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PROFITABILITY OF INSIDER TRADING IN FINNISH STOCK MARKET

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Abstract

The insider trading is one of the controversial phenomena in the financial world. The aims of the study is to analysis the profitability of insider trading in Finland, also to investigate the association of insider determinants with abnormal returns for purchase and sales transactions. The motivation for this study is the lack of research related to insider trading on Finnish stocks. The main parts of insider trading purchase and sales transactions are investigated and analysis, that insider purchases and sales transactions are related to abnormal returns. In addition, the insider determinants (insider position, firm size, transaction size, book to market ratio, and price to earnings ratio) are also analysed and investigated the roles of it with insider profitability. In order to fulfil the objectives, the daily insider transactions data of 135 publicly listed companies in the Finnish stock market was investigated from 01-07-2005 to 31-12-2014.

The study applied the market adjusted (stocks) returns model, along with univariate, correlation analysis and linear regression to determine the relation of insider traders and abnormal returns. Interestingly, the results found no such relationship of insider trading and abnormal returns. Insiders of high book to market firms are the only who are gaining extra profits (abnormal returns). The overall concluding remarks for this study is, in Finland the insider traders are not generating abnormal returns for both purchases and sales transactions.

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1 INTRODUCTION

1.1 Definition and Background

Before starting this first, let's put a short contrast on insider and insider trading. An individual who is involved in trading the stocks of her own firm, is known to be an insider.

According to Jaffe (1974), corporate officers, directors, and large stockholders, trading their own corporate stocks are referred to insiders. Insiders have special information regarding their own corporate stocks, and due to that special knowledge, they earn a profit when they are trading. Hence, outsiders are interested in insider trading.

Insider trading may be legal or illegal. Legal insider trading includes firm managers, directors, officers, and even employees who can buy and sell stocks of their own corporation. As the directors, and managers know much better and have enough information than anyone about the firm value and performance, and uses that information to trade profitably in the firm stocks.

According to Finanssivalvonta (2018), under the article 7(1) (a) of the Market abuse regulation, the inside information is defined as the information related to the financial instrument which is unambiguous in nature and cannot be made public, and after been made public it has a significant effect on financial instruments prices. Illegal insider trading is defined as, the use of non-public information of a firm to gain profit. Illegal insider trading can be engaged in by the firm employee or executive, or by anyone, for example, company executive friends or family members, or even a random person on the street.

Corporate insiders have special access to important information about the firm, due to which insiders have superiority about the investment decisions over stock market investors. For the first time, the insider has special information about the firm that

was discussed and explain by Fama (1970). He explains in a strong form of his study that insiders cannot generate abnormal returns if the prices fully reflect all available information.

After introducing the concept of efficient market hypothesis by Fama (1970), insider trading becomes an important topic in the financial market world. Afterward, many of the researchers done a study on an efficient market hypothesis and suggested that if the hypothesis grasps the market, then there is a high chance of gaining abnormal returns by doing investment (Fama, 1970; Mackinlay, 1997).

1.2 Related studies and research

On the issue of insider trading, countless studies had come into sight from the last few decades and most have resulted into two of the claims. First, company insiders can gain abnormal profits by trading their own corporation stocks, and second, outside investors can also generate abnormal returns by utilizing information regarding insider transactions which is publicly available (Rozeff & Zaman, 1988).

The topic of insider trading is still controversial despite decades of empirical research. The researchers in prior studies shown that insider trading had a significant positive impact on future stock returns in the US & Europe e.g. (Seyhun, 1986; Eckbo & Smith, 1998). Past studies also determine the outsider's performance by following the insider trading e.g. (Seyhun, 1986; Rozeff & Zaman, 1988; Chang & Suk, 1998).

Many of prior Financial and Accounting studies, also examines that the insiders trade their own firm stocks, which gives informative about the abnormal returns e.g. (Jaffe, 1974; Seyhun, 1986; Rozeff & Zaman, 1988). However, many of the studies on the issue of insider trading is mixed.

One of the studies finds that, the information involved in larger proportion insider selling is beneficial for future returns and also the objective of insider selling is for diversification (Kallunki; & Nilsson;& Hellstrom, 2009). On the other hand, another

study also reveals that the insider trading profitability is high when insiders trade for their personal interests (Skaife; & Veenman;& Wangerin, 2012), and the executive insiders are slightly being more profitable and left the firm employment.

The relation between abnormal returns and information asymmetry is also statistically significant (Huddart & Bin, 2007), which shows that insider trading can give a positive signal for future returns. On the other hand a study analyzing Australian stocks showed that, selling stocks by insider traders are signaling negative information to the outsiders (Hodgson; Lim;& Lin, 2018).

Aboody et al., (2000) studied the insider gains in R&D based and non- R&D based firms. They concluded that the insiders of R&D based firms earn more abnormal returns, and have more access to the information about the firm and also took advantage of the information than insiders of non-R&D based firms. They also concluded that, the contribution of R&D based firms to information asymmetry and insider gains are higher over non-R&D based firms.

Betzer and Theissen (2009) analyses the corporate insider's transaction in Germany. They find a relationship between insider trading and abnormal returns. And concluded that insider trading which occurs before the earning announcements have a great impact on financial instrument prices. A study of Iqbal & Shetty (2002), examines the causality relationship of 2521 firms from 1988 to 1998 with insider purchases and sales transaction and stock returns. They find the stock returns impact on insider transactions, and suggested that insider purchases the stocks when the prices decrease and sales when they get increased. They also found, weak positive relationship of insider transactions over future returns.

Past studies also examine, the relationship between insider trading and social ties of executives. A recent study by Goergen; & Renneboog; & Zhao (2019), have taken a closer look on the director's network and insider trading in U.K listed companies. They examines the relationship between executive and non-executives network with

insider transactions behavior and performance. They concluded that, insider trading is done in a small amount and less frequent of good network directors (executive and non-executive directors) as compare to poor network directors, but the transactions of good network directors are found more profitable, more commonly when the insider purchases.

Insider trading has also been found to decrease agency costs. A study by Roulstone (2003), investigated the restrictions on insider trading in a firm and compensation of executives. He finds that such firms in which insider trading is restricted have high incentive compensation as compare to a firms which does not restrict insider trading. Furthermore, he found that there is also a positive relationship between the restriction of insider trading and annual grants. The findings are the addition to understanding how to reduce the agency costs of the firm.

Many researchers have found that insiders do a trade for the interest of their own firm, but it has also been found that insider may trade for personal interest too. Cheng and Lo (2006) investigated the relationship of insider disclosures policies and trading timings. They found that insiders discloses the number of bad news much more when they are going to purchase the stocks to reduce the stock prices. And that such activity is done mostly by CEOs as compare to other executives insiders.

The relationship between corporate governance with insider trading was also investigated. Dai et al., (2016) investigated the impact of corporate governance over the insider trading profitability. They found that corporate governance decreases insider sales gains but not the insider purchases. The results show that good corporate governance can restrict much more disclosure of inside information.

Nowadays firms are also more focusing on Corporate Social Responsibilities. Prior studies investigated insider trading relationship with Corporate Social Responsibilities and concluded that Corporate Social Responsibilities limited the profitability of insider trading. For example, a study by Gao et al., (2014),

investigated the firms which are more serious about Corporate Social Responsibilities and the firms which are not much serious about Corporate Social Responsibilities. They found that executives of firm with better Corporate Social Responsibilities are making less inside profits following insider purchases as compare to firm's executives which are not much serious about Corporate Social Responsibilities.

Some investors in the stock market are mimicking insider trading, because they believe that insiders are signaling to the market by trading their own firm stocks. Some of the prior shreds of evidences also show that insider trading is signaling to the market. Gosnell et al., (1992) studied the insider trading of OTC firms and exchange-listed firms before the bankruptcy. They found that before the bankruptcy announcement insider selling increases dramatically. They resulted that insider trades of sales increases 92.99% before the six months of bankruptcy announcement. Another study of the Hong-Kong stock market by Cheng et al., (2011), studied the actions of insider trading and found insider sales actions much more than insider purchases before bad news announcements. These findings clearly supports the signaling effects of future firm performance.

Many of the studies are supporting the evidence that insider trading exploits illegal inside information, but at the same extent, some studies contradict the exploitation of illegal inside information. Givoly and Palmon (1985) took a random sample of 68 firms listed in AMEX from 1973-1975 and found that insiders did not exploit the illegal information. Moreover, they concluded that the abnormal gains are due to trade information and changes in prices of stocks.

1.3 Thesis Objective, Purpose and Question

When studying insider trading a key question always arises: can insiders earn abnormal stock returns by trading stocks of their own firm? There are many reasons which make insider trading interesting to study and reveals some stylized facts.

Insiders usually purchase the stocks of their firm for one reason, i.e. they think prices will rise up, but they sell stocks for many reasons. The company insiders know better their company as compare to outsiders, and have private information about the firm stocks which is useful for future returns. An insider earns the abnormal returns only when there is some movement in stock prices. All investor invests for earning profits, and the same goes for insiders. They usually invest for the long term and when they are sure about the corporate long term performance will be strong they invested. There are some past studies, which reveals that it is not important that insider trades only for earning extra profit but also trade for some other motives too (Kallunki et al., 2009).

Another important area of insider trading research is to investigate who has traded the stocks by company insiders. A stock traded by insiders such as CEO or CFO got much attention by outsiders in the financial market as compare to trading by a low-level executive insiders. The insider trading transaction and the time horizon of insider trading is also an important portion to investigate.

The objective of this research thesis is to investigate whether Finnish insiders earn abnormal returns, also to find out whether outside investors can earn an abnormal return by mimicking insider trading. I will also examine which factor will have a significant and strongest relation with abnormal returns.

Following the prior studies of Seyhun (1998), and Cheuk et al. (2006), the variables which are investigated in this thesis are *insider position, transaction intensity, firm size, book-to-market ratio, and price-to-earnings ratio.* The overall question of this thesis is to analyze the profitability of the insider traders. But more specifically: *Can corporate insiders gain abnormal returns due to inside purchasing or selling?*

1.5 Structure of the thesis

Afterward, of the introductory part, the thesis includes the following five chapters.

Chapter 2: is based on market efficiency, and is the cornerstone of this thesis. The strong form of efficient market hypothesis is discussed, by which the thesis is built for further work. After this, the insider returns, and the determinants of insider returns are explained including the thesis-hypothesis. *Chapter 3:* In this chapter, I have discussed the insider trading regulation in Finland, and the supervisory authority who controls the stock market in Finland.

Chapter 4: In this part of the thesis, the data sources and the insider data are explained, and also the methodology of thesis work, which is consist of the market adjust-return model and the regression analysis. *Chapter 5:* consists of general results, variable specific results and analysis, and discussion. *Chapter 6:* The final chapter of the thesis is consisting of a conclusion, which includes a summary of findings and future research.

2 MARKET EFFICIENCY

In this chapter of the thesis, the efficient market hypothesis is discussed which is the cornerstone of this thesis, and by following the theory, hypothesis are built. The hundreds of studies has been done in the last few decades on the concept to test the market efficiency. Different studies have different conflicting results.

This thesis mainly focuses on the strong form of an efficient market hypothesis. Many of the studies are in a favor of the insiders who are able to earn abnormal returns, which basically argue against the strong form of an efficient market hypothesis, while many studies find out that insiders are unable to earn abnormal returns.

2.1 Efficient Market Hypothesis

The efficient market theory was introduced by Fama (1970). In both economic and financial studies, the efficient market hypothesis theory plays a very vital role, and the theory indicates not only the effect of insider transactions, but also the market efficiency depending on abnormal returns.

According to Fama (1970), the market is perfect when the stock prices provide an unambiguous signal, and the market where the firms can make the future investment decisions and the investors choose stocks for investment under such predictions that the stock prices will be "fully reflects all available information". Such a market in which stock prices "fully reflects available information is known as an efficient market."

Malkiel (2003) reported the efficient market theory same as Fama (1970), and stated that each of the financial security gives all related information in the market. In other words, security prices reflect information (Malkiel, 2003). That indicates that average prices are correct, and which means stock marketplaces are efficient. So a straight effect is that, investors who are participating actively cannot strike the

market and non-active investors are earning the same average profit as the active investor does.

In a general, the market is efficient when all available information about stock prices is fully reflected. In efficient market hypothesis, the market efficiency is defined in three different subsets, the subsets are categorized as:

- Weak form
- Semi-strong form
- Strong form

2.1.1 Weak Form

In a weak form, the tests are set on a basis of historical prices information, which means prices of stocks are pursue the random walk, by which it is very hard to get profit by using past data, many of the empirical results supports strongly the weak form hypothesis. This form stated that the past price information and historical data do not have any perfect effect on the stock prices, the future prices are also not influenced by it, and that the future prices are random. It is impossible for investors in the long run market to earn profit by using historical data of stocks, if it is the technical analysis would not work persistently. The weak form is theoretical in nature, and it does not consider technical analysis, so it is very hard in a short time to outperform the market. According to Fama (1970):

> "Weak form tests in which the information subset of interest is just past price (or return) histories. Most of the results here come from the random walk literature. When extensive tests seemed to support the efficiency hypothesis at this level, attention was turned to semi-strong form." (p. 388)

To test the weak form of an efficient market hypothesis, a study by Hamid et al., (2010), and tested the weak form in 14 different south Asian countries stock markets.

The study aim was to analyze whether these stock markets are following the weak form individually. The result shows that none of the markets are following the weak form.

Lian and Lieng (1994) conducted a study on the Malaysian stock market and discusses the issue of weak form by analysis the random walk stock behavior in prices following short run. They use the seven Kuala Lumpur Stock Exchange indices for daily, weekly, and monthly for 9 year period starts from 1984 to 1992. They presented the results for two different time periods (1984-1988 and 1988-1992) for comparison purpose. By applying different tests, all of the results presented that the Kuala Lumpur Stock Exchange had enhanced its efficiency from inefficient weak form market in the mid-1980s to an efficient weak form market by the end of 1980s and 1990s.

Huang (2019) uses the S&P 500 index to investigate the efficiency of U.S stock market by using the 30 years past daily data of S&P 500 index. In his study, he tested the random walk model and autoregressive integrated moving average model, to investigate which model is best forecaster of daily returns performance. The results reported that autoregressive integrated moving average model performing much better than random walk model that indicates that, the U.S stock market is not a weak form during the sample time-period. The results also reveals that if the US stock market is either efficient or not, but it completely rely on investors that how they calculated their losses.

2.1.2 Semi-strong form

Second, the semi-strong form stated that the information related to prices has monopolistic access to any investors or group of investors. It means that prior public announcement when the prices are adjusted itself before public information, there is an access of investors to secret information regarding the prices, and thus the investors can earn abnormal returns.

However, the market is efficient, if the faster adjustment of prices is been observed after public information reveals. In short, the semi-strong form stated that the current stock prices adjusted itself after the release of public information. This aspect concluded that neither fundamental nor technical analysis can be used to gain higher abnormal returns, it suggests that monopolistic non-public information can favor the investors to gain abnormal returns.

While Shaker (2013), suggested that the future prices are unpredictable by using current or past data history, a study analysis the Finnish and Swedish stocks, and the results rejected the random walk series in both cases, and that both of the stocks are not efficient on a weak form of efficient market hypothsis. In some extent, it is an opposite study of Fama (1970). Another study by Jennergren & Korsvold (1974), on Norwegian and Swedish stocks, it concluded that the weak form is inefficient in both stocks too.

2.1.3 Strong form

Finally, the third form which is the important forms of efficient market hypothesis for this thesis, the strongest form of the efficient market hypothesis is closely related to insider trading. Fama (1970) stated that either it is private or public information, all of it have an effect to some extent on the stock prices. Experts who strongly supports the strong form of efficient market hypothesis believe that even insider information did not give any advantage to the investors, because all kind of information including inside information can reflect the current stock price.

Seyhun (1998) test and explain the strong form of efficient market hypothesis in his book "Investment intelligence from insider trading". As I mention above that the strong form of efficient market hypothesis is closely related to insider trading, and one of the modern and most cited writings related to insider trading topic is Seyhun (1998).

This thesis will further follow the Seyhun (1998), testing and explanation of insider trading. He explains in his book about the insider transaction and shows that investors who are mimicking the insider transactions are believing that the insiders know much about their own firm and that's why they purchase and sales their own firm stocks at the correct time to earn the abnormal returns.

Seyhun (1998), shows that how insiders for their own advantage are using firm information. He also explains the intensity and time frame of stock prices after insider trades, the insider profits determinants, and the risk which is related to mimic insider trading. And also compare the values of firms and stock market by looking at the performance of an individual firm and the overall stock market, and get to know what the investors can learn from insider trading.

Furthermore, Seyhun (1998) also find that insiders publicized some important information prior to trading, to affect the stock future prices, which resulted insiders to earn abnormal returns. He also finds that the management hierarchy is also positively correlated with information hierarchy. He find out that an insider who wants to trade their own firm stocks, and wants positive earnings are holding back from trading, and purchases the stocks after some bad news are announced which leads the stocks in a price decreasing. In his book, he explains how to deal with conflicting signals given by different insiders. And suggested the way to outside investors that how to interpret the insider trading signals.

Seyhun (1998) concluded that insider purchases is decreasing when the size of the firm is increasing, which clearly shows that the insider purchases ratio is higher in a small firm as compared to large firms. And also reported that the duration of insider trading in larger firms is higher than the smaller firms. Furthermore, Seyhun (1998) findings also suggested that the duration of insider trading life cycle are over 4 to 5 years averagely, which is equals to the duration of the business cycle, which he suggested that the investors can get out or in of the stock market by analyzing this averagely insider trading.

2.2 Empirical evidences on market efficiency

Countless studies have been done on insider trading, one of the famous study by Jaffe (1974). He works on the U.S market from 1962 to 1968 data traded by insiders. The study resulted that insiders have some special information and exploit the same information related to firms. Finnerty (1976) did the same study by using U.S stocks from 1969 to 1972 and found the same conclusion as Jaffe (1974).

Most of the studies on insider trading have resulted in two of the claims. First, corporate insiders can earn abnormal returns by trading their own corporation stocks, and second outsiders can also earn abnormal returns by using information regarding insider transactions which is publicly available (Rozeff & Zaman, 1988). Seyhun (1986) reveals that insider trading has a significant positive impact on future stock returns.

Jeng et al., (1999) studied the insider's trade and profit which they gain from their own company stocks, they found that the sales transactions did not earn abnormal returns and that the small firm insider's trade is not different than large firms. And also found that top executives are not gaining more abnormal returns than other insiders. Jeng et al., (2003) found the same results again that insider purchases earn 6% more abnormal returns as sale insiders do not gain significant profit.

The study based on the OTC/NASDAQ market investigated the profitability of insider traders, and results reported that corporate insiders sales the stocks when the abnormal returns are positive and high and purchases stocks when it is negative and low. However, the outsiders are unable to gain abnormal profit by mimicking the insider transaction, as the insider transactions are predictive content and the insiders who are planning to trade are using the information regarding the firm stocks, but the bid-asks spreads was sufficiently very high which prevent insiders to realizes the positive abnormal returns (Lin & Howe, 1990).

Huddart & Ke (2007) explores the relationship of insider's trade and firm information and insider trades motive. They found that insider transaction and information environment of the firm has a significant positive relationship, despite the insider trade restrictions on trading strategies that did not fully eliminate the profit which is gaining due to superior information. They also concluded that the motive behind inside trade is not only to gain profit, but also the compensation is involved in the insider trade motives, because when there is an increase in stock price due to the signaling effect can also have an impact on insider compensation.

Lakonishok & Lee (2001) studied insider trading based on three of the stock markets NYSE, AMEX, and NASDAQ which reported that trading activity of insider is changing over time, even the market ignores the signals received by insider trading and there is very little action observed in the market. The study also explores that when insider's purchases, market do well and market performance is poor when insider sales. They also reveals that insider trading is useful to be predicting cross-sectional stock returns, and that only the insider purchases are informative and useful.

Previous studies of insider trading evidence based on Asian markets has resulted different impacts of insider trading on abnormal returns. According to Boonyawat et al., (2005), in the Thai stock market, the insider transaction contains positive information, and the insiders earn the abnormal returns by inside purchases not by sales. They also reported that the outsiders can also gain abnormal returns by mimic insider transactions.

Another study from Hong Kong stock market by Cheuk et al., (2006), finds that insiders earn abnormal profit from both buying and selling activities of their own firm stocks. They also suggested that to get maximum abnormal profit, outsiders should follow the insider sales transaction.

The study of family own firms from the Thailand stock market by Ingkasit & Leemakdej (2018), concluded that insider trading affects the stock prices. The

research also reported that the relationship between family ownership and controlled structure is strong and reacts to the price of the stocks when insiders traded, the study found that in the family firms the insiders earn four times higher than non-family firm insiders, also reported that before quarterly and annual earnings announcement the transaction of insider affect highly the market.

Chronopoulos et al., (2018) examines the ownership concentration relation with insider trading and stock returns. They utilize the data of East Asian countries, and finds significant negative relationship of sales transactions and stock returns, and that the buying transactions were also recorded negatively significant with stock returns. The paper shows that high ownership top director's, who's trading strategy mostly directing the purchases are gaining negative returns.

Taking studies of insider trading in European market. Kallunki et al., (2009) on the Swedish stock market finds, that information gets from larger proportion insider selling is beneficial for future returns and that the objective of insider selling is for diversification. Another evidence of the Swedish stock market by Wahlstrom (2003), resulted that for outside investors earning of abnormal returns is possible by following inside transactions if they hold the stocks for a minimum three months after purchase. Albert & Wadman (2008) studied Swedish stocks data of ten years from 1997 to 2007. The study found a strong signal effect evidence of insider trading to the market.

Eckbo & Smith (1998) studied the Norwegian stock market. They find that a firm insider is incompetent to create abnormal returns, and suggested that insider may don't have much information related to the firm in Oslo Stock Market. Another evidence from the German stock exchange suggested that if the bid-ask spreads and transaction costs are included then outsiders can get a profit very hardly by mimicking insider transactions (Dickgiesser & Kaserer, 2009).

Aussenegg et al., (2017) studied the insider trading after the Market Abuse Directive was introduced. They resulted that insiders can discloses the information to the public by using both sales and purchases. The study also explores that a country with a low ITE index has a high price impact of insider transactions. Buffett (2007) studied the 5 years stocks data from 2000-06 to 2005-06 of Stockholm stock exchange and finds out that releasing of inside information can give a signal effect, which allows gaining abnormal returns.

A study on Dutch listed firms by Degryse et al., (2013), they investigated the corporate insiders trading information content. They analyze the behavior of short-term price all over the trades by using standard event-study methodology. They figure out that purchasing by top executives of small firm capitalization makes large abnormal returns. And also the new regulation of the Market Abuse Directive decreases the amount of information related to sales by the top executive.

Albert & Wadman (2008) examines the Swedish stocks from the duration of 1997 to 2007, to finds out the insider trading impact on market efficiency by using zero-inflated Poisson and Tobit regressions. And that the insider trading and analyst coverage relationship with each other. The study explores the negative significant relation between insider trading and analyst coverage, which shows that there is a signaling effect of insider trading.

Another study by Bengtsson & Östersgård (2010), on Swedish large companies, the event-study methodology was used by assuming the six months event window for the data, which covers the time period from 2001-2009. The analysis of the study did not conclude any perfect positive or negative significance, which shows that it is not sure that whether the large company's insiders are able to earn abnormal returns.

Del Brioet al., (2002) studied the profitability and information content of the Spanish stock market and found that insiders can earn enough abnormal returns by

investing in nonpublic information, while outsiders fail to earn enough abnormal returns by mimicking the insider transactions.

Pope et al., (1990) examines stocks of London stock exchange, and finds that the insiders of small firms earn more abnormal returns as compared to large firms, as the finding is same to (Seyhun, 1986; Jaffe, 1974).

A study by Degryse et al., (2013), concluded that to produce abnormal returns by following insider transactions, it is important to figure out the market conditions. They also resulted that liquidity is also an important impact on insiders to generate abnormal returns. Insiders with low liquidity market make higher abnormal returns, as compared to high liquidity market. Furthermore, the market liquidity has a negative impact for sales transactions, and insiders get low abnormal returns. And that the insider purchase transactions are more informative as compare to sales transactions.

Seyhun (1988 & 1992) also investigated the role of market condition importance in insider trading, and found that insiders are gaining an abnormal returns, is due to the ability of how insiders understand that when the share is undervalued due to market condition.

Kallunki et al., (2015) studied Swedish stocks about the exploitation of inside information by insiders who obediently follow a tax laws and insiders who shows disobedience with a tax laws. They find out that the insiders who are not following a tax laws obediently are seemed more to take advantage of inside information shortly before the stock price changes, as compared to obedient insiders.

One of the study tries to investigate the relationship between voluntary disclosures and insider trading. According to Noe (1999), the managers of the company don't do any inside transactions for gaining extra profits before voluntary disclosures, while

the managers apply some other ways to publicize the private information when they do inside trading.

Sivakumar and Waymire (1994) concluded that insiders usually purchases when negative earnings announcements are recorded, and that insiders are often keep away from trading before earnings announcements. A study of Ke et al., (2003), reported that insiders traded their stocks by selling three to nine quarters before announcements, and that insiders don't trade instantly for a few quarters after an earnings announcements.

He et al., (2018) investigated the aggregated insider transactions in Chinese listed firms for the time period of July 2007 to December 2014. The results suggested that the available information about the stocks did not forecast future returns. And that the ability in insider transactions for forecasting the future returns is positively significant with corporate governance.

Chung et al., (2019) analysis the relationship between insider trading profitability and corporate tax aggressiveness. They have documented that purchase transactions by insiders are significantly higher as compare to sales transactions in a firm, whose tax aggressiveness is comparatively high. They also gave evidence of tax aggressiveness is significantly related with great insider sales intensity before the crash of stock prices in the fiscal year. And finally, they find that the relation among profitability of insider purchases and tax aggressiveness has become weaker after the FIN 48 introduces.

2.3 Insider returns

Insiders traded the stocks of their own firm to gain abnormal returns, in this study the abnormal returns is dependent variable. Many of studies (Aussenegg & Ranzi, 2008; Cheuk et al., 2006; Degryse, de Jong & Lefebvre, 2013; Dickgiesser & Kaserer, 2009; Fidrmuc;Goergen; & Renneboog, 2006; Huddart & Ke, 2007; Lakonishok &

Lee, 2001; Seyhun, 1986), shows that inside traders earn abnormal returns by both purchase and sales transactions. They also express that purchasing trade make optimistic abnormal returns, while it is pessimist in selling trade. Here, the perception is made in two ways about sales transaction: an insider sales a stock for money saving which actually decrease stock prices or dropping the value of stocks to earn abnormal returns by insiders.

Jeng et al., (2003) also find that earning of abnormal returns for insider purchases per year is 6% higher, while the insider sales are not earning significant abnormal returns. A study based on US and UK, the majority of the studies concluded the positive abnormal returns after the purchase transactions, while negative after the sales transactions.

This thesis focus on Finnish stocks, the evidences related to European stock markets resulted different views about insider trading and abnormal returns. Such as, a study on German stocks by Klinge et al., (2005), also finds the positive relation of abnormal returns around the insider purchase announcements, while negative relation around the announcements of the sales. The finding also shows the strong signaling effect too. They concluded that the responsible motives are diversification and liquidity.

Eckbo & Smith (1998) studied the Norwegian stock market and concluded that firm insiders is not able to generate the abnormal returns, and suggested that insiders may don't have much information related to the firm in Oslo Stock Market. On the basis of previous evidences the following hypothesis is made and can be tested in this thesis:

H_1: Are insiders capable to earn abnormal returns?

2.4 Determinants of insider trading returns

Seyhun (1998) and Firth et al., (2011) has revealed that the abnormal returns immensity related to insider transactions are affecting both insiders and transactions by factors, particularly to the firm. In this section, I have divided the variables into three categories as following:

- Insider's characteristics.
    - Insider position.
- Transaction characteristics.
    - Transaction intensity.
- Firm characteristics.
    - Firm size.
    - Book-to-market ratio.
    - Price-to-earnings ratio.

2.4.1 Insider characteristic

Insider position

If the volume of information contains by an insider is categorized by hierarchy, then obviously some insider has more information than other insiders. For example, Chief executives has much better information as compare to other insiders. And it is true that trading by CEOs are inspected more closely by outsiders, and also by regulators as compare to other officer insiders. Seyhun (1998) suggested that the information hierarchy regarding the value of the firm in insiders exist. Insider trading by the top executives give more information as compared to insider trading by managers.

The study of a Dutch market by Degryse et al., (2013), finds the identical pattern as Seyhun (1998). When differentiating among top executive insiders and others, they only show effective abnormal returns for the prior classification. While Jeng et al.,

(2003), find that top executive insiders are not able to earn higher abnormal returns as compared to other lower level insider officers. For regression specification, I classified the transaction by insiders according to their position as a transaction by A class (CEO, Chairman, Board executives) otherwise 0.

H_2: Is the insider's position related to insider returns?

2.4.2 Transaction characteristic

Transaction intensity

In prior studies, researchers had found a positive relationship between transaction intensity or volume of trade and abnormal returns. A study by Karpoff (1987), concluded that there is a significant positive relation among the transaction volume and insider information quality. According to Firth et al., (2011), abnormal returns has an effect on market outsiders, and change the perception of inside information quality. The study also explains that abnormal returns is higher when the information quality is higher too.

Jeng et al., (2003) finds that insiders with low purchase volume earn less abnormal returns, as compare to insiders with higher purchase volume. The relationship between abnormal returns and transaction volume was also proven by many past studies (Aussenegg & Ranzi, 2008; Huddart & Ke, 2007; Wong et al., 2000). This study will evaluate the transaction intensity or transaction volume as the log of total insider transaction shares and multiplied with purchase or sales price.

H_3: Is the insider's transaction intensity related to insider returns?

2.4.3 Firm characteristics

Firm size

Many of the empirical evidences shows that there is a relationship between firm size and insider trading information. A study by Aussenegg and Ranzi (2008), reveals that small firms gave more information, as compared to the large firms to the stock market. The small firm insiders are involved more in insider trading, to take benefit of much access to the private information of the firm to earn abnormal returns (Cheuket al., 2006). Seyhun (1998) also shows that in a small firm there is a huge information asymmetry.

Jeng et al., (2003) also shows that the managers of small firms hold much more relevant information of the firm. Another study on a London stock exchange by Pope et al., (1990), find that small firm insiders generate more abnormal returns. The findings are identical with (Seyhun, 1986; & Jaffe, 1974). While Jeng;et al., (2003) concluded that there is no significant effect of firm size on abnormal returns. The size of the firm is classified as, the firm logarithmic market capitalization.

H_4: Is the insider's firm size related to insider returns?

Book-to-Market

Many of the strong evidences illustrated that stocks with the value characteristics in which book-to-market ratio is included can predict the performance of stocks. According to Fama & French (1995), with the help of the book-to-Market (BtM) ratio, we can forecast the performance of stock prices, and also claim that overvaluation of stock prices can be predicted by low book-to-market ratio, while it is opposite if the book-to-market ratio is high.

Seyhun (1998) supports the trading pattern, that an insider purchases stocks if there is a high book-to-market ratio and sales the stocks if there is a low book-to-market ratio. Rozeff & Zaman (1988) also predicts that insiders are more interested to purchase value stocks and sales the growth stocks. To predict the stock performance, it is not enough to follow alone an insider trading, but to measure the value of book-

to-market ratio with insider trading resulted in much better stock performance (Cheuket al., 2006). The standard form of book-to-market is used for calculation i.e. shares book value over shares market value.

H_5: Is the Book-to-Market ratio related to insider returns?

Price-to-Earnings

Price to earnings ratio is also one of the value stocks characteristic, and can also predict the returns for future stocks. Cheuk et al., (2006) found a significant negative relation among price-to-earnings ratio and future stock performance. They interpreted the relationship with two of the claims *Mispricing interpretation,* that low price-to-earnings is related to higher future abnormal returns and the high price-to-earnings is related to low future abnormal returns. It is because of the wrong valuation by the market (Basu, 1977; Fama and French, 1992 & 1995), and *Risk consideration* (Seyhun, 1998), that the frim price-to-earnings signal a riskiness of the firm, if there is a low price-to-earnings, the firm is risky and if high price-to-earnings the firm is less risky.

Cheuk et al., (2006) claims that insider purchases are constant and earn more abnormal returns when there is low price-to-earnings ratio and found few of the sales transactions, while the insider sales are prominent, and gave a negative signal for future stock returns when there is high price-to-earnings, and found few of the purchase transactions. They concluded that their results did not support the *Mispricing interpretation* concept. The price-to-earnings is also calculated, by using its standard form i.e. shares market value over earning per share.

H_6: Is the Price-to-Earnings ratio related to insider returns?

3 INSIDER TRADING REGULATION FRAMEWORK

In Finland, the financial markets are controlling and supervised by the authority named Finanssivalvonta. Its responsibilities are the development of the regulatory framework, and to keep a check on the financial market that the same framework is followed.

Insider trading is also a part of this regulatory framework. To keep fairness in the financial market, is the basic reason for regulating. The insiders should not make benefits illegally by using the secret information of the firm but act under the Finanssivalvonta legislations. In this chapter, I describe shortly what the rules and regulations are used for insider trading in Finland, and what criteria are compulsory to be an insider.

3.1 Financial supervisory authority

The Finnish Financial Supervisory Authority is an authority of Finnish Government for the financial regulatory, which is responsible to look after the laws, reviewing, inspections and regulations in Finnish financial market, which includes pension companies, insurance firms, banks, investment firms, fund management firms, and also all other companies circulating or operating in Helsinki stock exchange.

The main responsibility of Finanssivalvonta is to handle the Finnish financial sector stability, and in case if any deviations are observed, the authority is responsible to report the Finnish Government. The Finanssivalvonta was established by the merging of two authorities Financial Supervision Authority, and the Insurance Supervisory Authority, and starts working on 1 January 2009. The Finanssivalvonta operates its activities with the collaboration of the Bank of Finland.

The mission of the authority is to supervise the financial market participants operations. The authority has to motivate and boost up the good practices in the financial market, and awareness in public regarding the financial market operations.

And to prolong the confidence in the financial market by aiming at the financial stability, and all other kinds of important operations is an objective of the authority.

3.2 Insider laws and statements

According to Finanssivalvonta (2018), the Market Abuse Regulation (MAR) 596/2014, and the Directive criminal sanctions for market abuse 2014/57/EU has been implemented on 3rd July 2016 in EU including Finland. To protect the financial market integrity and trust of investors is the main goal of MAR. The MAR can cover all kinds of financial and market abuse related to insider dealing. The Market Abuse Regulation can apply on companies who are trading financial instruments on a regulated market, MTF (Multilateral trading facility), OTF (organized trading facility), those financial instruments whose prices depend on an instrumental financial instrument, and auctioning of emission allowances.

The MAR can define the inside information under Article 7(1) (a). The definition of inside information under the Article is referring as such information which is related to a financial instrument or issuer are correct in nature and not to the public, in case of making it public, it would for the purpose to have an impact on stock prices. Article 7(4) explains that information which has a significant effect on prices can be used by investors as an investment decision.

If someone gets inside information which is related to financial instrument a person is prohibited against acquisition or disposal, and is not allowed to give any kind of suggestion to some other person for acquisition or disposal of financial instrument under the MAR Article 14. The disclosure of inside information is prohibited and unlawful, while it is allowed if it is by the disclosing person as a normal exercise course.

A person can enter in the insider list if a person has/have an approach and full access to inside information and a person is working under the contract of the issuer as an employee or working as a performing a task such as an advisor, or accountants by

which a person gave access to inside information. And the insider list should be drawn up and updated every time in electronic format and not to delay a list to update if a person is to changed and mentioning a reason as well if he/she is already in a list, if new person is added in a list, and ceasing a person to have an access to inside information.

The responsible authority for declaring of insider holdings are board members, deputy of board members, and also the Financial Supervisory Authority employee, after taking the position of insider holdings the authorities have to declare and update the insider holdings within a month. The detail contains in insider holdings declaration are the details of the individual, entity, and financial instrument information.

An Article 16 of MAR, the transactions and orders including the modification or cancellation related to insider dealing or market manipulation should be reported the details directly to authority without any delay. The reporting obligation applies to operators of the market, investment firms who operate an MTF or OTF, legal persons who are engaged in financial instruments transaction executions.

NASDAQ OMX Helsinki (2009), explains the guidelines for an insider as:

- Under the Securities Market Act chapter 5, section 3 an insider with the duty to declare are a company Board of Directors or Supervisory Board member and deputy member, Managing director and deputy managing director, Auditor and deputy auditor as well as audit organization employee who has the responsibility for company audit, and also any top management related person who get the information related to inside trading on a regular basis and has the authority to take the future development decisions of the business.
- Under section 7.2 of Securities Market Act, the permanent company-specific insider is a company employee or a person who works on the other agreement basis for the company and receives regularly the inside

information due to his/her position or duty and was assigned and designated as an insider by the company.

- Under section 7 of Securities Market Act, the project-specific insider is defined as a person who works for the company on the basis of an employment contract and get the inside information regularly and also a company voluntarily discloses inside information to a person and also company entered a person temporarily in a project-specific insider.

According to NASDAQ OMX Helsinki (2009) describes the Securities Markets Act section 2 of chapter 5 for the prohibited disclosures and use of inside information as it is prohibited of using the inside information in acquisition or security transfer or advising another person directly or indirectly. It is prohibited to disclose unauthorized inside information to another person until the information takes place as a normal course of the disclosing person work, profession or tasks. However, it does not restrict a person trading rights of securities if the acquisition or securities transfer takes place on a contract basis and also if the order of a person was made before the access to securities inside information.

4 DATA AND RESEARCH METHODOLOGY

In this chapter of thesis, I shed a light on data sources and sampling of the data. Furthermore, the methodology will describe, in which the method and approach which in this thesis is following are described, the market adjusted return model and regression model is explained in a methodology section.

4.1 Data description

Three datasets are used in this study. The data consists of daily insider trading transactions, stock returns, and accounting data of the firms. Data are obtain from two different database sources. The daily insider transaction data are obtained from the 2IQ database, while the source for stock returns and accounting data is Thomson Reuters Datastream. The data covers the time period from 01-07-2005 to 31-12-2014 of the NASDAQ OMX Helsinki stock exchange, which is publicly available.

The insider traders are from 135 Finnish firms, in which 7331 in total the insider purchase and sales transactions. The primary data was an electronic data in a SAS format and to fulfill the study requirement, the data has been closely refined in a SAS. The primary insider data was much comprehensive which consists of insider ID, company name of an insider, insider name, insider relation and level in a company, and dates of an insider transaction, while some variables which are not relevant to this study as well as missing observations are excluded. After mining the insider data, 2377 daily insider transaction observations were left, which consist of 1782 purchase observations and 595 sales observations.

The primary adjusted stock returns dataset was very extensive data, which was also been refined according to the insider transaction time-period (dates) and ISIN. The initial stock data includes company name, ISIN, dates, price of stocks on a daily basis, the daily stock returns, as well as the monthly returns, quarterly, semi-annually, annually returns, and also 18 months returns. This study uses returns over

three and six month's returns, to analysis the profitability of insider trading. While the company's primary accounting data is also refined and merged with insider transaction data according to insider trading dates, and excluded the observations which are out of date range of insider transactions as well as excluded the unnecessary variables.

4.1.1 Treatment of insider transactions data

For insider data treatment, SAS software is used to arrange and sort the data according to the transaction dates, and ISIN codes. For the insider transaction analysis, the study follow the past study of Kallunki et al., (2009), and included all daily insider transactions, and analysis separately daily purchase and sales transactions.

The insider purchase and sales transactions are separated in different columns, and sorted the observations according to the insider trading date. I have taken the insider position as a dummy variable, and sorted the insider transactions data according to class A, transactions by CEO, Board chairman, and Top level Directors are considered only, while excluded the transactions by low-level managements (class B, and C). Returns over three and six months and the variables from accounting dataset which are required according to this study, are both merged to insider transaction dataset and sorted the observations according to insider transaction date and ISIN code.

Table 1.Summary statistics of stock returns, and insider determinants

Variable	Mean	Minimum	Maximum	N
RET3M	0.011	-0.607	1.258	2375
RET6M	0.043	-0.822	2.352	2368
FirmSize	1057.856	5.420	14649.160	2377
BTM	0.772	0.055	3.692	2377
PTE	33.609	-1194.583	1708.227	2377
Transaction Size (Purchase)	9.446	0.506	18.213	1782
Transaction Size	9.577	-2.303	17.107	595

(Sales)

4.2 Methodology

According to Bryman & Bell (2007), the research design gave a complete structure of collecting and analyzing the data for the study. Afterwards, they simply define the research method as a capability or ability for the collection of data for any study. There are two major ways to conduct the research method, qualitative and quantitative method.

This thesis is based on a quantitative method by using the deductive approach. The quantitative method was defined by Bryman & Bell (2007) as, to collect the numerical data and reveal the relation of theory with collected data by using a deductive approach. The basic steps which are conducted in a quantitative method of a study are shown in a following diagram.
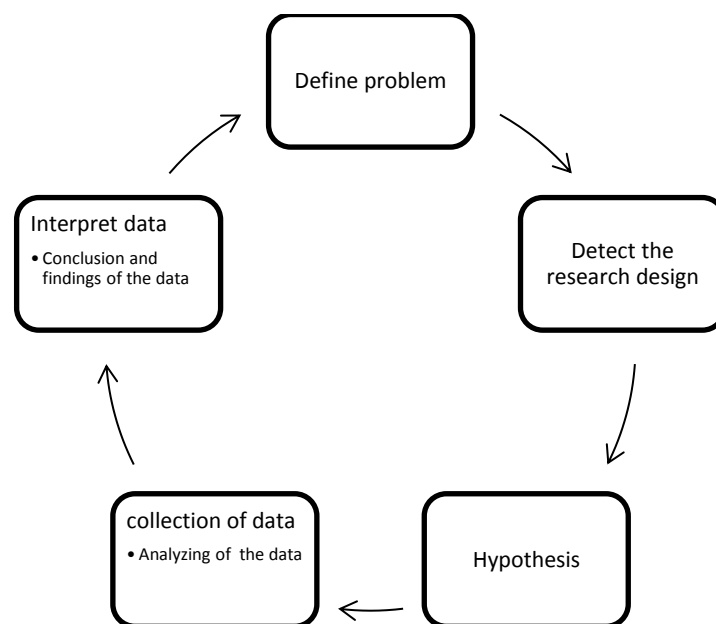

Figure 1. Basic steps of quantitative method

Some of the main advantages of the quantitative method are:

- The findings of quantitative data are generalized as a whole, due to a large sampling.
- The data analysis took much less time, because of using statistical tools.
- The research is constructed on an optimistic model or pattern of estimating the variables.
- Many of the variables can be used in quantitative research.

While, some of the disadvantages of the quantitative method are:

- It fails to represent the proper target population (variables).
- The resources for the collection of data are limited.
- Outcomes are limited.
- Quantitative data might be expensive.
- Non-statistical or non-mathematician background researchers might be facing difficulty to analyses the data.

Finally, the deductive approach is described as, to establish such a hypothesis that previously exists in prior theories and then making a research strategy to examine the hypothesis to modify the prior existing theory. In another term, the deductive approach goes from particular to general conclusion. The deductive approach pursue more closely the pathway of logic, the arguments begin with existing theories and approaches to new hypothesis, and the hypothesis is being tested with observations to reject or accept that hypothesis. Following stages are followed in a deductive approach:

- Assuming the hypothesis from prior theory.
- Making a relationship between two variables with each other.
- Hypothesis testing.
- Analyzing the results.
- Theory modification.

4.2.1 Market-adjusted return model

To identify the effect after the event of an insider transaction, it is necessary of the calculation of abnormal stock returns, which is measured as the actual stock returns subtracting the market returns (Brown and Warner, 1980). The market returns is the OMX Helsinki stock market index. According to Brown and Warner (1985), the abnormal returns is as follow:

$$RET_{it} = R_{it} - R_{mt} \qquad (1)$$

where RET_{it} = adjusted returns of stock i at time t,

R_{it} = returns of stock i at time t,

R_{mt} = index returns of stock i at time t.

There is countless of prior empirical evidence, which shows that insiders earn abnormal returns by the trading of their own firms e.g. (Seyhun, 1998; Cheuk et al., 2006). By following the evidences, the study consider the adjusted (abnormal) returns of insiders buy or sale (RET_{it}) as a dependent variable.

For regression specification, the explanatory variables (independent variables) are as following: the study classified the variable insider position as a dummy variable, and can explain it as a transactions by insiders according to their position, a transaction by class A (CEO, Chairman, Board executives) otherwise 0 and denoted as INP_{classA}. The transaction size or volume is evaluated as, the log of total insider transaction shares and multiplied with purchase or sales price, the variable is denoted as lnT_{size}.

In a study of Degryse et al., (2013), the size of the firm is considered as the market capitalization of the company. By adopting the same method, the study considered the firm size as the market capitalization of the firm, which is estimated as the price of the share is multiplied with total outstanding shares (F_{size}). The standard form of a book to market ratio is used for calculation i.e. shares book value over shares market

value (BtM). And same standard form for price to earnings ratio is used and calculated as, shares market value over earning per share (PtE).

4.2.2 Regression model

For the regression analysis, the study has develop two different insider purchases and sales samples (matched-pair) to investigate the insider traders earning of abnormal returns (Kallunki et al.,2009). The reason behind the two separate groups of insider purchases and sales and analysis of both individually is, because the main interest of this thesis is to analyze the profitability of insider trading, and to identify which of the factor is significant positively either insider purchase or sales. The relation of abnormal returns Y with independent variables distinguishing X_i is measured by using the linear regression and explained as:

$$Y_i = \alpha + \beta X + \varepsilon, \tag{2}$$

where Y_i = dependent variable,

X_i = explanatory variable,

α = intercept of Yi,

β = slope, and

ε = error term.

So, the linear regression model is as following:

$$RET_{it} = a_i + \beta_1 INP_{CLASSA} + \beta_2 lnT_{size} + \beta_3 lnF_{size} + \beta_4 BtM + \beta_5 PtE \tag{3}$$
$$+ \varepsilon_{it}$$

where RET$_{it}$ = adjusted returns of stock i at time t over a period of three and six months,

CLASS$_A$ = insider position,

lnT$_{size}$ = transaction volume or size,

lnF$_{size}$ = firm size,

BtM = book to market ratio,

PtE = price to earnings ratio,

α = intercept of stock returns, and

ε_{it} = error term.

Table 2, explains the descriptive statistics of the variables which are used in empirical analysis in the study, and also the market adjusted stock returns over a three and six months period.

Table 2. Descriptive statistics on dependent and explanatory variables

Variable	N	Mean	Std Dev	Variance	Minimum	Maximum	95th Pctl
RET3M	2375	0.011	0.164	0.027	-0.607	1.258	0.293
RET6M	2368	0.043	0.278	0.077	-0.822	2.352	0.555
Firm Size	2377	1057.856	2458.941	6046391.334	5.420	14649.160	5631.230
BTM	2377	0.772	0.525	0.276	0.055	3.692	1.730
PTE	2377	33.609	219.187	48042.864	-1194.583	1708.227	107.388
Transaction Size (purchases)	1782	9.446	2.280	5.196	0.506	18.213	13.487
Transaction Size (sales)	595	9.577	2.366	5.596	-2.303	17.107	13.647

5 EMPIRICAL RESULTS, AND ANALYSIS

This chapter address the findings of result and analysis. First, the general discussion of results is discussed. Second, the regression results are described according to specific variables and hypotheses.

5.1 General overview of results

In this study, the insider daily transaction data are analyzed with different analysis, i.e. Univariate analysis, Pearson correlation, and linear regression. The overall results for returns over three and six months after insider transactions, reported that insiders are unable to gain the abnormal returns for both inside purchase and sales. The results in correlation analysis, reported that all the variables used in the study are statistically not significant, the only variable price to earnings is reported statistically significant with stock returns over six months, but statistically negatively correlated.

The regression model reported that all of the explanatory variables uses in this study, are statistically insignificant with stock returns over three and six months both for purchase and sales transactions, except book to market ratio (BtM). Book to market ratio is statistically significant over three and six month returns both for purchase and sales transactions, while it is noticed that price to earnings ratio is statistically significant over six-month stock returns only for purchase transactions. Following the results, it is suggested that the Finnish insiders are unable to generating abnormal stock returns, for outside investors to mimicking the inside transactions in Finland are not beneficial for future extra returns.

While insiders of such firms with a high book-to-market ratio (BtM) are gaining a very large amount of abnormal returns, as the results for book-to-market (BtM) is strongly statistically significant over three and six-month returns at 0.01% for both purchase and sales transactions. Which suggested that outside investors should only mimic the insider purchase and sales transactions only for such firms which has a

high book to market ratio. The results indicate, that insider trading for Finnish stocks are not informative for future extra returns.

Here the question arises, why insider of Finnish stocks are not generating returns, it may be because of strong insider trading laws and penalties in Finland, or it can be a lack of social ties in the corporate level in Finland. Another possibility is, the insiders in Finland does not have a complete access to the company-specific private information. It can be also possible that the company insiders, trades their own firm stocks just to mislead the outside investors, and also possible that insider in Finland may have some other motives for trading their own firm stocks.

5.2 Results depending on insider determinants

In this study, I have selected the insider position as a dummy variable, the study chooses inside transactions by class A executives, which includes CEO, CFO, Board chairman, and Directors. Seyhun (1998), concluded in his study, that the top management insiders contain information about its own firm stocks. While, the results of this study is a counter to Seyhun (1998), and reported that there is no such relationship of insider position with abnormal returns both for purchase and sales transactions in the Finnish stock market.

5.2.1   Univariate analysis

In a table 3, the results of the average returns and t-stats for insider returns over three and six months for purchase and sales transactions are reported to test the hypothesis, that insiders are able to earn abnormal returns. Table 3 reported that, mean return over six months following insider purchases is significantly higher than three months stock mean returns. Particularly, the mean returns for six and three month stock returns is 6.4% and 2.3% respectively, indicating that 4.1% mean return units higher than three months of stock purchases. While, mean returns over three months stock returns following insider sales are significantly higher than six months stock returns. Particularly, the mean return for three and six months stock returns are 2.3% and

1.8% respectively, this shows that 0.5% mean return units higher than the six months stock returns.

Moreover, returns over six months following purchases is statistically significant at 1.1%, while returns over three months following purchases and sales, and returns over six month following sales are statistically insignificant. Summing up, the results are inconsistent with the hypothesis, that insiders are capable to earn abnormal returns.

Table 3. Average return and t-statistics

Variable	Purchase	Sales
Ret_3M	0.023	-0.023
	(0.495)	(0.860)
Ret_6M	0.064	-0.018
	(0.011)	(0.396)

5.2.2 Correlation analysis

Table 4 reports, the Pearson correlation coefficients analysis between stock returns over three and six month's returns and insider determinants, to analysis whether is there a relationship between inside trading and abnormal stock returns in Finland. The correlation results report, that book to market is positively very weakly correlated with over three and six months stock returns, but statistically insignificant for both, which means the correlation significance does not exist. The firm size is positively strong correlated with returns over three and six months, but statistically not significant for both.

Price to earnings is strongly correlated with returns over three months, but statistically insignificant, which shows the correlation significance does not exist, while the weak negative correlation with returns over six months is statistically significant. That present that price to earnings and stock returns over six month are statistically positive.

The result presented, statistically positive correlation of transaction size for purchase with returns over three months and negative correlation within returns over six months but statistically insignificant for both. While transaction size for sales, the results reported the statistically negative correlation for returns over three months and positive correlation with returns over six months, and statistically not significant for both returns.

Table 4. Correlation analysis for selected variables

	BTM	Firm Size	PTE	Transaction Size (Purchase)	Transaction Size (Sale)	RET3M	RET6M
BTM		-0.22596	-0.07993	-0.13767	-0.16914	0.04459	0.06398
		<.0001	<.0001	<.0001	<.0001	0.0298	0.0018
		2377	2377	1782	595	2375	2368
Firm Size	-0.22596		-0.02395	0.39531	0.21896	0.00762	0.00664
	<.0001		0.2431	<.0001	<.0001	0.7106	0.7466
	2377	2377	2377	1782	595	2375	2368
PTE	-0.07993	-0.02395		-0.00114	0.04608	0.00186	-0.12043
	<.0001	0.2431		0.9615	0.2618	0.9279	<.0001
	2377	2377	2377	1782	595	2375	2368
Transaction Size (Purchase)	-0.13767	0.39531	-0.00114		.	0.01650	-0.00883
	<.0001	<.0001	0.9615		.	0.4866	0.7098
	1782	1782	1782	1782	0	1781	1781
Transaction Size (Sale)	-0.16914	0.21896	0.04608	.		-0.02620	0.01740
	<.0001	<.0001	0.2618	.		0.5239	0.6740
	595	595	595	0	595	594	587
RET3M	0.04459	0.00762	0.00186	0.01650	-0.02620		0.70181
	0.0298	0.7106	0.9279	0.4866	0.5239		<.0001
	2375	2375	2375	1781	594	2375	2368

RET6M	0.06398	0.00664	-0.12043	-0.00883	0.01740	0.70181	
	0.0018	0.7466	<.0001	0.7098	0.6740	<.0001	
	2368	2368	2368	1781	587	2368	2368

5.2.3 Linear regression

In this study, the author estimates the regression model for stock returns over three and six months, to analysis whether the insider traders earn abnormal stock returns more across returns over three months returns or six months returns. The study selected the insider position as a dummy variable, in other words, the study chooses only those insider transactions which was made by class A executives, which includes CEO, CFO, Board chairman, and Directors. Seyhun (1998) concluded in his study, the top management insiders contain information about its own firm stocks.

Table 5, shows the results of the regression model for purchase transactions of stock returns over three months to investigate whether the insiders are earning returns over three months period after the insider purchase transaction. The regression result shows that book to market is the only variable that is statistically significant at 0.01% with insider purchases, while rest of the insider determinants (Firm size, Insider position, Price to earnings, and Transaction size) are statistically insignificant for inside purchases. According to the findings, inside traders of a firm with high book to market ratio are the only insiders who were earning abnormal stock returns for insider purchase transactions, while remaining of inside traders with determinants of Firm size, Insider position, price to earnings, and transaction size are unable to earn abnormal stock returns while purchasing the stocks.

Table 5. Regression analysis for insider purchase over three months stock returns

Variables	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.026	0.019	-1.42	0.157
FirmSize	1	4.310	0.000	0.25	0.804
BTM	1	0.035	0.008	4.67	<.0001

PTE	1	6.213	0.000	0.04	0.968
TransactionSize	1	0.002	0.002	1.15	0.249

In a table 6, the regression model results for sales transactions over three months stock returns are presented, to clarify that the insider is able to generate the abnormal stock returns when selling the stocks. The results reported, that the insider sales are statistically insignificant with insider determinants (insider position, firm size, price to earnings, and transaction size), while statistically significant only with book to market at 0.01%. Simply the regression results suggested, that insider is not generating abnormal stock returns when insider sales the stocks, while insiders of a firm with a high book to market ratio are the only who are getting returns for the sales transaction.

Table 6. Regression analysis for insider sales over three month's stock returns

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.068	0.030	2.25	0.025
FirmSize	1	3.849	0.000	0.14	0.891
BTM	1	-0.072	0.013	-5.36	<.0001
PTE	1	0.000	0.000	0.18	0.855
TransactionSize	1	-0.004	0.002	-1.58	0.113

Taken tables 5 and 6 together, the only insiders who are getting the abnormal stock returns are those who are trading the high book to market firm stocks, the results are consistent with H_5. While the result indicates that the remaining of the hypothesis for this study is rejected.

Table 7 reports the results of the regression model for insider purchase with insider determinants over six months stock returns, and presented the report whether the insiders are generating stock returns over the six months of purchase transactions. The results clarify that insider purchase over six months stock returns is statistically significant with book to market ratio and price to earnings ratio at 0.01% for both. While the firm size and transaction size are statistically insignificant for insider purchase transactions. The report shows that only insider of firms with high book to

market ratio and price to earnings ratio are capable to generate the abnormal returns, while insiders with other determinants are unable to gain additional profits.

Table 7. Regression analysis for insider purchases over six months stock returns

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.0197	0.032	0.61	0.542
FirmSize	1	0.000	0.000	0.56	0.575
BTM	1	0.059	0.013	4.54	<.0001
PTE	1	-0.0001	0.000	-5.83	<.0001
TransactionSize	1	0.000	0.003	0.02	0.988

The result of the regression model in Table 8, reports the insider sales of insider determinants over six months stock returns, to show whether insiders are able to earn abnormal profit for selling the stocks. The result presented that book to market ratio is statistically significant for insider sales at 0.01%, while other of insider determinants (firm size, insider position, price to earnings, and transaction size) are statistically not significant for insider sales. Furthermore, the result suggested that only insiders with a firm of high book to market ratio are able to gain extra returns, and insiders with other determines are not capable to gain abnormal stock returns for sales transactions.

Table 8. Regression analysis for insider sales over six month's stock returns

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.066	0.045	1.47	0.142
FirmSize	1	-0.000	0.000	-0.27	0.785
BTM	1	-0.104	0.020	-5.16	<.0001
PTE	1	0.000	0.000	0.13	0.899
Transaction Size	1	-0.001	0.004	-0.37	0.712

Taken table 7 and 8 together, suggested that book to market ratio is statistically significant for both purchase and sales transaction, and price to earning is statistically

significant only for purchase transactions, which indicates that H_5 is consistent for both purchase and sales transaction and H_6 is consistent only for purchase transactions but rejected for sales transaction over six months stock returns. While rest of the hypothesis for this study is rejected. The overall finding for six month stock returns result is, that insiders in Finland are unable to gain abnormal stock returns both for purchase and sales transactions, only the insiders who trades the stock of high book to market ratio firms are able to gain extra profit, while insiders who is trading the stocks of high price to earnings ratio firm are also gaining extra profit only for purchase transactions over six month stock returns.

5.3 Discussion

The empirical results of the study suggested that insiders in Finland are unable to gain abnormal stock returns, and that the insiders don't contain any private information related to their own firm stocks. It is not a good idea for outside investors to mimic the inside transactions to gain additional profits. As the results indicate that, insiders are giving wrong signals to the market. The results also reveal the top level executives information access too, and shows that they have no such information which is beneficial for future returns.

During the time period in which the data is analyzed, only a single variable book to market ratio is found statistically significant over three and six months stock returns both for purchase and sales transactions. That clearly indicates, that insiders of the firm with high book to market ratio are the only insiders who are generating a good amount of abnormal returns, and to mimicking such insiders by outside investors is a good decision.

There are many factors that make the insider traders unable to gain extra returns, among those factors, the one effective factor is a risk. It is highly possible that the Finnish stocks in a time period in which the data is selected, be highly riskier, as there are many such historical events that occurred in that time period, such as the

recession of Nokia. Another main factor which should be considered as an important factor and investigated thoroughly is the method which the study applied, the study of Eckbo and Smith (1998), is an example of it, after changing the methodology for their study the abnormal returns changes dramatically and get reduced.

6 CONCLUSION

The final chapter of this study discusses the concluding remarks of the results which are presented in previous chapters. In addition to that, this chapter also provides suggestions for future researches related to topics of insider trading in Finland.

5.3 Summary

Insider trading is often discussing topics internationally as well as domestically. The objective of this study is to investigate the profitability of insider trading in the Finnish stock market. Briefly, the study examines either purchase or sales transactions are beneficial for insiders for making abnormal stock returns. The study analysis the Finnish stocks from the time period of 01-07-2005 to 31-12-2014. Following the previous studies (Seyhun, 1998; Dickgiesser & Kassirer, 2009, and Hudart & Ke, 2007; Kallunki et al., 2009), on European and US stocks that insiders are gaining abnormal returns in any case of purchase transaction or sales transactions, the case for Finnish insider's profitability is contrary with prior evidences.

The results for this study strongly suggested the opposing findings to the prior studies. The insider traders in the Finnish stock market are unable to generate the abnormal stock returns by trading their own firm stocks for both purchase and sales transactions.

The second objective of this study was, to examine which insider determinant is associated with abnormal returns. According to Seyhun (1998), the management hierarchy contains information about their firm stocks, but it's appealing that top executive's insiders of Finnish firms don't contain any private information about the firm stocks. The study follows the Cheuk et al., (2006), and suggested that insiders of a firm with a high book to market ratio are the only insiders who are gaining stock return for both purchase and sales transactions, and is similar to Cheuk et al., (2006).

Examining the other variables, it is noticed that firm size, price to earnings ratio, and transaction size has no such association with abnormal returns for both purchase and sales transactions. It is not a good decision for insider traders to hold stocks for long terms or short terms. Seyhun (1998), suggested that inside information did not give any advantage to the outside investors, because all kinds of information including inside information can reflect the current stock price, the explanation is supporting the results of this study.

5.4 Future research

It is very important to use another model, methodology, and scope for the same data to determine, either results are same or different. It is highly advocated that some more studies should be done, to comprehend much more the insider trading profitability in Finland for the same time period.

Another important point to figure out is, to study some special events too which was occurred in the same selected time period of the data of this study e.g. Nokia downturn, and also companies mergers and acquisitions were done. Also, it will be highly appreciable to study if the insider is not gaining the extra returns, what are the motives of insider traders in the Finnish stock market for trading.

REFERENCES

Aboody, D., & Lev, B. (2000). Information asymmetry, R&D, and insider gains. *the Journal of Finance, Vol. LV, No. 6*.

Albert, P., & Wadman, R. A. (2008). Insider trading and analyst coverage. *Stockholm School of Economics*.

Ausseneg, W., & Ranzi, R. (2008). Legal corporate insider trading and the price impact of private information: Evidence for Germany. *The Open Business Journal, Vol. 1*, 40-52.

Aussenegg, W., Jelic, R., & Ranzi, R. (2017). Corporate insider trading in Europe. *Journal of International Financial Markets, Institutions and Money, Vol. 54*, 27-42.

Barber, B., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics, Vol. 16, No. 1*, 261-292.

Basu, S. (1977). Investment performance of common stocks in relation to their price-earning ratios: A test of the efficient market hypothesis. *The Journal of finance, Vol. 32, No. 3*, 663-682.

Bengtsson, A., & Östersgård, P. (2010). Do insiders from large investment companies earn a higher abnormal return than other insiders on the Swedish stock market? . *Stockholm School of Economics*.

Boonyawat, K., Jumreonrnvong, S., & Limpaphayom, P. (2005). Insider Trading: Evidence from Thailand. *Thammasat Review*.

Brooks, C. (2014). *Introductory econometrics for finance, 3rd edition.* Cambridge: Cambridge University Press.

Brown, S., & Warner, J. (1980). Measuring security price performance. *Journal of Financial economics, Vol. 8*, 205-258.

Brown, S., & Warner, J. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics, Vol. 14*, 3-31.

Bryman, A., & Bell, E. (2007). *Business research methods, 2nd edition.* Oxford University Press.

Buffett, W. (2007). Substitutes for insider trading. *Stockholm School of Economics*.

Chang, S., & Suk, D. Y. (1998). Stock Prices and the Secondary Dissemination of Information: The Wall Street Journals "Insider Trading Spotlight" Column. *The Financial Review*, 115-128.

Cheng, L., Davidson, W., & Leung, T. (2011). Insider trading returns and dividend signals. *International Review of Economics and Finance, Vol, 20*, 421-429.

Cheng, Q., & Lo, K. (2006). Insider trading and voluntary disclosures. *Journal of Accounting Research, Vol. 44, No. 5*, 815-848.

Cheuk, M.-Y., Fan, D., & So, R. (2006). Insider trading in Hong Kong: Some stylized facts. *Pacific-Basin Finance Journal*, 73-90.

Chronopoulos, D., McMillan, D., Papadimitriou, F., & Tavakoli, M. (2018). Insider trading and future stock returns in firm with concentrated ownership levels. *European Journal of Finance*.

Cowles, A. (1933). Can stock market forecasters forecast? . *Econometrica, Vol. 1*, 309-324.

Degryse, H., Jong, F., & Lefebvre, J. (2013). An empirical analysis of legal insider trading in the Netherlands. *De Economist, Vol. 162*, 71-103.

Del Brio, E., Miguel, A., & Perote, J. (2002). An investigation of insider trading profits in the Spanish stock market. *The Quarterly Review of Economics and Finance, Vol. 42*, 73-94.

Dickgiesser, S., & Kaserer, C. (2009). Market efficiency reloaded: Why insider trades do not reveal exploitable information. *German Economic Review, Vol. 11, No. 3*, 302-335.

Doffou, A. (2003). Insider Trading: A review of Theory and Empirical Work. *Journal of Accounting and Finance Research, Vol. 11, No 1*.

Eckbo, B. E., & Smith, D. (1998). The conditional performance of insider trades. *The Journal of Finance, Vol. LIII, No. 2*.

Eckbo, B. E., & Smith, D. D. (1998). The Conditional Perfformance of Insider Trades. *The Journal of Finance*.

Fam, E., & French, K. (1995). Size and Book-to-Makrte factors in earning and returns. *The Journal of Finance, Vol L, No. 1*.

Fama, E. (1970). Efficient capital market: A review of theory and empirical work. *The Journal of Finance, Vol. 25, No. 2*, 383-417.

Fama, E., & French, K. (1992). The cross-section of expected stock returns. *The Journal of Finance, Vol XLVII, No 2*.

Fidrmuc, J., Goergen, M., & Renneboog, L. (2006). Insider trading, news releases, and ownership concentraton. *The Journal of Finance, Vol. LXI, No. 6*.

Finanssivalvonta. (2018, 12 19). *finanssivalvonta.fi*. Retrieved from market-abuse-regulation: https://www.finanssivalvonta.fi/en/regulation/regulatory-framework/market-abuse-regulation/

Finnerty, J. (1976). Insiders and market efficiency. *The Journal of Finance, Vol 31, No. 4* , 1141-1148.

Firth, M., Leung, T., & Rui, O. (2011). Insider trading in Hong Kong: Tests of stock returns and trading frequency. *Review of Pacific Basin Financial Markets and Policies, Vol. 14, No. 3*, 505-533.

Gao, F., Lisic, L., & Zhang, I. (2014). Commitment to social good and insider trading. *Journal of Accounting and Economics, Vol. 57*, 149-175.

Givoly, D., & Palmon, D. (1985). Insider trading and the exploitation of inside information: Some empirical evidence. *the Journal of Business, Vol. 58, No. 1*, 69-87.

Goergen, M., Renneboog, L., & Zhao, Y. (2019). Insider trading and network directors. *Journal of Corporate Finance, Vol. 56*, 152-175.

Goh, B., Lee, J., & Shevlin, T. (2019). Corporate tax aggressiveness and insider trading. *Contemporary Accounting Research, Vol. 36, No. 1*.

Gosnell, T., Keown, A., & Pinkerton, J. (1992). Bankruptcy and insider trading: Differences between exchange-listed and OTC firms. *The Journal of Finance, Vol. 47, No. 1*, 349-362.

Hamid, K., Suleman Muhammad tahir, Shah, S., & Akash , R. (2010). Testing the weak form of efficient market hypothesis: Empricial evidence from Asia-Pacific markets. *International Research Journal of Finance and Economics, Vol 58*.

He, Q., Cheng, B., & Wen, J. (July 2018). Does aggregate insider trading predict stock returns in China? *International Journal of Financial Economics, Vol. 24* , 922-942.

Hodgson, A., Lim, W. D., & Lin Mi. (2018). Insider sales vs. short selling: Negative information trading in Australia. *Pacific-Basin Finance Journal*, 72-83.

Huang, C. (2019). US stock market efficiency: EMH or AMH? *Advances in Economics, Business and Management Research, Vol. 76*.

Huddart, S. J., & Bin Ke. (2007). Information Asymmetry and Cross-sectional Variation in Insider trading. *Contemporary Accounting Research Vol. 24 No. 1*, 195-232.

Huddart, S., & Ke, B. (2007). Information asymmetry and cross-sectional variation in insider trading. *Contemporary Accounting Research, Vol. 24, No.1*, 195-232.

Ingkasit, r., & Leemakdej, A. (2018). Famil affiars? Insider trading and family firms: Evidence from Thailand. *Finance and Economics Readings*, 117-132.

Iqbal, Z., & Shetty, S. (2002). An investigation of casuality between insider transactions and stock returns. *The Quarterly Review of Economics and Finance, Vol. 42*, 41-57.

Jaffe, J. (1974). Special information and insider trading. *The Journal of Business*, 410-428.

Jaffe, J. F. (July 1974). Special Information and Insider Trading. *The Journal of Business, Vol 47, No. 3*, 410-428.

Jeng, L. A., Metrick, A., & Zeckhauser, R. (1999). The profits of insider trading: A performance-evaluation perspective. *National Bureau of Economics Research*.

Jeng, L., Metrick, A., & Zeckhauser, R. (2003). Estimating the returns to insider trading: A performance-evaluation perspective. *The Review of Economics and Statistics, Vol. 85, No. 2* , 453-471.

Jennergren, L., & Korsvold, P. (1974). Price formation in the Norwegian and Swedish stock markets-some random walk tests. *The Swedish Journal fo Economics, Vol. 76, No.2*, 171-185.

Kallunki, J. P., Nilsson, H., & Hellstrom, J. (2009). Why do Insiders Trade? Evidence based on unique data on Swedish insiders. *Journal of Accounting and Economics*, 37-53.

Kallunki, J.-P., Mikkonen, J., Nilsson, H., & Setterberg, H. (2015). Tax noncompliance and insider trading. *Journal of Corporate Finance, Vol. 36*, 157-173.

Kallunki, J.-P., Nilsson, H., & Hellstrom, J. (2009). Why do insiders trade? Evidence based on unique data on Swedish insiders. *Journal of Accounting and Economics*, 37-53.

Karpoff, J. (1987). The relation between price changes and trading volume: A Survey. *The Journal of Financial and Quantitative Analysis, Vol. 22, No. 1*, 109-126.

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

Klinge, M., Seifert, U., & Stehle, R. (2005). Abnormal returns in the vicinity of insider transactions: Unbiased estimates for Germany. *SSRN Electronic Journal*.

Lakonishok, J., & Lee, I. (2001). Are insider trades informative? *The Review of Financial Studies, Vol. 14, No. 1*, 79-111.

Lian, K., & Leng, G. (1994). Weak-form efficiency and mean reversion in the Malaysian stock market. *Asia Pacific Development Journal, Vol 1. No.2*, 137-152.

Lin, J.-C., & Howe, J. (1990). Insider Trading in the OTC Market. *The Journal of Finance, Vol. 45, No. 4*, 1273-1284.

Mackinlay, A. (1997). Event studies in economics and finance. *Journal of Economic Literature, Vol. 35, No. 1*, 13-39.

Malkiel, B. (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspective, Vol 17, No. 1*, 59-82.

Menkhoff, L., Schmeling, M., & Schmidt, U. (2012). Overconfidence, experience, and professionalism: An experimental study. *Journal of Economics Behaviour and Organization, Vol. 86*, 92-101.

Methodology, R. (n.d.). *research-methodology.net*. Retrieved from research-approach/deductive-approach-2: https://research-methodology.net/research-methodology/research-approach/deductive-approach-2/

NASDAQ OMX Helsinki . (2009, 10 9). *cgfinland.fi*. Retrieved from guidelines-for-insiders_09102009: https://cgfinland.fi/wp-content/uploads/sites/6/2012/01/guidelines-for-insiders_09102009.pdf

Noe, C. (1999). Voluntary disclosures and insider tramsactions. *Journal of Accounting and Economics, Vol. 27*, 305-326.

Pope, P., Morris, R., & Peel, D. (1990). Insider trading: Some evidence on market efficiency and directors share dealings in Great Britain. *Journal of Business Finance & Accounting, Vol. 17, No. 3*.

Research Methodology. (n.d.). *research-methodology.net*. Retrieved from research-approach/deductive-approach-2: https://research-methodology.net/research-methodology/research-approach/deductive-approach-2/

Roulstone, D. (2003). The relation between insider-trading restrictions and executive compensation. *Journal of Accounting Research, Vol. 41, No. 3*.

Rozeff, M. S., & Zaman, M. A. (Jan 1988). Market Efficiency and Insider Trading: New Evidence. *The Journal of Business, Vol 61, No. 1* , 25-44.

Seyhun , N. (1998). *Investment intelligence from insider trading*. Massachusetts, London: The MIT press Cambridge.

Seyhun, H. (1986). Insiders profits, costs of trading, and market efficiency. *Journal of Financial Economics*, 189-212.

Seyhun, H. (1988). The information content of aggregate insider trading. *The Journal of Business, Vol. 61, No. 1*, 1-24.

Seyhun, H. (1992). Why does aggregate insider trading predict future stock returns. *The Quarterly Journal of Economics, Vol. 107, No.4* , 1303-1331.

Seyhun, H. N. (1986). Market Effeciency and Expected Value, Cost and Quality of Information. *Journal of Financial Economics*.

Shaker, A. (2013). Testing the weak-form efficiency of the Finnish and Swedish stock markets. *European Journal of Business and Social Sciences, Vol.2, No.9*, 176-185.

Sivakumar, K., & Waymire, G. (1994). Insider trading following material news events: Evidence from earnings. *Financial Managament, Vol. 23* , 23-32.

Skaife, H. A., Veenman, D., & Wangerin, D. (2012). Internal control over financial reporting and managerial rent extraction: Evidence from the profitability of insider trading. *Journal of Accounting and Economics*.

Wahlstrom, G. (2003). Legal insider trading and abnormal returns: Some empirical evidence from Sweden. *Belgian Journal of Banking and Finance, Vol. 6*.

Williams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *The Academy of Management Journal, Vol. 40, No. 3*, 626-657.

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