COMPARATIVE ANALYSIS OF DETERMINANTS OF BANK PERFORMANCE: FOREIGN AND DOMESTIC BANKS IN THAILAND

BY

MISS SASIN KIRAKUL

AN INDEPENDENT STUDY SUBMITTED
IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
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ABSTRACT

The increasing role of foreign banks and their growing significance in Thailand's financial system is a trend that will likely continue going forward. The purpose of this empirical study is to identify the determinants of performance of foreign banks in Thailand as compared to those of domestic banks. This study explores the extent to which bank-specific factors, macroeconomic factors and multinational factors, affect the profitability of domestic and foreign banks in Thailand, using panel data on banks operating in Thailand during 2006 - 2014. The findings indicate statistically significant and negative impact of asset size and GDP growth, a positive effect of capital adequacy, and a mixed influence of liquidity risk on performance of domestic banks. For foreign banks, significant and positive determinants of bank performance are liquidity risk, cost-to-income ratio and capital adequacy ratio, whereas trade relationship between home country and Thailand is identified as a significant and negative determinant of foreign banks' profitability.

Keywords: Determinants, Bank performance

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Miss Sasin Kirakul

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CHAPTER 1
INTRODUCTION

1.1 Background

As part of the financial system, banks function as intermediaries for capital mobilisation, resources allocation and as payment and settlement service providers. The significance of the financial system in Thailand is demonstrated by data from the Bank of Thailand (BOT) showing total assets of financial institutions at end-2014 stood at 36 trillion baht, 2.7 times of GDP. Financial institutions are categorised into deposit-taking institutions and non-deposit-taking institutions. Commercial banks, belonging to the former category, are the largest component of the financial institutions, solely accounting for 47.9 percent of the total assets. Assets of other deposit-taking institutions, namely specialized financial institutions (SFIs), saving cooperatives and credit union and money market mutual funds, totalled to 21.7 percent of financial institutions' total assets.

Foreign banks in this paper refer to foreign banks' branches, which are of the same entity as their foreign parent banks, and locally incorporated banks with over 49 percent foreign shareholding. The latter type can be further categorised into established subsidiaries and those that entered through merger with domestic banks, which this paper refers to as hybrid banks. On average over the period 2005-2014, foreign banks accounted for approximately 20.2 percent of banking assets, 14.7 percent of deposits, and 14.3 percent of loans in Thailand, with growing prospect.

Since the 1997 financial crisis, Thai financial sector has undergone various reforms to develop a stable, resilient and efficient financial system. Series of initiatives have been introduced under the Financial Sector Master Plan (FSMP), a medium term plan to enhance efficiency and competitiveness of the Thai financial system. With an aim to strengthen the fundamentals of the financial institutions system, structural improvements were the cornerstone of the first phase of the FSMP (FSMP I) which spanned from 2004 to 2008. During the period, necessary financial infrastructures were put in place such as the National Credit Bureau and the Deposit

Insurance Scheme while the consolidation of financial institutions was encouraged, reducing the total number from 83 in 2003 to 43 in 2007. With an overall objective to enhance efficiency, three pillars underpinned the second phase of the FSMP (FSMP II), which covered the period 2010-2014. The first pillar was aimed at reducing system-wide operating cost. The second pillar aimed to promote competition and financial access while the third aimed to improve financial infrastructure. As of September 2015, the plan for the third phase of the FSMP is currently a work-in-progress.

Throughout the period after the 1997 crisis, Thailand has witnessed the growing role of foreign banks as the banking sector has progressively liberalised with fewer restrictions affecting foreign banks. As part of a series of measures to restore financial stability, foreign banks were allowed to takeover distressed banks during the crisis and hold majority shares, which were not possible prior to the 1997 crisis.

Under FSMP I, foreign banks were afforded greater operational flexibilities. Foreign bank's branch, which was not permitted to open any more branches in Thailand, was allowed to incorporate in Thailand and became a subsidiary, which were allowed to open up to 4 branches. In 2010, to comply with Thailand's banking liberalisation commitments in the World Trade Organisations (WTO), foreign bank branches were allowed to open up to 3 branches. As part of the second pillar of FSMP II to enhance efficiency through heightened competition, new foreign entrants were permitted to incorporate in Thailand, taking the form of subsidiaries that may open up to 20 branches and 20 ATMs. Australian ANZ bank and Japanese Sumitomo Mitsui Trust bank were the new foreign players entering the Thai market under the scheme. Moreover, a number of mergers between domestic and foreign banks have been permitted over the years. The most recent merger was allowed in 2013 involving the fourth largest domestic bank in Thailand, Bank of Ayudhaya, and the Japanese Bank of Tokyo-Mitsubishi UFJ.

The roles of foreign banks will likely increase, possibly at a faster pace, as Thai economy becomes more deeply integrated into the global economy and more involved in international trade and investment. Thailand's total export and import value in 2014 almost doubled that of 2005, with 9 percent average growth rate over

the period. Thailand has also seen an upward trend in foreign direct investment, growing at 12.4 percent on average during the same period. Furthermore, following the targets laid out in the ASEAN Economic Blueprint, the ASEAN Economic Community (AEC) is to be established by 2015 and financial integration in the region is to be achieved by 2020. A key milestone of financial integration is the establishment of Qualified ASEAN Banks (QABs) which will be subject to fewer operational restrictions to promote greater presence of ASEAN banks in the region. These developments pave the way for greater foreign presence in Thailand in the coming years. As the role of foreign banks grows, so does their importance to the soundness of the Thai financial system and, hence, a matter of concern for the supervisory authorities.

The increasing role of foreign banks and their growing significance to Thailand's financial stability, a trend that will likely persist, has peaked the author's interest to conduct an empirical study to assess the determinants of foreign bank performance in the country in comparison with those of domestic banks.

1.2 Objectives

The purpose of this study is to identify the determinants of performance of foreign banks in Thailand as compared to those of domestic banks. The extent to which internal or bank-specific factors and external factors, such as macroeconomic factors and multinational factors, relate to domestic and foreign bank performance as measured by profitability indicators, is to be assessed.

1.3 Scope

To reflect recent developments and to provide sufficient period coverage, the scope of this study covers commercial banks, both foreign (including foreign bank branches and locally incorporated with over 49 percent foreign shareholding) and domestic banks operating in Thailand over a 9-year-quarterly-period from 2006 to 2014.

1.4 Expected benefits

The findings of this study would provide insights into the effects of a change in relevant factors on bank performance in Thailand, particularly those of foreign banks, an area with limited previous literature. The results of this study would help the management of existing domestic and foreign banks as well as new entrants in their strategy formulation and decision-making with regard to their operations in Thailand. Supervisory authorities may also find the results of this study of use in their policy-making and consideration on the effects of a proposed policy on the performance of different types of banks through relevant determinants.

CHAPTER 2
REVIEW OF LITERATURE

2.1 Foreign commercial banks in Thailand

Commercial banks are financial institutions licenced to undertake commercial banking business under the Financial Institutions Business Act B.E. 2551 (2008), which consists of locally incorporated banks and foreign banks' branches. Aggregate data on locally incorporated banks from the BOT generally include banks that are domestically-owned as well as those that are majority-owned by foreign entities. Nonetheless, for the purpose of this study, banks incorporated in Thailand with majority foreign shareholding are classified as foreign banks. Hence, foreign banks in this paper comprise of foreign banks' branches, which are considered as the same entity as their foreign parent banks, and locally incorporated banks with foreign majority shareholding which are further categorised by how they enter the Thai market into those that enter through establishment as subsidiaries and hybrid banks that enter through merger with domestic banks. Foreign banks have been subject to certain restrictions and requirements depending on their licence types as summarised in the table below.

Table 2.1

Examples of restrictions and requirements for different licence type

Licence type	Branches and ATMs	Paid-up Capital
Domestic bank	- no limitation	N/A
Foreign bank: Branch	up to 3 branches	3,000 million Baht
Foreign bank: Locally-incorporated Subsidiary	- up to 20 branches and 20 ATMs	20,000 million Baht
Hybrid banks	- no limitation	N/A

As at end-2014, the number of commercial banks stood at 29, with 10 domestic banks, 6 locally-incorporated foreign banks, and 13 foreign bank branches. However, it should be noted that at the time of writing, as of September 2015, the figure has somewhat changed, with the completion of merger between the Japanese Bank of Tokyo-Mitsubishi UFJ (BTMU) and the domestic Bank of Ayudhaya (BAY) as well as the official opening of the Australian ANZ subsidiary in Thailand, bringing the current number of foreign bank to 20 while the total number of commercial banks remain the same at 29.

2.2 Measures of bank performance

Most of the previous studies in this area included ROA as part of their analysis of bank performance as measured by profitability.

Return on assets (ROA) is a ratio that has long been considered to reflect overall measures of performance (Johnson and Johnson, 1989). Due to its composition, ROA in one way or another relates to the interests of banks' key stakeholders. Profit maximisation, generally one of banks' main objectives, is the main concern of shareholders. Therefore, ROA, a standard profitability indicator, is a key measure of performance in shareholders' view. Furthermore, effects of investments will affect ROA eventually. The ratio also relates to the level of equity which is important as loss absorption buffer for depositor protection, which is one of the main concerns of regulators. Nonetheless, it should be noted that ratio by itself is considered relatively useless (Sinkey, 1986). For the ratio to be useful, it must be analysed over time (trend analysis), explored in comparison with ratios of a control group of similar firms (cross-section/peer-group analysis), or combined in a peer-group/trend analysis (time-series/cross-section analysis). A downward trend in ROA may suggest that the bank is experiencing earnings difficulty while an increasing trend is generally seen as a positive sign, but may also reflect excessive risk-taking.

Net interest margin (NIM) as calculated by dividing net interest income with average earning assets, reflects performance in asset-liability management of the

bank. An upward trend in NIM has positive signal on asset-liability management while decreasing NIM suggests that profits may be under pressure.

2.3 Determinants of bank performance

Previous literature generally explores how various internal and external factors relate to bank performance, where internal factors have usually been termed as bank-specific factors that are within control of the management. Selected literature is discussed further in the following.

2.3.1 Internal factors

2.3.1.1 Bank size

While there is a long list of literature, the studies do not often yield consistent results with regard to the relationship between bank size and profitability. Recent study by Perera et al (2013) on banks in a group of South Asian countries as well as a research by Sarita and Zandi (2012) on performance determinants of banks in Indonesia find that bank size is positively related to profitability, indicating possible benefits of economies of scale. These results are in contrast to the findings of Syafri (2012) and Zeitun (2012), which suggest negative relationship and no significant relationship between the variables respectively.

A positive relationship between banks' asset size and profitability is expected in this study due to potential benefits of economies of scale.

2.3.1.2 Asset quality

Associated with credit risk concept, asset quality tends to relate to banks' earnings and may affect bank profitability. Loan is the major asset of banks that generate income. Therefore, loan portfolio quality seems to have direct bearing on profitability of banks. Moreover, one of the risks facing a bank is the loss from delinquent loans (Dang, 2011). Thus, ratios relating to non-performing loans are often used as proxies for asset quality. Loan loss provision ratios also reflect regulatory requirements and management's views on bank's asset quality. A study covering 76 banks in China during 1999 and 2006 conducted by Heffernan and Fu (2008) finds that loan loss provisioning actually improved performance. By contrast,

Dinh (2013) finds that Vietnamese banks' before-tax profits are not influenced by loan loss provision, while a negative and significant link between the ratio and NIM of Vietnamese domestic banks are found, possibly as a result of inefficient risk management and the downturn of the economy in 2008.

2.3.1.3 Liquidity risk

Liquidity is a matter of concern for both bank managers and regulators as it reflects the availability of a bank's funds to meet withdrawal demands of depositors and other short-term obligations. Inability to fund such short-term liabilities could bring about risk of bankruptcy. Under Basel III international regulatory standards, liquidity requirements are to be imposed on banks for the purpose of safety and soundness of individual banks and the stability of the financial system. On the other hand, maintaining excess liquidity could mean opportunity costs for banks as certain investments are foregone which may affect profitability.

Significant association between bank performance and the ratio representing liquidity risk as total loan to assets has been observed in a number of studies with contradictory findings. Nonetheless, Frederick (2015) finds no significant relationship between such variables in a study on factors affecting performance of domestic commercial banks in Uganda. The empirical study by Muda et al. (2013), using different liquidity ratios of liquid assets (including cash, short-term funds, and deposits and placements with other financial institutions) over total assets, also suggests that liquidity ratio could not explain the performance of both domestic and foreign Islamic banks in Malaysia.

This study expects a positive relationship between liquidity risk and banks' profitability.

2.3.1.4 Efficiency

Cost-efficiency is often found to be a significant contributing factor to profitability. Cost-efficient banks may offer services at attractive prices for customers and still able to maintain or improve their profitability. A study by Wong et al. (2007) to identify major determinants of performance of banks in Hong Kong involving panel data set of 38 retail banks during the period from Q1 1991 to Q4 2005 finds that ROA is positively related to level of cost efficiency, with larger banks

usually more cost efficient than smaller banks. This is consistent with a study by Frederick (2015), exploring operational efficiency from another aspect through operating expenses, whose findings suggest that operating expenses have a significant negative impact on banks' ROAs in Uganda during 2000-2011.

This study expects a negative impact of cost to income ratio on bank performance as indicated by ROA and NIM.

2.3.1.5 Capital Adequacy Ratio

Capital indicates if a bank is solvent and capital adequacy is often identified as a significant determinant of bank performance. Most of the previous studies find a positive impact of capital adequacy on profitability, suggesting that better capitalized banks appear to perform better (Ximenes and Li, 2013; Sufian, 2009; Syafri, 2012). Capital adequacy has been the main focus of international regulatory framework for banks. Banks are required to maintain minimum capital to meet specified capital adequacy ratio, generally calculated as regulatory capital to risk-weighted assets. In Thailand, regulatory requirement for capital adequacy ratio for both domestic and foreign banks is set at a minimum of 8.5 percent.

For this study, a positive relationship between capital adequacy ratio and banks' performance is expected.

2.3.2 Macroeconomic Factors

2.3.2.1 GDP Growth

Most studies suggest that good economic environment, as indicated by real GDP growth rate, is likely to facilitate banks' operations since banks would be able to charge higher rates and earn more profits (Wong et al., 2007). In Vietnam, Dinh (2013) finds a strong and positive influence of GDP on domestic banks' profitability, suggesting that domestic banks took the opportunity to offer more loans in good times while customers are able to repay their debts given the favourable economic environment. On the other hand, the study indicates no significant relation between GDP and profitability of foreign banks.

2.3.2.2 Inflation

Inflation is another factor that is often considered as a possible determinant of bank performance. Since inflation potentially affects the

pricing of banking products, performance of banks operating in economies with volatile inflation is expected to be more susceptible compared to banks in economies with stable inflation (Uzhegova, 2015).

2.3.3 Multinational Factors

Due to the multinational characteristics of foreign banks, there may be factors that are not under control of the management of the foreign bank, but are rather particular to each foreign bank, such as parent bank's profitability. Some of these factors are considered in a study by Dinh (2013) in addition to bank-specific and macroeconomic factors. The study examines determinants of foreign banks' profitability in Vietnam in comparison with domestic banks during the 2000-2012 period, employing fixed effects model and using before-tax profit to total assets and NIM as proxies for profitability. The empirical results indicate that experience of foreign bank, as measured by the length of time that the foreign bank has been operating in the country, does not significantly influence their performance while parent bank's profitability affects foreign bank profitability negatively. Dinh (2013) did not suggest a reason for the latter finding and indicated that further research was needed regarding the effect of parent bank's profitability on the performance of foreign bank. In other aspects, the study finds that foreign banks performed better in comparison with domestic banks during the period of study, possibly owing to investment in technology and better risk management.

2.4 Previous Studies

A number of studies relating to determinants of bank performance in other countries and in the context of Thailand have been conducted. Studies have been undertaken to assess determinants of banks' performance, often indicated by profitability, with regard to banks from across countries in a region as well as banks in a specific country. As far back as 1992, a research was conducted by Molyneux and Thornton on banks across 18 European countries during the years 1986-1989 with results indicating positive relationship between interest rates, bank concentration and government ownership as independent variables and ROE as dependent variable.

Initially, most conduct studies on banks in general, considering local and foreign banks together as a whole. Some later studies consider local banks and foreign banks separately while some adopt a comparative approach. Focusing on foreign banks alone, a study by Ling and others (2013) on microeconomic and macroeconomic factors that affect the performance of foreign banks in Malaysia finds that out of 7 variables, bank size, cost to income ratio and real GDP have statistically significant effect on ROA while capital ratio, real interest rate, inflation and global financial crisis have no significant effect on the performance of foreign banks in Malaysia. Meanwhile, a comparative study by Muda et al. (2013) to identify profitability determinants of domestic and foreign Islamic banks in Malaysia shows that determinants of profitability of domestic banks are different from those of foreign banks. Using an unbalanced panel for all Islamic banks in Malaysia during 2007-2010, the study suggests that overhead expenses ratio, loans ratio, technical efficiency (ability to minimise inputs given specific outputs), GDP growth and bank size are significant profitability determinants of domestic Islamic banks, but does not significantly affect foreign Islamic banks in Malaysia. On the other hand, GDP per capita seems to have significant effect on foreign Islamic banks' profitability but does not significantly relate to the profitability of their domestic peers. Deposit ratios, capital and reserves, inflation and banks' age are found to be important determinants for all Islamic banks, both domestic and foreign. The study also indicates that domestic banks are more profitable overall, but are adversely affected by the global financial crisis while foreign banks are not.

In Thailand context, an earlier study into bank performance in Thailand after the 1997 Asian financial crisis was undertaken by Chantapong (2003), making comparison between domestic and foreign banks. Using regression analysis based on 6-year-data from 1995-2000, the study finds that foreign bank profitability during the period was higher than that of domestic banks in Thailand, though the gap gradually became narrower suggesting positive impact of the financial restructuring programme implemented after the crisis.

Literature on factors affecting profitability of major banks in Thailand includes studies by Anawatchakul (2010) and Ximenes and Li (2013). Both examine

profitability of commercial banks listed in the Stock Exchange of Thailand (SET). The quantitative study by Anawatchkul, covering 11 listed commercial banks over 9-year-period using multiple regression ordinary least squares method, explores the relationship between ROA of Thai commercial banks and the 11 selected bank-specific and external factors. The findings indicate that equity-to-total assets ratio, cost-to-income ratio, bank size, GDP growth and stock value to market capitalisation significantly and positively relate to profitability. On the contrary, loan-to-deposit ratio, loan-to-short term investment ratio and inflation rate are negatively related to ROA.

The study by Ximenes and Li, using quarterly data from 2004-2013, examines bank-specific and macroeconomic factors that may be related to profitability and stock return of listed banks. The finding is consistent with Anawatchakul's results with regard to the relationship between profitability and bank's asset size (positive) and between profitability and inflation rate (negative). On the other hand, Ximenes and Li finds that GDP growth is a factor that is insignificant to profitability and stock return, which differs from Anawatchakul's that suggests a positive relationship. Apart from the mentioned factors, Ximenes and Li's study indicates that capital adequacy and liquidity significantly and positively affect profitability, while operational efficiency, credit risk, and real interest rate adversely affect profitability and stock return.

2.5 Summary

Previous studies offer mixed results with regard to the significance of most of the variables to bank performance. This study is intended to explore such relationship further in Thailand context. Furthermore, earlier literature in relation to determinants of performance of banks in Thailand usually focuses on banks listed on the stock exchange, most of which are domestic banks. Independent variables adopted in the previous studies are generally limited to bank-specific and macroeconomic factors. This seems to suggest that a study on determinants of bank performance in Thailand with focus on foreign banks is still lacking and factors related to foreign

banks' multinational character (such as trade and investment relationship between Thailand and the foreign bank's country of origin) have not been sufficiently covered. This study aims to fulfill such gaps in the literature. In addition, different types of banking licence and differing operating environment in different time period could yield different research results. Hence, this study will provide up-to-date findings in this area to reflect the current state of play in the industry.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Data

This study covers commercial banks operating in Thailand during the years 2006 to 2014. This scope of data should provide sufficient period coverage and up to date data to ensure credibility of the results. Data for bank-specific variables are retrieved from BankScope database where possible, while detailed data are collected from quarterly financial statements of each bank. Macroeconomic data is gathered from the Office of the National Economic and Social Development Board (NESDB) and Bank of Thailand (BOT). Foreign banks and domestic banks within the scope of this research are listed in Table 3.1 and Table 3.2. This study only includes banks that were in existence throughout the entire observation period. Therefore, banks that ceased to operate during the period are excluded from the scope of this paper. BTMU merged with Bank of Ayudhaya, Thai domestic bank, and became a hybrid bank in 2015. Nonetheless, since this study covers period up to 2014, BTMU is considered a foreign bank branch in this paper. Moreover, BOC became a locally incorporated subsidiary in Q4 of 2014. This study classifies BOC as foreign bank branch for the whole observation period for consistency.

Table 3.1

Foreign banks in Thailand during the period of observation (2006-2014)

No.	Foreign Bank	Abbreviation
	Locally incorporated foreign bank (over 49% foreign ownership)	
1	Standard Chartered Bank (Thai) Public Company Limited	SCBT
2	CIMB Thai Bank Public Company Limited	CIMBT
3	United Overseas Bank (Thai) Public Company Limited	UOB
4	Industrial And Commercial Bank Of China (Thai) Public Company Limited	ICBC
5	Mega International Commercial Bank Public Company Limited	MEGA
	Foreign bank branch	
6	The Royal Bank Of Scotland PLC	RBS
7	JP Morgan Chase Bank, National Association	JP
8	Over Sea-Chinese Banking Corporation Limited	OCBC
9	The Bank Of Tokyo-Mitsubishi UFJ, Ltd.1	BTMU
10	Citibank, N.A.	CITI
11	Sumitomo Mitsui Banking Corporation	SMBC
12	RHB Bank Berhad	RHB
13	Bank Of America, National Association	BOA
14	Indian Oversea Bank	IOB
15	The Hong Kong And Shanghai Banking Corporation Ltd.	HSBC
16	Deutsche Bank AG.	DB
17	Mizuho Bank, Ltd. Bangkok Branch	MIZUHO
18	BNP Paribas	BNP
19	Bank Of China (Thai) Public Company Limited2	BOC

[2] BOC became a locally incorporated subsidiary in Q4 of 2014. This study classifies BOC as foreign bank branch for the whole observation period for consistency.

Table 3.2

Domestic banks in Thailand during the period of observation (2006-2014)

No.	Domestic Bank	Abbreviation
20	Bangkok Bank Public Company Ltd.	BBL
21	Kasikornbank Public Company Ltd.	KBANK
22	Krung Thai Bank Public Company Ltd.	KTB
23	TMB Bank Public Company Limited	TMB
24	Siam Commercial Bank Public Company Ltd.	SCB
25	Bank Of Ayudhya Public Company Ltd.	BAY
26	Thanachart Bank Public Company Ltd.	TBANK
27	Tisco Bank Public Company Limited	TISCO
28	Kiatnakin Bank Public Company Limited	KK

3.2 Methodology

3.2.1 Dependent Variables

This study employs ROA as indicator of bank performance, in line with most of the previous studies in this area. NIM is sometimes dismissed in earlier literature where banks have high off-balance-sheet activities. However, off-balance sheet activities are not widespread in Thailand to be of concern, thus, NIM is included in this study.

3.2.2 Independent Variables

In addition to the usual bank-specific factors and macroeconomic factors, this study also explores the potential effects of multinational factors including foreign bank's home country's economic condition and foreign bank's experience as reflected by the length of time it has operated in Thailand. Moreover, at an initial stage, banks are often motivated to expand their network to a foreign country in order to cater international banking services needs of their corporate customers that carry out businesses outside their own country. To learn more regarding this motivation, home country's trade relationship with Thailand has been selected as an independent

variable. Dummy for the type of bank, whether domestic or foreign, is also included to determine if being of a domestic or foreign character would affect a bank's performance. Independent variables for this study, description and their expected impact on dependent variables are shown in the table below.

Table 3.3

Independent variables

Variables	Description	Notation	Expected Impact
Internal factors			
Bank size	Natural logarithm of total assets	SIZE	+
Asset quality	Non-performing loans to total loan	AQ	-
Liquidity risk	Net loans to total assets	LIQ	+
Inefficiency	Cost to income ratio	OPC	-
Capital adequacy	Regulatory capital adequacy ratio	CAR	+
Type of bank	Dummy variable for domestic and foreign bank	TYPE	N/A
Macroeconomic factors			
Economic condition	Thailand's quarterly GDP y-o-y growth rate	GDP	+
Inflation rate	Consumer Price Index y-o-y growth rate	CPI	+
Multinational factors			
Trade relationship between home and host countries	Trade value (imports and exports) between bank's home country and Thailand	TRADE	+
Experience	Natural logarithm of bank age	AGE	+
Home country's economic condition	Quarterly GDP y-o-y growth rate of foreign bank's home country	FGDP	+

3.2.3 Models

3.2.3.1 All Banks

(1) $$ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \beta_8 TYPE + \varepsilon_{it}$$

(2) $$NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \beta_8 TYPE + \varepsilon_{it}$$

3.2.3.2 Domestic Banks

(3) $$ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \varepsilon_{it}$$

(4) $$NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \varepsilon_{it}$$

3.2.3.3 Foreign Banks

(5) $$ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \beta_8 TRADE_{it} + \beta_9 AGE_{it} + \beta_{10} FGDP_{it} + \varepsilon_{it}$$

(6) $$NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it} + \beta_3 LI_{it} + \beta_4 OPC_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \beta_7 CPI_{it} + \beta_8 TRADE_{it} + \beta_9 AGE_{it} + \beta_{10} FGDP_{it} + \varepsilon_{it}$$

3.2.4 Estimation Technique

This study employs ordinary least-squares (OLS) and generalized least-squares (GLS) regression on panel data for empirical analysis. Advantages of using panel data include (1) considerable larger sample size (2) better suited to study dynamics of change and (3) capability to facilitate more complicated behavioural

model (Gujarati, 2003). As the number of observations is equal for all panel members, this study uses a balanced panel. Correlation coefficients between independent variables are calculated to detect multicollinearity problem.

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Data Descriptive Statistics

This study uses quarterly data from the first quarter of 2006 to the fourth quarter of 2014 in order to include a number of banks that started their operations in 2005 and to reflect recent developments.

Table 4.1

Descriptive statistics of variables

Variables	Mean			Paired-sample t-test
	All	Domestic	Foreign	Probability
ROA	0.871370	1.061679	0.781224	0.0401**
NIM	2.374610	3.048235	2.055525	0.0000***
SIZE	11.810999	13.464210	11.027899	0.0000***
AQ	0.039398	0.049753	0.034493	0.0000***
LIQ	0.524740	0.722361	0.431130	0.0000***
OPC	0.212048	0.559537	0.047447	0.1511
CAR	20.778147	15.189302	23.425494	0.0000***
GDP	3.450000	3.450000	3.450000	-
CPI	2.861111	2.861111	2.861111	-
TRADE	-	-	0.086374	-
AGE	-	-	6.130589	-
FGDP	-	-	5.422617	-
Obs	1008	324	684	-

From Table 4.1, on average, ROA and NIM of domestic banks are higher than those of foreign banks, suggesting that domestic banks performed better in terms

of profitability than their foreign counterparts during the observed period of 2006-2014. Domestic banks were larger by assets than foreign banks on average as reflected by the higher mean value of SIZE. Meanwhile, lower mean values of AQ and LIQ of foreign banks indicate that their asset quality and liquidity were better than domestic banks. The lower mean value of the variable OPC is also an indication that foreign banks were more efficient in their operations with lower cost to income ratio. Mean of capital adequacy ratio of foreign banks is higher than that of domestic banks and far above the regulatory requirement of 8.5 percent of risk-weighted assets.

4.2 Pearson Correlation

To avoid statistical problem in the models, correlation between independent variables in each model are examined for existence of multicollinearity.

Table 4.2

Correlation between independent variables – All banks

	SIZE	AQ	LIQ	OPC	CAR	GDP	CPI
SIZE	1.000						
AQ	-0.031	1.000					
LIQ	0.330	0.085	1.000				
OPC	0.034	-0.091	0.060	1.000			
CAR	-0.612	-0.020	-0.165	-0.013	1.000		
GDP	-0.017	0.037	-0.009	0.005	0.034	1.000	
CPI	-0.031	0.060	0.027	0.000	0.037	0.348	1.000

Table 4.3

Correlation between independent variables – Domestic banks

	SIZE	AQ	LIQ	OPC	CAR	GDP	CPI
SIZE	1.000						
AQ	-0.165	1.000					
LIQ	-0.389	-0.255	1.000				
OPC	-0.103	0.096	0.076	1.000			
CAR	0.012	0.098	-0.364	-0.144	1.000		
GDP	-0.034	0.069	-0.056	-0.063	0.075	1.000	
CPI	-0.063	0.135	0.017	-0.026	-0.059	0.348	1.000

Table 4.4

Correlation between independent variables – Foreign banks

	SIZE	AQ	LIQ	OPC	CAR	GDP	CPI	TRADE	AGE	FGDP
SIZE	1.000									
AQ	-0.213	1.000								
LIQ	-0.038	0.011	1.000							
OPC	0.022	-0.116	0.051	1.000						
CAR	-0.645	0.036	0.013	-0.003	1.000					
GDP	-0.020	0.026	-0.006	0.009	0.039	1.000				
CPI	-0.035	0.032	0.038	0.001	0.052	0.348	1.000			
TRADE	-0.141	0.075	0.044	0.046	0.054	0.599	0.521	1.000		
AGE	0.196	0.043	-0.399	-0.017	-0.166	-0.019	-0.039	-0.072	1.000	
FGDP	-0.215	0.279	0.129	-0.016	0.018	0.245	0.225	0.309	-0.006	1.000

Table 4.2-4.4 illustrate that independent variables for all models are not highly correlated (none exceeds 0.8), indicating that there is no multicollinearity problem.

4.3 Panel Model

For panel model, the issues of heteroscedasticity, serial correlation or autocorrelation, and non-stationarity of data are matters of concern and therefore, are examined and dealt with as appropriate.

Covariance coefficient method or cluster option for panel is selected in estimation to create standard error estimates robust to heteroscedasticity and serial correlation. In addition, Hausman test is performed to determine whether each model is suited for fixed effect or random effect. The result indicates that random effect is suitable for each model.

4.4 Regression Estimates

Regression results for balanced panel of all observed banks are shown in Table 4.5. The estimations are generally done using OLS method while GLS method through the addition of AR(1) as an independent variable has been adopted to deal with serial correlation in selected models. Taken as a whole, for bank-specific factors, only the variable regulatory capital adequacy ratio (CAR) has a positive and statistically significant effect on ROA. On the other hand, the estimates show that NIM is affected by bank's asset size (SIZE), loan to total assets ratio (LIQ), and operating expenses to operating income (OPC). Both macroeconomic factors of GDP growth and rate of inflation (CPI) are found to have statistically significant impact on NIM. Surprisingly, GDP growth has a converse relationship with NIM, suggesting that banks' profitability as measured by NIM lowers during economic growth period. This is probably due to higher competition in the banking sector during economic growth with banks lowering their rates to attract customers, resulting in a decrease in interest income. In addition, a dummy for type of banks, i.e. domestic or foreign, is added into the analysis. The finding implies that being of domestic or foreign nature has a statistically significant impact on NIM. Different determinants of domestic and foreign banks' profitability are explored further with results as shown in Table 4.6.

Table 4.5

Regression estimates – All banks

Independent variables	All banks			
	ROA		NIM	
	Coefficient	P-value	Coefficient	P-value
Constant	0.078321	0.9609	2.549854	0.0000
SIZE	0.026542	0.7841	-0.057505	0.0003***
AQ	-3.509562	0.3302	0.623293	0.1021
LIQ	0.437238	0.4611	1.703640	0.0002***
OPC	0.004765	0.4140	0.000491	0.0005***
CAR	0.025016	0.0000***	0.000669	0.1537
GDP	-0.005177	0.6936	-0.004834	0.0001***
CPI	0.041934	0.1168	-0.013345	0.0482**
DUMMYTYPE	-0.345610	0.3754	-1.480356	0.0023***
AR(1)			0.907522	0.0000***
Adjusted R-Squared	0.023333		0.758229	
Durbin-Watson	2.145190		2.789382	
Observation	1008		1008	

*, ** and *** indicate significance levels of 10, 5, and 1 percent respectively

Table 4.6

Regression estimates – Domestic banks and Foreign banks

	Domestic banks				Foreign banks			
	ROA		NIM		ROA		NIM	
Independent variables	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	8.417099	0.0163**	8.644443	0.0007***	-0.930989	0.4492	-0.145649	0.9300
SIZE	-0.360222	0.0657*	-0.517777	0.0003***	0.094147	0.3629	-0.142776	0.1352
AQ	-8.412137	0.0643*	4.260043	0.1404	-2.421036	0.5242	0.452681	0.5597
LIQ	-3.940123	0.0238**	1.534334	0.0179**	0.653100	0.1781	1.701919	0.0000***
OPC	-1.003081	0.2074	-0.118883	0.2010	0.008607	0.1763	0.000600	0.6227
CAR	0.081015	0.0000***	0.014672	0.4951	0.023732	0.0000***	0.000571	0.8421
GDP	-0.029032	0.2014	-0.016672	0.0012***	0.010743	0.5765	-0.003572	0.5076
CPI	0.066502	0.0600*	-0.015333	0.3788	0.053210	0.1643	-0.002809	0.8082
TRADE					-0.761278	0.0021***	-0.119383	0.2852
AGE					-0.051239	0.5654	0.445920	0.0255**
FGDP					0.020312	0.1621	0.004731	0.6144
AR(1)							0.804522	0.0000
Adjusted R-Squared	0.279927		0.141288		0.023333		0.883581	
Durbin-Watson	2.103579		1.638673		2.145190		2.695645	
Observation	324		324		684		684	

*, ** and *** indicate significance levels of 10, 5, and 1 percent respectively

Regression estimates for domestic and foreign banks are illustrated in Table 4.6. Overall, domestic and foreign banks in Thailand have certain common profitability determinants, namely liquidity and capital adequacy, while other independent variables seem to affect domestic and foreign banks' profitability differently.

The results indicate that Bank's asset size (SIZE) has a negative and statistically significant influence on domestic banks' ROA and NIM, consistent with the study by Syari (2012). This suggests that despite economies of scale and scope, larger domestic banks may cost more to organize and manage their operations while smaller banks may find it easier to adapt their strategies to accommodate dynamic demand of consumers to make profits. Meanwhile, the findings indicate that asset size does not have a statistically significant impact on ROA and NIM of foreign banks. This may be due to operational restrictions imposed on foreign banks regardless of their size.

Asset Quality (AQ), representing credit risk, as measured by NPL to total loans is found to be insignificant at conventional level of significance to profitability of both domestic and foreign banks. Nonetheless, on a 10 percent level of significance, AQ is found to have a negative impact on domestic banks' ROA, suggesting that high NPL can damage domestic bank's profitability. The indication of a negative relationship between credit risk and profitability is supported by the study by Dinh (2013) that finds a negative and significant link between credit risk and NIM of Vietnamese domestic banks.

Liquidity risk factor (LIQ) represented by net loans to total assets, has a positive and significant impact on NIM for both domestic and foreign banks as expected, implying that banks with a certain level of liquidity risk can be profitable while maintaining high liquid assets can be banks' opportunity costs. On the contrary, the results show a negative and significant effect of LIQ on domestic banks' ROA, reflecting that more liquid domestic banks are more likely to produce higher return on assets. This is contrary to the findings of Frederick (2015) and Muda et al. (2013) that indicate no significant relationship between liquidity risk and performance of domestic commercial banks in Uganda and Islamic banks in Malaysia respectively.

Operating costs variable (OPC) is found to have insignificant impact on profitability of domestic and foreign banks. This finding contrasts with the quantitative study by Anawatchkul (2010) that concludes that cost to income ratio is one of the factors that significantly and positively relate to profitability of Thai listed commercial banks..

Capital adequacy ratio (CAR) variable, calculated as bank's regulatory capital to risk-weighted assets, has a statistically significant and positive impact on profitability (ROA) of domestic and foreign banks. The finding of a positive relationship is as expected and is supported by the majority of the literature. The positive effect may be due to capital adequacy being the basis on which regulatory limit on various business activities are calculated and imposed. This means that the higher a bank's CAR is, the more business activities it can undertake and hence, the more likely it can produce returns. Enhanced customer confidence in better-capitalised banks may also help attract more businesses.

For macroeconomic factors, the findings indicate that GDP growth significantly and negatively affect NIM of domestic banks. This differs from the conclusion of Wong et al. (2007) that banks would be able to charge higher rates and earn more profits in good times. Heightened competition to offer more loans may put pressure on banks' profits despite better economic condition. Meanwhile, inflation or growth in consumer price index (variable CPI) is shown to have a positive impact on domestic banks' ROA (at 10 percent significance level). Higher inflation could induce higher interest rates, which may prompt an increase in banks' income.

Regression estimates in Table 4.6 indicate that multinational variable of TRADE, which represents growth in value of imports and exports between Thailand and the foreign bank's home country, has a significant and negative impact on foreign banks' ROA. This seems to suggest that setting up an overseas operation in a country with an increasing trade relationship does not necessarily enhance foreign bank's profitability. Nonetheless, this result may be because while most foreign banks target wholesale customers, their customers may be concentrated in specific industry and the overall trade value may not be reflective of this character. On the other hand, the results find that the length of time a foreign bank has operated in Thailand (AGE) has

a significant and positive influence on foreign banks' profitability. This outcome suggests that experience and goodwill that a foreign bank accumulates over time in operation may lead to greater profitability, reflecting the possibility for foreign bank to expand and increase profits over time in spite of certain operational limitations that foreign banks are subject to. This result appears to differ from the study by Dinh (2013) that finds no significant impact of experience of foreign bank in Vietnam on their performance. With regard to another multinational factor, GDP growth in the foreign bank's home country (FGDP) is found to be statistically insignificant to foreign bank's performance.

Lag effects for a period of 6 months or 2 quarters of variables are explored further with regression results in Table 4.7-4.8.

Models with lag effects:

All Banks

(7) $$ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it-2} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \beta_8 TYPE + \varepsilon_{it}$$

(8) $$NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \beta_8 TYPE + \varepsilon_{it}$$

Domestic Banks

(9) $$ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it-2} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \varepsilon_{it}$$

(10) $$NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it-2} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \varepsilon_{it}$$

Foreign Banks

(11) $ROA = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it-2} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \beta_8 TRADE_{it-2} + \beta_9 AGE_{it} + \beta_{10} FGDP_{it-2} + \varepsilon_{it}$

(12) $NIM = \alpha_i + \beta_1 SIZE_{it} + \beta_2 AQ_{it-2} + \beta_3 LI_{it-2} + \beta_4 OPC_{it-2} + \beta_5 CAR_{it-2} + \beta_6 GDP_{it-2} + \beta_7 CPI_{it-2} + \beta_8 TRADE_{it-2} + \beta_9 AGE_{it} + \beta_{10} FGDP_{it-2} + \varepsilon_{it}$

Table 4.7

Regression estimates with lag effects – All banks

	All banks			
	ROA		NIM	
Independent variables	Coefficient	P-value	Coefficient	P-value
Constant	-0.4817	0.7834	8.4922	0.0000***
SIZE	0.0566	0.5979	-0.4806	0.0000***
AQ_{t-2}	-2.0277	0.4359	1.3212	0.0936*
LIQ_{t-2}	0.7324	0.2415	1.2359	0.3262
OPC_{t-2}	-0.0054	0.2146	0.0016	0.5928
CAR_{t-2}	0.0213	0.0017**	0.0021	0.6387
GDP_{t-2}	0.0058	0.6144	-0.0059	0.4545
CPI_{t-2}	-0.0045	0.8425	0.0211	0.4528
DUMMYTYPE	-0.1450	0.7105	-1.833	0.0000***
AR(1)				0.0000***
Adjusted R-Squared	0.011144		0.914149	
Durbin-Watson	2.034139		2.287155	
Observation	1008		1008	

*, ** and *** indicate significance levels of 10, 5, and 1 percent respectively

Table 4.8

Regression estimates with lag effects – Domestic banks and Foreign banks

	Domestic banks				Foreign banks			
	ROA		NIM		ROA		NIM	
Independent variables	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Constant	4.7041	0.0321**	9.4110	0.0000***	-1.1959	0.4251	6.138987	0.2192
SIZE	-0.2546	0.1583	-0.5348	0.0001***	0.0840	0.4791	-0.265211	0.0076***
AQ_{t-2}	-7.4594	0.1942	4.5421	0.2367	-1.1923	0.6492	-0.466425	0.0354**
LIQ_{t-2}	-2.4340	0.0387**	1.0071	0.1612	0.9226	0.1158	1.170168	0.1927
OPC_{t-2}	-0.4292	0.3110	0.0238	0.5977	-0.0030	0.3540	0.000888	0.4402
CAR_{t-2}	0.1491	0.1654	-0.0013	0.9332	0.0184	0.0080***	0.004117	0.9614
GDP_{t-2}	-0.0100	0.6009	-0.0084	0.0179**	0.0173	0.3179	-0.006390	0.8111
CPI_{t-2}	-0.0260	0.0577*	-0.0262	0.3788	0.0320	0.3779	0.039602	0.8642
$TRADE_{t-2}$					-0.5491	0.1416	-0.182618	0.6895
AGE					-1.1959	0.8713	-0.318666	0.1681
$FGDP_{t-2}$					0.0840	0.6766	0.019650	0.4322
AR(1)								0.0000***
Adjusted R-Squared	0.118106		0.144969		0.007572		0.872706	
Durbin-Watson	2.091789		1.674801		2.044296		2.639121	
Observation	324		324		684		684	

*, ** and *** indicate significance levels of 10, 5, and 1 percent respectively

From Table 4.7-4.8, the regression results of models with lag effects indicate that some variables may have a delayed effect on a bank's profitability. CAR_{t-2} remains statistically significant to profitability of all banks while LIQ_{t-2} and GDP_{t-2} remain statistically significant to domestic banks' profitability, suggesting that capital situation of a bank, liquidity risk and condition of the economy may still affect bank performance two quarters later. In contrast to the findings in Table 4.6, the lagged variable AQ_{t-2} is found to have a significant and negative effect on foreign banks' NIM, implying that poor asset quality adversely affects profitability of foreign banks two quarters later.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This study aims to identify determinants of performance of foreign banks in Thailand in comparison with domestic banks, using a balanced panel data of banks operating in Thailand over the entire period from the first quarter of 2006 to the last quarter of 2014. A total of 28 banks in Thailand are included in this study: 9 domestic banks and 19 foreign banks. This paper assesses bank-specific and macroeconomic factors for all banks as well as additional multinational factors specific to foreign banks, on their impacts on banks' performance as measured by profitability indicators, namely return on assets (ROA) and net interest margin (NIM). Type of bank (domestic and foreign) dummy variable is included to examine if being of different types has an effect on their profitability. Additionally, lag effects of variables for a period of 1 year or 4 quarters is explored in comparison with models with no lag.

Descriptive statistics of the data show that on average domestic banks in Thailand are larger and more profitable than foreign banks, while foreign banks are far more cost-efficient as indicated by the means of cost to income ratio. Overall, foreign banks also appear to be more liquid, hold better quality assets and has higher capital adequacy ratio than domestic banks.

When domestic and foreign banks are examined as a whole, the findings indicate significant and positive impacts of net loans to total assets, cost-to-income ratio, capital adequacy ratio, and inflation rate on a bank's profitability. Meanwhile, profitability appears to be negatively and significantly affected by asset size and GDP growth while the results find no significant relationship between asset quality and profitability of a bank. The added bank type dummy is also found to have a statistically significant effect on NIM, suggesting that profitability of a bank may be affected by whether it is a domestic or foreign bank.

Separate regression estimates of the two subgroups of domestic banks and foreign banks indicate statistically significant and negative influence of asset size and GDP growth on domestic banks' performance and a positive association of capital adequacy with domestic banks' profitability. While liquidity risk appears to be significant to profitability of domestic banks, the outcomes suggest a negative effect on ROA, but a positive effect on NIM. For foreign banks, significant and positive performance determinants are liquidity risk, cost-to-income ratio, capital adequacy ratio, and the length of time the bank has operated in Thailand, whereas trade relationship between home country and Thailand is identified as a significant and negative determinant of foreign banks' profitability. Moreover, while not significant at the conventional level of significance, asset size is found to be significant at 10 percent significance level and, similar to the case of domestic banks, has negative impact on foreign banks' profitability.

Results of regression with lag effects for a six-month-period suggest that liquidity, GDP and inflation figures of six months earlier are statistically significant to profitability of domestic banks. Regarding potential determinants of foreign bank performance, multinational factors do not appear to have a lagged effect on foreign bank's profitability.

5.2 Recommendations

Empirical results of this study may benefit the management of banks operating in Thailand as well as to policymakers, identifying factors that significantly affect bank performance. Liquidity risk factor and capital adequacy are identified as significant determinants of bank performance in most of the models in this study, for both domestic and foreign banks, and significant in the short term (same period) as well as in the longer term (for the following two quarters). Therefore, effective capital and liquidity risk management are critical issues in managing a bank and are essential for profitability of both domestic and foreign banks alike. Moreover, the findings suggest that larger banks do not necessarily lead to greater profitability and may cost more to manage. Hence, the bank management should decide on appropriate size of

operations to suit their strategies and the nature of their businesses, taking into account relevant factors and context, rather than simply trying to increase their size. Asset quality is also an issue for foreign banks to monitor as it may have an effect on their performance over time. As for macroeconomic factors, a domestic bank should be managed in a way that can withstand changes in economic conditions and their competitiveness should be enhanced to take advantage of opportunity in good times and to be able to profit even in heightened competition.

Future study on this topic may explore other factors that may potentially determine banks' profitability. In particular, multinational factors for foreign banks should be explored in further details. The greater role of foreign banks and the performance of new foreign entrants after 2014 as well as the impact of the ASEAN Economic Community are also aspects that can be the focus of future study.

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