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TRADE-BASED ANALYSIS OF MOMENTUM: EVIDENCE FROM THAILAND

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งานวิจัยนี้จัดทำขึ้นเพื่อศึกษาถึงพฤติกรรมของนักลงทุนแต่ละกลุ่มในการซื้อขาย
หลักทรัพย์ตามหลักการโมเมนตัมของ Jegadeesh and Titman (1993) โดยใช้ข้อมูลการซื้อ
ขายหลักทรัพย์ซึ่งมีลักษณะเฉพาะของประเทศไทยในหุ้นกลุ่ม SET50 และ หุ้นที่มีปริมาณการ
ซื้อขายสูงสุดนอก SET50 อีก 50 หุ้น ในช่วงระหว่างปี พ.ศ. 2542 ถึง 2551 จากการศึกษาพบ
ผลที่สำคัญ 3 ประการคือ 1) นักลงทุนแต่ละกลุ่มมีพฤติกรรมการซื้อขายแตกต่างกัน 2) การเข้า
มาของนักลงทุนต่างชาติในตลาดส่งผลกระทบต่อพฤติกรรมของนักลงทุนในประเทศ   3)
พฤติกรรมการซื้อขายที่แตกต่างกันของนักลงทุนแต่ละกลุ่มไม่สามารถอธิบายได้ด้วยความ
แตกต่างในขนาดการซื้อขาย จากการศึกษาพบว่า นักลงทุนรายย่อยตอบสนองน้อยกว่าที่ควร
(Underreaction) และ ตอบสนองอย่างช้า ๆ (Delayed reaction) ต่อข้อมูลผลตอบแทนใน
อดีต   ยกตัวอย่างเช่น   ในช่วงแรกนักลงทุนรายย่อยซื้อหุ้นที่ให้ผลตอบแทนต่ำที่สุดก่อนจะ
เปลี่ยนไปขายหุ้นเหล่านั้นหลังจากที่ข่าวได้ประกาศออกมาแล้ว   และยังคงขายหุ้นเหล่านั้น
ต่อไปแม้ว่าเวลาจะผ่านไปกว่า 2 ปีแล้วก็ตาม กองทุนรวมและนักลงทุนต่างชาติไม่แสดงถึง
พฤติกรรมดังกล่าว แต่กองทุนรวมมีการตอบสนองต่อข้อมูลที่ช้าไปเล็กน้อย โดยสรุปแล้ว ผล
การศึกษานี้ยืนยันว่านักลงทุนแต่ละกลุ่มมีพฤติกรรมการลงทุนที่แตกต่างกัน และ นักลงทุนราย
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This study uses the unique transaction data for Thailand SET50 stocks and other high turnover stocks in the period 1999 to 2008 to examine the behavior of each investor type based on Jegadeesh and Titman's (1993) momentum strategy. There are three key findings: (1) each investor type trades differently, (2) the presence of foreign investors in the market affects how domestic investors trade, (3) the difference in trading behavior of each investor type cannot be explained by difference in trade size. Specifically, retail-trades exhibit a clear evidence of initial underreaction and delayed reaction to past return. For example, there is an initial retail buying pressure among losers which abruptly changes into selling pressure after the news arrives. Mutual fund and foreign-trades, however, show no evidence of underreaction. Though, mutual fund-trades demonstrate a little delayed reaction. In conclusion, the results further validate the points that different groups of investors behave dissimilarly and that retail investors are suffered from behavioral biases.

Department : Banking and Finance Student's Signature กฤษกล อภิวัฒนากรณ์

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CHAPTER I

INTRODUCTION

1.1 Background and Problem Review

Momentum is a phenomenon in which the stocks that perform well in the past tend to perform well in the future while stocks that perform badly in the past continue to perform badly. This happens for the immediate time horizon of 3 to 12 months after the formation period. There are several strong evidences of momentum profit in both the developed and emerging markets as documented in many studies. Jegadeesh and Titman (1993), using the data of US stocks from 1969 to 1985, finds a momentum effect in stock return at the immediate time horizons. By forming the portfolios based on past 3 to 12-month returns, they show that past winners on average outperform past losers over the next 3 to 12 months. They also show that by constructing the zero-cost or self-financing portfolios which take long positions in winners and short positions in losers, investors can achieve abnormal return. The return is pervasive and significant even after considering trading cost. The effect is also robust both across time and countries as the result hold out of sample. Jegadeesh and Titman (2001) studies the data for another period and documents the momentum effect in that period. Rouwenhorst (1998) also finds evidence of momentum in many European countries. The effect points to time-series and cross-sectional predictabilities of returns which are a serious challenge to the rational financial models and the efficient market hypotheses.

Momentum happens because investors or agents overreact or underreact to new information and also because of cognitive biases. The biases cause investors to adopt diverse models of risk and expected return. This heterogeneity in expectation leads to trading between investors. Moreover, Shleifer (2000) argues that when different models lead to the same predictions, investors will simultaneously act in the same direction thus driving prices even without any new information. Therefore the link between cognitive biases and the prices is the trading behavior of investors. So we

can study trading behavior as a way to examine the behavioral theories and rational models by looking at the trade imbalances. In order to study about the rationality of investors by looking at their trading behavior, I choose momentum strategy as a starting point because of three main reasons. First, it is robust. Second, it is a very simple strategy which average investors can use easily. Lastly, investors generally focus on past returns as a key determinant in their investment decisions.

Many past literature document that individual investors are biased while institutional investors are more sophisticated. Hvidkjaer (2006) studies U.S. data and finds that individual investors suffered from underreaction and delayed reaction and thus drive momentum profit. Though, in the study, it uses trade size as a proxy for investor type by assuming that small trades are retail trades whereas large trades are institutional trades thus it is subjected to errors. Although Lee and Radhakrishna (2000) finds that using firm-specific cutoff point and buffer zone can reduce type I errors, it leads to type II errors by failing to account for as much as 40-60% of retail and institutional trades. Thailand data allows me to classify investor type directly and bypass the errors. To the best of my knowledge, this is the first paper that utilizes the unique intraday trading data in developing countries to study about the behavior of each type of investors directly and answer the question about behavior of each type according to momentum. It is also interesting to see how small and large trades act differently and whether trade size is a good proxy for investor type.

In emerging markets such as Thailand there is another important category of investors which is foreign investor. Foreign investors play a significant role in emerging markets as documented in Grinblatt and Keloharju (1999), Lin and Swanson (2003,) Stulz (2005), Dvorak (2005), and Agarwal *et al.* (2008). However, there is no study that document how foreign investors affected trading behavior of local investors. This study will also investigate the issue. Moreover, there is no study about behavior of each type of investors according to momentum in emerging markets. It is interesting to see whether result would still be the same in emerging market as in developed market.

1.2 Objectives of the Study

1. To investigate the behaviors of different type of investor by using the momentum framework and then compare the result with predictions from different models, explanations.

2. To examine whether the presence of foreign investors affect domestic investors' behavior.

3. To clarify whether any difference in investors' trading behavior between each group arise from the difference in trading size.

1.3 Statements of Problem/ Research Questions

1. Do different groups of investors trade dissimilarly according to past returns?

2. Does the major existence of foreign investors affect how domestic investors trade?

3. If there is the difference in trading behavior between each type, could it be explained by the difference in trading size between each group?

1.4 Scope of the Study

This study uses data of stocks in the SET50 in each year and also the other 50 highest turnover stocks in SET outside the SET50. The period of study is during 1999 – 2008.

CHAPTER II

LITERATURE REVIEW

This section summarizes related literatures that examine models and explanations of momentum phenomena and their predictions about trading behavior. It also includes related literatures that investigate whether different group of investors behave in a different way. This section is divided into three parts as follow.

2.1 Distinction of Active and Passive Trades

Every trade is both a buy and a sell in itself. Nevertheless, the field of market microstructure classifies trades into two distinct groups, active trades and passive trades. In active trades, the traders demand immediacy by submitting the market orders thus consume the liquidity in the market. On the other hand, passive traders provide immediacy and liquidity by submitting limit orders or act as market makers. Kyle (1985), Glosten and Milgrom (1985) and Easley and O'Hara (1987) show that price will react mainly due to active trading, because active trading consume liquidity thus driving price in that direction or because the trade reflect the possibility of private information. Therefore, trade imbalances are defined as the imbalances between active traders. Buying pressure means that there is more active buyer's volume than active seller's volume and selling pressure means that there is more active seller's volume than active buyer's volume.

2.2 Models and Explanations of Momentum phenomena

There are three different groups of models of investor reaction to momentum which lead to three different patterns of imbalances. First, Conrad and Kaul (1998), proposes a simple rational model which suggest that momentum arises entirely because of cross-sectional variation in unconditional expected returns. By construction, good news arrives for the winners during the portfolio formation period either as private or public information. In the case of private information, I expect to see a relative buying pressure among winners, while I would expect to see no particular trading pressure in

the case of public information. Following the same argument, I would expect to see a relative selling pressure among losers in the case of private information while I would expect to see no particular trading pressure in the case of public information. However, the model is mute on any imbalances patterns after formation period.

The second group of models proposed by Daniel, Hirshleifer, and Subrahmanyam (1998), Barberis, Shleifer, and Vishny (1998) and Hong and Stein (1999) focus on irrationality of investors. The irrational models propose that due to cognitive biases, investors demand arises which in turn prevent prices from adjusting fully to public news. According to the models, I expect a buying pressure among losers and selling pressure among winners. However, during the formation period, privately informed traders would buy winners and sell losers. Thus, the net formation-period trade imbalance with both initial underreaction and informed trading would be a selling pressure or a weaker buying pressure than under the rational model among winners. Among losers, it would be the opposite patterns. Nevertheless, the relative importance of public and private information is unobservable, so the evidence of underreaction would be inconclusive unless there is a buying pressure among losers and selling pressure among winners.

After the formation period, the effect of any informed trading disappears. Therefore, the initial underreaction would imply a selling pressure among winners and a buying pressure among losers. On the other hand, the delayed reaction would imply an eventual buying pressure among winners and vice versa for losers. With both effect, there would be a gradual shift from initial selling pressure to delayed buying pressure among winners and the opposite would hold true for losers. From past empirical evidence, momentum is profitable over the one-year horizon, so the shift should occur in that period.

Third, it could also be that investors who know about the momentum effect would try to take profit from the strategy. If this is the case, I would expect to see initial buying pressure among winners and initial selling pressure among losers in the formation period. Subsequently there should be no sign of pressure in the holding

period. Table 1 below summarizes the patterns of imbalances suggested by the three models of investor reaction to momentum.

Table 1: Summary of hypotheses of momentum and their implication on trade imbalances

Hypothesis		Formation Period	Holding Period
Difference in cross-sectional expected returns	Winners	$IMBAL_{(b)} > 0$	No prediction
	Losers	$IMBAL_{(s)} < 0$	No prediction
Initial underreaction	Winners	$IMBAL < IMBAL_{(b)}$	$IMBAL < 0$
	Losers	$IMBAL > IMBAL_{(s)}$	$IMBAL > 0$
Delayed reaction	Winners	No prediction	$IMBAL > 0$
	Losers	No prediction	$IMBAL < 0$
Underreaction followed by delayed reaction	Winners	$IMBAL < IMBAL_{(b)}$	At first $IMBAL < 0$ then gradually shift to $IMBAL > 0$
	Losers	$IMBAL > IMBAL_{(s)}$	At first $IMBAL > 0$ then gradually shift to $IMBAL < 0$
Momentum Trading	Winners	$IMBAL > 0$	At first $IMBAL > 0$ then $IMBAL = 0$
	Losers	$IMBAL < 0$	At first $IMBAL < 0$ then $IMBAL = 0$

The trade imbalances suggest by different hypotheses of investors' reaction to momentum. $IMBAL > 0$ indicates a buying pressure while $IMBAL < 0$ indicates a selling pressure. $IMBAL_{(b)}$ is the benchmark formation period buying pressure for winners caused by informed traders, while $IMBAL_{(s)}$ is the benchmark formation period selling pressure for losers

2.3 Difference between Trading Behaviors of   Different type of Traders

There are many studies that document the difference in trading behavior between different types of traders. Shefrin and Statman (1984a) documents a disposition effect among individual investors, which can be termed as a tendency to sell winners too soon and hold on to losers too long. Lee (1992) shows that small investors trade differently from large investors around earning announcements. The small investors always buy the stock after the announcements. Odean(1998, 1999) and Barber and Odean (2000, 2008) show that individual investors are more likely to use relatively unsophisticated trading strategies. Odean (1999) further shows that individuals who trade the most are the worst performers. Barber and Odean (2001) finds that women outperform men in their individual stock investments. Barber and Odean (2002) studies the effect of online investing and finds that at first investors who later choose to make investments online are better performers than those who do not go online but they become worse performers after they go online. Barber *et al.* (2005) indicates that individual investor trading has a significant systematic component, suggesting that the biases of individuals do not cancel in aggregate. With intraday data, Hvidkjaer (2006) also shows that large traders also participate in early state momentum trading to take profit while small traders suffer from initial underreaction and then delayed reaction. Barber, Odean and Zhu (2009) studies small trade order imbalance and finds that it is closely correlated with order imbalance based on trades from retail brokers. They also find evidence of herding among individual investors and that small trade imbalance can predict future returns. Specifically, over an annual horizon, stocks with highest small trade buying pressure underperform stocks with highest small trade selling pressure by 4.4 percent over the following year. However, over a weekly horizon, the direction is the opposite. Stocks with highest small trade buying pressure outperform stocks with highest small trade selling in the next week. Hvidkjaer (2008) finds that stocks favored by retail investors subsequently experience prolonged underperformance relative to stocks out of favor with retail investors.

Institution traders are believed to be more sophisticated thus subjecting to less cognitive biases and having better information. Many researches such as

Lakconishok, Shleifer, and Vishny (1992), Grinblatt, Titman, and Wermers (1995), Nofsinger and Sias (1999), Wermers (1999), Chen, Jegadeesh and Wermers (2000), Gompers and Metrick (2001), and Badrinath and Wahal (2002) study the trading behavior of institutions by using quarterly changes in institutional holdings and find that institutions engage in momentum trading. Using Finnish transaction-level data, Grinblatt and Keloharju (2001) also documents the same result. Cambell, Ramadorai and Schwartz (2005), using the transaction data to infer about daily institutional trading behavior, finds that daily institutional trades respond positively to recent daily returns but negatively to longer-term past daily returns They also find that institutions generally anticipate both earning surprises and post earnings announcement drift correctly. Shu (2008) also finds that institutional investors participate in momentum trading by doing the positive feedback trading and contribute to momentum return.

However, in these studies, they have to assume that small trades are done by retail or individual investors while large trades are done mainly by institutional investors. This is because the data they use are not labeled with investor type. Intraday trading data in Thailand does label each order and transaction with the type of investor; therefore I can categorize trades into four groups according to traders. They are individual trades, institutional trades, foreign trades and broker trades which allow me to study the behavior of each group directly. This allows me to better study the behavior of each group separately.

In emerging markets, foreign investors play a significant role due to their relatively huge amount of capital. Therefore, their actions often significantly affect markets. Many studies try to document the behavior of the foreign investors compare to domestic ones. For example, Grinblatt and Keloharju (1999) finds that foreign investors use momentum strategy while domestic investor especially individual ones tend to be contrarian. They also find that foreign investors outperform their domestic counterparts. Lin and Swanson (2003) also find the same result using data from Taiwan. However, the superior return for foreign investors only exist in the short term, in the long term foreign investors underperform domestic ones. Nevertheless, recent studies by Choe, Kho and Stulz (2005), Dvorak (2005), and Agarwal *et al.* (2008) show that foreign investors gets

lower profit because of their aggressiveness in placing orders and their large trade size.
Anyway there is no clear evidence of momentum trading by foreign investors.

CHAPTER III

DATA AND METHODOLOGY

3.1 Data and Sample

I use the intraday trading data of all stocks listed in SET50 which are the 50 largest stocks based on market capitalization in Thailand from 1999 to 2008. Returns and other data come from Thompson Reuter Datastream. Stocks are classified by industry according to the one-digit Standard Industrial Capitalization (SIC) groupings. I use only the stocks with the largest market capitalization because the participation rate of foreign investors on the low capitalization stocks is limited and many low capitalization stocks also suffer from the lack of liquidity. To study whether the presence of foreign trade has any influence on how local traders trade, I use another 50 stocks with highest share turnovers not in SET50 as another sample which I would call this sample Non-SET50. By construction, these two groups would have different degree of foreign participation because foreign investors usually invest only in the highest market capitalized stocks. This is because their rules and their relative large amount of capital make it very hard or impossible for them to invest in small stocks. The lists for all stocks in each sample will be shown in the appendix.

3.2 Methodology

For these two sample sets, winner and loser portfolios are constructed separately at the first trading day of each month by arranging stocks in each sample according to their past 6-month returns. Stocks in percentile 0 to 30 are classified as losers and stocks in percentile 70 to 100 are classified as winners. In order to track the imbalance in the formation period and holding period, I use only portfolios which have trading data for prior 6 months and next 2 years after formation date. Therefore, I get 90 winner and loser portfolios for each sample (from June 1999 to December 2006). I choose to use higher range for both winner portfolios and loser portfolios to compensate for the relatively small sample size.

From the transaction data, all trades are classified as either buys or sells by looking at the buy order time and sell order time. If a trade has an earlier buy order time than sell order time, I classified that trade as a buy. If a trade has an earlier sell order time than buy order time, I classified that trade as a sell. Trades are further categorized into four groups based on the Port/Client Flag. If the flag is "P", "C", "M", or "S" then the trade is categorized as broker trade, retail trade, mutual fund trade, or foreign trade respectively. The directional trade volume is measured each day for each investor group and the subsequent analyses are based on this daily data. Following Hvidkjaer (2006) Individual stock trade imbalances are computed as

$$\widehat{IMBAL}_{git} = \begin{cases} \dfrac{BUYVOL_{git} - SELLVOL_{git}}{(BUYVOL_{git} + SELLVOL_{git})/2} & , \max(BUYVOL_{git} - SELLVOL_{git}) > 0 \\ 0 & , otherwise \end{cases} \quad (1)$$

Where $BUYVOL_{git}$ ($SELLVOL_{git}$) is the buy-initiated (sell-initiated) volume for stock i on day t based on the trades in characteristic groups which are individual, institution, foreign and broker trades. Note that the trade imbalance is measured relative to the average of the buy and sell volume. The underlying idea of the approach taken in this article is that trade imbalances could be related to mispricing. If correct, then the expected trade imbalance of a given stock could depend on any stock characteristic, which might be related to mispricing. That is, the expected trade imbalance could vary across stocks, and so to isolate the effect of momentum on imbalances, I need to control for the effect of other characteristics.

To this end, daily $\widehat{IMBAL}$ is regressed against several characteristics, and the error term is used as the measure of abnormal imbalance. I also include characteristics that have been linked to trading activity which might affect trade imbalances as regressors. Specifically, the following cross-sectional regression is run each day t in the sample period (t subscripts are suppressed for ease of notation): I use the model to run regression separately for the two sets of data.

$$\widehat{\text{IMBAL}}_{gi}$$
$$= \delta_0 + \delta_1 \text{SIZE}_i + \delta_2 \text{BM}_i + \delta_3 \hat{\sigma}_i + \delta_4 \hat{\gamma}_i(1) + \delta_5 \text{DIVYLD}_i + \sum_{j=1}^{n} \gamma_j \text{ SIC}_{ij}$$
$$+ \text{ IMBAL}_{gi} \tag{2}$$

where SIZE_i is the logarithm of the market capitalization of stock i at the end of year s – 1; BM_i is the logarithm of the book-to-market value of equity for stock i in year s – 1; $\hat{\sigma}_i$ is the logarithm of the standard deviation of weekly returns for stock i over year s – 1; $\gamma_i(1)$ is the first-order autocovariance of daily returns for stock i during year s – 1; DIVYLD_i is the average of the monthly dividend yields for stock i during year s – 1; and SIC_{ij} is an indicator variable equal to 1 if stock i belongs to industry j. The error term IMBAL_{gi} is then used as the measure of abnormal trade imbalance for trade characteristic group g in stock i on day t.

In regression (2), SIZE, BM, and SIC are included as they are standard controls for returns and could be related to mispricing. Of course, these variables might also be related to genuine factors driving expected returns. In that case, if demand by different investors is driven by their different risk preferences, then expected trade imbalances could depend on these factors, which then need to be controlled for. The standard deviation of returns, $\hat{\sigma}_i$, is included to capture effects from total risk.

Amihud and Mendelson (1986) suggest that trading costs lead to an investor clientele effect as longer term investors hold more illiquid stocks. Hence, investor demand might also be related to the illiquidity of a stock, and the first-order autocovariance of returns, $\hat{\gamma}(1)$, are included as illiquidity measures. Lastly, the dividend yield is included as a regressor, because differences in dividends also could affect trading activity. Also, dividend payments can generate trading as some investors attempt to capture differences between dividends and returns around the ex-dividend day as shown by Lo and Wang (2000).

Portfolio trade imbalances $IMBAL_{gpt}$ are then computed each day t for trade-characteristic group g as the average of the abnormal imbalances of the n stocks in portfolio p:

$$IMBAL_{gpt} = \frac{1}{n} \sum_{i \in p} IMBAL_{git} \qquad (3)$$

For each portfolio, the trade imbalances are computed from the formation period which is prior 6 months which is corresponding approximately to 120 trading days before the formation date to the next 2 years which is corresponding approximately to 500 trading days after the formation date. Then I perform the event study by computing the event-date trade imbalances for each trading days. Event-date trade imbalances are computed for each event date by simply averaging all 90 portfolio trade imbalances with the same event date.

To test whether the patterns for winners and losers happen because of difference in investor types or difference in trade size, trades are further divided into small and large trades. Trades are sorted into small and large trades according to firm-specific cut-off point. Specifically, I arrange trading volume of all trades for each firm in a year separately. Then the trades with the largest volumes (percentile 75 and above) are considered large trades while the trades with the lowest volumes (percentile 0 to 25) are considered small trades.

CHAPTER IV

RESULTS

4.1 Summary Statistics and Initial Comparisons

Table 2 and Figure 1: The proportions of each investor type active trades' value for the overall market

| Investor Type		1999	2000	2001	2002	2003	2004	2005	2006
Retail	Buy	33.84%	31.16%	39.78%	36.32%	39.30%	35.01%	29.85%	26.06%
	Sell	32.35%	30.75%	37.69%	36.43%	37.01%	35.44%	30.88%	27.16%
	Total	66.19%	61.92%	77.47%	72.75%	76.31%	70.45%	60.73%	53.22%
Mutual Funds	Buy	1.64%	2.02%	1.24%	1.88%	2.22%	3.11%	3.11%	3.53%
	Sell	1.69%	2.22%	1.49%	1.81%	2.19%	3.30%	4.04%	3.94%
	Total	3.33%	4.24%	2.73%	3.69%	4.42%	6.41%	7.15%	7.47%
Foreign	Buy	14.81%	15.06%	9.31%	11.26%	8.69%	10.48%	14.84%	17.60%
	Sell	14.39%	17.44%	9.55%	11.14%	8.90%	10.72%	13.79%	17.25%
	Total	29.19%	32.50%	18.86%	22.40%	17.59%	21.20%	28.64%	34.85%
Broker	Buy	0.67%	0.65%	0.48%	0.59%	0.89%	0.97%	1.69%	2.08%
	Sell	0.62%	0.69%	0.46%	0.57%	0.80%	0.98%	1.79%	2.38%
	Total	1.29%	1.34%	0.94%	1.16%	1.69%	1.95%	3.48%	4.46%
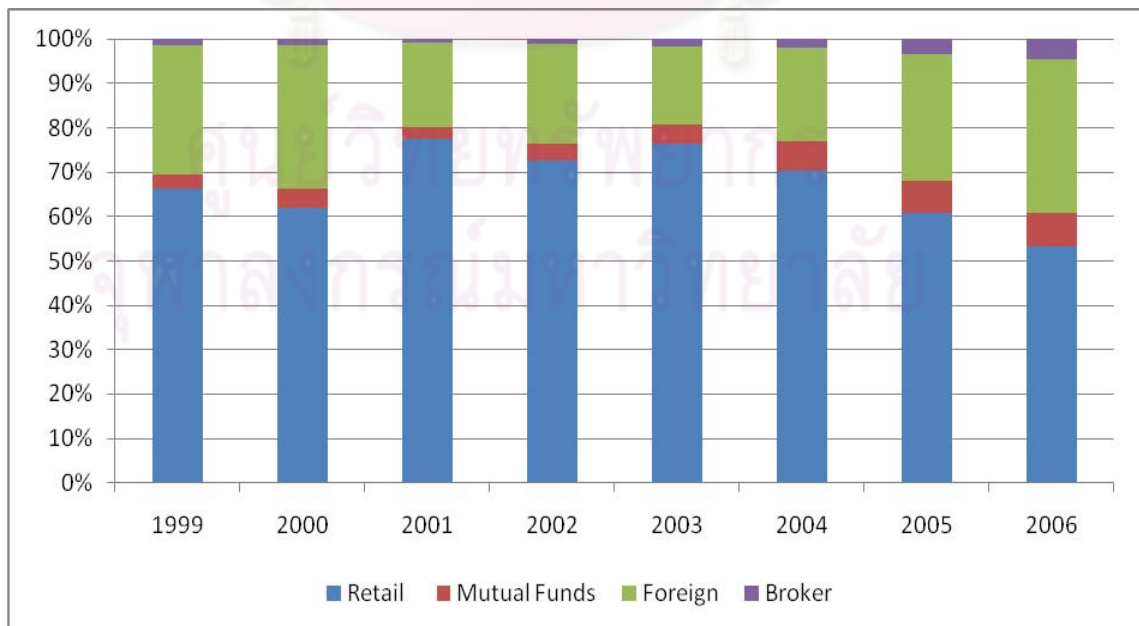
Table 2 and Figure 1 show the proportion of active trades' value made by each investor type in the period of 1999 to 2006 for all active trades in SET. I choose to show the proportion of active trades' value instead of the total value because of the fact that price will react mainly due to active trading. In the literature about microstructure, active trades consume liquidity thus driving price in that direction and the trades also reflect the possibility of private information. This makes active trades' value a better indicator of investor's activity. There are some interesting trends here. Retail trades made up more than half of all active trades each year but the proportion is clearly declining. Foreign trades came up as the second most for each year at around 25% but the number is quite volatile. The most obvious trend is the rise of mutual funds and broker trades which increase from 3.33% to 7.47% and from 1.29% to 4.46% respectively. There also seem to be no asymmetry between buy orders and sell orders for each group.

Table 3a and 3b and Figure 2a and 2b show the percentage of active trades' value made by each investor type in the period of 1999 to 2006 for all active trades in SET50 and the non-SET50 group. The key finding here is that foreign active trades in SET50 stocks in consistently much higher for all years in the sample period which signify the higher participation of foreign investors in the SET50 stocks. In the SET50 sample, foreign active trades constitute to about 25% of total trading value and retail trades constitute to about 60% while in the non-SET50 sample, foreign active trades constitute to only 12% of total trading value and retail trades constitute to about 84%. Moreover, the disparity seems to become bigger in the recent years, the proportion of foreign trades in the SET50 stocks was rising sharply in 2005 and 2006, at the same time, the proportion of retail trades was falling sharply too. Meanwhile, the numbers for the non-SET50 are quite stable. While the increasing trends for mutual funds and broker trades are apparent in both samples, the proportion of mutual funds and broker trades is significantly lower in the non-SET50 stocks at only 4.5% combined compare to 10.9% in the SET50 stocks.

Table 3a and Figure 2a: The proportions of each investor type active trades' value for stocks in SET50

| Investor Type		1999	2000	2001	2002	2003	2004	2005	2006
Retail	Buy	34.90%	32.35%	37.57%	31.84%	35.77%	29.55%	21.98%	15.78%
	Sell	34.31%	32.54%	36.92%	32.90%	33.87%	31.05%	24.07%	17.52%
	Total	69.21%	64.88%	74.49%	64.73%	69.64%	60.60%	46.05%	33.30%
Mutual Funds	Buy	2.79%	3.75%	2.37%	3.62%	3.38%	4.82%	4.86%	5.63%
	Sell	2.78%	4.09%	2.74%	3.54%	3.38%	4.82%	6.47%	6.35%
	Total	5.57%	7.85%	5.10%	7.15%	6.76%	9.63%	11.34%	11.98%
Foreign	Buy	11.97%	11.51%	9.88%	13.43%	10.43%	13.46%	19.84%	24.53%
	Sell	11.60%	14.29%	9.49%	13.25%	11.03%	13.85%	17.80%	23.44%
	Total	23.58%	25.80%	19.37%	26.68%	21.45%	27.30%	37.65%	47.97%
Broker	Buy	0.87%	0.70%	0.53%	0.73%	1.08%	1.19%	2.41%	3.09%
	Sell	0.78%	0.77%	0.51%	0.71%	1.06%	1.27%	2.56%	3.66%
	Total	1.64%	1.47%	1.04%	1.43%	2.14%	2.46%	4.97%	6.75%
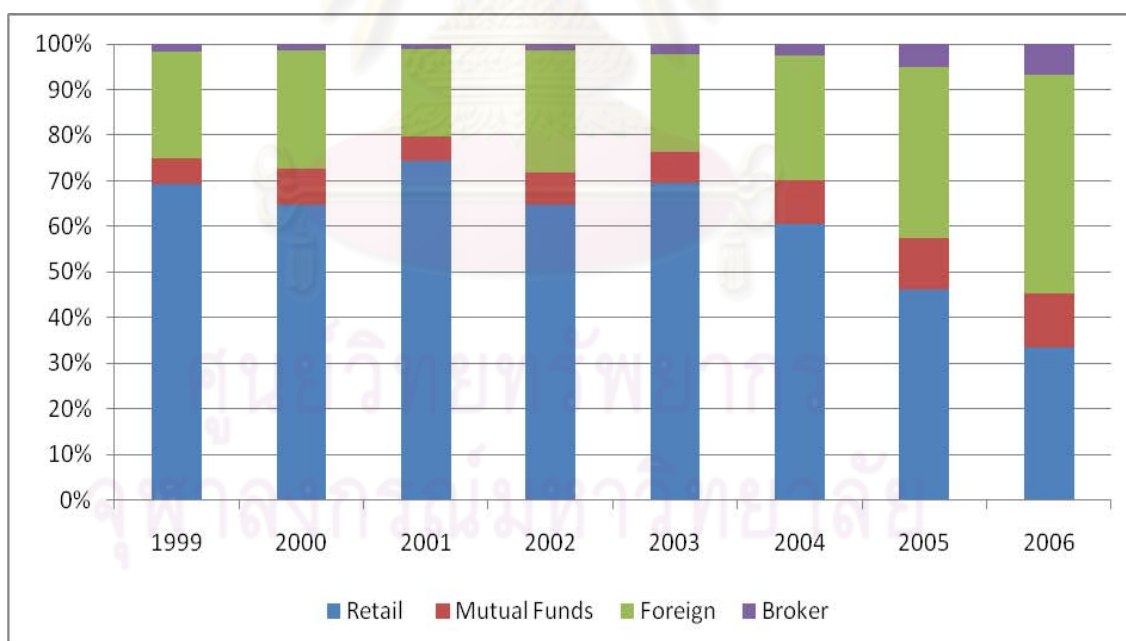
The main reason for the difference is caused by construction. Many stocks in the non-SET50 group are small stocks in which foreign investors and institutional investors do not trade. They avoid the stocks because some of them are subjected to trading rules or regulations which prohibit them to trade small stocks and

because their relatively huge amount of money would create adverse price movement.
The data confirms that foreign investors have played a much smaller role in the non-SET50 stocks therefore I can use the two samples to study the effect of the presence of foreign investors.

Table 3b and Figure 2b: The proportions of each investor type active trades' value for 50 highest turnover   stocks not in SET50

Investor Type		1999	2000	2001	2002	2003	2004	2005	2006
Retail	Buy	43.23%	40.11%	46.17%	40.44%	44.84%	42.52%	39.49%	40.92%
	Sell	42.00%	39.22%	42.53%	41.71%	42.62%	42.22%	39.39%	43.32%
	Total	85.23%	79.34%	88.70%	82.16%	87.46%	84.75%	78.87%	84.24%
Mutual Funds	Buy	1.10%	1.64%	0.82%	1.53%	1.53%	1.76%	2.00%	1.38%
	Sell	1.03%	1.85%	1.03%	1.40%	1.56%	2.01%	2.02%	1.51%
	Total	2.13%	3.49%	1.84%	2.92%	3.10%	3.77%	4.02%	2.89%
Foreign	Buy	5.99%	7.10%	4.18%	7.29%	4.06%	4.75%	7.03%	5.40%
	Sell	5.87%	8.79%	4.39%	6.63%	3.92%	5.26%	7.08%	5.36%
	Total	11.86%	15.89%	8.57%	13.91%	7.98%	10.01%	14.12%	10.76%
Broker	Buy	0.41%	0.65%	0.47%	0.50%	0.80%	0.74%	1.43%	0.97%
	Sell	0.37%	0.63%	0.43%	0.51%	0.66%	0.73%	1.56%	1.13%
	Total	0.78%	1.28%	0.89%	1.01%	1.46%	1.47%	2.99%	2.10%
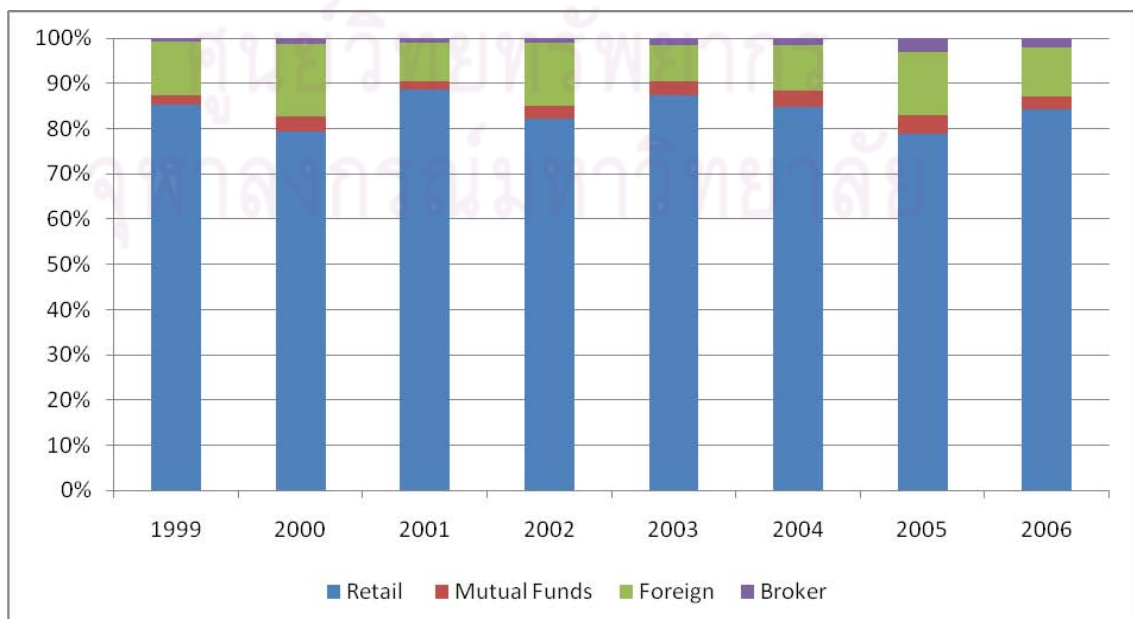
4.2 Momentum Profits in the Samples

Table 4: Returns of momentum portfolios

| Holding Period	SET50			NON-SET50		
	Winner	Loser	Winner-Loser	Winner	Loser	Winner-Loser
3	0.0058	-0.0049	0.0107	0.0004	<u>-0.0131</u>	0.0105
	(1.07)	(-0.80)	(1.30)	(0.07)	(-1.81)	(1.40)
6	0.0065	-0.0041	<u>0.0105</u>	-0.0036	**-0.0143**	0.0106
	(1.63)	(-0.92)	(1.77)	(-0.73)	(-2.56)	(1.42)
9	<u>0.0061</u>	-0.0023	<u>0.0084</u>	-0.0047	**-0.0119**	0.0072
	(1.80)	(-0.69)	(1.77)	(-1.13)	(-2.89)	(1.23)
12	**0.0060**	-0.0011	<u>0.0070</u>	-0.0057	**-0.0096**	0.0039
	(2.10)	(-0.38)	(1.77)	(-1.64)	(-3.19)	(0.86)

The momentum portfolios are formed based on past 6-month returns and held for 3, 6, 9, and 12 months. The stocks are ranked in ascending order on the basis of past 6-month returns. An equally weighted portfolio of the stocks in the highest 30 percentile is winner and equally weighted portfolios of the stocks in the lowest 30 percentile is loser. The average monthly returns of these portfolios are showed in this table. The returns which are significant at the 90% significant level and 95% significant level are underlined and bolded respectively. The t-statistics are reported in parentheses. The sample period is January 1999 to December 2006.

Table 4 shows holding period returns for momentum portfolios from the two samples with different holding periods. For the SET50 sample, the monthly returns from doing momentum strategy by longing winner and shorting loser are both significant economically at approximately 8 to 13 % annually and statistically at 90% significant level for 6, 9 and 12 months holding periods. The majority of the returns come from buying winner. The returns for winner are about 7.5% annually and significant at 90% and 95% for both 9 and 12 months holding periods respectively. This indicates that momentum is a viable and profitable strategy in the SET50 sample period for this sample.

For the Non-SET50 sample, however, the returns from simultaneously buying winner and selling loser are not significant for all holding periods. Returns for loser are significant in all holding periods though. This means that shortselling losers might be a viable strategy in the sample.

4.3 Event-Date Trade Imbalances

Figure 3: Trade imbalances for each investor's type among SET50 stocks
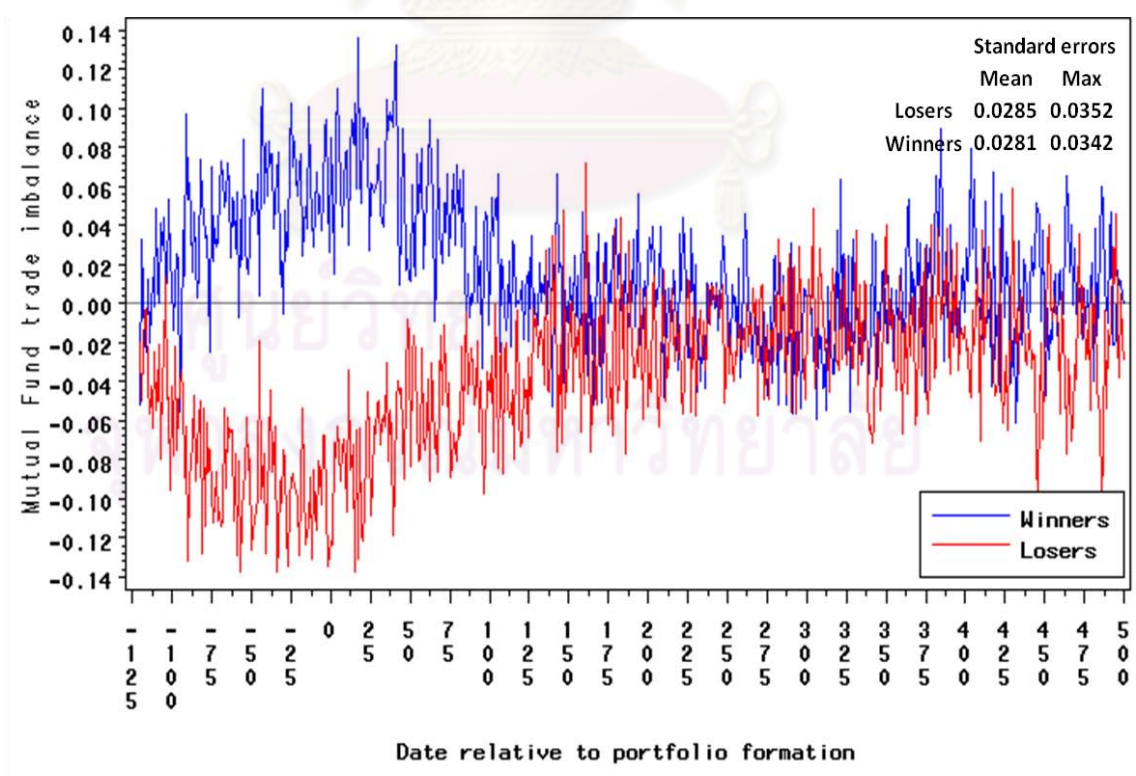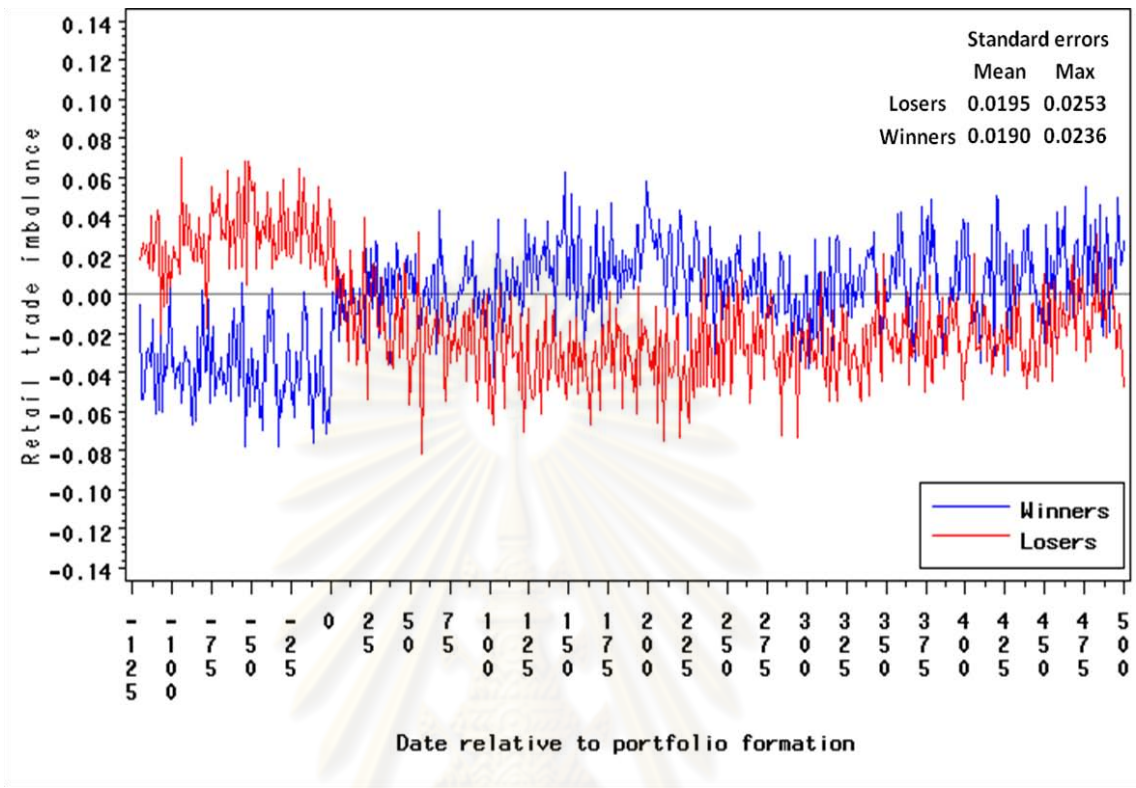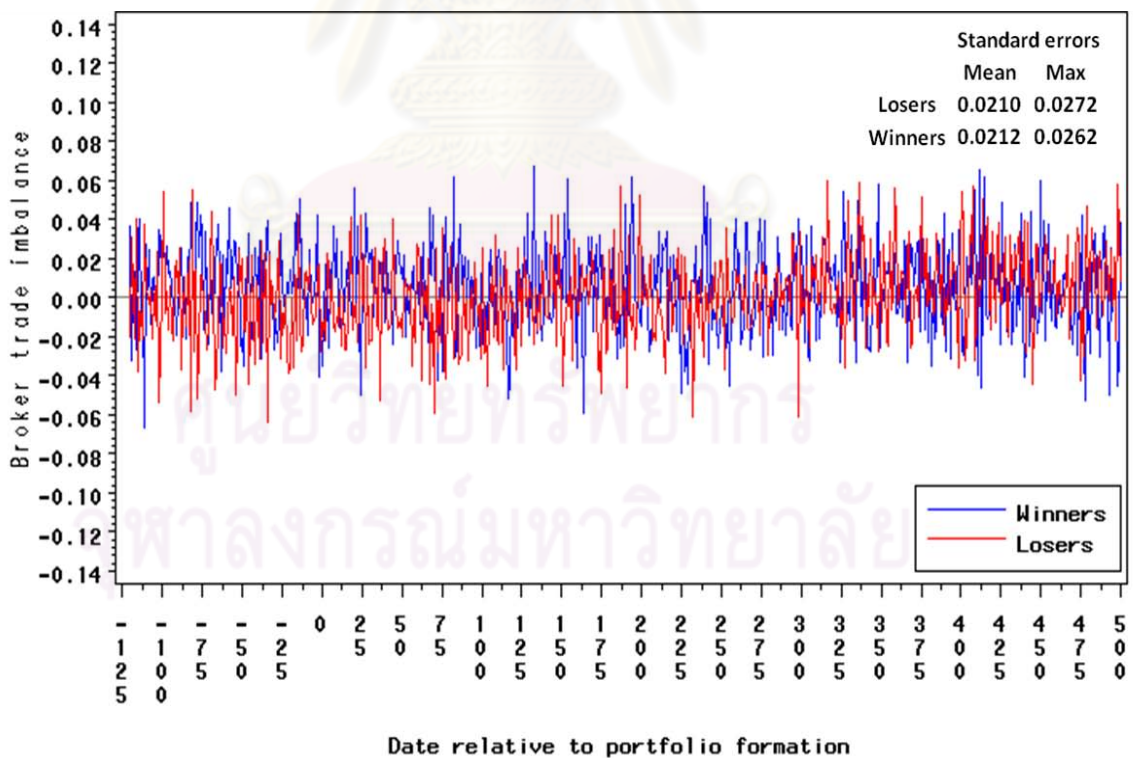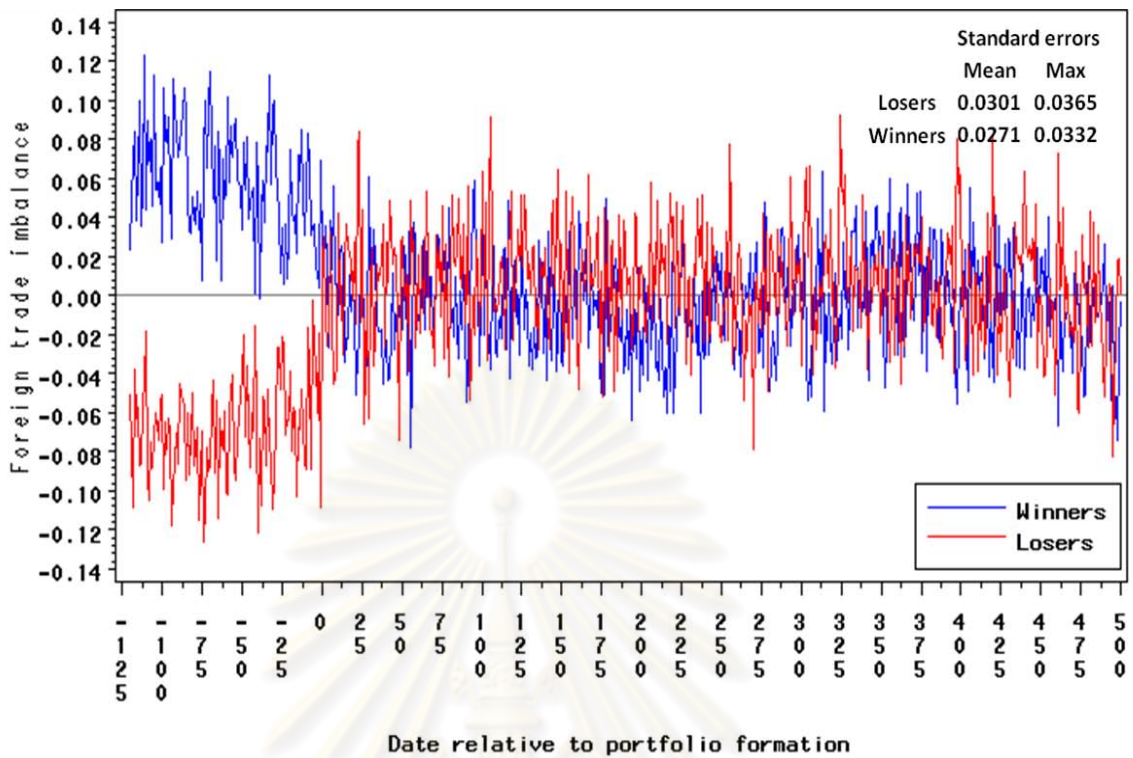
Date relative to portfolio formation

Date relative to portfolio formation

For each formation date, daily event-time portfolio trade imbalances are computed by averaging the imbalance of the stocks in the portfolio. The figures show the means for each event-time day across formation dates. The inserted tables report statistics on the standard errors of these means. "Mean" and "Max" are the average and maximum standard error across event-time days. Date 0 is the monthly portfolio formation date, -120 is 120 days before the formation date which is approximately the start of the formation period, and 500 is about 2 years later.

Figure 3 shows the portfolio trade imbalances for SET50 stocks in event-time for retail, mutual fund, foreign and broker trades respectively. On the horizontal axis, date 0 characterizes the portfolio formation date. Daily imbalance for shown from date -120 to date 500. On the vertical axis, imbalance 0 means that there is no abnormal imbalance. Imbalances that are more than zero signify buying pressures while imbalance that are lower than zero signify selling pressure. The mean and maximum of the 621 standard errors are shown in tables inserted in the figures.

There are several crucial findings. For retail trades, there is a quite significant and persistent buying pressure of around 2 to 6 percent for losers and selling pressure for winners during the formation period. The standard errors imply a two-standard-error bound of around 3.9% for losers and 3.8% for winners which make the result significant for most dates before formation date. At the formation date, the pressures abruptly reverse and show a modest selling pressure for losers and buying pressure for winners. The pressures continue to exist even after 2 years after formation date. However, imbalances often fall in the two-standard-error bound thus rendering the result not consistently significant. Therefore, there is a strong evidence for retail investor underreaction to public news in the formation period and a less significant evidence for delayed reaction in the holding period. The other noteworthy point is that the patterns for winner and loser portfolios are quite symmetry which are different from past findings in Grinblatt and Moskowitz (2004) and Hvidkjaer (2006) which find the stronger result among loser.

For mutual fund trades, there is a significant buying pressure for winners and a significant selling pressure for losers in formation period. These pressures start from zero at date -120 then gradually increase during the formation period and later peak at the formation date. After that, the pressures still exist but gradually decrease then they are disappear at around 120 trading days after formation date which correspond to around 6 months. During the period the imbalances in both directions stand around 6 to 12%. The two-standard-errors bounds for losers and winners are 5.6%

and 5.7% respectively. These limits indicate that the result is quite significant especially around the formation date which signifies the likelihood of momentum trading by mutual funds. The patterns for losers and winners portfolios are also quite symmetric. The evidence here is in line with informed trading and also shows that mutual funds are early-stage momentum traders as well. However, the persistence of strong buying pressure among winners and strong selling pressure among losers after the formation date might suggest that mutual funds react slowly to news and might be suffering from delayed reaction to some degree.

For foreign trades, there is also a significant buying pressure for winners and a selling pressure for losers in formation period. The two-standard-error bounds for losers and winners are 6% and 5.4% respectively which make the result consistently significant for most dates in the formation period. The pressures suddenly disappear after the formation date and imbalances for both losers and winners are not significant in the holding period. The main differences between foreign trades and mutual funds are that foreign trade imbalances are stronger in the early days of the formation period and they also abruptly disappear on the formation date. This suggests that foreign traders are informed and take part in early-stage momentum trades to reap profit from momentum effect. However, compare to mutual funds, foreign traders are likely to be more informed judging from higher speed of their reactions. There is also no evidence of delayed reaction either.

Lastly, for broker trades, there is no significant pressure or pattern for both winners and losers. The two-standard-error bound of 4.2% renders the result insignificant suggesting that there is no particular pattern of broker's behavior in accordance with momentum. This might reflect the fact that brokers normally trade to rectify any mistakes they make in sending clients' orders and to do proprietary trade to take profit on a day-to-day basis so they do not hold any positions for any significant time period.

Figure 4 shows the portfolio trade imbalances of 50 highest turnover stocks outside SET50 for the four investor types. The result here suggests that the presence of foreign investors might indeed affect domestic retail traders and mutual funds' behavior.

Retail trades display a buying pressure for losers in the formation period. The pressure vanishes on the formation date and gradually becomes miniature selling pressure in the holding period. After date 375 which correspond to approximately a year and a half after formation date, the pressure reverses to buy side again. For winners though, there is a small buying pressure at the start of the formation period which quickly reverses into tiny selling pressure later in the formation period. After the formation date, the pressure turns around to buying pressure which then persists throughout the holding period. This result suggest that, among losers, there is still an evidence of initial underreaction followed by delayed reaction while, among winners, there is only a vague evidence of delayed reaction. The stronger result among losers is consistent with the finding in Hong, Lim, and Stein (2000), Grinblatt and Moskowitz (2004) and Hvidkjaer (2006) which document that major part of momentum profits come from shorting losers. However, the two-standard-error bounds of 4.8% and 4.4% for losers and winners make almost all of the result insignificant. The only significant part is the delayed buying pressure for winners 1 year after formation date.

Mutual funds trade imbalances show almost similar result with the result from SET50 sample. For winners, there is a buying pressure which grows stronger during formation period then peaks at the formation date then gradually disappear. The opposite is true for losers as well. Though, the result is less significant for this sample and the disappearance of pressure seem to happen a little bit earlier in this case. Foreign trade imbalances and broker trade imbalances both also show the same patterns to the result from SET50 sample too. Though, the result for foreign trade imbalances is generally become insignificant at the 95% level.

Figure 4: Trade imbalances for each investor's type among the Non-SET50 stocks
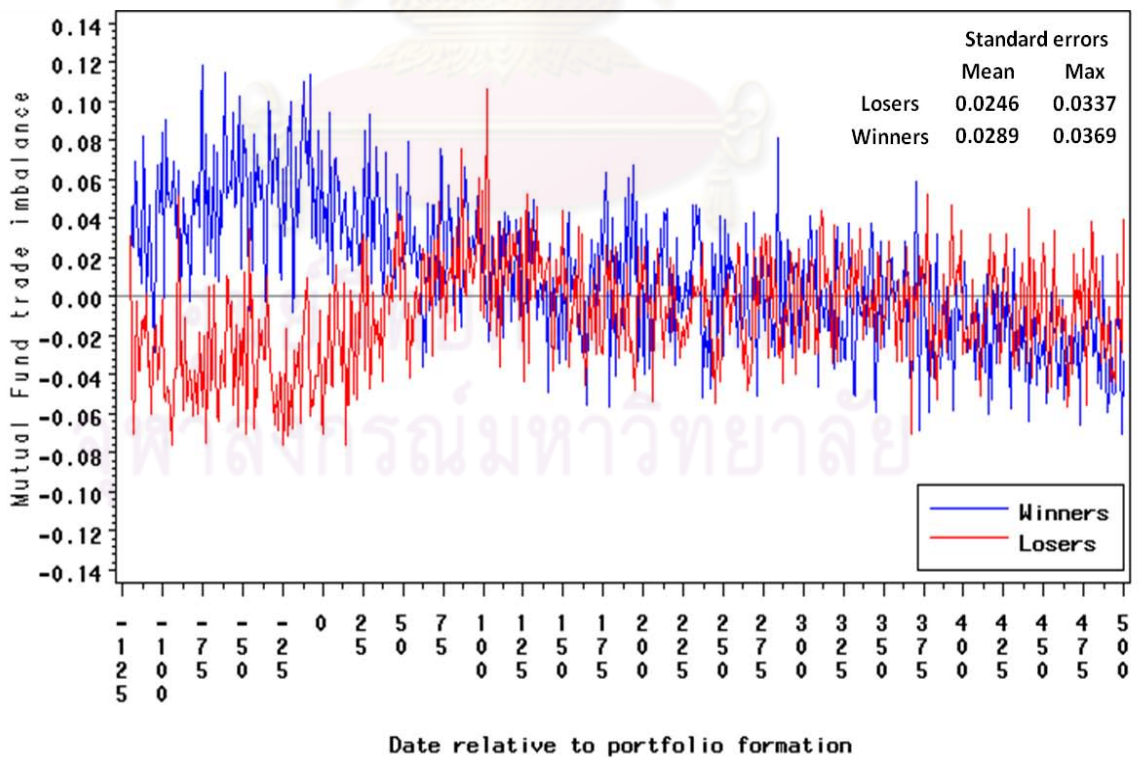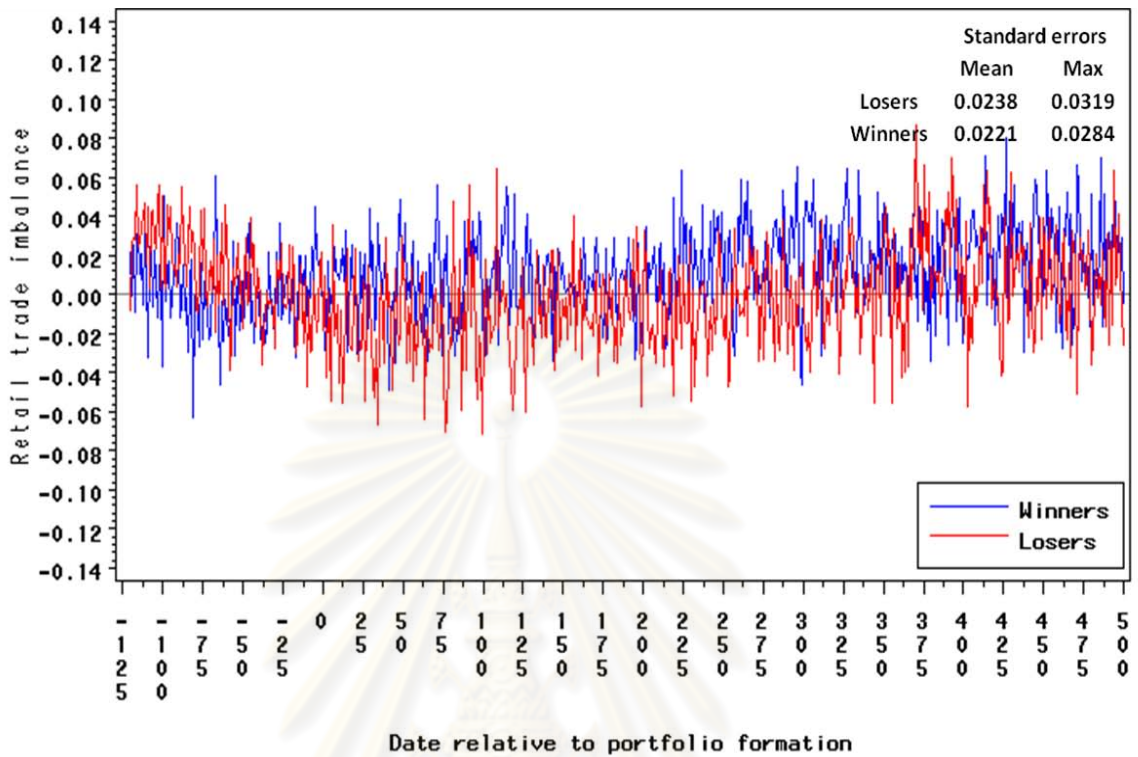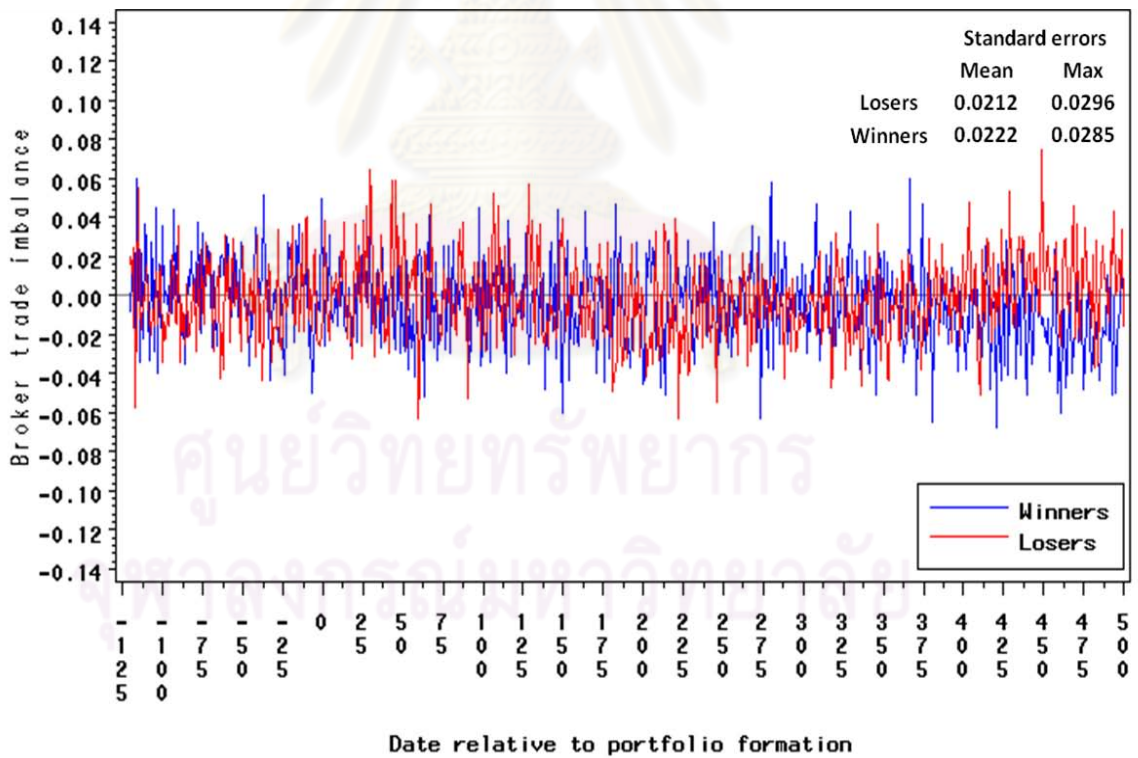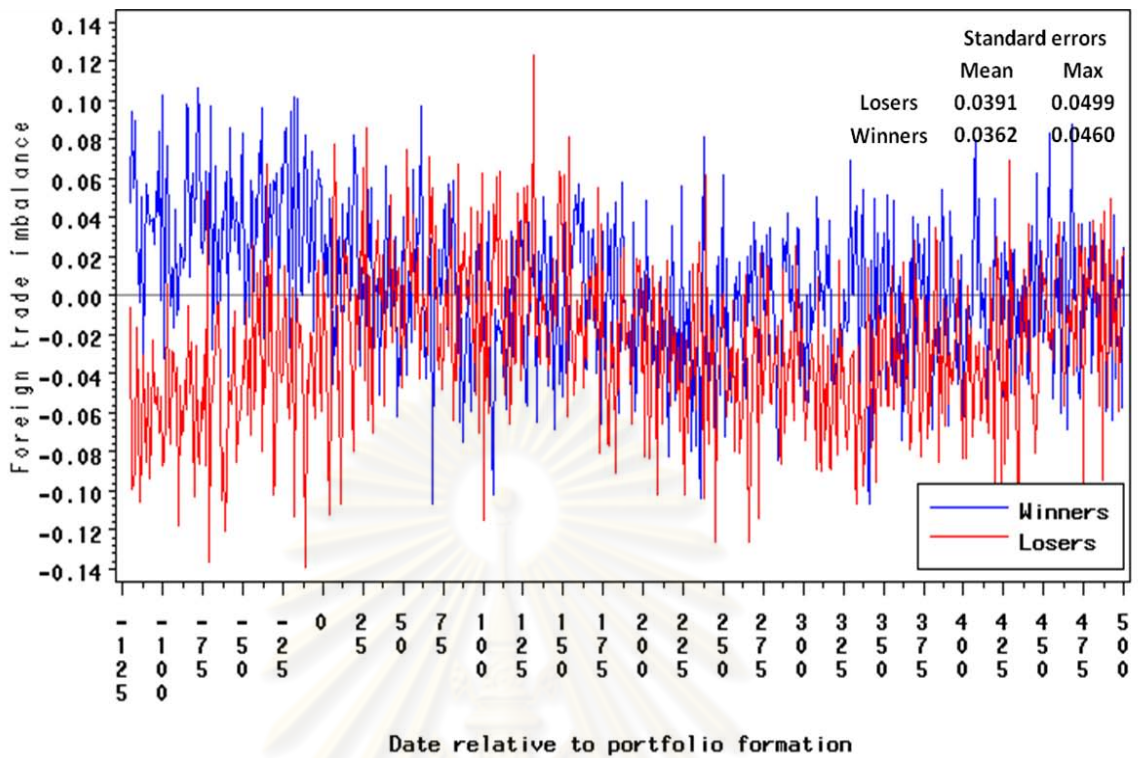
Date relative to portfolio formation

Date relative to portfolio formation

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The difference between the results of the two samples seems to suggest that foreigner presence in the market affect how domestic traders trade. In the non-SET50 sample, which has significant lower foreign presence, both retail investors and mutual funds behave less irrational than in the SET50 sample. This result contradict the conventional wisdom that the arrival of foreign investors in emerging market would make domestic investors become more rational by taking profit from the irrational ones and thus driving them out of the market. The result suggests that the presence of foreign investors do make the domestic investors become more irrational. The reason for this phenomenon is still unclear without further study. However, due to a small sample size the result is, at best, inconclusive.

4.4 Effect of Trading Size

Figure 5 shows the portfolio trade imbalances for SET50 stocks in event-time for retail, mutual fund, and foreign trades which are further classified into large trades and small trades. There are some very interesting patterns showing from the figure. For small retail trades, there exists very large buying pressure of around 17% for losers in the formation period which reduces to about 10% at the formation date. The imbalances decreases further to about 4% around 1 year in the holding period then gradually increases back to 10% at the end of the second year. There is also a small buying pressure for winners of about 4% in the formation period which increases to 10% at the formation date and stays at that level throughout the holding period. So, these is an evidence of small retail trades initial underreaction for losers and an evidence of small retail trades delayed reaction for winners. For large retail trades, though, there are large and significant selling pressures for both winners and losers. For losers, the selling pressure starts at 14% then drops to 20% at the formation date and settles at that level. For winners, the selling pressure starts at 18% then rise to 14% at the formation date and then levels off. This certainly cannot be explained by underreaction and delayed reaction alone.

For small and large mutual funds trades, the imbalances patterns are quite similar. Losers' trade imbalances start at zero on the date -120 (6 month before formation date), gradually exhibit selling imbalances which peak at the formation date and then gradually dissappear around half a year later. The opposite imbalance pattern appears for winners portfolios. The difference between small mutual funds imbalances and large mutual funds imbalances is that, at the two-standard-error bounds, the result for small trade is not significant while the result for large trade, especially losers, is significant. Therefore, there is still an evidence that mutual funds are informed traders and taking part in early-stage momentum trading to take profit. They still exhibit delayed rection which persist to half year after formation date.

For small foreign trades, the imbalances for both losers and winners are volatile and do not show any clear patterns. Moreover, with two-standard-error bound of about 7.3% and 7.5%, the results are mostly insignificant. For large foreign trades, however, there are clear patterns for both losers and winners. Losers portfolios' imbalances show very huge and significant selling pressure of 16% in the formation period which then suddenly drop to 6% selling pressure at the formation date and level off at that level. Winners portfolios' imbalances exhibit a small buying pressure of about 3% in the formation period which then suddenly change to 7% selling pressure at the formation date and stay at around that level for the next 2 years. With two-standard-error bound of 8% and 7.9% for losers and winners, the result for losers is significant while the result for winner is not.

The key finding here is that the diffrence in trading behavior still exists even after controlling for trade size. Retail investors still exhibit the initial underreaction in the formation period and delayed reaction in the holding period. Mutual finds and foreing investors still act like informed traders and early-stage momentum traders. Though, it worths noting that small trades display more buying pressure while large trade display more selling pressure. This phenomena seem to exist both in the retail and foreign groups. This result suggest that both trading size and investor type play a role in determining how traders trade.

Figure 5: Small- and large-trade imbalances for each investor's type among SET50 stocks
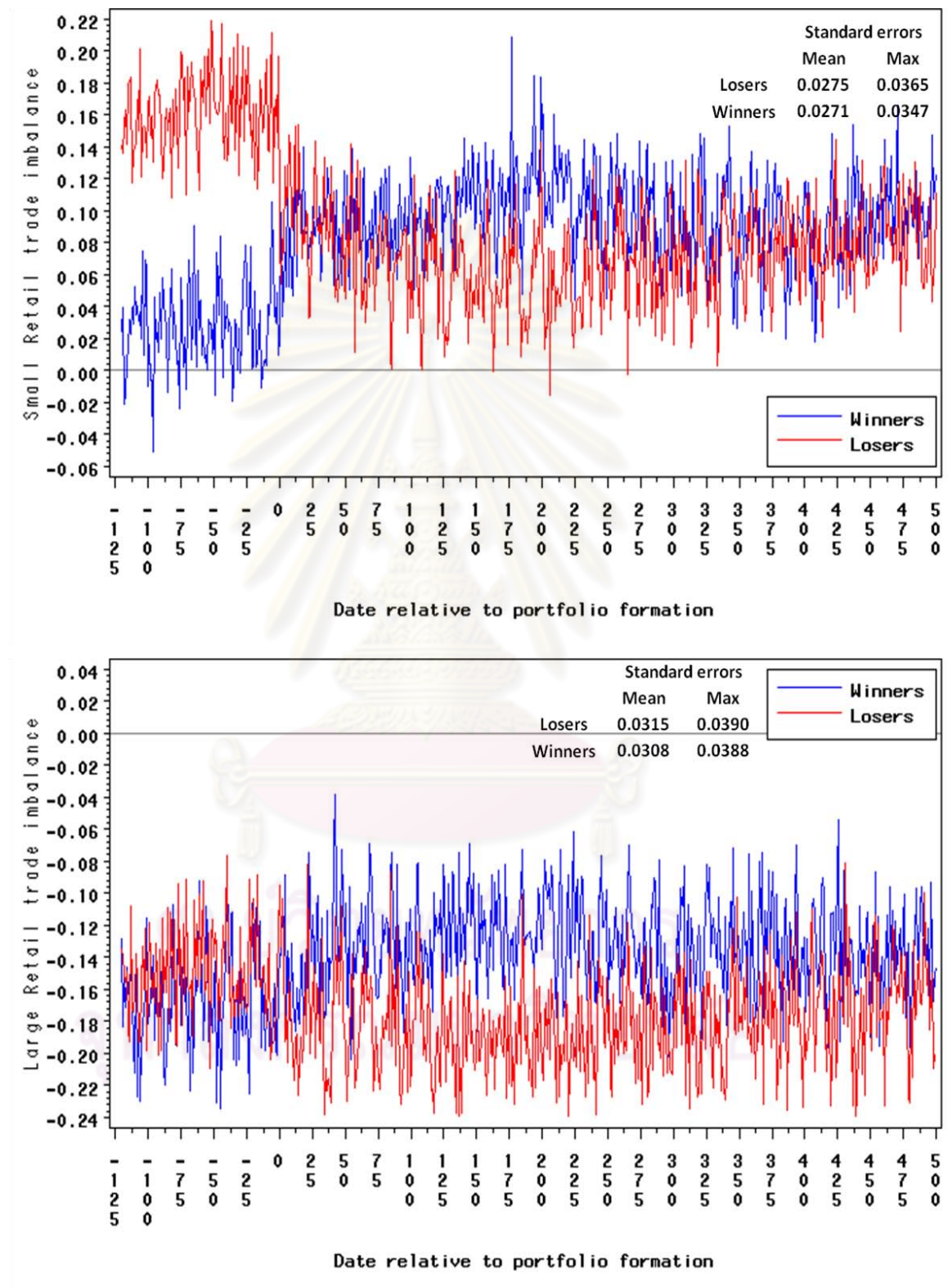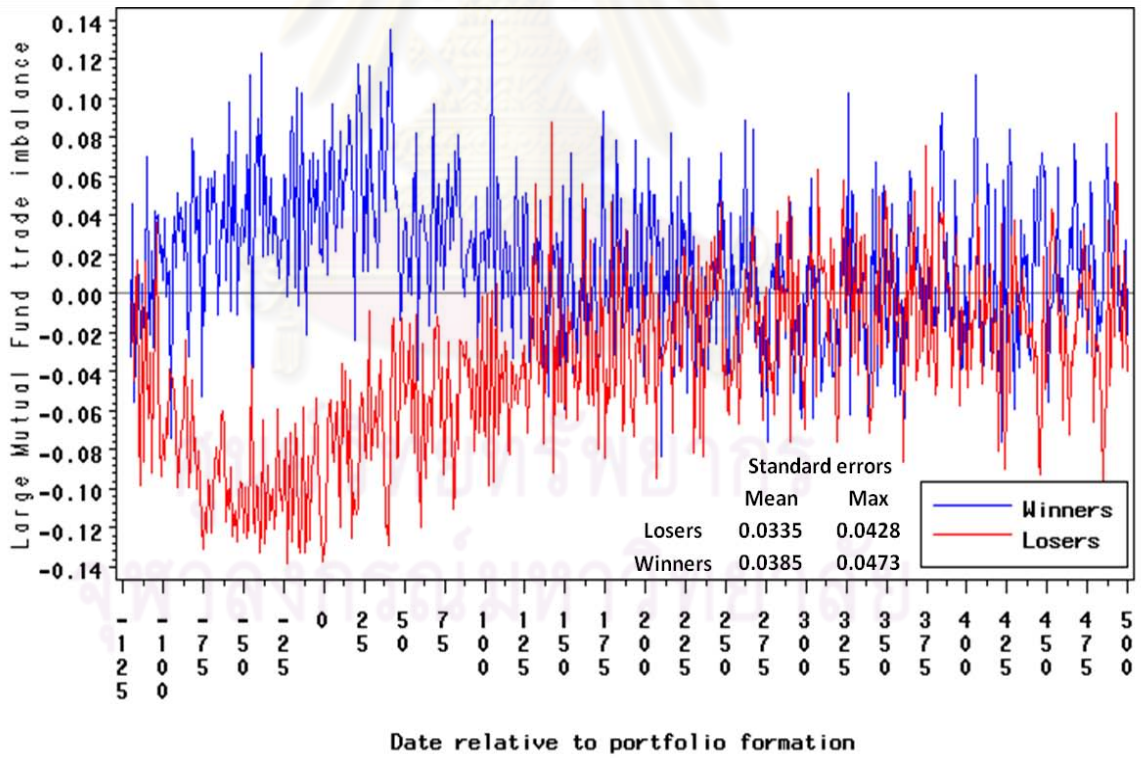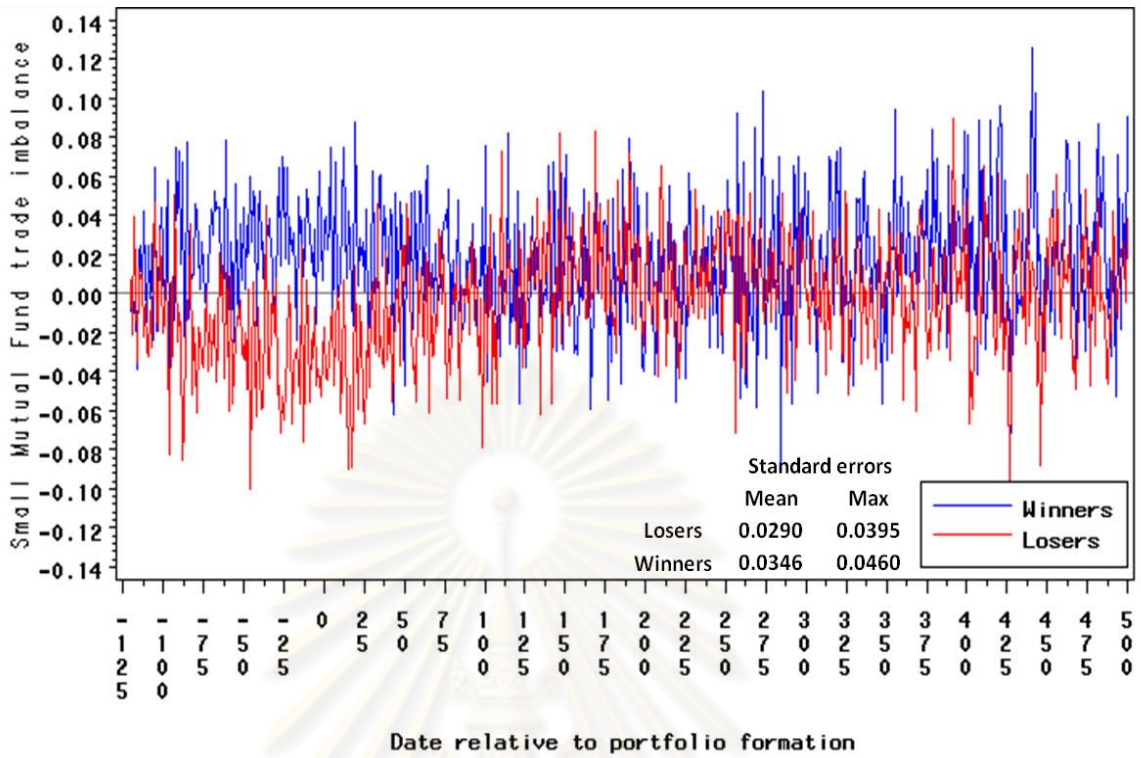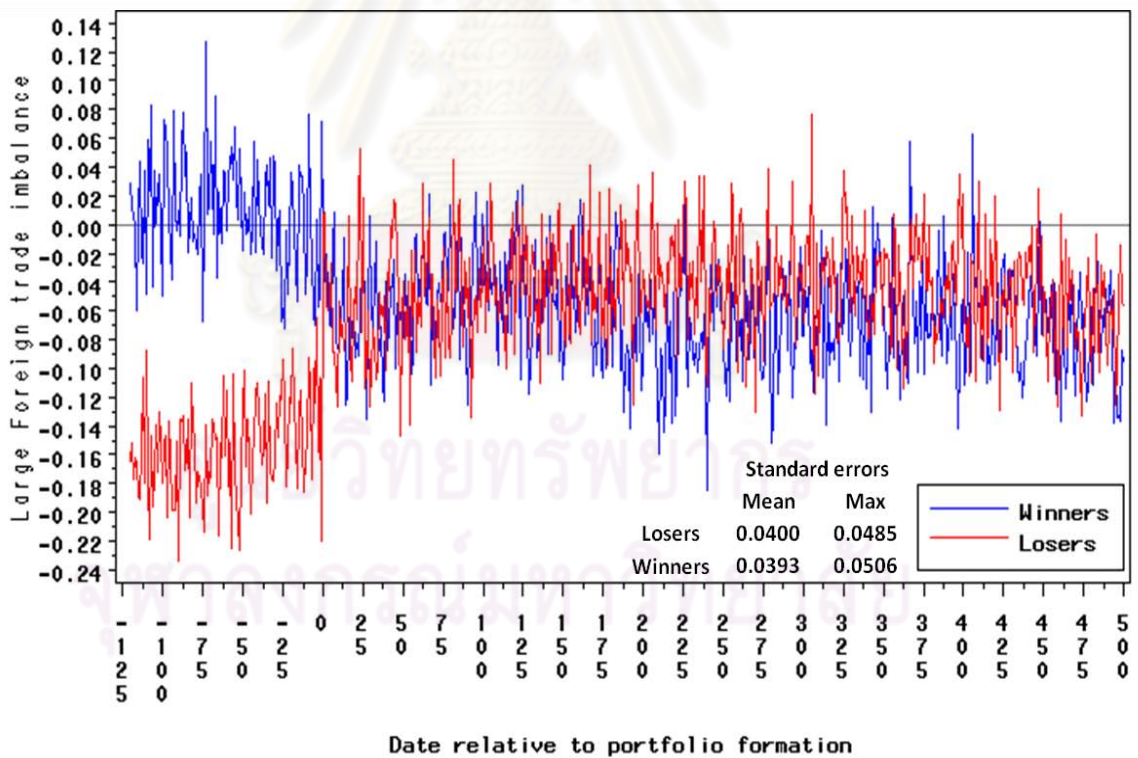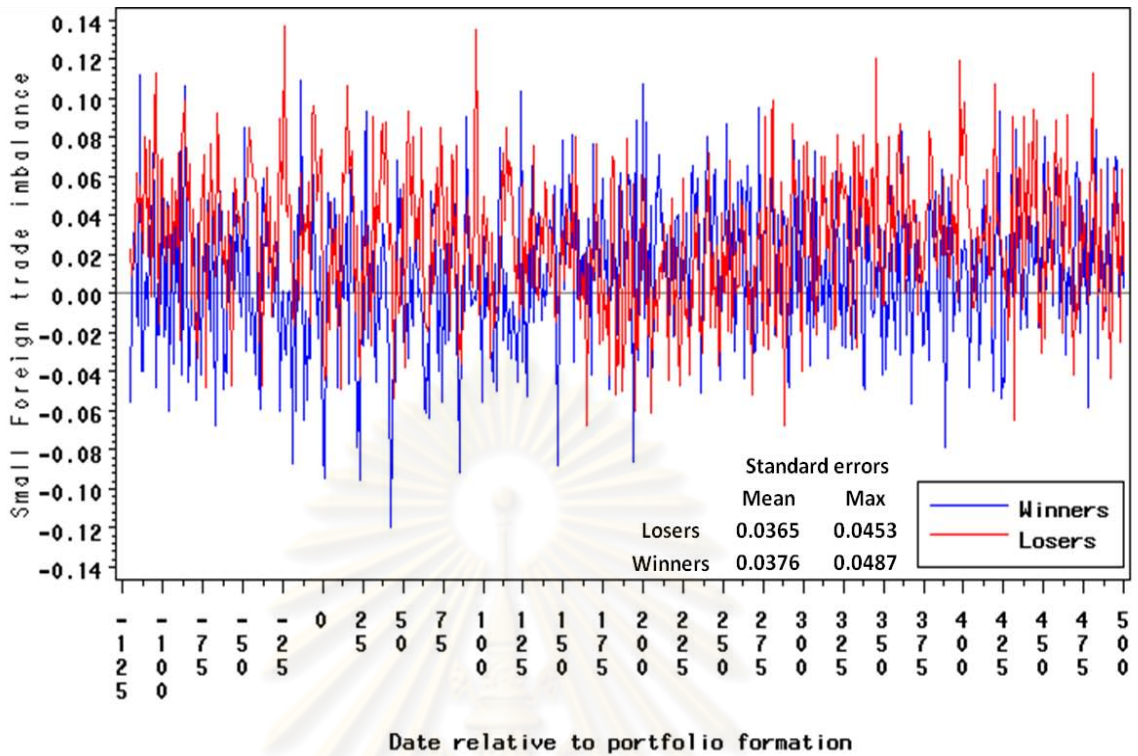
Date relative to portfolio formation

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For each formation date, daily event-time portfolio trade imbalances are computed by averaging the imbalance of the stocks in the portfolio. The figures show the means for each event-time day across formation dates. The inserted tables report statistics on the standard errors of these means. "Mean" and "Max" are the average and maximum standard error across event-time days. Date 0 is the monthly portfolio formation date, -120 is 120 days before the formation date which is approximately the start of the formation period, and 500 is about 2 years later.

CHAPTER V

CONCLUSION

The results show that there is significant evidence about the heterogeneity of investors' behavior across different investor type. By using momentum phenomena as a starting point, the results from both samples suggest that retail investors initially underreact in the formation period and subsequently have delayed reaction in the holding period. This is a strong evidence for irrationality of retail investors in Thailand. Mutual funds and foreign investors show strong evidence for informed trading and take profit from early-stage momentum trading as well. However, mutual funds display a little delayed reaction in that their buying pressure for winners first arise around 6 months before formation date ,peak at the date ,then gradually decline and finally disappear around 6 months after formation date. The opposite is true for their selling pressure for losers as well.

By comparing two samples with difference proportion of foreign active trades, I find that the behavior of domestic investors, especially retail investors, is affected by the presence of foreign investors. Specifically, the presence of foreign investors in the SET50 sample makes retail investors behave more irrationally. This finding contradicts with past studies and general belief in the emerging markets that foreign investors would make market become more rational and efficient. I propose that this may happen because foreign traders who are more sophisticated take advantage from retail investors' irrationality. For better understanding of the phenomena, further studies should be conducted in the future.

I further classify trades by trading size and find that the difference in trading behavior does not come from difference in trading size between investors. When sorting trades into small and large trades based on firm-specific cut-off point, both small and large retail trades still exhibit a pattern of initial underreaction followed by delayed reaction but the pattern is much stronger for small retail trades. Both small and large mutual funds and foreign trades still exhibit the evidence of informed trading. However, small retail trades show significant buying pressure for all period while large retail and

foreign trades show significant selling pressure. This suggests that there is heterogeneity in trading behavior between small and large trades as well and this difference could not be explained by momentum alone. Further studies should be conducted to investigate this and find the explanation behind it. It would also be interesting to include all the stocks in SET in setting up momentum portfolio and use only trade size to categorize trades.

Theoretically, this paper gives more evidence to the notion that investors especially retail investors are not rational. Different type of investors does behave differently and this cannot be explained by trade size alone too. Moreover, this paper also gives some evidence that foreign presence in the market does alter domestic traders' behavior. This also illustrate that informed investors take advantage from irrational investors by exploiting their irrationality. Furthermore, the result shows that there is a persistent behavioral bias in Thailand equity market and sophisticate investors can make profit.

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APPENDIX

APPENDIX

Table A: List of stock's symbols in the SET50 for the period 1999-2006

No	1999	2000	2001	2002	2003	2004	2005	2006
1	AA	ADVANC	ADVANC	ADVANC	ADVANC	ADVANC	ADVANC	ADVANC
2	ADVANC	ASL	ASL	ASL	ASL	AMATA	AOT	AOT
3	ATC	AST	AST	AST	AST	AP	AP	ATC
4	BANPU	ATC	BANPU	BANPU	BANPU	ATC	ASP	BANPU
5	BAY	BANPU	BAY	BAY	BAY	BANPU	ATC	BAY
6	BBL	BAY	BBL	BBL	BBL	BAY	BANPU	BBL
7	BCP	BBL	BEC	BEC	BEC	BBL	BAY	BEC
8	BEC	BCP	BECL	BECL	BECL	BEC	BBL	BECL
9	BECL	BEC	BIGC	BIGC	BOA	BECL	BEC	BGH
10	BOA	BECL	B-LAND	B-LAND	BT	BOA	BECL	BH
11	COCO	BIGC	BOA	BOA	CCET	BT	CK	CP7-11
12	DELTA	B-LAND	CNS	CCET	CNS	CPF	EGCOMP	CPF
13	EASTW	BOA	COCO	CNS	CPF	DELTA	GLOW	CPN
14	EGCOMP	CAPE	CPF	CPF	DELTA	DTDB	HANA	DELTA
15	GRAMMY	CNS	DELTA	DELTA	DTDB	EGCOMP	ITD	EGCOMP
16	HANA	COCO	DTDB	DTDB	EGCOMP	GOLD	ITV	GLOW
17	IFCT	DELTA	EGCOMP	EFS	GOLD	GRAMMY	KBANK	HANA
18	ITD	DTDB	GRAMMY	EGCOMP	GRAMMY	HANA	KEST	ITD
19	JASMIN	EGCOMP	HANA	GRAMMY	HANA	ITD	KGI	ITV
20	KCE	HANA	IFCT	HANA	IFCT	ITV	KK	KBANK
21	KRP	IFCT	ITD	IFCT	ITD	KGI	KTB	KEST
22	KTB	ITD	JASMIN	JASMIN	JASMIN	KK	LH	KK
23	KTT	JASMIN	KK	KGI	KGI	KTB	MS	KTB
24	LANNA	KK	KTB	KK	KK	LH	NFS	LH
25	LH	KTB	LH	KTB	KTB	MAJOR	NPC	MAKRO
26	MAKRO	LH	MAKRO	LH	LH	MS	NSM	MCOT
27	NFS	NFS	MBK-PD	MAKRO	MAJOR	NFS	PSL	NFS
28	NPC	NPC	NFC	NFS	NFS	PTT	PTT	PSL
29	NSM	NSM	NFS	NPC	PTT	PTTEP	PTTEP	PTT
30	PTTEP	PTTEP	NPC	PPPC	PTTEP	QH	RATCH	PTTCH
31	SAFARI	SAFARI	PTTEP	PTTEP	QH	RATCH	SCB	PTTEP
32	SATTEL	SATTEL	SATTEL	RATCH	RATCH	SATTEL	SCC	RATCH
33	SCB	SCB	SCB	SATTEL	SATTEL	SCB	SCCC	RCL
34	SCC	SCC	SCC	SCB	SCB	SCC	SCIB	SCB
35	SCCC	SCCC	SCCC	SCC	SCC	SCCC	SHIN	SCC
36	SGACL	SGACL	SHIN	SCCC	SCCC	SHIN	SSI	SCCC
37	SHIN	SHIN	S-ONE	SHIN	SHIN	SIRI	STEC	SCIB

38	S-ONE	S-ONE	SPL	SPL	SPL	SPL	THAI	SHIN
39	SUC	SUC	SSI	SUC	TA	SSI	THCOM	SSI
40	TA	TA	SUC	TA	TFB	TA	TISCO	THAI
41	TASCO	TASCO	TA	TFB	THAI	TFB	TMB	THCOM
42	TDB	TFB	TASCO	THAI	TISCO	THAI	TOC	TISCO
43	TFB	THAI	TFB	TMB	TMB	TISCOB	TPC	TMB
44	THAI	TMB	THAI	TPI	TPI	TMB	TPIPL	TOP
45	TMB	TPI	TMB	TPIPL	TPIPL	TPIPL	TT&T	TPC
46	TPI	TPIPL	TPI	TT&T	TT&T	TT&T	TTA	TPIPL
47	TT&T	TT&T	TT&T	TUF	TUF	TUF	UCOM	TTA
48	TUF	TYONG	UBC	UBC	UBC	UBC	VNG	TUF
49	UBC	UBC	UCOM	UCOM	UCOM	VNG	VNT	UCOM
50	UCOM	UCOM	VNT	VNT	VNT	VNT	TRUE	TRUE

Table B: List of stock's symbols in the Non-SET50 group for the period 1999-2006

No	1999	2000	2001	2002	2003	2004	2005	2006
1	ASP	AA	AA	AEONTS	AEONTS	APAO	A	AMATA
2	BJC	BC	ATC	AP	AJ	ASP	AI	APAO
3	BLAND	BRC	AYAL	BC	AMATA	ASSET	AMATA	APURE
4	BRC	CIRKIT	BC	BCP	AP	BCP	AMC	ASP
5	BTS	CK	BTS	BFIT	APC	BH	ASSET	BFIT
6	CEI	CPF	CIRKIT	BJC	ASSET	BLAND	BCP	BLAND
7	CGS	EASTW	CK	BRC	ATC	BTC	BFIT	BLS
8	CIRKIT	ESTAR	CTW	CIMBT	BAFS	CGS	BLAND	CEN
9	CK	GLAND	DRACO	CIRKIT	BCP	CK	BTC	CGS
10	CNS	GOLD	EASTW	CK	BLAND	DTM	CCP	CK
11	DS	GSS	FMT	COCO	BRC	ESTAR	CEN	CPR
12	FCI	IEC	GENCO	CPH	DCC	FNS	CGS	EMC
13	GFPT	JCC	GJS	ERAWAN	DTM	GENCO	CIMBT	GBX
14	GLAND	KCE	GOLD	ESTAR	ERAWAN	GJS	CNS	GJS
15	GSS	KTT	GSS	GFPT	ESTAR	HEMRAJ	CPALL	HEMRAJ
16	IEC	LANNA	ICBCT	GOLD	FNS	IRPC	CPF	ICBCT
17	IFCTF1	LIVE	IEC	ICBCT	GFPT	JAS	CSL	IEC
18	JCC	LOXLEY	IPI	IEC	HEMRAJ	KEST	DELTA	INOX
19	KK	MAKRO	JCC	INET	HMPRO	KMC	EMC	IRP
20	KMC	MAX	KCE	IPI	ICBCT	KTC	FNS	IRPC
21	KYE	MBK	KTT	ITD	ITV	LIVE	GBX	JAS
22	LIVE	MPT	LIVE	KARAT	KARAT	LOXLEY	HEMRAJ	KGI
23	MALEE	NFC	LOXLEY	KCE	KMC	MIDA	IRPC	LIVE
24	MAX	NMG	METCO	KMC	LOXLEY	MLINK	JAS	LOXLEY

25	METCO	NOBLE	MPT	LIVE	LPN	MPT	KMC	MIDA
26	NAVA	NWR	NMG	LOXLEY	MK	NOBLE	LOXLEY	MPT
27	NEP	PA	PA	METCO	MLINK	NPARK	MIDA	NPARK
28	NFC	PDI	PDI	MK	MPT	NWR	MK	NPC
29	NMG	PL	PL	MPT	NFC	PF	NCH	NWR
30	OLAP	QH	PPPC	NMG	NOBLE	PICNI	NPARK	PHATRA
31	PA	ROBINS	QH	NOBLE	NPC	SAMART	NWR	PICNI
32	PDI	SAMART	RATCH	NWR	NVL	SC	PICNI	PLE
33	PF	SAMTEL	ROBINS	PAF	NWR	SCIB	QCON	POWER
34	QH	SCAN	SAFARI	PDI	PF	SICCO	RCL	PTL
35	ROBINS	SCBT	SAMART	PL	SICCO	SPALI	SAMART	RANCH
36	SC1	SGF	SAMTEL	PTT	SIRI	STEC	SICCO	SAMART
37	SCBT	SICCO	SCAN	QH	SITHAI	SUSCO	SIM	SIM
38	SCIB	SIRI	SGF	SCAN	SPALI	TASCO	SIRI	SINGHA
39	SSI	SPALI	SICCO	SGF	SSI	TCP	SPALI	SMIT
40	SUSCO	SPSU	SIRI	SICCO	STEC	TFI	SVOA	SOLAR
41	TC	SSI	SMC	SIRI	STPI	TGP	SYNTEC	STEC
42	TISCO	STEC	SUSCO	SITHAI	SUSCO	THANI	THL	TFD
43	TPIPL	SUE	SVI	SMC	TASCO	THL	TNITY	THL
44	TSTH	SUSCO	TGP	SPALI	TCP	TK	TOP	TICON
45	UAF	SVARA	TISCO	SSI	TFI	TNITY	TRU	TOC
46	UFC	TISCO	TPIPL	TASCO	TGP	TOC	TYCN	TSC
47	VNT	TUF	TUF	TGP	TRU	TTA	UBC	TSTH
48	WAVE	VNT	WAVE	TISCO	US	UCOM	UMS	TT&T
49	WIN	WAVE	WIN	US	VNG	US	UOBT	YNP
50	ZMICO	ZMICO	ZMICO	ZMICO	ZMICO	ZMICO	ZMICO	ZMICO

Biography

Mr. Krissakul Apiwattanaporn graduated from Faculty of Economics, Chulalongkorn University majoring in labor and human resources with Grade Point Average (GPA) of 3.84, achieved First Class Honor with Gold Medal in 2007. He went to work with the SCG Cement Co., Ltd. as a HR officer for one year. After that, he entered to Full-Time program in Master of Science in Finance (MS Finance) at Faculty of Commerce and Accountancy, Chulalongkorn University in 2009. He graduates in academic year 2010 with GPA of 4.00.