

PROFITABILITY OF LOCAL AND FOREIGN BANKS
IN MALAYSIA: INTERNAL AND MACROECONOMIC
PERSPECTIVE

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A research project submitted in partial fulfillment of the
requirement for the degree of

BACHELOR OF BUSINESS ADMINISTRATION (HONS)
BANKING AND FINANCE

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE
DEPARTMENT OF FINANCE

APRIL 2018

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DECLARATION

We hereby declare that:

- (1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.
- (2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
- (3) Equal contribution has been made by each group member in completing the research project.
- (4) The word count of this research report is 24,803 words.

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Date: 11th APRIL 2018

ACKNOWLEDGEMENT

We are very grateful that we have completed our final year project by the assistance of various authorities. Therefore, we would like to express our thankful and appreciation to these authorities.

Firstly, we would like to express our sincere gratefulness to our greatest supervisor, Ms. Vikniswari. She guided us all along the way of this research. She often showed us to the right path when we faced difficulties. The guideline, direction and comment have clearly brought us to the right path; let us able to complete the research project perfectly. We also would like to thank those lecturers and tutors who have share their knowledge with us.

Besides, we would like to thank our friends, classmates and family who always give us their biggest support on the way of completing the final year project. However, the most important matter is teamwork. Through a good teamwork, we have successfully completed the research project.

Lastly, we would like to thank to other all authorities who have supported and help us at back in completing this research project. The amount of mentorship, encouragement and support that we have received while conducting this research has been great. All the assistances we will keep them deeply in our heart.

DEDICATION

First of all, we would like to dedicate to our research paper's supervisor, Ms. Vikniswari, who have leaded and supported us throughout the process of completing this research paper. Besides, thanks for her patient on guiding us in the process of completing the research paper.

Moreover, we would like to dedicate this successful research paper to our parents and friends as an appreciation to them in giving support to us throughout the whole process in completing this research paper. They are the best supporter behind the screen who always lend their hands when we need helps.

Lastly, we would like to dedicate to the future researchers whose have interest to carry out further research and study on this topic. We hope that this research paper will help them in the future.

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LIST OF ABBREVIATIONS

BOD	Female Board of Director
LR	Lending Rate
BANK SIZE	Bank Size
ROA	Return on Asset
ROE	Return on Equity
OE	Operating Expenses
IR	Inflation rate
RL	Real Interest Rate
GDP	Gross Domestic Product
ER	Exchange Rate

PREFACE

This research project has been conducted in accordance to the need of accomplish the research methodology and project subject by our university within the final year of Bachelor of Business Administration (HONS) Banking and Finance.

This research paper's topic is "Profitability of Local and Foreign Banks: Internal and Macroeconomic Perspective" and is needed to be accomplished within the time given.

Commercial bank's profit is derived from their main business which is offering the financial services to the public. Besides, banks' profitability is important in forecast the occurrence of financial crisis and important in developing a country's economic. Therefore, it is important to determine the banks' profitability. There are both internal and macroeconomic variables that will affect the banks' profitability. Thus, this research is to examine the relationship between the internal and macroeconomic variables with the banks' profitability.

It is hope that this research paper will contribute to the increase of awareness of local and commercial banks' management on how the bank's profitability is affected by the internal and macroeconomic variables. Thus, this may help to provide a better decision making on the risk taking.

ABSTRACT

This research paper is carried out to examine the determinants of local and foreign banks profitability. The internal variables are return on asset, return on equity, operating expenses, lending rate, bank size and female board of directors. Macroeconomic variables are real interest rate, inflation rate, exchange rate and gross domestic product. Seven local commercial banks and eight foreign commercial banks have been chosen to represent the commercial banks in Malaysia. The period of data for this study is from 2007-2016 and is collected on annual basis. Pooled OLS, Unit Root Test, Fixed Effect Model and Random Effect Model analysis are carried out to run the data.

In the findings, all the internal variables except operating expenses show statistically significant to the local banks profitability. All the internal variables except return on equity and operating expenses show statically significant to the foreign banks profitability. In macroeconomic variables, GDP and exchange rate shown significant to the local banks profitability while GDP, exchange rate and inflation rate shown significant to the foreign banks profitability.

Key words: Determinants of Bank's Profitability, Local Commercial Banks, Foreign Commercial Banks, Internal Variables, Macroeconomic Variables, Malaysia

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Bank is a financial institution which provides the financial services and help in developing the country's economy. Therefore, if the bank does not perform well in the market, it will cause the country's economic falls (Omotayo,2016). Based on the research of Deming-Kunt and Detregiache (1999), they mentioned that bank profitability is an important indicator to forecast the financial crises occurs. Therefore, study on the determinate of bank's profitability has become an important issue. This will help the bank to understand more about the current conditions of the banking industry market and beware of the factors that they should consider while making decisions. Moreover, the bank creates new polices for recovery or improvement of their banking system based on their profitability. Moorad Choudhry (2017) said that the biggest challenge that faced by banks in 2017 is to stay engaged with the customer. Therefore, bank sectors improve their services based on the statement stated.

In this chapter, there will be 7 sections to be discussed. All the sections could be qualified as the research overview. These sections are research background, problem statement, research questions, research objective, significant of study, chapter layout and chapter summary. Firstly, the background and net profit of the Malaysia's banking industry will be briefly explained. Next is the problem statement, and continued by research objective, it is about the simple discussion to address out the aim of this study. Moreover, the research question will be the guideline to carry out this research. Thus, the significant of study will help to identify the involvement for

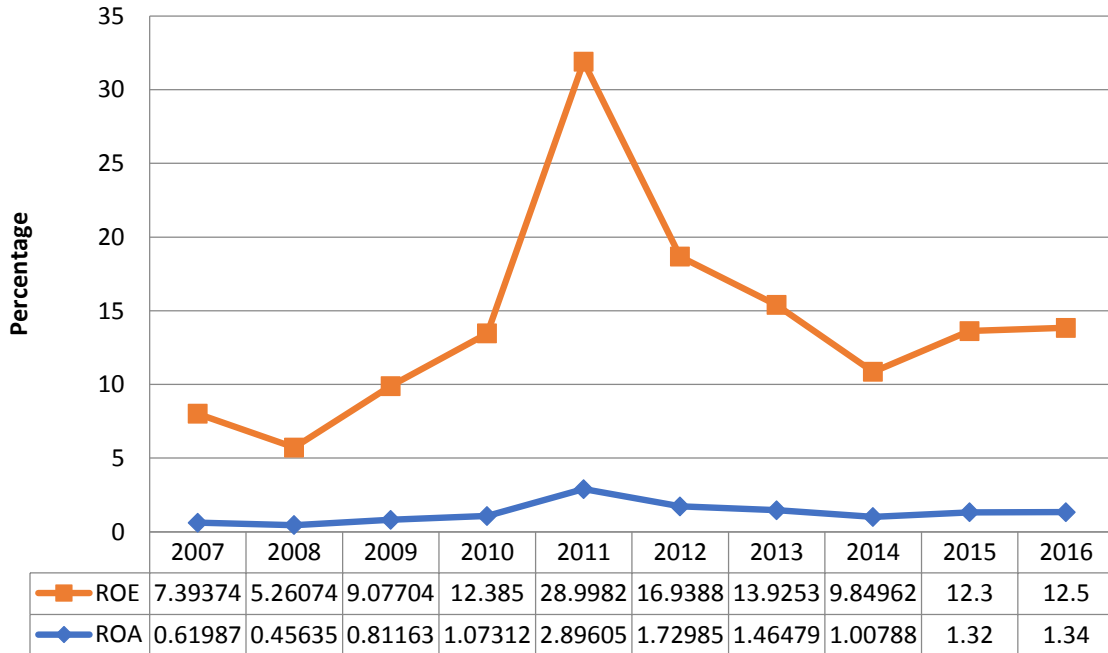
this study. The chapter layout will discuss about the outline all five chapters of this study. Finally, is limitation and conclusion being of the overall study.

1.1 Research Background

Banking industry acts as the main backbone for a country's economic because their performance will gain influences from other sectors. Based on the past 30 years records, the banking industry in Malaysia face downturn during the financial crisis in 1986, 1998 and 2008. The occurrence of this financial crisis is a big challenge for the banking sectors. According to Ivashina,V., & Scharfstein, D. (2010), loan of borrowing during the financial crisis in fourth quarter of 2008 was dropped 79% compare to the second quarter of 2007. In the same year, the Lehman Brothers Berhad in September 2008 was close down due to the bank has too much short-term debt and the industry loans soared. The failure of bank will cause the country's economic become unstable (Omotayo,2016).

According to Abdul Jamal, Abdul Karim and Hamidi (2012), they said that banks will hold those specific characterises, such as well-managed and profitable will encourage the economic growth and will resilience during the recession. Therefore, the banking industry must keep a higher level of profit to enhance the safety and soundness of the financial system. Besides, government, bankers and the investors can get the information about the bank profitability on behalf the bank Return on Assets (ROA) and Return on Equity (ROE) from the bank's annual reports. The fluctuation of the Malaysia's banking industry had been shown at below:

Figure 1.1 Banking Industry Profitability in Malaysia year 2007-2016(%)



The figure above shows the changes of bank profitability from year 2007 to year 2016. Based on the figure, the ROE is increasing from year 2008 and reach peak in year 2011. The reason is because BNM has forced the banks to merger to increase the bank profitability. The result shows that the small-medium bank had benefited the most in this merger programme. Therefore, the banks have the highest equity in the year 2011 (Sufian & Fazilan, 2004). However, it drops dramatically after year 2011 to year 2014, then remain stable until year 2016. Based on the figure, ROA shows not much change, it slightly increases from year 2007 and reach peak in year 2011. After 2011, it drops slightly to year 2014 and remain stable until year 2016.

According to Almazari, A.A. (2014), he said that bank size is one of the internal variables that can affect the bank profitability. Thus, Sulub, S.A. (2014) agreed with his point of view. In his study, he finds out that the size of bank, age of the bank and the leverage of bank will also affect the bank performance and the profitability. The

result in this study also shows that the relationship between bank size and bank profitability is positively related. However, age of the bank and the leverage has a negative relationship with bank profitability. This study has included the Return on Asset (ROA), Return on Equity (ROE) and Bank Size as our internal factors that will affect the bank profitability.

To have clearer pictures about the situation of the bank profitability in the Malaysia's bank industry, we have chosen 8 local banks, 7 foreign banks, totals 15 banks as our target respondent. There are total of 27 banks including 8 local banks and 19 foreign banks. The reason we have selected only 7 foreign banks is because the other foreign banks started to operate in Malaysia after the year 2007. The list is show below:

TABLE 1.1 List of Local Banks in Malaysia:

No	Name of Banks	Ownership
1	Malayan Banking Berhad	Local
2	Public Bank Berhad	Local
3	CIMB Bank Berhad	Local
4	RHB Bank Berhad	Local
5	AmBank Berhad	Local
6	Affin Bank Berhad	Local
7	Alliance Bank Berhad	Local
8	Hong Leong Bank Berhad	Local

TABLE 1.2 List of Foreign Banks in Malaysia:

No	Name of Banks	Ownership
1	Bangkok Bank Berhad	Foreign
2	Bank of China (Malaysia) Berhad	Foreign
3	Citibank Berhad	Foreign
4	HSBC Bank Malaysia Berhad	Foreign
5	OCBC Bank (Malaysia) Berhad	Foreign
6	Standard Chartered Bank Malaysia Berhad	Foreign
7	United Overseas Bank (Malaysia) Bhd	Foreign

1.2 Problem Statement

Financial crisis in 2008 affected many institutions across the world including banking sector in Malaysia. During financial crisis, the loans were defaulted and caused the bank faced loses. Loan default is still happening although the country's economic is in well condition, this is a big challenge for the banks (Ivashina & Scharfstein, 2010). According to The Star (July 2016), Malaysia bank's earnings were under pressure. Bank Negara Malaysia tends to decrease the Overnight Policy Rate (OPR). By reducing this OPR, it will give negative impact to the banks in Malaysia, as their margins will be pressured. The deposit rate offer by bank to customer has been declined (BNM, 2018). Based on the banks annual report, ROE and earning per share are fluctuating throughout the year. Therefore, reducing OPR will affect the bank profitability. Thus, it is important to identify the determinants of bank profitability to improve overall economic activities in Malaysia.

Nowadays, the economy in Malaysia is improving, however not all the banks are earning a high profit. According to The Star (2017), RHB Bank face a lower of total income and higher impairment losses for the loans led to register a 11.4% year-on-year lower net profit for the 1st quarter end on 30 March 2017. Compared to the previous quarter, gross impaired loans were declined slightly to RM3.7bil. The CEO of the RHB bank expected the bank will do well in 2017, but at the end the bank did not declare any dividend for the first quarter.

Moreover, Mercantile Bank CEO, Kazi Masihar Rahaman said that the lack of underperforming banks should merge for improvement of bank quality. Rahaman also said that, when the banks merge together, they able to generate more profit. Otherwise, the bank has to cut down their operating expenses in order to maintain the high profit. Therefore, we will find out both financial factors and macroeconomic factors that will affect the bank profitability in this study. We have chosen the data for financial factors and macroeconomic factors from year 2007 to year 2016. The reason for choosing this time period is because there is financial crisis happen in year 2008, therefore we able to find out whether the banks can survive during the crisis. We are also able to find out how the profitability of the bank changes before and after the financial crisis.

Based on the annual report of RHB Bank in 2016, the bank still facing market risk, credit risk, liquidity risk and so on. The report mentioned that the market risk faced by the bank was low in relation compare with the total Group's operation which is less than 5%. However, the trend showed that market Risk-Weighted Asset (RM' million) only increased RM1,233 million from year 2015 (RM3,614 million) to year 2016 (RM4,847 million). At the same time, RHB Bank also highlights some items in the credit risk, such as Loan, Advances Financing, gross impaired loans Ratio and Average Risk Weight. All these items have increase in the year between 2015 and 2016.

The bank list out that the reasons that the credit risk will increased was due to the oil glut, projects pastored or canceled, company closures or consolidations. These reasons caused the corporate sector adversely impacted by the weaker economy originating. In 2016, the GDP was over by the rising of unemployment rate, economy going downturn and increasing in household debt. These causes heightened the risk and cost of credit lending to the retail market (Chodorow, 2013). Due to the downturn of economy originating, the Loans, Advances and Financing had increased RM2771 million from year 2015 (RM149, 579 million) to year 2016 (RM152, 350 million). The gross Impaired Loans Ratio also increased 0.55% which from 1.88% (year 2015) up to 2.43% (year 2016). On the other hand, the average risk weight also increases 0.2% between year 2015 (43.4%) and year 2016 (43.6%). Economy factors showed that it will affect the profitability of bank although RHB Bank has already taken part to moving forward (RHB Bank Annual Report, 2016).

1.3 Research Question

- 1.3.1 What are the relationship between financial factors and bank's profitability?

- 1.3.2. What are the relationship between economic factors and bank's profitability?

- 1.3.3. How the lending rate affected by the macroeconomic variables and overall affect bank's profitability?

1.4 General Objective

The general objective is to examine the impact of the financial factors and the macroeconomic factors on the local and foreign banks' profitability. In this study, the research will be carry out based on the 15 banks in Malaysia with the period from year 2007 to year 2016.

1.4.1 Specific Objectives

- a) To examine the relationship between the financial factors and bank's profitability.
- b) To examine the relationship between economic factors and bank's profitability.
- c) To examine how lending rate affected by the macroeconomic variables and overall affect the bank's profitability.

1.5 Significant of Study

In this study, our objective is to investigate the relationship between financial factors and macroeconomic factors with the bank profitability. The dependent variable of this study is bank profitability and the financial independent variables are return on assets (ROA), return on equity (ROE), bank size, operating expenses, female Board of Director (BOD) and lending rate. The macroeconomic independent variables are gross domestic product (GDP), inflation rate, interest rate and real exchange rate. We use specific formulas to calculate each of the variables in order to get more accurate and valid figures.

Furthermore, this study has including both local and foreign bank in Malaysia. By determining both local and foreign banks, we can compare the performance of local and foreign bank. Besides, we may find out whether the financial factors and macroeconomic factors have different impact on the local and foreign banks. However, there are some foreign banks are excluded from this study. Those banks are BNP Paribas Malaysia Berhad, Bank of America Malaysia Berhad, Bank of Tokyo-Mitsubishi UFJ Malaysia Berhad, Deutsche Bank Malaysia Berhad, India International Bank Malaysia Berhad, Industrial and Commercial Bank of China Malaysia Berhad, J.P. Morgan Chase Bank Berhad, Mizuho Bank of Abu Dhabi Malaysia Berhad, National Bank of Abu Dhabi Malaysia Berhad, Sumitomo Mitsui Banking Corporation Malaysia Berhad, The Bank of Nova Scotia Berhad and The Royal Bank of Scotland Berhad. The reason of excluding those banks is because they operate in Malaysia after year 2007, therefore there is insufficient data for us to carry on the study. Besides, the banks do not have offer retail loans. Therefore, we are unable to get the retail loan lending rate.

In this study, we used the female Board of Director (BOD) as one of the internal variables to find out the relationship between female Board of Director and bank profitability. According to the research of Perilleux, A., and Szafarz, A. (2015), they find out that female management will have different decision-making perspective compare to the male management in financial cooperatives. Based on their study, they found out the female manager is more participative in organizing the events with the teams. The female manager's style is fewer directives to her team members. These two different types of leadership will help the banks to perform well and indirectly increase the bank's profitability. Moreover, based on the research of Palvia, A., Vahamaa, E., & Vahamaa, S. (2014), they investigated that if there were female Chief Executive Officer and female board of directors in smaller banks, the bank will have less probability to close down during financial crisis. Therefore, at the end of this study, we can know well how the female Board of Director (BOD) affects the bank's profitability.

This study contributes to the literatures on the determinants of banks profitability in Malaysian banking sector which contribute on both financial factors and macroeconomic factors to the local and foreign bank profitability. We have taken in the variable female Board of director to investigate the relationship between female Board of Director and bank profitability. Hence, the results of our study can be used as a reference in future researches. They will be more clearly known on how the female Board of Director impact on the bank profitability.

Another contribution of this study is how the lending rate affected by macroeconomic variables and overall affect the bank profitability. In this study, we have identified the relationship between the macroeconomic variables with lending rate. William, et. al. (2014), said that the macroeconomic variables will affect the supply of loan. Therefore, the demand for loan will also be affected. At the end, the bank profitability will be affected. Besides, during financial crisis, the country's economic is going downturn, the bank must adjust their lending rate. This has cause the losses of 47% borrower, and the bank faced huge losses during the financial crisis (Vitoria & David, 2010).

Moreover, the outcome of this study can be used as additional information for the investors. By knowing well on how the financial factors and macroeconomic factors affect the bank profitability, the investors may make their decision wisely. They may able to identify either to invest in local or foreign banks.

1.6 Chapter Layout

Chapter one is a brief introduction about the research background and the aim of this study. The chapter one is started with the introduction, research background, problem statement and the research objective. All the chapters will be end with a summary.

Chapter two will presents a literature review of all the variables which had been choose. These reviews are to analysis the financial factors and the macroeconomic factors, how these variables affect the bank's profitability. It will consist of a simple of the introduction, the model and literatures review. Moreover, it also suggested some theoretical and conceptual framework to the chapter three.

Chapter three is presents the methodology and the data which used in this research paper. This chapter will begin with the introduction, processing of the data, methods of collecting the data and make a conclusion with the econometric diagnosis tests.

Chapter four will provide the finding result and analysis. It will show the significant or insignificant relationship between financial and macroeconomic factors with the bank's profitability. All the detail of the finding result will be showed in this chapter.

Chapter five will be the last chapter to conclude all the finding result from the chapter one to chapter four. It will also provide the limitation and some recommendation to the future researcher.

1.7 Chapter Summary

In this paper, the objective of this research is to investigate the effects of the financial factors and the macroeconomic factors to the bank's profitability of these 15 banks in Malaysia. Moreover, this study will focus on the relationship among all the variables that may benefits the banking industry. The finding of this study will be presented in the coming chapters.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In this chapter, we discuss about the internal and macroeconomic factors that will affect the bank profitability. Bank is a financial institution which assents to public deposits and bring out credit. Bank profit is paying the money in the expense less than money that they earn. In this study, there different internal factor and macroeconomics factors use to determine bank profitability. To estimate this study, it can implement by using OLS, logarithm, and fixed effect regression on the data set of local bank and foreign bank from year 2007 to 2016 in Malaysia. Internal factors can be influenced by the bank's management judgments and policy objectives. There are included bank size, operating expense, lending rate, return on assets, return on equity and board of female director. However, foreign exchange rate, gross domestic product, inflation and interest rate are macroeconomics factor in this study. There are some evidences that proved by past researchers in which the internal and macroeconomic factors will affect bank profitability. Hence, this chapter also will discuss purpose of this study and methodologies that used by pass researchers. Furthermore, the results of the factors whether will significant, insignificant and no significant to the bank profitability also explained in this chapter.

2.1 Theoretical Review

In this study, there are different of theory use to explaining the bank performance to earning their profit. Efficiency theory was an alternative explaining on the relationship of the market performance which is explained by Demsetz (1973). In the investment theory, it always stated that cannot to beat the market because the stock market efficiency will lead to exist share price will be incorporate, and it also will relevant to all the information. Based on the bank sector, this alternative presupposes the more efficiency bank management and gaining the highest profit with lower operating cost compare with the competitor. The different level of the market efficiency also will construct an unfair distribution of the situation within the market among larger size of bank and smaller size of bank. Bank can fix an amount to buyer and seller with maximum amount without increase transaction cost. However, the efficiency also mentioned that the negative consistency profitability that may related to the bank size and bank efficiency becomes negative consistency.

Market power theory was more concentrated to the unsatisfactory market facilitate within of the imperfect price of calibration product and service at the level less favorable to the customers and this theory can make the best measure of the premise. However, this theory can also assume the more profitability results from the perfect market and centralize which consent to the bank to compare together and gaining more of the profit which increase the portfolio of the bank with different product and it will also raise the market share and power of these product. Shepherd (1986) also mentioned that most of the forces that control this market move come from participants' control of individual markets and criticized this method, hence it was emergence of relative of the market power theory. Today's markets Banks that have a large number of diversified products and make different prices based on market conditions also result in market imbalances. Consequently, individual market price

shares can define the market power and imbalance market by using market share theory.

Last but not least, bank with market power has ability to impact the price and quantity of market shares in the economy market. Significant market power will lead to bank gain profit when the price exceeds the marginal cost and long run average cost in the economy market.

2.1.1 Theoretical Framework

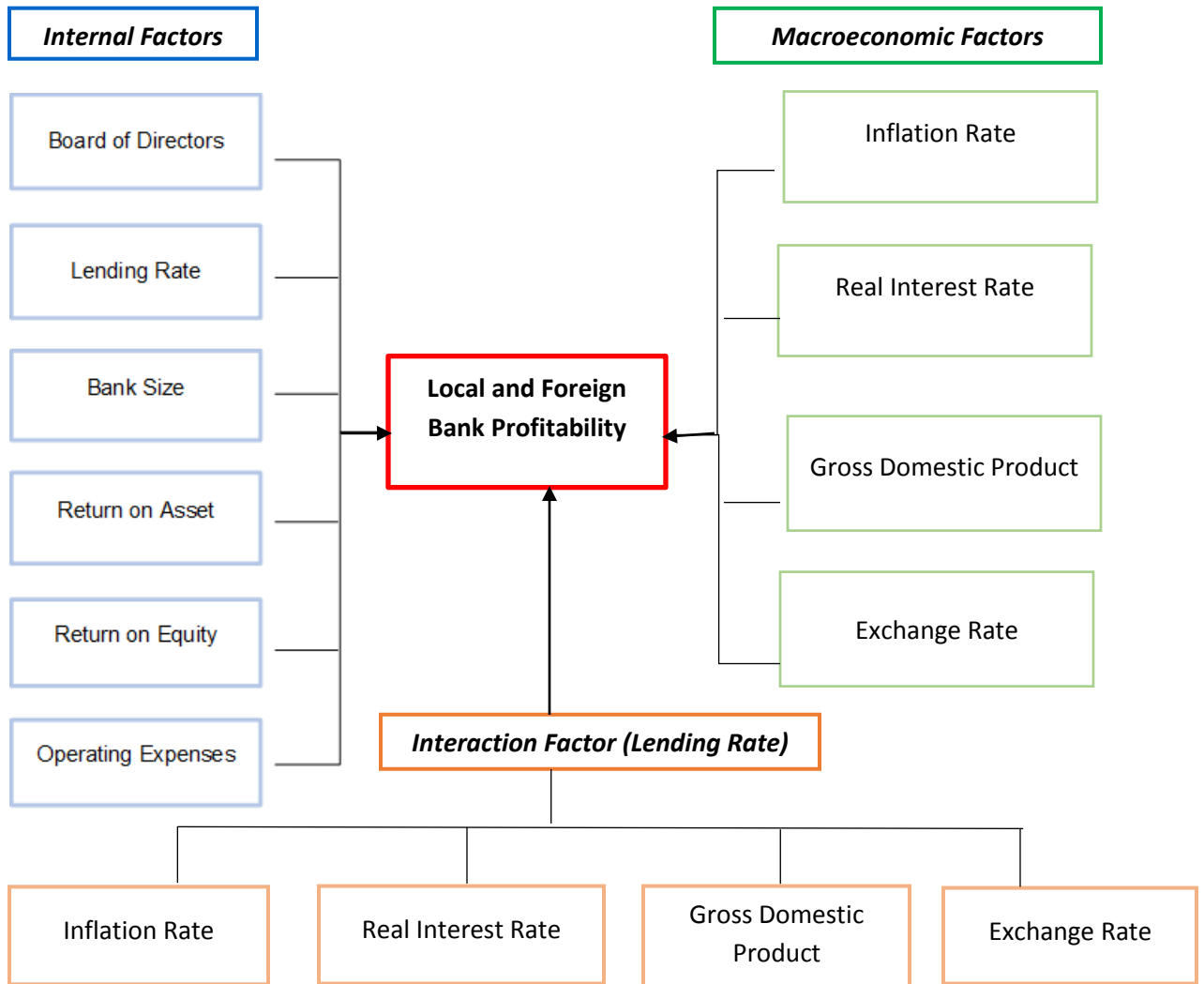


Figure 2.1: Ten independent variables which presented in this research

Based on the Figure 2.1, there are estimate the internal factor and macroeconomics factor that impact the local and foreign bank profitability in the Malaysia. The first of the research question was to examine the relationship between internal factor and bank profitability. Board of female director, bank size, lending rate, operating expense, return on assets and return on equity are the internal factor. However, the second research question we have examine the relationship between macroeconomics factor and bank profitability. In the macroeconomics factor are included inflation rate, real interest rate, gross domestic product and exchange rate. In order that last of research question, we also had estimate how the lending rate affect macroeconomics factor and overall affect bank profitability.

2.2 Empirical Review (Internal Factors)

2.2.1 Bank Size and Bank Profitability

This study was attempted to examine bank size as potential bank special influential on bank profitability. Bank profitability can be expressed by both internal and external factor (Syafri, 2012). Bank is playing an important role for ensuring sustainable economic growth continuously. In this study, bank size is estimated by using logarithm of the profitability of the bank Staikouras, Wood (2004), Pasiouras&Kosmidou (2007) and Syafri (2012). Based on the economic model, bank size was chosen as independent variable and bank profitability as dependent variable. It will use statistical package for the social (SPSS Program) as data processing between these variables. SPSS can hold and control with a huge amount of data and perform all the analysis that need present in the document. It is also using correlation test that the two-measurement variable is to quantify the relationship between the dependent variable.

According to the results, bank size had a positive relationship between bank size and bank profitability Athanasoglou et. al. (2008), Masood and Ashraf (2012) and Perera et (2013). This research has used a sample data for 14 commercial banks and period between year 2000 to 2013. From the result, it shows that bank size had a significant relationship with bank profitability which p value less than significant level and R which is used to coefficient of determination for multiple regressions was more than 0.49. It also found that coefficient of the bank size which p value less than the significant level.

According to Mohammad, S.A., investigates that bank profitability will be affected by bank size between year 2007 to 2012. We use Pearson correlation which measures the variable between independent variable and dependent variable. It was showed positive value which 0.590 and a linear regression to estimate variable of bank size, the hypothesis enquiry the problem. Hence, the result is shown significant at the 5% significant level.

By using the primary data from common stock exchange annual report and secondary data that found at World Bank development, it was showed that largest size of the bank invested higher liquidity by using a large cost to investing different technology such as computer mainframes compare with other size of bank. Hence, higher potential cost was direct reflecting the profit decrease. Moreover, the Pearson correlation is used to test the relationship between the bank size and bank profitability. Based on the result, there are higher average returns in the bank which are large scale and the smallest scale of bank is the lowest. They were assumed by signs that the relationship between them is positive.

Furthermore, there are also negative effect on the profitability which the size of bank will not be affected by any type of the profitability in the commercial bank Syafri

(2012) and Hassan and Bashir (2003). When the size of the bank to a certain degree of impact, any fluctuate of the size of the bank will bring about negative related to bank profitability. However, Athanasoglou et al. (2008) stated that the Bureaucratic also will relate to negative relation. Arif, M., Khan, M. Z., & Iqbal, M. (2013) found that the small size bank is negative related to bank profitability which the test statistics -0.176 less than $\alpha 0.05$.

2.2.2 Operating Expenses and Bank Profitability

This study to investigate the impact factor such as operating expense that affect bank profitability in the different commercial bank. Relatively firms that are more efficient tend to maintain more stable levels of output and operating performance compared to their industry peers (Mills and Schumann, 1985). Operating expenses costs associated with a company's main operating activities and which are reported on its income statement. These expenses are collected by management and inversely related to the bank profit.

This study is using an explanatory research design using panel data and fixed effects regression model as per the Hausman test results to explain the relationship between operating cost and bank profitability. By analyzing these results, expenses that using for bank performance are highly related with profitability of bank. Properly use of the operating expense will increase the efficiency of bank to gain more profit. Miller and Noulas (1997) also stated that higher the credit ratio will lead to lower profit. Sehrish et al. (2012) also mentioned that the results were used net income as operating efficiency to measure the economic model and it found there are positively relationship that the bank performance are affect by the operating expenses. The correlation coefficient of operating expense was more than 0.80 and it can lead to higher value of the R square. In fact, commercial bank has been increasing their

expenses through the investment resources to improve its operational efficiency thus affecting profitability of bank.

As the result shown, operating expenses are significant relationship explain profit of bank which that less than significant level of 0.10 and it also strength level of the operating expense in the bank performance (Rose and Hudgins, 2005). The operating ratio with bank profitability was show less than 0 at the significant level.

Last but not lease, Odunga (2015) concluded operating expense is important in the bank performance. The data were found from the Central bank system for up to 43 commercial banks in Kenya between the periods of year 2005-2012. In the result, it shows that the bank minimum value which less than 1.0 and maximum ratio 2.01. It means there are lower operating expenses were efficiency in these years than the longer period of the operation. Hence, there were negative relationships between of them.

2.2.3 Lending Rate and Bank Profitability

This study to explain the impact of the interest rate spread which as difference between deposit rate and lending rate of the bank on the bank profitability. Interest rate is the most influential that is used to achieve the macroeconomics goals and monetary policy. There is various type of the lending rate will influence bank profitability which in balance sheet of bank, securities to purchase and cash reserve.

According to Maigua, C., & Mouni, G. (2016) was mentioned that there was a sample data of 43 licensed commercial banks in Kenya country to represent it. Probability

random sampling technique which utilizes from different value has been equal to probabilities that used for evaluating the relationship between interest rate of bank and bank profitability. This is consistent which, R square of between relationship interest rate of bank which 0.585 less than 0.80. Hence, commercial bank may decide to increase the interest rate of bank more than to the customer deposit rate when the central bank increases their discount rate.

As the result, the Durbin Watson test was show there have positive serial auto correlation and Durbin Watson between independent variable and dependent variable at the significant level. The positive effect of Prime Lending Rate and Maximum Lending rate is in line with the probability of the results which the variable percentage was higher than the effect on the bank profitability. This analyze was found by (Ogunbiyi and Ihejirika, 2014). According to Kiptui (2014) also stated that some of the macroeconomic factor also will impact the interest margin. The difference between the lending rate will influence the bank profitability.

In order to measuring the interest rate of bank, it will test by the Pearson product-moment correlation coefficient test and linear regression. It was used to measure the strength of the linear direction between two variables. The value of the bank loan has negative statistical which less than the significant level on bank profitability. The maximum prime rate and Treasury bill rate have the negative relationship related to bank profitability. It will cause the consumer decreasing on the cost of borrowing and they will also expectation the interest rate will be decrease together. From the linear regression model, it was found that tolerance value was higher than 0.10. Hence, the variable of the bank loan was slight impact and do not have linking on bank profitability in the economic model that choose.

2.2.4 Return on Asset (ROA) and Bank Profitability

Based on the studies indicates that effect of return on asset (ROA) on bank profitability. These empirical findings are supported by the researchers (Siddik, Kabiraj, & Joghee, 2017; Kadioglu, Telceken & Ocal, 2017; Almazari, 2014; Qamar, Masood, & Khan, 2016; Taani, (2014). Taani (2014) found that the correlation between capital structure and performance of Jordanian bank is positively from 2007 to 2011. Total debt is associated with capital structure and bank performance. The method that used to determine the relationship is multiple regression models. R^2 values also can indicate the positive correlation. According to the Almazari (2014) mentioned that bank specific has an impact on Saudi and Jordanian banks from 2005 to 2011. There are directly positive relationships between ROA with total equity to assets ratio, total investment to total assets ratio and liquidity risk. Based on the results of this study, Saudi banks earned more profit compare to the Jordanian banks due to efficiency of apply the resources. Regression analysis is used to determine the results of the relationship between Saudi and Jordanian banks. There are either direct or indirect correlations between these two banks and proved by Durbin-Watson test in this study.

There are negative relationships between the effects of capital structure on the performance supported by Siddik et al. (2017) in Bangladesh, Kadioglu et al. (2017) in Turkey, Qamar et al. (2016) in Pakistan. The time series examined for Bangladesh and Pakistan are same which are from 2005 to 2014 while first quarter of 2005 to third quarter of 2016 in Turkey. According to Siddik et al. (2017) stated that the capital structure is directly proportion to the debt capital and equity capital. Capital structure can affect the risk and return on a firm. There are different opinions in the previous empirical studies. Previous researchers (Rouf, 2015; Hasan, Mainul Ahsan, Afzalur Rahaman & Nurul Alam, (2014); Ramadan and Ramadan, 2015) use ROA as a measurement of bank performance. It showed ability of the bank to manage with the

available assets. Kadioglu et al. (2017) indicates impacts of non-performing loans (NPL) on bank profitability. The higher non-performing loans, the lower asset quality, lead to the lower return on asset and return on equity (Kadioglu et al., 2017).

On the other hand, the lower non-performing loan, the higher asset quality, leads to higher return on asset and return on equity (Kadioglu et al., 2017). Ozgur and Gorus (2016) discovered that ROA and NPL is indirect relationship by using the ratio of NPL. Buyuksalvarci and Abdlioglu (2011) mentioned that gearing ratio is positive correlated with ROA, but negative correlated to the ROE while the ROE is negative relation with leverage ratio. Descriptive statistics, multicollinearity test, cross-sectional dependence test, panel unit root test, endogeneity test and robustness check are used in the studies of capital structure choice on the bank performance (Siddik et al, 2017). Unit root test is used to measure the non-performing loan and bank profitability (Kadioglu, 2017). However, panel data regression model is tested by Hausman test with random effect model. Heteroscedasticity is used to test whether the variance of the regression model residuals is dependent by using Breusch Pagan Godfrey test (Qamar et al., 2016).

2.2.5 Return on Equity (ROE) and Bank Profitability

One of the factors that effect on the profitability of bank is return on equity (ROE). These studies are supported by researchers (Shamki, Alulis & Sayari, 2016; Rahman, Hamid & Khan, 2015; Alshatti, 2015; Adesina, Nwidobie & Adesina, 2015; Alalaya & Al Khattab, 2015). There is positive relationship of loan and capital strength on profitability of bank in Bangladesh for the period of 2006 to 2013, Nigeria for 2005 to 2012 and Jordanian bank for 2002 to 2014. According to Rahman et al. (2015) mentioned that the profitability is determined by ROE, ROA, and net interest margin over total assets (NIM) in this study. Research results show that regulatory capital,

equity capital and loan intensity are positively and significant relationships on profitability bank. ROE is significantly influenced by ownership structure (Rahman et al., 2015). ROE also showed the result of significant and insignificant with the variables in descriptive statistics, correlation analysis and regression analysis.

However, according to Thamila and Arulvel (2013), financial performance of the bank is indicated by return on capital employed and ROE. Long-term debt to capital ratio, short-term debt to capital ratio and total debt to capital debt are used to examine the capital structure. Determinants of capital structure, ROE and ROA are used to estimate the performance of the banks (Saeed, Gull & Rasheed, 2013). Ordinary least square regression analysis shows that capital structure has a positively and direct relation with the performance of banks (Adesina et al., 2015). Regression analysis and Durbin-Watson test also measured in this study in which the Durbin-Watson value does not has autocorrelation on bank performance. Bank debt and bank equity are positive and significant with financial performance of the bank (Adesina et al., 2015).

There is also showed positive impact of credit risk management on Jordanian commercial bank for the period 2005 to 2013 (Alshatti, 2015). Banks need to improve their credit risk performance in order to generate more profitability. It is because insufficient credit risk management will lead to economic downturn. According to Hosna Manzura and Juanjuan, 2009; Li and Zou, 2014 stated that ROE is used to measure the non-performing loans. The overall impact of ROE and ROA on bank performance is significantly positive by using research model. F statistic and R^2 are significant 0.000 from suitability of the research model. According to Alalaya et al. (2015) stated that there three models used in this study, such as cross-sectional data, ROA as dependent variable and ROE as an independent variable and panel data. Pooled OLS regression of a cross-sectional series indicated as first model, pooled OLS and fixed effects methods used as others two models that with different factors

(Alalaya et al., 2015). In this study, there can add some models of independent variables in second model due to the adjusted R square are 61.3%. ROE has a positively and direct relations with ROA at the level of 5% significant. Normally the bank that operates well will had a higher returns and direct relationship between total deposits and ROA.

The effect of financial information and determinants variables are negatively correlated on Jordanian commercial bank during the period 2005 to 2013 (Shamki et al., 2016). ROE is inverse significant on bank profitability. Athanasoglou et al. (2008) mentioned ROE are used to measure profitability in central banks as supervisory authorities. Bank regulators and analysts are use ROA and ROE to estimate the market's structure, profitability and performance of bank (Shamki et al., 2016). Two regression models are used to test the effect of capital ratio on bank profit. Alalaya et al. (2015) discovered that the coefficient of stability is -0.019 which means that it is an indirect relationship on bank profit. The migrants of Iraqis and Syrians had invested to Jordanian bank. Lee and Kim (2013) found that exist of economies scale will lead to insignificant impact on ROA. Based on the study, this may cause by the limitations on the bank profitability.

2.2.6 Female Board of Directors (BOD) and Bank Profitability

In this era, women are given the opportunities to develop themselves by morally, intellectually and socially. They were being well educated. Therefore, the number of women joined in the banking sector is increasing every year. Women only worked as a clerk in the bank before. However, in 20th century, women started to become leader and role models. Based on the Standard Chartered Bank about the women on corporate boards, the financial sector performed the best. The result showed that women had positive impact on the bank performance so as profitability Ramya & Raghurama,

(2016). Besides, women can help to achieve a better business financial result. A gender diversity in Board of Director can bring higher profits to the bank Yasir, Saba & Hina (2014).

In theoretical way, the participant of female in banking sector will improve the bank's performance and financial reporting quality (FRQ). The participant of female in banking sector on the board of director will lower the banking risk, cost efficiency and improve bank profitability Dong, Girardone & Kuo, 2016 & Salma & Cesario, (2016). Moreover, the investors respond positively to the representation of women directors in banking sector Kang, Ding & Charoenwong, (2010). Based on the research, the participation of female in board of directors had enhanced the innovation of the bank. The participation of female in board affect positively to the financial position of bank, but the number of female in board did not show the same result Calabro, Torchia & Huse (2011).

The benefits brought by the female participant in board of director range in educational background, career experience, communication style and aspect of personality tend to wider the perspective in decision making (Liao et al., 2014). In addition, female directors are more compassionate and generally concerned (Adams & Funk, 2012). Female directors had better attendance compared to male directors (Adams & Ferreira, 2009). The different perspectives of female directors will increase the effectiveness of the problem solving. In addition, female perform well in interactions with people which helped the company to retain and expand human resources (Liu & Li, 2010).

However, some studies indicate that women participate in board of director has no significant effect on the bank profitability. As the most banks has less female and most of the strategies are decided by men. Therefore, men have more significant effect than women on bank performance (Ekadah & Josphat, 2012). Moreover, based on the study, increase of women participate in board of director will negatively affect

the bank performance. Therefore, gender diversity in board of director is not a necessary (Tomislava & Maja, 2016 & Merve, 2015).

2.3 Empirical Review (Macroeconomic Factors)

2.3.1 Foreign Exchange Rate and Bank Profitability

Foreign exchange (FOREX) is used to determine the value of one country's currency relative to other country's currency. It is important and represented the financial part of commercial transactions of the banks. Foreign exchange market was established in order to meet the requirement of large volume of foreign exchange transactions by banks (Babazadeh & Farrokhnejad, 2012). The methods used in this study are descriptive statistics and ARCH LM test for examined the impact of exchange rate fluctuation on banks' profitability (Osundina et al., 2016). Furthermore, Combey & Togbenou (2017) concluded that exchange rate had significant effect on bank profitability. The effect in the short run is greater than long run. Besides, Fayman and Casey (2014) said that if there is a rise in the home currency value, the profit of the home banking institutions will also increase. Based on the study, the researcher found that exchange rate positively influenced the bank profitability (Christine, 2016).

The banks should be profitable while carry out their intermediation function, however, the exchange rate fluctuation had a significant impact on the banks' profitability. A poor bank performance can lead to a banking failure and economic growth downturn in the country. The price of foreign currency is important for understanding the growth of other countries in the world. Since misalignments of exchange rate can lead to economic hardship and output contraction. Multiple regression was used to identify the impact of foreign exchange on bank performance (Lambe, 2015). Leyla (2015) concluded foreign exchange rate had a negative impact on banks' profitability. In

addition, fluctuation in currency will hurt the production and investor because it will affect the bank profitability (Lambe, 2015). Moreover, fluctuations will affect bank's profit both directly and indirectly. Exchange rates affect the bank directly on the foreign operations and foreign currency transactions. Exchange rates affect the bank indirectly on the degree of foreign competitors and demand for the loan (Leyla, 2015).

2.3.2 Gross Domestic Product (GDP) and Bank Profitability

The result computed by Duraj and Moci (2015) using time series regressions and cross-sectional regressions, to examine the banking sector in Albania and to statistically it proves if the factors taken in consideration are significant and the relation to the bank profitability. Eventually, they stated as increase of the GDP of the country have positive influences in the Albania bank's profitability. Bouzgarrou, Jouda and Louhichi (2017) researched over 170 of commercial bank in French to study the banking sector environmental and the financial characteristics that influenced the bank's profitability Besides, use of the dynamic panel data to evaluate of bank profit and state that the movement of GDP will make changes in the demand for the bank's asset in the event there is a signal of declining GDP growth, whereas the higher GDP growth the greater demand for the non-interest and interest activities, thus boosting the profitability of banks. Pasiouras & Kosmidou (2007) discovered there is significant positive relationship between GDP growth and banking profit both domestic and foreign banks by using cross country panel method on investigating 15 European countries over the period 1995-2001.

Staikouras and Wood (2003) state there will have higher demand for loan whenever the economy is booming, with the assumption of imperfect competitive market, bank profitability is expected to be positively relationship with the GDP measured by the market size. However, he also said that the relationship could be negatively due to

countries with higher GDP are likely to have developed banking system operates under competitive environment.

On the contrary, Hoggarth (1998) figure out that the banking sector profitability in UK could not be explains by the variable of real GDP but it could in Germany. In spite, however, he did not deny that the trend of GDP does have positively relationship with banking sector performances.

2.3.3 Inflation and Bank Profitability

Ishfaq and Khan (2015) studies Pakistan's banks in the period of 2008 to 2012 by using panel data to analysis over 100 observations. As the result is apparently show that the higher productivity of the bank the more profit that bank can generate. Although inflation will discourage investor and also create negative impact to the market yet there is positively relationship between profitability of bank and inflation of Pakistan's banks. Naceur and Omran (2011) explore the affection of bank regulatory and profitable of banks from the North Africa and Middle East. As for the result show that the capitalization for the bank and credit risk of the bank have significant and positive influences on net interest margin of bank, also profitability and cost efficiency. While, from the macroeconomic factors, inflation is to be found significant influence on the bank net interest margin. Rahman, Hamid and Khan (2015) examines bank profitability by using inflation as one of the macroeconomics determinant to evaluate Bangladesh's commercial banks over the period from 2006 to 2013, and three different type measures of profitability are used in their study which is Return on Equity, Return on Assets and Net interest margin. As the result indicate that inflation is found to be a must determinant of Return on assets and Return on Equity.

Habibullah and Sufian (2009) carried out a study of commercial banks taken from the Bangladesh to assess the performances of banks for a time period ranges within 1997 to 2004. Eventually, they found the credit risk, cost efficiency and loan intensity of selected banks have a positive and significant impact on banks performance and non-interest income is negative relation with the bank performance. Come to the macroeconomics variables, they found no significant impact on the bank's profitability except for inflation showed a significant and negatively impact on the banks profitability on study period.

According to Sufian (2009), who started a research to explore the performances of total 77 commercial banks selected from Pakistan, Sri Lanka, and Bangladesh over the period of 197 to 2008. The statistically proves that credit risk, non-interest income and liquidity is significant and positively relation with the bank profitability. Regarding to the macroeconomic variables, the study found out that there is a positive and significant between bank performance and economic growth, meanwhile the relation between bank's profitability and inflation is not significant as thought.

2.3.4 Interest rate and Bank Profitability

Claessens, Coleman and Donnelly (2017) examines the impact of low interest rates on 3,385 banks taken from over 47 countries over the period of 2005 to 2013, using the econometric analysis method which is to hold other factors constant, found that as per one percentage drop in interest rate cause bank net interest margin to decrease 8 basis points. This show that low interest rate have is significantly and have greater impact on bank's net interest margin than high interest rates. By Genay (2014), suggest that when the banking environment having low short-term interest rate, bank profitability is tended to be more profitable by analyzing the relationship between short term interest rate and the yield curve of bank ROA and NIM. According to

Abreu and Mendes (2002) examines the relationship between interest rate and bank profitability over the periods of 1986 to 1999 and have found evidence that interest rate is of the variable will affect the profitability of banks.

Khan and Sattar (2014) studies how interest rate affect profitability of bank by analyzing Pakistan's four major commercial bank in 2008 - 2012 by applying pension condition method, also proved and agreed there is a positive relationship between the Nigerian bank's profitability and rate of interest. Baltaci (2014) investigated the relationship between the profitable of Turkish banks and macroeconomic variables. In the study, the data of 31 banks and macroeconomic variables data that covered the period of 2001 to 2011 under the study is analyzed by use of the panel data method. As the result of the study, there is significant and positively relationship has been found between the interest rate and bank's profitability, which indicate that the banking industry is under the affection of the general economy.

Tamunonimim and Lucky (2016) investigated the relationship between interest rate and the profitability of Nigeria commercial banks over the period of 1980 - 2014, and they objective is further extended to examine which various interest rate measures influence the profitability of the targeted banks. The time series data used in the study were mined from the annual financial reports of the commercial banks, and also from the Nigeria Central Bank. They used the ordinary least square of regression analysis method to test the relationship between the independent and dependent variables. Besides, Johansen Cointegration Test, Granger Causality Test, Augmented Dickey Fuller test and Vector Error Correction Test were used to determine the relationship and significant among the variables. From the study proved that interest rate has more impact on ROA than ROE. The study further concludes that they found no causal relationship in between interest rate and the profitability of Nigeria commercial banks.

2.4 Conclusion

In nutshell, there are great performance to describe bank comparative advantage in the diversify and offset various type of risks. In this study, market power theory through the power of the outside or external market forces to increase their own profits (Bain,1951). However, Demsetz (1973) was stated that efficient management and productivity can lead to both high market share and high profitability of personal banking.

Moreover, this study also explored different type of internal factor and macroeconomics factor that impact bank profitability in the Malaysia. Internal factor that will influence bank profitability such as bank size, operating expense, lending rate, return on assets, return on equity and board of female director. Most of that have a positive relationship with the bank profitability and there are not much of the effects on the volatility of the banking profitability market. However, macroeconomics factors are explained foreign exchange rate, gross domestic product, inflation rate and interest rate that will affect bank profitability in the Malaysia. There are exists many factors that lead to dramatic changes and significant implicate for customers, policy makers and banker in the bank profitability market. Relative to crisis management capabilities, foreign banks have better systems and liquidity management strategies compare with the local bank to deal with these issues in the Malaysia. In results, it was suggested bank industry should have make consideration based on the various type of macroeconomics factors to make a good alternative choice regarding to their future policy and forecasting

Chapter 3: Research Methodology

3.0 Introduction

This chapter describes the overall research methodology which will apply in the research. The descriptions of data, data collection methods, data analyses techniques are the research methodology and they will explain in detail in this chapter. These quantitative data such as the Gross Domestic product (GDP), inflation rates, female Board of Director (BOD), interest rate, real exchange rate, return on assets (ROA), return on equity (ROE), bank sizes, operating expenses and lending rate will be used to test the relationship with the bank's profitability from 2007 to 2016. Furthermore, this chapter also will have determined that the model and methodology which will carry out the objective of this study. So, this section is to ensure that the results will showed from the econometric test are authoritative.

3.1 Research Design

The main objective of this research is to examine the relationship between the internal and macroeconomic factors with the profitability of local and foreign banks in Malaysia. Hence, the quantitative data is used to analyze the bank's profitability. All the secondary data are collected from the published source in which data for the internal data from the bank's financial statements and annual reports and the data for the macroeconomic factors are collected from the bank's annual report and Work Bank. The annually data used in this research paper is collected from year 2007 until year 2016. By using the secondary data, we run series of test to identify how and why

the internal and macroeconomic factors will affect the bank's profitability. Meanwhile, the cross-sectional data will involve include 8 local banks and 7 foreign banks.

List of Local Banks in Malaysia:

No	Name of Banks	Ownership
1	Malayan Banking Berhad	Local
2	Public Bank Berhad	Local
3	CIMB Bank Berhad	Local
4	RHB Bank Berhad	Local
5	AmBank Berhad	Local
6	Affin Bank Berhad	Local
7	Alliance Bank Berhad	Local
8	Hong Leong Bank Berhad	Local

List of Foreign Banks in Malaysia:

No	Name of Banks	Ownership
1	Bangkok Bank Berhad	Foreign
2	Bank of China (Malaysia) Berhad	Foreign
3	Citibank Berhad	Foreign
4	HSBC Bank Malaysia Berhad	Foreign
5	OCBC Bank (Malaysia) Berhad	Foreign
6	Standard Chartered Bank Malaysia Berhad	Foreign
7	United Overseas Bank (Malaysia) Bhd	Foreign

Table 3.1: List of Local Banks and Foreign Banks in Malaysia.

3.2 Research Framework

In this research, we used Pooled OLS regression model to analyze the panel data for this paper. The reason behind of using Pooled OLS regression is the secondary data are consisting of cross sectional data (The 8 local and 7 foreign commercial banks in Malaysia) and time series data (Year 2007 to 2016). Moreover, by using panel data is enabling to provide a result of comprehensive data with additional variability and lesser multicollinearity. In additional, Pooled OLS regression model has better performance than pure cross and time series data due to it can discover the effects that cannot be detect by just using pure form of data. Therefore, Pooled OLS regression model is used to identify the panel data.

3.2.1 Internal Factors Model

Local Banks (Model 1):

$$\begin{aligned} Net\ profit_{it} = & \beta_1 + \beta_2 BOD_{it} + \beta_3 LR_{it} + \beta_4 Bank\ Size_{it} + \beta_5 ROA_{it} + \beta_6 ROE_{it} \\ & + \beta_7 OE_{it} + \mu_{it} \end{aligned}$$

Foreign Banks (Model 2):

$$\begin{aligned} Net\ profit_{it} = & \beta_1 + \beta_2 BOD_{it} + \beta_3 LR_{it} + \beta_4 Bank\ Size_{it} + \beta_5 ROA_{it} + \beta_6 ROE_{it} \\ & + \beta_7 OE_{it} + \mu_{it} \end{aligned}$$

Although different category of the bank, but we still choosing the same internal factors for better comparison and understanding.

3.2.2 Macro Factors Model

Local Banks (Model 3):

$$Net\ profit_t = \beta_1 + \beta_2 IR_t + \beta_3 RL_t + \beta_4 GDP_t + \beta_5 ER_t + \mu_t$$

Foreign Banks (Model 4):

$$Net\ profit_t = \beta_1 + \beta_2 IR_t + \beta_3 RL_t + \beta_4 GDP_t + \beta_5 ER_t + \mu_t$$

The fifteen selected banks are all operating in Malaysia regarding it is local or foreign, thus it will be affect by the macroeconomics variables of Malaysia.

3.2.3 Interaction Model

Local Banks (Model 5):

$$Net\ profit_t = \beta_1 + \beta_2 IR * LR_{it} + \beta_3 RL * LR_{it} + \beta_4 GDP * LR_{it} + \beta_5 ER * LR_{it} + \mu_{it}$$

Foreign Banks (Model 6):

$$Net\ profit_t = \beta_1 + \beta_2 IR * LR_{it} + \beta_3 RL * LR_{it} + \beta_4 GDP * LR_{it} + \beta_5 ER * LR_{it} + \mu_{it}$$

The interaction model was based from the macro factors model, as we wanted to know an individual independent variable have affected by macroeconomics variables.

3.2.4 The Linear-Log Model

A Linear-log model is mathematical model that interpret on the estimated coefficient, if a one-unit increase in log X will lead to an expected increase in Y of estimated coefficient unit. In other word, we are keeping our dependent variable in its original form and using natural log value for independent variables.

$$Y_i = \beta_0 + \beta \log X_i + \mu$$

In this study, we used linear-log model regression for better understanding the regression coefficient estimate. The log transformed independent variable bank size (lnBank Size) and log transformed independent variable operating expenses (lnOperating expenses). For this study we have taken the natural log (ln).

$$Y_i = \beta_0 + \beta_1 \ln \text{Banksize}_i + \mu$$

$$\Delta Y = (\beta_1 / 100)\% \Delta x$$

Thus, the interpretation for the above Linear-log model is as: For every 1 percent increase in Bank size, Net profit is expected to increase by $(\beta_1 / 100)$ units.

$$Y_i = \beta_0 + \beta_1 \ln OE_i + \mu$$

$$\Delta Y = (\beta_1 / 100)\% \Delta x$$

Thus, the interpretation for the above Linear-log model is as: For every 1 percent increase in Operating expenses, Net profit is expected to increase by $(\beta_1 / 100)$ units.

3.3 Data Collection Method

In this study, methodology adopted in assist to achieve the research objectives which are included in this chapter. It includes the approaches adopted to examine the profitability of the local banks and foreign banks in the whole Malaysia. The secondary data are categorized into two different listing which are internal factors and macroeconomic factors. The component of internal factors consists of return on assets (ROA), return on equity (ROE), bank size, operating expenses, female Board of Director (BOD) and lending rate. At the same time, macroeconomics factors are to be expressed by gross domestic product (GDP), inflation rate, interest rate, and real exchange rate.

Type of data	Data Source
Internal factors	
Return on Assets (ROA)	Annual Reports
Return on Equity (ROE)	Annual Reports
Bank Size	Annual Reports
Operating Expenses	Annual Reports
Lending Rate	Annual Reports
Female Board of Director (BOD)	Annual Reports
Macroeconomics Factor	
Gross Domestic Product (GDP)	World Bank, Annual Reports
Inflation Rate	World Bank, Annual Reports
Real Interest Rate	World Bank, Annual Reports
Exchange Rate	World Bank, Annual Reports

Table 3.2 Data Sources

3.4 Dependent Variable

The dependent variable expresses by the bank's net profit of the commercial banks of eight local and seven foreign banks in Malaysia. Generally, return on assets and return of equity is often used as indicator of bank's profitability. In this research bank's net profit after taxation is chosen as our dependent variable. In the view of the fact that net profit is the direct showing a bank's performances in the designed period.

3.5 Independent Variable

There are total ten factors are chosen as independent variables to explain the net profit after taxation for the Local and Foreign of total fifteen selected commercial banks in Malaysia in this study. Six factors expressed from the internal factors which are return on assets, return on equity, bank size, operating expenses, lending rate and female board of director (BOD). With the same time, the remaining fix independent variables under external factors are gross domestic product, inflation rate, interest rate, and real exchange rate. The reason for adding external factors are due it can impact the bank's net profit through it profitability in several ways.

3.5.1 Return on Asset (ROA)

Return on Asset is a financial ratio that can explain how many percentage of profit that a company earns relative to its own total assets. Manager, investor and the analyst can use the ROA's data to get an idea about how the efficient a company's management is using the company's assets to generate the total earning. Return on assets is calculated as:

$$ROA = \frac{\text{Net Profit After Tax}}{\text{Total Assets}}$$

3.5.2 Return on Equity (ROE)

Return on Equity is the amount of net profit return as a percentage of stockholder equity. It measures a profitability that related how much profit a company earns with how much the investors have invested. Return on Equity also name as "return on net worth". Return on equity is calculated as:

$$ROE = \frac{\text{Net Income}}{\text{Stockholders' Equity}}$$

3.5.3 Bank Size

Bank size is a bank specific factors in define the banks' profit. Due to the large bank have the power which can easier to achieve the economies of scale, so bank profit can be increase in any large bank. On the other hand, level of product and loan that large banks provide are higher that the small banks. Bank size is calculated as:

$$\text{Bank Size} = \log_{10} \text{Total Assets}$$

3.5.4 Operating Expenses

Operating Expenses are the costs that associated with daily maintenance and management of the business. When there are high operating expenses, it will affect the bank's profitability. The profitability of bank will decrease and the performance that bank provides will under low level due to the high operating expenses.

3.5.5 Lending rate

Lending rate is the interest rate that charge by any financial institution or bank for lending money to anyone. So as the lending rate increase it will also raise up bank interest earning. Banks offer lower lending rate will have lesser interest earning, however it will be more competitive than other bank that have higher lending rate.

3.5.6 Female Board of Directors (BOD)

Board of Director (BOD) is a group that of elites elected to represent stockholders. It is responsibility in establishing policies for the company and make decisions on most of the critical issues. With different gender of Board of directors will affect the company decision in vary perspective. As Female Board of Directors are more look into the details due to female are more sensitivity, warmth and apprehension (Dario 2012). The data for the Board of Directors over the 10 years, starting from 2007 until 2016, collected from the bank's annual reports.

3.5.7 Inflation Rate

Inflation rate is defined as the percentage change in the prices of goods and services. On the other hand, it also may show the purchasing power of the currency. However, if the banks adjust the interest rate base on the inflation rate, they may earn higher profit (Pasiouras and Kosmidou, 2007). The period will be used is from 2007 until 2016, 10 years, which obtained from World Bank.

3.5.8 Growth Domestic Product (GDP)

GDP can conduce the liquid assets. It usually calculated on an annual basis. It usually calculated on an annual basis. GDP can be a board to measure the nation's overall economic activity. When the GDP is at a higher amount, it will reflect that the government of that country is supplying a large amount of securities. Hence, the government may intermeddle the bank's activities. In this research paper, the time

series data on GDP for 10 years, collected from World Bank, spanning from 2007 until 2016.

3.5.9 Real Interest Rate

The interest rate is the percentage of the amount of a debt or the balance that pays by someone with one-time period or paid for each period. For the loan interest rate, it is the amount that a borrower required to pay for the bank. Each bank will base on a few factors to adjust the interest rate for each transaction. The factors such as the amount of money that borrower required, the purpose and duration of the loan, the creditworthiness and the security that borrower can be offered. Banks will use this all factors to analysis the degree of perceived risk that they need to bear before they approve the loan which is under applying.

3.5.10 Exchange Rate

The real exchange rate is the two-country's purchasing power related to each other on the foreign exchange market. It means that the price of goods and services will not fix with one currency cost. The real exchange rate will change based on the different inflation rates and the home country. Real exchange rates are used as a calculation method to adjust for the different rates between inflation and the two country's currencies.

3.6 Econometric Model

3.6.1 Unit Root Test

Unit root test is used in this research paper to carry out whether the series is that stationary or not. A stationary model is consisting of three characteristic which it has constant variance, constant covariance, and constant mean. It means that the variance and covariance will not change or the times, the series is named as stationary. On the other hand, non-stationary model will not consist of long run mean, and the reason for this being is its variance is time dependent and it became infinity as if the sample period approaches infinity. In the event of the regression model is to be having non-stationary variables, resulting in the problems of spurious regression model.

Based on the research of Maredza (2009), he found that the 10% as the significance level is a best while he applied in his study about the internal factors of bank profitability in South Africa.

H_0 : The series is non-stationary or it has a stochastic trend

H_1 : The series is stationary or has a non-stochastic trend

Decision Rule: Reject H_0 if the p-value is less than the significance level. Otherwise, do not reject H_0 .

3.6.2 Fixed Effects Model (FEM)

Generally, fixed effect model is defined as parameters and expressed by the least-square dummy variable and covariance estimation. The reason for this is because of the model with error term having of zero mean is constructed by use of the dummy variables. Fixed effect model it means has the constant slopes but consist of different time variant and intercepts. However, when adding some of the inadequate dummy variables into the regression model will affect the degree of freedom of the regression model, eventually it will lead to losing partial important information (Rendon, 2002). Despite this, it still enables to use for estimating the parameters, carrying out the average estimates over individuals and allowing the unrestricted heterogeneity to go through the individual in the event of the mean is equal to the individual's variance. Fixed effect model creates unbiased estimate of population intercept, however those estimation might be subject to high R squared.

In this research, Fem is used to examine the relationship between internal factors and macroeconomic factors with the bank profitability of the 8 local banks and the 19-selected foreign commercial banks. Data obtained consists of both cross-sectional data from these 8 local banks and the 19-selected foreign commercial banks and time series data from year 2006 until 2016. The model can be regressed as below:

$$Y_{it} = X_{it} \beta_1 + \alpha_i + \mu_{it}$$

Where,

Y_{it} = the independent variable observed for individual in time t.

X_{it} = representing one independent variable (IV).

β_1 = the coefficient of IV.

α_i = the unobserved individual effect.

μ_{it} = error term.

The result from the E-view 9 will showed the relationship between dependent variable and independent variables. This Fixed Effects Model can produce the better result in explaining the relationship that which cannot explain with the pure time-series data or the pure cross-sectional data.

3.6.3 Random Effects Model (REM)

Random Effect Model is to believe that the intercept of a variable is to be randomly sketched out from large scale of population with the constant mean value and the particular effect of random variables is not interacted with the independent variable. It will consist of correlation when there is unobserved heterogeneity. The random effect model estimators are more efficiency than the fixed effect model. REM cut off lot of degree of freedom by it mean and standard deviation due to it does not included any dummy variables. Anyhow, REM parameter estimator is most likely to be biased because of the separate individual effect are not considered by REM. Also, when comparing REM and FEM, REM is more easily on interpretation, and the reason of this is REM used the basis of complexity of the data to arranging the data.

Random Effects Model (REM) is a model that only contains random effects. This model is used in this research paper because it holds more efficient that the Fixed Effects Model (FEM). The model can be regressed as below:

$$Y_{ij} = \varepsilon + X_i + \beta_{ij}$$

Where,

Y_{ij} = Score of the j th pupil at the i th banks.

ε = Average test score for the entire population.

X_i = Specific random effect.

β_{ij} = Individual – specific effect.

3.6.4 Lagrange Multiplier Test (LM test)

Lagrange multiplier test is also known as Rao's score test in econometric, it is a statistical test use to testing the hypotheses of parameters in likelihood framework. To perform the LM test, only when the estimation of parameter is subject to the restrictions. It can be regarded as to test whether the Lagrange multiplier is consists in complying the restrictions are significantly differed from zero. There is an advantage of using LM test is it does not demand an estimate of the information below the alternative hypothesis or unrestricted maximum likelihood.

H₀ : Restriction on parameters are true

H₁ : Restriction on parameters are not true

Decision Rule: Reject **H₀** if the p-value is less than the significance level. Otherwise, do not reject **H₀**.

3.6.5 Hausman Test

Hausman tests are tests to do comparison and decision on choosing which estimators of the model parameter is better between two econometric models. By running the test, the estimators to be compare should have consists of few characteristics. Both estimators must constant for the 'true parameters of the regression model under the rule of the null hypothesis of correct model specification. Additionally, according to the model misspecification the compared estimators should have vary probability limits. The former property makes sure that the size of the Hausman test can be controlled, while the latter property grant the Hausman test it power. The main idea is

when the model is correctly designate, compared estimators will close together, but it is mis specified, the compared estimators will be distinct away.

Hausman Test is used in this research paper to test the FEM and REM.

H_0 : REM is better than FEM.

H_1 : FEM is better than REM.

Decision Rule: Reject H_0 if the p-value is less than the significance level. Otherwise, do not reject H_0 .

3.6.6 Diagnostic Checking

Diagnostic Test is a test that performed to reform the model to achieve the Classical Linear Regression Model (CLRM) assumptions. Diagnostic Test includes many tests such as Wooldridge Test, Cook-Weisberg test and VIF. The Classical Linear Regression Model (CLRM) assumption is:

1. There is no relationship between the independent variables (no multicollinearity).
2. There is no specification bias.
3. There are no relationship between the error term and independent variables (Homoscedasticity and no autocorrelation problem).
4. Zero mean value of error term.
5. There is no relationship among the error term at period t and error term at the period before t (no autocorrelation problem).

When the CRLM assumption is fulfill, the Best Linear Unbiased Estimator (BLUE) will be obtained. Once the BLUE resulted are achieved, it means that the research's

result will not overestimate or underestimated. So, the p-value obtained will be accurate and reliable.

3.7 Conclusion

In this Chapter 3, the progress of this research paper will be explained which include the data collection methods, theory and the research framework that used to test the internal factors and macroeconomic factors with the bank profitability. This research has used 8 local commercial banks and 7 selected foreign commercial banks in Malaysia as the target population. Next Chapter 4, the analysis of data and discussion on the hypothesis testing and diagnostic tests and other test's results of the study will be explained in detail.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

Previous chapter is discussing the research methodology which includes the methods of the data collection, research design, data processing and data analysis techniques. For this chapter, all the related tests will be carried out to certify the trustworthiness of the data is that fulfill with the hypothesis tests. Hausman test also will be used as a test that showed which panel regression model should be used consistent and efficient result.

4.1 Unit Root Test

Table 4.1: Unit Root Test Result (Assume Individual Unit Root Process)

Local Bank with Data Period from year 2007-2016								
Variables	LLC Test				IPS Test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend
Net_Profit	-2.639** (0.004)	-1.754** (0.040)	-3.391*** (0.000)	-11.548*** (0.000)	0.587 (0.721)	0.906 (0.818)	-2.104** (0.018)	-4.483*** (0.000)
lnBank_Size	-4.978*** (0.000)	-0.447 (0.327)	-4.742*** (0.000)	-5.496*** (0.000)	0.132 (0.553)	0.686 (0.754)	-2.039** (0.021)	-3.237*** (0.001)
ROE	0.344 (0.635)	-1.171 (0.121)	-4.551*** (0.000)	-8.514*** (0.000)	0.3583 (0.640)	0.9378 (0.826)	-2.225** (0.012)	-1.829** (0.034)
ROA	-3.960*** (0.000)	-4.078*** (0.000)	-5.585*** (0.000)	-5.888*** (0.000)	-1.317* (0.094)	-1.102 (0.460)	-2.400*** (0.008)	-3.201*** (0.001)
lnOE	-2.566*** (0.005)	-2.273** (0.012)	-5.913*** (0.000)	-7.626*** (0.000)	-1.744** (0.041)	0.049 (0.519)	-5.390*** (0.000)	-3.442*** (0.000)
LR	-4.640*** (0.000)	-27.946*** (0.000)	-33.954*** (0.000)	-45.689*** (0.000)	-1.906** (0.028)	-6.268*** (0.000)	-14.847*** (0.000)	-8.854*** (0.000)
BOD	0.124 (0.549)	-1.810** (0.035)	-2.442*** (0.007)	-22.340*** (0.000)	1.378 (0.916)	0.048 (0.519)	-1.854** (0.032)	-3.213*** (0.001)

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

As shown in Table 4.1, Levin-Lin-Chu (2002) test for the Local bank with data period from year 2007-2016, the null hypothesis of Levin-Lin-Chu (2002) test in Level form with intercept assuming without trend is rejected for *ln* Bank Size, Return on Assets, *ln* Operating Expenses, Lending Rate, and Net profit. The non-rejection of unit root null hypothesis of Return on Equity, and Female Board of Director seem to be is having unit root. However, when performing additional test with trend, *ln* Bank size unit root test null hypothesis firstly was rejected has become non-rejection, and Female Board of Director null hypothesis of unit root test is to be rejected, only Return on Equity remain the same.

Table 4.1, also present the First difference result of the Levin-Lin-Chu (2002) test for unit root test of intercept with or without time trend. We found out the result clearly state that all the variables are significantly against the null hypothesis for the unit root test. Thus, we can conclude that all the variables are stationary computed by using Levin-Lin-Chu (2002) test.

When computing the Im, Pesaran and Shin (2003) test, at the unit root test Level form mostly all the variables shown as non-rejection of the null hypothesis except Return on Assets, *ln* Operating Expenses, and Lending Rate. In the presents of time trend with intercept, except Lending Rate to be reject the null hypothesis of the unit root test, other variables found not enough evidence, nor it has p-value greater than the alpha 0.1 to reject the null hypothesis of the unit root test.

From Table 4.1, shown the result of the unit root test at First Difference for the Im, Pesaran and Shin (2003) in intercept with and without time trend. All the variables null hypothesis for the unit root test are to be rejected at p-value less than alpha level 0.1, which can be conclude it has overwhelming evidence that it is only some of the variables are stationary.

Table 4.2: Unit Root Test Result (Assume Individual Unit Root Process)

Foreign Bank with Data Period from year 2007-2016								
Variables	LLC Test				IPS Test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend
Net_Profit	-1.759** (0.039)	-4.735*** (0.000)	-2.201** (0.014)	-5.843*** (0.000)	-0.725 (0.234)	0.854 (0.8304)	-3.160*** (0.001)	-1.344* (0.090)
lnBank_Size	-2.549*** (0.007)	-2.051*** (0.020)	-5.660*** (0.000)	-8.344*** (0.000)	-1.988** (0.023)	0.387 (0.651)	-1.867** (0.031)	-5.700*** (0.000)
ROE	-4.030*** (0.000)	-3.642*** (0.000)	-4.246*** (0.000)	-5.983*** (0.000)	-0.691 (0.245)	-0.522 (0.301)	-1.796** (0.036)	-7.830*** (0.000)
ROA	-1.744** (0.041)	-8.050*** (0.000)	-10.802*** (0.000)	-15.362*** (0.000)	-0.4129 (0.340)	-0.7226 (0.235)	-1.750** (0.040)	-16.170*** (0.000)
lnOE	-7.934*** (0.000)	-39.925*** (0.000)	-28.036*** (0.000)	-19.112*** (0.000)	-2.236** (0.013)	-5.503*** (0.000)	-8.522*** (0.000)	-2.295** (0.011)
LR	-3.863*** (0.000)	-31.889*** (0.000)	-34.105*** (0.000)	-40.572*** (0.000)	-1.141 (0.127)	-7.174*** (0.000)	-14.897*** (0.000)	-7.765*** (0.000)
BOD	-2.785*** (0.003)	-3.621*** (0.000)	-3.703*** (0.000)	-6.418*** (0.000)	-1.560* (0.059)	-2.036** (0.021)	-3.328*** (0.000)	-1.613* (0.053)

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

The Table 4.2 shows the summary result of the unit root test for the foreign bank with data period from year 2007-2016. The first test is Levin-Lin-Chu (2002), the null hypothesis of intercept without trend is rejected for all the variables include *ln* Bank Size, Return on Equity, Return on Assets, *ln* Operating Expenses, Lending Rate, and Net profit. When performing additional test of intercept with trend, the null hypothesis for all variables are still rejected. Therefore, we can conclude that all variables are significant.

Table 4.2, the test of First difference result of the Levin-Lin-Chu (2002) test for unit root test of intercept with and without time trend, the result shows that all the variables are significantly against the null hypothesis for the unit root test. Thus, we can conclude that all the variables are stationary computed by using Levin-Lin-Chu (2002) test.

When computing the Im, Pesaran and Shin (2003) test, the results show that most of the variables are insignificant except *ln* Bank Size, *ln* Operating Expenses and Female Board of Director. The results of intercept with trend, except the variables *ln* Operating Expenses, Lending Rate, and Female Board of Director, the null hypothesis for these variables are rejected. Other variables from the test shows insignificant, thus the null hypothesis is not rejected.

From Table 4.2, the result of the unit root test at First Difference for the Im, Pesaran and Shin (2003) of intercept with and without trend, all the variables' null hypothesis for the unit root test are rejected. Thus, we can conclude that all the variables are stationary at p-value less than 0.10.

Table 4.3: Unit Root Test Result (Assume Individual Unit Root Process)

Macroeconomic Variables with Data Period from year 2007-2016								
Variables	LLC Test				IPS Test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend
Net_Profit	-4.7696*** (0.000)	-7.4413*** (0.000)	-17.111*** (0.000)	-26.009*** (0.000)	-1.079 (0.140)	-0.465 (0.321)	-9.983*** (0.000)	-6.427*** (0.000)
RL	-11.843*** (0.000)	-9.934*** (0.000)	-16.012*** (0.000)	-15.382*** (0.000)	-6.043*** (0.000)	-1.952** (0.025)	-9.206*** (0.000)	-2.854*** (0.002)
GDP	-10.624*** (0.000)	-16.946*** (0.000)	-30.811*** (0.000)	-54.416*** (0.000)	-4.955*** (0.000)	-3.320*** (0.001)	-14.065*** (0.000)	-10.307*** (0.000)
IR	-61.596*** (0.000)	-61.515*** (0.000)	-69.128** (0.000)	-57.168*** (0.000)	-32.514*** (0.000)	-16.053*** (0.000)	-34.411*** (0.000)	-12.096*** (0.000)
ER	-4.164*** (0.000)	-3.773*** (0.000)	-16.560*** (0.000)	-33.277*** (0.000)	-2.502*** (0.006)	-0.7894 (0.215)	-2.472*** (0.007)	-7.607*** (0.000)

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

Statistically, Unit root test is used to test the mean-reversion in the panel data. The common null hypothesis for the test is practically defined as the existence of a unit root and alternative hypothesis is stationary. For the Levin-Lin-Chu (2002), the null hypothesis is each time series have unit root and alternative hypothesis is each time series is stationary. For the Im, Pesaran and Shin (2003), the null hypothesis is all time series have unit roots and alternative hypothesis is partial time series are stationary.

As shown in Table 4.3, the results of the Levin-Lin-Chu (2002) test for the macroeconomic variables with data period from year 2007 to 2016 at Level expressed all variables are intercepting in the panel unit root regression model. Here we are using the p-value against the null hypothesis at alpha 0.1, whereas if p-value is less than or equal 0.1, reject null hypothesis. Hence, according to computed result, the p-value of all variables is nearly 0, this clearly indicate that the null hypothesis of all unit root of the panel data can be rejected. Additionally, we run test for the intercept plus trend, unsurprisingly the null hypothesis of existence unit root is all to be rejected at Level form. By looking through the result we can conclude that all the variables are stationary in present and absence of time trend specifications at Level, therefore each variable is stationary.

In Table 4.3, also presents the calculated results of the Levin-Lin-Chu (2002) test at First Difference in intercept and intercept plus trend. All the null hypothesis for variables of unit root test is remaining to be rejected at p-value less than alpha 0.10. This to conclude as there is strong evidence against the Levin-Lin-Chun (2002) null hypothesis, hence all variables are stationary and significant.

Also show in Table 4.3, the result of the Im, Pesaran and Shin (2003) test for the macroeconomic variables with data period from year 2007 to 2016 at Level with intercept assume there is no trend and with trend, we found only the null hypothesis of Exchange

rate of unit root in the intercept plus trend cannot be rejected. However, in the First order difference for Im, Pesaran and Shin (2003) test, all the variables' null hypothesis of unit root test is continue to be rejected and surprisingly the exchange rate null hypothesis has become rejected, hence based on the Im, Pesaran and Shin (2003) test, there is enough evidence to conclude that partial variables are in stationary.

Table 4.4: Unit Root Test Result (Assume Individual Unit Root Process)

Macroeconomic Variables interact with Lending Rate with Data Period from year 2007-2016								
Variables	LLC Test				IPS Test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend	Intercept	Intercept + Trend
Net_Profit	-4.770*** (0.000)	-7.441*** (0.000)	-17.112*** (0.000)	-26.009*** (0.000)	-1.079 (0.140)	-0.465 (0.321)	-9.983*** (0.000)	-6.427*** (0.000)
RL	-7.9537*** (0.000)	-7.6713*** (0.000)	-12.795*** (0.000)	-12.337*** (0.000)	-3.962*** (0.000)	-1.589* (0.056)	-8.282*** (0.000)	-2.331*** (0.010)
GDP	-10.452*** (0.000)	-18.505*** (0.000)	-31.302*** (0.000)	-54.389*** (0.000)	-4.950*** (0.000)	-3.795*** (0.000)	-14.595*** (0.000)	-10.241*** (0.000)
IR	-47.313*** (0.000)	-55.221*** (0.000)	-60.358*** (0.000)	-49.154*** (0.000)	-24.667*** (0.000)	-14.183*** (0.000)	-30.025*** (0.000)	-10.297*** (0.000)
ER	-4.770*** (0.000)	-7.441*** (0.000)	-17.112*** (0.000)	-26.009*** (0.000)	-1.079 (0.140)	0.746 (0.772)	-2.003** (0.023)	-6.427*** (0.000)

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

The Table 4.4 shows the summary result of the unit root test for the macroeconomic variables interact with the lending rate with data period from year 2007-2016. The first test is Levin-Lin-Chu (2002), the null hypothesis of intercept without trend and with trend is rejected for all the variables include Real interest rate, Gross Domestic Product, Inflation Rate and Exchange rate. Therefore, we can conclude that all variables are significant.

Table 4.4, the test of First difference result of the Levin-Lin-Chu (2002) test for unit root test of intercept without trend, all the variables are significant. In the result of unit root test of intercept with trend, all the variables are still significantly against the null hypothesis for the unit root test. Therefore, we can conclude that all the variables are stationary computed by using Levin-Lin-Chu (2002) test.

When computing the Im, Pesaran and Shin (2003) test, the result show that most of the variables are significant except Exchange rate. For the result of intercept with trend, except the variables Exchange rate, all the variables are significant, the null hypothesis for these variables are rejected. The variable Exchange rate from the test shows insignificant, thus the null hypothesis is not rejected.

From Table 4.4, the result of the unit root test at First Difference for the Im, Pesaran and Shin (2003) of intercept with and without trend, all the variables' null hypothesis for the unit root test are rejected. Therefore, we can conclude that all the variables are significant.

4.2 Model Comparison

Table 4.5: Estimate for (POLS), FEM and REM (Model 1 and Model 2)

Models	Model 1 (Local Banks)			Model 2 (Foreign Banks)		
	POLS	FEM	REM	POLS	FEM	REM
C	-15.76850*** (0.0083)	-12.21128** (0.0149)	-15.76850*** (0.0012)	-18.46490** (0.0132)	21.89305*** (0.0004)	-18.46490*** (0.0020)
BOD	0.124683** (0.0225)	0.111459** (0.0194)	0.124683*** (0.0049)	1.611396** (0.0145)	1.631237*** (0.0076)	1.611396*** (0.0023)
LR	2.795932*** (0.0009)	1.610388** (0.0204)	2.795932*** (0.0001)	2.853620** (0.0131)	1.768781* (0.0657)	2.853620*** (0.0020)
lnBank Size	6.08E-06*** (0.0044)	2.54E-05*** (0.0000)	6.08E-06*** (0.0005)	6.22E-05*** (0.0099)	0.000129*** (0.0000)	6.22E-05*** (0.0013)
ROA	13.12699*** (0.0000)	12.17786*** (0.0000)	13.12699*** (0.0000)	3.509029* (0.0576)	7.972650*** (0.0004)	3.509029** (0.0175)
ROE	-0.726242*** (0.0000)	-0.573654*** (0.0007)	-0.726242*** (0.0000)	-0.030455 (0.7568)	0.132519 (0.2195)	-0.030455 (0.6960)
lnOE	0.001079 (0.3407)	0.000682 (0.5497)	0.001079 (0.2362)	-7.00E-05 (0.6690)	-0.000192 (0.2488)	-7.00E-05 (0.5897)
R-squared	0.541412	0.732715	0.541412	0.351582	0.631603	0.351582
Adjusted R-squared	0.503719	0.680068	0.503719	0.289827	0.554045	0.289827
F-statistic	14.36402***	13.91748***	14.36402***	5.693246***	8.143685***	5.693246***
Durbin-Watson stat	0.893156	1.275422	0.893156	0.668129	1.128538	0.668129
VIF	2.180607	3.74132	2.180607	1.542215	2.71446	1.542215
Hausman Test		47.238004 (0.0000)			43.326045 (0.0000)	

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

4.2.1 Pooled Ordinary Least Square (Pooled OLS)

Internal Factors:

Model 1(Local Banks)

There is a coordination between the data and the Pooled OLS. Results from E-views clearly indicated that all variables are significant except operating expenses. Moreover, all coefficients are significant with 0.01 (1%) except the X1 (Female Board of Directors) significant at 0.05 (5%) of the significance level.

The results from the Table 4.5 showed that with an additional one person increase in the X1 (BOD), on average, the bank profitability (net profit) of the eight local banks will increase 0.124683 (percent), holding other variables constant. On the other hand, additional one percent increases in X2 (lending rate), on average, the bank profitability (net profit) will increase 2.795932 (percent). Besides, increase one size in X3 (*ln* bank size), the bank profitability (net profit) will increase 6.08E-06. Moreover, increase additional one percent of X4 (ROA) will increase 13.12699 for the bank profitability; increase one percent of X5 (ROE) will decrease 0.726242 of bank profitability (net profit). For the X6 (*ln* Operating Expenses), when add additional RM1000, the bank profitability (net profit) will increase 0.001079 (percent).

The Table 4.5 also showed the X1 variable (Board of Director) is positively related to the bank profitability (net profit) since its coefficient is 0.124683. It is significant at the 5 percent of significance level with a probability of 0.0225 which is lesser than 0.05. Besides, the X2 variable (Lending Rate) has a positive relationship with the bank

profitability (net profit). It equal to 2.795932 and it is statically significant at 1 percent of significance level with a profitability of 0.0009 which is lesser than 0.01. Furthermore, the X3 variable (*ln* Bank Size) is equal to 6.08E-06, so it has a positive relationship between the bank profitability (net income). It is a significant at the 1 percent of significance level with a probability of 0.0044 which is lesser than 0.01. Moreover, the X4 variable (ROA) is equal to 13.12699, it is significant at the 1 percent of significant level with a profitability of 0.0000 which is lesser than 0.01. The X5 variable (ROE) is negatively related to bank profitability (net profit) since its coefficient is -0.726242, but it shows a statistically significant at 1 percent significance level as its probability is 0.0000 which is lesser than 0.10. In addition, the result from Table 4.5 shows that the X6 variable (*ln* Operating Expenses) is insignificant at 10 percent significant level with a probability of 0.3407. However, it is positively related to the bank's profitability (net profit) since its coefficient value is 0.001079.

In this study, the E-views result shows that the R-squared of Model 1 (internal factors) is 0.541412 or 54.1412 percent. This result is considered as a quite low level. On the other word, it means that the dependent variable (banks profit) can be explained by all the independent variable (X1 to X6). Besides, Durbin-Watson statistic value (0.893156) which can conclude as there is no mis-specification error. Hence, we can assume the possibility of autocorrelation problem in Model 1 is extremely low.

Model 2 (Foreign Banks)

For the foreign banks in the Model 2, the results from the Table 4.5 showed that with an additional one person increase in the X1 (BOD), on average, the bank profitability (net profit) of the foreign banks will increase 1.611396 (percent), holding other variables constant. On the other hand, additional one percent increases in X2 (lending rate), on average, the bank profitability (net profit) will increase 2.853620 (percent). Similarly,

increase one size in X3 (*ln* bank size), the bank profitability (net profit) will increase 6.22E-05. Moreover, increase additional one percent of X4 (ROA) will increase 3.509029 for the bank profitability; increase one percent of X5 (ROE) will decrease 0.030455 of bank profitability (net profit). For the X6, when add additional RM1000, the bank profitability (net profit) will decrease -7.00E-05 (percent).

The Table 4.5 also showed that the X1 variable (board of Director) is positively related to the bank profitability (net profit) since its coefficient is 1.611396. It is significant at the 5 percent of significance level with a probability of 0.0145 which is lesser than 0.05. Besides, the X2 variable (Lending Rate) showed a positive relationship between the bank profitability (net profit). It equal to 2.853620 and it also showed statically significant at 5 percent of significance level with a profitability of 0.0131 which is lesser than 0.05.

Furthermore, the X3 variable (*ln* Bank Size) is equal to 6.22E-05, so it has a positive relationship with the bank profitability (net income). It is a significant at the 10 percent of significance level with a probability of 0.0576 which is lesser than 0.1. Moreover, the X4 variable (ROA) is equal to 13.12699, it is significant at the 1 percent of significant level with a profitability of 0.0000 which is lesser than 0.01. The X5 variable (ROE) is negatively related to bank profitability (net profit) since its coefficient is -0.030455, and it shows insignificant at 1 percent significance level as it has a probability of 0.7568 which is more than 0.10. In addition, the result from Table 4.2 shows that the X6 variable (*ln* Operating Expenses) is also insignificant at 10 percent significant level with a probability of -7.00E-05. Thus, it is a negatively related to the bank's profitability (net profit) since it has 0.6690 of coefficient value.

In this study, E-views result shows that the R-squared of Model 2 (internal factors) is 0.351582 or 35.1582 percent. This result is considered as a quite low level. On the other word, it means that the dependent variable (banks profit) can explained by all the

independent variable (X1 to X6). Besides, the Durbin-Watson statistic value (0.668129) can conclude as there is no mis-specification error. Hence, the Model 1 can be assumed that the possibility of autocorrelation problem is extremely low.

Table 4.6: Estimate for (POLS), FEM and REM (Model 3 and Model 4)

Models	Model 3 (Local Banks)			Model 4 (Foreign Banks)		
	POLS	FEM	REM	POLS	FEM	REM
C	1.286333 (0.5140)	-0.550424 (0.8031)	1.286333 (0.5216)	2.702429 (0.2669)	0.673892 (0.8033)	2.702429*** (0.2719)
IR	-0.437589 (0.3222)	-0.305080 (0.5127)	-0.437589 (0.3309)	1.004401* (0.0696)	1.325405** (0.0238)	1.004401 (0.0725)
RL	0.049241 (0.7072)	0.105442 (0.4497)	0.049241 (0.7123)	0.179955 (0.2686)	0.282617 (0.1021)	0.179955* (0.2736)
GDP	0.547963*** (0.0004)	0.638329*** (0.0001)	0.547963*** (0.0005)	0.374985** (0.0461)	0.477413** (0.0173)	0.374985*** (0.0483)
ER	2.435688*** (0.0000)	2.776520*** (0.0000)	2.435688*** (0.0000)	1.079387* (0.0813)	1.289221* (0.0525)	1.079387* (0.0845)
R-squared	0.276878	0.320051	0.276878	0.155980	0.217608	0.155980
Adjusted R-squared	0.238311	0.210060	0.238311	0.104040	0.084999	0.104040
F-statistic	7.179232***	2.909778***	7.179232***	3.003090**	1.640974	3.003090**
Durbin-Watson stat	0.882224	1.022055	0.882224	0.724223	0.828075	0.724223
VIF	1.382893	1.470699	1.382893	1.18406	1.278132	1.184806
Hausman Test		4.317670 (0.3647)			4.647356 (0.3254)	

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

Macroeconomic Factors

Model 3 (Local Banks)

The results from the Table 4.6 showed that with an additional one percent increase in the X1 (Inflation Rate), on average, the bank profitability (net profit) of the eight local banks will decrease 0.437589 (percent), holding other variables constant. On the other hand, increase one percent increases in X2 (Real Interest Rate), on average, the bank profitability (net profit) will increase 0.049241 (percent). Besides, increase one percent in X3 (Gross Domestic Product, GDP), the bank profitability (net profit) will increase 0.547963 (percent). Moreover, add additional one percent of X4 (Exchange Rate), bank profitability (net profit) will increase 2.435688 (percent).

The Table 4.6 also stated the X1 variable (Inflation Rate) is negatively related to the bank profitability (net profit) since its coefficient is -0.437589. It is insignificant at the 10 percent of significance level with a probability of 0.3222 which is more than 0.10. Besides, the X2 variable (Real Interest Rate) showed it has a positive relationship with the bank profitability (net profit). It equal to 0.049241 but it showed insignificant at 10 percent of significance level with a probability of 0.7072 which is greater than 0.10. Furthermore, the X3 variable (GDP) is equal to 0.547963, so it has a positive relationship with the bank profitability (net income). It is significant at the 1 percent of significance level with a probability of 0.0004 which is lesser than 0.01. Moreover, the X4 variable (Exchange Rate) is equal to 2.435688, it is significant at the 1 percent of significant level with a probability of 0.0000 which is lesser than 0.01.

In this study, E-views result shows that the R-squared of Model 3 (macroeconomic factors) is 0.276878 or 27.6878 percent. This result is considered as a very low level. On the other word, it means that the dependent variable (banks profit) can explained by all the independent variable (X1 to X4). Besides, there is a high Durbin-Watson statistic value (0.882224) which can conclude as there is no mis-specification error. Hence, the Model 3 can be assumed that the possibility of autocorrelation problem is extremely low.

In this research paper, the E-views result shows that the R-squared of Model 3 (macroeconomic factors) is 0.276878 or 27.6878 percent. This result considers a very low level. On the other word, it means that the dependent variable (banks profit) can explained by all the independent variable (X1 to X4). Besides, there is a high Durbin-Watson statistic value (0.882224) which can conclude as there is no mis-specification error. Hence, the Model 3 can be assuming that the possibility of autocorrelation problem is extremely low.

Model 4 (Foreign Banks)

The results from the Table 4.6 showed that with an additional one percentage increase in the X1 (Inflation Rate), on average, the bank profitability (net profit) of the eight local banks will increase 1.004401 (percent), holding other variables constant. On the other hand, additional one percent increases in X2 (Real Interest Rate), on average, the bank profitability (net profit) will increase 0.179955 (percent). Similarly, increase one percentage in X3 (Gross Domestic Product, GDP), the bank profitability (net profit) will increase 0.374985 (percent). Moreover, add additional one percent of X4 (Exchange Rate), bank profitability (net profit) will increase 1.079387 (percent).

The Table 4.6 also stated the X1 variable (Inflation Rate) is positively related to the bank profitability (net profit) since its coefficient is 1.004401. It is a significant at the 10 percent of significance level with a probability of 0.0696 which is more than 0.10. Besides, the X2 variable (Real Interest Rate) showed it has a negative relationship with the bank profitability (net profit). It equal to 0.179955 and it showed insignificant at 1 percent of significance level with a profitability of 0.2686 which is more than 0.01. Furthermore, the X3 variable (GDP) is equal to 0.374985, so it has a positive relationship with the bank profitability (net income). It is a significant at the 5 percent of significance level with a probability of 0.0461 which is lesser than 0.05. Moreover, the X4 variable (Exchange Rate) is equal to 1.079387, it is significant at the 10 percent of significant level with a profitability of 0.0813 which is lesser than 0.10.

In this study, E-views result shows that the R-squared of Model 4 (macroeconomic factors) is 0.155980 or 15.5980 percent. This result is considered as a very low level. On the other word, it means that the dependent variable (banks profit) can explained by all the independent variable (X1 to X4). Besides, there is a high Durbin-Watson statistic value (0.724223) which can conclude as there is no mis-specification error. Hence, the Model 4 can be assumed that the possibility of autocorrelation problem is extremely low.

Table 4.7: Estimate for (POLS), FEM and REM (Model 5 and Model 6)

Models	Model 5 (Local Banks)			Model 6 (Foreign Banks)		
	POLS	FEM	REM	POLS	FEM	REM
C	6.702283*** (0.0000)	-0.378363*** (0.0000)	7.828504*** (0.0000)	8.164653*** (0.0000)	7.681729*** (0.0000)	8.164653*** (0.0000)
IR	-0.074563 (0.1720)	-0.047108 (0.4641)	-0.074563 (0.1825)	-0.038918 (0.6035)	-0.045695 (0.5595)	-0.038918 (0.6092)
RL	0.055059** (0.0261)	0.066253** (0.0149)	0.055059** (0.0299)	0.064011* (0.0512)	0.068587** (0.0456)	0.064011* (0.0548)
GDP	0.063586*** (0.0089)	0.080140*** (0.0041)	0.063586** (0.0106)	0.078979*** (0.0084)	0.101008*** (0.0029)	0.078979*** (0.0094)
ER	0.075222 (0.1045)	0.115810** (0.0426)	0.075222 (0.1130)	0.048242 (0.3705)	0.058341 (0.3609)	0.048242 (0.3779)
R-squared	0.174182	0.213575	0.174182	0.153245	0.206971	0.153245
Adjusted R-squared	0.130138	0.086359	0.130138	0.101137	0.072560	0.101137
F-statistic	3.954749***	1.678838*	3.954749***	2.940919**	1.539832	2.940919**
Durbin-Watson stat	0.892124	1.028078	0.892124	1.151827	1.334208	1.151827
VIF	1.210921	1.271577	1.210921	1.180979	1.260988	1.180979
Hausman Test		3.406227 (0.4923)			3.880279 (0.4225)	
LM Test	0.0000			0.0204		

Notes: *, ** and *** implies that the rejection of the null hypothesis of non-stationary at 10%, 5% and 1% significant level respectively.

Interaction

Model 5 (Local Banks)

The results from the Table 4.7 showed that with an additional one percent increase in the X1 (Inflation Rate), on average, the bank profitability (net profit) of the eight local banks will decrease 0.074563 (percent), holding other variables constant. On the other hand, additional one percent increases in X2 (Real Interest Rate), on average, the bank profitability (net profit) will increase 0.055059 (percent). Similarly, increase one percent in X3 (Gross Domestic Product, GDP), the bank profitability (net profit) will increase 0.063586 (percent). Moreover, add additional one percent of X4 (Exchange Rate), bank profitability (net profit) will increase 0.075222 (percent).

The Table 4.7 also stated the X1 variable (Inflation Rate) is negatively related to the bank profitability (net profit) since its coefficient is -0.074563. It is insignificant at the 10 percent of significance level with a probability of 0.1720 which is more than 0.10. Besides, the X2 variable (Real Interest Rate) showed it has a positive relationship with the bank profitability (net profit). It equal to 0.055059 and it showed significant at 5 percent of significance level with a probability of 0.0261 which is more than 0.05. Furthermore, the X3 variable (GDP) is equal to 0.063586, so it has a positive relationship with the bank profitability (net income). It is significant at the 1 percent of significance level with a probability of 0.0089 which is lesser than 0.01. Moreover, the X4 variable (Exchange Rate) is equal to 0.075222 and it is insignificant at the 10 percent of significance level with a probability of 0.1045 which is more than 0.10.

In this study, E-views result shows that the R-squared of Model 5 (macroeconomic factors) is 0.174182 or 17.4182 percent. This result is considered as a very low level. On the other word, it means that the dependent variable (banks profit) can explained by all

the independent variable (X1 to X4). Besides, there is a quite high Durbin-Watson statistic value (0.892124) which can conclude as there is no mis-specification error. Hence, the Model 5 can be assumed that the possibility of autocorrelation problem is extremely low.

Model 6 (Foreign Banks)

The results from the Table 4.7 showed that with an additional one percentage increase in the X1 (Inflation Rate), on average, the bank profitability (net profit) of the eight local banks will decrease 0.038918 (percent), holding other variables constant. On the other hand, additional one percent increases in X2 (Real Interest Rate), on average, the bank profitability (net profit) will increase 0.064011 (percent). Similarly, increase one percentage in X3 (Gross Domestic Product, GDP), the bank profitability (net profit) will increase 0.078979 (percent). Moreover, add additional one percent of X4 (Exchange Rate), bank profitability (net profit) will increase 0.048242 (percent).

The Table 4.7 also stated the X1 variable (Inflation Rate) is negatively related to the bank profitability (net profit) since its coefficient is -0.038918. It is insignificant at the 10 percent of significance level with a probability of 0.6035 which is more than 0.10. Besides, the X2 variable (Real Interest Rate) showed it has a positive relationship with the bank profitability (net profit). It equal to 0.064011 and it showed significant at 10 percent of significance level with a probability of 0.0512 which is less than 0.10. Furthermore, the X3 variable (GDP) is equal to 0.078979, so it has a positive relationship with the bank profitability (net income). It is significant at the 1 percent of significance level with a probability of 0.0084 which is lesser than 0.01. Moreover, the X4 variable (Exchange Rate) is equal to 0.048242 and it is insignificant at the 10 percent of significance level with a probability of 0.3705 which is more than 0.10.

In this study, E-views result shows that the R-squared of Model 6 (macroeconomic factors) is 0.153245 or 15.3245 percent. This result is considered as a very low level. On the other word, it means that the dependent variable (banks profit) can explained by all the independent variable (X1 to X4). Besides, there is a very high Durbin-Watson statistic value (1.151827) which can conclude as there is no mis-specification error. Hence, the Model 6 can be assumed that the possibility of autocorrelation problem is extremely low.

4.2.2 Random Efficient Model

Internal Factors:

Model 1 (Local Banks)

To match the POLS and REM in the Model 1, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.5, the REM results include the Female Board of Director (BOD), Lending Rate (LR), *ln* Bank Size, Return on Asset (ROA), Return on Equity (ROE) are significant in 1 percent expect the *ln* Operating Expenses (OE). It has a negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of 0.001079. The goodness of R^2 is at the middle level, which is 0.541412 or 54.1412 percent.

Bank profitability (net profit) will increase by 0.124683 (percent) for each additional 1 person of the Female Board of Director (BOD) in average, *ceteris paribus*. If the lending

rate increases by 1 percent, the bank profit will also increase 2.795932 (percent) on average, *ceteris paribus*. Moreover, the *ln* bank size increase by 1, the bank will increase 6.08E-06 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also increase by 13.012699 (percent) and 0.001079 (percent) when the ROA is increase by 1 percent and the *ln* operating expenses increase RM1000 on average, *ceteris paribus*. Lastly, when the ROE increases 1 percent, the bank profit will decrease 0.726242 (percent) on average, *ceteris paribus*.

Model 2 (Foreign Banks)

To match the POLS and REM in the Model 2, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.5, the REM results include the Female Board of Director (BOD), Lending Rate (LR), *ln* Bank Size, are significant in 1 percent. Besides, Return on Asset (ROA) is significant in 5 percent, expect for the Return on Equity (ROE) and *ln* Operating Expenses (OE). Both variables have a negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of -0.030455 and -7.00E-05. The goodness of R^2 is at the low level, which is 0.351582 or 35.1582 percent.

Bank profitability (net profit) will increase by 1.611396 (percent) for each additional 1 person of the Female Board of Director (BOD) in average, *ceteris paribus*. If the lending rate increases by 1 percent, the bank profit will also increase 2.853620 (percent) on average, *ceteris paribus*. Moreover, the *ln* bank size increase by 1, the bank will increase 6.22E-05 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also increase by 3.509029 (percent) when the ROA is increase by 1 percent on average, *ceteris paribus*. Lastly, when the ROE increases 1 percent and *ln* Operating Expenses (OE)

increase RM1000, the bank profit will decrease 0.030455 and 7.00E-05 (percent) on average, ceteris paribus.

Macroeconomic Factors:

Model 3 (Local Banks)

To match the POLS and REM test in the Model 3, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.6, the REM results include the Gross Domestic Production (GDP) and Exchange Rate (ER) are significant in 1 percent expect the Inflation Rate (IR) and Real Interest Rate (RL). These two independent variables have a negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of -0.437589 and 0.049241. The goodness of R^2 is at the low level, which is 0.276878 or 27.6878 percent.

Bank profitability (net profit) will decrease by 0.437589 (percent) for each additional 1 percent of the Inflation Rate in average, ceteris paribus. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.049241 (percent) on average, ceteris paribus. Moreover, the GDP increase by 1 percent, the bank will increase 0.547963 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 2.435688 (percent) when the Exchange Rate is increase by 1 percent.

Model 4 (Foreign Banks)

To match the POLS and REM test in the Model 4, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.6, the REM results include the Inflation Rate (IR) and Exchange Rate (ER) are significant in 10 percent and the Gross Domestic Product (GDP) is the one significant in 1 percent. On the other hand, Real Interest Rate (RL) is the only independent variable which has negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of -0.179955. The goodness of R^2 is at the low level, which is 0.155980 or 15.5980 percent.

Bank profitability (net profit) will increase by 1.004401 (percent) for each additional 1 percent of the Inflation Rate in average, ceteris paribus. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.179955 (percent) on average, ceteris paribus. Moreover, the GDP increase by 1 percent, the bank will increase 0.374985 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 1.079387 (percent) when the Exchange Rate is increase by 1 percent.

Interaction:

The following models will explain the interaction between the macroeconomic variables and the lending rate and overall affected the bank profitability.

Model 5 (Local Banks)

To match the POLS and REM test in the Model 5, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.7, the REM results include the Real Interest Rate (RL) and Gross Domestic Production (GDP) are significant in 5 percent expect the Inflation Rate (IR) and Exchange Rate (ER). These two independent variables have a negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of -0.074563 and 0.075222. The goodness of R^2 is at the low level, which is 0.174182 or 17.4182 percent.

Bank profitability (net profit) will decrease by 0.074563 (percent) for each additional 1 percent of the Inflation Rate in average, ceteris paribus. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.055059 (percent) on average, ceteris paribus. Moreover, the GDP increase by 1 percent, the bank will increase 0.063586 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 0.075222 (percent) when the Exchange Rate is increase by 1 percent.

Model 6 (Foreign Banks)

To match the POLS and REM test in the Model 6, the E-view result shows that both test have consistent results in sign and they are significant in each independent variable which have a goodness of fit (R^2). Base on the Table 4.7, the REM results include the Gross Domestic Product (GDP) is significant in 1 percent and the Real Interest Rate (RL) is the one significant in 5 percent. On the other hand, Inflation Rate (IR) and Exchange Rate (ER) are the independent variables which have negative relationship with the Dependent Variable (bank profitability) and insignificant with the coefficient of -0.045695 and 0.058341. The goodness of R^2 is at the low level, which is 0.153245 or 15.3245 percent.

Bank profitability (net profit) will decrease by 0.038918 (percent) for each additional 1 percent of the Inflation Rate in average, *ceteris paribus*. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.064011 (percent) on average, *ceteris paribus*. Moreover, the GDP increase by 1 percent, the bank will increase 0.078979 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also increase by 0.048242 (percent) when the Exchange Rate is increase by 1 percent.

4.2.3 Fixed Efficient Model

Internal Factors:

Model 1 (Local Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the Table 4.5, the FEM test result shows that the *ln* Bank Size, Return on Asset (ROA) and Return on Equity (ROE) are statistically significant at 1 percent significant level. On the other hand, the Female Board of Director (BOD) and Lending Rate (LR) are statistically significant at the 5 percent significance level. Instead, the *ln* Operating Expenses (OE) is the only one which has the negative relationship with the Bank's profitability (net profit) and insignificant of 0.5497.

Bank profitability (net profit) will increase by 0.111459 (percent) for each additional 1 person of the Female Board of Director (BOD) in average, *ceteris paribus*. If the lending rate increases by 1 percent, the bank profit will also increase 1.610388 (percent) on average, *ceteris paribus*. Moreover, the *ln* bank size increase by 1, the bank will increase 2.54E-05 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also

increase by 12.17786 (percent) and 0.000682 (percent) when the ROA is increase by 1 percent and the *ln* operating expenses increase RM1000 on average, ceteris paribus. Lastly, when the ROE increases 1 percent, the bank profit will decrease 0.573654 (percentage) on average, ceteris paribus.

Model 2 (Foreign Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the Table 4.5, FEM test result shows that the Female Board of Director (BOD), *ln* Bank Size and Return on Asset (ROA) are statistically significant at 1 percent significant level. On the other hand, the Lending Rate (LR) is statistically significant at the 5 percent significance level. Instead, the Return on Equity (ROE) and *ln* Operating Expenses (OE) are the only one which has the negative relationship with the Bank's profitability (net profit) and insignificant of 0.132519 and -0.000192.

On the other hand, bank profitability (net profit) for the foreign banks in Model 2 will increase by 1.631237 (percent) for each additional 1 person of the Female Board of Director (BOD) in average, ceteris paribus. If the lending rate increases by 1 percent, the bank profit will also increase 1.768781 (percent) on average, ceteris paribus. Moreover, the *ln* bank size increase by 1, the bank will increase 0.000129 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 7.972650 (percent) and 0.132519 (percent) when the ROA is increase by 1 percent and the ROE increase 1 percent on average, ceteris paribus. When the *ln* operating expenses increases RM1000, the bank profit will decrease 0.000192 (percent) on average, ceteris paribus.

Macroeconomic Factors:

Model 3 (Local Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the FEM result of the Table 4.6, the Gross Domestic Product (GDP) and Exchange Rate (ER) are statistically significant at 1 percent significant level. Instead, the Inflation Rate (IR) and the Real Interest Rate (RL) are the two independent variables which have the negative relationship with the Bank's profitability (net profit) and insignificant of 0.5127 and 0.4497.

Bank profitability (net profit) will decrease by 0.305080 (percent) for each additional 1 percent of the Inflation Rate in average, *ceteris paribus*. If the Real Interest Rate increases by 1 percent, the bank profit will also increase 0.105442 (percent) on average, *ceteris paribus*. Moreover, the GDP increase by 1 percent, the bank will increase 0.638329 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also increase by 2.776520 (percent) when the Exchange Rate is increase by 1 percent.

Model 4 (Foreign Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the Table 4.6, FEM test result shows that the Inflation Rate (IR) and Gross Domestic Product (GDP) are statistically significant at 5 percent significant level. Besides, the Exchange Rate (ER) is stay at the 1 percent of significant level. Instead, the Real Interest Rate (RL) is the only one independent variables which has the negative relationship with the Bank's profitability (net profit) and insignificant of 0.1021

Besides, the bank profitability (net profit) of the foreign banks in Model 4 will increase by 1.325405 (percent) for each additional 1 percent of the Inflation Rate in average, ceteris paribus. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.282617 (percent) on average, ceteris paribus. Moreover, the GDP increase by 1 percent, the bank will increase 0.477413 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 1.289221 (percent) when the Exchange Rate is increase by 1 percent.

Interaction:

Model 5 (Local Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the Table 4.7, FEM test result shows that the Real Interest Rate (RL) and Exchange Rate (ER) are statistically significant at 5 percent significant level. Besides, the Gross Domestic Product (GDP) is stay at the 1 percent of significant level. Instead, the Inflation Rate (IR) is the only one independent variables which has the negative relationship with the Bank's profitability (net profit) and insignificant of 0.4641.

The bank profitability (net profit) of the local banks in Model 5 will decrease by 0.047108 (percent) for each additional 1 percent of the Inflation Rate in average, ceteris paribus. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.066253 (percent) on average, ceteris paribus. Moreover, the GDP increase by 1 percent, the bank will increase 0.080140 on average, ceteris paribus. Besides, the bank profit (net profit) will also increase by 0.115810 (percent) when the Exchange Rate is increase by 1 percent.

Model 6 (Foreign Banks)

By comparing the POLS and the FEM, most of the result are similar expect for the *ln* Bank Size. From the Table 4.7, FEM result shows that the Real Interest Rate (RL) is statistically significant at 5 percent significant level. Besides, the Gross Domestic Product (GDP) is stay at the 1 percent of significant level. Instead, the Inflation Rate (IR) and Exchange Rate (ER) are the two independent variables which have the negative relationship with the Bank's profitability (net profit) and insignificant of 0.5595 and 0.3609.

Besides, the bank profitability (net profit) of the foreign banks in Model 6 will decrease by 0.045695 (percent) for each additional 1 percent of the Inflation Rate in average, *ceteris paribus*. If the Real Interest Rate increases 1 percent, the bank profit will also increase 0.068587 (percent) on average, *ceteris paribus*. Moreover, the GDP increase by 1 percent, the bank will increase 0.101008 on average, *ceteris paribus*. Besides, the bank profit (net profit) will also increase by 0.058341 (percent) when the Exchange Rate is increase by 1 percent.

4.3 Comparison Test

4.3.1 Lagrange Multiplier Test (Interaction)

In this study, the tests Pooled OLS, REM and FEM are carry on selecting the best model to explain the relationship between the macroeconomic factors and the bank profit (net profit). From these three methods, an additional test is carried out to choosing the best model, which is Lagrange Multiplier Test (LM Test).

The primary objective of using the LM test in this study mainly is used to compare between the Pooled OLS and the REM. From the result displayed at Table 4.7, the p-value for the local banks (0.0000) and foreign banks (0.0204) are smaller than the significance level at 1%, 5% and 10% respectively. The result shows that REM is better than the Pooled OLS.

4.3.2 Hausman Test

Hausman test is used to test which panel regression model has more trustworthiness and efficient result. The panel regression models are Fixed Efficient Model (FEM) and Random Efficient Model (REM). This study is to find out how the internal factors and macroeconomic factors affect the profitability of the local and foreign banks during the period from year 2007 to 2016.

For the Model 1, the local bank's result showed that the p-value is 0.0000, which is less than the significant level 0.05 (5%). On the other hand, the result of the foreign banks in Model 2 also showed the p-value also 0.0000, which is less than the significant level 0.05(5%). With the result produced, it is evident that with the result from foreign and local bank results, Fixed Efficient Model (FEM) produced the most optimal result.

For the Model 3, the local bank's result showed that the p-value is 0.3647, which is higher than the significant level 0.05 (5%). Besides, the result of the foreign banks in Model 4 also showed the p-value of 0.3254, which is more than the significant level 0.5 (5%). Statistic from both local banks and foreign banks in model 3 and model 4, it clearly indicated that the Random Efficient Model (REM) is better than the Fixed Efficient Model (FEM).

Lastly, for the Model 5 (interaction), the local bank's result showed that the p-value is 0.4923, which is higher than significant level 0.05 (5%). Besides, the result of the foreign banks in the Model 6 showed the p-value of 0.4225, which is higher than the significant level 0.05 (5%). The Hausman Test proved that the Random Efficient Model (REM) is still better than Fixed Efficient Model (FEM) in model 5 and model 6 when comparing between both local banks and foreign banks.

Therefore, based on the Hausman Test result, we can conclude that Random Efficient Model (REM) is better than the Fixed Efficient Model.

4.4 Conclusion

In the end of this chapter, some variables show statistical significance relationship with the dependent variable, bank profitability (net profit). For the local bank's result shows in the Model 1, the Female Board of Director (BOD), Lending Rate (LR), *ln* Bank Size, Return on Asset (ROA), and Return of Equity (ROE) are significant. However, the *ln* Operating Expenses (OE) shows that it has insignificant relationship with the bank profitability. Besides, for the foreign banks in Model 2, the variables of the Female Board of Director (BOD), Lending Rate (LR), *ln* Bank Size, and Return on Asset (ROA) are significant. Whereas, the other two variables which are Return of Equity (ROE) and *ln* Operating Expenses (OE) show insignificant relationship with the bank profit.

For the Model 3, Inflation Rate (IR) and Real Interest Rate (RL) from the local banks and foreign banks showed insignificant relationship with the bank profit. The Gross Domestic Product (GDP) and Exchange Rate (ER) are the only two variables from the local banks and foreign banks in the Model 4 showed significant relationship with the bank profit. Besides, the sign of the coefficient for all the independent variable from E-view's result

are consistent with expected sign which is discussed in the earlier chapter. Therefore, the next chapter will discuss in detail about the findings, policy implication of the study, recommendation for the future research and the limitation of the research.

5.0 CONCLUSION

5.0 Introduction

In this final chapter, it has consisted the summary of statistical analysis that was presented in previous chapter. Besides, this chapter will continue to discuss about the major findings to validate with the research objectives and the hypothesis which set in previous chapter. It also will discuss the policy implication, limitations of this research and the recommendations in detail way. Moreover, the conclusion of the overall for this research paper will be draws in the last session of this chapter.

5.1 Discussion of Major Finding

This research is to examine the bank profitability (net profit). Thus, the Board of Director (BOD), Lending Rate, Bank Size, Return on Asset (ROA), Return on Equity (ROE), Operating Expenses, Inflation Rate, Real Interest Rate, Gross Domestic Product (GDP) and Exchange Rate will be the independent variables that affect the bank's profitability of the local banks and foreign banks in whole Malaysia.

As the internal independent variables for the local banks (Model 1), Board of Director, Lending Rate, Bank Size, Return on Asset, Return on Equity are significant while Operating Expenses is the only independent variable shows the insignificant with the bank profitability (net profit). For the foreign banks (Model 2), the internal independent variables as Board of Director, Lending Rate, Bank Size and Return on Asset are significant with the bank profitability (net profit) while Return on Equity and Operating

Expenses are the independent variable show the insignificant with the bank profitability (net profit).

Besides, the macroeconomic independent variables (Model 3 and 4) such as Gross Domestic Product and Exchange Rate for the local banks and foreign banks are significance. Meanwhile, the Inflation Rate and Real Interest Rate are the only two macroeconomic independent variables have the insignificant relationship with the bank profitability (net profit).

Furthermore, in this research, the Hausman test is used after all the data have been analyzed by using the E-view 9 and 10 software. From the result, Hausman test suggested Fixed Efficient Model (FEM) has more efferent and trusty result.

Independent Variables	Local Banks	Foreign Banks
Board of Director	Significant**	Significant**
Lending Rate	Significant***	Significant**
Bank Size	Significant***	Significant***
Return on Asset	Significant***	Significant*
Return on Equity	Significant***	Insignificant
Operating Expenses	Insignificant	Insignificant
Gross Domestic Product	Significant***	Significant**
Exchange Rate	Significant***	Significant*
Inflation Rate	Insignificant	Insignificant
Interest Rate	Insignificant	Insignificant

Significant at *** 1 percent, ** 5 percent, * 10 percent

Based on the previous result in chapter 4, in the model 1 and 2, there is significant positive relation to be found between female board of director and bank's profitability at local and foreign bank that operate in Malaysia. The result is to be consistent with the study Vinnicombe and Singh (2004) who said a company having women on the board will be more creative, innovative and transparent whereas the company could have achieved better performance. Besides that, female employees are to be encouraged, stimulated, and motivated while there are women on their company's board, the reason behind this is they can strive to the top (Rose 2007).

In the model 1 and 2, lending rate is found to have significant positive impact towards bank's profitability. With the new base rate that started effect in Malaysia on January 2, 2015. Thus, if the banks decide to increase their rate, eventually they will be earning more on the interest on the loan given. Thus, changing of the lending rate will have huge influence on the bank's profitability (BNM 2015).

In the model 1 and 2, bank size do have significant positive relationship for the selected local and foreign bank in Malaysia, The result is stand in line with the study of Syafri (2012), as larger bank could have create the economics of scale which is to reduce the cost of information mining process, lowering down the average cost of the bank thus banks have bigger space for it profit to be growth. Additionally, larger bank willing take extraordinary risk compare with the smaller bank size, thus with the higher risk result of higher return. On the study of Halkos and Salamouris (2004), through investigating the Greek bank and concluded that bank with higher asset will have higher efficiency in operating.

Based on the result in previous chapter, in the model 1 and 2, return on asset is significant and positive towards local and foreign bank's profitability. Moreover, the result is in line with the study of Atanasoglou, Brissimis, and Delis (2008) that Return on assets it show

the bank effectively managing its assets to generate profit, the higher Return on Assets indicates the bank is better at controlling and converting its investment into income, thus banks with high Return on Assets are using less deposit to earn more on investment activities.

In the model 1, Return on Equity has been found to have a significant positive impact on the local bank's profitability. The result is consistent with the hypothesis in the previous chapter. By the study of Jahangir (2007), Return on Equity is used as one of the measurements for the profitability of the bank, with a higher figure of Return on Equity compared within the bank industry, it shows the bank is performing well as it converts deposits into larger and better gains and growth for its bank and investors. Moreover, Lee and Kim (2013) found that economies of scale will lead to an insignificant impact on bank profit. This may be caused by the limitations on bank profitability based on the study.

Also, in the model 3 and 4, the Gross Domestic Product after the test is found to have a positive significant relationship with local and foreign bank's profitability. The result is proved and agreed in the study by Gul, Irshad and Zaman (2011), where they explained that when economic growth tends to boost the demand of consumers for loans and encourages banks to increase the amount of loans to lend out at higher rates. In a nutshell, the profitability of a bank is able to raise its profit while the Gross Domestic Product is growing, the reason for this is the high demand for loans from firms that want to expand, and the consumer's desire for spending.

Besides, in the model 3 and 4, there is a positive significant relationship between the exchange rate and the local and foreign bank's profitability. According to the study by Taiwo and Adesolo (2013), the exchange rate is found to have a positive influence on the bank's profit. A country with a stable exchange rate policy and appropriate lending rules can stimulate the bank's performance.

Moreover, in the model 1 and 2, the operating expenses has an insignificant relationship with bank's profitability in local and foreign bank in Malaysia. In the year 2008, economy market had faced the financial crisis. The result is proved by the study in Honohan and Beck (2007), where financial crisis directly results which a bank has bad debt which predict the loan will become a bad debt in the future and it may demonstrate operating expense have insignificant relationship with bank profitability.

In the model 3 and 4, interest rate has insignificant relationship with local and foreign banks' profitability. The results show that interest only has small effect on the bank which are small-sized. Therefore, we can say that there will be less or no effect to the banks' profitability in Malaysia (Hesna Genay, 2014).

In the model 5 and 6, inflation has found that there is insignificant relationship with lending rate for local and foreign bank that operates in Malaysia. Based on the research result, the fluctuation of inflation rate will not affect lending rate (Ebiringa, et.al, 2014). Moreover, the increase in exchange rate lead to increasing the value of own currency. However, the foreign bank is operated in Malaysia and use Malaysia currency for their financial transaction. Therefore, there is no effect for the changes of exchange rate towards the foreign bank's lending rate policy (Yu Hsing, 2014).

This study concluded that the condition of inflation in the total demands of loan, the status of the macroeconomic environment, the growth of the economic, and also the foreign exchange rates in Malaysia have great influenced on the lending rate in Malaysia Commercial banks.

5.2 Implication of the study

Based on the results that we study, there are some implications can be achieved. There are three internal factors and two macroeconomic factors that show significant impact on the profitability of local and foreign bank. Female Board of Director (BOD), lending rate and return on asset are internal factors while gross domestic product and exchange rate are macroeconomic factors.

Firstly, the female Board of Director (BOD) has significant impact on bank profit. Besides, the fixed effect model test result also shows that female Board of Director (BOD) has significant effect on profit of local and foreign bank. Ramya & Raghurama (2016) stated that the female had positive effect on bank profit. We may suggest government to set the laws and regulations to let female participate in the working market. For example, there was a law that first published in 2011, called Women, Business and the Law data (Alice, N., 2012). This law is to enhance the female participation in workplace. As we suggest that female can join the management team like standard chartered, it has more female BOD, and so it will increase the profit. Government can emphasize the company to concern about the behavior of female employees and praise them during good performance. The importance of implication can raise the efficiency, bank profit and reduce the banking risk. Female director will be more careful and pay more attention compare to the male director in most of the time. However, female is more independent and capability nowadays. The well interaction and communications also show the ability of female director to solve the problems in bank.

Moreover, Ogunbiyi and Ihejirika (2014) found that bank profit was influenced by lending rate and there is positive relationship between bank profit and lending rate. The higher the lending rate will lead to higher the bank profitability. We may suggest that the government should apply monetary policy in order to improve bank profitability. The

management of bank should manage their liquidity of the money supply and strengthen lending rate policy. For example, bank should manage efficiently, monitoring framework and make sure that the bank has sufficient money in bank as required reserves. The importance of this implication is flexibility regard with charging moderate lending rates in the affairs (Ogunbiyi, S. S., 2014).

In addition, based on our results, return on asset has significant relationship between bank profitability. Bank plays an important role in economic growth. As we know that, the increases of debt will lead to the risk increases. So, we suggest that the bank should concern about the profitability by controlling their internal sources of financing. Besides, the top management of the bank should make a wise decision during financing and this will help to maintain the profitability and competitive (Taani, K., 2013). A good management can help the bank to improve profit through the efficiently of manage. For instance, bank can adopt the deposit by setting the competitive lending rates and enable the customers for applying loans (Taani, K., 2013).

Furthermore, our results show that gross domestic product has a positive and significant influence on the bank profitability. Pasiouras & Kosmidou (2007) also stated that there is significant positive relationship between gross domestic product growth and banking profit both domestic and foreign banks. Gross domestic product is a main indicator to examine the economic growth. Gross domestic product will lead to the economy's production and so it will influence the economic growth. For example, policy makers use gross domestic product to determine the economy. The economy either is contracting or expanding based on the gross domestic product. We may suggest government should supervisory the production of country to avoid the economy contracting.

Lastly, exchange rate has a significant impact on bank profitability based on our results. Combey & Togbenou (2017) found that exchange rate had significant effect on bank

profitability. The volatility of exchange rate also will influence the economic growth. We may suggest that bank managers should build risk management team. So, they can make control strategies and follow closely monetary policy. However, policy makers should control the money supply in order to take the situation of banking system into the account (Kasman, S., Vardar, G., & Tunç G., 2011). Monetary policy also can help to stable the banking system.

5.3 Limitations

The major activities for Bank profitability come from the service charges fees and accrual bond that receive on the property. Based on our research, we are evaluating the relationship between economic and financial factor and bank profitability. Hence, investor can easily make decision and improve the evidence through before their investing in the bank. Despite the advantage of the bank profitability, there also have a lot of limitation based on our research.

Based on our research, we have found the database from local and foreign bank with different internal and macroeconomics perspective variable from year 2006 in Malaysia. During the process that we have gather the empirical database of local and foreign bank, it is make difficult to certainly establish that the sufficient bank data in the draft and incredible to make a proper analysis based on the insufficient data. Hence, we have face challenges that the big amount of the bank database which require strict data management. The big amount of bank database which imperfect processing of data can lead to data corruption. Thus, it may impact the finding on the research.

Besides, we also have inadequate to obtain the data of female participant who work in the local and foreign bank as dependent variable. Hence, we unable to estimate the

significant relationship between female participant and bank profitability in the absence of complete data. As we know, quantitative of the studies have require of the extensive wide range of the statistical analysis. Hence, some of the foreign bank are evacuate the banking market from Malaysia. Due to preventive and safety measures, we can only get not much of the foreign bank database on their web page. This also caused the unbalance database of the several variables are unbalance between local and foreign bank. If we neglect these missing and unbalance variable, it may also affect our result when we are estimate the economic modal.

Last but not least, at the globalization level, the combination of the economy market and supply chain were affected all of the foreign countries. This will lead to great changes in the market fluctuations, unstable economy rate and lower leverage due to the global crisis. Hence, some of the foreign banks will reduce their fund and budget of the business to decrease their outflow in the local market. Hence, it also caused these of the foreign bank consider to retreats their business in the Malaysia.

5.4 Recommendation for Future Research

After plenty of these studies and comparing with macroeconomics that faced by local bank and foreign bank, there are some recommendation for the next researchers. Based on these studies, missing and unbalance data are the largest problem that we had faced. Due to this limitation, we have to reduce the size of the bank database. There are few of the recommendation that had made in this study.

Future researcher can supplement these defects which missing and unbalanced data of the several variables that will impact bank profitability in Malaysia. It is suggested that future researcher can incorporate some of the new variable such as sector of female participant

that work as board of director for this economy model and estimate the significant relationship to improve the economy modal more accuracy. Not only sector of female participant, future researcher also can consider estimating some of the new variable in this study.

Finally, future researcher also suggested to estimate the economic modal with more largest of the period to have more accurate results. Next, it also suggests future researcher can consider estimate and enhance the economy modal to finding their significant relationship through different country and region.

5.5 Conclusion

In the last session of this chapter, this research paper has accomplished the ultimate objective as the title showed which is to investigate what variables from the internal factors and macroeconomic factors will affected and how they will affect the bank's profitability (net profit) of the local banks and foreign banks in whole Malaysia. The internal variables include the Board of Director, Lending Rate, Bank Size, Return on Asset, Return on Equity and Operating Expenses. Meanwhile, the macroeconomic factors include Inflation Rate, Real Interest Rate, Gross Domestic Product and Exchange Rate. In this research, the period of data is chosen from January 2007 to December 2016 and total 15 banks in Malaysia is selected which is 8 licensed local commercial banks and 7 foreign banks are be used in measurement of their profitability (net profit). The sample sizes for this study are 80 and 70. Besides, in this chapter also carry out the statistical analysis, discussions of major findings and policy implications for this study. The limitations which was faced when this research is carry out also been presented in this last chapter along with the recommendation for the future research.

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