INVESTOR TYPES AND REACTIONS TO DISCRETIONARY ACCRUALS

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A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science Program in Finance

Department of Banking and Finance

Faculty of Commerce and Accountancy

Chulalongkorn University

Academic Year 2013

ประเภทนักลงทุนและการตอบสนองต่อรายการคงค้างในดุลยพินิจของผู้บริหาร

นางสาวอาภาวี ต่อเอกบัณฑิต

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาการเงิน ภาควิชาการธนาคารและการเงิน
คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2556

Thesis Title	INVESTOR TYPES AND REACTIONS TO DISCRETIONARY ACCRUALS
By	Miss Arpavee Tor-ekbundit
Field of Study	Finance
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อาภาวี ต่อเอกบัณฑิต : ประเภทนักลงทุนและการตอบสนองต่อรายการคงค้างในดุลยพินิจของผู้บริหาร. (INVESTOR TYPES AND REACTIONS TO DISCRETIONARY ACCRUALS) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ดร. ธนากร ลิขิตาภิวัฒน์, 41 หน้า.

ผลงานฉบับนี้พิจารณานักลงทุนแต่ละประเภทและการตอบสนองต่อรายการคงค้างในดุลยพินิจของผู้บริหารที่อยู่ในตลาดหลักทรัพย์แห่งประเทศไทย เมื่อมีการประกาศผลการดำเนินงานของบริษัท นักลงทุนรายใหญ่ ซึ่งอาจเป็น นักลงทุนชาวต่างชาติ หรือ นักลงทุนสถาบัน มีการตอบสนองต่อรายการคงค้างในดุลยพินิจของผู้บริหารในทางที่ถูก โดยจะขายหุ้นเมื่อรายการคงค้างในดุลยพินิจของผู้บริหารมีระดับสูง การกระทำนี้จะเกิดขึ้นเมื่อผลการดำเนินงานของบริษัทสูงกว่าตัวเลขจากบทวิเคราะห์ของนักวิเคราะห์ทางการเงินคาดไว้ ผลลัพธ์ที่ได้นี้สอดคล้องกับผลลัพธ์ของ Battalio et al. (2012) ที่อ้างว่าเมื่อผลการดำเนินงานของบริษัทสูงกว่าตัวเลขที่นักวิเคราะห์ทางการเงินคาดไว้ นักลงทุนที่ซื้อหรือขายหุ้นปริมาณมาก ซึ่งอาจคาดว่าเป็นนักลงทุนสถาบัน จะตอบสนองกับรายการคงค้างทางบัญชีในทิศทางตรงกันข้าม ในขณะที่นักลงทุนที่ซื้อหรือขายหุ้นปริมาณน้อย ซึ่งอาจคาดว่าเป็นนักลงทุนรายย่อย ไม่สามารถตรวจจับได้ว่ามีรายการคงค้างทางบัญชีอยู่หรือไม่ อย่างไรก็ตามข้าพเจ้าไม่พบความสัมพันธ์ของรายการคงค้างในดุลยพินิจของผู้บริหารสำหรับพฤติกรรมการซื้อขายของนักลงทุนรายย่อย และ บัญชีหลักทรัพย์ ซึ่งอาจเกิดขึ้นได้เนื่องจากนักลงทุนเหล่านี้ไม่ได้คำนึงถึงรายการคงค้างในดุลยพินิจของผู้บริหาร นอกจากนี้ข้าพเจ้ายังพบว่านักลงทุนชาวต่างชาติและสถาบันคำนึงถึงบทวิเคราะห์ของนักวิเคราะห์ทางการเงินมากกว่า การวิเคราะห์อนุกรมเวลาโดยใช้กำไรที่เกินความคาดหมาย ทั้งนี้อาจเป็นเพราะนักลงทุนสถาบันเป็นผู้มีความเชี่ยวชาญและประสบการณ์มากกว่านักลงทุนประเภทอื่น ดังนั้นนักลงทุนสถาบันจึงตอบสนองต่อข้อมูลที่ซับซ้อน เช่น บทวิเคราะห์ของนักวิเคราะห์ทางการเงินซึ่งเป็นตัวเลขที่ได้รับความเห็นพ้องต้องกันของนักวิเคราะห์ทางการเงินมากกว่าการวิเคราะห์อนุกรมเวลาโดยใช้กำไรที่เกินความคาดหมาย นอกจากนี้นักลงทุนรายย่อย และ บัญชีหลักทรัพย์ยังไม่คำนึงถึงบทวิเคราะห์ของนักวิเคราะห์ทางการเงินและ การวิเคราะห์อนุกรมเวลาโดยใช้กำไรที่เกินความคาดหมาย ซึ่งอาจเป็นเพราะนักลงทุนเหล่านี้ใช้แหล่งข้อมูลอื่นในการตัดสินใจลงทุน

ภาควิชา การธนาคารและการเงิน ลายมือชื่อนิสิต .....

สาขาวิชา การเงิน ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

ปีการศึกษา 2556

5482948226 : MAJOR FINANCE
KEYWORDS: INVESTOR / TYPE / DISCRETIONARY ACCRUALS

ARPAVEE TOR-EKBUNDIT: INVESTOR TYPES AND REACTIONS TO DISCRETIONARY ACCRUALS. ADVISOR: TANAKORN LIKITAPIWAT, Ph.D., 41 pp.

This paper examines each type of investors and their reactions to discretionary accruals in the Stock Exchange of Thailand. When the earnings are announced, large investors like institutions react to discretionary accruals in the right direction by selling when the discretionary accrual information level is high. This action occurs only when the earnings beats analyst forecast. The result is consistent with that of Battalio et al. (2012) who claim that in the event that earnings are greater than analyst forecast, large trades which are thought as institutions, tend to react negatively to accruals while small trades which are thought as individuals cannot detect accrual information. However, I do not find the relationship to discretionary accruals for individual and proprietary investors. This probably happens because they are not aware of discretionary accrual information. Additionally, I also find that institutions follow analyst forecasts rather than using time series analysis. This is because institutions are sophisticated traders hence, they use more sophisticated information for instance, analyst forecasts consensus rather than time series analysis. Moreover, Individuals and proprietary trades do not follow both analyst forecast and times series analysis. These investors probably use other sources of information to make an investment decision.

Department: Banking and Finance
Field of Study: Finance
Academic Year: 2013

Student's Signature .....

Advisor's Signature .....

ACKNOWLEDGEMENTS

This thesis could not be completed without countless people supporting. First and foremost, I would like to express my sincerest thanks and appreciation to Dr. Tanakorn Likittapiwat, my advisor, for his generous advices and his self-sacrifice in evaluation and recommendation in all details of the report and logic when retrieving data in the SAS programming, Dr. Anant Chiarawongse and Dr. Ruttachai Seelajaroen for their useful comments to improve the report, Mr. Jakkrit Srivajirothai for his kindness help in SAS programming and advice, Mr. Piti Dhamkhantichoti for his compassion help in data collection process and arranging.

Next, I would like to thank all members of the MSF administrator for their kind support and announcing necessary news to keep the author up-to-date including the registration time and defense schedule, my MSF classmates and alumni for their kindhearted support and good advice.

Finally, my thesis could not be succeeded without my family's moral support. They always cheer me up and stand by me to pass through all difficulties.

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CHAPTER I INTRODUCTION

When investing in stocks, should investors be more concerned about accrual information than net income when earnings is announced? Accrual information is generated from the use of accrual accounting. Accrual accounting is a procedure to recognize revenue and expense in proper period regardless of cash transactions. Accrual accounting is required for financial statement preparation in order to be in accordance with the first series of International Accounting Standards (IAS1): presentation of financial statement. The use of accrual accounting helps company provide reliable performance representation in proper period. However, accruals, particularly, discretionary accruals can be used as a tool to drive earnings. Battalio et al. (2012) find a relationship between accruals and trade sizes. They show that large trades, which are likely by institutions or wealthy investors, have different investment style in compare with small trades, which are probably by individual investors because large traders do not ignore accrual information when company's financial statement is first announced. Therefore, it helps large trades trade correctly whereas small trades trade incorrectly. Consequently, I would like to study which type of investors in Thailand might observe the discretionary accrual information and correctly reacts to it. This comes to the primary research question, how does each type of investors in Thailand react on accrual information especially, discretionary accruals around earnings announcement date?

Generally, when investors decide to invest in stocks, financial statement is one of the fundamental information that investors can look for when they need to know companies' financial position. However, investors do not know whether information provides real performance of the company because of the use of accrual

accounting. Accrual accounting requires that revenue and expenses have to be recognized when economic benefits flow in and out to company. The advantages are to give more accurate picture regarding matching revenue and expenses in proper period and meaningful financial information. The gap of this accrual accounting is that if a company wants to boost sales, one may sell lots of goods or services in advance without receiving money from customers. So, when it comes to the reporting period and customers still do not make a repayment, the financial statement will show that this company is profitable. However, in the next period, nightmare begins as some customers are falsified and some default and suppose the company still wants to speed up the sales. Do we still believe that this company is healthy? Therefore, regarding the example given, net income in financial statement consists of cash items and non-cash items or accrual parts which can be used to determine earnings quality. However, individual investors probably do not concern over the accrual parts because of the fact that news presented by media are always in respect to earnings performance of the company without mentioning about accruals which may lead to misunderstanding about real situation of the company. Additionally, if one looks at accruals in more details, accruals can be divided into two parts consisting of discretionary accruals and non-discretionary accruals. Discretionary accruals are used to identify management choices while non-discretionary accruals are from general business condition that naturally occurs and it will be reversed by general business transactions. For example, accounts receivable will be reversed from accounts receivable to cash received if customers repay their debts.

There are a number of papers studying earnings components particularly accrual elements since the accrual parts can be used to drive earnings for managements. Sloan (1996) finds that earnings that come from accrual part is less persistent than earnings that are from cash flow component and the results indicate that stock prices act as if investors focus on earnings without noticing that earnings are not only from cash component but accruals . Gavious (2007) also shows that investors focus on earnings and cannot detect earnings management. Epps and Guthrie (2010) show that managements try to manipulate earnings using discretionary accruals regardless of an increase or a decrease in income. In addition, when the information is announced, these studies do not clearly tell us who actually observe and react to discretionary accrual part which may result from earnings management. A recent paper published a new view of research in accrual information. Battalio et al. (2012) also show an interesting distinction behavior amongst traders. They find that small trade investors which are likely individual investors respond to time series forecast while large trade investors which are likely institutions respond to analyst forecast. The result is similar to Battalio and Mendenhall (2005).

This paper studies the relationship between discretionary accruals and different types of investors in Thailand stock market. I follow classification from the Stock Exchange of Thailand (SET) clustering investors into four groups including institutions, proprietary trading, foreign investors and individuals. I investigate whether investors in Thai market act similarly to or differently from the existing literature including how each investor relies on time series analysis or analyst forecast and how each group of investors react to both accrual and discretionary accruals information on the date that financial performance is disclosed. The highlights of this paper are

twofold. First, there is no prior research examining the relationship between discretionary accruals and investor types. This is one additional compliment that helps describing why institutions trade differently from individuals. Second, this study proposes a new study for emerging markets and combines accounting and microstructure data which help investors to get better understanding in component of earnings and to become aware of the accounting data importance as it is not only accruals that should be aware of, but specifically discretionary accruals since it may be a tool for managements that want to window dress financial statement therefore, if there is discretionary accrual found in the statement in the future, investors probably have to pay more attention to the reason and persistence of those numbers as it will inevitably affect company's future performance.

My study differs from the existing studies in number of ways. First, I use modified Jones model Dechow et al. (1995) because this model provides more accurate view of accruals that I would like to capture. The rationale of the model is non-discretionary accruals come from natural business transactions such as accounts receivable which is common for companies when billing occurs but they have not received payment from customers; however, discretionary accruals are from managements' decision that basically uses estimation. This is an incentive for earnings management as when looking at the median of quarterly net income and revenue which are standardized by lagged total assets between year 2005 and 2010 from the Stock Exchange of Thailand shown in figure 1, both net income and revenue slightly change. This may imply that all firms perform well during this range of time. However, some interesting evidence in Thailand is also found in this paper. When using median of quarterly net income and discretionary accrual data scaled by

lagged total assets as shown in figure 2, it also confirms that performance shown in the financial statement may be because managements try to smooth firms' income.

Figure 1 The median of quarterly net income and revenue scaled by lagged total assets between year 2005 and 2010

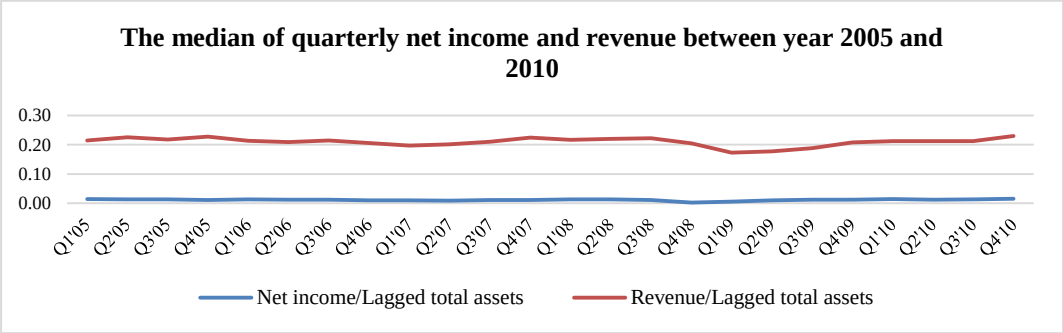
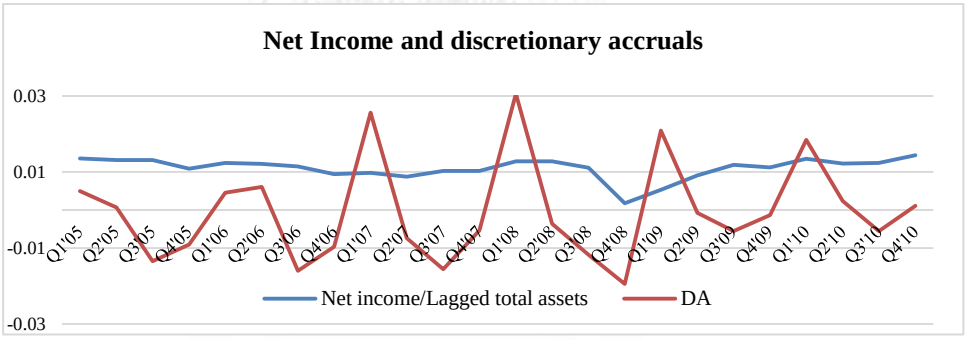


Figure 2 The median of quarterly net income scaled by lagged total assets and discretionary accruals



Therefore, I ignore nondiscretionary accruals by using this model which is different from Sloan (1996) who use the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets during the year and Battalio et al. (2012) that use general accrual computation that includes both discretionary and nondiscretionary accruals by using quarterly net income before extraordinary items and discontinued operations, less net operating cash flow for, all divided by average total assets. Second, I use earnings announcement date as the event date

whereas Battalio et al. (2012) use two event dates including preliminary earnings release date and filing date. The two event studies help explain in more detail that large traders will response to accrual information only if the reported earnings in preliminary earnings announcement is positive. Nevertheless, it differs from Thailand as earnings will be reported within 45 days of the end of each quarter[1]. Therefore, there is only one event date in Thailand. Battalio et al. (2012) split investors into six-group by trade sizes because of the fact that Trade and Quote data (TAQ) do not provide information about trade side initiation and type of investors. For this reason, I take this as a favorable element as our investor data used in this paper allows me to classify investors into four groups, namely, institutions, proprietary trading, foreign investors and individuals with a clear trade side initiation.

The first hypothesis is set due to the test of Battalio and Mendenhall (2005). They show that traders with the smallest order size implying individual investors rely on time series analysis more than analyst forecasts. On the other hand, traders with large order size rely on analyst forecast rather than time series. Therefore, I test whether individual investors and institutions rely on time-series analysis or analyst forecast. I hypothesize that the net buying behavior which is buy minus sell transaction scaled by average buy plus sell transaction of non-event date for institutions, foreigners and proprietary trades are correlated to analyst forecast meaning that all types of investors use analyst forecast whereas individual investors

[1] Regarding information disclosure regulations provided by The Stock Exchange of Thailand (SET), the reviewed quarterly financial statement is required to submit to SET within 45 days and the audited annual financial statement is required to submit within three months. However, the company may elect to submit the statement within 60 days instead of submitting the fourth quarter financial statement.

use time series analysis. The rationale from the hypothesis is that using time series analysis is similar to using technical analysis where individuals can speculate future performance by using historical data for example, historical earnings per share which is available via the internet, whereas analyst forecast is the consensus estimation which is more difficult than time series analysis to collect. The null hypothesis is both time series and analyst forecast do not affect investors' trading behavior.

The second hypothesis is set based on the research question "how does each type of investors react to discretionary accrual information around earnings announcement date". Battalio et al. (2012) state that large traders respond to accruals in the right direction when there are positive earnings surprises while small traders react to accruals in the wrong direction. the reason why investors do not likely react when the earnings surprises is negative is given by Battalio et al. (2012) stating that large traders ignore accruals in the unfavorable earnings surprises event as they cannot go short due to short-sell restrictions. Thus, I test relationship between net buying behavior of each type of investors (dependent variable) and discretionary accruals (independent variable). I hypothesize that institutions and proprietary traders will trade heavier than individual investors. The null hypothesis is that there is no relationship between net buying behavior for each investor type and discretionary accrual information.

Battalio et al. (2012) find that large traders will react on accrual only if earnings surprise is non-negative. I test relationship between discretionary accruals and net buying behavior of each type of investors with positive and negative earnings surprises separately. Therefore, the final hypothesis is that institutions and

proprietary trades will react only on positive earnings surprises. The null hypothesis is that there is no relationship between net buy activity and positive earnings surprises.

CHAPTER II OBJECTIVES AND CONTRIBUTIONS

There are two main objectives in this paper. First, this is the first paper that examines the relationship between buy and selling activities and discretionary accruals. To estimate discretionary accruals, I use modified Jones model Dechow et al. (1995) because this model provides more accurate view of accruals that I would like to capture. The modified jones model is different from many studies for example Sloan (1996) and Battalio et al. (2012) that use disparate accrual computation described. Second, this paper studies investor behavior in the Stock Exchange of Thailand which is one of an example of the emerging market with the earnings surprise including time series measure of earnings surprise defined as SUE and standardized unexpected earnings using analyst forecast defined as SUEAF. Because of an advantage of the microstructure data in Thailand, we have a clear classification of each investor type consisting of individuals, financial institutions, foreigners and proprietary trades which differ from Battalio et al. (2012) who split investors by using trade sizes because Trade and Quote data (TAQ) do not provide information about trade side initiation and type of investors. Therefore, they have to use an estimated model to identify which transaction is buying or selling.

CHAPTER III LITERATURE REVIEW

Because of accounting treatments, there is innumerable research concerning components of financial statement, particularly, accruals for years. Sloan (1996) documents that earnings that come from accruals is less persistent than earnings that comes from cash component. Richardson et al. (2005) studies reliability of accruals

and persistence in earnings and finds that if accruals are less reliable, earnings are less persistent. This is the evidence that accrual component influences earnings manipulation.

Epps and Guthrie (2010) investigate an intention to misuse accounting and show that managements try to manipulate earnings using discretionary accruals regardless of an increase or a decrease in income but they do not examine investors' response to accruals used to manipulate income. Moreover, the objective of earnings manipulation is that managements need to boost stock returns persuading investors to invest in their stocks. Sloan (1996) and Daniel W. Collins (2000) shows that firms with high (low) level of accruals have low (high) future returns. Although there are numerous studies published, investors seem to focus only on reported earnings. Sloan (1996), Richardson et al. (2005) and Gavious (2007) also show that investors do not determine components of earnings that consist of cash and accruals. This result is further researched and found that the failure leads to significant security mispricing Richardson et al. (2005).

Regarding accrual evaluation, Dechow et al. (1995) evaluate many accrual models for detecting earnings management and propose the modified Jones model which is the modified version of Jones (1991) that it is the most powerful model in detecting earnings management because of the lowest type II errors which is generally used to evaluate model ability Pornupatham (2007).

These probably happen because investors may use different information when investing. Battalio and Mendenhall (2005) provide the evidence that investors use disparate information sets and find that investors who initiate small trades use

time series analysis or the simplistic seasonal random walk (SRW) model or technical analysis which is less complicated than using analyst forecasts used by large trades. Battalio et al. (2012) also confirm the findings which is similar to Battalio and Mendenhall (2005). Nevertheless, they also state that the model that small traders usually use has autocorrelation pattern which is less precise than the model used by large traders. Additionally, Zielonka (2004) shows that investors using technical analysis are not rational.

Many researchers try to find which group of investors can recognize and distinguish reported earnings. Noticeably, some investors can detect accrual information and use this information to outperform others. Battalio et al. (2012) is the first paper examining investors' behavior at the time accrual information is released by splitting investors into six groups of shares traded from the smallest to the largest trades. They document that large traders, which are likely institutions will concern over accrual information when prior earnings announcement is positive indicating negative correlation between accruals and buy volume whereas small traders which is probably individual investors seem to trade wrongly. However, it is uncertain whether small traders are individual investors because trade size cannot proxy for investor type and there are probably large investors who want to hide themselves by splitting their orders into small trade sizes called stealth trading. Barclay and Warner (1993) argue that investors who trade large size will break their trades into small or medium sizes to hide their trades. In that case, the results from the small trade provided by Battalio et al. (2012) probably include stealth trading from large traders. Unlike the above paper, I provide a clear clustering of the trades which can help solving stealth trading issue.

In Thailand, Phansatan et al. (2012) examines trading behavior containing market timing and security selection in Thai stock market by breaking down investors into four types which is the same as those used in this paper and find that individual investors are good when picking stocks but they are poor when predicting market, nevertheless; other types of investors are good at predicting market direction but they are poor at selecting securities. However, in compare with the same level of information, none of studies determine the relationship between earnings performance and reaction of each investor type. Sloan (1996) and Daniel W. Collins (2000) state the same result for the accrual persistence but Daniel W. Collins (2000) do not show how investors react on accruals. Richardson et al. (2005) and Gavious (2007) find that investors fail to distinguish between accrual and cash components but they do not state which group of investors fail to distinguish the components. Battalio et al. (2012) study the relationship between accrual information and investors and also separate investors by numbers of shares initiated but they do not know exactly whether large trades are institutions, proprietary trading or foreign investors. Using a transparent clustering helps explain each group behavior clearly and helps solving stealth trading issue. Moreover, Battalio et al. (2012) compute the whole accrual by using net income before extraordinary items and discontinued operations for the quarter, less net operating cash flow for the quarter. With respect to the computation, all companies in the US can compute it because they adopt US-GAAP (US- Generally Accepted Accounting Standard) so they can obtain net income before extraordinary items and discontinued operations shown in the statement while majority countries have already adopted IFRS (International Financial Reporting Standards). The implication of using net income before extraordinary items and

discontinued operations is that there is an opportunity to shift expenses to extraordinary items and discontinued operations and show high net income before extraordinary items and discontinued operations leading to overestimation when computing accruals. McVay (2006) also shows that item classification in income statement is one of earnings management tools to shift expenses from core expenses to special items. I refine my study by using modified Jones model Dechow et al. (1995) as it provides more accurate view of accruals that I would like to capture.

CHAPTER IV DATA AND EMPIRICAL METHODOLOGY

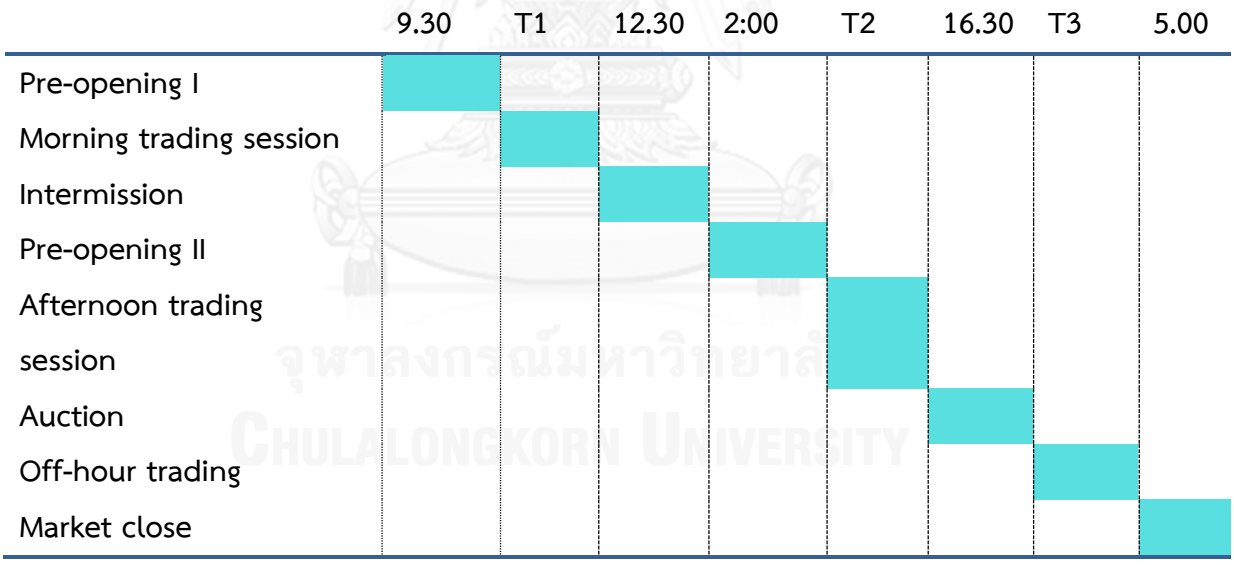
Data

I obtain microstructure data from the Stock Exchange of Thailand (SET). The data provides all traded information that is executed on the SET including investor types that initiate an order and their trade direction which is buy or sell. Investor types are classified into institutions, proprietary trading, foreign investors and individuals. In addition, I obtain quarterly financial data from SETSMART database including total assets, accounts receivables, cash, gross property plant and equipment, total liabilities, total debts, cash flow from operating activities (CFO), cash flow from investing activities (CFI), earnings per share and net income and between 2005 and 2010. Finally, I obtain the earnings announcement date and analyst forecasts from Bloomberg database in the same range of time.

There are 66 firms in the sample sizes. 16 firms are removed due to their information is less than four quarters. All firms are listed in the SET50. SET50 is the first 50 stocks having large market capitalization which is revised every six months. It is used because they are usually active trading which enable the author to clearly

see buy and sell transactions. Moreover, analyst forecast information is occasionally seen in the SET50 more than other stocks. In addition, because of the specific characteristics of the SET whose trading sessions are divided into two rounds consisting of morning and afternoon, I use trading transactions from 10.00 AM to 12.30 PM and 2.30 PM to 4.30 PM. The reason that I use these two ranges of time is to avoid abnormal trading volume in the auction period which may lead to an overestimation of both buy and sell volume. Figure 3 shows trading hours in the Stock Exchange of Thailand (SET) where T1 and T2 are the random opening time ranging 9.55 to 10.00AM and 2.25 to 2.30 PM, respectively and T3 is random closing time between 4.35-4.40 PM.

Figure 3 Illustration of trading hours[2]



[2] Figure 3 is modified from the Stock Exchange of Thailand's website (http://www.set.or.th/en/products/trading/equity/tradingsystem_p2.html)

Empirical methodology

I use earnings announcement date as the event date. There are four main variables comprising of abnormal net buy activity ($NETBUY_{j,t}$), earnings surprise ($SUE_{j,t}$), accruals ($Accrual_{j,t}$) and discretionary accrual component(μ_t).

Abnormal net buy activity ($\boldsymbol{NETBUY_{j,t}}$)

In order to find net buying activity around the event date, I replicate the formula from Battalio et al. (2012). However, because there is only earnings announcement date in Thailand which is different from the US which has two events including the preliminary earnings released date and the filing date thus, when computing pre (buy-sell), and post (buy-sell), I use the three-day trading window centered twenty trading days before and after earnings announcement date, respectively which is the same as Battalio et al. (2012). They will be defined as follows.

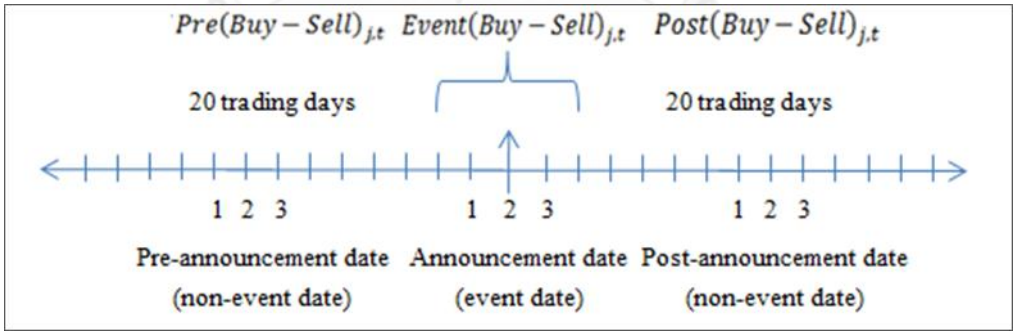
$$NETBUY_{j,t} = \frac{Event(Buy-Sell)_{j,t} - \frac{1}{2}[Pre(Buy-Sell)_{j,t} + Post(Buy-Sell)_{j,t}]}{Avg.number\ of\ non-event\ trades_{j,t}} \quad \text{... (1)}$$

$Event(Buy-Sell)_{j,t}$ is the summation of the three-day trading window of the abnormal volume of buy minus sell of each investors type for firm *j* at quarter *t* calculated by subtracting number of sell trades during the three days centered on the announcement date from the number of buy trades over the same period to get the net buying for each type of investors. After that, I compute similar statistics for the three-day trading windows centered on twenty trading days before the earnings announcement date for each investor type for firm *j* at quarter *t* denoted by $Pre(Buy-Sell)_{j,t}$ and for three-day trading window centered on twenty trading

days after the earnings announcement date for each investor type for firm j at quarter t denoted by $Post(Buy - Sell)_{j,t}$. I then subtract $Event(Buy - Sell)_{j,t}$ by the average of $Pre(Buy - Sell)_{j,t}$ and $Post(Buy - Sell)_{j,t}$ and deflate by average number of non-event trades for each investor type ($Avg.number\ of\ non - event\ trades_{j,t}$) which is calculated by the sum of each investor type transactions including buy and sell in the three- day pre and post nonevent windows centered twenty trading days before pre-announcement date and post-announcement date divided by two. I calculate these variables in order to get $NETBUY_{j,t}$ for each investor type for firm j at quarter t. $NETBUY_{j,t}$ is the abnormal volume as a part of the whole non-event trades.

To get better understanding of the calculation, the variables are explained in time line shown in figure 4.

Figure 4 Time line for abnormal net buying activity calculation



Time series measure of earnings surprise ($SUE_{j,t}$)

Because Battalio et al. (2012) state that small traders tend to use time series forecasts while large traders tend to use analyst forecasts. I employ two measures of earnings surprise consisting of time series and analyst forecast which are similar to Battalio et al. (2012). Consequently, I first estimate earnings per shares in order to get

$\varepsilon_{j,t}$ for each firm *j* at quarter *t* by using pooled regression. $\varepsilon_{j,t}$ is the earnings surprise before scaling by the standard deviation STD_j for each firm *j* as follows.

$$E_{j,t} = \delta_j + E_{j,t-4} + \varepsilon_{j,t} \quad ...(2)$$

Where $E_{j,t}$ is quarterly diluted earnings per shares (EPS) for firm *j* at quarter *t*. δ_j is a drift term to allow for firm's recent historical earnings growth and $\varepsilon_{j,t}$ is an error term for firm *j* at quarter *t* with standard deviation STD_j. Next, I follow the first time series measure of earnings surprise, SUE as

$$SUE_{j,t} = \frac{E_{j,t} - \delta_j - E_{j,t-4}}{STD_j} \quad ...(3)$$

Standardized unexpected earnings using analyst forecast ($SUEAF_{j,t}$)

The second measure of earnings surprise which is called standardized unexpected earnings using analyst forecast defined as SUEAF uses actual analyst forecasts of earnings during the 90-day period prior to the real earnings disclosure from SETSMART.

$$SUEAF_{j,t} = \frac{E_{j,t} - F_{j,t}}{P_{j,t}} \quad ...(4)$$

Where $SUEAF_{j,t}$ is the standardized unexpected earnings using analyst forecast $E_{j,t}$ is the actual EPS reported for each quarter and $F_{j,t}$is the mean of the most recent quarterly forecast of EPS made by analyst during the 90-day period prior to the earnings disclosure of actual earnings. The nominator is divided by $P_{j,t}$ which is price per share for firm *j* at the quarter-end.

Discretionary Accrual ($\mu_{j,t}$)

Recall that total accruals consist of discretionary accruals and non-discretionary accruals. Therefore, if total accruals and non-discretionary can be calculated, discretionary accruals will be easily computed. Hence, I replicate Dechow et al. (1995) regression to compute discretionary accruals defined as $\mu_{j,t}$.

$$TA_{j,t} = \alpha_{1j}\left(\frac{1}{A_{j,t-1}}\right) + \beta_{1j}\left(\frac{\Delta REV_{j,t} - \Delta REC_{j,t}}{A_{j,t-1}}\right) + \beta_{2j}\left(\frac{PPE_{j,t}}{A_{j,t-1}}\right) + \mu_{j,t} \quad \text{... (5)}$$

Where α_{1j} is an intercept term for firm *j*. β_{1j} and β_{2j} are coefficient terms for firm *j*, $TA_{j,t}$ is total accruals for firm *j* in quarter t. $\Delta REV_{j,t}$ is revenue in the current quarter less revenue in the previous quarter for firm *j*. $\Delta REC_{j,t}$ is net receivable in the current quarter less net receivable in the previous quarter for firm . $PPE_{j,t}$ is gross property, plant and equipment at quarter *t* for firm *j*. $\Delta REV_{j,t}$, $\Delta REC_{j,t}$ and $PPE_{j,t}$ are scaled by lagged total assets for firm *j* ($A_{j,t-1}$). $\mu_{j,t}$ is an error term which is a measure of discretionary accruals for firm *j* at quarter *t*.

Following Jones (1991) and Dechow et al. (1995), total accruals ($TA_{j,t}$) can be calculated by the following equation.

$$TA_{j,t} = \frac{(\Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STD_{j,t} - Dep_{j,t})}{A_{j,t-1}} \quad \text{...(6)}$$

Where $\Delta CA_{j,t}$ is a change in current assets for firm *j* at quarter *t*. $\Delta CL_{j,t}$ is a change in current liabilities for firm *j* at quarter *t*. $\Delta Cash_{j,t}$ is change in cash and cash equivalents for firm *j* at quarter *t*. $\Delta STD_{j,t}$ is change in debt included in current liabilities for firm *j* at quarter *t*. $Dep_{j,t}$ is depreciation and amortization expenses for

firm *j* at quarter *t*. These variables are scaled by lagged total assets for firm *j* denoted as $A_{j,t-1}$.

Dechow et al. (1995) provide the modified version of expected non-discretionary accruals from Jones (1991). The only difference from Jones (1991) is the change in revenue in equation 7 which is adjusted from the change accounts receivable because the modified Jones model assumes that all changes in accounts receivable come from earnings management. The method from Dechow et al. (1995) is defined as follows.

$$NDA_{j,t} = \alpha_{1j} + \beta_{1j}\left(\frac{\Delta REV_{j,t} - \Delta REC_{j,t}}{A_{j,t-1}}\right) + \beta_{2j}\left(\frac{PPE_{j,t}}{A_{j,t-1}}\right) \quad \text{...(7)}$$

Where α_{1j} is an intercept term for firm *j*. β_{1j} and β_{2j} are coefficient terms for firm *j*. $NDA_{j,t}$ is nondiscretionary accrual component for firm *j* at quarter t. $\Delta REV_{j,t}$ is revenue in the current quarter less revenue in the previous quarter for firm *j*. $\Delta REC_{j,t}$ is net receivable in the current quarter less net receivable in the previous quarter for firm *j*. $PPE_{j,t}$ is gross property, plant and equipment in quarter t for firm *j*. $\Delta REV_{j,t}$, $\Delta REC_{j,t}$ and $PPE_{j,t}$ are scaled by lagged total assets for firm *j* ($A_{j,t-1}$)

CHAPTER V TEST OF HYPOTHESES

I use a simple regression model to test each hypothesis. The subscript “0” refers to the null hypothesis, subscript “A” to alternative hypothesis, subscript “i” refer to investor type consisting of individual, proprietary, institutions and foreign investors, respectively.

Hypothesis 1: The net buying behavior which is buy minus sell transactions scaled by average buy plus sell transactions of non-event date for all investors are correlated to analyst forecast.

To test the first hypothesis, I replicate Battalio et al. (2012) by using the following regression model.

$$NETBUY_{j,t} = \alpha + \beta_1 SUE_{j,t} + \beta_2 SUEAF_{j,t} + \varepsilon_{j,t} \quad \text{...(8)}$$

Where α is an intercept term. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. Therefore, it will be regressed four times for each investor type including institutions, proprietary trading, foreign investors and individuals. $SUE_{j,t}$ is time series measure of earnings surprise and $SUEAF_{j,t}$ is actual analyst forecasts of earnings. $\varepsilon_{j,t}$ is an error term for firm *j* at time *t*.

I test to see whether the net buying behavior for individual investors or the net buying behavior for institutions and proprietary trading are correlated to time series forecast or analyst forecast due to the different way to access data for Thai individual investors. I test the following null and alternative hypotheses.

(a) Individuals: $H_0: \beta_1 = 0 \; versus \; H_A: \beta_1 > 0$

Individuals: $H_0: \beta_2 = 0 \; versus \; H_A: \beta_2 > 0$

(b) Foreigners: $H_0: \beta_1 = 0 \; versus \; H_A: \beta_1 > 0$

Foreigners: $H_0: \beta_2 = 0 \; versus \; H_A: \beta_2 > 0$

(c) Institutions: $H_0: \beta_1 = 0 \; versus \; H_A: \; \beta_1 > 0$

Institutions: $H_0: \beta_2 = 0 \; versus \; H_A: \; \beta_2 > 0$

(d) Proprietary: $H_0: \beta_1 = 0 \; versus \; H_A: \; \beta_1 > 0$

Proprietary: $H_0: \beta_2 = 0 \; versus \; H_A: \; \beta_2 > 0$

Hypothesis 2: Institutions and proprietary trades will trade heavier than individual investors if there is discretionary accrual information.

I test the relationship between abnormal volumes of buy minus sell for each type of investors by using the following regression model.

$$NETBUY_{j,t} = \alpha + \beta_3 \mu_{j,t} + \varepsilon_{j,t} \quad \text{...(9)}$$

Where α is an intercept term. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. $\mu_{j,t}$ is discretionary accruals for firm *j* at quarter *t*. Therefore, it will be regressed four times for each investor type including institutions, proprietary trading, foreign investors and individuals. $\mu_{j,t}$ is the discretionary accrual component computed from equation (5) for firm *j* at quarter *t*. $\varepsilon_{j,t}$ is an error term for firm *j* at time *t*.

Similar to Battalio et al. (2012) the following null and alternative hypotheses are set.

(a) Institutions: $H_0: \beta_3 = 0 \; versus \; H_A: \; \beta_3 < 0$ if SUE or SUEAF >0

(b) Proprietary: $H_0: \beta_3 = 0 \; versus \; H_A: \beta_3 < 0$ if SUE or SUEAF >0

Where SUE is time series measure of earnings surprises and SUEAF is analyst forecast

Hypothesis 3: Institutions and proprietary trades will trade in discretionary accrual stocks only when the analyst forecast is positive.

Regarding the final hypothesis, I hypothesize that institutions and mutual funds will react on the discretionary accruals only when the analyst forecast is non-negative where there is a negative correlation between net buy activity and discretionary accruals. With reference to the final hypothesis, I follow Battalio et al. (2012) by adding the variable POS which is the dummy variable meaning that it takes the value of one if SUE or SUEAF is positive and zero, otherwise. I also test the interaction term of POS and discretionary accrual variable. The purpose of adding the interaction term is to see whether institutions and proprietary traders trade on discretionary accruals when the analyst forecast is positive.

$$NETBUY_{j,t} = \alpha + \beta_1 SUE_{j,t} + \beta_2 SUEAF_{j,t} + \beta_3 \mu_{j,t} + \beta_4 POS + \beta_5 POS \times \mu_{j,t} + \varepsilon_{j,t} \quad \text{...(10)}$$

Where α is an intercept term. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. Therefore, it will be regressed four times for each investor type including institutions, proprietary trading, foreign investors and individuals. $SUE_{j,t}$ is time series measure of earnings surprise for firm *j* at quarter *t* and $SUEAF_{j,t}$ is earnings surprises using analyst forecasts for firm *j* at quarter *t*. $\mu_{j,t}$ is the discretionary accrual component computed from equation (5) for firm *j* at quarter *t*. POS is a dummy variable which equal one if SUE or SUEAF is positive and zero, otherwise. $\varepsilon_{j,t}$ is an error term for firm *j* at quarter *t*.

The following null and alternative hypotheses are set.

(a) Institutions: $H_0: \beta_4 = 0 \; versus \; H_A: \; \beta_4 > 0$

(b) Proprietary: $H_0: \beta_4 = 0 \; versus \; H_A: \; \beta_4 > 0$

(c) Institutions: $H_0: \beta_5 = 0 \; versus \; H_A: \; \beta_5 < 0$

(d) Proprietary: $H_0: \beta_5 = 0 \; versus \; H_A: \; \beta_5 < 0$

CHAPTER VI DESCRIPTIVE STATISTICS AND EMPIRICAL RESULTS

Descriptive statistics

I begin with the summary statistics of net buying behavior for each type of investors as shown in Table 1. There are 66 firms in the original sample for each type of investors includes 1,064 observations during year 2005 and 2010. 16 firms are removed due to their information is less than four quarters. Individual investors, on average, are net buyers where the median is 0.0379. Foreign investors and institutions, on average, are net sellers where the median net buy activities are -0.105 for foreigners and -0.049 for institutions. These results are similar to Battalio et al. (2012)'s finding. However, the median for proprietary trades is 0.1091 indicating that, on average, proprietary trades are net buyers around earnings announcement date which is different from Battalio et al. (2012)'s finding that large trades are generally net sellers.

Table 1 Summary Statistics for net buying activities for each investor type

Investor type	Number of observations	Mean	SD	Median	Minimum	Maximum
Individuals	685	0.0379	0.0194	0.0167	-1.7463	1.7289
Foreigners	697	-0.105	0.0273	-0.0809	-2.9968	2.9739
Institutions	704	-0.049	0.0461	-0.0438	-5.4951	5.3428
Proprietary	654	0.1091	0.0432	0.0077	-4.5975	4.8783

Summary statistics for each investor type from 2005 to 2010. Netbuy variable for each investor type is the abnormal volume for each type of investors around the

earnings announcement date calculated by summarizing volume of net buy by subtracting sell from buy transactions for three days around the earnings announcement date. The amount is then subtracted by the average of the summation of three days trading volume of buy minus sell for three days centered twenty trading days before the earnings announcement date and three days trading volume of buy minus sell for three days centered twenty trading days after the earnings announcement date. All is divided by an average of buy and sell transactions for three days centered twenty trading days after and before the earnings announcement date.

Next, summary statistics for earnings surprise ($SUE_{j,t}$) and earnings surprise using analyst forecasts ($SUEAF_{j,t}$) are shown in Table 2. The median SUE is 0.0433 meaning that the coming quarterly earnings per share is usually better than the previous quarter. The mean SUEAF is -0.0001 meaning that analyst forecast is, on average, consensus analyst forecast is closed to actual earnings per share. Table 3 shows summary statistics for financial information including net income, cash flow from operating activities, accruals, total accruals, discretionary accruals, change in revenue less change in accounts receivable and property plant and equipment.

Table 2 Summary Statistics

Variable	Number of observations	Mean	SD	Median	Minimum	Maximum
SUE	1,014	0.0354	0.0287	0.0433	-2.9925	3.0561
SUEAF	1,004	0.0015	0.0007	0.0001	-0.1667	0.2795

Summary statistics for earnings surprise ($SUE_{j,t}$) and earnings surprise using analyst forecasts ($SUEAF_{j,t}$).

Table 3 Summary statistics

Variable	Mean	Standard deviation	Median	Maximum	Minimum
Net income	0.0215	0.0245	0.0185	0.1564	-0.1499
Cash Flow from Operating Activities	0.0633	0.1095	0.0529	0.63	-0.6241
Total accruals	0.0033	0.0556	-0.0004	0.4736	-0.4893
Discretionary accruals	-0.0003	0.0511	-0.001	0.3163	-0.3756
Change in Revenue less change in Accounts receivable	0.004	0.067	0.0016	0.5904	-0.6061
Property Plant and Equipment	0.368	0.0066	0.3661	0.8991	0.0012

I collect quarterly data consisting of 1,416 observations during year 2005 and 2010. All variables are obtained from SETSMART database. Net income and cash flow from operating activities are standardized by lagged total assets. Total accruals, discretionary accruals, change in revenue less change in accounts receivable and property plant and equipment are calculated by referring to the formula in Dechow et al. (1995).

Table 3 represents some important financial statement information. It shows that firms listed in the SET50, on average, announce positive net income which may imply that firms perform well. The median of cash flow from operating activities is 0.0529 meaning that mostly, companies generate positive operating cash from their core business. The median of total accruals is -0.0004 and the median of discretionary accruals is -0.001 for discretionary accruals. When combining the negative median of discretionary accruals with figure 2 shown at the beginning, it implies that, on average, firms that have good performance may have an incentive to smooth the income which leads their performance not to be overrated. The median

of other variables including change in revenue less accounts receivable and property plant and equipment are 0.0016 and 0.3661, respectively.

CHAPTER VIII EMPIRICAL RESULTS

Investors' reaction to earnings surprises versus analyst forecast

With respect to the first hypothesis set at the beginning that all investors use analyst forecasts as a tool to invest because of easiness to get access and economical price than using times series. Table 4 shows correlation between net buy activity for each investor type and earnings surprises consisting of time series analysis (SUE) and analyst forecast (SUEAF). Table 5 shows correlation between time series analysis (SUE) and analyst forecast (SUEAF). Table 6 shows regression between net buying activity and time series (SUE) and analyst forecast (SUEAF). The results indicate that on average, foreigners and institutions follow analyst forecast rather than time series at earnings announcement date. The result for foreigners and institutions are statistically significant at 1 percent and 5 percent level, respectively which agree with the hypothesis set at the beginning. This is also consistent with Battalio and Mendenhall (2005) and Battalio et al. (2012)'s result. However, the result for individuals and proprietary traders are insignificant for both time series and analyst forecast which is inconsistent with Battalio et al. (2012). Another observable point is the quite low R-square in the regression which is 0.0028, 0.0105, 0.0091 and 0.0002 for individuals, foreigners, institutions and proprietary trades, respectively combining with some significant p-values of the intercept terms meaning that there probably be other factors influencing these investors especially individuals and proprietary trades when investing in stocks. However, analyst forecast is one of the choices when investors, likely foreigners and institutions make a decision as time

series forecast may be more difficult and complicated than using analyst forecast which has already analyzed and calculated by analysts which may be an employee of that institutions. Furthermore, it is also easy to access via countless media for example internet and newspapers.

Table 4 Correlation between net buy activity and earnings surprises

	SUE	SUEAF
Individuals	-0.0116	0.0455
Foreigners	0.0551	0.1017
Institutions	0.0446	0.0939
Proprietary	-0.0136	-0.0023

Table 5 Correlation between earnings surprises and analyst forecasts

	Earnings surprises and analyst forecasts correlation
Individuals	0.2955
Foreigners	0.4247
Institutions	0.3149
Proprietary	0.4492

Table 6 Net buying activity and earnings surprises at the earnings announcement date

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0397	-0.1151	-0.0329	0.1083
P-Value	0.0203	0.0014	0.2509	0.0062
SUE	-0.0153	0.0152	0.022	-0.018
P-Value	0.246	0.3615	0.3355	0.3597
SUEAF	0.5057	3.9759	1.6838	0.2272
P-Value	0.0897	0.0097	0.0121	0.4564
R Square	0.0028	0.0105	0.0091	0.0002
Number of observations	689	728	718	657

Regression for the first hypothesis $NETBUY_{j,t} = \alpha_j + \beta_1 SUE_{j,t} + \beta_2 SUEAF_{j,t} + \varepsilon_{j,t}$ where $\alpha_j$is an intercept for firm *j*. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. Therefore, it will be regressed four times for each investor type including institutions, proprietary trading, foreign investors and individuals. $SUE_{j,t}$ is time series measure of earnings surprise and $SUEAF_{j,t}$ is actual analyst forecasts of earnings. $\varepsilon_{j,t}$ is an error term for firm *j* at time *t*.

Investors' reaction to discretionary accruals

The next hypothesis is to test the investors' reaction to discretionary accruals. Table 7 represents the regression result for all type of investors before considering the analyst forecast event. The result shows that all investors, on average, do not consider discretionary accrual information. The insignificant result probably because investors are not interested in discretionary accruals all the time. They may react on discretionary accruals in some specific events for example, the event that analyst forecast is favorable.

Table 7 Net buying activity and discretionary accruals at the earnings nouncement date

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0385	-0.107	-0.0507	0.1088
P-Value	0.0239	<0.0001	0.136	0.006
Discretionary accruals	-0.2429	0.9997	0.7888	0.927
P-Value	0.2945	0.0793	0.2444	0.118
R Square	0.0004	0.0029	0.0007	0.0022
Number of observations	689	728	718	657

Regression for the second hypothesis $NETBUY_{j,t} = \alpha \ \ + \beta_3 \mu_{j,t} + \varepsilon_{j,t}$. Where α is an intercept. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. $\mu_{j,t}$ is discretionary accruals.

Therefore, I separate the earnings whether it is favorable meaning that the earnings is greater than analyst forecast or unfavorable where the earnings is less than analyst forecast which results in a negative analyst forecast. Recall that the standardized unexpected earnings using analyst forecast is calculated by subtracting quarterly analyst forecast from quarterly earnings per share and all is scaled by price per share for each stock. Table 8 presents regression result for all type of investors when analyst forecast is favorable and Table 9 presents regression result for all type of investors when analyst forecast is unfavorable. The result from Table 3B shows that the coefficient for individuals and proprietary trades are statistically insignificant where the coefficients are -0.1591 and 0.1457, respectively. The result for foreigners and institutions are 1.9682 and -3.0536, respectively. Both are significant at 5 percent level. Therefore, when analyst forecast is favorable, foreign investors and institutions

will react on discretionary accruals whereas individuals and proprietary seem to ignore discretionary accrual information. The result for individuals, foreigners and institutions are consistent with Battalio et al. (2012) stating that large trade investors react on accruals only when the analyst forecast is positive while small traders do not. However, the result for proprietary trades is inconsistent with Battalio et al. (2012). After testing which type exactly reacts to discretionary accruals, the direction of the trades will be explored later on.

Table 8 Net buying activity and discretionary accruals at the earnings announcement date when earnings surprises are greater than analyst forecast.

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0291	-0.0641	0.0851	0.0775
P-Value	0.1239	<0.0001	0.0749	0.0832
Discretionary accruals	-0.1591	1.9682	-3.0536	0.1457
P-Value	0.3939	0.0235	0.0162	0.4414
R Square	0.0002	0.0098	0.0115	0.0001
Number of observations	411	404	399	395

Regression for the second hypothesis $NETBUY_{j,t} = \alpha \ \ + \beta_3 \mu_{j,t} + \varepsilon_{j,t}$. Where α is an intercept. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. $\mu_{j,t}$ is discretionary accruals.

With respect to table 3C, coefficient for individuals, foreigners, institutions and proprietary trades are -0.2698, 0.1902, 2.3943 and 2.114, with p-value 0.3527, 0.4314, 0.0911 and 0.204, respectively. The result shows that when the analyst forecast is negative or unfavorable, Individuals, foreigners and institutions do not consider on discretionary accruals while proprietary trade do. The reason why institutions do not react on discretionary accruals when there is negative analyst forecast is probably

because the short sell restriction that prohibits institutions and mutual funds to go short.

Table 9 Net buying activity and discretionary accruals at the earnings announcement date when the earnings surprises are less than analyst forecast.

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0516	-0.1789	-0.0902	0.1739
P-Value	0.0515	<0.0001	0.1056	0.0062
Discretionary accruals	-0.2698	0.1902	2.3943	3.114
P-Value	0.3527	0.4314	0.0911	0.204
R Square	0.0005	0.0001	0.0063	0.0162
Number of observations	278	324	319	262

Regression for the second hypothesis $NETBUY_{j,t} = \alpha \quad + \beta_3 \mu_{j,t} + \varepsilon_{j,t}$. Where α is an intercept. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. $\mu_{j,t}$ is discretionary accruals.

Do investors react to discretionary accruals?

When looking at discretionary accruals, firms having high level of discretionary accruals provide low earnings quality meaning that managements of that firm may use aggressive accounting procedure to overstate their performance. Therefore, when investors find there is high level of discretionary accrual information embedded in the earnings, investors that trade in the correct direction should sell that stock. Inversely, investors should buy stocks that contain low level of discretionary accruals at the earnings announcement date. Hence, after testing reaction to discretionary accruals, I further partition discretionary accruals into high and low using quintile to see whether all type of investors react in the right direction. Table 10 represents regression result for net buying activity and high level of discretionary accruals at the

earnings announcement date and Table 11 represent regression result for net buying activity and low level of discretionary accruals at the earnings announcement date.

The result in table 10 shows that when there is high degree of discretionary accruals, only institutions react in the way that it should be by selling stocks that contain high discretionary accruals which is statistically significant at 5 percent level (coefficient -4.836, p-value 0.0438) while other investors, on average, do not do so because of the insignificant result from individuals, foreigners and proprietary traders. The coefficient and p-value for individuals are 0.2586 and 0.3792, foreigners are 1.424 and 0.2757 and proprietary trades are 2.3804 and 0.096. However, the result in table 11 showing that only result for foreigners is significant at 1 percent level whereas results for other investors are statistically insignificant. Therefore, foreigner reactions to discretionary accruals probably come from the noise of the data since when there is high level of discretionary accruals, the statistically significant result is found only for institutional investors.

Table 10 Net buying activity and high level of discretionary accruals at the earnings announcement date

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0181	-0.0675	0.1809	0.0723
P-Value	0.3221	0.2369	0.0946	0.1997
Discretionary accruals	0.2586	1.424	-4.8365	2.3804
P-Value	0.3792	0.2757	0.0438	0.096
R Square	0.0003	0.0018	0.0147	0.0053
Number of observations	346	526	618	330

Table 11 Net buying activity and low level of discretionary accruals at the earnings announcement date

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0308	0.0183	0.4029	0.1306
P-Value	0.217	0.3874	0.0454	0.0698
Discretionary accruals	-0.6434	4.5977	3.3892	2.2681
P-Value	0.2596	0.0091	0.2582	0.1522
R Square	0.0012	0.0276	0.0043	0.0032
Number of observations	343	202	100	327

Regression for the second hypothesis $NETBUY_{j,t} = \alpha \ + \beta_3 \mu_{j,t} + \varepsilon_{j,t}$ for Table 6A to 6C. Where α is an intercept. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm j at quarter t. $\mu_{j,t}$ is discretionary accruals.

If investors react on discretionary accruals, do they trade in the right direction?

The third hypothesis is adding both analyst forecast ($SUEAF_{j,t}$), the dummy variable (POS) which is equal to one if analyst forecast is greater than one and zero otherwise, and POS times discretionary accruals to the regression of net buying activity on discretionary accruals to test whether institutions and mutual funds react on the discretionary accruals only when the analyst forecast is positive. With reference to the regression of net buy activity and discretionary accruals, the result in Table 12 shows that making a condition on analyst forecast, adding both POS variable and interaction term between POS and discretionary accruals do not affect net buying activity for all type of investors except institutions where the coefficient of individuals, foreigners, institutions and proprietary trades are 0.0648, 1.7248, -4.5035 and -1.9276 with p-value 0.472, 0.1224, 0.0219 and 0.1702, respectively. The meaning of the regression result is when there is positive earnings surprises, the more

discretionary accruals which can be determined earnings quality disclosed at the earnings announcement date, the greater volume of stocks institutions will sell. On the other hand, the more discretionary accruals disclosed in the financial statement, the greater volume of stocks foreigners will buy whereas individuals and proprietary trades, on average, do not react on discretionary accruals. The result for institutions is consistent with Battalio et al. (2012) stating that large traders react to accrual information only when the analyst forecast is positive. Therefore, institutions, on average, trade in the correct direction whereas other types of investors do not. However, the result for foreign investors probably results from the noise in data. Furthermore, because of the quite low R-square in all regression which observes the relationship between net buying activities and discretionary accruals, they may use other source of information to make an investment decision.

Table 12 Net buying activity and discretionary accruals

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.0627	-0.1887	-0.0443	0.1783
P-Value	0.0247	<0.0001	0.2665	0.0079
SUEAF	0.5294	-0.8558	1.6878	0.3712
P-Value	0.0792	0.3056	0.0045	0.4298
POS	-0.0386	0.1305	0.123	-0.114
P-Value	0.177	0.0215	0.0941	0.1272
POS*DA	0.0648	1.7248	-4.5035	-1.9276
P-Value	0.472	0.1224	0.0219	0.1702
DA	-0.2449	0.2376	2.531	3.0994
P-Value	0.3628	0.4146	0.0698	0.2107
R Square	0.0038	0.0133	0.0213	0.009

Regression for the third hypothesis $NETBUY_{j,t} = \alpha \ + \beta_1 SUEAF_{j,t} + \beta_2 \mu_{j,t} + \beta_3 POS + \beta_4 POS \times \mu_{j,t} + \varepsilon_{j,t}$ Where α is an intercept term. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. $SUEAF_{j,t}$ is earnings surprises using analyst forecasts for firm *j* at quarter *t*. $\mu_{j,t}$ is the discretionary accrual component computed from equation (5) for firm *j* at quarter *t*. POS is a dummy variable which equal one if SUEAF is positive and zero, otherwise. $\varepsilon_{j,t}$ is an error term for firm *j* at quarter *t*.

CHAPTER IX ROBUSTNESS CHECK

Robustness test is done to make sure that the result from the first hypothesis is robust. In the equation2, there is a lagged term of the earnings per share added to find the error terms which is the earnings surprises. Therefore, I add numbers of the lag of earnings per share for the previous quarter and the other three-quarter preceding the previous quarter in the equation 11. For example, if the earnings per share for the first quarter of 2005 is used as an dependent variable, the first, second, third, fourth quarter of 2004 are added as dependent variables to the equation.

$$E_{j,t} = \delta_j + E_{j,t-1} + E_{j,t-2} + E_{j,t-3} + E_{j,t-4} + \varepsilon_{j,t} \quad \text{...(11)}$$

Where $E_{j,t}$ is quarterly diluted earnings per shares (EPS) for firm *j* at quarter *t*. δ_j is a drift term to allow for firm's recent historical earnings growth and $\varepsilon_{j,t}$ is an error term for firm *j* at quarter *t* with standard deviation defined as STD_j. Hence, the first time series measure of earnings surprises defined as SUE is calculated as follows.

$$SUE_{j,t} = \frac{E_{j,t} - \delta_j - E_{j,t-1} - E_{j,t-2} - E_{j,t-3} - E_{j,t-4}}{STD_j} \quad \text{...(12)}$$

$SUE_{j,t}$ is then regressed with the net buy activity which refers to the first hypothesis to test whether the net buying behavior for individual investors is

correlated to analyst forecast shown in equation 8. The result which is shown in table 13 is still the same as the result in table 6. Another interesting point is that the p-value of foreigners and institution are even more significant. Consequently, foreign and institution investors do not follow times series forecasts when the earnings is announced.

Table 13 Net buying activity and earnings surprises at the earnings announcement date

	Investor type			
	Individuals	**Foreigners**	**Institutions**	**Proprietary**
Intercept	0.04	-0.1159	-0.0332	0.108
P-Value	0.0196	0.0012	0.2493	0.0063
SUE	-0.0088	-0.0047	-0.0148	-0.0263
P-Value	0.3348	0.4545	0.3812	0.2897
SUEAF	0.4728	4.3156	1.8472	0.4185
P-Value	0.1031	0.0058	0.0063	0.4203
R Square	0.0023	0.0104	0.0089	0.0005
Number of observations	689	728	718	657

Regression for the first hypothesis $NETBUY_{j,t} = \alpha_j + \beta_1 SUE_{j,t} + \beta_2 SUEAF_{j,t} + \varepsilon_{j,t}$ where $\alpha_j$is an intercept for firm *j*. $NETBUY_{j,t}$ is the abnormal volume of buy minus sell of each investor type for firm *j* at quarter *t*. Therefore, it will be regressed four times for each investor type including institutions, proprietary trading, foreign investors and individuals. $SUE_{j,t}$ is time series measure of earnings surprise and $SUEAF_{j,t}$ is actual analyst forecasts of earnings. $\varepsilon_{j,t}$ is an error term for firm *j* at time *t*.

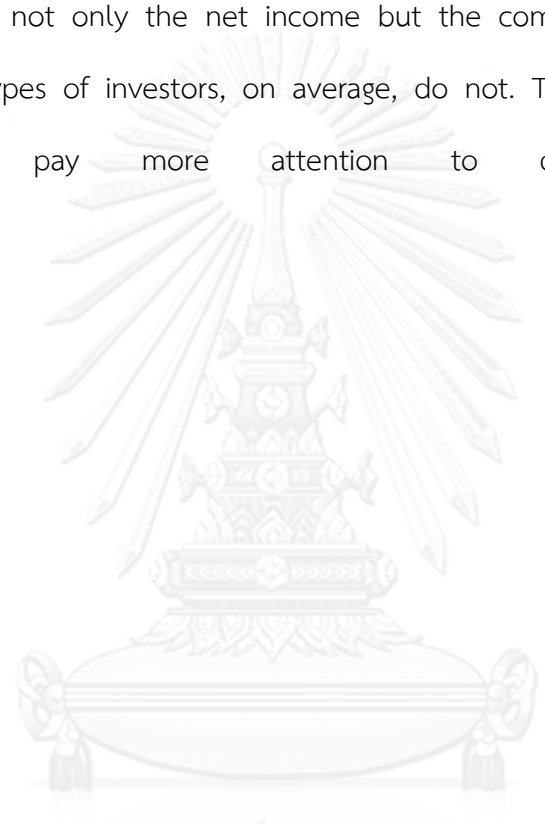
CHAPTER X CONCLUSION

This paper shows investor choices between time series analysis and analyst forecast and an interesting relationship between net buying activity and discretionary accruals for each investor type which helps investors in the market beware of an existence of discretionary accruals.

Regarding investor choices between time series analysis and analyst forecast, the evidence shows that institutions and foreigners use analyst forecast when making an investment decision which is the same as the result from Battalio and Mendenhall (2005) and Battalio et al. (2012) stating that large trades which likely mutual funds and institutions follow analyst forecast. The reason why they trade on analyst forecast is institutions are known as sophisticated investors who are always expert and have better information in compare with individual investors. Therefore, they choose consensus analyst forecast as one of the choices to make a decision whereas it is harder and more difficult for individuals to obtain consensus analyst forecast information. The result for individuals and proprietary trades is not consistent with Battalio et al. (2012).This probably because they may use other sources of information when investing. After that, I found that institutions, on average, notice on the existing of discretionary accruals only when the actual earnings surprises are greater than analyst forecast while individuals and proprietary trades do not. Finally, institutions also trade on discretionary accruals in the right direction. The reason behind this is because discretionary accruals can be used to determine earnings quality, thus, the more discretionary accruals level disclosed at the earnings announcement date, the greater sell volume will be. An example of the correct direction of the trade is investors should sell stocks if there is high level of

discretionary accrual information. Additionally, the result for foreigners can be concluded that it is resulted from the noise of the data.

Consequently, this paper shows a clear reaction to discretionary accruals for each type of investors and I conclude that big investors like institutions, on average, pay attention to not only the net income but the components of net income whereas other types of investors, on average, do not. This brings up individuals investors to pay more attention to discretionary accruals.



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APPENDIX

VITA

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