(Independent Study Proposal)
Do domestic institutional investors always win? (Evidence from
the Stock Exchange of Thailand)

Miss Preeyada Kanakupt

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

A Independent Study Proposal Submitted in Partial Fulfillment of the
Requirements
for the Degree of Master of Science in Finance
Department of Banking and Finance
FACULTY OF COMMERCE AND ACCOUNTANCY
Chulalongkorn University
Academic Year 2021

(โครงร่างสารนิพนธ์)
นักลงทุนสถาบันในประเทศไทยเทรดชนะนักลงทุนต่างชาติเสมอใช่หรือไม่ หลักฐานจากตลาด
หลักทรัพย์แห่งประเทศไทย

น.ส.ปรียาดา คณาคุปต์

Independent Study Proposal Title	Do domestic institutional investors always win? (Evidence from the Stock Exchange of Thailand)
By	Miss Preeyada Kanakupt
Field of Study	Finance
Thesis Advisor	Assistant Professor TANAKORN LIKITAPIWAT, Ph.D.

Accepted by the FACULTY OF COMMERCE AND ACCOUNTANCY, Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of Science

.... Dean of the FACULTY OF COMMERCE AND ACCOUNTANCY

(Associate Professor Wilert Puriwat, D.Phil)

INDEPENDENT STUDY PROPOSAL COMMITTEE

.... Chairman

()

.... Thesis Advisor

(Assistant Professor TANAKORN LIKITAPIWAT, Ph.D.)

.... Examiner

(NARAPONG SRIVISAL, Ph.D.)

.... Examiner

(Assistant Professor ANIRUT PISEDTASALASAI, Ph.D.)

TABLE OF CONTENTS

Page

I. INTRODUCTION

Questions about relative performance among, domestic and foreign investors, can be explained by market microstructure and behavioral finance studies in different aspects. Some researchers find that foreign investors take advantage of experience, knowledge and access to research to gain higher profit than domestic investors. In the meantime, some studies find the explanation of the edge of domestic investors over foreign investors. Choe et al. (2005) find the empirical evidence from the Stock Exchange of Korea that foreign investors are disadvantage domestic investors because of inferior executed prices. Dvořák (2005) also finds that domestic Indonesian investors have better information so that they generate higher return comparing to foreign investor. Using German Security Exchange data, foreign investors also gain less profit than domestic investors. On the contrary, Grinblatt and Keloharju (2000) provide evidence that foreign investors are better informed because of their expertise, experience and priority access to research comparing to domestic investors. The evidence in Thailand, based on Phansatan et al. (2012), find that foreign investors are likely to be momentum investors, which cause them to outperform in short term trading.

Choe et al. (2005) report that price tend to move against foreign investors when they trade intra-day intensive trading, and it causes foreign investors underperform domestic investors. Other explanation of the inferior performance of foreign investors is aggressive trading (Agarwal et al., 2009). Also, informed investors tend to use market orders to initiate their trades because of their short-lived information before they switch their orders from market orders to limit orders (Anand et al., 2005). Thus, order

initiation or initiated trade is defined as submitting orders that immediately executed which is one of the proxies for aggressive trading.

Aggressiveness of trading represents trading behavior of investors and plays important role to explain performance of each type of investors, based on Agarwal et al. (2009) and Barber et al. (2006). (Barber et al., 2006) find that individual investors that lose from trades are significantly caused by their aggressive orders in short horizon periods. The empirical result shows that foreign investors underperform domestic investors as their counterparties because of their aggressively executed orders, which are the completion or filled of buy or sell orders (Agarwal et al., 2009)

International studies on order size containing information of trading activities of investors are explained by Barclay and Warner (1993), Chakravarty (2001), and Anand et al. (2005). Barclay and Warner (1993) find that investors tend to trade medium-size orders to prevent revealing of their private information and prevent price impact from large trade size. The evidence from Thailand stock exchange market, medium-to-large orders on average are submitted by informed investors (Charoenwong et al., 2010). Beside order size, types of orders effectively reveal type of investors as well. For example, market orders tend to be submitted by informed investors (Anand et al., 2005). Lee et al. (2004)find that non-marketable orders or limit orders by individual investors tend to perform worse than orders by institutional investors; furthermore, they cause negative price impact comparing to market orders. In addition, institutional investors or informed investors tend to switch their order type from market order to limit order due to their relevant information (Anand et al., 2005).

Trading performance between foreign and domestic investors in Thailand's equity market can be explained by timing of trades, aggressiveness, and types and sizes of orders. Price impact reflects price level of order execution and emphasizes that a type of investors buys or sells at worse or better price comparing to other types (Choe et al., 2005). Price impact is known as an element of implicit transaction cost in Market Microstructure studies, which buyer (seller) who initiated trades has different cost implication which tend to reflect return on trades. The empirical result in Korea presents that foreign investors pay more and receive less in an intensive trading period, reported by Choe et al. (2005). The disadvantage is caused by price impact from their trades, and their trading style is momentum style on average (Keim, 2003). Momentum trading style can be referred as poor timing for trades because momentum investors trades after the price moves, which is one of the causes of higher price impact. Aggressive trading among types of investors is to explain performance in another aspect of each type of investor. There are three proxies of aggressive trading; average time of submitting orders to be executed, percentage of executed orders to submitted orders and percentage of initiated orders to submitted orders (Agarwal et al., 2009). Lastly, another cause of price impact can be order types that initially move stock prices by observing the relation between marketable order and mean-adjusted return. The result can explain the first hypothesis in the sense of the initial cause of price movement before foreign investors trade, which consider different order types of intra-day trading. Based on three theorical frameworks (timing of trades following momentum trading, aggressiveness trades and order choices), The objective of this study is to provide relevant explanations to performance of each type of investor by applying price impact and two metrics of aggressiveness models by studying on Thailand's equity market. This paper is

organized in four sections as follow. The next section is the review of existing literatures, motivation, contribution, and development of the hypotheses. Section III represents data from the Stock Exchange of Thailand, following by section IV which are methodology and results. Finally, section V are the conclusion, respectively.

II. LITERATURE REVIEW AND HYPOTHESES

Choe et al. (2005)find the evidence in Korea stock exchange that domestic investors are better informed, so they trade on average at better prices for the medium and large trades during the Asian financial crisis period. In other words, foreign investors tend to pay more when they purchase and receives less comparing to domestic Korean investors. They additionally study on order imbalances which impact stock prices and find that foreign investors intensively trade intra-day momentum signal than domestic institution before price moves against them. Chiyachantana et al. (2004) also find that when institutional investors purchase during the bullish market, price impact is larger comparing when they sell. On the contrary, price impact will be bigger when institutional investors sell during the market is bearish.

Choe et al. (2005) and Froot et al. (2001)observe that foreign investors tend to apply momentum strategy when they trade. As well as in Taiwan, foreign investors similarly tend to buy stocks that outperform in the past and sell underperform stocks in the past, which this action is described as momentum trading style (Lin & Swanson, 2003). Nevertheless, Grinblatt and Keloharju (2000) and Phansatan et al. (2012) contrastingly state that domestic investors are losers of trades in both Finland and Thailand, respectively. While Grinblatt and Keloharju (2000) report that foreign investors tend to follow buy (sell) past outperform (underperform) stocks, domestic investors appear to be contrarian investors for the two-year period. Phansatan et al. (2012) study trading behavior using Thailand's trading transactions between 1999 until 2004 and report consistent trading behavior as Grinblatt and Keloharju (2000), which

foreign investors tend to follow positive feedback securities, as momentum trading behavior.

Dvořák (2005) focuses on information asymmetry to explain inferior performance of foreign investors in Indonesia. Using Jarkata Stock Exchange (JSX)'s transactions, his study shows the result that domestic investors that gain higher profits because of information advantage of domestic investors from different brokerages. Thus, studies from Choe et al. (2005), Froot et al. (2001) and Dvořák (2005) provide evidence that domestic investors perform better than foreign investors with different explanations. Agarwal et al. (2009) similarly find the same result of investors' performance, but neither poor timing of trades nor information disadvantage of foreign investors causes them to underperform. Aggressive trading behavior is the key to explain the performance of foreign investors that is underperformed domestic investors. The three metrics are representative to investigate the difference in aggressiveness of each type of investor when they trade, which comprise of order initiation rate, time-length of non-initiated orders for execution and order execution rate. The trading behavior of foreign investors to aggressively execute orders as initiated and non-initiated effectively explains the result of their performance. The results are mixed depending on counterparty, which foreign investors perform poorer especially when they trade against domestic counterparts.

Barber et al. (2006) find that institutional investors generate profit from the liquidity they provided to individual investors, and this causes institutional investors are systematically and economically the winner of trades, the evidence from Taiwan stock exchange market. Their study also estimates market timing of types of investors,

which institutional investors generate higher profit in anticipating large price movement. Their empirical results explain that institutions are not only liquidity providers, but they are also aggressively trade when market prices are not fully reflected their private information.

Anand et al. (2005) investigate that different types of investors tend to use different order types. Informed investors tend to use market orders to secretly trade in the earlier trading session, and they switch to limit orders later in the afternoon trading session. Their study examines price movement using order-initiated transactions of NYSE based on the assumption that institutional investors are informed, and individual investors are uninformed investors (Szewczyk et al., 1992). Barclay and Warner (1993) and Chakravarty (2001) also study on sizes of orders that impact price. They report that informed investors tend to submit medium-size orders, rather than small or large; however, large-size orders theoretically have an impact on price movement which can cause opportunity cost of trades. The evidence from stock exchange of Thailand simultaneously reports that informed investors in Thailand tend to submit medium-to-large orders to execute trades.

The previous studies suggest that trading strategy, order initiation, aggressive trading, information advantage and counterparty effect that play significant role relative to trading performance such as, Choe et al. (2005), Dvořák (2005) and Agarwal et al. (2009). Hence, different sample periods, market conditions and mechanisms, trading rules, and execution systems lead to following three hypotheses. The first hypothesis is related to trading styles, as momentum trading, of foreign investors.

Momentum trading strategy

Hypothesis I: Momentum trading style causes foreign investors more disadvantage comparing to domestic investors

Different groups of investors follow different trading strategies. One of those is momentum trading style. There is an evidence showing that 77% of mutual fund investing in stocks tend to be momentum investors (Grinblatt et al., 1995). Grinblatt and Keloharju (2000) study the relation of past-return-based behavior. The idea is that they hypothesize the relation between the past return of stocks and trading behavior of each type of investors in Finland, and they found that foreign investors tend to purchase (sell) stocks that perform well (poor) in the past, as describe as momentum trading behavior. They argue that foreign investors perform superior and pay less transaction cost when they trade following momentum strategy, while individual investors follow contrarian strategy. On the contrary, Choe et al. (2005) find that foreign investors have poor timing of trades because they trade after the price move when they compare mean-return adjusted around the largest price-setting order imbalances among types of investors. Their empirical result presents that domestic investors have an edge over foreign investors, since foreign investors tend to be momentum traders.

Aggressiveness trading of foreign investors

Hypothesis II: Inferior performance of foreign investors causes by their aggressiveness trading.

The recent study argues that foreign investors are more aggressive when they trade against domestic investors. Agarwal et al. (2009) investigate relation between trading performance of foreign and domestic investors against their counterparty. Their empirical results report that aggressive investors tend to have higher order initiation rate, lower time of order execution and higher execution rate (Agarwal et al., 2009). However, Chakravarty (2001) finds that market orders are always submitted to initiate trades. Anand et al. (2005) state that market orders tend to be submitted by informed investors to immediacy executed trades, and institutional investors tend to execute order immediately when they have relevant private information. I classify proportion of limit and market orders from foreign investors, domestic institutional investors, and domestic individual investors using Thai database to observe the different in price ratio among them.

The relative performance of foreign investors that is underperformed domestic investors because of many possible reasons: information asymmetry (order choice), price impact (poor timing of trades) and aggressiveness trading which mainly provide explanation on returns of each investor. This paper purposes an explanation of trading behavior of each investor using intraday price impact in Thailand.

III. DATA

3.1 Stock exchange of Thailand

Data from the Stock Exchange of Thailand (SET), the trading days are from Monday through Friday, except for holidays. Saturday, Sunday, and all commercial bank holidays are days when the market is closed. Intra-day trading is separated into 2 sessions: morning session (9.55-10.00 A.M. until 12.30 P.M.) and afternoon session (2.25-2.30P.M. until 4.35-4.40 P.M.). The order-matching methods used by the market include the continuous period and the call auction, among others. There are three batches of call auctions, which consist of the pre-open in the morning, the pre-open in the afternoon, and the closing time of each trading day, which will be excluded to this study. As opposed to the traditional three auction times, continuous trading is split into two major batches: after the morning pre-open auction until the closing market in the morning, and after the afternoon pre-open auction until the call auction at the closing market of the trading day. This order matching method is based on price and then time priority, which is appropriate since there is no market maker who can influence stock prices at this period.

The Stock Exchange Market of Thailand works as an order-driven market, with a variety of order types available for submission. Since limit orders and market orders in the system are made public, the benefit of an order driven market is that some orders in the system are visible to one another. These are the orders that are executed instantly at the current market price, regardless of whether they are market orders or marketable limit orders. A limit order, also known as a non-initiated order, asks investors to indicate the upper and lower price limits.

3.2 Data

This paper focuses on the latest data sample period which is from January 2013 to December 2017 (five-year sample period). Five-year sample period is to prevent excessive or moderate period to examine. There are two main sources of data: Bloomberg by daily and Stock Exchange of Thailand by transaction. Both sources comprise of the same stocks which are SET50, 50 most liquidity stocks.

In figure 1, after I look at the cumulative daily market return (SET50) during five-year sample period, the market there are two main periods that the market has negative return which are during the end of 2014 to the mid of 2014 and the end of July 2015 to the mid of July 2016. Except for those periods, return on market is positive. The market condition during this five-year sample period has been swinging downtrend and uptrend. On average, the average daily return from 2013 to 2017 is very small at 0.002% throughout my sample periods. The minimum cumulative return is -19.42% while the maximum is 20.26%. Therefore, market condition is irrelevant in this study.

From Bloomberg, I select daily current market capitalization, daily price to earnings ratio, daily number of shares outstanding, daily trading volume, daily highest and lowest price, daily close and opening price throughout the sample period. Another source is the intra-day trading transactions as security symbol, buyer/seller flag, buy/sell order time, deal date, deal price, deal volume and deal time are retrieved from SET50. The data base does not display buyer and seller participants, but the order submitting records show whether domestic or foreign orders. Database categorized whom submitted orders into 3 types: domestic institution investors (M), domestic individual investors (C), and foreign investors (F). Since foreign individual investors

that are trading in Thailand are trading at small volume. Most of foreign investors are assumed to be institutional traders, so they are limited to trade on large stocks. Therefore, the limitation of this paper is that large stocks will be the focus which this paper applies SET50 as the samples. There are 80 total stocks in SET50 throughout five-year sample period or 1260 trading days, but there are 65 stocks that are consistently listed in SET50 during the five-year sample period. Thus, the results are expected to explain the causes of the poor performance of foreign investors on large stocks in Thailand.

IV. METHODOLOGY AND RESULTS

4.1 Trading performance of price different and price impact of intra-day

intensive trading period

Price ratio is computed to explain inferior performance of foreign investors comparing to domestic individual and institutional investors along the sample. A price ratio is computed by volume-weighted average price of each type of an investor divided by volume-weighted average price of all investors of each day. Volume-weighted average price for all buy and sell of each type of investors (j) is calculated from sum of the multiplication between price and volume of each investor type j for trade t of stock i within day d divided by sum of total trade volume of each investor type j trade t of stock i within day d, as follows:

$$VWAP_{i,j}^d = \sum_t \frac{P_{i,j}^{dt} V_{i,j}^{dt}}{V_{i,j}^{dt}}$$

Where $P_{i,j}^{dt}$ is defined as the price of each investor type j for trade t of stock i within day d and $V_{i,j}^{dt}$ is defined as the number of shares trade of each investor type j for trade t of stock i within day d. Volume-weighted average price using all transactions on each day in the sample is calculated from sum of the multiplication between price and volume for trade t of stock i within day d divided by sum of total trade volume trade t of stock i within day d, as follows:

$$VWAP_i^d = \sum_t \frac{P_i^{dt} V_i^{dt}}{V_i^{dt}}$$

Where P_i^{dt} is defined as the price of stock i on day d for trade t and V_i^{dt} is defined as the number of shares traded on stock i on day d for trade t. Noted that one order per one trade t. Different price ratios can explain disadvantage of one type of investors relative to traded price, are calculated by $(\frac{VWAP_{i,j}^d}{VWAP_i^d} - 1) * 100$. If price ratio more than one, it can be translated that on average the type of investor (j) purchases a stock above the average price in that trading day for net buy. Then, we test t-statistic given the equal-weighted average price ratio in SET50 which is relative to the average trading prices of each type of investors.

This paper categorized trade size into small trade, medium trade, and large trade. Small trade refers to the one with average daily median trade of less than or equal to 30,000 THB. On the other hand, medium trades refer to those with average daily median trade of less than or equal to 150,000 THB. The last category is where the average daily median trade size is over 150,000 THB.

After sizes of initiated order of both domestic and foreign investors are categorized, percentage change of cumulative stock prices, percentage change of trades and percentage change of volumes are measured. To derive cumulative price change, I firstly compute the different between current price and previous price before I sum all the changes in price change in each trade size. Barclay and Warner (1993) and Chakravarty (2001) study the stealth trading using percentage change of trades and percentage change of volumes to support which type of investors secretly submitting which trade sizes to conceal their private information. Afterall, I regressed on the permanent impact of order imbalance (T0,T+10), temporary impact (T+1,T+10) and total impact (T0,T+1), separately for buy and sell order imbalance.

The regression is partially run 3 variables first, then regress by adding one more variable. Results of regression can be interpreted each domestic individual, institution and foreign investors has higher/lower total cumulative return impacts for buy/sell. The expectation of the regression results is that the coefficients of domestic institution are significantly higher than the coefficient of foreign for both buy and sell side. This is to confirm the research question that domestic institutional investors perform better than foreign investors because they gain higher return comparing to foreign investors. In addition to trade size, this study also looked at trade volume and number of trades. The number of shares or contracts that belong to a certain security that are exchanged daily is referred to as the volume of trade, also known as the trading volume. In other words, trading volume is a metric that measures the number of shares that have been traded during a certain period of time. This metric measures market activity and liquidity for a particular asset, which may include any kind of financial instrument such as stocks, bonds, futures contracts, options contracts, or any variety of commodities. Because it shows that the market is very active, buyers and sellers will have an easier time communicating and completing deals as a result of this. In a similar vein, when a security is traded less actively, the trading volume of that security is small.

According to Table 1, the mean buy price ratio, which have been multiplied by 100, is the least among domestic investors with the ratio of 99.922 followed by domestic institutional investors with the ratio of 100.002. Foreign investor has the highest mean buy price ratio of 100.315. These number shows that foreign investors buy at higher prices than domestic investors and domestic institutional investors. The ratio for all type of investors were significant different from 100. Thus, it could be implied that foreign investors do not trade at price significantly different from the

average price in a day. The results also show a significant difference between the buy prices of foreign investors compared to domestic individual investors. The price ratio of foreign investors is higher than the price ratio of domestic individual investor by 0.1095%. This price ratio indicates that foreign investors buy stocks at a price that is on average 0.11% higher than the average daily price paid by domestic individual investors. Similarly, the price ratio of foreign investors is higher than the price ratio of domestic institutional investor by 0.029%. Thus, it can also be implied that foreign investors buy stocks at a price that is on average 0.03% higher than the average daily price paid by domestic institutional investors.

It is, however, important to consider trade size when comparing prices as bias could occur if one compares prices paid on large trades by foreign investors to relatively small trades paid by domestic individual investors or domestic institutional investors. Thus, I divided trade size into small, medium, and target trades in order to ensure that prices are being compared among stocks in the same size classification. As mentioned previously, small trade refers to the one with average daily medium trade of less than or equal to 30,000 THB. On the other hand, medium trades refer to those with average daily median trade of less than or equal to 150,000 THB. The last category is where the average daily median trade size is over 150,000 THB. Regarding small trade sizes, Table 1 also shows that domestic individual investors engaged in small trades more than domestic institutional investors and foreign investors. Average number of stocks per day is the number of shares on a day that each investor is trading. Foreign investor has engaged the least with small trade size with average number of stocks per day. Similar to the findings on overall trade regardless of size, the price ratio of small trades made by foreign investors is higher than the price ratio of small trade by both domestic

individual investor and domestic institutional investors by 0.1806% and 0.0487%, respectively. Thus, it can also be implied that foreign investors engaged in small trade at a price that is on average 0.18% and 0.05% higher than the average daily price paid by domestic individual investors and domestic institutional investors, respectively. The findings are also the relatively similar for medium trade. All types of investors engaged in similar proportion of medium trades per day. The price ratio of medium trades made by foreign investors is higher than the price ratio of medium trade by both domestic individual investor and domestic institutional investors by 0.1497% and 0.0465%, respectively. Thus, it can also be implied that foreign investors engaged in medium trade at a price that is on average 0.15% and 0.05% higher than the average daily price paid by domestic individual investors and domestic institutional investors, respectively. The similar finding also followed through to large trade size where the price ratio of large trades made by foreign investors is higher than the price ratio of large trade by both domestic individual investor and domestic institutional investors by 0.0755% and 0.0848%, respectively. As such, it can also be implied that foreign investors engaged in small trade at a price that is on average 0.076% and 0.085% higher than the average daily price paid by domestic individual investors and domestic institutional investors, respectively.

Table 1

Average buy price of three investor types relative to the average trading price

Table 1 and 2 are the results of buy and sell price ratio, which is computed from $VWAP_{i,j}^d = \sum_t \frac{P_{i,j}^{dt} V_{i,j}^{dt}}{V_{i,j}^{dt}}$

divided by $VWAP_i^d = \sum_t \frac{P_i^{dt} V_i^{dt}}{V_i^{dt}}$ multiplied by 100

where $P_{i,j}^{dt}$ is defined as the price of each investor type j for trade t of stock i within day d and $V_{i,j}^{dt}$ is defined as the number of shares trade of each investor type j for trade t of stock i within day d.

Buy: All trades	Domestic Individual Investors (C)	Domestic Institutional Investors (M)	Foreign Investor (F)
Average of daily media trade size (THB)	35,004.48	70,181.68	38,090.53
Average of mean buy price ratio	99.9220	100.00268	100.315
P-Value	<0.001	<0.001	<0.001
Average of SD of buy price ratio	0.2931	0.3016	0.2966
Average number of stocks per day [1]	48.05	47.93	47.79
Difference of buy price ratio from C		-0.0805	-0.1095
P-Value		<0.001	<0.001
Difference of buy price ratio from M			-0.0290
P-Value			<0.001
Buy: Small trades	**Domestic Individual Investors (C)**	**Domestic Institutional Investors (M)**	**Foreign Investor (F)**
Average of daily mean trade size (<=30,000 THB)	10,389.06	12,622.22	10,189.55
Average number of stocks per day	45.30	45.17	44.89
Difference of buy price ratio from C		-0.1319	-0.1806
P-Value		<0.001	<0.001
Difference of buy price ratio from M			-0.0487
P-Value			<0.001
Buy: Medium trades	**Domestic Individual Investors (C)**	**Domestic Institutional Investors (M)**	**Foreign Investor (F)**
Average of daily mean trade size (30,001-150,000 THB)	59,986.47	64,568.19	60,425.52
Average number of stocks per day	47.98	47.19	47.80
Difference of buy price ratio from C		-0.1032	-0.1497
P-Value		<0.001	<0.001
Difference of buy price ratio from M			-0.0465
P-Value			<0.001
Buy: Large trades	**Domestic Individual Investors (C)**	**Domestic Institutional Investors (M)**	**Foreign Investor (F)**
Average of daily mean trade size (>150,000 THB)	359,728.24	442,050.14	371,947.62
Average number of stocks per day	47.71	47.83	46.54
Difference of buy price ratio from C		-0.0755	-0.0848
P-Value		<0.001	<0.001
Difference of buy price ratio from M			-0.0093
P-Value			<0.001

Table 2 shows the average sell price of three investor types. The table illustrates that the average selling price ratio of foreign investors is significantly below 100 (at 99.9655), which means that foreign investors sell at a lower price than the average price during the day. Overall, there were significant difference between sell prices of foreign investors compared to domestic individual investors and domestic institutional investors. The price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0897%, which can also be implied that foreign investors sell stocks at price that is on average 0.09% lower than the average daily price paid by domestic investors. Similarly, the price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0351%, which can also be implied that foreign investors sell stocks at price that is on average 0.04% lower than the average daily price paid by domestic institutional investors.

For small trades, foreign investors also sell at significantly lower price than both domestic individual investors and domestic institutional investors. The price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.1420%, which can also be implied that foreign investors sell stocks at price that is on average 0.14% lower than the average daily price paid by domestic individual investors. Likewise, the price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0552%, which can also be implied that foreign investors sell stocks at price that is on average 0.06% lower than the average daily price paid by domestic institutional investors. For medium trades, foreign investors also sell at significantly lower price than both domestic individual investors and domestic institutional investors. The price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.1245%, which can also be implied that foreign

investors sell stocks at price that is on average 0.12% lower than the average daily price paid by domestic individual investors. Likewise, the price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0503%, which can also be implied that foreign investors sell stocks at price that is on average 0.03% lower than the average daily price paid by domestic institutional investors. Lastly, foreign investors also sell at significantly lower price than both domestic individual investors and domestic institutional investors in term of large trades. The price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0659%, which can also be implied that foreign investors sell stocks at price that is on average 0.07% lower than the average daily price paid by domestic individual investors. Likewise, the price ratio of foreign investors is lower than the price ratio of domestic individual investor by 0.0122%, which can also be implied that foreign investors sell stocks at price that is on average 0.01% lower than the average daily price paid by domestic institutional investors. All in all, Table 1 and Table 2 shows that foreign investors have inferior performance in comparison to both types of domestic investors as foreign investors bought at higher prices and sold them at lower prices for all trade sizes.

Table 2

Average sell price of three investor types relative to the average trading price

Sell: All trades	Domestic Individual Investors (C)	Domestic Institutional Investors (M)	Foreign Investor (F)
Average of daily media trade size (THB)	36,227.19	51,660.57	35,839.21
Average of mean sell price ratio	100.0552	100.0006	99.9655
P-Value	<0.001	<0.001	<0.001
Average of SD of sell price ratio	0.2279	0.2749	0.2789
Average number of stocks per day	48.08	48.13	47.86
Difference of sell price ratio from C		0.0546	0.0897
P-Value		<0.001	<0.001
Difference of sell price ratio from M			0.0351
P-Value			<0.001

Sell: Small trades	Domestic Individual Investors (C)	Domestic Institutional Investors (M)	Foreign Investor (F)
Average of daily mean trade size (<=30,000 THB)	10,729.55	11,658.41	10,284.19
Average number of stocks per day	45.32	45.44	45.02
Difference of sell price ratio from C		0.0868	0.1420
P-Value		<0.001	<0.001
Difference of sell price ratio from M			0.0552
P-Value			<0.001

Sell: Medium trades	Domestic Individual Investors (C)	Domestic Institutional Investors (M)	Foreign Investor (F)
Average of daily mean trade size (30,001-150,000 THB)	59,985.09	61,914.65	59,641.87
Average number of stocks per day	48.00	48.01	47.24
Difference of sell price ratio from C		0.0742	0.1245
P-Value		<0.001	<0.001
Difference of sell price ratio from M			0.0503
P-Value			<0.001

Sell: Large trades	Domestic Individual Investors (C)	Domestic Institutional Investors (M)	Foreign Investor (F)
Average of daily mean trade size (>150,000 THB)	364,388.40	420,521.50	366,461.90
Average number of stocks per day	47.82	47.73	46.34
Difference of sell price ratio from C		0.0537	0.0659
P-Value		<0.001	<0.001
Difference of sell price ratio from M			0.0122
P-Value			<0.001

[1] Average number of stocks per day is the number of shares on a day that each investor is trading

4.2 Aggressive trading style

Aggressive trading style refers to investment strategy that aims to maximize returns by taking on a greater level of risk. Capital appreciation, rather than income or principal protection, is usually emphasized as a key investment goal in strategies for obtaining higher-than-average returns. As a result, such a strategy would have an asset allocation that heavily favors equities, with little or no exposure to bonds or cash.

To measure that a group of investors tend to be more aggressive, this paper follows Agarwal et al. (2009) potential aggressive trading measurements: (i) one type of investors is more likely to submit initiate orders; (ii) non-initiated orders by one type of investor consume less time to be executed. Before applying these two metrics, there is curiousness about an importance of a counterparty whether it is relevant or not. Agarwal et al. (2009) report the significant of counterparty effect that foreign investors are likely to be more aggressive when they trade against domestic counterparty; contrastingly, their aggressiveness of trading is lower when they trade against other foreign investors as their counterparty.

The two measurements, order initiation rates and execution time of non-initiated order, can prevail aggressiveness of investors' type (Agarwal et al., 2009). Order initiation rates demonstrate that aggressive investors are more likely to initiate trades. The higher the initiation rate means the more aggressive when a group of investors submit initiation orders. The order initiation rates are calculated by

$$Order\ Initiation\ Rates(i,j,t)\ = \frac{Number\ of\ initiation\ orders(i,j,t)}{Total\ number\ of\ executed\ order(i,j,t)}$$

Where i is for a stock, j is a type of investor, and t is for buy (sell) trade. Secondly, the time length for execution of non-initiated orders represents how many minutes that limit orders from both domestic and foreign investors are executed on average. It is noted that time length is zero when investors submit initiated orders because the orders are guaranteed to be executed immediately. This can be computed by time when the orders are executed subtract time when limit orders submitted, and the results are time-length as minute intervals where i is for a stock, j is a type of investor and t is for buy (sell) trade.

$$Time-length\ of\ order\ execution(i,j,t)$$
$$= Execution\ time(i,j,t) - Submission\ time(i,j,t)$$

The aggressive trading style on the performance of foreign investors can be determined mainly by two variables namely order initiation rate and execution time of non-initiated order. Table 3 shows order initiation rate (OIR) of different investors. The interpretation of this table is relatively straight forward where the higher OIR reflects the more aggressive trading style. The upper section of the table shows the OIR of the buy session. It is clear that foreign investors have the highest mean OIR of 0.7192 compared to the mean OIR of 0.7119 and 0.6647 of domestic institutional investors and domestic individual investors, respectively.   Compared to buy a session, foreign investors engaged more in aggressive trading behavior with their sell session as the OIR in the lower section of Table 3 shows that the OIR for international investors was 0.7192

meaning that foreign investors initiated around 71.92% of their sell executed order. The finding is the opposite for both types of domestic investors where they are less engaged with aggressive trading style in their sell session. This table also shows that the time length of domestic individual investor has the longest time length of 72.0205 followed by domestic institutional investors with time length of 55.5985. Another indicator of aggressive trading is time length. As shown in Table 3, the time length is the shortest among foreign investors with a time length of buy trade of 44.4732 compared to 55.5985 and 72.0205 of domestic institutional investors and domestic individual investors, respectively. Likewise, the time length of sell trade is also the shortest among foreign investors at 42.8242 compared to 49.706 of domestic institutional investors and 76.8165 of domestic individual investors. The shorter time length signifies aggressive trading behavior. All in all, OIR shows that foreign investors are more engaged with aggressive trading styles both in terms of buy and sell compared to domestic individual investors and domestic institutional investors. The time length also supported the findings on OIR. Time length is the shortest among foreign investors compared to both types of domestic investors. Based on these findings, I can conclude that foreign investor uses more aggressive trading style that domestic individual investor and domestic institutional investor.

Table 3

Statistic summary of order initiation rate and execution time of non-initiated order (time length) of different types of investors

	OIR (C)	OIR (F)	OIR (M)	TIMELENG (C)	TIMELENG (F)	TIMELENG (M)
Buy Trade						
Mean	0.6647	0.7192	0.7119	72.0205	44.4732	55.5985
Median	0.6641	0.7244	0.6882	58.4757	31.0877	39.9181
Maximum	3.5051	42.5131	341.0000	413.0982	419.8837	428.7385
Minimum	0.0357	0.0030	0.0080	0.2748	0.0000	0.0000
Std. Dev.	0.1376	0.2298	1.7138	50.3856	40.7868	49.5235
Sell Trade						
Mean	0.6646	0.7162	0.7272	76.8165	42.8242	49.7603
Median	0.6646	0.7198	0.6996	64.7037	30.2855	36.7498
Maximum	13.0000	65.0370	508.3333	429.4692	428.6232	427.6930
Minimum	0.1273	0.0008	0.0065	0.0903	0.0025	0.0002
Std. Dev.	0.1551	0.3367	2.9030	49.1010	38.9436	43.1733

จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

4.3 Trade price determinants

According to the results from table 1 and 2, foreign investors are trading at disadvantage comparing to domestic individual and institutional investors. In this section, based on Choe et al. (2005). I investigate whether the difference in trading price among investors can be explained by stock characteristic and market return, momentum- related characteristic, trade-related characteristic, and aggressive trading style. Stock characteristic is proxy for information asymmetries among investors' trading performance which the poor performance will relatively come along with the higher asymmetry. According to Keim (2003), investors who use momentum trading strategy have higher price impact because when the stock price increases, they will buy that stock and vice versa. Trade-related characteristic can explain when an investor is more likely to trade in less liquid stocks which will cause their worse price comparing to other investors. I use trade-sizes as dummy variables to investigate the impact of trade-sizes on trade price among foreign investors, domestic individual investors, and domestic institutional investors. Then I control variables as follow:

(1)   Stock characteristics and market return:

- Lsize   = market value of stock taking log on the previous day

- PE   = price to earnings on the previous day

- Set50ret   = percentage of SET 50 daily return

Stocks that have larger size (lsize) and lower growth (pe) trend to have less information asymmetries. If foreign investors are trading at disadvantage comparing to domestic investors due to information asymmetries, I would expect an increase in market value (lsize) and growth of stock (pe) in terms of trading price between each investor. The market return explains the impatience of foreign investors when the return is high, foreign investors will buy. They will sell, the market return is low, so I would expect the negative coefficient of daily top 50 stocks' return (set50ret).

Momentum trading style referred trading strategy where investor purchase securities that are on the rise and sell them when the securities look to have peaked. The aim of this trading style is to work with volatility by looking for purchasing opportunities in short-term uptrends and selling when the assets lose their momentum. The investor then withdraws the funds and searches for the next short-term upswing, or purchasing opportunity, before repeating the process. Moving into a position too early, closing out too late, and being sidetracked and missing important trends and technical deviations are all risks of momentum trading. The impatience of foreign investors might be caused by momentum trading behavior. If foreign investors are momentum trader, they will purchase when the return is high. Therefore, to measure momentum trading style, I control previous return of 5-days (ctc5), overnight return (cto) and daily return (otc) and expect the high value of all variables.

(2)   Momentum-related characteristics:

- ctc5   = 5-day return momentum where,

$$previous\ 5 - day\ return\ (\%) = (\frac{close\ price\ of\ the\ previous\ day}{close\ price\ of\ the\ previous\ 6th\ day} - 1\ )\ X\ 100$$

- cto   = overnight return momentum where,

$$overnight\ return\ (\%) = (\frac{today\ opening\ price}{previous\ close\ price} - 1)\ X\ 100$$

- otc   = day-time return momentum where,

$$daily\ return\ (\%) = (\frac{today\ closed\ price}{today\ opening\ price} - 1)\ X\ 100$$

(3)   Trade-related characteristics:

- Avgturn20   = average of previous 20 daily turnover ratios, where

$$turnover\ ratio = (\frac{daily\ stock\ trading\ volume}{total\ shares\ outstanding})\ X\ 100$$

- Avgvol20   = average of previous 20 daily volatilities, where

$$voltality = (\frac{high\ price - low\ price}{high\ price + low\ price})\ X\ 100$$

I use avgturn20 and avgvol20 to control trade-related characteristics and

proxies for liquidity of stocks. Lastly, I control aggressive trading strategy by

applying order initiation rate and execution time for non-initiate order.

In table 4 through 9, I show the regression models of buy and sell price ratio

differences between two investor types as the dependent variable. Trade price ratio is

calculated by $(\frac{VWAP_{i,j}^{d}}{VWAP_{i}^{d}} - 1) * 100$ for investor type j for stock i on day d.   The

independent variables are OIR, Time Length, Set50Ret, AvgTurn, AvgVol, Lsize and

PE. OIR is computed from number of initiation orders of stock i of each investor j for trade t divided by total number of executed order of stock i of each investor j for trade t. Time-length is computed by execution time of stock i of each investor j for trade t minus submission time of stock i of each investor j for trade t . Set50Ret is the daily market return. AvgTurn20 = average of previous 20 daily turnover ratios and AvgVol20 denotes as the average of previous 20 daily volatilities. Lsize and PE are the log market value of shares on the previous day and price to earnings on the previous day. ctc5 is previous 5-day return momentum (%). cto is overnight return momentum (%). otc is day-time return momentum (%). Lastly trade sizes are dummies which TrdSize2 refers to the medium trade size and TrdSize3 refers to the large trade size. The significant level is at 0.05.

There are three regression models for buy price ratio differences between domestic individual investors and there are the other three models that regress on sell price ratio differences between domestic individual investors and foreign investors as well. Apart from the buy and sell price ratio differences between domestic individual investors and foreign investors, there are the other six models regress on buy and sell price ratio differences between domestic institutional investors and foreign investors. For the first two models, I regress using one aggressiveness metric as a proxy to indicate aggressive trading behavior of foreign investors to explore whether the difference proxy of aggressiveness has impact differently on price ratio differences or not. The third models I regress both using two proxies of aggressive trading.

Regression for the buy and sell price ratio differences: Domestic individual-foreign investors (C-F) as follow:

1. $Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d + \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$

2. $Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 TimeLength_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d + \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$

3. $Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 TimeLength_i^d + \beta_5 ctc5_i^d + \beta_6 cto_i^d + \beta_7 otc_i^d + \beta_8 Set50ret_i^d + \beta_9 Avgturn20_i^d + \beta_{10} Avgvol20_i^d + \beta_{11} Lsize_i^d + \beta_{12} PE_i^d + \varepsilon_{it}$

Regression for the buy and sell price ratio differences: Domestic institutions-foreign investors (M-F) as follow:

1. $Price\ ratio_{i,M-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d + \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$

2. $Price\ ratio_{i,M-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 TimeLength_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d + \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$

3. $Price\ ratio_{i,M-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 TimeLength_i^d +$

$\beta_5 ctc5_i^d + \beta_6 cto_i^d + \beta_7 otc_i^d + \beta_8 Set50ret_i^d + \beta_9 Avgturn20_i^d + \beta_{10} Avgvol20_i^d +$

$\beta_{11} Lsize_i^d + \beta_{12} PE_i^d + \varepsilon_{it}$

Order initiation rate (OIR) is one of the aggressiveness indicators. The order initiation rate is expected to be positive when foreign investors buy and sell. In other words, the order initiation rate is high, if foreign investors aggressively initiate both buy and sell trade. Time length for non-initiate orders (TimeLength) is another proxy for aggressive trading behavior. When foreign investors aggressively trade, the result is expected to be the negative sign of coefficient. This implies that the shorter time of foreign investors' executed orders after submitting orders, the more aggressive on trading in both buy and sell price.

From Table 4 to table 6, order initiation rates are insignificant which means aggressiveness does not explain buy and sell price ratio differences between domestic individual and foreign investors. According to table 5 to 6, time length for non-initiate orders is significant for buy and sell price ratio differences. For buy price ratio difference between domestic individual and foreign investors, the result shows the positive sign meaning that foreign investors tend wait for longer time to buy. On the contrary, foreign investors tend to match sell order for a shorter time which cause them sell at lower price comparing to domestic individual investors. In table 7 and 9, order initiation rate of sell price ratio differences between domestic institutional and foreign investors is significant but with the negative sign meaning that foreign investors sell at lower price comparing to domestic individual investors when they are less initiated sell

trades. In Table 8 and 9, foreign investors tend to execute buy order faster comparing to institutional investors. In other words, they are more aggressive and buy at higher price comparing to domestic institutional investors.

The behavior of momentum traders depends on the return of stocks. They tend to buy after the return of stocks is positive and sell when the return is negative. This paper applies the previous 5-day return (ctc5), overnight return (cto) and day-time return (otc) to explain the trading behavior of foreign investors whether they trade following momentum strategy or not. The expected results are the positive coefficient when foreign investor buy and negative coefficient when they sell.

According to table 4 through 6, they show the regression results of buy and sell price ratio differences between domestic individual and foreign investors. The previous five-day return (ctc5) from table 4 to 6 of sell price ratio difference between domestic individual and foreign investors is positive when the previous 5-day return is positive. In other words, sell price ratio of foreign investors are significantly lower comparing to domestic individual investors, when the previous 5-day return increases. This result can explain that foreign investors tend follow the contrarian strategy when they sell stocks in Thailand. From Table 4 to 6, overnight return (cto) and day-time return (otc) of buy price ratio difference between domestic individual and foreign investors are significantly positive. When the overnight and day-time returns are positive, foreign investors tend to buy more at higher price comparing to domestic individual investors. Therefore, foreign investors tend to behave as momentum traders only when they buy after overnight and day-time returns are positive. Table 7 through 9 show the regression

results of buy and sell price ratio differences between domestic institutional and foreign investors. The previous five-day returns, in table 7 and 8, are positively significant for buy price ratio differences meaning that foreign investors tend to buy when the returns of previous five-day of stocks increase. This supports the first hypothesis that foreign investors trade at worse price when they purchase stock using momentum strategy. However, the result is found that there is no significant impact of the previous five-day return on buy and sell price ratio differences in table 9. As well as overnight and day-time returns, I found no significant in all tables of buy and sell price ratio differences between domestic institutional and foreign investors. In table 7 and 8, foreign investors tend to follow contrarian strategy on sell trades comparing to domestic institutional investors, but then follow just overnight and day-time returns. However, in table 9, then tend to follow only the positive day-time return to sell stocks.

Table 4: Regression of buy and sell price ratio differences between domestic individual and foreign investors (C-F) with order initiation rate

This table shows the result from below regression equations:

$$Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3OIR_i^d + \beta_4ctc5_i^d + \beta_5cto_i^d + \beta_6otc_i^d$$
$$+ \beta_7Set50ret_i^d + \beta_8Avgturn20_i^d + \beta_9Avgvol20_i^d + \beta_{10}Lsize_i^d + \beta_{11}PE_i^d + \varepsilon_{it}$$

where $Price\ ratio_{i,C-F}^{d}$ is the buy and sell price ratio between domestic individual and foreign investors as C-F regress with medium (*TrdSize2*) and large trade size (*TrdSize3*). *OIR* is order initiation rate. The previous five-day returns, overnight return and day-time return are *ctc5*, *cto* and *otc*, respectively. *Set50ret* is the market return for SET50, and *Lsize* is the logarithm of the market value on the previous day. *PE* is the previous day price to earnings ratio. *Avgturn20* and *Avgvol20* are the previous 20 days turnover and volatilities. *Significant level is at 0.05.

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.2029*	0.2545*
	(0.0012)	(0.0000)
Medium (TrdSize2)	-0.0276	0.0289
	(0.0778)	(0.0286)
Large (TrdSize3)	0.0493*	-0.0493*
	(0.0000)	(0.0000)
OIR	0.0051	-0.0059
	(0.5981)	(0.4715)
ctc5	0.0001	0.0039
	(0.945)	(0.0541)
cto	0.0132*	-0.0038
	(0.0183)	(0.3441)
otc	0.0141*	-0.0040
	(0.0377)	(0.3131)
Set50ret	-1.4008*	-1.5531*
	(0.0000)	(0.0000)
Avgturn20	0.0716*	-0.0411*
	(0.0000)	(0.0000)
Avgvol20	-0.0428*	0.0271*
	(0.0000)	(0.0000)
Lsize	0.0038	-0.0063*
	(0.1168)	(0.0016)
PE	0.0000*	-0.0000*
	(0.0000)	(0.0013)
Number of observations	58,393	58,424
Adjusted R square	0.7791	0.5503

Table 5: Regression of buy and sell price ratio differences between domestic individual and foreign investors (C-F) with time-length for non-execution orders

This table shows the result from below regression equations:

$$Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1 (TrdSize2)_i^d + \beta_2 (TrdSize3)_i^d + \beta_3 TimeLength_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d$$
$$+ \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$$

where $Price\ ratio_{i,C-F}^{d}$ is the buy and sell price ratio between domestic individual and foreign investors as C-F regress with medium (*TrdSize2*) and large trade size (*TrdSize3*). *TimeLength* is the non-initiated orders execution time. The previous five-day returns, overnight return and day-time return are *ctc5*, *cto* and *otc*, respectively. *Set50ret* is the market return for SET50, and *Lsize* is the logarithm of the market value on the previous day. *PE* is the previous day price to earnings ratio. *Avgturn20* and *Avgvol20* are the previous 20 days turnover and volatilities. *Significant level is at 0.05.

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.2148*	0.2622*
	(0.0006)	(0.0000)
Medium (TrdSize2)	-0.0266	0.0282*
	(0.0888)	(0.0324)
Large (TrdSize3)	0.0504*	-0.4995*
	(0.0000)	(0.0000)
TimeLength	0.0399*	-0.0291*
	(0.0001)	(0.0001)
ctc5	0.0002	0.0031*
	(0.9716)	(0.0502)
cto	0.0141*	-0.0044
	(0.0101)	(0.3057)
otc	0.0158*	-0.0057
	(0.0263)	(0.2856)
Set50ret	-1.4326*	-1.5891*
	(0.0000)	(0.0000)
Avgturn20	0.0712*	-0.0409*
	(0.0000)	(0.0000)
Avgvol20	-0.0404*	0.0254*
	(0.0000)	(0.0000)
Lsize	0.0040	-0.0064*
	(0.0983)	(0.0013)
PE	0.0000*	-0.0000*
	(0.0000)	(0.0012)
Number of observations	58,393	58,424
Adjusted R square	0.8112	0.5742

Table 6: Regression of buy and sell price ratio differences between domestic individual and foreign investors (C-F) with order initiation rate and time-length for non-execution orders

This table shows the result from below regression equations:

$$Price\ ratio_{i,C-F}^{d} = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 TimeLength_i^d + \beta_5 ctc5_i^d + \beta_6 cto_i^d + \beta_7 otc_i^d + \beta_8 Set50ret_i^d + \beta_9 Avgturn20_i^d + \beta_{10} Avgvol20_i^d + \beta_{11} Lsize_i^d + \beta_{12} PE_i^d + \varepsilon_{it}$$

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.2152*	0.2629*
	(0.0006)	(0.0000)
Medium (TrdSize2)	-0.0266	0.0281*
	(0.0891)	(0.0329)
Large (TrdSize3)	0.0505*	-0.0499*
	(0.0000)	(0.0000)
OIR	0.0021	-0.0036
	(0.8297)	(0.6642)
TimeLength	0.0398*	-0.0289*
	(0.0000)	(0.0001)
ctc5	0.0001	0.0032
	(0.9388)	(0.0544)
cto	0.0144*	-0.0038
	(0.0111)	(0.3149)
otc	0.0145*	-0.0040
	(0.0282)	(0.2952)
Set50ret	-1.4303*	-1.5859*
	(0.0000)	(0.0000)
Avgturn20	0.0712*	-0.0409*
	(0.0000)	(0.0000)
Avgvol20	-0.0403*	0.0254*
	(0.0000)	(0.0000)
Lsize	0.0040	-0.0065*
	(0.0977)	(0.0012)
PE	0.0000*	-0.0000*
	(0.0000)	(0.0012)
Number of observations	58,393	58,424
Adjusted R square	0.8102	0.5730

Table 7: Regression of buy and sell price ratio differences between domestic institution and foreign investors (M-F) with order initiation rate

This table shows the result from below regression equations:

$$Price\ ratio_{i,M-F}^d = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d$$
$$+ \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$$

where $Price\ ratio_{i,M-F}^d$ is the buy and sell price ratio between domestic institutional and foreign investors as M-F regress with medium (*TrdSize2*) and large trade size (*TrdSize3*). *OIR* is order initiation rate. The previous five-day returns, overnight return and day-time return are *ctc5*, *cto* and *otc*, respectively. *Set50ret* is the market return for SET50, and *Lsize* is the logarithm of the market value on the previous day. *PE* is the previous day price to earnings ratio. *Avgturn20* and *Avgvol20* are the previous 20 days turnover and volatilities. *Significant level is at 0.05.

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.0326	0.1726*
	(0.5542)	(0.0017)
Medium (TrdSize2)	0.0270*	0.0066
	(0.0489)	(0.6341)
Large (TrdSize3)	0.0347*	-0.0410*
	(0.0000)	(0.0000)
OIR	-0.0118	-0.0177*
	(0.1681)	(0.0419)
ctc5	0.0864*	-0.0183
	(0.0034)	(0.4523)
cto	-0.0463	0.1389*
	(0.1085)	(0.007)
otc	-0.0024	0.1252*
	(0.9797)	(0.0483)
Set50ret	-2.9339*	-1.6899*
	(0.0000)	(0.0000)
Avgturn20	-0.0111*	-0.0127*
	(0.0017)	(0.0003)
Avgvol20	0.0388*	-0.2604*
	(0.0000)	(0.0000)
Lsize	-0.0039	-0.0025
	(0.0632)	(0.2251)
PE	0.0000*	-0.0000*
	(0.0195)	(0.0027)
Number of observations	58,393	58,424
Adjusted R square	0.7128	0.3655

Table 8: Regression of buy and sell price ratio differences between domestic institution and foreign investors (M-F) with time-length for non-execution orders

This table shows the result from below regression equations:

$$Price\ ratio_{i,M-F}^d = \beta_0 + \beta_1(TrdSize2)_i^d + \beta_2(TrdSize3)_i^d + \beta_3 TimeLength_i^d + \beta_4 ctc5_i^d + \beta_5 cto_i^d + \beta_6 otc_i^d$$
$$+ \beta_7 Set50ret_i^d + \beta_8 Avgturn20_i^d + \beta_9 Avgvol20_i^d + \beta_{10} Lsize_i^d + \beta_{11} PE_i^d + \varepsilon_{it}$$

where $Price\ ratio_{i,M-F}^d$ is the buy and sell price ratio between domestic institutional and foreign investors as M-F regress with medium (*TrdSize2*) and large trade size (*TrdSize3*). *TimeLength* is the non-initiated orders execution time. The previous five-day returns, overnight return and day-time return are *ctc5*, *cto* and *otc*, respectively. *Set50ret* is the market return for SET50, and *Lsize* is the logarithm of the market value on the previous day. *PE* is the previous day price to earnings ratio. *Avgturn20* and *Avgvol20* are the previous 20 days turnover and volatilities. *Significant level is at 0.05.

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.0215	0.1674*
	(0.6957)	(0.0023)
Medium (TrdSize2)	0.0260	0.0071
	(0.0571)	(0.6055)
Large (TrdSize3)	0.0336*	-0.4079*
	(0.0000)	(0.0000)
OIR	-0.0414*	0.0051
	(0.0000)	(0.5185)
ctc5	0.0927*	0.2904
	(0.0021)	(0.4522)
cto	-0.0445	2.1653*
	(0.0814)	(0.0071)
otc	0.0525	2.0000*
	(0.3168)	(0.0481)
Set50ret	-2.8944*	-1.6985*
	(0.0000)	(0.0000)
Avgturn20	-0.0107	-0.0126*
	(0.0026)	(0.0003)
Avgvol20	0.0364*	-0.0252*
	(0.0000)	(0.0000)
Lsize	-0.0041	-0.0024
	(0.0516)	(0.2428)
PE	0.0000*	-0.0000*
	(0.0212)	(0.0002)
Number of observations	58,393	58,424
Adjusted R square	0.7557	0.3598

Table 9: Regression of buy and sell price ratio differences between domestic institution and foreign investors (M-F) with order initiation rate and time-length for non-execution orders

This table shows the result from below regression equations:

$$Price\ ratio_{i,M-F}^{d} = \beta_0 + \beta_1 (TrdSize2)_i^d + \beta_2 (TrdSize3)_i^d + \beta_3 OIR_i^d + \beta_4 TimeLength_i^d + \beta_5 ctc5_i^d + \beta_6 cto_i^d$$
$$+ \beta_7 otc_i^d + \beta_8 Set50ret_i^d + \beta_9 Avgturn20_i^d + \beta_{10} Avgvol20_i^d + \beta_{11} Lsize_i^d + \beta_{12} PE_i^d + \varepsilon_{it}$$

variables	Regression coefficients	
	Buy price ratio difference	**Sell price ratio difference**
Intercept	-0.0200	0.1708*
	(0.7170)	(0.0019)
Medium (TrdSize2)	0.0259	0.0067
	(0.0580)	(0.6529)
Large (TrdSize3)	0.0335*	-0.0409*
	(0.0001)	(0.0000)
OIR	-0.0087	-0.0182*
	(0.2118)	(0.0367)
TimeLength	-0.0408*	0.0063
	(0.0000)	(0.4240)
ctc5	-0.0441	-0.0172
	(0.0812)	(0.5001)
cto	0.0451	0.1361*
	(0.3892)	(0.0086)
otc	0.0001	0.1214
	(0.9964)	(0.0531)
Set50ret	-2.9037*	-1.6827*
	(0.0000)	(0.0000)
Avgturn20	-0.0107*	-0.0127*
	(0.0026)	(0.0003)
Avgvol20	0.0362*	-0.0256*
	(0.0000)	(0.0000)
Lsize	-0.0041*	-0.0025
	(0.0499)	(0.2310)
PE	0.0000*	-0.0000*
	(0.0213)	(0.0002)
Number of observations	58,393	58,424
Adjusted R square	0.7557	0.3644

4.4 Price impact of intra-day intensive trading style by investor types

Another variable in this study is price impact. Each type of investor has permanent impact or temporary impact of price change, and we apply price-setting order-imbalance for each event. Five-minute interval of order imbalance is conducted by using subtraction between buyer-initiated orders and seller-initiated orders; in other words, buy and sell volume of trades as a result to order imbalance. Then, I collect 50 largest buy and sell imbalanced orders from positive and negative order imbalance of each type of investor, respectively, of each interval from ten subsequent period (T-10) to ten preceding period (T+10) as around an intensive trading period (T0). Therefore, the total are 300 events. The ten intervals before and after one largest order imbalance is sufficient for short-lived private information for each investor group. The next level is to measure each type of investor's mean-adjusted return (average the interval return).

$$mean\ adjusted\ return_{i,j,t} = \left(average\ interval\ return_{i,j,t} - average\ daily\ return_{i,j,t}\right)$$

Where i is for a stock, j is an type of investor, and t is for buy (sell) trade. Lastly, I cumulative mean-adjusted return and report as AR0, CAR (T-10 to T-1) , CAR (T0 to T+1), CAR (T0 to T+10), CAR (T+1 to T+10) and CAR (T-10 to T+10). These are the measurement of immediate impact on the events, cumulative returns from interval -10 to -1 for pre-intensive trading period, cumulative returns from interval 0 to +1 for total effect, cumulative returns from interval 0 to +10 for permanent effect, cumulative returns from interval +1 to +10 for temporary effect, respectively. During trading periods, if prices significantly increase greater in short run, the permanent impact of

CAR (T0 to T+10) can describe this greater increase in stock prices whether it is a compensation to liquidity suppliers or not using t-statistical test. Then, if stock prices instantaneously absorb all new information within period T+1 to T+10, the return is temporary during intensive trading period. As well as permanent price impact, temporary effect can be described as a compensation to liquidity suppliers. Immediate impact on T0 is defined by absolute value of mean-adjusted return. The results of this method represent comparison price impact of foreign trading and domestic individual and institutional trading during intensive periods whether impatient trading of foreign investors has significant impact on their performance associated with returns or not.

It is also important to look at the price impact of the intra-day intensive trading style to help determine whether aggressive trading influences investor performances. With reference to D_{-10} to D_{-1} in Table 5, the cumulative mean-adjusted return (CAR) for domestic institutional investors is -0.2939% with a t-statistic of -0.1304. For domestic individual investors the CAR for the same period was -0.2705% at a t-statistic of -0.0886 while the CAR for that period for foreign investor was -0.2012% at t-statistics of -0.0657. I also looked at permanent effect of intensive trading by determining the CAR at 10 periods subsequent to the intensive trading period, CAR (0, +10). The permanent effect on foreign investor is -0.3948% at t-statistics of -0.0189 while the temporary effect, which is the cumulative abnormal return from interval +1 to +10, CAR (+1, +10), of foreign investor is 0.0348. Regarding intensive selling intervals, The cumulative mean-adjusted return from D_{-10} to D_{-1} of foreign investors is 0.1565% at t-statistic of 0.0263. For foreign investors, the permanent effect is

0.04552% with t-statistics of 0.0187. In contrast the temporary effect is 0.0415% at t-statistics of 0.0144. With reference to these findings, the permanent effect of sell is therefore minimal. As such, it can be implied that majority of price decline observe in the period of intensive selling reverses over the subsequent periods and can be perceived as a compensation for liquidity providers.

For domestic institutional investors, the permanent impact is -0.5834%, which is lower than that of permanent effect of foreign investors. Similarly, the permanent impact of domestic individual investors is -0.4214% is also lower than the permanent impact of foreign investors, which is at -0.3948%. In terms of sell trade, the permanent effect of domestic institutional investors is 0.5129% while the permanent effect of domestic individual investors is 0.4528%. The permanent effect of foreign investors at 0.4553% is, therefore, lower than that of domestic institutional investors, but higher than that of domestic individual investors. The differences, however, is relatively small. All in all, it can be concluded that the price impact for both buy trade and sell trade between domestic institutional investors, domestic individual investors, and foreign investors are relatively small.

Table 10: Cumulative mean-adjusted return (%) around five-minute intervals of large price-setting order imbalance

Price-setting order imbalance is computed by total net buy-initiate volumes minus total net sell-initiate volumes of each type of investor for each stock in SET50 from January 1, 2013 to December 29, 2017. The samples comprise of 50 largest net buy and 50 largest net sell price-setting order-imbalances for each stock and each type of investor, so there are 3,700 observations for each. The mean-adjusted return is calculated by the five-minute interval return minus the mean of the same interval return throughout the sample. The AR(0) is the interval of the mean-adjusted return of the event. The CAR(-10,-1), CAR(0,+1), CAR(0,+10), CAR(+1,+10) and CAR(-10,+10) are the cumulative mean-adjusted return from interval -10 to -1, 0 to +1, 0 to +10, +1 to +10 and -10 to +10.

Cumulative mean-adjusted return		Domestic Institutional Investors		Domestic Individual Investors		Foreign Investors	
		Net buy	Net sell	Net buy	Net sell	Net buy	Net sell
CAR (-10,-1)		-0.2939	-0.0532	-0.2705	0.1699	-0.2012	0.1565
		(-0.1304)	(0.0375)	(-0.0886)	(0.0307)	(-0.0657)	(0.0263)
AR (0)	Immediate	-0.3701	-0.3735	0.0002	0.4991	-0.4173	0.4147
	impact	(-0.5757)	(0.4992)	(-0.3704)	(0.3726)	(-0.42320)	(0.4186)
CAR (0,+1)	Total effect	-0.6106	0.5087	-0.3682	0.3746	-0.3969	0.4061
		(-0.0135)	(0.0095)	(0.0022)	(0.0020)	(0.0222)	(-0.0182)
CAR (0,+10)	Permanent effect	-0.5834	0.5129	-0.4214	0.4538	-0.3948	0.4553
		(0.0041)	(0.0136)	(0.0013)	(0.0063)	(-0.0189)	(0.0187)
CAR (+1,+10)	Temporary effect	0.0428	0.0137	-0.2325	0.0812	-0.0348	0.0415
		(0.0041)	(0.0134)	(0.0013)	(0.0134)	(-0.0138)	(0.0144)
CAR (-10,+10)		-0.8959	0.4596	-0.7028	0.6238	-0.6118	0.6118
		(-0.0344)	(0.0303)	(-0.0438)	(0.0224)	(-0.0295)	(0.0295)

V. DISCUSSION AND CONCLUSION

This research investigated whether or not native Thai stock exchange investors perform worse than foreign investors. Additionally, the research looks to examine whether aggressive trading and momentum trading are to blame for the poor performance of foreign investors. The study's conclusions indicated that foreign investors often engage in buy session at higher prices than domestic institutional investors and domestic individual investors. On the other hand, foreign investors often engaged in sell session at lower prices than domestic institutional investors and domestic individual investors. To be more specific, foreign investors made purchases of any size—small, medium, or large—at a cost greater than that of both categories of local traders. These results lead to the conclusion that foreign investors do less well than local ones. The results of this research also indicated that foreign investors trade more aggressively than domestic institutional and individual investors. The regression analysis of this study found that inferior performance of foreign investor is somewhat caused by aggressive trading and momentum trading. However, only some of the proxies of aggressive trading and momentum trading can be used the explain the buy and sell price differences between domestic investors and foreign investors in Thai stock exchange. Lastly, this study concluded that the price impact for both buy trade and sell trade between domestic institutional investors, domestic individual investors, and foreign investors are relatively small.

REFERENCES

Agarwal, S., Faircloth, S., Liu, C., & Ghon Rhee, S. (2009). Why do foreign investors underperform domestic investors in trading activities? Evidence from Indonesia. *Journal of Financial Markets*, *12*(1), 32-53. https://doi.org/10.1016/j.finmar.2008.04.001

Anand, A., Chakravarty, S., & Martell, T. (2005). Empirical evidence on the evolution of liquidity: Choice of market versus limit orders by informed and uninformed traders. *Journal of Financial Markets*, *8*(3), 288-308. https://doi.org/10.1016/j.finmar.2005.03.001

Barber, B., Lee, Y.-I., & Liu, Y.-J. (2006). Who Loses from Trade? Evidence from Taiwan.

Barclay, M. J., & Warner, J. B. (1993). Stealth trading and volatility: Which trades move prices? *Journal of Financial Economics*, *34*(3), 281-305. https://doi.org/https://doi.org/10.1016/0304-405X(93)90029-B

Chakravarty, S. (2001). Stealth-trading: Which traders' trades move stock prices? *Journal of Financial Economics*, *61*(2), 289-307. https://doi.org/https://doi.org/10.1016/S0304-405X(01)00063-0

Charoenwong, C., Ding, D. K., & Jenwittayaroje, N. (2010). Price Movers on the Stock Exchange of Thailand: Evidence from a Fully Automated Order-Driven Market. *Financial Review*, *45*(3), 761-783. https://doi.org/https://doi.org/10.1111/j.1540-6288.2010.00270.x

Chiyachantana, C. N., Jain, P. K., Jiang, C., & Wood, R. A. (2004). International Evidence on Institutional Trading Behavior and Price Impact. *The Journal of Finance*, *59*(2), 869-898. http://www.jstor.org/stable/3694916

Choe, H., Kho, B.-C., & Stulz, R. M. (2005). Do Domestic Investors Have an Edge? The Trading Experience of Foreign Investors in Korea. *The Review of Financial Studies*, *18*(3), 795-829. http://www.jstor.org/stable/3598079

Dvořák, T. (2005). Do Domestic Investors Have an Information Advantage? Evidence from Indonesia. *The Journal of Finance*, *60*(2), 817-839. http://www.jstor.org/stable/3694768

Froot, K. A., O'Connell, P. G. J., & Seasholes, M. S. (2001). The portfolio flows of international investors. *Journal of Financial Economics*, *59*(2), 151-193. https://doi.org/https://doi.org/10.1016/S0304-405X(00)00084-2

Grinblatt, M., & Keloharju, M. (2000). The investment behavior and performance of various investor types: a study of Finland's unique data set. *Journal of Financial Economics*, *55*(1), 43-67. https://doi.org/https://doi.org/10.1016/S0304-405X(99)00044-6

Grinblatt, M., Titman, S., & Wermers, R. (1995). Momentum Investment Strategies, Portfolio Performance, and Herding: A Study of Mutual Fund Behavior. *The American Economic Review*, *85*(5), 1088-1105. http://www.jstor.org/stable/2950976

Keim, D. (2003). The Cost of Trend Chasing and The Illusion of Momentum Profits.

Lee, Y.-T., Liu, Y.-J., Roll, R., & Subrahmanyam, A. (2004). Order Imbalances and Market Efficiency: Evidence from the Taiwan Stock Exchange. *The Journal of Financial and Quantitative Analysis*, *39*(2), 327-341. http://www.jstor.org/stable/30031858

Lin, A. Y., & Swanson, P. E. (2003). The Behavior and Performance of Foreign Investors in Emerging Equity Markets: Evidence from Taiwan. *International Review of Finance*, *4*(3-4), 189-210. https://doi.org/10.1111/j.1468-2443.2005.00046.x

Phansatan, S., Powell, J. G., Tanthanongsakkun, S., & Treepongkaruna, S. (2012). Investor type trading behavior and trade performance: Evidence from the Thai stock market. *Pacific-Basin Finance Journal*, *20*(1), 1-23. https://doi.org/https://doi.org/10.1016/j.pacfin.2011.07.004

Szewczyk, S. H., Tsetsekos, G. P., & Varma, R. (1992). Institutional Ownership and the Liquidity of Common Stock Offerings. *Financial Review*, *27*(2), 211-225. https://doi.org/https://doi.org/10.1111/j.1540-6288.1992.tb01314.x

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Agarwal, S., Faircloth, S., Liu, C., & Ghon Rhee, S. (2009). Why do foreign investors underperform domestic investors in trading activities? Evidence from Indonesia. *Journal of Financial Markets*, *12*(1), 32-53. https://doi.org/10.1016/j.finmar.2008.04.001

Anand, A., Chakravarty, S., & Martell, T. (2005). Empirical evidence on the evolution of liquidity: Choice of market versus limit orders by informed and uninformed traders. *Journal of Financial Markets*, *8*(3), 288-308. https://doi.org/10.1016/j.finmar.2005.03.001

Barber, B., Lee, Y.-I., & Liu, Y.-J. (2006). Who Loses from Trade? Evidence from Taiwan.

Barclay, M. J., & Warner, J. B. (1993). Stealth trading and volatility: Which trades move prices? *Journal of Financial Economics*, *34*(3), 281-305. https://doi.org/https://doi.org/10.1016/0304-405X(93)90029-B

Chakravarty, S. (2001). Stealth-trading: Which traders' trades move stock prices? *Journal of Financial Economics*, *61*(2), 289-307. https://doi.org/https://doi.org/10.1016/S0304-405X(01)00063-0

Charoenwong, C., Ding, D. K., & Jenwittayaroje, N. (2010). Price Movers on the Stock Exchange of Thailand: Evidence from a Fully Automated Order-Driven Market. *Financial Review*, *45*(3), 761-783. https://doi.org/https://doi.org/10.1111/j.1540-6288.2010.00270.x

Chiyachantana, C. N., Jain, P. K., Jiang, C., & Wood, R. A. (2004). International Evidence on Institutional Trading Behavior and Price Impact. *The Journal of Finance*, *59*(2), 869-898. http://www.jstor.org/stable/3694916

Choe, H., Kho, B.-C., & Stulz, R. M. (2005). Do Domestic Investors Have an Edge?
The Trading Experience of Foreign Investors in Korea. *The Review of
Financial Studies*, *18*(3), 795-829. http://www.jstor.org/stable/3598079

Dvořák, T. (2005). Do Domestic Investors Have an Information Advantage? Evidence
from Indonesia. *The Journal of Finance*, *60*(2), 817-839.
http://www.jstor.org/stable/3694768

Froot, K. A., O'Connell, P. G. J., & Seasholes, M. S. (2001). The portfolio flows of
international investors. *Journal of Financial Economics*, *59*(2), 151-193.
https://doi.org/https://doi.org/10.1016/S0304-405X(00)00084-2

Griffiths, M. D., Smith, B. F., Turnbull, D. A. S., & White, R. W. (2000). The costs
and determinants of order aggressiveness. *Journal of Financial Economics*,
56(1), 65-88. https://doi.org/https://doi.org/10.1016/S0304-405X(99)00059-8

Grinblatt, M., & Keloharju, M. (2000). The investment behavior and performance of
various investor types: a study of Finland's unique data set. *Journal of
Financial Economics*, *55*(1), 43-67.
https://doi.org/https://doi.org/10.1016/S0304-405X(99)00044-6

Grinblatt, M., Titman, S., & Wermers, R. (1995). Momentum Investment Strategies,
Portfolio Performance, and Herding: A Study of Mutual Fund Behavior. *The
American Economic Review*, *85*(5), 1088-1105.
http://www.jstor.org/stable/2950976

Keim, D. (2003). The Cost of Trend Chasing and The Illusion of Momentum Profits.

Lee, Y.-T., Liu, Y.-J., Roll, R., & Subrahmanyam, A. (2004). Order Imbalances and
Market Efficiency: Evidence from the Taiwan Stock Exchange. *The Journal of*

Financial and Quantitative Analysis, *39*(2), 327-341.

http://www.jstor.org/stable/30031858

Lin, A. Y., & Swanson, P. E. (2003). The Behavior and Performance of Foreign

Investors in Emerging Equity Markets: Evidence from Taiwan. *International*

Review of Finance, *4*(3-4), 189-210. https://doi.org/10.1111/j.1468-

2443.2005.00046.x

Phansatan, S., Powell, J. G., Tanthanongsakkun, S., & Treepongkaruna, S. (2012).

Investor type trading behavior and trade performance: Evidence from the Thai

stock market. *Pacific-Basin Finance Journal*, *20*(1), 1-23.

https://doi.org/https://doi.org/10.1016/j.pacfin.2011.07.004

Szewczyk, S. H., Tsetsekos, G. P., & Varma, R. (1992). Institutional Ownership and

the Liquidity of Common Stock Offerings. *Financial Review*, *27*(2), 211-225.

https://doi.org/https://doi.org/10.1111/j.1540-6288.1992.tb01314.x

VITA

NAME   Preeyada Kanakupt

DATE OF BIRTH   5 August 1993

PLACE OF BIRTH Nakhon Pathom

INSTITUTIONS   -BBA, Mahidol University International
ATTENDED   Collage
HOME ADDRESS 10/63 Rhythm Rangnam, Soi Rangnam,
Thanon Phaya Thai, Ratchathewi, Bangkok
10400

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY