Earnings management and insider trading -
A study of firms listed on Nasdaq OMX Stockholm

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Abstract
There is an ethical dilemma and a legal issue of earnings management and insider trading, and a risk of it affecting the accuracy of financial markets. The use of earnings management leads to an information asymmetry between the corporate management and the financial markets. This paper investigates how earnings management affects insider trading and whether insider trading is a good information source about earnings quality and future performance. Studying companies believed to have conducted earnings management on Nasdaq OMX Nordic Stock Exchange (Stockholm) from 2005 through 2014 indicates that: (1) insiders do not sell shares after managing earnings upwards; (2) the relationship between insider selling and future earnings performance is positive, contradicting agency theory and previous research; (3) the market’s reaction to the earnings announcement one year after suspected earnings management is positive for firms where insiders have sold shares, and vice versa. Taken together, our results are not in line with those of previous studies conducted on other markets. This is likely to depend on the unique Swedish setting with the existence of endowment insurances, where insiders can trade shares without having to disclose their transactions to the market. Because of this, we argue that insider trading is not an adequate signal about Swedish firms’ earnings quality and future performance. We therefore further emphasize the importance of a change in the Swedish legislation, in order to insure the accuracy of financial markets and to protect other investors.

Keywords: Earnings management; Insider trading; Earnings around thresholds; Information asymmetry; Agency theory; Endowment insurance
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1. Introduction

“The most valuable commodity I know of is information” – Gordon Gecko, Wall Street (1987)

Companies financial reporting is highly important for the accuracy of financial markets, and ever since the corporate collapses of firms like Enron and WorldCom in the beginning of the 21th century information users have started to pay more attention to its truthfulness. Scandals like these have also led academics to study the role of earnings management, which according to Shipper (1989) is defined as “when management purposely intervenes in the external financial reporting process with the intention of obtaining some personal gain”. Accounting earnings is one of the most commonly used measurements of a firm’s financial performance and managers are often incentivized based on how good the accounting earnings are (Healy, 1985; Hothouse, Larcker & Sloan, 1995). Because of this, some managers might be enticed to involve themselves in earnings management. Or as the famous investor Warren Buffet once said: “Managers that always promise to 'make the numbers' will at some point be tempted to make up the numbers” (Halpern, 2003).

Previous studies have found evidence that earnings management do exist in companies (Burgstahler & Dichev, 1997; Kasznic, 1999; Mattson & Tidholm, 2007), and that it is not uncommon that managers chooses reporting methods and estimates that do not accurately reflect their firms’ underlying economics (Healy & Wahlen, 1999). Even though little academic research regarding this topic has been conducted within the Swedish context, there have been studies investigating whether or not earnings management is exercised within Swedish firms. For example Granholm, Holmberg and Molander (2012) and Mattson and Tidholm (2007) examined firms listed on the Nasdaq OMX Nordic Stock Exchange (Stockholm) and concluded that also managers within Swedish firms conduct earnings management.

According to the efficient market hypothesis the financial markets are efficient, i.e. the price of an asset reflects all available information (Fama, 1970). There is a lot to gain for those who posses information unknown to other investors, and a possibility to “beat the market”. Insiders, like managers and directors, are for example in a better position to know more than outsiders about their companies’ value, and use this knowledge to trade profitable in shares of
their firms (Jaffe, 1974; Rozeff & Zaman, 1998). It is however illegal to trade financial instruments on the basis of information that is not public knowledge (FI, 2015). Even though regulations exist, in form of the Market Abuse Penal Act (2005:377), Sweden has in the media been described as “an haven for insider traders” (Jonasson, 2012). In the last years there have been many suspected cases of insider trading but very few prosecutions, e.g. there were 96 suspected offences of insider trading in 2011 but not a single prosecution (ibid.). There has also turned out to be a loophole in the Swedish legislation (ibid.). If insiders own shares through so-called endowment insurances, they are not obliged to report their insider trading transactions to the registry of Finansinspektionen, the Swedish financial supervisory authority, which is the case for share holdings outside of the insurances (FI, 2015). This exception is due to that shares in endowment insurances are held via insurance agencies, and not directly by the insiders. The existence of endowment insurances implies that insiders can secretly trade shares of their firms, withholding this information from the market. It should be noted that even though there are several laws that prevent insiders from trading on information that is not public to the market, trades based on perceived over- or undervaluation is not illegal (Sawicki & Shrestha, 2014).

The use of earnings management can have a mispricing effect on the stock price and leads to an information asymmetry between the corporate management and the financial markets, hence creating an opportunity for managers to take advantage of this. According to the agency theory, it is in the best interest for managers who perceive their firm’s stock to be overvalued to make sure that the stock stays overvalued, and at the same time sell their shares to achieve the greatest personal gain (Jensen, 2005). Previous research that have studied the relationship between earnings management and insider trading have found that managers of firms that have boosted their reported earnings by conducting earnings management are more likely to sell their shares in the firm the period after the earnings announcement (McVay, Nagar & Tang, 2006; Sawicki & Shrestha, 2014).

Further, since positive earnings management means that managers “borrow” earnings from the future in order to boost earnings today, the future earnings performance should be negatively affected (DeGeorge, Patel & Zeckhauser, 1999). If the market is not able to understand this effect, insiders who have a better understanding of their firms’ underlying economics could thus benefit from the superior knowledge they possess about their firms’ future performance. Furthermore, if a firm’s stock is overvalued due to that earnings
management has been performed, it should be affected negatively when the future earnings are presented.

1.1 Research aim
The aim of this paper is to investigate how earnings management affects insider trading and whether insider trading is a good information source about earnings quality and future performance. As demonstrated above, the topic of earnings management and insider trading is considered relevant both from an academic perspective, but also from a societal perspective. There is an ethical dilemma and a legal issue of earnings management and insider trading, and a risk of it affecting the accuracy of financial markets. The use of earnings management leads to an information asymmetry between the corporate management and the financial markets, and this paper investigates whether managers take advantage of this asymmetry for personal gain when trading stocks in their companies. The aim will be fulfilled by investigating earnings management from three different angles. First we will examine whether or not managers of Swedish firms will sell their companies shares the period after they are expected to have boosted the reported earnings by conducting earnings management. By understanding the trading behavior of managers during the period following earnings being managed, we will hopefully find a pattern that could function as a signal to the market about the true financial situation of the firm. The paper will therefore further investigate whether insider selling is a good information source about earnings quality and future performance. Finally we will study the stock markets reaction to the earnings presented by firms one year after they are suspected to have involved themselves in earnings management.

1.2 Contribution
This study contributes to the existing literature in numerous ways. It develops present knowledge regarding managers’ opportunistic behavior in relation to earnings management and insider trading. The Swedish market is chosen due to its unique characteristics. As earlier mentioned, Sweden has been described as a haven for insider traders since there is an opportunity to hide insider transactions within endowment insurances. Therefore it is especially interesting to study whether the relations that exist between earnings management and insider trading in other markets also can be observed in the Swedish setting. Furthermore, very little research regarding earnings management has been performed in the Swedish market and, to our knowledge, no previous research regarding the relationship between earnings management and insider trading has been conducted within this context.
Our research also differs from previous ones by, in the same study, tracking several different events and actions related to companies expected to have performed earnings management. More specifically, we approach the subject from three different angles by investigating earnings management's effect on insider selling, future earnings performance and the market’s reaction to future earnings. Thus enabling a better overview and understanding of the effects of earnings management. The stock market’s reaction to the earnings presented by firms one year after they are suspected to have involved themselves in earnings management has not, what we are aware of, been investigated earlier, hence expanding previous literature.

1.3 Limitations
Noteworthy is that there is also the possibility of managers doing the opposite instead – artificially depressing earnings for different reasons, and then purchasing shares in the company. However, our study is limited to exploring the perceived inflated earnings and following stock-selling behavior among corporate managers.
2. Literature review and formulation of hypotheses
In this section existing theory, Swedish legislation, and previous literature about earnings management and insider trading are presented. Based on this we formulate six hypotheses that will be tested through our study.

2.1 Agency theory
According to agency theory, the separation of ownership and control together with the information asymmetry that exist between managers and shareholders, may lead managers to operate in a way that maximize their own utility but not the owners (Jensen & Meckling, 1976). The theory further states that there are two problems that occur in relationships between a principal and an agent. The first problem is that the goal of the principal and the agent does not always align, and it is costly for the principal to monitor what the agent is doing. This often leads to opportunistic behavior since the principal is not aware of what the agent is doing (Eisenhardt, 1989). The second problem concerns risk sharing, it arises when the principal and the agent have different attitudes towards risk. Because of this the agent might not act in the best interest of the principal and make decisions that are not in line with what the principal wants (ibid.). The theory suggests that monitoring mechanisms and incentives can help align the interest of agents and their principals and thus decrease any opportunistic behavior (Jensen & Meckling, 1976). Jensen and Meckling (1976) studied the effects ownership structure had on the corporation and proposed that equity ownership by managers will help align the interest of managers’ with the ones of the stockholders’ (principals). Decreasing the opportunistic behavior among managers is considered important since it will help maintain the credibility of financial markets by making sure that the financial reporting is complete and reliable (Bushman & Smith, 2003).

2.2 Insider trading
It is common that managers and board members of publicly listed firms, so called insiders, own shares in the company they work for. Insiders are defined as any person or entity that own more than 10 percent of a company’s voting rights, or an employee that has access to sensitive information that is not public to the market (FI, 2015). Insider trading is often associated with illegal actions, however insider trading is not per se illegal and the term includes both legal and illegal conduct (ibid). Insiders can trade stocks in their companies under certain restrictions, in Sweden the market operates under the Market Abuse Penal Act (2005:377). It is illegal to trade financial instruments on the basis of information that is not public knowledge, and to unauthorized disclose information liable to essentially influence the
price. It is also forbidden to take measures to manipulate the share’s market price (ibid.). However, it should be noted that trades based on perceived over- or undervaluation is not illegal (Sawicki & Shrestha, 2014). In Sweden, all insiders must report their transactions and holdings to Finansinspektionen, the Swedish financial supervisory authority. The special rules that apply for those with insight into listed companies have the objective to prevent abuse of insider information and to provide the market with information about relevant persons’ securities transactions (FI, 2015).

2.2.1 Endowment insurances
There has turned out to be a loophole in the Swedish insider legislation (Jonasson, 2012). If insiders own shares through so-called endowment insurances, they are not obliged to report their insider trading transactions to Finansinspektionen (FI, 2015).

In the last 10 years, endowment insurances have become an increasingly popular way to invest money in Sweden. The reason behind this is primarily that the taxation on earnings from the endowment insurance can be much lower than if you invest in stocks or funds directly. Instead of paying tax based on what you earn from your investment, you pay a small tax each year based on how large your investment is, no matter if you have gained or lost (SPP, 2015). Moreover, when you invest in stocks or funds through an endowment insurance you do not own the holdings directly. It is the insurance company that on paper owns the holdings, and the investor has a receivable towards the insurance company based on the current value of the investment.

This setup has complications when it comes to insiders of firms. If insiders invest in shares of the companies they have an insider position in through endowment insurances, they do not have to report their transaction to Finansinspektionen. The same goes for trades they make within the insurance. This implies that insiders of Swedish firms can make trades under the radar using information that is not available to the market without having to report it, and thus they cannot get prosecuted for these trades (FI, 2011).

This loophole is something that has been debated in the media for a couple of years and Finansinspektionen demanded in 2011 that a change in the law would be made, although still nothing has happened (Spängs, 2012; FI, 2011).
2.3 Earnings management
As previously mentioned, academics have taken an interest in the area of earnings management (see e.g. Burgstahler & Dichev, 1997; Healy & Wahlen, 1999). Healy and Wahlén (1999) define earnings management as “when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”.

The accounting process leaves room for interpretations, hence earnings management activities can be carried out without violating accounting standards (Schipper, 1989). It is difficult to detect earnings management and it further increases the information asymmetry that naturally exists between management and shareholders. Earnings management is often divided into real earnings management and accrual-based earnings management (ibid.). Real earnings management is accomplished by timing financial decisions or investments to change the reported earnings. Firms can for example decrease their investments in R&D one year in order to present better earnings. This will affect the firms in the future, either because they have to increase their R&D investments another year or because their earnings decrease due to lack of innovation. Through accrual-based earnings management it is possible to report future earnings or expenses in the current period. When boosting reported earnings by discretionary accruals the company is “borrowing” earnings from the future. Since it is not possible to conduct earnings management this way over several periods, it eventually must cease.

There are a number of reasons why managers involve themselves in earnings management to boost earnings performance. First, firms often try to avoid reporting losses or lower profits than previous years since it might shed negative light on the performance of both the company and its management. Secondly, since it is important to show good results when looking for external funding, managers might be overstating their earnings (Spyros, 2004). When making a decision to invest in a firm, the firm’s earnings are often one of the most important information providers that investors look at (DeGeorge et al., 1999). Because of this, managers who know that they are monitored by investors, customers, directors and other stakeholders, might have great incentives to influence their firm’s earnings. Finally and perhaps most importantly, managers can benefit personally from conducting earnings management. Managers often have bonuses based on their companies reported earnings and
thus they can benefit financially by boosting the reported result (DeChow, Myers, & Shakespeare, 2010). Further, if they own shares in their companies they will profit from a high stock price, since it will increase the value of their personal portfolios. Studies indicate that high managerial ownership lead managers to increase the use of earnings management activities because of this (see e.g. Cheng & Warfield, 2005; Hothouse et al., 1995).

2.3.1 Earnings discontinuity around thresholds
Burgstahler and Dichev (1997) demonstrate that there is a discontinuity around three different thresholds: earnings around zero, earnings in relation to the previous years and earnings around analysts’ expectations. They find that there are a much greater number of firms that report earnings just above these thresholds and a lot less that report earnings just beneath them, compared to what would be expected given a smooth distribution of earnings. Mattsson and Tidholm (2007) use this methodology in their study of the Swedish market and find a similar pattern of the reported earnings. This discontinuity around the thresholds is said to be an indicator that earnings management is present in the market (Burgstahler & Dichev, 1997). Barth, Elliott and Finn (1999) find that firms that keep their earnings above thresholds over a long period of time are rewarded with a higher earnings multiple than other firms. Additionally they find that if these firms fail to reach the thresholds the earnings multiple decreases. Thus, managers want to avoid presenting earnings that are below the above-mentioned thresholds, and therefor they instead boost earnings by conducting earnings management to reach just above them. These findings suggest that Swedish firms that report earnings that are just above zero or slightly better than the previous year, might be using earnings management in order to boost their reported earnings.

Since earnings is an important information provider that investor’s look at before making investments (DeGeorge et al., 1999), the stock of firms that report just above a threshold should be rewarded positively. If managers have boosted their firms’ earnings by using earnings management to reach above such a limit, the underlying stocks should be rewarded with a higher price than if they would have missed it. It is shown that the future performance of firms that have reported earnings just above a threshold is poorer than for firms that have not (DeGeorge et al., 1999). This is an additional indication that firms that report earnings just above a threshold are using earnings management, since positive earnings management activities means that you push costs into the future, hence affecting future performance
negatively. Managers who have performed earnings management are aware of this and will have an information advantage compared to other investors.

Rozell and Zaman (1998) studies the market’s reactions to past performance and finds that insiders tend to buy less when stock returns are high, just as they would be for firms that report earnings that are positive. Firms that have used earnings management activities to reach above a threshold, and consequently are rewarded by the market, could then be considered overvalued. Although, Burgstahler and Eames (2003) find that analysts are expecting that more firms than what could be explained by a smooth distribution will report earnings that are just above zero and are therefor pessimistic about the firms that do so.

2.3.2 Earnings management and insider selling
The shares of firms that have conducted earnings management are often mispriced as not even professional analysts and auditors fully understand the implications of valuing accounting accruals (Sloan, 1996). When a firm’s stock is mispriced due to earnings management activities, the managers who performed the earnings management will have an information advantage towards the rest of the market, hence there is an opportunity for them to divest their shares if they perceive their firm’s stock is overvalued and vice versa.

There are studies that investigate the relationship between earnings management and insider trading. Cheng and Warfield (2005) propose that equity incentives for managers are connected to future managerial sales, hence managers can benefit from conducting earnings management. They find confirmation for the relationship between equity incentives and the incentive of just meeting or beating analysts’ forecasts. McVay et al. (2006) study the discontinuity of firms reporting around the analyst forecast benchmark, and the relationship between just meeting the benchmark and managerial insider sales. They suggest that managers boost earnings prior to the earnings announcement in order to just meet the analysts’ projections, and then use this insider knowledge to sell shares that they think are over-priced. The study finds a strong relationship between firms that just meet the analysts’ forecasts and subsequent insider sales. This suggests that managers act opportunistic when managing their firm’s earnings. This is in line with the findings of Sawicki & Shrestha (2008) that also study the relationship between earnings management and insider trading. They find that managers adjust earnings downwards before buying shares and upwards prior to selling their shares.
However, in a study by Jenter (2005) it is shown that the view top managers have on firm value often opposes the one of the market. It shows that insiders think firms with high book-to-market value are overvalued and firms with low book-to-market value are undervalued. The study measure this by looking at insiders private transactions, since it is thought to be a good indication of their personal views about their firm’s actual value. This could suggest that insiders trade their shares on contrarian beliefs rather than information that are not available to the market. This is supported by the finding that insiders does not receive excessive returns on their trades (ibid.)

As noted above, numerous of previous research has found that insiders tend to sell shares in the period following their expected use of earnings management to boost earnings (see e.g. Rozeff & Zaman 1998; Benish & Vargus 2002; Sawicki & Shrestha, 2008; Sawicki & Shrestha, 2014). Common for these studies are that they are done with a sample from the U.S. market and that they measure earnings management using discretionary accruals. Our study relates to previous research in the sense that we also study the relationship between earnings management and insider trading. Similar to McVay et al. (2006) we use the discontinuities around thresholds to gather samples in which we expect firms to have boosted their earnings. The study differentiate itself from previous studies by, (1) it is done using a sample of Swedish publicly listed firms that have not previously been studied in this context; (2) using the thresholds: earnings around zero and earnings in comparison to the firms previous years earnings, instead of the analysts forecasts used by McVay et al. (2006).

Studying the behaviour of insiders will help market participants to understand the signals that insider trades communicate when firms have reported earnings that just meet or beat an earnings threshold. We expect insiders of firms that have involved themselves in earnings management to behave opportunistically and sell their shares if they perceive them as overvalued. The overvaluation is expected to occur due to that not even sophisticated market participants, such as analysts, are able to fully understand the implications of earnings management.

Based on previous research and agency theory we propose the following two hypotheses regarding earnings management’s impact on insider trading:
Hypothesis (H1a): Insiders of firms that present earnings that are just above zero will sell shares in the period following the earnings call.

Hypothesis (H1b): Insiders of firms that present earnings that are slightly better than the previous year will sell shares in the period following the earnings call.

2.3.3 Earnings management’s impact on future earnings performance
When managers boost their reported earnings using earnings management, they “borrow” earnings from the future; hence their firm’s future earnings performance should be lower than expected. Previous research confirms this and shows that there is a correlation between firms that conduct earnings management and future performance (DeGeorge et al., 1999) – firms that manage earnings upwards will have worse future performance.

Piotroski and Roulstone (2004) on the other hand study the relationship between insider trading and future earnings performance. In line with Jenter (2005) they find that insiders are contrarian, but also that they possess superior information. Their study suggests that the future earnings performance of a firm is positively related to the insider trading in it. The future performance of firms where insiders sell their shares tends to be lower compared to firms where they buy.

We investigate whether firms that have reported earnings just above zero or just beaten their previous years earnings, and in which insiders have sold shares in the period after the earnings announcement, will present lower earnings during their next announcement compared to firms where insiders did not sell. There will be firms that report earnings that are just above zero or that just beat the previous years result that have not involved themselves in earnings management. Insiders in these firms should not be benefitting from selling their shares in the period after the earnings announcement since the price of their firms’ shares should be motivated. They might even buy shares, as some analysts might be sceptical to results that just beat a threshold and consequently do not reward them sufficiently (Burgstahler & Eames, 2003). Our method contributes to previous research such as Burgstahler and Dichev (1997) and DeGeorge et al. (1999) by adding the behaviour of insiders. Studying the behaviour of insiders will help determine whether insider selling is a good signal and information source about earnings quality and future performance.
As mentioned, earnings management implies that the firms are “borrowing” from the future, the future earnings performance is therefore expected to be lower in these firms than in firms where no suspected earnings management has taken place. Thus, based on agency theory and previous research we propose the following hypotheses:

**Hypothesis (H2a):** Firms that present earnings just above zero and in which, insiders are selling shares in the subsequent period will have worse future earnings performance than firms where insiders buy.

**Hypothesis (H2b):** Firms that present a small increase in earnings compared to the previous year and in which, insiders are selling shares in the subsequent period will have worse future earnings performance than firms where insiders buy.

### 2.3.4 Stock prices around future earnings announcements

During the days after a firm’s earnings announcement, where last years earnings are presented, the development of the firm’s stock price will be an indication of whether the result was in line with the markets expectations. Firms that report earnings that are better than expected are rewarded with an increase in their stock price and vice versa. As mentioned earlier, not even sophisticated market participants are able to fully understand the impact earnings management have on a firm’s earnings. Because of this, the stock price of firms that have involved themselves in earnings management might be overvalued. Further, since firms that boost their earnings using earnings management “borrow” from the future, their future earnings performance should to be lower than expected. Therefore it is likely that the presented earnings will disappoint the market, and this will be demonstrated in a declining stock price.

Firms in which insiders sell an abnormal amount of shares are significantly more likely to have reported earnings just above a threshold than just below during their last earnings announcement (Benish & Vargus, 2002). Furthermore, the stock price of firms in which insiders sell shares after conducting positive earnings management will on average decline in the period after the sales. The findings of Benish and Vargus (2002) also implies that managers that involve themselves in earnings management activities have better understanding of the effect the earnings management will have than other investors. This
means that managers can use this knowledge to trade their own stock if they consider it mispriced.

This paper investigates the development of firms’ stock prices the days after their earnings announcements. We focus on firms that in the previous year reported earnings that just met or did beat an earnings threshold and in which insiders sold shares during the year. This is an interesting subject since it demonstrates how well the market is able to understand the effect earnings management have on the future performance of firms.

Previous research by Skinner and Sloan (2002) and Kasznik and McNichols (2002) have studied stock prices after the reporting of insider sales for firms that are suspected to have performed earnings management. They find that the market’s reaction to insider selling is negative and therefore the stock price decreases. We instead look at the earnings announcements that take place one year later and study the market’s reaction to the presented earnings. By only studying the firms that we expect have conducted earnings management (those firms that have just beaten a earnings threshold and in which managers have sold shares in the subsequent period) and compare their stock price development with firms where managers have not sold shares, we investigate if the market is negatively surprised by the reported earnings or not.

The study contributes to the existing literature both by showing how well the market can incorporate earnings management and insider sales into the stock price and by indicating if insiders sold their shares when their firms’ stock was overvalued. In addition, studying the stock market in connection to the yearly earnings announcement is something that to our knowledge has not previously been done.

We base the study on the perception that the market is not efficient enough to fully understand the effects of earnings management. Because of this firms that have boosted their earnings to reach above an earnings threshold might be rewarded with a stock price that is higher than what is motivated. Managers that act opportunistically will sell shares based on the information they possess about the earnings management that has been conducted. If the full effect of the earnings management has not been taken into account by the market, the earnings during the next announcement should be a disappointment to the market. If the
earnings are a disappointment we expect the stock of the firm to decline in the days following the presentation. Hence, we propose the following hypotheses:

Hypothesis (H3a): The stock price of firms that presented earnings just above zero, and in which insiders were selling shares in the subsequent period, will perform worse in the days after the following year’s earnings announcement, compared to stocks of firms where insiders were buying.

Hypothesis (H3b): The stock price of firms that present a small increase in earnings compared to the previous year, and in which insiders were selling shares in the subsequent period, will perform worse in the days after the following year’s earnings announcement, compared to stocks of firms where insiders were buying.
3. Research methodology

Within this section, the research methodology will be presented. The paper’s studied samples, variables, and statistical tools will be highlighted in order to clarify our chosen approach.

3.1 Research approach

When selecting a research approach we chose to apply a deductive reasoning because we believed it would be the best way to fulfill the aim of the study. We investigate the effect earnings management has on insider trading, future performance and earnings quality, and since our hypotheses are based on theory and previous research a deductive approach is suitable (Patel & Davidson, 2003). The advantage of taking a deductive approach is that it naturally provides objectivity to the research, since you begin with known and acknowledged theories and let these guide both the collection of data as well as the analysis (ibid.). This is important because objectivity ensures that the results are not based on the researcher’s subjective opinions. On the other hand, since deduction accepts old assumptions about reality there is also the possibility that no new discoveries are found.

3.2 Sample

Our initial sample consisted of all companies listed on the Nasdaq OMX Nordic Stock Exchange (Stockholm), except financial ones. We have used financial information between the years 2005-2014. This covers an entire financial cycle and helps avoid receiving a distorted result. Only firms that measured a fiscal year equal to a calendar year was used in order to make the comparisons easier. The selected years were also limited by the available data in the used databases that only covered financial data back to 2005. Financial companies were excluded due to their special characteristics and the fact that they do not follow the same legislations as other firms do. The exclusion was done by utilizing OMX’s sector classification, the Global Industry Classification Standard. Also prior studies in the field e.g. Alves (2012) and Iturriaga and Hoffman (2005), have left out these types of organizations.

Using a sample consisting of all publicly listed firms on OMX enabled a large number of observations and also facilitates a reproduction of our study as well as comparisons with previous and future research. Another advantage is that all sample firms have been audited, which is not mandatory for smaller companies in Sweden, hence securing a more homogenous financial reporting.

When identifying firms that are expected to have conducted earnings management our study relies on results from previous studies demonstrating that earnings management is likely to be present in firms that report results just above zero or report a small increase compared to the
previous year. Burgstahler and Dichev (1997) show through their research that there is a lot more (less) firms that report earnings that are just above (below) zero or last year’s result than what is expected considering a smooth distribution of reported earnings. This is said to be an indication that firms using earnings management activities are present in the market. Thus we expect managers’ of firms that have reported results just above zero or a small increase compared to the previous year to have involved themselves more with earnings management activities than firms that have reported results just below or a small decrease compared to its previous year.

Our test samples were only made up by those firm-years when earnings either around zero or with a small change were reported. A breakdown of our sample can be found in Table 1. In Figure 1 and Figure 2 it is possible to see that our sample also consists of a lot more firms that report earnings just above the chosen thresholds than just below them. Without making any further tests about this we thus expect our sample to have captured firms that have boosted their earnings using earnings management. Since the findings by Burgstahler and Dichev (1997) have been acknowledged in a large number of earnings management research and many other researchers, e.g. DeGeorge et al. (1999), have further tested their findings we believe that relying on their findings have not hurt the reliability of our study.

In Figure 2 we can see that the interval two steps above zero is smaller than what should be expected given a smooth distribution of earnings. This could be an indication that there are firms that report earnings that are lower than they should be in order to “save” earnings for the future. Although this is a possibility, we assume that the majority of firms just above a threshold, and that have performed earnings management, have managed earnings upwards and not downwards. This assumption is based on the research by Burgstahler and Dichev (1997), and also on the findings that the discontinuity below the interval above a threshold is larger than for the interval two steps above zero (see Figure 2).

The financial data was collected through the database Retriever Business and Finansinspektionen provided the data of insider trading. The stock prices before and after firms presented their earnings had to be manually collected from both annual reports (the date of the earnings announcement) and through finansportalen.se were historical stock prices are found for firms listed on small, mid and large cap. Since earnings for year t is presented in year t + 1, we measured insider trades from the earnings call until the end of the year (see Figure 3).
Table 1 – Sample selection

<table>
<thead>
<tr>
<th></th>
<th>Sample Earnings around zero</th>
<th>Sample Earnings small change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial year Jan 1 – Dec 31</td>
<td>2120</td>
<td>1855</td>
</tr>
<tr>
<td>Earnings reported within chosen interval</td>
<td>1992</td>
<td>1752</td>
</tr>
<tr>
<td>Earnings above threshold</td>
<td>140</td>
<td>130</td>
</tr>
<tr>
<td>Earnings below threshold</td>
<td>88</td>
<td>74</td>
</tr>
<tr>
<td><strong>Test H1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings above threshold with insider trades</td>
<td>52</td>
<td>56</td>
</tr>
<tr>
<td>Earnings below threshold with insider trades</td>
<td>140</td>
<td>130</td>
</tr>
<tr>
<td>Test sample</td>
<td><strong>94</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td><strong>Test H2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings above threshold with insider selling</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Earnings below threshold with insider buying</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>Missing future performance</td>
<td>-19</td>
<td>-11</td>
</tr>
<tr>
<td>Test sample</td>
<td><strong>42</strong></td>
<td><strong>42</strong></td>
</tr>
<tr>
<td><strong>Test H3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings above threshold with insider selling</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Earnings below threshold with insider buying</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>Missing data for market reaction</td>
<td>-21</td>
<td>-18</td>
</tr>
<tr>
<td>Test sample</td>
<td><strong>40</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

Note: The Earnings around zero column is based on the initial sample of firm-years using the Above_zero variable and the Earnings small change column is based on the data from the Small_increase variable (see section 3.4 for variables). The interval for Earnings around zero is -0.01–0.01 and for Earnings small change -0.005–0.005
Note: Figure 1 is based on the initial sample of firm-years using the Above_zero variable and Figure 2 is based on the data from the Small_increase variable (see section 3.4 for variables). The interval for Earnings around zero is -0.01 to 0.01 and for Earnings change is -0.005 to 0.005.
Measurement of insider trades

Figure 3 – Measurement of insider trades

Note: Insider trades are measured from the period after the earnings announcement until the end of the year.

As displayed in Table 1, the size of the samples are quite limited, which could affect the outcome from the statistical analyses. Although, according to Pallant (2010) the problem is larger when you have many predictors. Since we only use one predictor in each of our tests, we should minimize the problems a small sample size can cause.

3.3 Statistical analyses
The study’s statistical analyses were performed in SPSS. Before we conducted the analyses we performed a couple of test in order to see if our variables were normally distributed, as well as check for a potential outlier dilemma. Our initial tests indicated that our variables were non-normally distributed and contained a number of outliers. This was also revealed by our skewness and kurtosis analyses (see Appendix A). We chose to use a significance level of five percent when interpreting the results achieved from the statistical analyses. This means that we accept a five-percent margin of error in our results, which according to Pallant (2010) is the margin of error commonly used within statistical analyses.

3.3.1 Winsorization and normality tests
Since outliers were found in our initial tests, a winsorization was conducted in order to limit the number of outliers and thus decrease the spread of the sample. Winsorization is a method used when you want to adjust your sample without excluding any valid observations (Chambers, Kokic, Smith & Cruddas, 2000). We chose to perform a five percent winsorization, which means that we changed any observation that reached the 97.5th or 2.5th percentile to the closest observed value inside the accepted percentiles. A five percent one or two-tail winsorization is commonly used within business research (ibid.)

The affects these tests had on skewness and kurtosis for the different variables can be found in Appendix A.
After conducting the winsorization, we performed new tests for normality. It revealed that despite the lower level of outliers, not all variables proved to be normally distributed. The results from this test can be seen in Appendix A. When testing for normality we performed Shapiro Wilk’s test, as it has been acknowledged being more reliable than the Kolmogorov-Smirnov test (Razali & Wah, 2011).

3.4 Variables
Since we used data from OMX’s Small Cap, Mid Cap and Large Cap the size of the firms significantly differed. Thus, we used scaling to avoid heteroscedasticity problems. We scaled the reported earnings variable with total assets from the beginning of the year. Many different approaches towards scaling have been used in finance literature but Burgstahler and Dichev (1997) test a number of different alternatives and found similar results using all.

Thus the test variables are:

\[ Above\_zero_t = \frac{Earnings_t}{Total\ assets_{t-1}} \]
\[ Small\_increase_t = \frac{(Earnings_t - Earnings_{t-1})}{Total\ assets_{t-2}} \]

In their study, Burgstahler and Dichev (1997) shows that there are more (less) firms than expected, with the assumption that the earnings distribution is smooth, that report earnings either just above (below) zero or slightly better (worse) than the previous year. Their analysis of this is that some managers in firms that report earnings in the interval immediately to the right of zero for either Above_zero_t or Small_increase_t have involved themselves in earnings management activities.

Since we only wanted to use firms that have reported results just above or below zero or a small increase or decrease compared to its previous year, we had to decide on an interval that was suitable. When deciding the interval there were a number of factors that needed to be taken into consideration: How much can a manager boost the reported earnings? If we chose to big of an interval, we would have received a sample with a lot of firms that have not involved themselves in earnings management and if the interval was to small on the other hand, we might have missed firms that used earnings management.

With the above in mind we chose to use an interval for Above_zero_t between -0,01 and 0,01
and between -0.005 and 0.005 for Small_increase. We used a smaller interval for Small_increase since the values were a lot smaller for this variable. This line of thinking is also applied in previous studies (see Burgstahler and Dichev, 1997; DeGeorge et al. 1999).

3.4.1 Variables hypotheses H1a & H1b
Our variables when testing hypotheses H1a and H1b were (1) whether the firm reported earnings just above zero versus a small loss (Dummy_above_zero), (2) if the firm reported earnings that were slightly higher than the previous year compared to slightly lower (Dummy_small_increase) and (3) the amount of insider sales that followed in the period after the earnings announcement (Insider_sales_t+1). Both Dummy_above_zero and Dummy_small_increase are indicator variables that are equal to one if the reported earnings are just above zero or a small increase compared to the previous year, and zero if it is just below zero or a small decrease compared to the firms previous year.

Our third variable was the measurement of insider trades; we used realized insider trades in our analyses. Since the earnings of year t is reported in year t+1, we measured the insider trades from the earnings announcement until the end of year t+1. There are many insiders in a firm and each of them can make numerous trades during a year. Because of this we had to generate a summary statistic of the insider trading data for each firm and year. There are many different ways of doing this summary statistic, and there does not seem to be a consensus among researchers which one is the most appropriate. We applied a model used by McVay, Nagar and Tang (2006) in which we scaled net sales by the insider’s holding. By doing this it allowed us to compare the insider trades in firms that have different levels of managerial ownership. For each firm year we define the net insider sales as follows:

$$\text{Insider\_sales}_{t+1} = \left[ \sum_{i=1}^{I} \sum_{h=1}^{H} \left( \frac{SS_{ih}}{SH_{ih}} \right) - \sum_{i=1}^{I} \sum_{h=1}^{H} \left( \frac{SP_{ih}}{SH_{ih}} \right) \right]$$

Where:
- SS_{ih} = Shares sold by insider i for each post-announcement trade h for the given firm in the given year.
- SP_{ih} = Shares purchased by insider i for each post-announcement trade h for the given firm in the given year.
- SH_{ih} = Shares held by insider i for each post-announcement trade h for the given firm in the given year.

3.4.2 Variables hypotheses H2a & H2b
When testing hypotheses H2a and H2b we compared the future performance of firms where insiders had sold shares with firms where insiders had bought shares in the year after they reported earnings that were just above zero or a small increase compared to the year before.
Since firms that conduct earnings management “borrow” earnings from the future, it is expected that their future performance will be lower compared to other firms. We expect insiders in firms to sell shares after they have conducted earnings management. In order to measure the future earnings performance we observed the earnings presented one year after the firms either reported earnings just above zero or a small increase, and then scaled the earnings by total assets. Thus the variable for future performance was calculated like this:

\[ Future\_earnings\_performance_t = \frac{Earnings_{t+1}}{Total\_assets_t} \]

The insider-trading variable (Insider_sales) from test 1 (see above) was converted into an indicator variable Dummy_insider_sales, where firms in which insiders sold shares were labeled as 1 and firms where insiders bought shares were labeled as 0.

3.4.3 Variables hypotheses H3a & H3b
In tests for the final two hypotheses we studied the stock price change the days around a firm’s earnings announcement. In order to see the stock price development of firms that had reported earnings just above zero or a small increase compared to the previous year we looked at the stock price at the end of the day before the earnings announcement and the stock price at the end of the day following the announcement. We looked at the earnings announcement one year after the expected earnings management took place. We also adjusted for the entire markets price change in the same period in order to receive an indication of the markets true reaction to the reported earnings. Thus the variable for market reaction was:

\[ Market\_reaction_t = \frac{Stock\_price_{t,ec+1}}{Stock\_price_{t,ec-1}} - \frac{Market_{t,ec+1}}{Market_{t,ec-1}} \]

Where:

- Stock price_{i,ec-1} = The stock price of firm i one day before the earnings announcement
- Stock price_{i,ec+1} = The stock price of firm i one day after the earnings announcement
- Market_{i,ec-1} = OMX Stockholm PI one day before the earnings announcement of firm i
- Market_{i,ec+1} = OMX Stockholm PI one day after the earnings announcement of firm i

The same indicator variable (Dummy_insider_sales) for insider trading as in test 3 and 4 (see above) was used in these tests as well to divide insiders buying from insiders selling.
3.5 Regressions
The most fitting way to test our hypotheses was by conducting logistic regressions. With logistic regression you can test your models ability to predict categorical outcomes with two or more categories (Pallant, 2010). We used only two categories when testing our hypotheses, thus a binary logistic model was used.

3.5.1 Earnings’ effect on insider trading
In order to test our hypotheses H1a and H1b, we recoded the variables Above_zero and Small_increase to be suited for a logistic regression. Values above a threshold were labeled as 1 and values below as 0. By doing this, it was possible to run a binary logistic and predict the probability that insiders that have sold shares have reported earnings just above a threshold during the previous earnings announcement. Hence, our first two regressions were as follows:

\[
Prob(Dummy\_Above\_Zero_t) = f(y_0 + y_1\_Insider\_Sales_{t+1})
\]

\[
Prob(Dummy\_Small\_increase_t) = f(y_0 + y_1\_Insider\_Sales_{t+1})
\]

Where: 
\[ F(y'X) = [e^{y'X}/(1 + e^{y'X})] \]

3.5.2 Insider trading and future performance
When testing hypotheses H2a and H2b, we recoded Insider_sales from its original value so that insiders that sold=1 and insiders that bought=0. This enabled us to calculate the probability that insiders have sold shares in the period prior to the next annual earnings announcement based on the presented earnings. We ran this regression two times using two different samples, first with a sample consisting of firms that had reported earnings just above zero and then with firms that had reported earnings with a small increase. The binary regression model was:

\[
Prob(Dummy\_Insider\_sales_{t+1}) = f(y_0 + y_1\_Future\_earnings\_performance_{t})
\]

Where: 
\[ F(y'X) = [e^{y'X}/(1 + e^{y'X})] \]

3.5.3 Insider trading and market reaction to the earnings announcement
In the tests of hypotheses H3a and H3b, we coded Insider_sales in the same way as in the previous tests (see above). This enabled us to study the probability that insiders had sold their...
shares after reporting earnings just above a threshold based on the market’s reaction to the firms’ next annual earnings announcements. Similar to the previous tests, we ran the regression two times using the samples that reported earnings just above zero as well as a small earnings increase. Thus, the binary regression model was:

\[
\text{Prob}(\text{Dummy}_\text{Insider\_sales}_{t+1}) = f(y_0 + y_1 \text{Market\_reaction}_t)
\]

Where:

\[
F(y'X) = \frac{e^{y'X}}{1 + e^{y'X}}
\]

3.6 Independent samples t-test
We followed up the regressions with independent samples t-tests in order to determine whether the groups we studied were significantly different from one another. When exploring the differences between two groups, an independent sample t-test is a good statistical test to conduct (Pallant, 2010).

Before analyzing the independent sample t-tests we performed a Levene’s test. This examines whether the variances between the two test groups are the same (Pallant, 2010). The results from this test helps when interpreting the outcomes of the independent sample t-tests.

3.6.1 Earnings’ effect on insider trading
When testing hypotheses H1a and H1b the variables Dummy_above_zero and Dummy_small_increase acted as the grouping variables that divided the groups into those that have just beaten a threshold and those that just missed to meet a threshold. Then we tested if there were any difference between the two groups when it comes to insider trading using the test variable Insider_sales.

3.6.2 Insider trading and future performance
In the tests for hypotheses H2a and H2b we compared the firms were insiders sold shares with firms where insiders bought and tested if there were any significant difference in future earnings between the two groups. The variable Dummy_insider_sales was used as the grouping variable and Future_earnings_performance was used as the test variable.

3.6.3 Insider trading and market reaction to the earnings announcement
The final tests studied the price change of firms’ underlying stocks the days around their earnings announcement to see how the market reacted to their presented earnings. The tests
used the same grouping variable Dummy_insider_sales as test 3 and 4 did in order to see if there were any significant difference in the market’s reaction to the presentation of a firm’s earnings. The test used Market_reaction as the test variable.

3.6.4 Mann-Whitney U
In the cases when any variable involved indicated non-normality, we performed a Mann-Whitney U instead of an independent sample t-test. Mann-Whitney U is the non-parametric equivalent to the independent sample t-test (Pallant, 2010). The benefit for us in this case is that the non-parametric test does not require the variables to be normally distributed.

To understand how large the difference between the groups were in the Mann-Whitney U test we calculated Cohen’s $r$ using the following formula:

$$ r = \frac{z}{\sqrt{N}} $$
4. Research findings
This chapter will describe the findings from the statistical analyses and answer our proposed hypotheses. Descriptive statistics for all variables are presented along with the results from each of our tests.

In Table 2 we present descriptive statistics for the variables used in our study. As we can see for all of the insider trading variables, insiders tend to on average buy shares in their respective companies in the period after reporting earnings just above or below a threshold. Furthermore, the future earnings of firms that have reported earnings above a threshold are on average above zero regardless of how the insiders have traded. Finally, the market’s reaction to the earnings announcement one year after reporting earnings just above a threshold was negative towards firms where insiders have bought shares between the two announcements and positive towards firms where insiders have sold shares.

<table>
<thead>
<tr>
<th>Table 2 – Descriptive statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Insider Trading Above Zero</td>
</tr>
<tr>
<td>Insider Trading Below Zero</td>
</tr>
<tr>
<td>Insider Trading Small increase</td>
</tr>
<tr>
<td>Insider Trading Small decrease</td>
</tr>
<tr>
<td>Future earnings Above Zero Insider selling</td>
</tr>
<tr>
<td>Future earnings Above Zero Insider buying</td>
</tr>
<tr>
<td>Future earnings Small increase Insider selling</td>
</tr>
<tr>
<td>Future earnings Small increase Insider buying</td>
</tr>
<tr>
<td>Market reaction Above Zero Insider selling</td>
</tr>
<tr>
<td>Market reaction Above Zero Insider buying</td>
</tr>
<tr>
<td>Market reaction Small increase Insider selling</td>
</tr>
<tr>
<td>Market reaction Small increase Insider buying</td>
</tr>
</tbody>
</table>

Note: The descriptive statistics are done after winsorizing the variables. The table displays the descriptive statistics for each group, e.g. Future earnings Above Zero Insider selling is the descriptive of future earnings for the group of firms that have reported earnings above zero, and in which insiders have sold shares in the subsequent period.

4.1 Earnings’ effect on insider trading
Firms in which insiders either sold or bought shares in the period after their earnings announcement were studied on whether they had reported earnings just above or just below an earnings threshold.
In the first test 70.2 % of the studied cases reported earnings just above zero compared to only 29.8 % that reported earnings just below zero. A logistic regression was completed to determine the relationship between insiders’ trading and their firms’ reported earnings (see Table 3). The logistic model was found to be an appropriate model ($\chi^2 = 4,867; df=1; p<0,05$) with the model predicting correctly 70.2 % of the cases. According to the pseudo r squares the model explained between 5-7.2% of the variance. A log odds ratio (B) of 1,449 (s.e.=0,678; Wald=4,445; df=1; p=0,035) and odds ratio of 4,260 indicated that for every increase by 0,01 of insider sales the odds of a firm reporting earnings above zero increased by 1,46 %. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see Table 4) showed that insiders of firms that have reported earnings that are just above zero (N=66; Mean=-0.147; Median= -0.122; Mean rank = 52,10) scored a higher mean, median and mean rank compared to insiders of firms that reported earnings just below zero (N=28; Mean=-0.324; Median=-0.387; Mean rank=36,66). The Mann-Whitney U value was found to be statistically significant (U=620,500, Z=-2,510, p=0,012). The difference between the groups was found to be small (r=-0,258). This indicates that there is a significant difference between firms that report earnings that are just above zero and firms that report earnings that are just below zero when it comes to insider selling. Although, as we can see from both the mean and median values, insiders tend to buy more shares than they sell in both firms that report earnings just above and below zero. This suggests that even if firms are more likely to report earnings just above zero if insiders are selling their shares, on average there are more insiders buying shares than selling. Even though our findings were significant we cannot find support that insiders of firms that report earnings just above zero sell shares in the period following the earnings announcement, thus we reject hypothesis H1a.

In the second test 55 % of the studied observations reported earnings with a small increase compared to its previous year, and 45 % reported a small decrease in earnings. A logistic regression was completed to determine the relationship between insiders’ trading and their firms’ reported earnings (see Table 3). The logistic model was not found to be an appropriate model ($\chi^2 = 0.269; df=1; p>0,05$), with the model predicting correctly 56,0 % of the cases. A log odds ratio (B) of 0,307 (s.e.=0,593; Wald=.268; df=1; p=0,605) and odds ratio of 1,359 indicated that for every increase by 0,01 in insider sales the odds of a firm reporting a small increase in earnings increased by 0,31 %. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see Table 4), showed that insiders of firms that have reported a small increase in earnings (N=55; Mean=-0,066; Median= -0,026) scored
### Table 3 – Logistic regressions

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Test 4</th>
<th>Test 5</th>
<th>Test 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dummy Above_zero</td>
<td>Dummy Small_increase</td>
<td>Dummy Insider selling Above_zero</td>
<td>Dummy Insider selling Small increase</td>
<td>Dummy Insider selling Above_zero</td>
<td>Dummy Insider selling Small increase</td>
</tr>
<tr>
<td>B (Wald)</td>
<td>Odds Ratio</td>
<td>B (Wald)</td>
<td>Odds Ratio</td>
<td>B (Wald)</td>
<td>Odds Ratio</td>
<td>B (Wald)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.199** (16,460)</td>
<td>.226 (1,190)</td>
<td>1.449* (4,445)</td>
<td>4.260 (2,88)</td>
<td>1.359 (2,26)</td>
<td>1.359 (2,26)</td>
</tr>
<tr>
<td>Insider_selling</td>
<td>-1,083** (6,580)</td>
<td>.003 (.000)</td>
<td>23,506* (3,719)</td>
<td>1.6E10 (.31)</td>
<td>-3,932 (-3,1)</td>
<td>.020 (.02)</td>
</tr>
<tr>
<td>Future_performance</td>
<td>23,506* (3,719)</td>
<td>1.6E10 (.31)</td>
<td>-3,932 (-3,1)</td>
<td>.020 (.02)</td>
<td>23,506* (3,719)</td>
<td>1.6E10 (.31)</td>
</tr>
<tr>
<td>Market reaction</td>
<td>-1,086** (8,701)</td>
<td>.380 (1,171)</td>
<td>6,600 (1,169)</td>
<td>37,514 (1,169)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * indicate significance at p < 0.05, ** indicate significance at p < 0.01. In the first test firms reporting earnings above zero are labeled as 1 and firms reporting below zero as 0. In the second test firms reporting an increase in earnings are labeled as 1 and firms reporting a decrease as 0. In test 3-6 firms where insiders are selling shares are labeled as 1 and firms where insiders are buying shares as 0.
Table 4 – Exploration of differences between groups

<table>
<thead>
<tr>
<th>Grouping variables:</th>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
<th>Test 4</th>
<th>Test 5</th>
<th>Test 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy Above_zero</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dummy Small_increase</td>
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</tr>
<tr>
<td>Dummy Insider selling</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dummy Above zero</td>
<td></td>
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<tr>
<td>Dummy Small increase</td>
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<tr>
<td>Dummy Insider selling</td>
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<td></td>
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</tr>
<tr>
<td>Dummy Above zero</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dummy Small increase</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Test variables:

- **Insider_selling**: 620,500* (-2.510), 035 (.514)
- **Future_performance**: 119,000* (-2.055), 204,500 (.354)
- **Market_reaction**: .007 (.236), .023 (1.085)

N: 94, 100, 42, 42, 40, 35

Note: * indicate significance at p < 0.05, ** indicate significance at p < 0.01. In the first test firms reporting earnings above zero are labeled as 1 and firms reporting below zero as 0. In the second test firms reporting an increase in earnings are labeled as 1 and firms reporting a decrease as 0. In test 3-6 firms where insiders are selling shares are labeled as 1 and firms where insiders are buying shares as 0. As not all variables were found to be normally distributed, we performed Mann-Whitney U tests in test 1, 3, and 4. Independent sample t-test were thus performed in test 2, 5, and 6 since all variables in these test passed the normality checks.
a higher mean and median compared to insiders of firms that reported a small decrease in earnings (N=45; Mean=-0,102; Median=-0,079). The result from the independent sample t-test was not found to be statistically significant (Mean difference=0,035; t=0,514; p=0,609). This indicates that there is no significant difference between firms that report earnings that are slightly better than the previous year and firms that report earnings with a small decrease when it comes to insider selling. This suggests that we should reject hypothesis H1b.

The results of test 1 and 2 show that according to both the mean and median values, insiders tend to buy more shares than they sell in both firms that report earnings with a small increase and a small decrease. This suggests that even if, as found in test 1, firms are more likely to have reported earnings just above a threshold if insiders are selling their shares, on average there are more insiders buying shares than selling.

4.2 Insider trading and future performance
In test 3 and 4, the future performance of firms that have reported earnings just above a threshold were studied in order to see whether it could be an indication if insiders had bought or sold their companies shares in the period between the two announcements.

In the third test we could see that in 66,7 % of the cases, insiders bought shares in the period after reporting earnings just above zero and in 33,3 % insiders sold shares. The logistic regression was completed to determine the relationship between firms’ future performance and their insiders’ trading (see Table 3). The logistic model was found to be an appropriate model ($\chi^2$ 4,396; df=1; p<0,05) with the model predicting correctly 64,3 % of the cases. According to the pseudo r squares between 9,9-13,8% of the variance was explained by the model. A log odds ratio (B) of 23,506 (s.e.=12,189; Wald=3,719; df=1; p=0,05) and odds ratio of 1,616E10 indicated that for every increase by 0,01 in future performance the odds of an insider to have sold their shares in the period after reporting earnings just above zero increased by 26,50 %. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see Table 4) showed that the future performance of firms that reported earnings just above zero and in which insiders sold shares (N=14; Mean=0,027; Median= -0,020; Mean rank = 27,00) scored a higher mean, median and mean rank compared the group of insiders that bought shares in period after the earnings announcement (N=28; Mean=0,006; Median=0,005; Mean rank=18,75). The Mann-Whitney U value was found to be statistically significant (U=119,000, Z=-2,055; p=0,040). The difference between the
groups was found to be small (r=-0.206). This indicates that there is a significant difference of the future performance of firms that have reported earnings just above zero and in which insiders have sold shares, compared to the firms where insiders have bought shares. The findings suggest that firms where insiders have sold shares will have a better future performance than firms where insiders buy shares. Based on the average mean values, firms where insiders have sold shares report earnings that are 4.5 times higher than firms where insiders have bought shares. These findings are opposing the ones expected and thus we reject hypothesis H2a.

In the forth test we could see that in 54.8 % of the firm-years, insiders bought shares in the period after reporting a small increase in earnings and in 45.2 % insiders sold shares. A logistic regression was completed to determine the relationship between firms’ future performance and their insiders’ trading (see Table 3). The logistic model was not found to be an appropriate model ($\chi^2=0.315; df=1; p>0.05$) with the model predicting correctly 54.8 % of the cases. A log odds ratio (B) of -3.932 (s.e.=12.189; Wald=7.052; df=1; p=0.577) and odds ratio of 0.020 indicated that for every increase by 0.01 in future performance the odds of an insider selling their shares in the period after reporting earnings just above zero decreased by 3.84 %. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see table 4), showed that the future performance of firms that reported a small increase in earnings and in which insiders sold shares (N=19; Mean=0.045; Median= -0.033; Mean rank = 20.76) scored lower on mean, median and mean rank compared the group of insiders that bought shares in period after the earnings announcement (N=23; Mean=0.053; Median=0.048; Mean rank=22.11). The Mann-Whitney U value was not found to be statistically significant (U=204,500, Z=-0.354; p=0.723). This indicates that there is not a significant difference of the future performance of firms that have reported a small increase in earnings and in which insiders have sold shares compared to the firms where they have bought shares. Because of this we reject hypothesis H2b.

4.3 Insider trading and market reaction to earnings announcements

In test 5 and 6, the market’s reaction to the earnings presented by firms at the earnings announcement one year after they have reported earnings just above a threshold were studied in order to see whether it could be an indication if insiders had bought or sold their companies shares.
In the fifth test we could see that in 75% of the observations insiders bought shares in the period after reporting earnings just above zero and in 25% insiders sold shares. The logistic regression was completed to determine the relationship between firms’ future performance and their insiders’ trading (see Table 3). The logistic model was not found to be an appropriate model ($\chi^2 = 0.089; df=1; p>0.05$) with the model predicting correctly 75% of the cases. A log odds ratio (B) of 1.148 (s.e.=4.753; Wald=0.058; df=1; p=0.809) and odds ratio of 3.153 indicated that for every increase by 1% in stock price awarded by the market the day after the earnings announcement the odds of an insider to have sold shares in the period after reporting earnings just above zero increased by 1.15%. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see Table 4) showed that the market’s reaction to the earnings announcement the year after firms had reported earnings that were just above zero and in which insiders sold shares (N=10; Mean=0.006; Median=0.000) scored a higher mean, and median compared to firms where insiders bought shares in the period after the earnings announcement (N=30; Mean=-0.015; Median=-0.075). The result from the independent sample t-test was not found to be statistically significant (Mean difference=0.007; t=0.236; p=0.815). This indicates that there is no significant difference in the market’s reaction to the earnings announcement of firms that in the previous year reported earnings just above zero and in which insiders sold shares compared to the firms where insiders bought shares. Although not significant, the market’s reaction to firms reporting where insiders sold shares was positive whereas the reaction to firms where insiders bought shares was negative. Our findings suggest that we should reject hypothesis H3a.

In the final test, we could see that in 60% of the cases, insiders bought shares in the period after reporting a small increase in earnings and in 40% insiders sold shares. A logistic regression was completed to determine the relationship between firms’ future performance and their insiders’ trading (see Table 3). The logistic model was not found to be an appropriate model ($\chi^2 = 1.236; df=1; p>0.05$) with the model predicting correctly 57.1% of the cases. A log odds ratio (B) of 6.600 (s.e.=6.104; Wald=1.169; df=1; p=0.280) and odds ratio of 735.149 indicated that for every increase by 1% in stock price, awarded by the market the day after the earnings announcement, the odds of an insider to have sold shares in the period after reporting a small increase in earnings increased by 6.82%. Furthermore, descriptive statistics (see Table 2) and an exploration of differences between groups (see Table 4) showed that the market’s reaction to the earnings announcement the year after firms have
reported a small increase in earnings, and in which insiders sold shares (N=14; Mean=0.007; Median= 0.015), scored a higher mean and median, compared to firms where insiders bought shares in the period after the earnings announcement (N=21; Mean=-0.016; Median=-0.007). The result from the independent sample t-test was not found to be statistically significant (Mean difference=0.023; t=1.085; p=0.286). This indicates that there is no significant difference in the market’s reaction to the earnings announcement of firms that in the previous year reported a small increase in earnings and in which insiders sold shares, compared to the firms where insiders bought shares. Although not significant, just as in test 5 the market’s reaction to firms where insiders sold shares was positive and the reaction to firms where insiders bought shares was negative. The findings from the performed tests indicate that we should reject hypothesis H3b.
5. Analysis
In this part we present our analyses that are based on the findings in the previous chapter. Our findings are compared to the findings of previous research, and when they differ we propose possible explanations to the findings of our study.

5.1 Earnings’ effect on insider trading
The results from our statistical analyses revealed a significant difference between firms that report earnings that are just above zero and firms that report earnings that are just below zero when it comes to insider trading. Firms reporting earnings just below zero tend to buy more shares than firms reporting earnings just above zero. Furthermore, there is a greater probability that firms where insiders are selling shares have reported earnings that are just above zero. Although, on average insiders of both firms reporting earnings just above and below zero bought shares therefor we reject hypothesis H1a.

On the other hand, there was no significant difference between insiders’ trading in firms that report a small increase in earnings compared to firms that report a small decrease. Similar to test 1 the results showed that both insiders in firms just below and just above the threshold on average bought shares in their firms, contradicting what we initially expected. There was however an indication that insiders’ in companies above bought less than insiders in companies below. Due to these findings we reject hypothesis H1b.

There are several possible explanations to these outcomes. The results could be affected by our use of Burgstahler and Dichev’s (1997) method of small increases and small losses. There is the option that the abnormal amounts of observations just above the chosen thresholds are not due to earnings management. However, if earnings management was present in the market there is also the possibility that it was performed in both directions, i.e. both positive and negative earnings management. This would imply that some companies would, for different reasons, have reduced their earnings to reach the interval just above the thresholds. The insider buying behavior would then make sense since managing earnings downwards implies “saving” earnings for the future. This is supported by the study by Sawicki and Shrestha (2008) that suggests that insiders manage earnings downwards before buying shares.

If some of the firms who reported earnings just above a threshold have been conducting
positive earnings management, which we believe, the fact that managers are not selling their shares in the following period implies that they are not taking advantage of the information asymmetry that exists between them and the market, which oppose what would be expected given the agency theory. Or it could be the case suggested by Burgstahler and Eames (2003), analysts are pessimistic about firms that report earnings that just beats a threshold and thus the stocks of firms that have conducted earnings management is not overvalued, hence not creating an incentive for insiders to sell. This could also mean that the stock price of firms that naturally have ended up in the interval just above a threshold might be undervalued and insiders are thus instead expected to buy shares.

As earlier mentioned there is a loophole in the Swedish legislation – insiders who hold company shares through endowment insurances are not obliged to report their insider trading transactions to Finansinspektionen. This means that insiders can secretly trade in shares of their firms, and it has implications for our presented results since it is therefor likely that our study has not captured all insider transactions. It could be argued that a manager disposing a large number of firm shares would not want to publicly disclose this because it could send a negative signal about expected future performance to the market. Therefor, insiders with superior information due to earnings management might be performing their informed transactions in the protection of the insurances.

5.2 Insider trading and future performance
Previous research has suggested that firms in which insiders sell shares have worse future performance than firms where managers buy (Piotroski & Raulstone, 2004). Our study on the other hand found that in firms that reported earnings just above zero and in which insiders sold shares, on average had better future performance compared to firms where insiders bought shares. The two groups differed from one and other on a significant level. The future performance of firms where insiders sold shares were 4,5 times higher than of firms where insiders bought shares. Though not significant, the tests performed with the sample consisting of companies reporting earnings with a small increase demonstrated a similar trend. This means that we cannot accept either hypothesis H2a or hypothesis H2b. These findings are highly interesting since they contradict both the findings of previous research and the hypothesised signalling effect insider selling would have on future performance, which is based on the agency theory.
We think there could be a couple of reasons to why the findings look the way they do. One reason could be that the firms where managers have sold their shares have not conducted earnings management in order to boost their results. This would be in line with the findings by DeGeorge et al. (1999) that it is the firms that have performed earnings management whose future performance is affected negatively. If the firms in which insiders did sell their shares had not involved themselves in earnings management there is no reason to why the stock would be overpriced and insiders would not be able to take advantage from any mispricing when selling their shares. This suggests that our model for identifying firms that have involved themselves in earnings management is not accurate and that findings by previous researchers in the American market (Burgstahler & Dichev, 1997; DeGeorge et al., 1999) are not applicable for the Swedish context.

Another explanation to our findings could be that insiders does not have better knowledge than the rest of the market of the future performance of their firms, or are not able to analyse the information advantage they have towards the rest of the market. If this were the case, they would trade on the same premises as the rest of the market. This is supported by Jenter’s (2005) findings that insiders trade on contrarian beliefs, rather than on an information advantage.

It is difficult to find any explanation in previous research or in existing theory that explains why firms in which insiders sell would have better future earnings than firms where insiders bought shares. It could be due to that we had a small sample size, especially when it comes to firms where managers sold shares. This is an effect of the findings that insiders on average net buy shares and not sell. Additionally the result could be explained by the Swedish setting, with the existence of endowment insurances. Because of these it is possible that insider trading is not a adequate signal to the market regarding future performance, since informed trades can take place in the insurances and not out in the open. Our results imply that the findings by e.g. Piotroski and Roulstone (2004) that insider trading is an indication about future performance, are not valid in the Swedish context.

5.3 Insider trading and market reaction to the earnings announcement

The results from the final tests, although not significant, indicate that the stock of firms in which insiders have sold shares in the period after reporting earnings just above the chosen
thresholds are performing better than the stock of firms where insiders bought shares. The stock price of firms where insiders have sold shares increased on average by 0.6 % in the sample above zero and 0.7 % in the sample with small increases (adjusted for market fluctuations) in the days following the earnings announcements. The stock price of firms where insiders have bought shares on the other hand declined by 1.5 % and 1.6 % respectively. This means that we cannot accept our hypotheses H3a and H3b that firms where insiders sold shares in the period after presenting earnings that were just above the thresholds would have worse development in stock price than firms where insiders bought shares.

These findings could be an indication that insiders do not act opportunistically and sell shares that they think are overpriced, but rather sell their shares for other reasons. This is coherent with Jenter’s (2005) research that insiders trade on contrarian beliefs, rather than on an information advantage. It could also be an indication that no earnings management have been conducted in these firms. If no earnings management was performed and insiders did not sell their shares because of the information advantage it would have created towards the rest of the market, there was no reason for the market to react more negatively to the reported earnings at the next earnings announcement compared to other firms.

The indication that the development in stock price the days after the earnings announcements are better in firms where insiders sold shares than in firms where they bought, could perhaps be explained through the findings by Skinner and Sloan (2002) and Kaznik and McNichols (2002). They found that the short-term stock price is sensitive to meeting or beating analysts’ forecasts. Further, if analysts expect the future performance of firms where insiders sold shares to be worse compared to firms where they bought shares, as suggested by Piotroski and Raulstone (2004), there should not be any fluctuation in stock price after the earnings announcement since they have already taken a worse result in to account. Burgstahler and Eames (2003) also suggest that analysts are pessimistic towards firms that report earnings just above a threshold. Hence this suggests that analysts might be expecting firms that report earnings that are just above such a limit, and in which insiders sell shares, to perform worse than other firms. When these firms then announce their earnings, the market could instead be positively surprised because they have overanalysed the negative signalling effect earnings just above thresholds and insider selling have.
One reason to why analysts over-analyse the signalling effect of insider trades could be that they expect it to be the same as for firms on other markets than the Swedish. This could be especially true for investors that are not entirely familiar with the Swedish regulations. Due to the possibility for insiders to make trades through endowment insurances, the trades that are made in the open might not have the same signalling value about future performance that they do in other markets. Thus, if investors use the same line of reasoning to insider trading in Swedish firms as they do elsewhere, it could explain the positive reaction to announcements of firms where insiders have sold shares, as well as the negative reaction to firms where insiders have bought.

Finally, it is also important to note that the samples in these tests are quite small, especially for firms where insiders sold shares (N=10; N=14). This could be an explanation to the unexpected indications from the test, but also to why the findings are not significant.
6. Conclusion and future research

This section summarizes the findings of the paper and proposes possible subjects for future research.

This aim of this paper was to investigate how earnings management affects insider trading and whether insider trading is a good information source about earnings quality and future performance. The statistical analyses from the study did not support our hypotheses, hence the results were not in line with what was expected based on previous research and agency theory. Although not all significant, many of our results indicated contrarian relations to the proposed hypotheses.

One possibility is that the method utilized by Burgstahler and Dichev (1997) is inadequate and not suitable for identifying companies that have performed earnings management in the Swedish context. Hence, our study might not have captured firms manipulating earnings as accurately as desired, and therefore providing results contradicting what was expected.

If our study correctly has captured firms conducting earnings management our results reveal that insiders of the firms that we expect to have conducted earnings management still buy shares rather than dispose them. This indicates that insiders do not behave opportunistically and take advantage of the information asymmetry that exist between them and the market, contradicting what would be expected given the agency theory.

Surprisingly we found support that firms in which insiders sell shares have better future performance than firms where insiders bought shares. These findings suggest that the market should not interpret insider selling as a signal that their firm’s future performance will be affected negatively. This is extra interesting since it contradicts the findings of previous research. However, it is worth to keep in mind that insiders in Sweden can trade shares under the radar, which probably has affected the result.

Furthermore, in line with the findings of insider trading and future performance we see indications that the market is more positively surprised to the earnings presented after insider selling has been done, than when insiders have bought shares. This implies that the market might be overreacting to the signal insider trades send about future performance, and therefore misprice the stock until the following earnings announcement when they receive new information.
Taken together, our results are not in line with those of previous studies conducted on other markets. This is likely to depend on the unique Swedish setting with the existence of endowment insurances, where insiders can trade shares without having to disclose their transactions to the market. Since not all trades that are done by persons with insider positions have to be reported, the information value of the trades that are made public will not be as strong. This implies that it not is possible to see the true impact of how earnings management affects insider trading. Moreover, the insurances could also be a reason to why insider trading is not a good information source about earnings quality and future performance among Swedish firms.

As a result of our study, we believe that if trades are done upon superior information it is possible that they are secretly made through the endowment insurances, and therefor the true signaling about earnings quality could be found in these transactions. As a consequence of this, we argue that it is important that a change in the Swedish legislation is made as soon as possible, in order to insure the accuracy of financial markets and to protect other investors.

Suggestions for future research are to examine the effect the possibility to trade through endowment insurances have on insider trading as an information source. If possible, it would be very interesting to reproduce our study and include the trades that are done by insiders within the insurances. Additionally, if legislators remove the opportunity for insiders to trade secretly, a study of the difference before and after the law change could be done in order to reveal the effect of the new law.
References


## Appendix A

Tests of normality (before and after Winsorization)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Skewness Before</th>
<th>Skewness After</th>
<th>Kurtosis Before</th>
<th>Kurtosis After</th>
<th>Shapiro-Wilk Before</th>
<th>Shapiro-Wilk After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insider Trading Above Zero</td>
<td>.344</td>
<td>.060</td>
<td>2.087</td>
<td>1.335</td>
<td>.951*</td>
<td>.960*</td>
</tr>
<tr>
<td>Insider Trading Below Zero</td>
<td>.523</td>
<td>.523</td>
<td>.678</td>
<td>.678</td>
<td>.957</td>
<td>.957</td>
</tr>
<tr>
<td>Insider Trading Small increase</td>
<td>-.081</td>
<td>.003</td>
<td>1.345</td>
<td>.674</td>
<td>.975</td>
<td>.980</td>
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<tr>
<td>Insider Trading Small decrease</td>
<td>.393</td>
<td>.073</td>
<td>.932</td>
<td>-.181</td>
<td>.973</td>
<td>.984</td>
</tr>
<tr>
<td>Future earnings Above Zero Insider selling</td>
<td>3.633</td>
<td>.998</td>
<td>13.402</td>
<td>-.123</td>
<td>.407**</td>
<td>.851*</td>
</tr>
<tr>
<td>Future earnings Above Zero Insider buying</td>
<td>-.180</td>
<td>-.142</td>
<td>-.439</td>
<td>-.502</td>
<td>.981</td>
<td>.979</td>
</tr>
<tr>
<td>Future earnings Small increase Insider selling</td>
<td>.642</td>
<td>.688</td>
<td>-.859</td>
<td>.874</td>
<td>.907</td>
<td>.894*</td>
</tr>
<tr>
<td>Future earnings Small increase Insider buying</td>
<td>1.871</td>
<td>.767</td>
<td>4.834</td>
<td>.031</td>
<td>.834**</td>
<td>.923</td>
</tr>
<tr>
<td>Market reaction Above Zero Insider selling</td>
<td>-.2,102</td>
<td>-.550</td>
<td>6.144</td>
<td>1.650</td>
<td>.740**</td>
<td>.937</td>
</tr>
<tr>
<td>Market reaction Above Zero Insider buying</td>
<td>-.101</td>
<td>-.101</td>
<td>.448</td>
<td>.448</td>
<td>.989</td>
<td>.989</td>
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<tr>
<td>Market reaction Small increase Insider selling</td>
<td>1.756</td>
<td>-.835</td>
<td>5.518</td>
<td>.621</td>
<td>.820**</td>
<td>.925</td>
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<tr>
<td>Market reaction Small increase Insider buying</td>
<td>-.273</td>
<td>-.265</td>
<td>-.773</td>
<td>-.787</td>
<td>.957</td>
<td>.956</td>
</tr>
</tbody>
</table>

Note: * indicate significance at $p < 0.05$, ** indicate significance at $p < 0.01$ and declare that these variables were non-normally distributed. The table displays the results from the normality tests, before and after winsorization, for each variable e.g. Future earnings Above Zero Insider selling is the variable Future_earnings_performance for the group of firms that have reported earnings above zero, and in which insiders have sold shares in the subsequent period.