

Profitability Condition with Stylized Fact of Banking Industries in Indonesia, Malaysia and Thailand

Helma Malini^{1*}

¹ Universitas Tanjungpura, Pontianak, Indonesia

Abstract

The survival of banking industries is determined by many factor including profitability earn during the years. Therefore, this study investigates factors affecting profitability of banks in ASEAN. This study uses 10 banks with the largest assets in Indonesia, Malaysia, and Thailand with sample studies of 30 banks in ASEAN with 10 years of operationalization duration. Return on assets (ROA) is the dependent variable and the independent variables used are non-performing loans (NPL), capital adequacy ratios (CAR), total assets (Size), loan-to-deposit ratio (LDR), domestic product growth gross (GDP growth), inflation, interest rates and exchange rates.

Data is processed using panel data regression with the Cochrance Orcutt method of the Common and Fixed Effect Model with the combination of stylized facts among each country. The results of this study are varied among countries. In Indonesia only NPLs have a significant significance of ROA, which is a significant negative. In Malaysia, only the exchange rate is significant to ROA, which is a significant negative. In Thailand, only NPI has a significant effect on ROA, which is a significant negative. Overall, in Southeast Asia, only NPLs, interest rates and exchange rates significantly affect ROA, which is a significant negative. In other independent variables, it does not have a significant effect on ROA.

Keywords: *Capital adequacy ratio (CAR), Non-performing Loans (NPL), Profitability, Return on Assets (ROA), Total Assets (SIZE).*

1. Introduction

The world is currently experiencing an era of globalization, an era filled with international integration processes that occur due to the exchange of views, products, thoughts, and other aspects of culture. One of the effects of globalization is the open trade between nations and the development of increasingly sophisticated information technology. This world trade will certainly affect the economic growth of a country (Weill, et al. 2003; Mongid, 2007; Hamza and Katctouli, 2014; Sufian, 2014).

Economic growth open investment opportunities and integration, however, concern occurs with a question around whether the development contributed toward company's profitability. One of the efforts to achieve profitability, banks implement a variety of strategies to maximize its profits. The profitability of bank refers to the difference between the amount of income from the assets and the expense of the liabilities. In literature, micro and macro determinants affecting bank profitability. Micro variables consist of the accounts in the balance sheet and income statement. Therefore, they are also named as bank-specific variables. On the other hand, macro variables are not linked to the banks internal process, but they have a significant impact on profitability.

In general, size, assets, risk management, cost control, marketable securities and non-performing loans are included in micro variables (Güngör 2007, pp. 42–43;

* Corresponding author. Email address: helma.malini@ekonomi.untan.ac.id

Wibowo, 2012). The macro factors are inflation, interest rate, GDP growth and exchange rate. In the beginning of financial integration of the ASEAN Economic Community (MEA) by 2020, banks in ASEAN must ensure the sustainability of the business and enlarge the market share. The larger the market share, the larger the profitability earned by a bank. In the implementation, Banks depends on both equity and debt where the proportion of savings are not allowed to be considered as assets.

This study seeks to analyze profitability condition both from micro and macro perspective. This research helps to fill the literature gap of with previous research that only focusing on profitability variable but failed to focus on the issues of stylized facts (Berger, et al. (2009); Khediri *et al* (2015); Gelos and Roldos, 2004) by examining bank profitability condition from Southeast Asia. This study contributes to the literature by comprehensively examining of banking system in Indonesia, Malaysia and Thailand over the period 2009-2019. Indonesia, Malaysia and Thailand are three countries in South East Asia that includes in emerging market while policy, competition and changing business environment could have an impact on the profitability of banking industry in those countries. This study thus examines and compares the profitability condition between selected banks with stylized fact. For each bank, the aim of comparison is to identify the factors that contributes to based on their countries environment. However for the bank itself, the study about profitability condition is expected to be a guide for stakeholders, investors and government on the level of performance of their banking industry.

2. Literature Review

According to Abreu and Mendes (2001) capital has positive impact towards banks profitability by using Capital Adequacy Ratio as variables for European Union countries by using regression where interest and profitability becoming dependent variables. However, capital is not merely the only variable that determine a bank profitability where Al-Jafari (2014) and Zeitun (2012) stated that macroeconomic variables as one the major determines of banks profitability in Syria by using Inflation and GDP with GMM method. Inflation and economic growth are two mainly variables that affect bank profitability.

A company performance also contributes toward bank profitability's by several variable ratios and the result pointing out that although company's performances in financial report show a huge contribution. However, due to market volatilities, a bank should focus on macro variables such as GDP growth, inflation and income percapita (Alshatti, 2015; Boitan 2015). Internal factors or the Bank-specific variable such as the liquidity, credit risk, operational efficiency, capital adequacy of the banks are also considered in number of studies perspective. In banking industry, it is usually argued that banks have higher degree of credit risks than interest-based banks mainly because of their nature of trade based investment (Norman *et al*, 2015). The ratio of loan provisions to total loans (LLP/TL) is incorporated as an independent variable in the regression analysis as a proxy of credit risk (Goddard *et al* 2004). The coefficient of LLP/TL is expected to be negative because bad loans to reduce bank profitability (Buchory, 2015). Miller and Noulas (1997) suggest that the greater the financial institutions exposure towards high risk loans, the higher would be the accumulation of unpaid loans resulting in a lower profitability where the co-efficient of LLP/TL is expected to be negative because bad loans are likely to decrease profitability. In addition to this, the total cost of a bank can be divided into operating cost and other expenses (Sufian, 2011).

The relationship between the costs to income is related and dependent, since banks should focus on becoming productive and efficient. Gelos and Roldos (2004) and Masood, *et al*. (2011) found a positive impact on cost to income of the Islamic banks, while Ratna, et al. (2013) and Rini (2004) found a negative relation on cost to income performance of the Islamic banks. A study conducted by Berger, et al. (2009);

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Khediri *et al* (2015); Gelos and Roldos (2004) concludes that assets size, risky assets ratio and Islamic banks management efficiency effect found statistically significant on Islamic banks credit risk. A study conducted by Chin and Ito (2007) examined the internal variables and economic environment impact on the performance of Islamic banks where a positive relationship founds between capital adequacy and profitability of Islamic banks.

While most of the research (Berger, et al. (2009); Khediri *et al* (2015); Gelos and Roldos (2004) has highlighted the growth of the financial industry and the determinants of such growth, robust further study is essential for the future potential and growth of the industry. To that effect, there is a strong demand to put the future prospects for the industry's development within the overall context of financial and institutional development especially in the member states of the OIC countries. The expected finding of the study will add new dimension in the South East Asian banking industry.

3. Research Methodology

3.1 Data

The population in this study is all banks listed in the capital markets of Indonesia, Malaysia, and Thailand from 2009 to 2019. Indonesia, Malaysia and Thailand are three countries in South East Asia that includes in emerging market while policy, competition and changing business environment could have an impact on the profitability of banking industry in those countries The sample selection is determined by taking ten banks with the largest assets in each country. The total banking used is 30 banks that have the largest assets in Indonesia, Malaysia, and Thailand where all data are taken from Data stream and Central bank of Indonesia, Malaysia and Thailand.

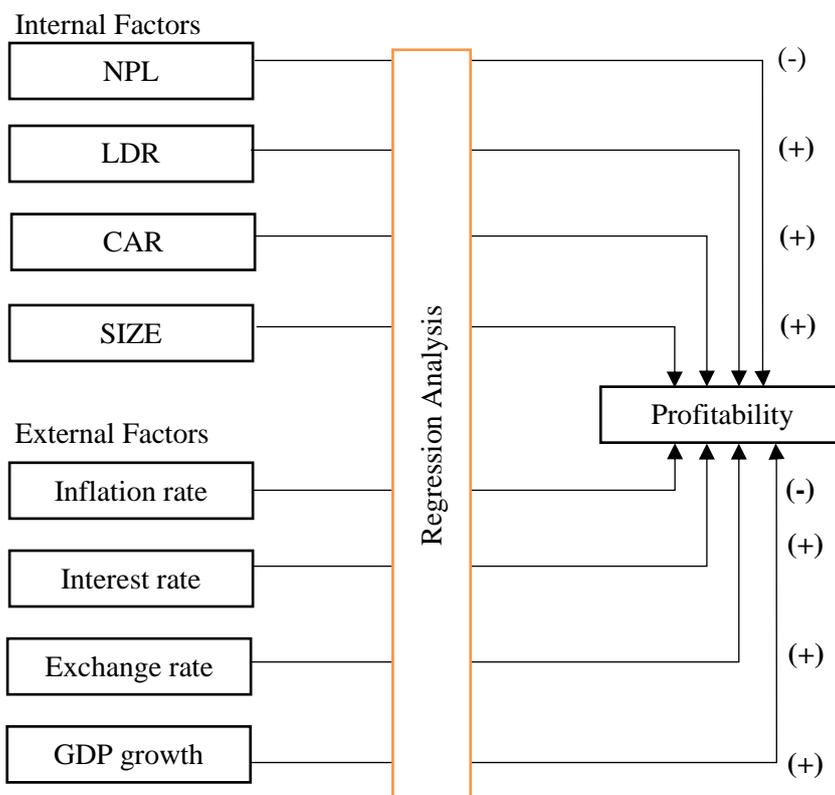


Figure 1 Conceptual Framework

Hypothesis Development

- a. Effect of NPL on banks' profitability
Non-performing loan ratio is a of ratios to measure the credit risk of a bank. This ratio showed bank capabilities in managing non-performing loans provided by banks.
H1: NPL has negative impact on profitability
- b. Effect of LDR on banks' profitability
Liquidity risk is the ability of banks to fulfill its obligations without disrupting financial condition of the bank.
H2: LDR has positive impact on profitability
- c. Effect of CAR on banks' profitability
Capital adequacy is an essential component in bank business to accommodate the risk of loss.
H3: CAR has positive impact on profitability
- d. Effect of Size on Banks' profitability
The size of banks can be seen from the total assets owned by the company. The greater the assets owned by a bank, the greater the size of the company.
H4: Size has positive impact on profitability
- e. Effect of Inflation on Banks' profitability
High inflation will disrupt the function of money, especially to the value of savings.
H5: Inflation has negative impact on profitability
- f. Effect of Interest rate on Banks' profitability
Interest rate is the amount of interest paid per unit time. In other words, consumers have to pay for opportunities to borrow money.
H6: Interest rate has positive impact on profitability
- g. Effect of Exchange rate on Banks' profitability
Exchange rates affect banks in term of decreasing profitability if the exchange rate for 1US \$ increases because the costs incurred will be greater.
H7: Exchange rate has positive impact on profitability
- h. Effect of GDP growth on Banks' profitability
Gross Domestic Product (GDP) reflects the activities of the population in a country in producing goods in a certain period. The linkage of GDP with the banking world is where GDP is related to saving.
H8: GDP growth has positive impact on profitability

3.2 Research Variables

3.2.1 Dependent Variable

Dependent variables can be defined as variables that measure the effect of the independent variables on the test units (Malhotra, 2014). This research chooses ROA and dependent variable since it is represents bank assets particularly from third party funding.

$$\text{Return on Asset (ROA)} = \frac{\text{Earning Before Tax}}{\text{Total Asset}} \times 100\% \quad (1)$$

3.2.2 Independent Variable

Independent variable is variable or alternative that are manipulated whose effect is measured and compared (Malhotra, 2014). Independent variables in this research:

Table 1 Independent Variables

Variables	Formula of ratio
Non-performing loan	(Non-performing loan/Total Loan) x 100%
Capital Adequacy Ratio	(Bank Capital/ Risk Weighted Assets) x 100%
Loan to Deposit Ratio	(Amount of credit granted/ Third party funds) x 100%
Size	Natural Logarithm of total asset
Inflation Rate	Consumer Price Index
Interest Rate	Deposit interest rate
Exchange Rate	Natural Logarithm of exchange rate (Indirect Quote)
GDP growth	(GDPt-GDPt-1)/GDPt-1)

3.3 Analysis Methods

According to the objective and the data used in this research, multiple regressions is used in this study. The multiple regressions enable the author to determine the simultaneous effect of several independent variables on the dependent variable using the least square model (Newbold, Carlson, & Thorne, 2003). First, to check the data distribution, the classic hypothesis analysis is also performed. These steps are done to fulfill the linear assumption in multiple regression analyzes to avoid infringement of those assumptions and to obtain the best linear unbiased estimator (BLUE). Several tools used in this study are Microsoft Excel 2010, E-views 9.0 with a 95 percent confidence interval. The analytical measures are described as follows:

1. Descriptive Statistics

The descriptive statistics are used to describe the mean, standard deviation, maximum, and minimum values of the data. This study helps the author to visualize the raw data in a meaningful way by summarizing the data. The writer can therefore define the variance and error in the data and minimize the frequency of the question of sample distribution.

2. Model Specification

Multiple regression analysis is a simple regression extension that allows multiple independent variables to estimate a statistical dependent variable (Zikmund, Babin, Carr, & Griffin, 2010). This study uses (Gujarati, 2003) methodology to find out regression coefficients and other statistical results by using multiple least square on panel data. The best model among the Common Effect Model, Fixed Effect Model, and Random Effect Model will be evaluated and compared to find the most effective model for estimating the outcome of this study. To further validate our results, random effect and fixed effect model testing have also been used. The econometric model under study is as follows:

$$Y_{it} = \alpha + \beta_1.X1_{it} + \beta_2.X2_{it} + \beta_3.X3_{it} + \beta_4.X4_{it} + \beta_5.X5_{it} + \beta_6.X6_{it} + \beta_7.X7_{it} + \beta_8.X8_{it} + \epsilon_{it} \quad (2)$$

Whereas:

- Y = ROA
- X1 = NPL
- X2 = CAR
- X3 = Logarithm of Total Asset
- X4 = LDR
- X5 = GDP Growth
- X6 = Inflation Rate
- X7 = Deposit Rate
- X8 = Exchange rate
- i = Each Firm
- t = Each Period (year)

The model could be the difference after the model chosen later will determine i and t of the model as this research will use panel data. The objective of regression on panel data is the same with simple regression. Nonetheless, the result of the intercept

and slope will be different for each entity in a certain period. According to (Widarjono, 2007; Karim. B.K *et al*, 2010) there are several possibilities that will occur due to the assumption of intercepts, slopes, and errors.

Therefore, from all the possibilities, we could conclude the model of regression into these three models:

a. Common Effect Model

This approach is the easiest in the panel data regression model as it integrates all the cross-section and time-series data without tracking the time and cross differences. The Ordinary Least Square (OLS) is the most common approach in this model.

b. Fixed Effect Model

The Fixed Effect Model method assumes that all cross-section intercepts are different while the slopes remain constant. The dummy variable is used in this technique to differentiate each cross data so that the intercept will be different as well.

4. Results and Discussion

Table 2 Descriptive Statistics of Selected Countries in ASEAN

Item	Y	Indonesia	Malaysia	Thailand
Mean	0.02	0.02	0.17	15.08
Median	0.02	0.02	0.17	13.39
Maximum	0.05	0.04	0.25	20.91
Minimum	0.001	0.004	0.11	10.98
Std. Dev.	0.01	0.01	0.03	3.20
Skewness	0.24	0.05	0.32	0.44
Kurtosis	2.22	2.20	2.31	1.52
Sum	2.62	2.26	17.9	1508
Sum Sq. Dev.	0.01	0.01	0.10	1013
Observations	100	100	100	100

Source: Eviews 9.0 (Processed Data)

Based on the table 2 the number of total observations is 100 with 30 cross section data and 11-year period. The dependent variable Y represents return on asset (ROA) of a bank asset from the accumulation of bank asset from 2009-2019 and we regress the number with minimum and maximum value by 0.001 and 0.052. It means the standard deviation of the companies' return on asset has minimum value by 0.001 point, and maximum value by 0.052 point. Indonesia has the minimum value by 0.004 and maximum value by 0.047. It means the data have a small range. In addition, the skewness and kurtosis of NPL show that sample is normally distributed. Which means the level of volatility is quite similar for all cross section.

The second independent variable is Malaysia with the maximum value is 0.253 and minimum value is 0.118. It means the data have small range. For the skewness and kurtosis of CAR shows that overall volatility of the sample is normally distributed, which means the level of volatility is similar. The result shows that the maximum total asset of bank in Malaysia is 20.910 and its minimum is 10.980. The average of total asset is 15.080 while median is slightly lower, 13.390. It means the data were skewed positively.

The fourth is Thailand with maximum value and minimum value is 1.089 and 0.503. The average of LDR is 0.871 while the median is slightly higher, 0.880. It means that data were skewed negatively.

Table 3 Common Effect Model of Indonesia

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.129	0.071	1.814	0.073
X1	-0.387	0.097	-3.973	0.000
X2	0.116	0.035	3.305	0.001
X3	-0.001	0.000	-2.289	0.024
X4	-0.041	0.009	-4.418	0.000
X5	-0.002	0.009	-0.224	0.824
X6	0.131	0.096	1.368	0.175
X7	-0.164	0.092	-1.782	0.078
X8	-0.007	0.008	-0.845	0.401
R-squared	0.470	Mean dependent var		0.026
Adjusted R-squared	0.424	S.D. dependent var		0.011
S.E. of regression	0.009	Akaike info criterion		-6.591
Sum squared resid	0.007	Schwarz criterion		-6.356
Log likelihood	338.531	Hannan-Quinn criter.		-6.496
F-statistic	10.103	Durbin-Watson stat		0.382
Prob(F-statistic)	0			

Table 3 shows that the impact of non-performing loan is incredibly significant toward the return on asset as the probability is lower than p-value (0.05 or 5%). The coefficient of NPL (X1) means every 1 point of change in NPL, there will be 0.387 point of change in ROA on the opposite direction, or by the other word, negative strong relationship. The results of this study indicate that non-performing loans have a negative and significant effect on return on assets in banking companies. The higher the NPL indicates the worse the quality of bank credit which causes the number of problem loans to be higher (Fifit, 2013). The high level of NPLs makes banking companies must bear losses in their operational activities so that it affects the decrease in return on assets. In addition, capital adequacy ratio (X2) has significant effect toward the ROA as the probability is lower than 0.05. The coefficient of CAR means every 1-point change in CAR, there will be 0.116 point of change in ROA on the same direction, or it has positive strong relationship between CAR and ROA. This favourable condition for the bank will contribute significantly to profitability. This capital is used to maintain public trust in the bank's performance. This is reasonable because the banking business is a business that is based on trust. In addition, there are various forms of great risk that may occur to banks, so it can be concluded that the higher the CAR, the higher the Bank ROA.

Beside it, there is negative significant relationship between total asset (X3) toward ROA, it showed by the probability is lower than 5% and the coefficient is negative 0.001 which means, when total asset increases 1 point, the ROA will decrease by 0.001 point. In addition, the coefficient of loan deposit ratio (X4) is -0.041 and the probability is 0.000 which means, loan deposit ratio has negative significant effect toward the ROA, when the LDR increase by 1 point the ROA will decrease 0.041. The high loan to deposit ratio can lead to high credit risk which will result in a decrease in company profitability. It also shows that the GDP's growth (X5) of Indonesia does not have significant effect toward the ROA of banking industry because the probability is greater than 0.05. The coefficient is -0.002 which means when the GDP growth increase 1 point, the ROA of bank will decrease 0.002. In conclusion, there is weak effect of GDP growth toward ROA.

Based on the above result, we can summarize the stylized facts for Indonesia Banking Industry is that empirical studies show volatilities in financial and trade channels however the impact on financial channels can be analyzed directly and indirectly where the direct impact affects banks in Indonesia with poor asset quality. This problem caused a substantial shift from more risky investment to safer portfolios to other ASEAN countries during the study period. On the contrary, domestic investors shifting their investment from Rupiah to be denominated in U.S. Dollar. As a result, bank industry in Indonesia received the lowest revenue in 2017-2019 (Bank Indonesia Fact Sheet, 2019).

Table 4 Common Effect Model of Malaysia

Common Effect Model of Malaysia				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068	0.007	10.102	0.000
X1	-0.089	0.039	-2.312	0.023
X2	0.068	0.019	3.579	0.001
X3	-0.005	0.001	-8.263	0.000
X4	0.009	0.005	1.716	0.090
X5	-0.002	0.003	-0.575	0.567
X6	0.015	0.040	0.364	0.717
X7	0.040	0.139	0.290	0.772
X8	-0.011	0.003	-3.178	0.002
R-squared	0.536	Mean dependent var		0.014
Adjusted R-squared	0.495	S.D. dependent var		0.005
S.E. of regression	0.003	Akaike info criterion		-8.390
Sum squared resid	0.001	Schwarz criterion		-8.155
Log likelihood	428.49	Hannan-Quinn criter.		-8.295
F-statistic	13.131	Durbin-Watson stat		0.443
Prob(F-statistic)	0			

Table 4 shows that the impact of non-performing loan is incredibly significant toward the return on asset as the probability is lower than p-value (0.05 or 5%). The coefficient of NPL (X1) where 1 point of change in NPL, resulting into 0.089 point of change in ROA on the opposite direction, or by the other word, negative strong relationship. The results of this study indicate that non-performing loans have a negative and significant effect on return on assets in banking companies. The higher the NPL indicates the worse the quality of bank credit which causes the number of problem loans to be higher (Fifit, 2013). The high level of NPLs affecting bank must bear losses in their operational activities so that it affects the decrease in return on assets.

In addition, capital adequacy ratio (X2) has significant effect toward the ROA as the probability is lower than 0.05. The coefficient of CAR means every 1-point change in CAR, there will be 0.068 point of change in ROA on the same direction, or it has positive strong relationship between CAR and ROA. This favourable condition for the bank will contribute significantly to profitability. In addition, there are various forms of great risk that may occur to banks, so it can be concluded that the higher the CAR, the higher the Bank ROA.

In addition, the coefficient of loan deposit ratio (X4) is 0.009 and the probability is 0.090 which means lower than 10%. Conclusion, loan deposit ratio has positive significant effect toward the ROA, when the LDR increase by 1 point the ROA will increase 0.009. An increase in LDR means an increase in interest income earned by banks. An increasing LDR means increased in profitability which indicates greater

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profit growth. It also shows that the GDP's growth (X5) of Malaysia doesn't have significant effect toward the ROA of banking industry because the probability is greater than 0.10. The coefficient is -0.002 which means when the GDP growth increase 1 point, the ROA of bank will decrease 0.002. In conclusion, Inflation does not have effect on ROA.

The stylized facts for Malaysia banking industry relate with the implementation of dual banking system in Malaysia where it has its own benefit and weaknesses. One of the benefits is that Malaysia government have two platforms for mobilizing fund from public including from the conventional sector where both works hand in hand to improve the capability of financing for the national economy. The characteristics of risk sharing in *Shariah* banks focus on transaction fairness, ethics investment and avoiding speculative activities in finance transaction that can be achieving by providing banking products that accordance with *Shariah* principal norm. On the other side, risk sharing principle offer solution with its own problem particularly relates with Malaysia socio economic problems that are changing day by day.

This study found that profitability in Malaysia banking industries derives from GDP growth for investor. However, this result should be examined further on whether GDP growth translated into government intervention since the implementation of dual banking system in Malaysia will make distinctive line between conventional and *Shariah* banking to prevent trade off. Trade off in dual banking system banking is something that will significantly occur since the integration between regulation and religion that leads to the mismatch in implementing banking policy Malaysia (Bank Negara Malaysia Fact Sheet, 2019).

Table 5 Common Effect Model of Thailand

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.086	0.090	0.959	0.340
X1	-0.109	0.029	-3.710	0.000
X2	0.032	0.025	1.288	0.201
X3	0.000	0.001	0.103	0.918
X4	0.005	0.005	0.975	0.332
X5	-0.006	0.011	-0.495	0.622
X6	0.012	0.079	0.158	0.875
X7	-0.194	0.182	-1.062	0.291
X8	-0.022	0.025	-0.870	0.387
R-squared	0.190	Mean dependent var		0.012
Adjusted R-squared	0.119	S.D. dependent var		0.005
S.E. of regression	0.005	Akaike info criterion		-7.796
Sum squared resid	0.002	Schwarz criterion		-7.562
Log likelihood	398.806	Hannan-Quinn criter.		-7.701
F-statistic	2.671	Durbin-Watson stat		0.403
Prob(F-statistic)	0.011			

Source: Eviews9.0 (Processed Data)

Table 5 shows that the impact of non-performing loan is very significant toward the return on asset as the probability is lower than p-value (0.05 or 5%). The coefficient of NPL (X1) means every 1 point of change in NPL, there will be 0.109 point of change

in ROA on the opposite direction, or by the other word, negative strong relationship. The results of this study indicate that non-performing loans have a negative and significant effect on return on assets in banking companies. The higher the NPL indicates the worse the quality of bank credit which causes the number of problem loans to be higher (Fifit, 2013). The high level of NPLs makes banking companies must bear losses in their operational activities so that it affects the decrease in return on assets.

In addition, capital adequacy ratio (X2) has no significant effect toward the ROA, as the probability is higher than 0.10. The coefficient of CAR means every 1-point change in CAR, there will be 0.032 point of change in ROA on the same direction, or it has no significant effect of CAR toward ROA. Beside it, there is no significant relationship between total asset (X3) toward ROA, it showed by the probability is higher than 10% and the coefficient is negative 0.001 which means, when total asset increases 1 point, the ROA will decrease by 0.0001 point. The sixth variable, Inflation, does not have significant effect toward the ROA of banking Industry because the probability is greater than 0.10, and the coefficient is 0.012. In conclusion, Inflation does not have effect the ROA. For the seventh variable which is deposit rate, has probability value that is greater than 10%, it means there are no significant effects of deposit rate toward ROA. Beside it, the coefficient is -0.194 which means when the deposit rate increase, the ROA will decrease 0.194. Exchange rate as represented by X8, does not have significant effect on ROA, because the probability value is lower than 0.05. The coefficient value is -0.022 which mean when exchange rate increases by 1 point, the ROA will decrease 0.022 point.

In Thailand's stylized fact, domestic banks dominate the domestic market share in Thailand through the approach of adding networks with local customers. However, after the financial crisis in Asian countries in 1997, the government opened up opportunities for foreign banks to operate in Thailand and the infiltration of foreign banks was getting stronger when foreign banks were able to control a majority stake in domestic banks. Post-2000, foreign banks began to expand by offering a variety of financial services so that competition was tighter and banking product offerings were increasingly focused on increasing the number of customers rather than maintaining quality and risk.

Therefore, the increasing competition between foreign banks and local banks in Thailand made the government through the central bank in Thailand ask the banking industry in Thailand to focus on risk management in order to increase a broader understanding of the risks involved in the financial and banking sector and encourage action. together to develop and strengthen prudential risk management standards for the stability of the Thai financial system. Meanwhile for transparency and disclosure, the Bank of Thailand has asked financial institutions to disclose the necessary information along the same lines as accounting standards. In addition, they must disclose their NPL and related loans on a monthly basis. The Bank of Thailand has also shifted its supervisory emphasis to focus more on risk and not on verification of transactions. Examiners specialize through effective scoping and scoping planning to match the size and activity of financial institutions and to concentrate on areas exposing financial institutions to the greatest levels of risk (Bank of Thailand Fact Sheet, 2019)

Table 6 Fixed Effect Model of Indonesia

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.155	0.046	3.341	0.001
X1	-0.241	0.089	-2.717	0.008
X2	0.020	0.029	0.702	0.485
X3	0.000	0.003	0.130	0.897
X4	0.006	0.011	0.608	0.545

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X5	-0.001	0.005	-0.139	0.890
X6	0.018	0.058	0.312	0.756
X7	-0.075	0.083	-0.900	0.371
X8	-0.014	0.009	-1.547	0.126

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.864	Mean dependent var	0.026
Adjusted R-squared	0.836	S.D. dependent var	0.011
S.E. of regression	0.005	Akaike info criterion	-7.770
Sum squared resid	0.002	Schwarz criterion	-7.301
Log likelihood	406.491	Hannan-Quinn criter.	-7.580
F-statistic	30.633	Durbin-Watson stat	0.990
Prob(F-statistic)	0		

Fixed Effect Model Malaysia

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.031	0.020	1.602	0.113
X1	-0.055	0.056	-0.988	0.326
X2	0.016	0.019	0.807	0.422
X3	-0.0002	0.002	-0.133	0.895
X4	-0.001	0.006	-0.205	0.838
X5	0.0002	0.002	0.085	0.933
X6	-0.001	0.027	-0.047	0.963
X7	-0.068	0.147	-0.462	0.645
X8	-0.010	0.003	-3.261	0.002

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.815	Mean dependent var	0.014
Adjusted R-squared	0.776	S.D. dependent var	0.005
S.E. of regression	0.002	Akaike info criterion	-9.127
Sum squared resid	0.000	Schwarz criterion	-8.658
Log likelihood	474.369	Hannan-Quinn criter.	-8.938
F-statistic	21.187	Durbin-Watson stat	1.029
Prob(F-statistic)	0		

Fixed Effect Model Thailand

Variable	Coefficient	Std. Error	t-Stat.	Prob.
C	0.082	0.010	8.129	0.000
X1	-0.109	0.020	-5.459	0.000
X2	0.010	0.013	0.751	0.453
X3	-0.002	0.001	-1.615	0.108
X4	0.005	0.004	1.090	0.277
X5	-0.002	0.002	-1.086	0.278
X6	0.022	0.019	1.179	0.239
X7	-0.133	0.030	-4.375	0.000

X8	-0.010	0.003	-3.716	0.000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.901	Mean dependent var		0.018
Adjusted R-squared	0.887	S.D. dependent var		0.010
S.E. of regression	0.003	Akaike info criterion		-8.470
Sum squared resid	0.003	Schwarz criterion		-8.001
Log likelihood	1308.5	Hannan-Quinn criter.		-8.282
F-statistic	64.561	Durbin-Watson stat		1.055
Prob(F-statistic)	0			

Source: EVIEWS9.0 (Processed Data)

From all variables above, only X1 (non-performing loan) has significant effect toward ROA of banking industry in Indonesia, because only X1 has lower probability value than 10% and the rest of other variable have higher probability value than 10%. When the non-performing loan (X1) increases by 1 point, the ROA will decrease 0.241. According to Fifit (2013), the higher the NPL indicates the worse the quality of bank credit which leads to a higher number of problem loans. The high level of NPLs makes it necessary for banking companies to bear losses in their operational activities, thus affecting the decrease in return on assets.

There are several variables effect ROA positively although they are not significant. They are CAR (X2), total asset (X3), LDR (X4) and Inflation (X6). In another hand, GDP growth (X5), deposit rate (X7) and exchange rate (X8) have weak negative impact toward ROA.

Table 7 F-test (Chow test) of All Samples

Redundant Fixed Effects Tests				
Equation: Untitled				
Test cross-section fixed effects				
Effects Test		Statistic	d.f.	Prob.
Cross-section F		34.3146	-29,262	0.000
Cross-section Chi-square		470.471	29	0.000

Source: EVIEWS9.0 (Processed data)

As shown in the table, the result of the cross-section F probability is lower than p-value ($0.0000 < 0.05$). Therefore, we should reject the null hypothesis, and FEM is better to be applied on this research rather than CEM.

Table 8 Durbin Watson Result

Countries	Indonesia	Malaysia	Thailand	Composite
Durbin Watson	0.990	1.029	1.360	1.055

Source: Eviews9.0 (Processed Data)

To correct the auto correlation problem, the author will carry out the Cochrane-Orcutt procedure, which is expressed as ρ (rho). The repetition method in Cochrane-Orcutt is performed by running a regression equation with AR (1) or up to AR (2), to eliminate the correlation between errors.

Table 9 Cochrane Orcutt of All Countries

Dependent Variable: Y				
Method: Panel Least Squares				
Date: 01/16/20 Time: 15:10				
Sample (adjusted): 2010 2018				
Periods included: 9				
Cross-sections included: 30				
Total panel (balanced) observations: 270				
Convergence achieved after 9 iterations				
Variable	Coefficient	Std. Error	t-Stat	Prob.
C	0.088	0.017	5.158	0.000
X1	-0.121	0.029	-4.114	0.000
X2	0.002	0.014	0.157	0.876
X3	-0.002	0.002	-1.345	0.180
X4	0.001	0.005	0.239	0.811
X5	-0.001	0.002	-0.478	0.633
X6	0.001	0.016	0.040	0.968
X7	-0.089	0.033	-2.674	0.008
X8	-0.008	0.003	-2.541	0.012
AR(1)	0.439	0.056	7.790	0.000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.932	Mean dependent var	0.018	
Adjusted R-squared	0.920	S.D. dependent var	0.010	
S.E. of regression	0.003	Akaike info criterion	-8.80	
Sum squared resid	0.002	Schwarz criterion	-8.29	
Log likelihood	1227.636	Hannan-Quinn criter.	-8.60	
F-statistic	82.858	Durbin-Watson stat	1.938	
Prob(F-statistic)	0			
Inverted AR Roots	0.44			

Source: EVIEWS 9.0 (Processed Data)

For Indonesia, Malaysia and Thailand data on this research consist 8 independent variables and 100 observation, thus, the value of $dL = 1.5060$ and $dU = 1.8489$ (the value of $4 - 1.8489 = 2.1511$). The requirement is that the value of Durbin Watson should be $dL < d < (4 - du)$ to have no autocorrelation. Therefore, there is no autocorrelation problem for each country research because it fulfills the requirement of Durbin Watson value $1.5060 < d < 2.1511$. In banks in the South Asia emerging market, non-performing loans have a significant negative impact on ROA; this can be seen from the exceedingly small probability value and the value of the coefficient that is negative.

A high NPL value will cause a decline in profitability of a bank. If the NPL rises by 1 point, the ROA value will decrease by 0.121 points. Capital adequacy ratio has a positive impact on bank ROA but capital adequacy ratio also does not have a significant impact on changes in bank profitability in composite countries, because the probability value is more than 10%. For total assets, the results obtained in this study have the same results as the NPL, which has a negative impact on the bank's profitability, although not significant. If total assets increase by 1 point, ROA will decrease by 0.002 points. Loan to deposit ratio also has a negative impact on ROA, but not significant, this is

evident from the probability value of more than 10%. If the LDR goes up by 1 point, ROA will decrease by 0.001 point.

In GDP growth shows that there is no significant impact on bank ROA, although in fact GDP growth has a negative relationship to ROA, if GDP rises by 1 point then ROA will decrease by 0.001 point. Inflation also has an insignificant impact on bank ROA in South Asia; however, inflation has a positive impact on ROA, if inflation rises by 1 point, ROA will rise by 0.001 point. The overall deposit rate in Southeast Asia has a positive impact on bank profitability; this is evident from the probability value of less than 5%. In addition, the value of the inflation coefficient is -0.089 which means that if inflation rises by 1 point, ROA will decrease by 0.089 points. The exchange rate also has the same results as the deposit rate, which has a significant negative impact, where the probability is less than 5%. In addition, the coefficient of the exchange rate is -0.008 which means that if the exchange rate rises by 1 point, the profitability of banks will decrease by 0.008 points.

5. Conclusion

This research provides a various model of estimating the panel data of the banking industry in Indonesia, Malaysia, and Thailand by using common effect model and fixed effect model. After several tests, fixed effect model with *Cochrance Orcutt* method is chosen as the final method. The result show that banks in Indonesia experience negative NPL toward ROA. While, banks in Malaysia exchange rate shown negative significant effect toward ROA. On the other hand, banks in Thailand experience negative NPL on bank profitability. Based on the result, banking industry should maintain their capital adequacy ratio in order to fulfill the ratio from central bank in each countries.

On the other hand, banking industries must carefully execute their NPL (non performing loans) to have a balanced profitability and liquidity while focusing on ratio of loans to achieve productivity in generating profits. For macroeconomic variables, banking industries in Indonesia, Malaysia, Thailand should focus on the particular variables with huge influence toward banking industries; inflation, GDP, interest rate and exchange rate since those variables have high interconnectedness to each other.

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