รายงานวิจัยฉบับสมบูรณ์

โครงการ การซื้อขายหุ้นสามัญของบุคคลวงใน การประกาศข่าวของบริษัท และธรรมาภิบาล

(Insider Trading, Corporate Disclosure and Corporate Governance)

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สัญญาเลขที่ MRG5280250

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Abstract

Project Code: MRG5280250

Project Title: Insider Trading, Corporate Disclosure and Corporate Governance

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In spite of the long debate for insider trading in developed markets, there is little empirical research on insider trading in emerging markets. The environment of weaker legal system and higher ownership concentration in emerging markets would allow insiders more opportunity to trade based on their informational advantages. The examination of insider trading in Thailand will fill that gap. We find that insiders can time the market. Both inside buyers and inside sellers can earn statistically significant abnormal returns before and after the news announcements. Insiders are more likely to trade on the information other than the news announcements. This may suggest outside investors and market regulators that not all material information is publicly disclosed. Using relative volatility as a proxy of information flow to the market, we uncover the increases of relative volatility immediately after interim earnings and dividend announcements. Active insider trades provide stronger information flow to the market than passive trades do. Higher relative volatility (information asymmetry) is evident in case of bad news for insider sales, but good news for buy trades. However, lower relative volatility presents for firms splitting CEO and chairman, appointing independent directors greater than 33%, and having director ownership between 25% and 50%. In summary, good corporate governance reduces the opportunistic insider trading. Insiders can earn more abnormal returns, in particular for buy trades, when the information flow to the market in pre-announcement period is low. It is of interest for the future research to study how corporate governance and disclosure affect the systematic risk as well as the information quality around announcements.

Keywords : Corporate disclosures, corporate governance, insider trading, information asymmetry

บทคัดย่อ

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ถึงแม้ว่าการโต้เถียงเกี่ยวกับการซื้อขายหุ้นสามัญของบุคคลวงในจะมีมานานแล้วในตลาดที่พัฒนาแล้ว งานวิจัยเกี่ยวกับการซื้อขายหุ้นสามัญของบุคคลวงในยังมีน้อยมากในตลาดเกิดใหม่ สภาพแวดล้อมที่มีระบบกฎหมายอ่อนและการถือหุ้นที่กระจุกตัวในตลาดเกิดใหม่เปิดโอกาสให้บุคคลวงในซื้อขายบนพื้นฐานของความได้เปรียบทางข้อมูล การพิจารณาการซื้อขายหุ้นสามัญของบุคคลวงในในประเทศไทยจะเติมเต็มช่องว่างในการวิจัยนี้ เราพบว่าการซื้อขายหุ้นสามัญของบุคคลวงในสามารถแสดงทิศทางของตลาด และสร้างผลตอบแทนที่ผิดปกติอย่างมีนัยสำคัญก่อนและหลังการประกาศข่าวของบริษัท การซื้อขายหุ้นสามัญของบุคคลวงในมีแนวโน้มที่จะซื้อขายบนข่าวสารที่นอกเหนือจากข่าวบริษัทที่ถูกประกาศ อาจแสดงให้เห็นว่าข่าวสารที่มีนัยสำคัญอาจไม่ถูกประกาศต่อสาธารณะ เมื่อพิจารณาความผันผวนโดยเปรียบเทียบซึ่งเป็นตัวชี้วัดของข่าวสารที่บริษัทประกาศสู่ตลาด พบว่าความผันผันผวนโดยเปรียบเทียบมีค่าเพิ่มขึ้นทันทีหลังจากการประกาศข่าวกำไรรายไตรมาสและเงินปันผล การซื้อขายหุ้นสามัญของบุคคลวงในที่เกิดขึ้นก่อนการประกาศข่าวก่อให้เกิดข่าวสารสู่ตลาดมากกว่าการซื้อขายที่เกิดหลังการประกาศข่าว ความผันผันผวนโดยเปรียบเทียบ (ความไม่เท่าเทียมกันของข่าวสาร) มีค่าเพิ่มขึ้นในกรณีข่าวร้ายถูกประกาศพร้อมกับการขายของบุคคลวงในและข่าวดีถูกประกาศพร้อมกับการซื้อของบุคคลวงใน อย่างไรก็ตาม ความผันผันผวนโดยเปรียบเทียบมีค่าต่ำลงสำหรับบริษัทที่มีการแยกตำแหน่งประธานบริหารและประธานบริษัท บริษัทที่มีกรรมการอิสระมากกว่าร้อยละ 33 และบริษัทที่กรรมการถือหุ้นระหว่างร้อยละ 25% ถึงร้อยละ 50 โดยสรุปแล้ว ธรรมาภิบาลที่ดีจะช่วยลดโอกาสทำกำไรของการซื้อขายหุ้นสามัญของบุคคลวงใน บุคคลวงในสามารถสร้างผลตอบแทนที่ผิดปกติโดยเฉพาะอย่างยิ่งธุรกรรมซื้อเมื่อข่าวสารช่วงก่อนประกาศอยู่ในระดับต่ำ สำหรับงานวิจัยในอนาคตน่าสนใจที่จะศึกษาว่าธรรมาภิบาลและการเปิดเผยข้อมูลส่งผลกระทบต่อความเสี่ยงที่เป็นระบบและคุณภาพข่าวสารในช่วงเวลาประกาศข่าวของบริษัท

คำสำคัญ: ธรรมาภิบาล การเปิดเผยข่าวสารของบริษัท การซื้อขายหุ้นสามัญของบุคคลวงใน ความไม่เท่าเทียมกันในขข่าวสาร

1. Introduction

It is well-known that good corporate governance can improve investor protection and transparency in economies, which consequently speeds capital market development and lowers the cost of raising capital. Corporate governance has increasingly become a major issue in South East Asian economies, including Thailand, since the 1997 financial crisis decimated the corporate landscape. The first corporate governance guideline in Thailand, namely the Code of Best Practice for Directors of Listed Companies, was introduced in 1999 directly as a response to the financial crisis. In the code, information disclosure and the role of the board are viewed as significant corporate governance mechanisms.

This project aims to analyze how the Thai stock market reacts to two important corporate disclosures, earnings announcements and dividend changes. Secondly, the project wishes to examine insider trading patterns and their performance in the Thai stock market. Empirical evidence on insider trading has uncovered the profitability of insider trades because insiders are able to access valuable private information and can trade based on this information (Jaffe, 1974; Seyhun, 1992; Kini and Mian, 1995; Hillier and Marshall, 2002). Most of the extant literature on insider trading has focused on insider transactions in developed markets. The study in the low regulation environment can bridge the gap in the literature. Thirdly, it is of interest to investigate insider trading activity surrounding the announcement period of corporate disclosures in which the information content affects the stock returns. In Thailand, insiders are prohibited to trade in a price-sensitive period. This investigation can offer an insight into the effectiveness of this regulation to market regulators. Finally, the project attempts to illustrate the issues of good corporate governance to reduce information asymmetry between managers and shareholders by the means of information disclosures and to prevent the use of non-public material information.

In weak legal or corporate control systems, controlling shareholders are able to divert cash flows away from their minority counterparts (Shliefer and Vishny, 1997; Johnson et al., 2000). Moreover, concentrated ownership structures are associated with information opacity and low informativeness of earnings (Fan and Wong, 2002). In East Asia, La Porta et al. (1999) has documented that

ownership is highly concentrated in listed firms. Scott (1999), who examines the role of corporate governance in four Asian countries covering Indonesia, Malaysia, South Korea and Thailand suggest that the priority for these countries was to strengthen the effective limits on self-dealing transactions of controlling owners (insider trades). The information asymmetry between insiders and outside investors has been documented and director trading has been shown to outperform the market in a number of studies, such as Jaffe (1974), Seyhun (1986), Petit and Venkatesh (1995), and Marshall and Hillier (2002).

Improving shareholder protection was recognized as a priority in Thailand in 1993 when the Public Limited Companies Act B.E. 2535 was enacted. Nonetheless, corporate funds in Thailand are still able to be expropriated by majority shareholders who legally appoint the board of directors (Thailand Lawyers Attorneys & Legal Services, 2008). Investor protection in Thailand is classified as only "adequate" in the International Finance Corporation's Emerging Stock Markets Factbook. To attract investors, it is important to assure investors that their financial investment would not be expropriated by the board of directors or other major shareholders.

Information asymmetry between insiders and outsiders coupled with a non-transparent corporate environment increases the probability of informed insider trading. Many countries impose insider trading rules to regulate and prohibit insider trading activity (Bhattacharya and Daouk, 2002). The Stock Exchange of Thailand also realized this possibility and has introduced regulations and initiated the principles of good corporate governance for listed companies prohibiting the abuse of price-sensitive non-public information in 2002 to provide equitable treatment of shareholders. Insiders in Thailand are not allowed to trade in a one month period before financial statements are publicly released. However, many studies document contrary evidence on the use of private information by insiders. Insiders trade prior to the specific events in both the direction of the tentative impact of those events (Penman, 1982; Park et al., 1995; and Seyhun and Bradley, 1997) and the opposite direction (Givoly and Palmon, 1985; Sivakumar and Waymire, 1994; Hillier and Marshall, 2004).

The project will provide a number of contributions to the academic literature that investigates the market reaction to periodic (earnings) and non-periodic corporate disclosures (dividend) in addition to insider trading.

Firstly, there exist a number of studies examining the information content of earnings or dividend announcements, for example Wiriyaphusit (1998), Sirikanant (2002), Tarapoom (2005), and Lonkani and Ratchusanti (2007). However, these studies of which most are unpublished papers do not take into account the influence of corporate governance. This project will compare investor responses to corporate disclosures while controlling for a firm's corporate governance.

Secondly, the market reaction to corporate announcement from an outsider's perspective will be examined through both stock price changes and variability. This will reflect changes in market expectations as well as infer the amount of information in a market.

Thirdly, we investigate insider trading activity around earnings and dividend announcements. Self dealing is prohibited by the Stock Exchange of Thailand (Code of Best Practice for Directors of listed companies, 2002 and 2006; Principles of Security Regulations no. 10 and 28). Directors are not allowed to trade during a period in which insiders are likely to have an advantage of important non-public information. However, both the code and principles do not specify a certain period that the directors are banned to trade on the stocks of their firms prior to the corporate disclosure. The Guideline to Disclose Information for Listed Firms requires directors to wait for at least 24 hours after the information is publicly disclosed, while the Act indicates that directors shall not trade based on the particular information as long as the information has not disclosed yet. This project analyses the abnormal returns of insider transactions during this period. The research findings will have important implications to market policy makers, since it is important for policy makers to consider a country's overall institutional environment prior to implementing a comprehensive set of rules or regulations for corporate disclosure (Ball et al., 2000).

Fourthly, the Stock Exchange of Thailand (2004) indicates that, from insider trading between 1993 and 1999, insiders have ability to time the market and there exists information content of insider

trading. Our research project considers the efficacy of regulation that imposes a one-month closing period prior to an earnings announcement. Corporate insiders are constrained from trading due to their informational advantage in terms of non-public material information during such a period. We provide a direct test whether the constraints by the Stock Exchange of Thailand (SET) are effective through analyzing the trading behavior of corporate insiders and their trading performance surrounding final and interim earnings announcements.

Fifthly, the research will add to the literature on the information content of not only earnings announcements, but also dividend declarations. According to dividend signaling theory, dividend changes can trigger price changes because they contain information on management's assessment of their firms' future prospects. Lonkani and Ratchusanti (2007) test the dividend signaling theory by using the data of Thai public companies. They find that dividend can signal the firm's future performance when it is accompanied by financial analysts' expected dividend. In addition, Aivazian, Booth and Cleary (2003) state that dividends are preferred to capital gains in Thailand. Finally, an analysis of the impact of corporate governance on the informativeness of news announcements introduces a better understanding of information asymmetry between insiders and investors. The firm with better corporate governance practices should create higher quality disclosures in a timely manner as well as provide more pre-announcement information.

Two research papers will be produced from the findings in this research project. The first paper will systematically examine the daily stock returns of Thai listed firms to determine evidence of insider trading activity, especially around corporate disclosures- earnings, and dividends. The focus of is to investigate the market reaction to specific corporate disclosures (earnings and dividend announcements) and insider trading activity around this period. From the disclosure manual for Thai listed firms, earnings announcements are periodic information disclosure, whereas dividend declarations are non-periodic disclosures. These important corporate disclosures may impact stock returns differently. Earnings announcements are based on firms' past transactions; whereas dividends signal a firm's future cash flows and corporate governance practices affect the quality of corporate disclosures. The second paper will take account of information flow in the

market and corporate governance practices. The assumption is that any information asymmetry between insiders and investors should be lower in a higher information flow environment and a better corporate governance context. The variables used to identify relatively better corporate governance are ownership structure (higher proportion of external majority shareholders), board structure (higher proportion of independent director); and the role of chief executive director (the split between chairman and chief executive director).

2. Literature review

Most insider trading research has investigated the US and the UK stock markets. The main conclusion is that, in spite of an extensive regulatory regime, insiders are able to generate high abnormal returns in both markets (e.g. Lorie and Niederhoffer, 1968; Jaffee, 1974; Finnerty, 1976; Pope, Morris and Peel, 1990; Gregory et al. 1994; Hillier and Marshall, 2002).

Cheng, Szeto and Leung (2005) report that director trades more when a firm discloses good earnings figures, positive dividend payout and extra special dividend in Hong Kong. The stock market reacts differently between the consistent (i.e. positive news in both current and future earning news) and the contradictory (i.e. positive news in either current earnings or future earning news) signal (Ely and Mande, 1996). Atiase et al. (2005) examine the return reaction to earnings and future earnings guidance and find that investors prefer current earnings to analysts' forecasts. They pointed to the strong association of current earnings with returns regardless of the consistent or contradictory signals and concluded that although the signal of future earnings is more relevant, the current earnings figure provides more reliable information. The firm's structure of corporate governance has also been found to be associated with earnings informativeness in seven East Asian countries (Fan and Wong, 2002).

One of the best practice codes in corporate governance relates to corporate disclosure. With regard to agency theory (Jensen and Mecking, 1976), corporate disclosure can reduce information asymmetry between owners and managers. Helflin et al. (2006) noted that high quality disclosure firms could introduce a smaller information asymmetry spread and a lower risk of informed trading. However, managers can also increase their wealth through disclosure based on the managerial

myopic theory. Information disclosure is related to firm performance, i.e. a manager is more likely to publicly disclose information when the firm performs well than when it performs poorly (Chambers and Penman, 1984; Leng and Lundholm, 1993). In other words, corporate disclosure is positively related to firm performance. A considerable body of empirical research has reported the influence of corporate governance on disclosure in developed economies, such as the independent non-executive directors (Fama and Jensen, 1983; Forker, 1992; and Haniffa and Cooke, 2000), the separation of CEO and chairman (Forker, 1982) and board size (Ahmed et al., 2005).

3. Research Methodology

This project is an empirical study which employs the secondary data of insider trading record from SEC, news announcements from SET smart database, company annual reports from SET and stock market data from Datastream. Research methodology is described in detail compatible with our two primary research aims (i) to investigate the market reaction to specific corporate news announcements of earnings and dividend, as well as insider trading activity around this period, and (ii) to illustrate the issues of good corporate governance to reduce information asymmetry between managers and shareholders by the means of information disclosures and to prevent the use of non-public material information.

Part I. Market reaction to insider trading around corporate news announcements

The first analysis will be the descriptive statistics of aggregate insider trading activities measured by the net purchase ratio (NPR) in terms of both the number of transactions and transaction value (Lakonishok and Lee, 2001).

$$NPR = \frac{NetPurchase}{TotalInsiderTransactions} \quad (1)$$

Where $NetPurchase$ is the number of insider purchases minus the number of insider sales. $TotalInsiderTransactions$ is the total number of transactions during the period.

Then we will examine the performance of insider trading from the market impact. If insider trading matter for firm performance and their effect is fully incorporated by the market; stock prices should

theoretically adjust accordingly. Stock excess returns are measured by daily abnormal stock returns, which are calculated from the market model. The market adjusted models and the mean adjusted model to compute abnormal returns are also employed and the results of these models are similar to that of market model. For T-statistic, the method of Boehmer et al. (1991) is applied. The estimation period is approximately three months (120 days to 61 days) prior to the director transaction. The event period begins from 60 days before and after director trading.

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \tag{2}$$

$$T = \frac{\frac{\sum_{j=1}^{N} SR_{jt}}{N}}{\frac{\sqrt{\sum_{j=1}^{N}\left(\sum_{j=1}^{N}\frac{SR_{jt}}{N}\right)^2}}{N(N-1)}} \tag{3}$$

$$SR_{jt} = \frac{AR_{jt}}{S_{jt}} \tag{4}$$

$$S_{jt} = \sqrt{\hat{\sigma}_j^2}\left[1 + \frac{1}{U} + \frac{\left(R_{mt} - \bar{R}_m\right)^2}{\sum_{-121}^{-61}\left(R_{mt} - \bar{R}_m\right)^2}\right] \tag{5}$$

where: AR_{it} is the risk and size adjusted abnormal returns, R_{it} is the return on firm i at time t, $\bar{R}_i$ is the average return on firm i in the estimation period (-120, 60), R_{mt} is the corresponding return on the market index at time t. SR_{jt} is the standardised abnormal return. S_{jt} is the estimated standard deviation of the abnormal return, σ_j^2 is security j's estimated variance of abnormal return during the estimation period, $\bar{R}_{mt}$ is the average market return during the estimation period, U is the number of trading days in the estimation period of security j.

The cumulative abnormal return and t-statistic are:

$$CAR_{jk} = \sum_{t=1}^{k} SR_{jt} \tag{6}$$

$$CT = \frac{\dfrac{\sum_{j=1}^{N} CAR_{jk}}{N}}{\left(\sqrt{k} \left[\dfrac{\sqrt{\sum_{j=1}^{N} \left(\sum_{j=1}^{N} \dfrac{SR_{jt}}{N} \right)^2}}{N(N-1)} \right] \right)} \qquad (7)$$

In order to investigate the insider trading pattern, we compare the abnormal stock returns in the pre-event, event and post- event periods. The pre- and the post- event period are defined as 60 days before and after the insider trading date. We compare the cumulative abnormal returns (CARs) in pre- event (-60, -1), event (0) and post- event (1, 60) period to determine the market reactions to insider trading.

The next step is to relate the corporate disclosures to the insider trading activity. The similar concept of cumulative abnormal returns during corporate disclosures is applied to the insider trading performance. The announcement period is defined as 20 days surrounding the announcement date. The insider trading pattern and performance in the announcement period is compared with other trading periods based on types of disclosures.

Then, like the US study of Sivakumar and Waymire (1994) and the UK study of Hillier and Marshall (2002b), we will investigate the impact of a trading restriction on the performance of announcement trades. It is assumed that an insider who trades based on an information advantage would trade immediately before the trading ban period. However, if exploiting this trading strategy is likely to be accused of self-dealing, the insider shall delay trading to immediately after the trading ban period. Insider transactions occurring 10 days before announcement date are called active trades, and those taking place 10 days after announcement date is called passive trades.

Further, we relate the announcement trades with the contents of news announcements. An informed trade is either a transaction that is in line with the surprise component in the news announcement (i.e. a purchase prior to unexpected good news and a sale prior to unexpected bad news) or a transaction that reacts in the opposite of the surprise component in the news

announcement (i.e. a purchase after unexpected bad news and a sale after unexpected good news). The abnormal returns of informed trades may be indicative of using non-publicly material information.

To classify the announcements into good or bad news, we firstly compute the security's standardized return on the announcement date on the basis of a market determined measure follows (Hillier and Marshall, 2002b).

$$SSR_i = \frac{R_i - \mu_i}{\sigma_i} \tag{8}$$

Where SSR_i is the security's standardized return on the day of news announcement, R_i is the return on security i on the news announcement day, μ_i is the mean of returns, σ_i is the standard deviation of returns.

The standardized earning announcement day returns are, then, ranked and grouped into three equally numbered portfolios. The portfolio of the most positive standardized returns is the good news portfolio, the portfolio of the most negative standardized returns is the bad news portfolio and the remaining portfolio is the no surprise portfolio.

The performance of insider trading is then related with different insider trading measurers in the regression analysis. This will allow us to identify informed insider trading from outsiders' perspective. The identification of insider trading with private information is not clearly defined by finance theory. However, empirical studies suggest the proxies of informed trading by various insiders' trading characteristics, such as net size of trades (i.e. purchases minus sales), absolute size of a trade (e.g. number of shares traded, trading volume and proportion of firm value traded), and the percentage change in a director's holdings. Following Hillier and Marshall (2002a), we examine the association between abnormal insider trading returns and trading measures in the below model.

$$CAR = \beta_0 + \beta_1 PCAR + \beta_2 LMV + \beta_3 LNSHARE + \beta_4 LPRICE + \beta_5 DACTIVE + \beta_6 DPASSIVE + \varepsilon \tag{9}$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). We also use (1, 20) and the result is qualitatively similar. $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise.

Part II. The relationship among information flow, corporate governance and information asymmetry

As investors can employ private information in anticipation of pre-announcement information and in conjunction with a public announcement (or event-period information), Blazenko (1997) indicate that greater informativeness increases return variability in the pre-disclosure period relative to the accounting report period. The variability of stock returns can refer to the amount of information (Chambers and Penman, 1984). We estimate volatility by the generalized autoregressive conditional heteroskedasticity (GARCH (1, 1)) model as follow:

$$R_{jt} = \alpha_{j0} + R_{jt-1} + e_t \tag{10}$$

$$\sigma_t^2 = \sigma^2 h_t \tag{11}$$

$$h_t = \beta_0 + \beta_1 h_{t-1} + \beta_2 \varepsilon_{t-1}^2 \tag{12}$$

where $\varepsilon_{jt} = z_i h_{jt}$ ~ iidn (0,1) and σ_t^2 is the variance of ε_{jt} conditional on the past information Ω_{t-1}

Verrecchia (1991, 1997) also suggest that the variance of price changes around the announcement period is decreasing in the amount of pre-announcement information. Firms with high risk or bad news may increase disclosure to reduce the incidence of a large one-time stock price change. We will compute the relative stock return volatility of announcement period to pre-disclosure period.

The next step is to relate the corporate disclosures to the insider trading activity. Insider trading activity would be another source of information flow to the market where the information asymmetry takes place. It is expected that the information asymmetry between insiders and shareholders is high for announcement trades.

The insider trading pattern and performance surrounding corporate disclosures are, then, compared by the types of announcements in different timing of insider trades (pre- and post-announcement periods). Further, we relate the announcement trades with the contents of news announcements.

The announcement trades may provide the signal to the market. Value-relevant information flows into stock price earlier for firms in which insiders have relatively more opportunities and incentives to trade on their private information, suggesting that stock price is more informative for such firms. Ball et al. (2000) identify that poor public disclosure does not necessarily impede the information flow into stock prices, since the information flow can occur via the trading of informed insiders instead. Other controlling variables are firm size and trading characteristics. We apply the following regression with generalized method of moment technique.

$$CAR_{it} = \beta_{0it} + \gamma_1 REVOLA + \beta_1 PCAR_{it} + \beta_2 LMV_{it} + \beta_3 LSHARE_{it} + \beta_4 LPRICE_{it} + \beta_5 DACTIVE_{it} + \beta_6 DPASSIVE_{it} + \delta_1 SPLIT_{it} + \delta_2 INDDI_{it} + \delta_3 DIOWN_{it} + \varepsilon \quad (13)$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). $REVOLA$ is the relative volatility in announcement period to pre-announcement period, $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. $SPLIT$ is the dummy variable equal 1 for the split of chairman and chief executive officer and zero otherwise,

4. Results

Our sample consists of non-financial firms listed on the Stock Exchange of Thailand (SET) from 2002 to 2007. The raw data of insider trading is provided by the Securities and Exchange Commission. The insider trading data prior to 2005 are in the format of scanned documents. The information in such a period is hand collected. The other data is gathered from three different sources: (i) Form 56-1 to manually collect corporate governance data; (ii) the SET smart database to manually obtain corporate announcements; and (iii) the Datastream database for financial and accounting variables.

Firms will be selected if they have complete data in all data sources and survived until 2004 from the initial sample to ensure that the transactions were not attributable to the danger of firm failure or the activity of takeover. This point is more important than the survivorship bias in the sample. In addition, the stocks in our sample should be traded at least 20 days in the estimation period to prevent the problem of thin trading.

Findings of each part can be summarized as of following.

Part I. Market reaction to insider trading around corporate news announcements

The initial sample consists of 21,676 transactions, of which 24,039 transactions are common stock trades. We consider only the insider transactions (buy or sale) in the open stock market and on non-financial firm stocks. This reduces the number of insider transactions to 15,901 transactions. We further remove the firms that were delisted before 2004 (2,064 transactions) as well as have incomplete information (368 transactions) and were illiquid (922 transactions) in the sample period. These filtering criteria result in the final sample of 12,547 transactions. The details of the number of observations in each criterion are presented in Table 1.

Insider trading activities

The time series distribution of insider transactions and stock market performance are exhibited in Table 2. The total number of transactions considerably rises in 2003 and goes down in 2004. The insider transactions comprise 5,398 buy transactions and 7,149 sale transactions. The sale

activities are typically dominant over time, with the exception of 2004 when the stock market had a negative return (-10.74%) before remarkably reversing in the later year (10.22%). The buy to sale ratios are varying with the average of 0.84. The buy to sale ratio is the lowest at 0.40 in 2003 when the market return is the highest and the ratio is the highest at 1.48 in 2004 when the market return is the lowest. Nevertheless, the pattern of stock market and insider trading activities is not ascertainable.

The characteristics of insiders' buys and sales are provided in Table 3. Insiders buy shares in smaller firms (THB 27,964 million) than in the firms they sell (THB 49,169 million). The number of shares bought is approximately two-third of the number of shares sold. Similarly, the monetary trading volume and the proportion of market value in buy transactions are much lower than those in sale transactions. In addition, the directors buy shares of their firm more frequent than when they sell. That is the insiders tend to trade in a smaller trade size when buying than selling shares.

Performance of insider trading

The initial pilot test shows that existing methodologies are inappropriate. A number of sensitivity checks are undertaken on the methodology, but the consistently greater proportion of negative cumulative abnormal returns throughout the event period suggests that the methodology is biased. To rectify this bias, we standardize the event study abnormal returns to get a mean zero from the abnormal return series in each event.

The abnormal returns from insider trading are detailed in Table 4 and Figure 1. The insiders can earn abnormal returns from their trades as well as time their trades on average. The insiders buy shares after a period of poor performance for nearly a month and the abnormal returns reverse subsequently to their trades. By contrast, the insiders sell after a prolonged period of good performance. After the insiders sell, abnormal returns drop immediately. Share prices continue moving in compatible with the direction of insider trading. That is the market reacts to the insider trades in line with the signalling model.

Taking into account of the proportion of abnormal returns, it appears a high probability of negative abnormal returns both before and after insider transactions. However, on the insider trading day, the proportion of positive abnormal returns is low (41.61%) on the day of a buy trade, but high (60.69%) on the day of a sale trade.

Announcement trades

To exploit the informational advantage, it assumes that the insiders tend to trade close to the news announcement day. We will compare both the distribution and performance of announcement trades with all other insider trades in Table 5 and Table 6, respectively.

Many insiders (30% of the total insider transactions) trade within the 20-day period surrounding the news announcement. The hypothesis of equal insider buy/sell distributions for announcement and non-announcement periods is rejected. The buy-to-sale ratio in announcement period (0.86) is higher than that in other periods (0.72), particularly the transactions around interim earnings announcements (0.96) and the joint announcements of final earnings and dividend (0.89).

The buy-to-sale ratios in the cases of dividend announcements (0.66) and the joint announcements of interim earnings and dividend (0.54) are low relative to those in other announcement periods. Although Aivazian et al. (2003) suggest that dividends are preferred to capital gains in Thailand; Lonkani and Ratchusanti (2007) claim that it is complicated for individual investors to interpret the signaling from dividend payment in Thailand.

In general, the insiders can time the market, especially in sale transactions. Insiders sell after the shares of their firm has over performed and becomes poor relative to the market subsequent to the sale trades. The findings in sale transactions are consistent in all periods and news classifications; while the evidence from insider buys is different. The abnormal returns after an insider buy are higher than those before the trade, but the performance of insider buys is not consistent through all news classifications. The announcement trades earn higher abnormal returns than other trades after buying only for interim announcements.

"Active" and "Passive" trades

The announcement trades are classified into active trades and passive trades. The distribution of active and passive trades is presented in Table 7. Both the timing of insider trading and the distribution of buy and sell trades appear to be affected by the trading restricted period. The announcement trades cluster after the news announcements (passive trades). Also, the buy-to-sale ratios typically increase after the news announcement. In the 10 days prior to the news announcements, the trading pattern is very pronounced around interim earnings announcements. The distribution of trading around interim earnings announcements is different from both that around final earnings and that around dividend announcements. Contrarily, the null hypothesis of equal distribution of trading around any news announcements cannot be rejected for passive trades.

We then examine the abnormal returns earned by insiders between active and passive trades in Table 8. On average, insiders can earn significant abnormal returns for both buy and sell trades, as well as before and after the news announcements. In the 10 days prior to the announcements, insiders earn abnormal profit around final earnings and the joint of earnings (interim and final) and dividend announcements from buy trades, but every news announcement (with one exception) from sale trades. In the 10 days after the announcements, abnormal returns are statistically significant from buy trades around interim earnings and its joint announcement with dividend, but around all news types from sale trades.

In summary, although buying and selling distributions are affected by the trading restriction, insiders' performance is not different between active and passive trades. The restricted trading period cannot prevent insiders from taking informational advantages.

"Informed" and "Uninformed" trades

To consider the use of non-public information by insiders, we corresponds the active and passive trades to the information content of news announcement. The informed trades are identified through the direction of insider trades which anticipates the good news or the bad news, i.e. buy

trades before good news and after bad news, as well as sale trades before bad news and after good news. The profit of informed trades can suggest that insiders exploit non-public information. Table 9 shows the distribution of insider transactions around good and bad news announcements using the market determined measure (equation 8). In overall, the null hypothesis of equal distribution of insider trades around all news classifications is rejected in both active and passive period.

The distribution of insider transactions in the 10 days after news announcement exhibits strong tendency of informed trading around both bad and good news. By contrast, informed trading with active strategies tends to appear around bad news only. Insiders are net sellers in the active period, but net buyers in the passive period around bad news. The insider trading pattern is dominated by sale trades in both active and passive periods around good news.

The performance of informed and uninformed trading is presented in Table 10. Insiders are able to gain significant abnormal returns for every earnings classification, with only one exception (a buy trade prior to bad news). All of the informed transactions highlight the outperformance relative to the market.

Insiders' performance and insider trading measures

In Table 11, we show the coefficients of the ordinary least square regressions between abnormal insider trading returns and the trading measures to identify the informative insider trades from outsiders' perspectives. The market price reaction after insider transaction is higher for the smaller firms. The significantly negative relationship between pre and post abnormal return reflects the contrarian trading strategy. Insiders buy (sell) shares of their own firm after a prolonged period of low (high) abnormal returns. As expected, the negative (positive) effect of transaction price is found for buy (sale) trades. Insider trading can be viewed as an information signal to the market.

The insiders employ different trading strategies for buying and selling transactions to generate abnormal returns. The greatest price reaction occurs when insiders trade before the news announcements for buy transactions, but after the news announcements for sale transactions.

Part II. The relationship among information flow, corporate governance and information asymmetry

Relative volatility around corporate announcements

Firstly, we estimate volatility based on GARCH (1, 1) as a proxy for information flow. The distribution of relative volatility by types of news announcements is displayed in Table 12. Relative volatility around all of the corporate announcements significantly increases by an average of about 0.43%. In other words, the average relative volatility in three days centred on the announcement date is 0.43% larger than the mean relative volatility in 20 days before an announcement. However, the information content of corporate announcement is significantly greater than that of alternative sources in two cases: interim earnings announcement (0.58%) and dividend announcement (2.18%). Relative volatility is likely to increase immediately after both interim earnings announcements and dividend announcements.

Although announcements of both final and interim reports provide more flow of information than alternative information sources in the pre-announcement period, only the relative volatility of interim reports is significantly greater than one. SEC requires a shorter delay to the announcement of interim earnings relative to final earnings. General investors would be able to gain private information and analyse such information in a shorter time and possibly leading to higher information flow for the quarterly earnings announcements.

Given that relative volatility of dividend announcement is greater than one, general investors obtain less information about dividend from other information sources. Since most investors in Thailand are individual investors, they do not have information to make decision and analysis capability as much as informed investors do. The signalling from corporate announcements is important for general investors to form firm's future performance. Nevertheless, Lonkani and Ratchusanti (2007), which test the dividend signalling theory by using the data of Thai public companies, report that changes of dividend payments from past dividends cannot be used as a single signalling tool to predict the future performance. They suggest that the appropriate dividend surprise is the

deviation from analyst forecasting. Consequently, this could introduce the difficulty for general investors to anticipate firm's future performance from the signal from dividend announcements.

Announcement trades and relative volatility around corporate announcements

The results of this analysis are reported in Table 13. Insiders' announcement trades are significantly related to new information of dividend announcements. The insider buy trades provide stronger information flow of dividend to the market because relative volatility increases by a greater amount for insider buy trades than insider sell trades. This is consistent with the result reported in the previous section that the dividend case is likely to be a more informative event

With regard to the simultaneous announcements of final earnings and dividends, insider buy trades induce an increase in information flow of 2.08%, while insider sell trades experience a downward shift in information flow of 1.88%. Interestingly, the change in relative volatility is not supported for final earnings announcements. The reason is probably that this type of news obtains much attention among financial analysts, as well as alternative sources of information can be accessed prior to the announcements.

Informed trades and relative volatility around corporate announcements

In order to examine the relationship between insider's ability to time the market and the information flow to the market, announcement trades are divided into the trades before and after corporate announcements. The disclosure of insider trading could be another source of information. Consequently, active trades provide stronger information flow to the market in the pre-announcement period than passive trades do.

Table 14 reports relative volatility by types of corporate announcements and insider trading strategies. The results generally confirm our proposition in case of insider buy trades for all types of announcements, with the exception of interim earnings announcements. For insider sell trades, less relative volatility for active trades is particularly striking, with the exception of dividend announcements.

We further relate the analysis with the information content of each announcement. It is expected that firms with forthcoming good news would experience lower relative volatility due to lower information asymmetry than firms with forthcoming bad news. The results are presented in Table 15. We observe different reactions for informed buying and selling activities. Firms tend to keep bad news, but not good news before the formal announcements. Higher information asymmetry taking place in bad news is confirmed by higher relative volatility for insider sell trades when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. The contradict evidence is observed for buy trades. Higher information asymmetry remains in case of good news for active insider trading when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. This could explain from existing literature stating that majority of insider sales are undertaken for reasons other than informed trading. Insider buy trades, thus, typically have a higher level of informed trading compared to insider sell trades.

Corporate governance and relative volatility around corporate announcement

Table 16 provides descriptive statistics of corporate governance variables. Most of the firms split the role of CEO and chairman. Although the principles of good corporate governance for Thai listed companies recommend the board should be comprised of independent directors at least one-third, the evidence shows that only 31%. The mean (median) of directors' shareholdings is approximately 17% (11%).

The analysis of corporate governance and information flow around corporate announcements is shown in Table 17. We compare relative volatility conditional on groups of each corporate governance factors. The significant difference of relative volatility between split and non-split CEO and chairman can be seen for interim earnings announcement and dividend announcement. The split group experiences lower relative volatility than the non-split group does. In other words, the information asymmetry could be lower in the split group for these two types of announcements. Even though the previous section of relative volatility and informed trading generally reveals higher

information asymmetry for these two types of announcements, general investors in the split group can better estimate firm's future performance via obtaining the information content of these two types of announcements from alternative sources in the market before the formal corporate announcement.

The similar result is found for interim earnings announcement when the board of directors contains independent directors greater than 33%. In addition, low relative volatility on the announcement period relative to pre-announcement period is observed across firms with director ownership between 25% and 50%. The level of pre-announcement information is low for firms with low (<25%) and high (>50%) director shareholdings. The reason is probably high agency problem between managers and shareholders in widespread shareholding firms (director ownership < 25%) as well as between majority and minority shareholder in high director ownership firms.

The impact of corporate governance and Relative volatility around corporate announcement on information asymmetry

The last section of analysis considers the influence of corporate disclosure (relative volatility) and corporate governance (split, the fraction of independent directors, and director shareholding) on the information asymmetry, which is surrogate by insider returns over 60 days after insider trading day. Table 18 presents regression results for purchase and sales.

The result indicates that insiders can earn more abnormal returns for buy trades when relative volatility is increasing in announcement period. That is the formal announcement introduces higher information flow than other information source in pre-announcement period, in which insiders have informational advantage. Besides, good corporate governance is negatively associated with opportunistic insider trading. With the exception of the fraction of independent directors for buy trades, firms with split, higher board independence, and greater directors' stock holdings have smaller insider returns.

With regard to trading measures and control variables, the market price reaction after insider trading is higher for the smaller firms. The significantly negative relationship between pre- and

post- abnormal return highlights the contrarian trading strategy employed by insiders. The smaller number of shares traded introduce the higher insider performance. Insiders buy (sell) shares of their own firm after a prolonged period of low (high) abnormal returns. The negative effect of transaction price is found for insider buy trades only. Further, the greater price reaction in the same direction as insider trading occurs when insiders trade before the news announcements only for buy transactions.

5. Conclusions

Many empirical studies document the low level of transparency, legal protection as well as disclosure quality of financial and accounting information in emerging markets. This environment provides an opportunity to insiders to take advantage of outside shareholders. However, scarce scientific evidence has investigated the insider trading in emerging markets. Thailand is one of emerging markets where the retail shareholders are major investors and the controlling shareholder is distinct. The Stock Exchange of Thailand and the Securities and Exchange Commission imposed the regulations to prevent self-dealing. Insiders shall not trade on the stocks of their firms during a period in which they are likely to have an advantage of private information. Our study examines (i) the pattern and performance of insider trading around news announcements, and (ii) the impact of corporate governance and corporate disclosure on insider returns. This examination can contribute to both academic literature and policy implication.

Our sample ranges from 2002 to 2007. Insider sale transactions are typically dominant. The buy trading blocks are smaller than the sale blocks. Insiders are able to time the market and on average they outperform the market. The trading distributions are affected by the insider trading restrictions, but not effective to reduce the insider's abnormal returns. The insiders' performance is greater when buying prior to the news announcements and selling after the news announcements. Insider trading is likely to be based on the information other than the news announcements. Not all material information is disclosed. The findings propose the debate on the voluntary disclosure and insider trading restrictions in Thailand.

Good corporate governance is empirically found to reduce the information asymmetry between managers and investors. We further incorporate corporate governance in the model specification of insider trading performance to examine the information flow to the market by evaluating the influence of news announcement and corporate governance over insider returns. The level of information flow is measured by relative volatility from the framework of Kim and Verrecchia (1991, 1997).

Relative volatility is likely to increase immediately after interim earnings and dividend announcements. Active insider trades generally provide stronger information flow to the market than passive trades do, with the exception of interim earnings announcements for buy trades and dividend announcements for sell trades. Higher relative volatility (higher information asymmetry) is recorded in case of bad news for insider sales when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. The similar findings are reported but in case of good news for buy trades. This could suggest a higher level of informed trading for insider buy trades.

Given that corporate governance is motivated to enhance information disclosure, we relate corporate governance variables with information flow to the market. A univariate analysis demonstrates lower relative volatility for firms splitting the role of CEO and chairman, appointing independent directors greater than 33% on board, and having director ownership between 25% and 50%. Moreover, this finding is also confirmed in the multivariate analysis. Good corporate governance reduces the opportunistic insider trading. Insiders can earn more abnormal returns for buy trades when relative volatility is increasing in announcement period.

Table 1 Selection criteria

The table presents the number of observations in each step of filtering process. The insider trading data ranges from 2002 to 2007.

Filtering rules	No. of trades
Reported trades	29,676
on common stocks	24,039
buy or sell only	20,722
on non-financial firms	15,901
on firms survived until 2004	13,837
with complete information	13,469
after exclude the thin trading	12,547

Table 2 Stock market situation and the distribution of trades by year

The table reports the market returns and the number of insider transactions by transaction types and years over the sample period: 2002-2007.

Year	Market returns	Buy		Sale		Net Purchase Ratio	
		No.Trades	Value	No.Trades	Value	No.Trades	Value
2002	17.68%	766	1,568,264,382	815	9,702,834,100,000	-0.03	-1.00
2003	78.25%	680	2,268,148,206	1690	8,764,882,990	-0.43	-0.59
2004	-10.74%	1195	31,244,378,242	810	4,716,469,100	0.19	0.74
2005	10.22%	837	2,458,861,798	924	7,371,716,465	-0.05	-0.50
2006	-0.25%	911	5,637,643,991	1381	29,827,716,451	-0.21	-0.68
2007	26.14%	1009	3,192,304,767	1529	10,720,340,975	-0.20	-0.54
Total		5,398	46,369,601,385	7,149	9,764,235,300,000	-0.14	-0.99

Table 3 Characteristics of insider trading

The table summarizes the descriptive statistics of insider transactions. Market value of firms is defined as the market value of the firm on the director trading day. No. of shares traded is defined as the number of shares the director buys or sells. Volume of shares traded is the number of shares traded multiplied by the transaction price. Proportion of market value traded by directors is defined as (the number of shares traded * transaction price)/market value of the firm. Frequency within one working month is defined as the number of director trades in the same direction (buy or sells) within a twenty day period subsequent to the first trade.

No. of Companies		242
No. of Trades		12,547
No. of Buys		5,398
No. of Sells		7,149
	Buy	Sale
Market value of firm (million)	27,964	49,169
	3,183	*6,936*
No. of shares traded	668,703	948,447
	20000	*37500*
Transaction price (THB	55.01	118.52
	15.08	*14.6*
Volume of shares traded (THB)	8,590,145	1,366,009,412
	336,000	*641,650*
Proportion of market value traded by directors (%)	0.49	93.27
	0.01	*0.01*
Frequency with one working month of the 1st trade		
1 trade in month (1st trade)	29	17
More than one trade in month	115	107

Table 4 Standardized average abnormal returns and cumulative abnormal returns surrounding insider trading day

The table reports abnormal and cumulative abnormal returns in the event period by different sampling criteria of thin trading during the estimation period. The abnormal returns are generated from market model: $AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$ where AR_{it} is the risk and size adjusted abnormal returns, R_{it} is the return on firm i at time t, $\overline{R}_i$ is the average return on firm i in the estimation period (-120, 60), R_{mt} is the corresponding return on the market index at time t. The estimation period is approximately three months (-120 days, -61 days) prior to the insider transaction, whereas the event period begins from 60 days before and after insider trading. ***, ** and * mean significant at 0.01, 0.05 and 0.10 level, respectively.

Day	Buy				Sell			
	AAR%	% of positive ARs	CAR%		AAR%	% of positive ARs	CAR%	
-60	0.0273	48.54	0.0273		0.0344	45.74	0.0344	
-50	-0.0118	48.59	0.2024	*	0.0496	46.40	0.8767	***
-40	0.0538	48.65	0.3419	**	0.0589	* 46.17	2.0140	***
-30	-0.0135	48.89	0.4699	***	0.0668	** 49.13	2.7854	***
-20	0.0117	48.52	0.3050		0.1216	*** 48.50	4.1011	***
-10	0.0867 **	48.31	0.1720		0.1219	*** 47.88	5.1947	***
-5	-0.0345	46.74	0.1635		0.2098	*** 49.03	6.2439	***
-4	-0.0516	45.76	0.1119		0.2319	*** 49.94	6.4758	***
-3	-0.0631 *	47.22	0.0489		0.3164	*** 50.76	6.7921	***
-2	-0.0645 *	46.17	-0.0156		0.4452	*** 52.37	7.2373	***
-1	-0.1809 ***	44.31	-0.1965		0.6527	*** 54.64	7.8900	***
0	-0.4718 ***	41.61	-0.6683	***	1.1624	*** 60.69	9.0525	***
1	0.0497	49.76	-0.6187	**	0.0115	46.02	9.0409	***
2	0.0947 ***	50.54	-0.5239	**	0.0054	46.43	9.0463	***
3	0.1115 ***	50.21	-0.4125	*	-0.0549	44.97	8.9914	***
4	0.0713 **	49.74	-0.3412		-0.1549	*** 43.94	8.8368	***
5	0.0263	47.66	-0.3150		-0.0750	** 44.66	8.7620	***
10	0.0569	47.84	-0.2118		-0.0566	* 45.44	8.4887	***
20	-0.0288	46.73	0.2300		-0.0746	** 45.93	7.9573	***
30	0.0257	48.30	0.6844	***	-0.0185	46.63	7.5200	***
40	0.0416	47.93	0.7149	***	-0.0094	45.68	6.9617	***
50	-0.0192	47.36	0.7893	***	-0.0520	* 45.21	6.3928	***
60	0.0378	51.00	1.0024	***	-0.0838	*** 45.72	5.8016	***

Table 5 Distribution of insider transactions around earnings and dividend announcements

The table presents the distribution of insider transactions around earnings and dividend announcement. The announcement trades are classified as 60-day windows. ***, ** and * mean significant at 0.01, 0.05 and 0.10 level, respectively

	No.of buys		No.of sales
Full sample- Announcement	1355		1571
Final earnings announcement	96		131
Interim earnings announcement	934		964
Dividend announcement	141		211
Final earnings & Dividend announcement	102		114
Interim earnings & Dividend announcement	82		151
Full sample- All other trades	4043		5578
Goodness of fit test			
All announcement vs Others	16.8159	***	
Final earnings vs Others	0.0065		
Interim earnings vs Others	33.3697	***	
Dividend vs Others	0.5389		
Final vs Interim earnings	3.8861	**	
Dividend vs Interim earnings	9.9699	***	
Final earnings vs Dividend	0.2848		

Table 6 Abnormal returns on insider trades around announcements

The table reports abnormal and cumulative abnormal returns surrounding the earnings and dividend announcements in the event period. T-statistics are shown in parenthesis.

	Buy			Sale		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Full sample- Announcement	0.18	-0.80	0.96	9.69	1.16	-4.91
	(2.77)	(-8.92)	(18.45)	(128.24)	(11.21)	(-77.99)
Final earnings announcement	-2.43	-1.13	-1.26	5.61	1.65	-3.48
	(-12.38)	(-4.67)	(-6.94)	(25.81)	(4.63)	(-18.84)
Interim earnings announcement	-1.07	-0.83	2.09	10.07	1.16	-4.12
	(-13.74)	(-7.27)	(32.18)	(93.05)	(8.09)	(-45.93)
Dividend announcement	2.39	-0.34	-2.39	9.67	0.64	-9.96
	(15.27)	(-1.45)	(-19.67)	(69.93)	(3.32)	(-84.53)
Final earnings & dividend announcement	12.64	-0.72	-4.61	16.77	1.34	-9.11
	(36.02)	(-2.36)	(-24.07)	(60.09)	(4.03)	(-54.03)
Interim earnings & dividend announcement	-1.85	-0.93	3.60	5.45	1.31	-0.87
	(-12.93)	(-2.85)	(21.59)	(44.38)	(4.52)	(-5.36)
Full sample- All other trades	-0.32	-0.36	1.87	7.38	1.16	-2.79
	(-8.94)	(-7.47)	(60.83)	(220.12)	(23.26)	(-97.89)
Difference in mean between two samples						
All announcement vs Others	(6.75)		(-15.09)	(27.84)		(-30.73)
Final earnings vs Others	(-10.56)		(-17.04)	(-8.04)		(-3.70)
Interim earnings vs Others	(-8.68)		(3.05)	(23.70)		(-14.18)
Dividend vs Others	(16.88)		(-33.98)	(16.04)		(-59.17)
Final vs Interim earnings	(-6.46)		(-17.41)	(-18.34)		(3.15)
Dividend vs Interim earnings	(19.78)		(-32.51)	(-2.30)		(-39.40)
Final earnings vs Dividend	(-19.20)		(5.22)	(-15.72)		(29.60)
Difference in mean between pre and post periods						
Full sample- Announcement	(-9.33)			(14.84)		
Final earnings announcement	(-4.40)			(31.87)		
Interim earnings announcement	(-31.19)			(10.09)		
Dividend announcement	(24.12)			(10.80)		
Final earnings & dividend announcement	(43.15)			(79.38)		
Interim earnings & dividend announcement	(-24.80)			(30.99)		
Full sample- All other trades	(-46.25)			(23.11)		

Table 7 Distribution of insider trades in "active" and "passive" periods

The table presents the distribution of director transactions around the announcement period. The active trades are classified as the insider transactions within the 10-day period prior to the news announcement period. The passive trades are classified as the insider trades in the 10-day period post the news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	No.of Buy transactions		No.of sale transactions	
	Active	Passive	Active	Passive
Full sample- Announcement	414	921	609	945
Final earnings announcement	33	63	57	74
Interim earnings announcement	313	621	362	602
Dividend announcement	35	106	88	123
Final earnings & Dividend announcement	17	78	46	60
Interim earnings & Dividend announcement	16	53	56	86
Goodness of fit test				
Full sample- Announcement	20.9982	***		
Final earnings announcement	1.9327			
Interim earnings announcement	3.3789	*		
Dividend announcement	10.5981	***		
Final earnings & Dividend announcement	15.1404	***		
Interim earnings & Dividend announcement	5.4536	**		
Active				
Final vs Interim earnings	3.0185	*		
Dividend vs Interim earnings	13.5787	***		
Final earnings vs Dividend	1.6124			
Passive				
Final vs Interim earnings	1.1314			
Dividend vs Interim earnings	1.5544			
Final earnings vs Dividend	0.0032			

Table 8 Abnormal returns on insider trades in "active" and "passive" periods

The table shows cumulative abnormal returns (CARs) over the announcement period. T-statistics are shown in parenthesis. The active trades are classified as the director transaction within the 10-day period prior to the announcement period. The passive trades are classified as the director trade in the 10-day period post the announcement period.

	Buy						Sale					
	Active			Passive			Active			Passive		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Full sample- Announcement	0.39	-0.94	1.08	0.13	-0.73	0.85	8.69	1.33	-4.11	10.14	1.03	-5.29
	(2.90)	(-6.14)	(9.83)	(1.79)	(-6.54)	(14.77)	(77.78)	(8.48)	(-39.02)	(99.36)	(7.59)	(-67.29)
Final earnings announcement	-4.79	-0.98	1.00	-1.19	-1.21	-2.45	4.83	1.78	-1.57	6.22	1.56	-4.94
	(-15.54)	(-2.97)	(4.21)	(-4.79)	(-3.70)	(-10.02)	(15.17)	(2.71)	(-6.52)	(20.98)	(4.06)	(-18.51)
Interim earnings announcement	1.15	-0.99	0.80	-2.18	-0.75	2.76	9.69	1.27	-4.30	10.30	1.10	-4.02
	(6.73)	(-5.24)	(5.84)	(-27.76)	(-5.25)	(40.45)	(58.79)	(5.74)	(-27.42)	(72.45)	(5.85)	(-37.04)
Dividend announcement	0.58	-0.94	-0.77	2.99	-0.14	-2.96	7.35	0.86	-7.35	11.32	0.48	-11.82
	(1.99)	(-2.34)	(-3.54)	(16.24)	(-0.50)	(-20.45)	(41.89)	(3.75)	(-44.04)	(56.90)	(1.67)	(-74.11)
Final earnings & Dividend announcement	1.58	-0.62	6.02	16.05	-0.86	-7.51	14.48	0.97	-8.08	18.15	1.76	-10.39
	(5.99)	(-1.53)	(15.34)	(36.28)	(-2.28)	(-35.38)	(40.56)	(2.16)	(-36.79)	(41.13)	(3.86)	(-39.48)
Interim earnings & Dividend announcement	-5.36	-0.22	5.38	-0.32	-0.90	2.91	3.45	2.33	2.91	5.10	0.35	-1.39
	(-19.27)	(-0.27)	(12.23)	(-2.20)	(-2.18)	(14.26)	(15.62)	(5.92)	(9.07)	(52.45)	(1.14)	(-11.49)
Difference in mean between pre and post periods												
Full sample- Announcement	(-3.97)			(-7.68)			(83.35)			(119.78)		
Final earnings announcement	(-14.88)			(3.59)			(16.03)			(27.97)		
Interim earnings announcement	(1.56)			(-47.47)			(61.48)			(80.07)		
Dividend announcement	(3.71)			(25.40)			(60.70)			(90.76)		
Final earnings & Dividend announcement	(-9.39)			(48.02)			(53.82)			(55.55)		
Interim earnings & Dividend announcement	(-20.63)			(-12.86)			(1.39)			(41.83)		

Table 9 Informed trading around announcements

The table shows the distribution of informed trading around the news announcement period. The active trades are classified as the director transaction within the 10-day period prior to the news announcement period. The passive trades are classified as the director trade in the 10-day period post news announcement. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	No.of Buy transactions		No.of sale transactions	
	Active	Passive	Active	Passive
Bad news	130	346	260	320
No surprises	115	207	137	181
Good news	161	338	177	415
Goodness of fit test				
Bad news	34.44	***		
No surprises	3.638	*		
Good news	0.7088			
Active	17.7325	***		
Passive	10.2872	***		

Table 10 Informed trading: abnormal returns on insider trades

The table shows cumulative abnormal returns (CARs) around the news announcement period. T-statistics are shown in parenthesis. The active trades are classified as the director transaction within the 10-day period prior to the news announcement period. The passive trades are classified as the director trade in the 10-day period post news announcement. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	Buy						Sale					
	Active			Passive			Active			Passive		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Bad news	0.83	-0.59	1.04	0.46	-1.26	1.53	11.25	1.63	-3.96	13.68	0.84	-6.88
	(3.70)	(-1.72)	(5.45)	(4.30)	(-7.48)	(18.17)	(57.18)	(5.74)	(-20.33)	(58.61)	(3.09)	(-39.14)
Good news	0.10	-1.11	3.03	-0.48	-0.13	0.66	8.73	0.98	-5.02	9.32	1.16	-5.67
	(0.66)	(-5.36)	(11.86)	(-4.44)	(-0.61)	(4.16)	(42.61)	(3.84)	(-27.60)	(73.59)	(5.98)	(-54.53)
Difference in mean between pre and post periods												
Bad news	(-0.74)			(-7.86)			(54.93)			(70.37)		
Good news	(-9.86)			(-5.95)			(50.19)			(91.48)		

Table 11 Cross-sectional regression coefficients of abnormal returns on insider trading metrics

The table presents the cross-sectional regression coefficients of cumulative abnormal returns on insider trading metrics.

$$CAR = \beta_0 + \beta_1 PCAR + \beta_2 LMV + \beta_3 LNSHARE + \beta_4 LPRICE + \beta_5 DACTIVE + \beta_6 DPASSIVE + \varepsilon$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). We also use (1, 20) and the result is qualitatively similar. $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	Purchases		Sales	
Intercept	4.4955	***	-3.16056	**
	(3.81)		(-2.57)	
PCAR	-0.48919	***	-0.51644	***
	(-54.70)		(-64.81)	
LMV	-0.80185	***	-0.67595	***
	(-6.85)		(-6.27)	
LNSHARE	0.15291		0.15603	*
	(1.66)		(1.77)	
LPRICE	-0.83444	***	0.76895	***
	(-4.78)		(4.57)	
DACTIVE	0.17022		-1.81321	***
	(0.79)		(-2.68)	
DPASSIVE	0.51672	*	0.51887	
	(1.88)		(0.61)	
Adjusted R-square	0.3601		0.3746	
F-statistic	60.52	***	54.87	***
No.obs	5,382		7,130	

Table 12 Relative volatility around corporate disclosures classified by types of disclosures

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Obs	Mean	
Full sample- Announcement	3344	1.0043	*
Final earnings announcement	225	1.0064	
Interim earnings announcement	1873	1.0058	*
Dividend announcement	354	1.0218	*
Final earnings & Dividend announcement	433	0.9999	
Interim earnings & Dividend announcement	459	1.0021	

Table 13 Relative volatility around corporate disclosures in conjunction with insider trading

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. These disclosures occurred during 60 days before or after insider trading. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy			Sales		
	Obs	Mean		Obs	Mean	
Full sample- Announcement	1527	0.9943		1817	1.0132	*
Final earnings announcement	94	1.0288		131	0.9903	
Interim earnings announcement	927	0.9882		946	1.0232	*
Dividend announcement	142	1.0293	*	212	1.0168	*
Final earnings & Dividend announcement	205	1.0208	*	228	0.9812	*
Interim earnings & Dividend announcement	159	1.0144		300	0.9956	

Table 14 Relative volatility around corporate disclosures in active or passive periods

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. These disclosures occurred in the active period (10 days before insider trading) or the passive period (10 days after insider trading). The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy					Sale				
	Active		Passive			Active		Passive		
	Obs	Mean	Obs	Mean		Obs	Mean	Obs	Mean	
Full sample- Announcement	447	1.0181	1040	0.9849		710	0.9929	1073	1.0287	*
Final earnings announcement	33	1.0199	61	1.0337	*	57	0.9120	74	1.0505	*
Interim earnings announcement	311	1.0212	616	0.9715		361	1.0110	585	1.0307	*
Dividend announcement	36	1.0228	106	1.0315	*	88	1.0299	124	1.0074	*
Final earnings & Dividend announcement	34	0.9884	157	1.0287	*	92	0.9538	120	1.0030	*
Interim earnings & Dividend announcement	33	1.0015	100	1.0240	*	112	0.9915	170	1.0160	*

Table 15 Relative volatility around corporate disclosures in conjunction with the potential informed trading

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy					Sale				
	Active		Passive			Active		Passive		
	Good news		Bad news			Bad news		Good news		
	Obs	Mean	Obs	Mean		Obs	Mean	Obs	Mean	
Full sample- Announcement	177	1.0217	378	0.9638		298	0.9738	487	0.9860	
Final earnings announcement	19	0.9981	26	1.0187		36	0.8522	44	1.0344	
Interim earnings announcement	116	1.0292	258	0.9596	*	167	1.0056	222	0.9795	*
Dividend announcement	10	1.0261	31	1.0229	*	19	1.0438	79	1.0050	*
Final earnings & Dividend announcement	14	0.9695	43	0.9529	*	30	1.0148	74	0.9766	*
Interim earnings & Dividend announcement	18	1.0138	20	1.0049		46	0.9068	68	0.9722	

Table 16 Descriptive statistics of corporate governance variables

The table reports summary statistics of corporate governance variables: split, board size, fraction of independent non-executive directors, and director ownership. Split is dummy variable equal to 1 where the firm separates the functions of the Chairman and the CEO, and 0 otherwise. Fraction of independent non-executive directors (NED) is the fraction of non-executives without any financial or personal relation to the firm including has a tenure exceeding ten years with the firm, was formerly an executive director, or has any disclosed business relationships with the firm (i.e. related party transactions). Director ownership represents shareholding by directors, the CEO and executive directors.

	Mean	Median	Min	Max	Stdev
Split	0.82	1.00	0.00	1.00	0.38
Fraction of independent NED	31.19	30.77	0.00	66.67	12.81
Director ownership	17.04	11.72	0.00	66.27	17.71

Table 17 Relative volatility around corporate disclosures classified by corporate governance variables

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The relative volatility is classified according to split, board size, fraction of independent non-executive directors, and director ownership. Split is dummy variable equal to 1 where the firm separates the functions of the Chairman and the CEO, and 0 otherwise. Fraction of independent non-executive directors (NED) is the fraction of non-executives without any financial or personal relation to the firm including has a tenure exceeding ten years with the firm, was formerly an executive director, or has any disclosed business relationships with the firm (i.e. related party transactions). Director ownership represents shareholding by directors, the CEO and executive directors.The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

A. Split	Split		Not split		
	Obs	Mean	Obs	Mean	
Full sample- Announcement	1878	1.0074	404	0.9976	
Final earnings announcement	146	1.0454	31	0.8861	
Interim earnings announcement	987	0.9973	265	1.0068	*
Dividend announcement	241	1.0277	42	1.0431	*
Final earnings & Dividend announcement	220	1.0265	18	0.9995	
Interim earnings & Dividend announcement	284	0.9907	48	0.9781	

Table 17 (continue)

B. Fraction of independent non-executive directors	< 33%		>= 33%		
	Obs	Mean	Obs	Mean	
Full sample- Announcement	1216	1.0124	1115	1.0160	
Final earnings announcement	77	1.0046	100	1.0274	
Interim earnings announcement	668	1.0223	629	1.0061	*
Dividend announcement	159	1.0134	124	1.0513	
Final earnings & Dividend announcement	124	1.0150	118	1.0373	
Interim earnings & Dividend announcement	188	0.9778	144	1.0034	

C. % director ownership	< 25%		25-50%		>= 50%		
	Obs	Mean	Obs	Mean	Obs	Mean	
Full sample- Announcement	1675	1.0264	473	0.9697	183	1.0162	*
Final earnings announcement	100	1.0156	55	0.9933	22	1.0866	
Interim earnings announcement	974	1.0353	270	0.9529	53	0.9455	*
Dividend announcement	181	1.0409	52	0.9810	50	1.0415	*
Final earnings & Dividend announcement	164	1.0346	70	0.9984	8	1.0871	*
Interim earnings & Dividend announcement	256	0.9816	26	0.9940	50	1.0235	*

Table 18 Panel data analysis of abnormal returns on insider trading

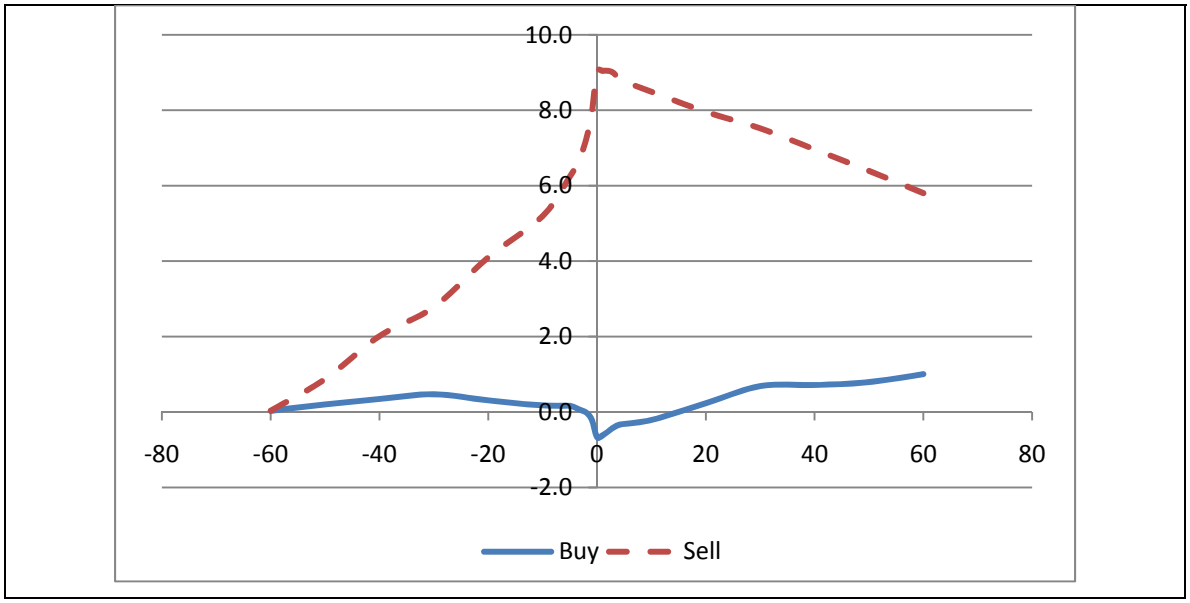
The table presents the coefficients from two-stage least square of cumulative abnormal returns on insider trading in the panel data analysis.

$$CAR_{it} = \beta_{0it} + \gamma_1 REVOLA_{it} + \beta_1 PCAR_{it} + \beta_2 LMV_{it} + \beta_3 LNSHARE_{it} + \beta_4 LPRICE_{it} + \beta_5 DACTIVE_{it} + \beta_6 DPASSIVE_{it} + \delta_1 SPLIT_{it} + \delta_2 INDDI_{it} + \delta_3 DIOWN_{it} + \varepsilon$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). $REVOLA$ is the relative volatility and is the endogenous variable in the two-stage least square equation. The instrumental variables include $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. * means significant at 5%.

CAR	Buy		Sales	
Intercept	4.818	*	-3.215	
	(3.71)		(-0.37)	
REVOLA	9.801	*	3.319	
	(2.90)		(1.63)	
PCAR	-0.514	*	-0.615	*
	(-17.52)		(-11.20)	
LMV	-0.173	*	-0.593	*
	(-4.10)		(-1.90)	
LNSHARE	-0.329	*	0.618	*
	(-1.66)		(2.52)	
LPRICE	-1.008	*	0.055	
	(-3.12)		(0.09)	
DACTIVE	2.082	*	0.352	
	(2.07)		(0.29)	
DPASSIVE	0.700		0.648	
	(0.69)		(0.56)	
SPLIT	-0.262	*	2.237	*
	(-2.40)		(2.09)	
INDDI	-0.020		0.065	*
	(-0.34)		(1.83)	
DIOWN	0.034	*	-0.076	*
	(3.21)		(-2.76)	
Adjusted R-square	0.332		0.489	
F-statistic	53.00	*	118.72	*

Figure 1 Standardized cumulative abnormal returns around insider trading



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Research output

1. International journals (with details of author(s), title, name of journal, year, issue, volume, and page)

   At present, we are developing a paper to publish in the target journals. We intend to publish the output in international academic journals in the relevant international peer reviewed journals rated at 3 stars in the Association of Business Schools journal quality list.

2. Research contribution
   - Commercial (produce a product/sell/earn revenue or apply for business/person)
     -
   - Policy (conduct a policy based on research findings/create a new procedure/change regulations)
     -
   - Public (build up a collaboration/network)
     -
   - Academic (develop teaching methods/new researcher)
     (i) A unique database on Thai corporate governance was created. The main obstacle to develop research studies in emerging markets is the lack of good quality data. We can further produce a number of research papers based on our database.
     (ii) The project enhances collaborative research and joint publications between the researcher's and the advisors' institutions.

3. Others (e.g. national journal publication, presentation at a conference, patent)

   After publishing in the international publication, we plan to disseminate the findings as a market report through Thai market regulators including the Stock Exchange of Thailand (SET) and the Securities and Exchange Commission (SEC).

Appendix 1

Working Paper 1

Tentative Title: Insider Trading in Emerging Markets: Evidence from Thailand

Insider Trading in Emerging Markets: Evidence from Thailand

Pornanong Budsaratragoon, David Hillier and Suntharee Lhaopadchan*

Abstract

In spite of the long debate for insider trading in developed markets, there is little empirical research on insider trading in emerging markets. The environment of weaker legal system and higher ownership concentration in emerging markets would allow insiders more opportunity to trade based on their informational advantages. The examination of insider trading in Thailand will fill that gap. Insiders can time the market. Both inside buyers and inside sellers can earn statistically significant abnormal returns before and after the news announcements. Insider seems to trade on the information other than the news announcements. This may suggest outside investors and market regulators that not all material information is publicly disclosed. Insiders in smaller firms can earn more abnormal profits. Trading volume matters in explaining the abnormal profits in sale trades. Passive strategy traders generate higher abnormal profits for buy trades; while active strategy traders earn higher profits for sale trades.

Keywords: insider trading, emerging market, news announcement

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1. Introduction

Empirical evidence on insider trading has uncovered the profitability of insider trades because insiders are able to access valuable private information and can trade based on this information (Jaffe, 1974; Seyhun, 1992; Kini and Mian, 1995; Hillier and Marshall, 2002). Most of the extant literature on insider trading has focused on insider transactions in developed markets. Claessens et al. (2000) and Lin (2003) reported that Thai listed firms have a high family ownership structure. This unique structure of Thai listed firms in the weak legal protection (Lin, 2002) and low levels of disclosing quality of financial and accounting information (Fan and Wong, 2002) allow corporate insiders to exploit the control over the managerial decision and this may allow them an opportunity to trade on their own stocks based on non-public material information. Further, insider trading restrictions become less effective in the high ownership concentration (Durnev and Nain, 2007). Besides, most of investors in Thailand are individual investors, who cannot access the firm information as well as institutional investors can (Lonkani and Ratchusanti, 2007). Information asymmetry between insiders and outsiders coupled with a non-transparent corporate environment may increase the probability of informed insider trading.

This study aims to examine insider trading patterns and their performance in the Thai stock market. It is also of interest to investigate insider trading activity surrounding the announcement period of corporate disclosures in which the information content can affect stock returns. Many existing studies document contrary evidence on the use of private information by insiders. Insiders trade prior to the specific events in both the direction of the tentative impact of those events (Penman, 1982; Park et al., 1995; and Seyhun and Bradley, 1997) and the opposite direction (Givoly and Palmon, 1985 and Sivakumar and Waymire, 1994, Hillier and Marshall, 2004). Many countries impose insider trading rules to regulate and prohibit insider trading activity (Bhattacharya and Daouk, 2002). Insiders are typically prohibited to trade in a price-sensitive period. The investigation surrounding corporate announcements can offer an insight into the effectiveness of this regulation to market regulators. The market reaction to corporate disclosures can be examined through stock abnormal returns from an outsider's perspective.

In Thailand, realizing the probability of informed trading in the disclosure period, the Stock Exchange of Thailand introduced the Guideline to Disclose Information for Listed Firms (Bor-Jor/Por 23-00) Page 144-145 Section 3.6(2) as well as initiated the principles of good corporate governance for listed companies prohibiting the abuse of price-sensitive non-public information to provide equitable treatment of shareholders. The prohibition of self dealing is also identified in the Security and Stock Exchange Act 238 – 244 Section 1 Part 8. Directors are not allowed to trade during a period in which insiders are likely to have an advantage of important non-public information. According to the Guideline to Disclose Information for Listed Firms, the directors should wait for at least 24 hours after the information is publicly disclosed. The Act indicates that the directors shall not trade based on the particular information as long as the information has not disclosed yet. Both the Guideline and the Act do not specify a certain period that the directors are banned to trade on the stocks of their firms prior to the corporate disclosure. Unlike the regulations in the UK, no specific rules in Thailand prohibit insiders from trading in any specific circumstances as well as the blackout periods.

The study contributes to the literature on insider trading, information asymmetry and the implementation of regulations in a number of ways. First, we extend the empirical evidence on the insider trading performance to the context of Thailand where the controlling shareholders and the owners' involvement on board of directors are generally found. The information asymmetry between the controlling shareholders and other shareholders are assumed to be high in this context. The study can determine the similarities and differences in the performance of insider trading in the literature.

Second, a couple of empirical studies (SET, 2004 and Boonyawat et al., 2004) examined the performance of Thai insider trading and their findings are not consensus. We found that the standard event methodology is bias in the context of Thailand. Our study can contribute to the new development of event methodology.

Third, we investigate insider trading activity around earnings and dividend announcements. We analyses the abnormal returns of insider transactions surrounding the disclosure period. The

research will add to the literature on the information content of not only earnings announcements, but also dividend declarations. According to dividend signaling theory, dividend changes can trigger price changes because they contain information on management's assessment of their firms' future prospects. Aivazian et al. (2003) claimed that dividends are preferable in Thailand.

Fourth, the research findings will also have important implications to market policy makers, since it is important for policy makers to consider a country's overall institutional environment to implementing a comprehensive set of rules or regulations for corporate disclosure (Ball, Kothari and Robin, 2000). This research project considers the efficacy of regulations that impose a closing period during announcement. Corporate insiders are constrained from trading due to their informational advantage in terms of non-public material information in such a period. We contribute a direct test whether the constraints by SET are effective through analyzing the trading behaviour of corporate insiders and their trading performance surrounding final and interim earnings, as well as dividend announcements.

Fifthly, we attempt to identify informed insiders' trades from the outsiders' perspective. The theoretical models of insider trading and literature suggest various measures of directors' trading activity. We will relate the abnormal returns of insider trades to these trading characteristics in the model.

Finally, the investigation of timing the insider transactions around the corporate disclosures allows us to determine the direct link with the content of forthcoming disclosures. Existing literature report mixed results in which the direction of insider trading is linked to the content of announcements. Our study will also contribute to the literature on the information content of different types of corporate disclosures.

The focus of this research project is to investigate the market reaction to specific corporate disclosures of earnings announcements (periodic information) and dividend disclosures (non-periodic disclosures) and insider trading activity around this period. These important corporate

disclosures may impact stock returns differently. Earnings announcements are based on firms' past transactions; whereas dividends signal a firm's future cash flows.

There exists information content of insider trading at the aggregate level. Insiders buy during the down market and sell during the up market. In addition, the abnormal returns increase after insiders buy and decrease after insiders sell. Post trade abnormal returns occur after corporate disclosures when insiders buy, but before corporate disclosures when insiders sell. Insiders are likely to hold information unknown to the market and buy based on this private information. Insider can earn significant abnormal returns for both buy and sell trades, as well as before and after the news announcements. Insiders' trading strategies (active or passive) generate abnormal returns differently in each period for buy trades. A large increase in trading price introduces low abnormal returns for purchases, but high abnormal returns for sales. Abnormal returns are concentrated in smaller firms. The share price effect is greater for passive strategies in buy trades, but for active strategies in sale trades.

The remainder of this paper is organized as follows. Section 2 summarizes the literature review. Section 3 describes the data sample. Section 4 describes the research methodology. Finally, Section 5 presents empirical results and Section 6 concludes.

2. Literature review:

Most insider trading research has investigated the US and the UK stock markets. The main conclusion is that, in spite of an extensive regulatory regime, insiders are able to generate high abnormal returns in both markets (e.g. Lorie and Niederhoffer, 1968; Jaffee, 1974; Finnerty, 1976; Pope, Morris and Peel, 1990; Gregory et al. 1994; Hillier and Marshall, 2002a).

Within the contexts of non-US and the non-UK, directors trade more when a firm discloses good earnings figures, positive dividend payout and extra special dividend in Hong Kong (Cheng, Szeto and Leung, 2005). The stock market reacts differently between the consistent (i.e. positive news in both current and future earning news) and the contradictory (i.e. positive news in either current earnings or future earning news) signal (Ely and Mande, 1996). Atiase et al. (2005) examine the

return reaction to earnings and future earnings guidance and find that investors prefer current earnings to analysts' forecasts. They pointed to the strong association of current earnings with returns regardless of the consistent or contradictory signals and concluded that although the signal of future earnings is more relevant, the current earnings figure provides more reliable information.

In Thailand, the early studies focus on whether insiders can outperform the market. There also exists an evidence of information content in insider trading. SET (2004) preliminarily investigated the insider trading performance between 1993 and 1999. Thai insiders can time the market in both purchase and sale transactions. Boonyawat et al. (2004) examine the profitability of insiders in the big firms (SET 50 index) in 2002. They point that insiders, especially CEOs, can earn abnormal profits from their purchase transactions, but not from sales. A family ownership control does not have significant impact on their profitability.

A number of studies examine the imposition and the enforcement of the insider trading laws/regulations. Bhattacharaya and Daouk (2002) find that 87 of 103 countries have insider trading laws, but only 38 of them impose the enforcement. Even though insider trading laws fail to eliminate insider profits, they can reduce the incidence of illegal insider trading (Bris, 2005). Fernandes and Ferreira (2009) suggest that in emerging market countries, price informativeness insignificantly changes after the enforcement of insider trading law.

Empirical evidence provides mixed results of the insider trading regulation effectiveness. On one hand, insider trading can drive security prices moving to the right direction. The insider trading regulations may reduce the market inefficiency, such as Hirshleifier (1971) and Meulbroek (1992). On the other hand, some studies suggest that insider trading regulations increase investor confidence as well as market liquidity, for example Glosten (1989), Campbell (1996) and Narayanan (2000). In the US, the voluntary restrictions on insider trading are found on the firm level over than 82% of the sample (Bettis et al., 2000).

The efficacy of trading ban is ambiguous. Kabir and Vermaelen (1996) point that stocks become less liquid and slower speed of price adjustment after a Model Code has been adopted in

Amsterdam Stock Exchange. Likewise, Hillier and Marshall (2002b) report the time of insider transactions are affected by the Model Code, but does not have an impact on insiders' performance. However, Beny (2007) find that more stringent insider trading laws are associated with more dispersed equity ownership, greater stock price accuracy and greater stock market liquidity.

3. Data

This project attempts to investigate director trading using a sample of all transactions undertaken by directors. The raw data of director trading is provided by the Securities and Exchange Commission. The director trading data prior to 2005 are in the format of scanned Form 59-2. We manually collect the information in such a period.

The sample we consider consists of non-financial companies listed on the Stock Exchange of Thailand (SET) over the period 2002 to 2007. Firms will be selected if they survived until 2004 from the initial sample to ensure that the transactions were not attributable to the danger of firm failure or the activity of takeover. This point is more important than the survivorship bias in the sample. In addition, the stocks in our sample should be traded at least 20 days in the estimation period to prevent the problem of thin trading.

4. Research methodology

The first analysis will be the aggregate activities and the descriptive statistics of the director trading. The aggregate insider transactions can be measured by the net purchase ratio (NPR) in terms of both the number of transactions and transaction value (Lakonishok and Lee, 2001).

$$NPR = \frac{NetPurchase}{TotalInsiderTransactions} \quad (1)$$

Where $NetPurchase$ is the number of insider purchases minus the number of insider sales. $TotalInsiderTransactions$ are the total number of transactions during the period.

Then we will examine pattern and performance from the market impact and relate the performance with the company's news announcements. If insider trading and firm's corporate disclosures matter for firm performance and their effect is fully incorporated by the market; stock prices should theoretically adjust to any relevant changes of firm's corporate disclosures. Excess returns are considered to be an unbiased assessment of the influence of news on equity market value (Mackinlay, 1997).

Secondly, we determine the performance of insider trading by the daily abnormal stock returns, which are calculated from the market model. We also use market adjusted models and mean adjusted model to compute abnormal returns. The results of these models are similar to that of market model. For T-statistic, the method of Boehmer et al. (1991) is applied.

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \tag{2}$$

$$T = \frac{\frac{\sum_{j=1}^{N} SR_{jt}}{N}}{\frac{\sqrt{\sum_{j=1}^{N}\left(\sum_{j=1}^{N}\frac{SR_{jt}}{N}\right)^2}}{N(N-1)}} \tag{3}$$

$$SR_{jt} = \frac{AR_{jt}}{S_{jt}} \tag{4}$$

$$S_{jt} = \sqrt{\hat{\sigma}_j^2}\left[1 + \frac{1}{U} + \frac{\left(R_{mt} - \bar{R}_m\right)^2}{\sum_{-121}^{-61}\left(R_{mt} - \bar{R}_m\right)^2}\right] \tag{5}$$

where: AR_{it} is the risk and size adjusted abnormal returns, R_{it} is the return on firm i at time t, $\bar{R}_i$ is the average return on firm i in the estimation period (-120, 60), R_{mt} is the corresponding return on the market index at time t. The estimation period is approximately three months (120 days to 61 days) prior to the director transaction, whereas the event period begins from 60 days before and after director trading. SR_{jt} is the standardised abnormal return. S_{jt} is the estimated standard deviation of the abnormal return, σ_j^2 is security j's estimated variance of abnormal return during the

estimation period, $\bar{R}_{mt}$ is the average market return during the estimation period, U is the number of trading days in the estimation period of security j.

The cumulative abnormal return and t-statistic are:

$$CAR_{jk} = \sum_{t=1}^{k} SR_{jt} \tag{6}$$

$$CT = \frac{\frac{\sum_{j=1}^{N} CAR_{jk}}{N}}{\left(\sqrt{k} \left[\frac{\sqrt{\sum_{j=1}^{N} \left(\sum_{j=1}^{N} \frac{SR_{jt}}{N} \right)^2}}{N(N-1)} \right] \right)} \tag{7}$$

The initial pilot test of Thai insider trading has shown that existing methodologies are inappropriate for the country's corporate environment. We carried out a number of sensitivity checks on the methodology, but the consistently greater proportion of negative cumulative abnormal returns throughout the event period suggests that the methodology is biased. All standard variations of the event study techniques are probably inappropriate for Thailand or in our sample period. To rectify this bias, we standardize the event study abnormal returns to get a mean zero from the abnormal return series in each event. This way will de-mean data and set the mean to zero for each event. This is an untested methodology in the literature.

Thirdly, in order to highlight the insider trading pattern, we compare the abnormal stock returns in the pre-event, event and post- event periods. The pre- and the post- event period are defined as 60 days before and after the insider trading date. We compare the cumulative abnormal returns (CARs) in pre- event (-60, -1), event (0) and post- event (1, 60) period to determine the market reactions to insider trading.

Fourthly, we will relate corporate disclosures, i.e. earnings and dividend announcements, to the insider trading activity. Thai listed firms typically make four earnings announcements a year: three quarterly reports and a final report. Hillier and Marshall (2002a) point that corporate insiders

attempt to hide the information contained in their trades, while the market attempts to discover such information. Other events, i.e. corporate disclosures, are used in conjunction with the insider trades to unearth the information in our case.

The linkage between insider trading and the content of announcements will provide us the evidence of the timing of insider trades around announcements and the efficacy of trading ban in such an announcement period. SET regulations restrict the insider trading on the announcement date, but not clearly specify the exact trading ban period before and after the corporate news announcements.

A number of empirical studies document an increase of trading volume around earnings announcements and other financial disclosures, for example Beaver (1968), Atiase and Bamber (1994), Kandel and Pearson (1995), Bamber et al. (1997, 1999), Utama and Cready (1997), Cready and Hurtt (2002), Landsman and Maydew (2002), Ahmed et al. (2003), Bailey et al. (2003), Asthana et al. (2004), Barron et al. (2005), Ball and Shivakumar (2008) and Ali et al. (2008). Therefore, we will compare insider trades closed to the announcements with trades at other times. The insiders who trade on the content of announcements are likely to trade as soon as possible after the announcements. The insider trading pattern and performance surrounding corporate disclosures are compared with other trading periods based on types of news announcements, i.e. interim earnings, final earnings and dividend announcements, in the pre-announcement, announcement and post-announcement periods. Following Hillier and Marshall (2002b), we define an announcement trade as 20 day-period around announcement. We compare the cumulative abnormal returns (CARs) in pre-announcement (-20, -1), announcement (0) and post-announcement (1, 20) period to determine the market reactions to corporate disclosures.

Then, like the US study of Sivakumar and Waymire (1994) and the UK study of Hillier and Marshall (2002b), we will investigate the impact of a trading restriction on the performance of announcement trades. It is assumed that an insider who trades based on an information advantage would trade immediately before the trading ban period. However, if exploiting this trading strategy is likely to be accused of self-dealing, the insider shall delay trading to immediately after the trading ban period.

In the analysis, we will consider the timing of announcement trades which occur 10 days before (active trades) and after (passive trades) the trading ban period.

Further, we relate the announcement trades with the contents of news announcements. An informed trade is either a transaction that is in line with the surprise component in the news announcement (i.e. a purchase prior to unexpected good news and a sale prior to unexpected bad news) or a transaction that reacts in the opposite of the surprise component in the news announcement (i.e. a purchase after unexpected bad news and a sale after unexpected good news). The abnormal returns of informed trades may be indicative of using non-publicly material information.

To classify the announcements into good or bad news, we firstly compute the security's standardized return on the announcement date on the basis of a market determined measure follows (Hillier and Marshall, 2002b).

$$SSR_i = \frac{R_i - \mu_i}{\sigma_i} \qquad (8)$$

Where SSR_i is the security's standardized return on the day of news announcement, R_i is the return on security i on the news announcement day, μ_i is the mean of returns, σ_i is the standard deviation of returns.

The standardized earning announcement day returns are, then, ranked and grouped into three equally numbered portfolios. The portfolio of the most positive standardized returns is the good news portfolio, the portfolio of the most negative standardized returns is the bad news portfolio and the remaining portfolio is the no surprise portfolio.

Finally, we will associate the performance of insider trading with different insider trading measurers in the regression analysis. This will allow us to identify informed insider trading from outsiders' perspective. The identification of insider trading with private information is not clearly defined by finance theory. However, empirical studies suggest the proxies of informed trading by various insiders' trading characteristics, such as net size of trades (i.e. purchases minus sales), absolute

size of a trade (e.g. number of shares traded, trading volume and proportion of firm value traded), and the percentage change in a director's holdings. Following Hillier and Marshall (2002a), we examine the association between abnormal insider trading returns and trading measures in the below model.

$$CAR = \beta_0 + \beta_1 PCAR + \beta_2 LMV + \beta_3 LNSHARE + \beta_4 LPRICE + \beta_5 DACTIVE + \beta_6 DPASSIVE + \varepsilon \quad (9)$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). We also use (1, 20) and the result is qualitatively similar. $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise.

5. Empirical Results

Insider trading activities

The time series distribution of insider transactions and stock market performance are exhibited in Table 2. The total number of transactions considerably rises in 2003 and goes down in 2004. The insider transactions comprise 5,398 buy transactions and 7,149 sale transactions. The sale activities are typically dominant over time, with the exception of 2004 when the stock market had a negative return (-10.74%) before remarkably reversing in the later year (10.22%). The buy to sale ratios are varying with the average of 0.84. The buy to sale ratio is the lowest at 0.40 in 2003 when the market return is the highest and the ratio is the highest at 1.48 in 2004 when the market return is the lowest. Nevertheless, the pattern of stock market and insider trading activities is not ascertainable.

The characteristics of insiders' buys and sales are provided in Table 3. Insiders buy shares in smaller firms (THB 27,964 million) than in the firms they sell (THB 49,169 million). The number of shares bought is approximately two-third of the number of shares sold. Similarly, the monetary trading volume and the proportion of market value in buy transactions are much lower than those in sale transactions. In addition, the directors buy shares of their firm more frequent than when they sell. That is the insiders tend to trade in a smaller trade size when buying than selling shares.

Performance of insider trading

The abnormal returns from insider trading are detailed in Table 4 and Figure 1. The insiders can earn abnormal returns from their trades as well as time their trades on average. The insiders buy shares after a period of poor performance for nearly a month and the abnormal returns reverse subsequently to their trades. By contrast, the insiders sell after a prolonged period of good performance. After the insiders sell, abnormal returns drop immediately. Share prices continue moving in compatible with the direction of insider trading. That is the market reacts to the insider trades in line with the signaling model.

Average abnormal returns are consistently negative before the insiders buy for a week; then change the trend to outperform the market one day after the transactions. The reaction trend lasts for approximately a month to impound the information in the buy transactions. For sales, the opposite pattern is observed. Underperformance exhibits prior to sell transaction and remains for a couple of days subsequent to the sale. Average abnormal returns are then negative.

Taking into account of the proportion of abnormal returns, it appears a high probability of negative abnormal returns both before and after insider transactions. However, on the insider trading day, the proportion of positive abnormal returns is low (41.61%) on the day of a buy trade, but high (60.69%) on the day of a sale trade.

Announcement trades

It assumes that the insiders tend to trade close to the day of news announcement to exploit the informational advantage. We will compare both the distribution and performance of announcement trades with all other insider trades in Table 5 and Table 6, respectively.

Many insiders (30% of the total insider transactions) trade within the 20-day period surrounding the news announcement. The hypothesis of equal insider buy/sell distributions for announcement and non-announcement periods is rejected. The buy-to-sale ratio in announcement period (0.86) is higher than that in other periods (0.72), particularly the transactions around interim earnings announcements (0.96) and the joint announcements of final earnings and dividend (0.89). The importance of interim earnings is similar to the evidence in the UK by Hillier and Marshall (2002b). They explain that interim results provide an early signal of the forthcoming period and it takes time to incorporate this information in the market.

The buy-to-sale ratios in the cases of dividend announcements (0.66) and the joint announcements of interim earnings and dividend (0.54) are low relative to those in other announcement periods. Although Aivazian et al. (2003) suggest that dividends are preferred to capital gains in Thailand; Lonkani and Ratchusanti (2007) claim that it is complicated for individual investors to interpret the signaling from dividend payment in Thailand. Dividend payment can be used as a signaling measure for firm's future performance only when it is compared with analysts' expectation. In addition, firms in many emerging markets, including Thailand in the sample, pay higher dividends than the US counterparts, even though they operate under more severe financial status (Booth and Cleary, 2003). This may explain the high incidence of high insider selling in our analysis.

In general, the insiders can time the market, especially in sale transactions. Insiders sell after the shares of their firm has over performed and becomes poor relative to the market subsequent to the sale trades. The findings in sale transactions are consistent in all periods and news classifications; while the evidence from insider buys is different. The abnormal returns after an insider buy are higher than those before the trade, but the performance of insider buys is not consistent through all news classifications. The right timing of buy trades is not found around dividend announcements and the joint announcements of final earnings and dividend announcements. Further, with regard

to the performance in each class of news announcements, the announcement trades earn higher abnormal returns than other trades after buying only for interim announcements.

"Active" and "Passive" trades

The announcement trades are classified into active trades and passive trades. The distribution of active and passive trades is presented in Table 7. Both the timing of insider trading and the distribution of buy and sell trades appear to be affected by the trading restricted period. The announcement trades cluster after the news announcements (passive trades). Also, the buy-to-sale ratios typically increase after the news announcement. In the 10 days prior to the news announcements, the trading pattern is very pronounced around interim earnings announcements. The distribution of trading around interim earnings announcements is different from both that around final earnings and that around dividend announcements. Contrarily, the null hypothesis of equal distribution of trading around any news announcements cannot be rejected for passive trades.

We then examine the abnormal returns earned by insiders between active and passive trades in Table 8. On average, insiders can earn significant abnormal returns for both buy and sell trades, as well as before and after the news announcements. The abnormal returns are driven by the insiders' trading strategies (active or passive) differently in each period for buy trades. In the 10 days prior to the announcements, insiders earn abnormal profit around final earnings and the joint of earnings (interim and final) and dividend announcements from buy trades, but every news announcement (with one exception) from sale trades. In the 10 days after the announcements, abnormal returns are statistically significant from buy trades around interim earnings and its joint announcement with dividend, but around all news types from sale trades.

In summary, although buying and selling distributions are affected by the trading restriction, insiders' performance is not different between active and passive trades. The restricted trading period is ineffective to prevent insiders from taking informational advantages. The profitable trading opportunities are evident from passive trading.

"Informed" and "Uninformed" trades

To consider the use of non-public information by insiders, we corresponds the active and passive trades to the information content of news announcement. The informed trades are identified through the direction of insider trades which anticipates the good news or the bad news, i.e. buy trades before good news and after bad news, as well as sale trades before bad news and after good news. The profit of informed trades can suggest that insiders exploit non-public information.

Table 9 shows the distribution of insider transactions around good and bad news announcements using the market determined measure (equation 8). In overall, the null hypothesis of equal distribution of insider trades around all news classifications is rejected in both active and passive period.

The distribution of insider transactions in the 10 days after news announcement exhibits strong tendency of informed trading around both bad and good news. By contrast, informed trading with active strategies tends to appear around bad news only. Insiders are net sellers in the active period, but net buyers in the passive period around bad news. The insider trading pattern is dominated by sale trades in both active and passive periods around good news.

The performance of informed and uninformed trading is presented in Table 10. Insiders are able to gain significant abnormal returns for every earnings classification, with only one exception (a buy trade prior to bad news). All of the informed transactions highlight the outperformance relative to the market. This evidence suggests us the ineffective trading restriction to reduce the insiders' informational advantages.

Insiders' performance and insider trading measures

This section attempts to identify the informative insider trades from outsiders' perspectives. The trading measures are available information to outside market participants. In Table 11, we show the coefficients of the ordinary least square regressions between abnormal insider trading returns and the trading measures.

The market price reaction after insider transaction is higher for the smaller firms. The significantly negative relationship between pre and post abnormal return reflects the contrarian trading strategy. Insiders buy (sell) shares of their own firm after a prolonged period of low (high) abnormal returns. As expected, the negative (positive) effect of transaction price is found for buy (sale) trades. Insider trading can be viewed as an information signal to the market.

The insiders employ different trading strategies for buying and selling transactions to generate abnormal returns. The greatest price reaction occurs when insiders trade before the news announcements for buy transactions, but after the news announcements for sale transactions.

6. Conclusion

Many empirical studies document the low level of transparency, legal protection as well as disclosure quality of financial and accounting information in emerging markets. This environment provides an opportunity to insiders to take advantage of outside shareholders. However, scarce scientific evidence has investigated the insider trading in emerging markets. Thailand is one of emerging markets where the retail shareholders are major investors and the controlling shareholder is distinct. Thai authorities (the Stock Exchange of Thailand and the Securities and Exchange Commission) imposed the regulations to prevent self-dealing, i.e. the Guideline to Disclose Information for Listed Firms (Bor-Jor/Por 23-00) Section 3.6(2), the principles of good corporate governance Security, and Stock Exchange Act 238 – 244 Section 1 Part 8. Insiders shall not trade on the stocks of their firms during a period in which they are likely to have an advantage of private information. Our study examines the pattern and performance of insider trading around news announcements using the demean methodology to rectify the data bias. The examination can contribute to academic literature and policy implication.

Our sample ranges from 2002 to 2007. Insider sale transactions are typically dominant. The buy trading blocks are smaller than the sale blocks. Insiders are able to time the market and on average they outperform the market. Further, the share prices react in the same direction as the insider trading. In other words, the insider trading can signal the future performance to the market.

The trading distributions are affected by the insider trading restrictions, but not effective to reduce the insider's abnormal returns. Insiders seem to exploit non-public information in their trading around news announcements. Final earnings, interim earnings and dividend announcements provide different trading opportunities. Insider trading abnormal returns associated with trading measures differently between buy and sale trades. The insiders' performance is greater when buying prior to the news announcements and selling after the news announcements.

Insider trading seems to be based on the information other than the news announcements. Not all material information is disclosed. The findings propose the debate on the voluntary insider trading restrictions in Thailand.

Table 1 Selection criteria

The table presents the number of observations in each step of filtering process. The insider trading data ranges from 2002 to 2007.

Filtering rules	No. of trades
Reported trades	29,676
on common stocks	24,039
buy or sell only	20,722
on non-financial firms	15,901
on firms survived until 2004	13,837
with complete information	13,469
after exclude the thin trading	12,547

Table 2 Stock market situation and the distribution of trades by year

The table reports the market returns and the number of insider transactions by transaction types and years over the sample period: 2002-2007.

Year	Market returns	Buy		Sale		Net Purchase Ratio	
		No.Trades	Value	No.Trades	Value	No.Trades	Value
2002	17.68%	766	1,568,264,382	815	9,702,834,100,000	-0.03	-1.00
2003	78.25%	680	2,268,148,206	1690	8,764,882,990	-0.43	-0.59
2004	-10.74%	1195	31,244,378,242	810	4,716,469,100	0.19	0.74
2005	10.22%	837	2,458,861,798	924	7,371,716,465	-0.05	-0.50
2006	-0.25%	911	5,637,643,991	1381	29,827,716,451	-0.21	-0.68
2007	26.14%	1009	3,192,304,767	1529	10,720,340,975	-0.20	-0.54
Total		5,398	46,369,601,385	7,149	9,764,235,300,000	-0.14	-0.99

Table 3 Characteristics of insider trading

The table summarizes the descriptive statistics of insider transactions. Market value of firms is defined as the market value of the firm on the director trading day. No. of shares traded is defined as the number of shares the director buys or sells. Volume of shares traded is the number of shares traded multiplied by the transaction price. Proportion of market value traded by directors is defined as (the number of shares traded * transaction price)/market value of the firm. Frequency within one working month is defined as the number of director trades in the same direction (buy or sells) within a twenty day period subsequent to the first trade.

No. of Companies		242
No. of Trades		12,547
No. of Buys		5,398
No. of Sells		7,149
	Buy	Sale
Market value of firm (million)	27,964	49,169
	3,183	*6,936*
No. of shares traded	668,703	948,447
	20000	*37500*
Transaction price (THB	55.01	118.52
	15.08	*14.6*
Volume of shares traded (THB)	8,590,145	1,366,009,412
	336,000	*641,650*
Proportion of market value traded by directors (%)	0.49	93.27
	0.01	*0.01*
Frequency with one working month of the 1st trade		
1 trade in month (1st trade)	29	17
More than one trade in month	115	107

Table 4 Standardized average abnormal returns and cumulative abnormal returns surrounding insider trading day

The table reports abnormal and cumulative abnormal returns in the event period by different sampling criteria of thin trading during the estimation period. The abnormal returns are generated from market model: $AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$ where AR_{it} is the risk and size adjusted abnormal returns, R_{it} is the return on firm i at time t, $\overline{R}_i$ is the average return on firm i in the estimation period (-120, 60), R_{mt} is the corresponding return on the market index at time t. The estimation period is approximately three months (-120 days, -61 days) prior to the insider transaction, whereas the event period begins from 60 days before and after insider trading. ***, ** and * mean significant at 0.01, 0.05 and 0.10 level, respectively.

Day	Buy				Sell			
	AAR%	% of positive ARs	CAR%		AAR%	% of positive ARs	CAR%	
-60	0.0273	48.54	0.0273		0.0344	45.74	0.0344	
-50	-0.0118	48.59	0.2024	*	0.0496	46.40	0.8767	***
-40	0.0538	48.65	0.3419	**	0.0589	* 46.17	2.0140	***
-30	-0.0135	48.89	0.4699	***	0.0668	** 49.13	2.7854	***
-20	0.0117	48.52	0.3050		0.1216	*** 48.50	4.1011	***
-10	0.0867 **	48.31	0.1720		0.1219	*** 47.88	5.1947	***
-5	-0.0345	46.74	0.1635		0.2098	*** 49.03	6.2439	***
-4	-0.0516	45.76	0.1119		0.2319	*** 49.94	6.4758	***
-3	-0.0631 *	47.22	0.0489		0.3164	*** 50.76	6.7921	***
-2	-0.0645 *	46.17	-0.0156		0.4452	*** 52.37	7.2373	***
-1	-0.1809 ***	44.31	-0.1965		0.6527	*** 54.64	7.8900	***
0	-0.4718 ***	41.61	-0.6683	***	1.1624	*** 60.69	9.0525	***
1	0.0497	49.76	-0.6187	**	0.0115	46.02	9.0409	***
2	0.0947 ***	50.54	-0.5239	**	0.0054	46.43	9.0463	***
3	0.1115 ***	50.21	-0.4125	*	-0.0549	44.97	8.9914	***
4	0.0713 **	49.74	-0.3412		-0.1549	*** 43.94	8.8368	***
5	0.0263	47.66	-0.3150		-0.0750	** 44.66	8.7620	***
10	0.0569	47.84	-0.2118		-0.0566	* 45.44	8.4887	***
20	-0.0288	46.73	0.2300		-0.0746	** 45.93	7.9573	***
30	0.0257	48.30	0.6844	***	-0.0185	46.63	7.5200	***
40	0.0416	47.93	0.7149	***	-0.0094	45.68	6.9617	***
50	-0.0192	47.36	0.7893	***	-0.0520	* 45.21	6.3928	***
60	0.0378	51.00	1.0024	***	-0.0838	*** 45.72	5.8016	***

Table 5 Distribution of insider transactions around earnings and dividend announcements

The table presents the distribution of insider transactions around earnings and dividend announcement. The announcement trades are classified as 60-day windows. ***, ** and * mean significant at 0.01, 0.05 and 0.10 level, respectively

	No.of buys	No.of sales
Full sample- Announcement	1355	1571
Final earnings announcement	96	131
Interim earnings announcement	934	964
Dividend announcement	141	211
Final earnings & Dividend announcement	102	114
Interim earnings & Dividend announcement	82	151
Full sample- All other trades	4043	5578
Goodness of fit test		
All announcement vs Others	16.8159 ***	
Final earnings vs Others	0.0065	
Interim earnings vs Others	33.3697 ***	
Dividend vs Others	0.5389	
Final vs Interim earnings	3.8861 **	
Dividend vs Interim earnings	9.9699 ***	
Final earnings vs Dividend	0.2848	

Table 6 Abnormal returns on insider trades around announcements

The table reports abnormal and cumulative abnormal returns surrounding the earnings and dividend announcements in the event period. T-statistics are shown in parenthesis.

	Buy			Sale		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Full sample- Announcement	0.18	-0.80	0.96	9.69	1.16	-4.91
	(2.77)	(-8.92)	(18.45)	(128.24)	(11.21)	(-77.99)
Final earnings announcement	-2.43	-1.13	-1.26	5.61	1.65	-3.48
	(-12.38)	(-4.67)	(-6.94)	(25.81)	(4.63)	(-18.84)
Interim earnings announcement	-1.07	-0.83	2.09	10.07	1.16	-4.12
	(-13.74)	(-7.27)	(32.18)	(93.05)	(8.09)	(-45.93)
Dividend announcement	2.39	-0.34	-2.39	9.67	0.64	-9.96
	(15.27)	(-1.45)	(-19.67)	(69.93)	(3.32)	(-84.53)
Final earnings & dividend announcement	12.64	-0.72	-4.61	16.77	1.34	-9.11
	(36.02)	(-2.36)	(-24.07)	(60.09)	(4.03)	(-54.03)
Interim earnings & dividend announcement	-1.85	-0.93	3.60	5.45	1.31	-0.87
	(-12.93)	(-2.85)	(21.59)	(44.38)	(4.52)	(-5.36)
Full sample- All other trades	-0.32	-0.36	1.87	7.38	1.16	-2.79
	(-8.94)	(-7.47)	(60.83)	(220.12)	(23.26)	(-97.89)
Difference in mean between two samples						
All announcement vs Others	(6.75)		(-15.09)	(27.84)		(-30.73)
Final earnings vs Others	(-10.56)		(-17.04)	(-8.04)		(-3.70)
Interim earnings vs Others	(-8.68)		(3.05)	(23.70)		(-14.18)
Dividend vs Others	(16.88)		(-33.98)	(16.04)		(-59.17)
Final vs Interim earnings	(-6.46)		(-17.41)	(-18.34)		(3.15)
Dividend vs Interim earnings	(19.78)		(-32.51)	(-2.30)		(-39.40)
Final earnings vs Dividend	(-19.20)		(5.22)	(-15.72)		(29.60)
Difference in mean between pre and post periods						
Full sample- Announcement	(-9.33)			(14.84)		
Final earnings announcement	(-4.40)			(31.87)		
Interim earnings announcement	(-31.19)			(10.09)		
Dividend announcement	(24.12)			(10.80)		
Final earnings & dividend announcement	(43.15)			(79.38)		
Interim earnings & dividend announcement	(-24.80)			(30.99)		
Full sample- All other trades	(-46.25)			(23.11)		

Table 7 Distribution of insider trades in "active" and "passive" periods

The table presents the distribution of director transactions around the announcement period. The active trades are classified as the insider transactions within the 10-day period prior to the news announcement period. The passive trades are classified as the insider trades in the 10-day period post the news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	No.of Buy transactions		No.of sale transactions	
	Active	Passive	Active	Passive
Full sample- Announcement	414	921	609	945
Final earnings announcement	33	63	57	74
Interim earnings announcement	313	621	362	602
Dividend announcement	35	106	88	123
Final earnings & Dividend announcement	17	78	46	60
Interim earnings & Dividend announcement	16	53	56	86
Goodness of fit test				
Full sample- Announcement	20.9982	***		
Final earnings announcement	1.9327			
Interim earnings announcement	3.3789	*		
Dividend announcement	10.5981	***		
Final earnings & Dividend announcement	15.1404	***		
Interim earnings & Dividend announcement	5.4536	**		
Active				
Final vs Interim earnings	3.0185	*		
Dividend vs Interim earnings	13.5787	***		
Final earnings vs Dividend	1.6124			
Passive				
Final vs Interim earnings	1.1314			
Dividend vs Interim earnings	1.5544			
Final earnings vs Dividend	0.0032			

Table 8 Abnormal returns on insider trades in "active" and "passive" periods

The table shows cumulative abnormal returns (CARs) over the announcement period. T-statistics are shown in parenthesis. The active trades are classified as the director transaction within the 10-day period prior to the announcement period. The passive trades are classified as the director trade in the 10-day period post the announcement period.

	Buy						Sale					
	Active			Passive			Active			Passive		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Full sample- Announcement	0.39	-0.94	1.08	0.13	-0.73	0.85	8.69	1.33	-4.11	10.14	1.03	-5.29
	(2.90)	(-6.14)	(9.83)	(1.79)	(-6.54)	(14.77)	(77.78)	(8.48)	(-39.02)	(99.36)	(7.59)	(-67.29)
Final earnings announcement	-4.79	-0.98	1.00	-1.19	-1.21	-2.45	4.83	1.78	-1.57	6.22	1.56	-4.94
	(-15.54)	(-2.97)	(4.21)	(-4.79)	(-3.70)	(-10.02)	(15.17)	(2.71)	(-6.52)	(20.98)	(4.06)	(-18.51)
Interim earnings announcement	1.15	-0.99	0.80	-2.18	-0.75	2.76	9.69	1.27	-4.30	10.30	1.10	-4.02
	(6.73)	(-5.24)	(5.84)	(-27.76)	(-5.25)	(40.45)	(58.79)	(5.74)	(-27.42)	(72.45)	(5.85)	(-37.04)
Dividend announcement	0.58	-0.94	-0.77	2.99	-0.14	-2.96	7.35	0.86	-7.35	11.32	0.48	-11.82
	(1.99)	(-2.34)	(-3.54)	(16.24)	(-0.50)	(-20.45)	(41.89)	(3.75)	(-44.04)	(56.90)	(1.67)	(-74.11)
Final earnings & Dividend announcement	1.58	-0.62	6.02	16.05	-0.86	-7.51	14.48	0.97	-8.08	18.15	1.76	-10.39
	(5.99)	(-1.53)	(15.34)	(36.28)	(-2.28)	(-35.38)	(40.56)	(2.16)	(-36.79)	(41.13)	(3.86)	(-39.48)
Interim earnings & Dividend announcement	-5.36	-0.22	5.38	-0.32	-0.90	2.91	3.45	2.33	2.91	5.10	0.35	-1.39
	(-19.27)	(-0.27)	(12.23)	(-2.20)	(-2.18)	(14.26)	(15.62)	(5.92)	(9.07)	(52.45)	(1.14)	(-11.49)
Difference in mean between pre and post periods												
Full sample- Announcement	(-3.97)			(-7.68)			(83.35)			(119.78)		
Final earnings announcement	(-14.88)			(3.59)			(16.03)			(27.97)		
Interim earnings announcement	(1.56)			(-47.47)			(61.48)			(80.07)		
Dividend announcement	(3.71)			(25.40)			(60.70)			(90.76)		
Final earnings & Dividend announcement	(-9.39)			(48.02)			(53.82)			(55.55)		
Interim earnings & Dividend announcement	(-20.63)			(-12.86)			(1.39)			(41.83)		

Table 9 Informed trading around announcements

The table shows the distribution of informed trading around the news announcement period. The active trades are classified as the director transaction within the 10-day period prior to the news announcement period. The passive trades are classified as the director trade in the 10-day period post news announcement. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	No.of Buy transactions		No.of sale transactions	
	Active	Passive	Active	Passive
Bad news	130	346	260	320
No surprises	115	207	137	181
Good news	161	338	177	415
Goodness of fit test				
Bad news	34.44	***		
No surprises	3.638	*		
Good news	0.7088			
Active	17.7325	***		
Passive	10.2872	***		

Table 10 Informed trading: abnormal returns on insider trades

The table shows cumulative abnormal returns (CARs) around the news announcement period. T-statistics are shown in parenthesis. The active trades are classified as the director transaction within the 10-day period prior to the news announcement period. The passive trades are classified as the director trade in the 10-day period post news announcement. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	Buy						Sale					
	Active			Passive			Active			Passive		
	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)	CARs(-60,-1)	AAR(0)	CAR(1,60)
Bad news	0.83	-0.59	1.04	0.46	-1.26	1.53	11.25	1.63	-3.96	13.68	0.84	-6.88
	(3.70)	(-1.72)	(5.45)	(4.30)	(-7.48)	(18.17)	(57.18)	(5.74)	(-20.33)	(58.61)	(3.09)	(-39.14)
Good news	0.10	-1.11	3.03	-0.48	-0.13	0.66	8.73	0.98	-5.02	9.32	1.16	-5.67
	(0.66)	(-5.36)	(11.86)	(-4.44)	(-0.61)	(4.16)	(42.61)	(3.84)	(-27.60)	(73.59)	(5.98)	(-54.53)
Difference in mean between pre and post periods												
Bad news	(-0.74)			(-7.86)			(54.93)			(70.37)		
Good news	(-9.86)			(-5.95)			(50.19)			(91.48)		

Table 11 Cross-sectional regression coefficients of abnormal returns on insider trading metrics

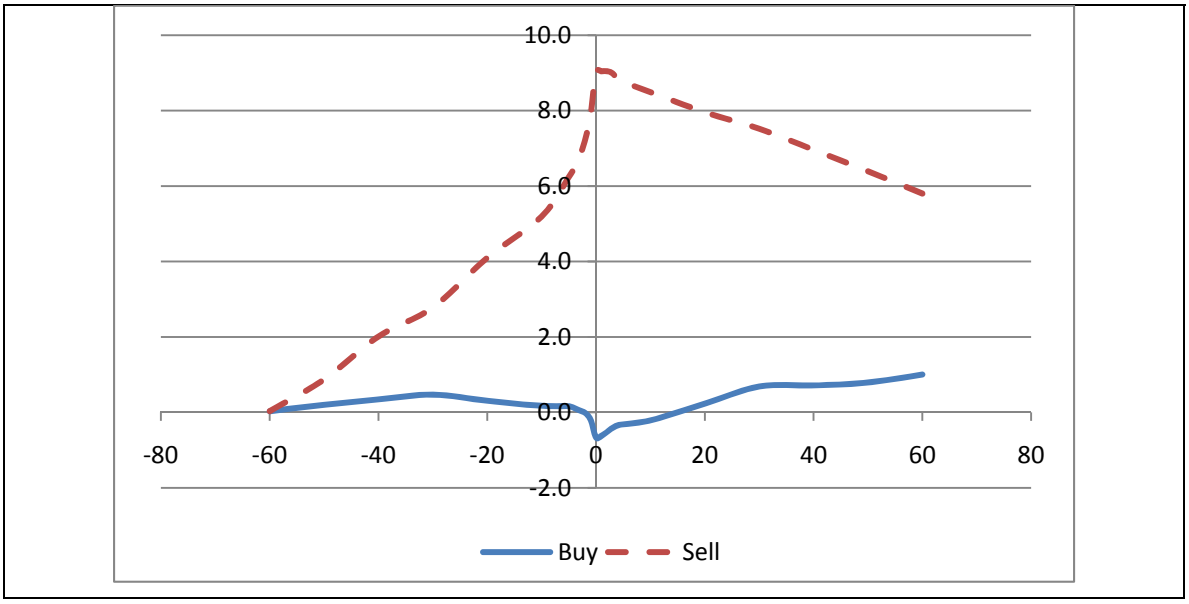
The table presents the cross-sectional regression coefficients of cumulative abnormal returns on insider trading metrics.

$$CAR = \beta_0 + \beta_1 PCAR + \beta_2 LMV + \beta_3 LNSHARE + \beta_4 LPRICE + \beta_5 DACTIVE + \beta_6 DPASSIVE + \varepsilon$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). We also use (1, 20) and the result is qualitatively similar. $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. ***, ** and * mean significant at 0.10, 0.05 and 0.01 level, respectively.

	Purchases		Sales	
Intercept	4.4955	***	-3.16056	**
	(3.81)		(-2.57)	
PCAR	-0.48919	***	-0.51644	***
	(-54.70)		(-64.81)	
LMV	-0.80185	***	-0.67595	***
	(-6.85)		(-6.27)	
LNSHARE	0.15291		0.15603	*
	(1.66)		(1.77)	
LPRICE	-0.83444	***	0.76895	***
	(-4.78)		(4.57)	
DACTIVE	0.17022		-1.81321	***
	(0.79)		(-2.68)	
DPASSIVE	0.51672	*	0.51887	
	(1.88)		(0.61)	
Adjusted R-square	0.3601		0.3746	
F-statistic	60.52	***	54.87	***
No.obs	5,382		7,130	

Figure 1 Standardized cumulative abnormal returns around insider trading



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Appendix 2

Working Paper 2

Tentative Title: Insider Trading, Corporate Disclosure and Corporate Governance : Evidence from Thailand

Insider Trading, Corporate Disclosure and Corporate Governance: Evidence from Thailand

Pornanong Budsaratragoon, David Hillier and Suntharee Lhaopadchan*

Abstract

This paper differ from prior research on information asymmetry and insider trading by providing an additional empirical insight into the level of information flow from the market's viewpoint via relative volatility conditioned by the types of insider transactions and news announcements, relating the pre-announcement information with the timing of insider trading conditioned on news announcement, and examining the link between corporate governance and corporate disclosure. The empiric sample is firms listed in Thailand where the information and regulation is low. We find that relative volatility increases immediately after interim earnings and dividend announcements. Active insider trades provide stronger information flow to the market than passive trades do. Higher relative volatility (information asymmetry) is evident in case of bad news for insider sales, but good news for buy trades. A univariate analysis reports lower relative volatility for firms splitting CEO and chairman, appointing independent directors greater than 33%, and having director ownership between 25% and 50%. This finding is also confirmed in the multivariate analysis. In summary, good corporate governance reduces the opportunistic insider trading. Insiders can earn more abnormal returns, in particular for buy trades, when the information flow to the market in pre-announcement period is low.

Keywords: insider trading, emerging market, corporate disclosure, corporate governance

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1. Introduction

This paper aims to address the fundamental question of whether corporate governance practices and corporate disclosure are beneficial to the general investor. The quantity of public information disclosed is related to insider trading strategies to observe the quality of such a public announcement. To achieve the principal aim, we examine the effect of various corporate governance instruments and the level of corporate disclosure on insiders' behaviour and their performance. We apply the relative volatility posited by Kim and Verrecchia (1991, 1997) to estimate the amount of information and provide the first empirical test of the link among volatility, corporate governance, and insider trading.

Volatility- a standardized measure of the variance of price change- can refer to the amount of information. Lang and Lundholm (1993) point that return volatility may relate to disclosure because of its effect on firms' vulnerability to legal action. Firms with volatile stock prices may increase disclosure to reduce the incidence of large one-time stock price change. Kim and Verrecchia (1991) suggest that different types of news can generate a different volatility reaction. Empirical evidence of Cox (1985), Waymire (1985) and Imholff (1978) suggest that firms with less volatility earnings are more likely to provide earnings forecasts. The pre-announcement information can be employed to anticipate the event-period information (Kim and Verrecchia, 1997). Trueman (1997) supported the theory that the probability of a disclosure will increase with not only the precision of the manager's information, but also the variability of his firm's earnings. In addition, the good news disclosures are expected to be more precise than those that reflect unfavourable information.

As investors can employ private information in anticipation of pre-announcement information and in conjunction with a public announcement (or event-period information), Blazenko (1997) indicate that greater informativeness increases return variability in the pre-disclosure period relative to the accounting report period. Verrecchia (1991, 1997) also suggest that the variance of price changes around the announcement period is decreasing in the amount of pre-announcement information. Firms with high risk or bad news may increase disclosure to reduce the incidence of a large one-time stock price change.

Many studies on insider trading document the profitability of insider trades, such as Jaffe (1974), Seyhun (1992), Lakonishok and Lee (2001), Hillier and Marshal (2002), Jeng et al. (2003), and Piotroski and Roulstone (2005). The consensus is that insiders can access to valuable information not possessed by specialist or outsider, and trade based on such information. Good corporate governance is empirically found to reduce the information asymmetry between managers and investors (Jensen and Meckling, 1976). Also, the information risk borne by investors can be reduced in high potential for disclosure. The insider's profitability should be lower in the better corporate governance and higher disclosure environment. The analysis of the impact of corporate governance and disclosure on insider's performance may make a great contribution and create a better understanding of information asymmetry between managers and shareholders. The analysis will fulfil the literature to examine the period of pre-announcement (rather than the non-announcement period), use the relative variance as a proxy (rather than the abnormal return, relative abnormal return, or relative beta), and incorporate corporate governance in the model specification of insider trading performance.

This paper carries on the non-financial firms listed in an Asian emerging market economy: Thailand. The International Monetary Fund and The World Bank highlight the importance of Asian countries suffering from the 1997 financial crisis to undertake institutional reforms in line with good corporate governance. The disclosure requirement is the key to improve the market participants' ability to assess a firm's value and risk. This is based on the assumption that a greater volume of information to the market should lead to improvement in firms' transparency. Although the greater transparency resulting from an increase in quantity of costly disclosure is sceptical, a number of initiatives have been exercised to enhance good corporate governance practices and the transparency in the financial markets in these Asian economies. Thailand, where the crisis commenced, gradually motivated listed firms to improve their corporate governance. The reform was introduced and the Principles of good corporate governance for listed firms were initially issued in 2002, which Thai government designated as the year for good corporate governance. All listed firms have to report how the firms implement the principles in their annual reports. The

significant progress was visible from the rank above the world average in the World Bank's corporate governance assessment in 2005.

The principles cover a wide range of regulations to promote transparency as well as to enhance investor's confidence in the capital market. The prevailing research approach has dealt with the determinant and the effect of corporate governance on decision making and firm value, for example Vafeas and Theodorou (1998), Hermalin and Weisbach (1991), Bhagat and Black (1996) and Klein (1998), examples are Young (2000), Hermalin and Weisbach (2003) and Peasnell et al (2003). This paper contributes by examining the more direct impact of corporate governance improvement and corporate disclosure on the reduction of asymmetric information. Insider transactions are of interest because they can direct access to non-public material information.

In summary, our empirical evidence adds to prior research in many ways. First, a different aspect to the information asymmetry literature is explored by examining the amount of pre-announcement information conditioned by the types of insider transactions and news announcements. Two important types of news announcements are investigated: earnings (periodic disclosure) and dividend (non-periodic disclosure). The comparison allows us to determine the level of disclosure in the market in conjunction with the information asymmetry in different types of news announcements. Second, we further relate the pre-announcement information with the timing of insider trading conditioned on news announcement. This complements the previous studies which generally analyse on the basis of the abnormal return approach. Third, we analyse whether corporate governance metric is associated with the disclosure by decomposing the sample upon split, board size, fraction of independent non-executive directors, and director ownership. Finally, our analysis is conducted in Thailand, in which the capital market has lower analyst following and disclosure regulation relative to the markets in developed economies. The lower level of regulated disclosure would provide greater incentive to disclose private information. The sample in most of existing studies on disclosure is the US. Leuz and Verrecchia (2000) and Core (2001) point that the disclosure environment in the US is rich due to the presence of highly regulated disclosure setting and other sources of information. Besides, the signalling qualities of regulated disclosures

are lower than those of voluntary disclosures. Thus, the studies on disclosures based on US firms are likely to uncover limited economic impact.

The empirical findings reported in this paper can be summarized as follows. We find that relative volatility increases immediately after interim earnings announcements and dividend announcements. In general, active insider trades provide stronger information flow to the market than passive trades do, with the exception of interim earnings announcements for buy trades and dividend announcements for sell trades. Higher relative volatility (higher information asymmetry) is evident in case of bad news for insider sales when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. By contrast, the similar findings are reported for buy trades in case of good news. Considering the influence of corporate governance, we relate corporate governance variables with information flow to the market. A univariate analysis demonstrates lower relative volatility for firms splitting the role of CEO and chairman, appointing independent directors greater than 33% on board, and having director ownership between 25% and 50%. This finding is also confirmed in the multivariate analysis. Good corporate governance reduces the opportunistic insider trading. Insiders can earn more abnormal returns for buy trades when relative volatility is increasing in announcement period.

The remaining part of this chapter is structured as follows. Section 2 summarises the literature framework. Section 3 provides institutional characteristics and research design. Section 4 and 5 describe the data sample and the empirical results. Section 6 concludes the paper.

2. Literature framework

The intuitive framework of the relation among information asymmetry, corporate disclosure and corporate governance is formed by the areas of insider trading activities, the quantity and the quality of information present in the market, and the impact of corporate governance on information asymmetry. Each literature area is briefly described as of following.

2.1 Insider trading behaviour and performance

Insider trading has long been in a debate about its effect on the market informational efficiency, since Manne (1966) posited that the agency problem between managers and shareholders would be mitigated if insiders were allowed to trade. Khang and King (2006) use insider returns as a proxy for information asymmetry between managers and shareholders. Possessing private and price-sensitive information, insider trading provides a signal to the information in public corporate announcements and may alleviate information asymmetry (John and Lang, 1991; Zhang, 2001; and Chau and Vayanos, 2008). However, Fishman and Hagerty (1992) and Bhattacharya and Nicodano (2001) pointed that insider trading causes the fall in outside investor trading, liquidity trading and market efficiency. Even though the extant literature does not reach a consensus on whether financial markets gain the benefit from insider trading, it does strongly suggest the insiders' superior ability to detect mispricing in their own company shares (see for example Lakonishok and Lee, 2001; Hillier and Marshall, 2002; Jeng et al., 2003; Jenter, 2005; Cheuk et al., 2005). Purchase transactions typically contain more price sensitive information than sales transactions do (Mendelson and Tunca, 2004; Cheng et al., 2007).

The analysis of insider trading behaviour and its corresponding abnormal returns around firm specific information events is another concern in insider trading research. Financial signalling theory explains that informed trader's transaction prior to the disclosure of price sensitive announcement indicates the market of mispricing, leading to the market reaction accordingly. Several studies document the relationship between insider transactions prior to corporate events and pricing behaviour, such as Karpoff and Lee (1991), Meulbroek (1992), and Lakonishok and Lee (2001). Insider trading profit is positively associated with information asymmetry (Aboody et al., 2005; Rogers and Stocken, 2005; Huddart et al., 2007).

With regard to earnings announcements, the evidence of insiders' ability to time their trades around the announcement is mixed. The supportive records are found by Elliot et al. (1984), Givoly and Palmon (1985), Park et al. (1995), and Betzer and Theissen (2009). On the contrary, the strong relationship between insider transaction and earnings news are documented by Allen and

Ramanan (1990), Sivakumar and Waymire (1994), Lustgarten and Mande (1995) Udpa (1996), Ke et al. (2003), Huddart et al. (2007) and Cheng and Leung (2008). The relationship between insider trading and dividend changes is also debated. John and Lang (1991), Hillier and Marshall (2002), and Del Brio and Miguel (2008) found that the signal from insider trading can explain the information effect of dividend announcement, whereas Fuller (2003) claim that the price reaction to dividend changes is lower when there is informed trading.

Given that earnings and dividends provide signals about the future performance (Asquity and Mullins, 1983; Bajaj and Vijh, 1995; Nissim and Ziv, 2001), insiders may use pre-announcement information to time their trades. A number of studies highlight the intensity of insider transactions prior to the corporate announcements. The cases in point are Allen and Ramanan (1995), Sivakumar and Waymire (1994), Park et al. (1995), Udpa (1996), and Sivakumar and Vijayakumar (2001) for earnings announcements; and John and Lang (1991) for dividend announcements.

2.2 Volatility and corporate value-affecting disclosure

Lang and Lundholm (1993) indicate that return volatility relates to disclosure because of its effect on firms' vulnerability to legal action. Firms with volatile stock prices may increase disclosure to reduce the incidence of large one-time stock price change. Empirical evidence of Cox (1985), Waymire (1985) and Imholff (1978) suggest that firms with less volatility earnings are more likely to provide earnings forecasts. Trueman (1997) supported the theory that the probability of a disclosure will increase with not only the precision of the manager's information, but also the variability of the firm's earnings. In addition, the good news disclosures are expected to be more precise than those that reflect unfavorable information.

Total risk is likely to increase at the time of company specific news releases (Kalay and Lowenstein, 1985, and Ball and Kothari, 1991), whereas the beta seems not to be undisputedly related to disclosure (Firth, 1984; Priebjrivat, 1992; Parviainen et al., 2001; and Schadewitz and Blevins; 2005). However, Kim and Verrecchia (1991, 1997) suggest that the variance of price changes around the announcement period is decreasing in the amount of pre-announcement

information. Volatility during the announcement period exhibits characteristics differing from that of the non-announcement period (Beaver, 1968; May, 1971; Jones et al., 1998; Li and Engle, 1998). There is also evidence that much accounting information is reflected in security prices prior to the release of the report (Ball and Brown, 1968; Brown and Kennelly, 1972). Pre-announcement information is private information gathered in anticipation of a public disclosure. Investors can employ private information in anticipation of pre-announcement information and in conjunction with a public announcement (or event-period information). Greater informativeness increases return variability in the pre-disclosure period relative to the accounting report period (Blazenko, 1997). Systematic risk is found to be increasing after earnings announcement by Cai et al. (2006). Further, Lang and Lundholm (1993) provided evidence that the rating of a firms' disclosure are increasing in firm size and return volatility; as well as decreasing in the correlation between earnings and return.

According to the agency theory (Jensen and Meckling, 1976), disclosure can reduce the information asymmetry between managers and owners. Based on the assumption that volatility can capture information to which investors do not have prior access, volatility should be negatively correlated with information asymmetry and, consequently, negatively correlated with disclosure (Lang and Lundholm, 1993). However, managers tend to increase their wealth through the disclosure based on managerial myopic theory. Helflin et al. (2006) highlight that high disclosure quality firms reveal a smaller information asymmetry spread components; therefore higher quality disclosures are useful in lowering the risk of informed trading. In addition, the willingness to disclose information is found to relate with firm performance.

2.3 Corporate governance and information asymmetry

The procedures in corporate governance exist to ensure the managers' decision in line with the shareholders' one. Given that shareholders hold different degree of information about their firms, inside shareholders may take advantage of superior information in their trading. Corporate governance is expected to have an impact on both quantity and quality of information disclosures, which in turn affect the financial transparency and the information asymmetry in the market.

Previous research reports that more effective board reduces the information asymmetry via the quantity and quality of information disclosed, for instance Diamond (1985), Verrechia (2001), Klein (2002), Ajinkya et al. (2005), Karamanou and Vafeas (2005), and Dey (2006). Kanagaretnam et al. (2007) highlight that increases in information asymmetry at earnings announcements is smaller when quality of corporate governance is higher. Apart from reducing the information asymmetry, better corporate governance can also affect insider trading through the increase cost of information-driven trades for insiders. Insider trading is more likely to be disciplined by the board of directors and the reputation damage or penalty is costly to the insider.

It is long accepted that good corporate governance is a means to protect the outside shareholders' return on investment (Fama and Jensen, 1983; Shleifer and Vishny, 1997). A number of studies present the certain characteristics of board and the ownership structure lead to more effective disclosure and smaller information asymmetry. For example, independent non-executive directors and the separation of the CEO and chairman have the power to force information to be released (Fama and Jensen, 1983; Forker, 1992; Haniffa and Cooke, 2000). Also, Schneible and Stevens (2005) proved that the pre-announcement of private information acquisitions increase with firm size and institutional ownership. Vafeas (2000), Ajinkya et al. (2005), and Karamanou and Vafeas (2005) confirm that effective board structure can represent more information of earning reports to the market.

Durnev and Nain (2007) identify that countries with not fully effective regulations and restrictions in mitigating information-driven insider trades or inadequate minority shareholder protection would not benefit from insider trading regulations. Insiders may attempt to earn the profit from their informational advantage in other ways. It is evidence that the stock prices reflect more public information in the countries with better corporate governance (Bailey et al., 2006; Chung et al., 2009). Ebrahim and Black (2010) conclude that corporate governance is more effective that insider trading regulations because corporate governance is enforced by parties who are specialized and actively engaged in firm activity, whereas the regulations are passive monitoring.

The determinants of insider trading profit can be the indication of the degree of information asymmetry between insiders and capital market. Fidrmuc et al. (2006) highlight that corporate governance is one of the determinants of insider trading profitability. Likewise, Betzer and Theissen (2009) point that ownership structure affect the market reaction to corporate insider trading. The evidence that Information asymmetry is smaller and more information incorporated in stock prices before insider trading is strongly associated with lower price adjustment after the disclosure of insider trading (Leuz et al., 2003).

3. Institutional characteristics and research design

Information asymmetry between insiders and outsiders coupled with a non-transparent corporate environment increases the probability of informed insider trading. In order to mitigate the probability of informed trading in the disclosure period, the Stock Exchange of Thailand introduced the Guideline to Disclose Information for Listed Firms (Bor-Jor/Por 23-00) Page 144-145 Section 3.6(2) as well as initiated the principles of good corporate governance for listed companies prohibiting the abuse of price-sensitive non-public information to provide equitable treatment of shareholders in 2002. The prohibition of self dealing is also identified in the Security and Stock Exchange Act 238 – 244 Section 1 Part 8. Directors are not allowed to trade during a period in which insiders are likely to have an advantage of important non-public information. According to the Guideline to Disclose Information for Listed Firms, the directors should wait for at least 24 hours after the information is publicly disclosed. The Act indicates that the directors shall not trade based on the particular information as long as the information has not disclosed yet. However, both the Guideline and the Act do not specify a certain period that the directors are banned to trade on the stocks of their firms prior to the corporate disclosure.

The focus of our study is to examine the relation among the insider trading performance, the amount of pre-announcement information in the market, and corporate governance around corporate announcements covering two important announcements: earnings announcements and dividends announcements. These two important corporate disclosures may impact stock returns differently because earnings announcements are based on firms' past transactions; whereas

dividends signal a firm's future cash flows. Corporate governance practices are taken into account, given that any information asymmetry between insiders and investors should be lower in a better corporate governance context.

Volatility, a standardized measure of the variance of price change, is served as a surrogate for corporate disclosure. The variability of stock returns can refer to the amount of information (Chambers and Penman, 1984). The volatility is estimated by using the generalized autoregressive conditional heteroskedasticity (GARCH (1, 1)) model as follow:

$$R_{jt} = \alpha_{j0} + R_{jt-1} + e_t \quad (1)$$

$$\sigma_t^2 = \sigma^2 h_t \quad (2)$$

$$h_t = \beta_0 + \beta_1 h_{t-1} + \beta_2 \varepsilon_{t-1}^2 \quad (3)$$

where $\varepsilon_{jt} = z_i h_{jt}$ ~ iidn (0,1) and σ_t^2 is the variance of ε_{jt} conditional on the past information Ω_{t-1}

Given that firms with volatile stock price increase disclosure to reduce the incidence of a large one-time stock price change, the investor can employ the pre-announcement information in anticipation of and in conjunction with event-period information (Kim and Verrecchia, 1997). The precision of public information increases as either the variance of prior information at the time of announcement decrease or the variance of the error in the announcement eliminates potential information asymmetry (Kim and Verrecchia, 1994). In order to analyze the level of private information for estimating the information prior to the announcement, we compute the relative return volatility as h on announcement period to h on pre-announcement period of stock. Similar to Blazenko (1997)'s definition, the announcement period is defined as three trading days centered on the announcement date. The pre-announcement period for any announcement date is 20 trading days proceeding the announcement period. The relative volatility may be interpreted as a measure of the information content of corporate announcements compared to alternative information sources.

The relative volatility values, which are greater than one, can indicate that corporate announcement conveys more information to financial markets than a typical pre-announcement date.

As different types of news announcements affect stock returns differently, we will present the relative volatility in accordance with types of corporate announcement. Contemporaneous announcements of earnings and dividends are more frequent in Thailand, unlike in the US. In order to avoid possible joint effect, we will classify the types of news into five groups: final earnings, interim earnings (quarterly earnings), dividends, final earnings in conjunction with dividends, and interim earnings in conjunction with dividends.

The next step is to relate the corporate disclosures to the insider trading activity. The literature suggests that corporate insiders tend to be able to access to specific private and material information in the announcement period. Many countries, including Thailand, have imposed regulations to prohibit corporate insiders from trading in that period. Insider trading activity would be another source of information flow to the market where the information asymmetry takes place. The forefront knowledge about this specific information could be an opportunity for insiders to take advantage to earn profits in such a period. It is expected that the information asymmetry between insiders and shareholders is high in case of announcement trades, which are defined as insider transactions within 20 days around corporate announcements. It is expected that the information asymmetry between insiders and shareholders is high for announcement trades.

Hypothesis 1: The relative volatility is relatively higher for announcement trades

The insider trading pattern and performance surrounding corporate disclosures are, then, compared by the types of announcements in different timing of insider trades (pre- and post-announcement periods). Taking accounting of a trading restriction in an announcement period, we assume that an insider who trades based on an information advantage would trade immediately before the trading ban period (active period). Or else, the insider shall delay to trade immediately after the trading ban period (passive period) if the trading prior to the news announcement is likely to be accused of self-dealing. These announcement trades occurring 10 days before the trading ban period are

called active trades and those taking place 10 days after the trading ban period are called passive trades.

Hypothesis 2: The relative volatility is relatively lower when insiders employ active trading strategy.

Further, we relate the announcement trades with the contents of news announcements. An informed trade is either a transaction that is in line with the surprise component in the news announcement (i.e. a purchase prior to unexpected good news and a sale prior to unexpected bad news) or a transaction that reacts in the opposite of the surprise component in the news announcement (i.e. a purchase after unexpected bad news and a sale after unexpected good news). To classify the announcements into good or bad news, we firstly compute the security's standardized return on the announcement date on the basis of a market determined measure follows (Hillier and Marshall, 2002).

$$SSR_i = \frac{R_i - \mu_i}{\sigma_i} \qquad (4)$$

Where SSR_i is the security's standardized return on the day of news announcement, R_i is the return on security i on the news announcement day, μ_i is the mean of returns, σ_i is the standard deviation of returns.

The standardized earning announcement day returns are, then, ranked and grouped into three equally numbered portfolios. The portfolio of the most positive standardized returns is the good news portfolio, the portfolio of the most negative standardized returns is the bad news portfolio and the remaining portfolio is the no surprise portfolio.

Hypothesis 3: The relative volatility is relatively lower (higher) when good (bad) news is announced.

We will then characterize the analysis of the quantity of pre-announcement information by corporate governance variables in the univariate analysis. The variables used to identify relatively better corporate governance are both internal and external corporate governance mechanisms including the role of chief executive director (the split between chairman and chief executive

director), board structure (higher proportion of independent director), and ownership structure (higher proportion of external majority shareholders). If corporate governance has an important role in the disclosure; the corporate governance components should explain the relative volatility of event-period information to the pre-announcement information period

Hypothesis 4: The relative volatility is relatively lower in firms with better corporate governance.

In order to test the impact of corporate governance and corporate disclosure on insider trading performance, we estimate the relation among insider trading returns, the relative volatility and corporate governance. We hypothesize that insider performance measured by abnormal returns serve as a proxy for information asymmetry between managers and outside investors. The announcement trades may provide the signal to the market. Value-relevant information flows into stock price earlier for firms in which insiders have relatively more opportunities and incentives to trade on their private information, suggesting that stock price is more informative for such firms. Ball et al. (2000) identify that poor public disclosure does not necessarily impede the information flow into stock prices, since the information flow can occur via the trading of informed insiders instead. Other controlling variables are firm size and trading characteristics. We apply the following regression with generalized method of moment technique.

$$CAR_{it} = \beta_{0it} + \gamma_1 REVOLA + \beta_1 PCAR_{it} + \beta_2 LMV_{it} + \beta_3 LSHARE_{it} + \beta_4 LPRICE_{it} + \beta_5 DACTIVE_{it} + \beta_6 DPASSIVE_{it} + \delta_1 SPLIT_{it} + \delta_2 INDDI_{it} + \delta_3 DIOWN_{it} + \varepsilon \quad (5)$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). $REVOLA$ is the relative volatility in announcement period to pre-announcement period, $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. $SPLIT$ is the dummy variable equal 1 for the split of chairman and chief executive officer and zero otherwise,

$INDDI$ is the percentage of number of non-executive (or independent) directors and $DIOWN$ is the percentage of shareholding by directors.

Hypothesis 5: The greater information content of corporate announcements compared to alternative information sources (the higher information asymmetry), the higher insider trading returns.

Hypothesis 6: Good corporate governance is negatively associated with opportunistic insider trading.

4. Data

Our sample consists of non-financial firms listed on the Stock Exchange of Thailand (SET) from 2002 to 2007. The raw data of insider trading is provided by the Securities and Exchange Commission. The insider trading data prior to 2005 are in the format of scanned documents. The information in such a period is hand collected. The other data is gathered from three different sources: (i) Form 56-1 to manually collect corporate governance data; (ii) the SET smart database to manually obtain corporate announcements; and (iii) the Datastream database for financial and accounting variables.

Firms will be selected if they have complete data in all data sources and survived until 2004 from the initial sample to ensure that the transactions were not attributable to the danger of firm failure or the activity of takeover. This point is more important than the survivorship bias in the sample. In addition, the stocks in our sample should be traded at least 20 days in the estimation period to prevent the problem of thin trading.

5. Results

Relative volatility around corporate announcements

Based on GARCH (1, 1) framework, a series of daily GARCH (1, 1) return volatility is estimated for each company share by using daily price data. A relative volatility is generated as the ratio of the mean daily volatility in the announcement period (t-1 to t+1 days) over the mean daily volatility in the period t-20 to t-2 days. The distribution of relative volatility by types of news announcements is displayed in Table 1.

Relative volatility around all of the corporate announcements significantly increases by an average of about 0.43%. In other words, the average relative volatility in three days centred on the announcement date is 0.43% larger than the mean relative volatility in 20 days before an announcement. However, the information content of corporate announcement is significantly greater than that of alternative sources in two cases: interim earnings announcement (0.58%) and dividend announcement (2.18%). Relative volatility is likely to increase immediately after both interim earnings announcements and dividend announcements.

Although announcements of both final and interim reports provide more flow of information than alternative information sources in the pre-announcement period, only the relative volatility of interim reports is significantly greater than one. The Securities and Exchange Commission (SEC) of Thailand requires a shorter delay to the announcement of interim earnings relative to final earnings. General investors would be able to gain private information and analyse such information in a shorter time and possibly leading to higher information flow for the quarterly earnings announcements.

Given that relative volatility of dividend announcement is greater than one, general investors obtain less information about dividend from other information sources. Since most investors in Thailand are individual investors, they do not have information to decide and analysis capability as much as informed investors do. The signalling from corporate announcements is important for general investors to form firm's future performance. Nevertheless, Lonkani and Ratchusanti (2007), which test the dividend signalling theory by using the data of Thai public companies, report that changes of dividend payments from past dividends cannot be used as a single signalling tool to predict the future performance. They suggest that the appropriate dividend surprise is the deviation from analyst forecasting. Consequently, this could introduce the difficulty for general investors to anticipate firm's future performance from the signal from dividend announcements.

Announcement trades and relative volatility around corporate announcements

We decompose the analysis into purchase and sales as prior research suggests a higher level of asymmetric information in insider purchase transactions and little information content in insider sales transactions. The results of this analysis are reported in Table 2. Insiders' announcement trades are significantly related to new information of dividend announcements. The insider buy trades provide stronger information flow of dividend to the market because relative volatility increases by a greater amount for insider buy trades than insider sell trades.

The previous section presents the striking increase of information flow for interim earnings announcements. However, this increase remains across sell transactions only. With regard to the simultaneous announcements of final earnings and dividends, insider buy trades induce an increase in information flow of 2.08%, while insider sell trades experience a downward shift in information flow of 1.88%. Interestingly, the change in relative volatility is not supported for final earnings announcements. The reason is probably that this type of news obtains much attention among financial analysts, as well as alternative sources of information can be accessed prior to the announcements.

Although we find the support for hypothesis 1, the support is stronger for dividend announcements. This is consistent with the result reported in the previous section that the dividend case is likely to be a more informative event.

Informed trades and relative volatility around corporate announcements

Existing literature suggests that corporate insiders can time the market, as well as that the information content has an impact on the timing of news announcements. In order to examine the relationship between insider's ability to time the market and the information flow to the market, announcement trades are divided into the trades before and after corporate announcements. The disclosure of insider trading could be another source of information. Consequently, active trades provide stronger information flow to the market in the pre-announcement period than passive trades do.

Table 3 reports relative volatility by types of corporate announcements and insider trading strategies. The results generally confirm our proposition in case of insider buy trades for all types of announcements, with the exception of interim earnings announcements. For insider sell trades, less relative volatility for active trades is particularly striking, with the exception of dividend announcements.

To provide a greater insight into informed trades, we further relate the analysis with the information content of each announcement. Firms with forthcoming good performance have little incentive to hide this good news, thus information asymmetry for these firms in terms of earnings and dividends should be relatively low before formal announcements. By contrast, firms with forthcoming bad performance have strong incentive to hide this bad news, so information asymmetry for these firms should be relatively high before the formal announcements. All in all, it is expected that firms with forthcoming good news would experience lower relative volatility due to lower information asymmetry than firms with forthcoming bad news. The results are presented in Table 4.

We observe different reactions for informed buying and selling activities. Firms tend to keep bad news, but not good news before the formal announcements. Higher information asymmetry taking place in bad news is confirmed by higher relative volatility for insider sell trades when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. The contradict evidence is observed for buy trades. Higher information asymmetry remains in case of good news for active insider trading when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. This could explain from existing literature stating that majority of insider sales are undertaken for reasons other than informed trading. Insider buy trades, thus, typically have a higher level of informed trading compared to insider sell trades.

Corporate governance and relative volatility around corporate announcement

Previous studies, e.g. Gompers et al., 2003; Cremers and Nair, 2005, suggest that corporate governance can influence stock prices and distribution or returns through management incentives

and constraints. The impact of corporate governance on return comes from its link with and investors' expectations or information flow (Ferreira and Laux, 2007). This section considers the association between corporate governance and information flow. A set of corporate governance variables in the analysis includes split between CEO and chairman, the proportion of independent executive directors, and director ownership.

Table 5 provides descriptive statistics of corporate governance variables. Most of the firms split the role of CEO and chairman. Although the principles of good corporate governance for Thai listed companies recommend the board should be comprised of independent directors at least one-third, the evidence shows that only 31%. The mean (median) of directors' shareholdings is approximately 17% (11%).

The analysis of corporate governance and information flow around corporate announcements is shown in Table 6. We compare relative volatility conditional on groups of each corporate governance factors. The significant difference of relative volatility between split and non-split CEO and chairman can be seen for interim earnings announcement and dividend announcement. As hypothesized, the split group experiences lower relative volatility than the non-split group does. In other words, the information asymmetry could be lower in the split group for these two types of announcements. Even though the previous section of relative volatility and informed trading generally reveals higher information asymmetry for these two types of announcements, general investors in the split group can better estimate firm's future performance via obtaining the information content of these two types of announcements from alternative sources in the market before the formal corporate announcement.

The similar result for interim earnings announcement is found when the board of directors contains independent directors greater than 33%. Interestingly, low relative volatility on the announcement period relative to pre-announcement period is observed across firms with director ownership between 25% and 50%. The level of pre-announcement information is low for firms with low (<25%) and high (>50%) director shareholdings. The reason is probably high agency problem

between managers and shareholders in widespread shareholding firms (director ownership < 25%) as well as between majority and minority shareholder in high director ownership firms.

The impact of corporate governance and Relative volatility around corporate announcement on information asymmetry

The last research question in this paper considers the influence of corporate disclosure (relative volatility) and corporate governance (split, the fraction of independent directors, and director shareholding) on the information asymmetry, which is surrogate by insider returns over 60 days after insider trading day. We also take account of trading measures from outsiders' perspectives, i.e. number of shares traded and transaction price; and control variables, i.e. insider returns prior to insider transaction, firm size (market value), and trading strategies (active or passive). Table 7 presents regression results of equation (5) for purchase and sales.

The result indicates that insiders can earn more abnormal returns for buy trades when relative volatility is increasing in announcement period. That is the formal announcement introduces higher information flow than other information source in pre-announcement period, in which insiders have informational advantage. In other words, hypothesis 5 is supported for buy trades.

Hypothesis 6 posits that good corporate governance is negatively associated with opportunistic insider trading. With the exception of the fraction of independent directors for buy trades, firms with split, higher board independence, and greater directors' stock holdings have smaller insider returns.

With regard to trading measures and control variables, the market price reaction after insider trading is higher for the smaller firms. The significantly negative relationship between pre- and post- abnormal return highlights the contrarian trading strategy employed by insiders. The smaller number of shares traded introduce the higher insider performance. Insiders buy (sell) shares of their own firm after a prolonged period of low (high) abnormal returns. The negative effect of transaction price is found for insider buy trades only. Further, the greater price reaction in the

same direction as insider trading occurs when insiders trade before the news announcements only for buy transactions.

6. Conclusions

Information asymmetry, corporate disclosure, and corporate governance are the key issues in finance, economics and accounting areas. This paper examines the information flow to the market by evaluating the influence of news announcement and corporate governance over insider returns. The level of information flow is measured by relative volatility from the framework of Kim and Verrecchia (1991, 1997). Corporate disclosures cover final earnings, interim earnings, dividend, simultaneous interim earnings and dividend, and simultaneous final earnings and dividend from 2002 to 2007. Information disclosure is useful for outside investor in making investment decisions.

We find that relative volatility is likely to increase immediately after both interim earnings announcements and dividend announcements. Active insider trades generally provide stronger information flow to the market than passive trades do, with the exception of interim earnings announcements for buy trades and dividend announcements for sell trades. Concerning with different reaction to bad and good news, firms are more likely to hide bad news, but not good news before the formal announcements. The result presents higher relative volatility (higher information asymmetry) in case of bad news for insider sales when the announcements of interim earnings, dividends, and simultaneous final earnings and dividend are released. The similar findings are reported but in case of good news for buy trades. This could suggest a higher level of informed trading for insider buy trades.

Given that corporate governance is motivated to enhance information disclosure, we relate corporate governance variables with information flow to the market. A univariate analysis demonstrates lower relative volatility for firms splitting the role of CEO and chairman, appointing independent directors greater than 33% on board, and having director ownership between 25% and 50%. Moreover, this finding is also confirmed in the multivariate analysis. Good corporate

governance reduces the opportunistic insider trading. Insiders can earn more abnormal returns for buy trades when relative volatility is increasing in announcement period.

This paper contributes to prior research on information asymmetry and insider trading by providing an additional empirical insight into the level of information flow from the market's viewpoint via relative volatility instead of the self-constructed disclosure index, by examining the link between corporate governance and corporate disclosure, and by investigating different types of news announcements.

Table 1 Relative volatility around corporate disclosures classified by types of disclosures

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Obs	Mean	
Full sample- Announcement	3344	1.0043	*
Final earnings announcement	225	1.0064	
Interim earnings announcement	1873	1.0058	*
Dividend announcement	354	1.0218	*
Final earnings & Dividend announcement	433	0.9999	
Interim earnings & Dividend announcement	459	1.0021	

Table 2 Relative volatility around corporate disclosures in conjunction with insider trading

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. These disclosures occurred during 60 days before or after insider trading. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy			Sales		
	Obs	Mean		Obs	Mean	
Full sample- Announcement	1527	0.9943		1817	1.0132	*
Final earnings announcement	94	1.0288		131	0.9903	
Interim earnings announcement	927	0.9882		946	1.0232	*
Dividend announcement	142	1.0293	*	212	1.0168	*
Final earnings & Dividend announcement	205	1.0208	*	228	0.9812	*
Interim earnings & Dividend announcement	159	1.0144		300	0.9956	

Table 3 Relative volatility around corporate disclosures in active or passive periods

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. These disclosures occurred in the active period (10 days before insider trading) or the passive period (10 days after insider trading). The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy					Sale				
	Active		Passive			Active		Passive		
	Obs	Mean	Obs	Mean		Obs	Mean	Obs	Mean	
Full sample- Announcement	447	1.0181	1040	0.9849		710	0.9929	1073	1.0287	*
Final earnings announcement	33	1.0199	61	1.0337	*	57	0.9120	74	1.0505	*
Interim earnings announcement	311	1.0212	616	0.9715		361	1.0110	585	1.0307	*
Dividend announcement	36	1.0228	106	1.0315	*	88	1.0299	124	1.0074	*
Final earnings & Dividend announcement	34	0.9884	157	1.0287	*	92	0.9538	120	1.0030	*
Interim earnings & Dividend announcement	33	1.0015	100	1.0240	*	112	0.9915	170	1.0160	*

Table 4 Relative volatility around corporate disclosures in conjunction with the potential informed trading

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The informed trades potential occur in 1.) Active period if the directors buy prior to the good news announcement or sell prior to bad news announcement; or 2.) Passive period if the directors buy after the bad news announcement or sell after good news announcement. The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

	Buy					Sale				
	Active		Passive			Active		Passive		
	Good news		Bad news			Bad news		Good news		
	Obs	Mean	Obs	Mean		Obs	Mean	Obs	Mean	
Full sample- Announcement	177	1.0217	378	0.9638		298	0.9738	487	0.9860	
Final earnings announcement	19	0.9981	26	1.0187		36	0.8522	44	1.0344	
Interim earnings announcement	116	1.0292	258	0.9596	*	167	1.0056	222	0.9795	*
Dividend announcement	10	1.0261	31	1.0229	*	19	1.0438	79	1.0050	*
Final earnings & Dividend announcement	14	0.9695	43	0.9529	*	30	1.0148	74	0.9766	*
Interim earnings & Dividend announcement	18	1.0138	20	1.0049		46	0.9068	68	0.9722	

Table 5 Descriptive statistics of corporate governance variables

The table reports summary statistics of corporate governance variables: split, board size, fraction of independent non-executive directors, and director ownership. Split is dummy variable equal to 1 where the firm separates the functions of the Chairman and the CEO, and 0 otherwise. Fraction of independent non-executive directors (NED) is the fraction of non-executives without any financial or personal relation to the firm including has a tenure exceeding ten years with the firm, was formerly an executive director, or has any disclosed business relationships with the firm (i.e. related party transactions). Director ownership represents shareholding by directors, the CEO and executive directors.

	Mean	Median	Min	Max	Stdev
Split	0.82	1.00	0.00	1.00	0.38
Fraction of independent NED	31.19	30.77	0.00	66.67	12.81
Director ownership	17.04	11.72	0.00	66.27	17.71

Table 6 Relative volatility around corporate disclosures classified by corporate governance variables

The table presents the relative volatility around different types of corporate disclosures including final earnings, interim earnings, dividend, the joint disclosure of final earnings and dividend and the joint disclosure of interim earnings and dividend. The relative volatility is classified according to split, board size, fraction of independent non-executive directors, and director ownership. Split is dummy variable equal to 1 where the firm separates the functions of the Chairman and the CEO, and 0 otherwise. Fraction of independent non-executive directors (NED) is the fraction of non-executives without any financial or personal relation to the firm including has a tenure exceeding ten years with the firm, was formerly an executive director, or has any disclosed business relationships with the firm (i.e. related party transactions). Director ownership represents shareholding by directors, the CEO and executive directors.The null hypothesis for Wilcoxin signed-rank test is whether the mean is different from one or not. * means significant at 5%.

D. Split	Split		Not split		
	Obs	Mean	Obs	Mean	
Full sample- Announcement	1878	1.0074	404	0.9976	
Final earnings announcement	146	1.0454	31	0.8861	
Interim earnings announcement	987	0.9973	265	1.0068	*
Dividend announcement	241	1.0277	42	1.0431	*
Final earnings & Dividend announcement	220	1.0265	18	0.9995	
Interim earnings & Dividend announcement	284	0.9907	48	0.9781	

Table 6 (continue)

E. Fraction of independent non-executive directors	< 33%		>= 33%		
	Obs	Mean	Obs	Mean	
Full sample- Announcement	1216	1.0124	1115	1.0160	
Final earnings announcement	77	1.0046	100	1.0274	
Interim earnings announcement	668	1.0223	629	1.0061	*
Dividend announcement	159	1.0134	124	1.0513	
Final earnings & Dividend announcement	124	1.0150	118	1.0373	
Interim earnings & Dividend announcement	188	0.9778	144	1.0034	

F. % director ownership	< 25%		25-50%		>= 50%		
	Obs	Mean	Obs	Mean	Obs	Mean	
Full sample- Announcement	1675	1.0264	473	0.9697	183	1.0162	*
Final earnings announcement	100	1.0156	55	0.9933	22	1.0866	
Interim earnings announcement	974	1.0353	270	0.9529	53	0.9455	*
Dividend announcement	181	1.0409	52	0.9810	50	1.0415	*
Final earnings & Dividend announcement	164	1.0346	70	0.9984	8	1.0871	*
Interim earnings & Dividend announcement	256	0.9816	26	0.9940	50	1.0235	*

Table 7 Panel data analysis of abnormal returns on insider trading

The table presents the coefficients from two-stage least square of cumulative abnormal returns on insider trading in the panel data analysis.

$$CAR_{it} = \beta_{0it} + \gamma_1 REVOLA_{it} + \beta_1 PCAR_{it} + \beta_2 LMV_{it} + \beta_3 LNSHARE_{it} + \beta_4 LPRICE_{it} + \beta_5 DACTIVE_{it} + \beta_6 DPASSIVE_{it} + \delta_1 SPLIT_{it} + \delta_2 INDDI_{it} + \delta_3 DIOWN_{it} + \varepsilon$$

Where CAR is cumulative abnormal return in the post-insider trading event period (1, 60). $REVOLA$ is the relative volatility and is the endogenous variable in the two-stage least square equation. The instrumental variables include $PCAR$ is cumulative abnormal return in the pre-insider trading event period (-60, -1), LMV is the logarithmic transformation of market value, $LNSHARE$ is the logarithmic transformation of number of shares traded, $LPRICE$ is the logarithmic transformation of transaction price, $DACTIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period prior to the corporate disclosures and zero otherwise, $DPASSIVE$ is dummy variable equal to 1 if the insider trading occurs within 10-day period after the corporate disclosures and zero otherwise. * means significant at 5%.

CAR	Buy		Sales	
Intercept	4.818	*	-3.215	
	(3.71)		(-0.37)	
REVOLA	9.801	*	3.319	
	(2.90)		(1.63)	
PCAR	-0.514	*	-0.615	*
	(-17.52)		(-11.20)	
LMV	-0.173	*	-0.593	*
	(-4.10)		(-1.90)	
LNSHARE	-0.329	*	0.618	*
	(-1.66)		(2.52)	
LPRICE	-1.008	*	0.055	
	(-3.12)		(0.09)	
DACTIVE	2.082	*	0.352	
	(2.07)		(0.29)	
DPASSIVE	0.700		0.648	
	(0.69)		(0.56)	
SPLIT	-0.262	*	2.237	*
	(-2.40)		(2.09)	
INDDI	-0.020		0.065	*
	(-0.34)		(1.83)	
DIOWN	0.034	*	-0.076	*
	(3.21)		(-2.76)	
Adjusted R-square	0.332		0.489	
F-statistic	53.00	*	118.72	*

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