%	9.15%	5.29%
o	MID CAP	ADDTECH 'B'	07/03/07	Göransson, Kennet	Köp	0.0006	0.8212	1.28%	7.47%	21.04%	9.39%	5.58%	18.99%
o	MID CAP	FENIX OUTD(	07/03/07	Nordin, Åke	Köp	-0.0005	0.4481	-0.34%	3.17%	4.35%	1.57%	8.04%	5.68%
o	MID CAP	SWECO 'B'	12/03/07	Douglas, Eric	Köp	0.0013	0.7081	4.47%	6.05%	1.94%	3.21%	-7.70%	-5.94%
o	MID CAP	FENIX OUTD(	13/03/07	Nordin, Åke	Köp	-0.0003	0.4410	-0.40%	-1.21%	-0.82%	0.72%	2.01%	-0.91%
o	MID CAP	FENIX OUTD(	14/03/07	Nordin, Åke	Köp	-0.0004	0.4558	1.57%	1.57%	1.56%	1.90%	3.03%	-3.83%
o	MID CAP	FENIX OUTD(	16/03/07	Nordin, Åke	Köp	-0.0004	0.4059	-1.60%	1.17%	0.38%	-0.04%	3.95%	-3.18%
o	MID CAP	FENIX OUTD(	20/03/07	Nordin, Åke	Köp	-0.0002	0.4159	1.60%	0.01%	1.18%	0.39%	5.89%	-2.73%
o	MID CAP	FENIX OUTD(	21/03/07	Nordin, Åke	Köp	-0.0001	0.3956	-1.19%	1.98%	-1.19%	0.78%	5.27%	-2.68%
o	MID CAP	AF 'B'	23/03/07	WISTRÖM, JONAS	Köp	0.0014	1.2503	7.65%	-2.19%	-4.47%	-1.74%	-7.99%	-18.82%
o	MID CAP	FENIX OUTD(	23/03/07	Nordin, Åke	Köp	-0.0004	0.3773	3.96%	3.56%	1.97%	1.95%	5.69%	0.69%
o	MID CAP	SWECO 'B'	23/03/07	Douglas, Eric	Köp	0.0018	0.7210	2.90%	-0.21%	5.31%	-1.16%	-0.78%	-4.79%
o	MID CAP	FENIX OUTD(	26/03/07	Nordin, Åke	Köp	-0.0001	0.3726	-2.76%	-1.58%	-3.56%	-2.79%	-3.21%	-3.30%
o	MID CAP	SWECO 'B'	26/03/07	Douglas, Eric	Köp	0.0020	0.7169	1.45%	-1.50%	3.89%	-1.92%	-5.06%	-4.42%
o	MID CAP	SECTRA 'B'	28/03/07	Brüer, Jan-Olof	Köp	-0.0007	1.2343	-3.41%	-2.38%	4.94%	-2.34%	-1.30%	0.34%
o	MID CAP	SECTRA 'B'	28/03/07	Brüer, Jan-Olof	Köp	-0.0007	1.2343	-3.41%	-2.38%	4.94%	-2.34%	-1.30%	0.34%
o	MID CAP	SECTRA 'B'	28/03/07	Kronander, Torbjörn	Köp	-0.0007	1.2343	-3.41%	-2.38%	4.94%	-2.34%	-1.30%	0.34%
o	MID CAP	SECTRA 'B'	28/03/07	Kronander, Torbjörn	Köp	-0.0007	1.2343	-3.41%	-2.38%	4.94%	-2.34%	-1.30%	0.34%
o	MID CAP	FAST PARTNI	18/04/07	Wahlqvist, Lars	Köp	0.0011	0.5885	0.69%	-1.97%	-8.68%	-2.82%	-6.19%	0.55%

Appendix 2: Included Companies

Large Cap	TeliaSonera	Orexo	Intellecta B
AarhusKarlshamn	Trelleborg B	Proffice B	KABE B
ABB Ltd	Volvo A	Rezidor Hotel Group	Karo Bio
Alfa Laval	Wallenstam B	Sagax A	KnowIT
ASSA ABLOY B	Mid Cap	SAS	Lammhults Design Group B
Atlas Copco	Active Biotech	SECTRA B	Malmbergs Elektriska B
Atrium Ljungberg B	Addtech B	SkiStar B	Micro Systemation B
Autoliv SDB	Aerocrine B	SWECO	Micronic Mydata AB
Axfood	ÅF B	Swedol B	Midsona
Axis	Arcam	Systemair	Midway
BillerudKorsnäs	Avanza Bank Holding	Vostok Nafta Investmen...	MQ Holding
Boliden	B&B TOOLS B	Wihlborgs Fastigheter	MSC Konsult B
Castellum	Beijer Alma B	Small Cap	MultiQ International
Electrolux A	Beijer B	Acando B	NAXS Nordic Access Buy...
Elekta B	Betsson B	ACAP Invest B	Net Insight B
Ericsson	Bilia A	Addnode Group B	Nordic Mines
Fabege	BioGaia B	Allenex	NOTE
Getinge B	Black Earth Farming SDB	AllTele	Novestra
Handelsbanken	Bure Equity	Anoto Group	NOVOTEK B
Hennes & Mauritz B	Byggmax Group	Arise	Oasmia Pharmaceutical
Hexagon B	Catena	Aspiro	Odd Molly International
HEXPOL B	Clas Ohlson B	Avega Group B	Opcon

Holmen A	Cloetta B	BE Group	Ortivus
Hufvudstaden	Corem Property Group	Beijer Electronics	PA Resources
Husqvarna	Diös Fastigheter	Bergs Timber B	PartnerTech
ICA Gruppen	Duni	BioInvent International	Poolia B
Industrivärden A	East Capital Explorer	Biotage	Precise Biometrics
Intrum Justitia	Eniro	Björn Borg	Prevas B
Investor A	Fagerhult	Bong	Pricer B
JM	Fast Partner	BTS Group B	Proact IT Group
Kinnevik A	Fast. Balder B	CellaVision	Probi
Latour B	Fenix Outdoor B	Cision	Profilgruppen B
Lundbergföretagen B	Fingerprint Cards B	Concordia Maritime B	RaySearch Laboratories B
Lundin Mining Corp. SDB	Gunnebo	Connecta	ReadSoft B
Lundin Petroleum	Haldex	Consilium B	Rederi AB Transatlantic
Meda A	HEBA B	CTT Systems	Rejlerkoncernen
Melker Schörling	HiQ International	Cybercom Group	RNB RETAIL AND BRANDS
Modern Times Group A	Industrial & Financial...	Dedicare B	Rottneros
NCC A	Indutrade	DGC One	Rörvik Timber B
NIBE Industrier B	ITAB Shop Concept B	DORO	Semcon
Nordea Bank	KappAhl	Duroc B	Sensys Traffic
Peab B	Klövern	Elanders B	Shelton Petroleum B
Ratos	Kungsleden	Electra Gruppen	SinterCast
SAAB B	Lagercrantz Group B	Elos B	Softronic B
Sandvik	Lindab International	Enea	Stockwik Förvaltning
SCA A	Loomis B	Etrion	Studsvik
SCANIA	Medivir B	eWork Scandinavia	Svedbergs B
SEB A	Mekonomen	Feelgood Svenska	Svolder
Securitas B	Nederman Holding	FormPipe Software	Traction B
Skanska B	Net Entertainment NE B	Geveko B	TradeDoubler
SKF	New Wave B	Global Health Partner	Uniflex B
SSAB A	Nobia	Havsfrun Investment B	VBG GROUP B
Swedbank A	Nolato B	Hemtex	Venue Retail Group B
Swedish Match	Nordnet B	HMS Networks	Vitrolife
Swedish Orphan Biovitrum	OEM International B	I.A.R Systems Group	XANO Industri B
Tele2 A	Öresund	Image Systems	

Appendix 3: Excluded Companies

Large Cap	CDON Group	Tribona	Moberg Pharma
AstraZeneca	Concentric	Unibet Group	NeuroVive Pharmaceutical
EnQuest PLC	Creades A	Victoria Park	Nordic Service Partners
Millicom Int. Cellular...	Hemfosa Fastigheter	Small Cap	PSI Group
Oriflame SDB	Opus Group	ACAP Invest B	Seamless Distribution
Stora Enso A	Platzer Fastigheter Ho...	Arctic Paper	Transcom WorldWide SDB A
Tieto Oyj	Recipharm	Availo	Transcom WorldWide SDB B
Mid Cap	Sanitec Oyj	Boule Diagnostics	Trigon Agri
BlackPearl Resources SDB	Semafo	Endomines	Vitec Software Group B
Bufab Holding	Tethys Oil	Finnveden Bulten	
Cavotec	Transmode	Karolinska Development B	