THE IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) INFLOWS TOWARDS NON – PERFORMING LOANS IN MALAYSIA COMMERCIAL BANKS

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DECLARATION

We hereby declare that:

(1) This undergraduate FYP 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 FYP 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 FYP.

(4) The word count of this research report is _____20282 words_____.

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DEDICATION

First, our group member would like to dedicate this study to our supervisor, Mr. Koh Chin Min. He provided us with many guidelines and motivated us to complete our group final paper successfully.

In addition, our group member would also like to dedicate this paper to our family and course mates who provided us with a lot of support until the completion of the paper. Without their blessings and support, this work could not be completed successfully. Last but not least, we dedicate this project to all those who actively support us in completing this project.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ALLL	Allowance Loan and Lease Loss Reserves
ARIMA	Autoregressive Integrated Moving Average
BLUE	Best Linear Unbiased Estimator
BNM	Bank Negara Malaysia
BOPO	Operational Cost Operating Income
BOT	Bank of Tanzania
CAR	Capital Adequacy Ratio
CECL	Current Expected Credit Losses
CEM	Common Effect Model
CESEE	Central, Eastern and South Eastern Europe
CLRM	Classical Linear Regression Model
DDF	Directional Distance Function
DEA	Data Development Analysis
D. F.	Degree Of Freedom
DOSM	Department of Statistics Malaysia
EVA	Economic Value Added
EViews	Econometric Views
FDI	Foreign Direct Investment

FDR	Financing to Deposit Ratio
FEM	Fixed Effect Model
FOREX	Foreign Exchange
GDP	Gross Domestic Products
GMM	Generalized Method of Moments
MNC	Multinational Companies
NPF	Non – Performing Financing
NPLs	Non – Performing Loans
PP	Phillip Perron
REM	Random Effect Model
ROA	Return on Asset (Profitability)
ROI	Return on Investment
SOL	Solvency
VIF	Variance Inflation Factor

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PREFACE

This research project is submitted as a partial fulfillment of the requirement for the graduate student of Bachelor of Business Administration (Hons) Banking and Finance in Universiti Tunku Abdul Rahman (UTAR). The title for this research report entitles "The Impact of Foreign Direct Investment (FDI) Inflow Toward Non-Performing Loans in Malaysia Commercial Banks" with the supervision by Mr. Koh Chin Min. The final year project is completed solely by the authors based on others researches and resources quoted as in references.

The mainly focus of this research study is to investigate the impact of FDI inflow toward Non-Performing Loans in Malaysia Commercial Banks. The independent variables applied in this research study are FDI Inflow along with other variables which are inflation rate, trade openness, bank size and capital adequacy ratio (CAR) while Non-Performing Loans (NPLs) used as the dependent variable in this research study.

We hope that the discussion of major findings, result summary, policy implication, limitation and recommendation is helpful for us or other for better understand on impact of all factors influence the bank's NPLs at the same time bring a significant contribution to further studies.

ABSTRACT

In Malaysia, banking institutions with increasing credit risk would eventually jeopardise the country's overall financial stability. The impact of Foreign Direct Investment (FDI) inflows on Malaysia's Non – Performing Loans (NPLs) is examined in this research study. Data from 2010 to 2019 are collected and analysed through various tests using EViews. The results show that FDI inflows have a significant positive effect on NPLs in Malaysia Commercial Banks. From the results, it is found that as Malaysia's credit supply increases due to foreign inflows from China, it lowers the credit standard and consequently NPLs increase. The main findings have implications and contribute to the review of literature to determine the relationship between FDI inflows and NPLs by determining the relationship between FDI inflows and NPLs in the context of commercial banks in Malaysia.

CHAPTER 1: INTRODUCTION

1.0 Introduction

The major goal of this research is to determine the impact of foreign direct investment (FDI) inflows towards non-performing loans (NPLs) in Malaysia Commercial Banks. By definition, NPLs is defined as credit risk towards the commercial banks in Malaysia. Thus, there are several controversies that have embarked on the impact of FDI inflows towards the NPLs that may influence the overall economic growth as well as the performance of the bank. Throughout this study, the factors that are taken into consideration includes FDI inflows, inflation rate, trade openness, bank size as well as capital adequacy ratio (CAR) that fulfils the criteria of factors which lead to the changes of bank performance in Malaysia.

In this particular chapter, the overall context for this research is being discussed which followed by the outline of this research study. Furthermore, there are several past studies and problem statements will also be discussed in detail to contribute to this research study. Besides this study will provide a clear notion regarding NPLs in Malaysia Commercial Banking. This research is to comprehend whether the FDI inflows are able to be one of the recovery prospects to reduce the NPLs rate other than the policy in Malaysia Commercial Bank as one of the purposes to conduct this research. Therefore, the result of the study would be able indicate whether the research may aid as one of the recovery prospects. This may help the financial institutions mainly banking sectors along with growing Malaysia's economies.

Besides, research questions and objectives of this study will be highlighted to be achieved and also testified via the hypothesis statement. The overall significance of the research study is regarding the contribution towards the main area that includes academic, industry and policy. Finally, this chapter will be summarised with a conclusion.

1.1 Research Background

In general, Malaysia's Commercial Banking sector has been operating alongside the Islamic banking sector which is legally recognised under the governance law of Central Bank of Malaysia Act 2009 (Othman Luk et al., 2021). By having a dual banking system, it exhibits different levels of efficiency towards banking operations and also different risk appetite associated with the banking sector (Alam ,2012). Due to different exhibits in dual banking system, commercial banking is the most important concern appertaining to this research study. This is due to the reasons that the development process of the commercial bank in nations is important for the mobilisation of resources or funds in the development of economic growth (Ragonmal, 2016).

According to BAFIA 1989 (Section 2), commercial bank is an entity that plays their role in financial services such as money lending, accepting deposits, collecting cheques and others (Zahiro, 2014). Commercial banking provides variety financial services to consumers that channels surplus funds to deficit by offering loans, deposits, and others (Idhbea, 2018). This reflects the objectives of the banking sector which offers a wide variety of products across the product line that aims to achieve a higher profit in return. Besides, the commercial banking sector is known for its primary axis of financial system. Thus, when the banking sector fails to meet its obligation, the entire economy and financial system will be disrupted in the particular country (Zahiro, 2014).

The failure of banking system was portrayed during the Great Recession where banks were over relying on the specific financing resources that triggered the funds inflows and resorted to volatile funding ability (Rixtel & Gasperini, 2013). The development of various funding channels through diversifications may lead to systematic crisis towards the bank (Rixtel & Gasperini, 2013). Thus, different financing operations exhibit different types of risk associated from the banking operation (Idhbea, 2018). The risk exposures that concern the banking sector were mainly arises from loans and credit lines (Antoniades, 2015).

The emerging trend of the commercial banking sector, most of the banking operations are susceptible to risk associated by the digital transformation, financial reregulation combined with deregulation alongside with integration of the global market (Ishtiaq, 2015). Considering

the facts that commercial banks would face several risks due to the evolvement of technology advancement for instance, credit risk, operational risk, foreign exchange (FOREX) risk, liquidity risk as per studied by Ishtiaq (2015). The risk associated is commonly known as risk management in the banking industry. In accordance with Yaylal and Safakli (2015), the study indicates that the existence of risk management does not mean to prohibit the existing banks to take risk, but it is meant for safeguarding the capital structure of the bank operation. A well-developed banking system would allow a better adaptation to variety conditions that is complied with the structure of the banking system (Yaylal & Safakli, 2015).

In order to seek for longer term of successfulness in banking organisation, credit risk is one of the critical components to define the management effectiveness (Njanike, 2009). On the other hand, credit risk is defined as the bank's borrower or the counterparty who fails fulfil their obligations upon the term and conditions agreed through contracts. By applying the credit risk, banks used to facilitate the bank's rate of return adjusted for risk by keeping the vulnerability of credit risk within the exposure criterion. Besides, banks are required to competent in controlling the credit risk in the overall portfolio as well as the risk in terms of individual transactions or credits. However, credit risk should be considered by banking institutions in conjunctions with other risks; in fact, credit risk is a crucial component in defining a complete risk management strategy and critical to any banking organization's long-term success (Njanike, 2009).

Besides, the credit risk is also one of the unsystematic risks to be apply in the NPLs as it includes all the important component in the banking book and trading book, and both on and off the balance sheet (Laurent et al., 2016). Furthermore, the banks are increasing credit risk in various financial instruments other than loans, it does include the acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, and in the extension adherence and guarantees and the settlements of transactions (Basel Committee on Banking Supervision & Bank for International Settlements, 2000).

Furthermore, a higher reliance on debt financing and the changes in the economic environment or interest rates may result in a greater negative impact on business development (Muriithi et al., 2016). The core business of the bank that is involved in granting loans and credit deposits

are prone to credit risk (Manab et al., 2015). The increase of credit risk will lead to the increase of marginal cost on debt and equity, whereas the bank financing costs are also increasing. As banks manage to handle the credit risks better, the better tendency for banks to experience financial crisis (Ekinci & Poyraz, 2019).

The Basel Committee relation to Banking Supervision has defined credit risk as the possibilities of partial or total loss of outstanding loans due to NPLs. A bank loan is considered bad debt when the contract exceeds more than 90 days without the borrower paying the agreed terms and conditions such as the instalments or interest stated. In addition, credit risk is usually substitute by NPLs in such the credit risk are loans and advance overdue by 90 days or more from the due date (Basel Committee on Banking Supervision & Bank for International Settlements, 2000). Besides, NPLs can also be known as a bad debt if the borrower did not complete the payment as stated in the contract provided. Moving on, existing of NPLs is found during the studies on bank efficiency where it is related to the bank account asset quality. The omitted variable of NPLs might leads to an erroneous bank efficiency measure (Mester, 1996). This is true that there were large proportion of NPLs may signal the banks use fewer resource than usual in their credit evaluation and loan monitoring process. In addition, the NPLs will lead to inefficiency in the banking sector as found by Altunbas et al. (2000); Fan and Shaffer (2004); Girardone et al. (2004). This is because bank is more efficient on managing their credit risk as highlighted by Berger and DeYoung (1997).

A bank which has recorded a large percentage of its outstanding loans as NPLs will dampen its financial performance in the banking sector. Banks mostly make their profits based on the interest charge on loans they assigned and therefore when borrowers fail to fulfil their obligation, banks consider them as bad debts. It means the chances of recovery rate from the default loan repayments are negligible because unable to collect the interest payment from the NPLs. It will affect the bank's cash flow where they will have less money in hand to create new loans to other borrowers and pay for operating costs for its institution. Based on research by Kithinji (2010), NPLs will result in high loan provisioning which leads to drop-in profits for many banks and supported by Abd Karim et al. (2010) research found that it reduces the ability of bank sector to play its role in the development of the economy.

Additionally, the past published studies revealed that the primary cause of the increase in the level of NPLs are mainly from lower rate of gross domestic products (GDP), poor rating in credit appraisal, inflation rate as well as inappropriate lending disbursement to the sectors (Azeem et al., 2017). From the study of Cetin (2019), the study found that NPLs has a significant negative influence on banks profitability. In order to reduce NPLs, banks come out with new risk management systems including more sophisticated statistical techniques, artificial intelligence technique and machine learning technique to protect them from systematic risk shocks. According to Gebreslassie and Nidu (2015), profitable companies should not be a guarantee that they can survive to fulfil its liabilities because not all of profit can be cashed as source of funds or be available for covering its debts. Gebreslassie and Nidu (2015), the research mentioned financial distress can be the reflection of a corporation 's management condition and it is determined by in term of failure, default, bankruptcy or distressed restricting. By looking at GrusuwmyNidu (2015), financial distress of banks is evaluated by applying the NPLs ratio to total loan ratio. GrusuwmyNidu (2015) mentioned that bank's assets are long term and less liquidity than their liabilities as well as banks primary source of operating income is from the interest income in which they gain through lending activities. Therefore, NPLs is used as a parameter to judge the performance and financial health of a corporation.

Malaysia has Commercial Banking and Islamic Banking in financial system. The main concern of the study is NPLs which is similar with Non-Performing Financing (NPF). Based on Setiawan and Sherwin (2017), bank credit risk can be communicated by the number of bad loans or NPLs in conventional banks and NPF in Islamic banks. The higher the value of NPLs or NPF of the banks, means implies the higher the credit risk of the bank. Therefore, the role of NPF in Islamic Banking can be determined and applied in the study. In term of Islamic Banking perspectives, based on Yusuf and Surjaatmadja (2018), NPF act as moderation variable in analysis of financial performance of banks in earning profits effectively and efficiently within a certain period. The study found that NPF as the moderation variable does not have effect of not being able to moderate CAR and financing to deposit ratio (FDR) relation to profitability (ROA) in bank while NPF able to moderate operational cost operating income (BOPO) relationship to ROA in banks. Hence, banks are expected to pay more attention to the level of capital adequacy, FDR and BOPO which have significant effect on the profitability of banks by using NPF variables as moderation.

This research is conducted as it sparks the interest to examine whether the factors involved FDI inflows by foreign direct investors are able to offset the growth of NPLs as better propensity to overcome financial crisis in Malaysia Commercial Banking sector.

1.2 Problem Statement

Based on the research from Wingard (2021), the article stated that in order to keep abreast of the latest regulatory changes and implement necessary controls to meet these requirements, banks sustained additional costs and risks to face with the serious consequences of non-compliance. Due to the sharp increase in regulatory fees relative to revenue and credit losses during the 2008 financial crisis, regulatory compliance has become one of the most important challenges for the banking industry. As from the incidents of more banks and credit unions are required to comply with the rules of starting from Basel's risk-weighted capital requirements to the Dodd-Frank Act, from the Financial Account Standards Committee's current expected credit loss (CECL) to allowance loan and lease loss reserves (ALLL). Upon to these agreements, it has caused a lot of pressure on resources and usually depends on the ability to correlate data from different sources. This might occupy a great threat to the development of banks.

Furthermore, another issue that found out by Wingard (2021) is the costs associated with compliance management are just one of many banking challenges that force financial institutions to change the way they operate. There are few factors that cause the pressure on the traditional sources of profit for the banking industry which are the reduction in proprietary trading, the decline in return on equity and the increasing cost of capital coupled with continued low interest rates. Therefore, many organizations create new competitive service products, rationalize business lines, and seek sustainable improvements in operational efficiency to maintain profitability which has forced by the combination of factors stated above. The structure of financial institutions must be flexible and be prepared to adjust if necessary. Upon to all the factors stated above, those might be the reason that causes bank earn lesser. However, there are other factors that pose a greater threat to bank profits, particularly in the research title of NPLs. Since all the issue faced by bank is indirectly relying to financial institutions, thus in

this study, the researchers would like to investigate that whether there is a significance relationship between NPLs and FDI inflows.

According to the article wrote by Hossain (2017), the empirical study noted that due to the provision of classified loans and write-offs as bad debts, NPLs affect the profitability of banks, reduce the return on investment (ROI), and disrupt the CAR. Moreover, it also increases the cost of capital, widens the imbalance between assets and liabilities, and disrupts the economic value added (EVA) of banks. Due to the high rate of NPLs, banks may face liquidity problems. The central bank has adopted various measures to reduce the increase in classified loans, due to NPLs always cause policy makers worried on it. By referring to the case of Bangladesh bank, they implemented a lot of policies, such as loan rescheduling facilitation, interest exemption, introduction of CIB report and so on to reduce the cases of NPLs. However, the outcomes of the result are unexpectedly not getting better even though rescheduling has reduced a number of NPLs. The loan is rescheduled after the damage has been done. Upon to the incident, NPLs bring quite a serious issue in bank's profitability and is quite a lot of factors that cause NPLs issue getting serious. Therefore, the purpose of this study is to examine the factors that could lead to an increase in NPLs and the possible factors that can effectively solve the problems of NPLs in this study.

In facts, upon to the researchers Khan et al. (2020), the studies stated that as in early 1997, East Asian developing countries suffered a financial crisis in the form of a substantial outflow of FDI (Soedarmono et al., 2011). The increase in NPLs in bank advances is a notable feature of the currency crisis. After the global crisis, government and bank management started to be more cautious in this NPLs issue due to this issue bring a failure and crisis of the banking system which proved by Ghosh (2015). Therefore, for those countries that rely heavily on banks as monetary intermediaries for the distribution of funds throughout the national economy have to take more serious on this NPLs issue. According to Moradi et al. (2016), the journal stated that banks play a key role in the sustainability of the banking system and are known as the main sources of funding in a bank-centric economic system. This is because the capital markets of these countries are still emerging. Thus, from case happen in East Asian developing countries, it can prove that FDI is one of the main factors that may cause NPLs increase which contribute the further exploration in the following study.

Throughout the report by Barclay (2019), since FDI is influential, this research is to identify whether the FDI inflows may help banking sectors to cope with NPLs. Therefore, this research is conducted to determine whether the FDI inflows will be one of the recovery prospects to reduce the NPLs rate other than the policy as proposed by Malaysia Commercial Banks. As the FDI decrease, at the same time, the banking sector face serious issue in NPLs which will impact on the profitability of the banks where it was clearly stated in the study by Kingu et al. (2018) that the gross NPLs in Bank of Tanzania (BOT) have raised steadily from 4.4% in 2005 to 9.6 in 2016. It has exposed in a huge risk to banks which caused the banks failure in growing to another better stage. Thus, NPLs usually lead to higher loan provisions, which can lead to lower profits for many banks (Kingu et al., 2018).

These findings are instructive and helpful in establishing literature on the relationship between FDI inflows. Therefore, this was an ample evidence that the ratio of NPLs of foreign banks is lower than that of domestic banks. Research and investigation strategies consider the choices banks can take to reduce NPLs. It may pay attention to changes in the external environment and the specific circumstances of the bank (Gharaibeh, 2015). In this study, FDI inflows is used as one of the variables to determine the evidence related to the above empirical studies.

On the contrary, based on Khan et al. (2018), when the country's economy is at strike, the level of NPLs may increase as the unemployment rate rises and borrowers face greater difficulties to repay their debt. By referring to Salas and Saurina (2002), Espinoza and Prasad (2010) or Nkusu (2011), all of the outcomes are similar. Furthermore, Khemraj and Pasha (2009) found out that the inflation rate and the strength of NPLs are direct relationship between the two. However, the outcome of the study by Nkusu (2011) was the natural link between NPLs and inflation rate can be direct or reverse. By referring to the theory, an increase in the inflation rate will lead to an increase in the income of the borrower, while the actual value of credit will decrease.

Upon to the research above, the result shows that every researcher have different result and even some of the found out that there are direct or reverse relationship in same variables. Therefore, this research is to determine which variables are the main factors that contribute towards the increment of NPLs, and Malaysia banking sector should focus more on the particular area in order to improve the level NPLs.
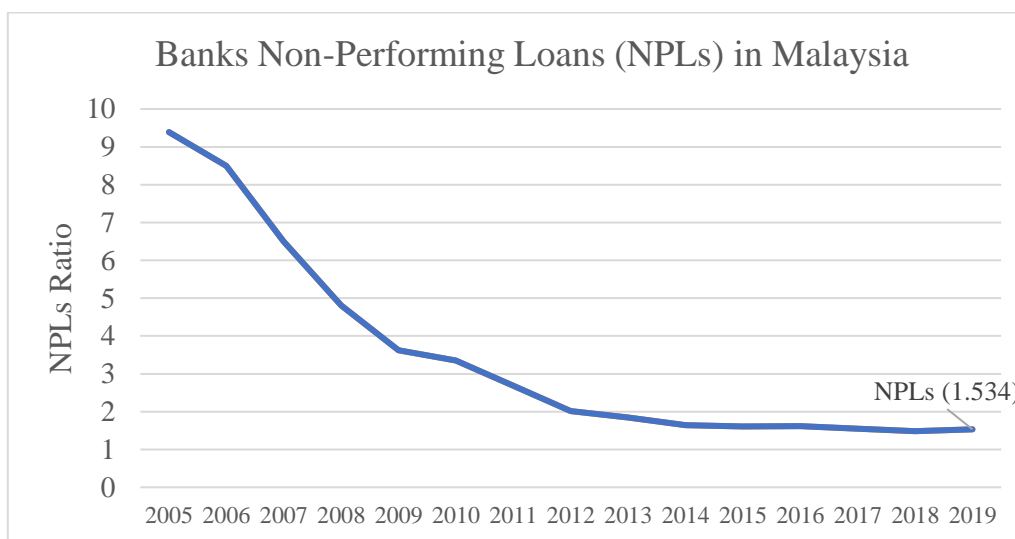
Figure 1.1 NPLs Trend in Malaysia from 2005 to 2019

From the above graph, it can be seen that NPLs in Malaysia have been declining from 2005 to 2019. The NPLs are highest at 9.39% in 2005 and lowest at 1.534% in 2019. Even though the level of NPLs shows a declining trend, the impact of risk posed by NPLs is still important in determining the performance of the financial system in Malaysia.

According to Messai and Jouini (2013), the reduction of NPLs is imperative to promote economic growth. When NPLs are held indefinitely, it affects the resources that are tied up in unprofitable regions. As a result, NPLs are likely to inhibit economic growth and economic efficiency. Despite the recent decline in the NPLs ratio, they are still a major source of risk for Malaysian banks. The decline in the NPLs ratio is mainly due to the transfer of NPLs from banks to public asset management companies. On the other hand, the authorities refuse to disclose the true level of NPLs accumulated over a decade (Ramli et al., 2018). Moreover, from 2005 to 2014, Hamid et al. (2017) adopted the Directional Distance Function (DDF) method to evaluate the efficiency measure of NPL in the Malaysian banking sector. In Malaysia, the Data Envelopment Analysis (DEA) technical efficiency score of domestic banks is slightly higher than that of foreign banks based on the comparison of the two results. When the poor results are included, the technical efficiency score of DDF of foreign banks is slightly higher than that of domestic banks.

1.3 Research Objectives

This research is to determine the factors that will affect the bank's NPLs.

1.3.1 General Objectives

The research study is conducted with the objective of investigating the impact of FDI inflows towards NPLs in Malaysia Commercial Bank.

1.3.2 Specific Objectives

1. To determine whether the FDI inflows have significant effect towards the level of NPLs in Malaysia Commercial Bank.

2. To determine whether the inflation rate has significant effect towards the level of NPLs in Malaysia Commercial Bank.

3. To determine whether the trade openness has significant effect towards the level of NPLs in Malaysia Commercial Bank.

4. To determine whether the bank size has significant effect towards the level of NPLs in Malaysia Commercial Bank.

5. To determine whether the CAR has significant effect towards the level of NPLs in Malaysia Commercial Bank.

1.4 Research Questions

1. Does FDI inflows have significant effects towards the level of NPLs in Malaysia Commercial Bank?

2. Does inflation rate have significant effects towards the level of NPLs in Malaysia Commercial Bank?

3. Does trade openness have significant effects towards the level of NPLs in Malaysia Commercial Bank?

4. Does bank size have significant effects towards the level of NPLs in Malaysia Commercial Bank?

5. Does CAR have significant effects towards the level of NPLs in Malaysia Commercial Bank?

1.5 Significance of Study

This study scrutinizes several determinants that affect NPLs, focuses on significant findings, and serves as a guide for future research. By observing in the commercial bank in all around the world, NPLs is important as it reflects the credit quality of the loan portfolio of the bank and the aggregate terms. In addition, by understanding the factors that influence the level of NPLs is crucial for the risk management function and the Central Bank supervisor to ensure the stability of the bank. Moreover, the risk management which can be applied in the significance of study are the credit risk which is related to NPLs where it will determine the risk that a lender may not receive the owed principal and interest that would result in interruption of cash flows and increased cost for collection. Furthermore, the preponderance of studies shows that the NPLs triggers the technology spill overs, assist human capital information, contribution business environment and enhances enterprise development as different commercial banks would provide different interest rate according to the amount that set by the central bank.

Therefore, this research can be an important reference for the policy makers and the Malaysia Commercial Bank. This research is intended to help the local commercial bank in managing their internal management become better and able to control the liquidity of the bank to avoid bank solvency upon the availability of cash to meet credit demand. So, the liquidity of banks is very important and every bank values it because the pandemic of COVID-19 has brought impact towards the company, when the cash flow of the company fails, they will lose the ability to repay loans (Ingait, 2017). This research might be key indicator to policy makers because during the economic downturn, the repayment ability of a company will be directly seen as to their economic performance and the financial health of the company. If the level of NPLs is high, it can conclude that the performance of the company is weak, so that the policy maker able to make a better decision to solve the problem (Baudino & Yun, 2017). Besides, NPLs can be applied as an efficient indicator for both commercial bank as well as Bank Negara Malaysia (BNM) to control the liquidity and cash flow. In short, policy makers can utilize the outcome of the research to make a more accurate analysis in decision making and effective policies to maintain the overall structure of banking system.

This research will contribute to the academic sector as it may help to determine the factor that will affect bank's NPLs since NPLs were tied up with bank profitability as well as country economics and the finding of study might be useful for students as future references that is designed for further study. A significant relationship might be found through examination of the effect of FDI inflow, inflation rate, trade openness, bank size and CAR toward the level of NPLs in commercial banks. A relationship of low level in NPLs will result in an increase of bank profitability (Jolevski, 2017). The research results provide a better insight on the determinants of NPLs and roles of determinants toward NPLs for students and researchers.

1.6 Conclusion

The purpose of this research is to determine the impact of FDI inflows towards the NPLs in Malaysia Commercial Bank. FDI inflows is one of the main variables determinants for this research study and the results of the findings may not be consistent with the previous study as there are other determinants are included to evaluate the performance of the bank in managing their NPLs level. Nevertheless, there is also different factors being considered as different country have different types of economic situation that would affects the findings of the overall research study.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature review of the previous researcher. The analysis of the components that have a significant impact on the level of NPLs was carried out in the extensive bodies of Malaysia Commercial Bank. The previous researcher provided further information on the subject topic and this chapter summarizes the cited journals and publications of academic papers. Furthermore, the remaining sections of this chapter describe the research's theoretical models and conceptual frameworks that will be applied in the study.

2.1 Review of Relevant Theoretical Model

In this particular section, different theories proposed by the past researchers will be explained in regards to the independent variables that is included in this research study. Moreover, different theories will define each relationship with the variables in logical way that lead the overall research study with a valid fundamental judgement.

2.1.1 Economic Theory (FDI Inflows)

Based on research by Levy et al. (2000), economic theory is about the investors and customers made the best decision in the investment with own assumption in rational and very "effective machines" way. The laboratory tests have shown that investor behavior is much more complicated than the behavior assumed in most economic theories. Therefore, upon to the research by Konstantinos et al. (2016), they stated that economic theory holds that the number of NPLs during the growth stage of an economy is relatively small. This is because both consumers and businesses face adequate income and income to repay debts. Besides, the banks will reduce the provision of credit due to supply-side constraints and side effects of demand in the period of recession. According to Ozili et al. (2020), such as other related

determinants, FDI inflows are considered to be the new determinants of NPLs. It is expected that during the economic crisis, the inflow of FDI may reduce the scale of NPLs, and the inflow of FDI and the combined effect of better institutions may not reduce the scale of NPLs, but will increase the scale of NPLs.

2.1.2 Financial Accelerator Theory (Inflation Rate)

Based on the research conducted by Bernanke and Gertler (1989), the theory of financial accelerators assumes that there is a correlation between access to credit and fixed investment, which helps to expand cyclical fluctuations (Benedictow & Hammersland, 2020). According to the research done by Skarica (2014), the journal is referring to theory of financial accelerator which wrote by Bernanke et al. (1998) where this theory is about the credit market is cyclical and the information asymmetries between borrowers and the balance sheet effect can amplify and also amplify the impact of the credit market on the economy. Apart from this, the research done by Kiyotaki and Moore (1997) has shown that if the credit market is imperfect, relatively small shocks are sufficient to explain the fluctuations in the business cycle. According to Wairimu and Gitundu (2017), the borrowers may avoid repaying their loans or external financing which resulting in a high rate of NPLs when financial accelerator theory points out that is because of the economic turmoil. When lenders adjust interest rates to maintain their actual returns, inflation may pass through nominal interest rates, or increase policy interest rates caused by monetary policy actions just to counter inflation, thereby reducing borrowers' loan service capabilities (Skarica, 2014). However, the inflation is not statistically significant in the Kenya study, whereas this is not significant and is consistent with the findings of Warue (2013). This finding contradicts with the findings of Moinescu (2012) and Mileris (2014), which shown that inflation is statistically significant in explaining NPLs.

2.1.3 Openness Theory (Trade Openness)

Higher trade openness provides opportunities for diversification, lowers consumer prices and it will lead to more effective economic growth. Therefore, upon the research by Ashra (2017), whether trade openness provides the opportunities to banks in the lending market, the

theory of openness on financial development believes that countries that are open to international trade and financial flows can promote financial development. Financial development and the trade openness have a statistically significant impact on the economic growth. Trade openness may affect the development of the financial sector, it is because the increase of the trade openness may contribute to the financial development by improving the functions and the financial services of the financial sector and increasing the efficiency of the capital allocation (Hanh, 2010). Therefore, when a country has a good development, it will help to increase the economics of a country. Moreover, trade openness will foster the financial development and it will create more investment opportunities for the bank. When the bank risk taking is high, it will lead to the increasing of the NPLs. While, in the long run, the increase in the level of the NPLs will affect the commercial banks and the financial status of the country's economy (Khan, 2020). The NPLs of the banks will increase it is because the companies or the borrowers cannot make the repayment loan. Therefore, the purpose of the openness theory in the trade openness is to examine whether the level of trade openness reduces risk taking behavior.

2.1.4 Structure Conduct Performance Theory (Bank Size)

Structure conduct performance or SCP is a theory proposed by Mason and Bain in the 19th century. Based on the study of Suppia and Arshad (2019), the theory argues that when a firm has a large percentage of the market, it could raise the level of competition in the industry. By reviewing Tan (2016), SCP paradigm states the market structure of a firm can be measured through various factors such as the number of competitors, the heterogeneity of products and the cost of entry. The performance of a firm can also be measured through various indicators such as productive efficiency, allocative efficiency and profitability. The various options and constraints faced by a firm are defined by the attributes of its industry. In higher-competitive industries, many firms have limited options and the returns they can generate are usually only covered by the cost of capital. Conversely, in a lower-competitive environment, firms have a greater range of options and the constraints are limited. Besides, the study of Tan (2014) found that SCP paradigm argues the competitive environment is a key determinant of firms' conduct. This concept argues that market structure can affect firms' performance by determining their actions. Hence, firms should adopt competitive strategies to sustain their competitive advantage

and superior performance. Therefore, industry structure has an important effect on firm conduct and firm performance even though firms in these industries sometimes have competitive advantage.

Based on the research from Yuanita (2019), the assumptions of structure conduct and performance clearly shows that market structure affects bank behaviour and bank performance. This study indicates that the decrease in prices is caused by the increase in market concentration, in other words the mergers increase economies of scale so that banks can offer lower prices. Therefore, falling prices will reduce the profitability of banks. Furthermore, based on studies by Ndede and Kavoya, (2017), one of the factors that effect on the industry is the size of the company. Hellmann et al. (2000) stated that the liberalization of Japanese financial markets in the 1990s increased competition and reduced the profitability of commercial banks. This is considered to be one of the factors that contributed to the East Asian financial crisis and the weakness of the Japanese financial system (Jimenez et al., 2007). In addition to affect its stability, the capital structure of a bank also affects its liquidity creation and credit creation functions Diamond and Rajan (2000). In other words, the efficient operation is fully depended on the best capital structure of any bank. There is controversy about the impact of capital on the level of banks' NPLs. The higher bank capital will ultimately reduce the level of NPLs which supported by quite a number of researchers. While Morrison and White (2005) focus on moral hazard, where if banks do not have enough equity, they may be inclined to issue high-risk loans. This means that higher capital levels will reduce moral hazard and thereby reduce risk-taking behaviour in the banking industry.

2.1.5 Buffer Theory of Capital Adequacy (CAR)

Buffer theory of capital adequacy is founded by Calem and Rob in the year 1996. According to the hypothesis that is developed, a bank required a necessary minimum amount of capital ratio in order to increase the capital and decrease the risk to prevent the legislation fines relating with capital requirement violation. In light of this, Ikpefen (2013) proposed that banking institutions prefers to keep sufficient capital in order to avoid the likelihood of falling below the capital requirement, due to the volatility of the CAR. A badly capitalized banks may be persuaded to take on extra risk with the assumption that greater projected profits will have to

potential to surge the capital (Udom & Eze, 2018). Under the regulation of Basel III, it is stated that banks are required to reserves a portion of capital which is known as capital reserves. The minimum CAR that a banking institution must maintain under Basel III is 8%. The regulatory requirement is to promote the overall banking institutions safety and soundness. In order to hedge the unsystematic risk such as credit risk, capital is required to reduce the potential losses incurred by the bank (Anisa & Sutrisno, 2020). The holding capital buffer of banks indicates that their real CAR is larger than the regulatory authorities' minimum CAR.

According to the case study in China, the commercial banks in rural area has a higher level of NPLs as compare to city which lead to credit risk. As a conclusion, this theory can be used to establish the relationship between CAR and NPLs as commercial banks with sufficient capital buffers may have benefits to create more loans to borrowers (Ngungu & Abdul, 2020). Thus, this will lead to increasing in the level of NPLs in commercial banks.

2.2 Literature Review

A literature review provides an overview of scholarly sources on a particular topic. It also provides a clearer picture to determine the gap in the previous research and to further explain the significant impact on the level of NPLs in Malaysia Commercial Bank, the research has targeted some components that would help in the findings of the review. The components are FDI inflows, Inflation Rate, Trade Openness, Bank Size and CAR.

2.2.1 Foreign Direct Investment Inflows

Based on the findings, the combined effect of higher bank efficiency and greater FDI inflows reduced the size of NPLs for banks. From the result of study, Ozili et al. (2020) found that FDI inflows acts as a moderating role in minimizing the size of NPLs during economic crisis years. Therefore, policymakers and regulators should formulate policies that encourage FDI inflows into the country. They should determine which FDI inflows affect banks' loan portfolio and also whether strict regulations or lending constraints should be imposed by banks, because particularly banks are the largest beneficiary of large FDI inflows deposits. Avetisyan (2018) found that FDI associated with NPLs is negatively from the empirical results. The study sample is concentrated during the post-crisis period within the 28 countries and the results shows that the variables have strong correlation between NPLs. Baum et al. (2017) found that portfolio investment inflow negative effect on NPLs due to the volatility from financial assets from banking sector. The capital flows resulted from FDI inflows has significant effect towards the financial indicator however, the effect between FDI inflows and NPLs is diversified across the world. Moving on, according to the empirical study by Ozili et al. (2020), the study found a negative connection between NPLs and FDI inflows. This is due to the reason that the join effect of the FDI inflows with well-performed banking institutions does not reduced the size of NPLs but instead it increases the size of NPLs.

Besides, FDI found a positive effect on NPLs in high-income countries. There will be an increases liquidity and creates additional loan supply on banks due to be high degree of FDI inflows significantly. Therefore, an increasing credit growth brings low credit standard, causing default loans to increase in banking sectors (Koju et al., 2018). The foreign

participation on capital formation is found to have insignificant effect on NPLs in all groups (middle and lower-income groups), which indicates that the FDI does not seem to influence NPLs (Koju et al., 2018). Ozili et al. (2020) also argued that there is positive relationship when the joint effect of FDI inflows and bigger size institutions did not reduce the size of NPLs but rather increased the size of NPLs. Festic et al. (2011) stated that FDI in the financial sector has a positive correlation with NPLs.

Furthermore, the empirical results by Şan (2016) confirms that NPLs has weak positive correlation with FDI which indicating undefined relationship between FDI inflows and NPLs. The study reveals that the changes among the macroeconomic variables was insufficient to explain the huge increase in NPLs with the sample from Albanian banking sector.

2.2.2 Inflation Rate

Based on the research conducted, the empirical findings of the researcher have supported the discussion that inflation rate has an impact on the level of NPLs (Greenidge & Grosvenor, 2010). Their results show that whenever the inflation rate rises, the level of NPLs automatically rises as well. Moreover, according to a statement by Farhan et al. (2012), correlation and regression data analysis show that the inflation has a significant positive relationship with NPLs. The results indicated positive relationship as this is because the sample was retrieved from the year 2006 in Pakistan, whereby the country was facing crisis that has significantly affected most of the loans to default due to the huge cost of production from sectors. In addition, Ahmad and Bashir (2013) stated that the Consumer Price Index (CPI) inflation has a significant and positive with NPLs as the increase of CPI funds left with borrowers after meeting their everyday needs declines as compared to the funds left at the time of lower CPI, therefore the borrowers are unable to repay their loans debt and consequently NPLs of the banks started to grows. The positive association of CPI alongside with NPLs suggested that when the government implemented policy in order to expand the economy, the interest rate will decrease and the money supply that is pump into the economy will increase.

Literature review of inflation rate and NPLs has a positive relationship where the study of Saba et al. (2012) research claims that NPLs determinants of banking sector in the United States. Besides, Skarica (2014) claimed that the GDP growth is one of the main reasons that leads the rise of NPLs ration which one of the statements prove that the GDP in the country slowing down the economy, inflation rate begins to rise that leads the NPLs level to grows drastically. In addition, Skarica (2014) stated that the growth of the NPLs ratio will results the growth of inflation rate. The research studied on the determinants of the NPLs ratio changes in selected European emerging markets from Q3 of 2007 until Q3 of 2012 (Q3 signifies third-quarter). The empirical study found that there is positive relationship between inflation rate and NPLs. On the other hand, researcher Bhattarai (2015) shows the fall back of the inflation rate has the significant positive impact with NPLs as both of the components were directly proportional stating that during the inflation, the level of NPLs will definitely increase. Above statement is supported by the point of view from the empirical results by Murthy et al. (2017). Moreover, Vardar and Özgüler (2015) shows the result of co-integration approach where there is a long run positive relationship between the inflation rate and NPLs. From the

findings of (Us, 2017), the crisis that happened in a country could cause the inflation to be positively significant for foreign bank's NPLs.

According to Badar et al. (2013), the researcher evaluates dynamics in the long-term and short-term between NPLs and macroeconomic variables that covers ten-year range period from January 2002 until December 2011 of Pakistan commercial banks, the inferences from co-integration tests that shows inflation rate is positively related towards NPLs in the long-run. The inflation rate is influencing the ability of borrowers to repay their borrowing. When the country is experiencing high inflation rate, customers find it difficult to pay their existing loans due to rising cost of capital. A study conducted by Chude and Chude (2014) examined the implication of NPLs on economic growth in Nigeria and found that inflation appeared in Ordinary Least Square (OLS) with a positive sign and significant coefficient. The past study by Chude and Chude (2014) explained that there is a significant relationship between inflation and NPLs. Research study by Greenidge and Grosvenor (2009) has used several models to forecast NPLs in Barbados' banking sector. The study implemented Autoregressive Integrated Moving Average (ARIMA) forecasting model, a positive relationship between inflation and NPLs was found, where a higher inflation rate leads to an economic climate that eventually results in a rise in the level of NPLs. As inflation increases, borrowing costs get more expensive and ultimately worsen the quality of the loan portfolios. The study concluded that an increase in inflation rates is estimated to cause growth in the NPLs ratio. The study by Saba et al. (2012) shown that the determinants of NPLs in the United States banking sector from 1985 to 2010 and found that the relationship between NPLs and inflation is positive. Rinaldi and Sanchis-Arellano (2006) concluded that when the economy slows down, the GDP has a lower increase and the level of NPLs increases. There is a linkage between the NPLs and the inflation rate.

Moreover, in the case of the Romanian banking system, the empirical results show that the inflation rate has a positive relationship with NPLs, as the economy in Romania is associated with the value of the loan portfolio. The research conducted using econometric analysis shows a strong result that NPLs have a strong relationship with macroeconomic variables such as inflation rate. As a conclusion for this empirical result, a low inflation rate in Romanian country will positively influence the borrower's financial ability or condition to fulfil their obligation and ultimately the defaulted loans will be recovered which presented a positive relationship between NPLs and inflation rate (Hada et al., 2020).

However, Ahmad and Bashir (2013) found out that the negative impact for the both inflation rate and NPLs. The statement is supported by the researcher Gremi (2013), where it stated that the long-term inflation debt will decrease in the book value which may help the pledger to repay their debts to the bank. Looking at the literature review on inflation rate and NPLs, it can be seen that different researchers have reached different conclusions, so due to the circumstances, there has been an increase interest in further research in this study to further establish the relationship between inflation rate and NPLs. Moreover, empirical results that is proven from the study by Khan et al. (2018) indicates that inflation rate has significant impact towards NPLs as it affects the borrower abilities to fulfil their obligation to repay their loans. The results of the replication shown that when the inflation is higher, the borrowers' abilities to repay the debt will decrease which ultimately leading to increase of NPLs in the banking institutions. Following by the research from Ptasica (2019), the study shown that there is linear relationship between inflation rate and NPLs which indicating negative relationship between each other. Thus, when the inflation rate increases, the level NPLs will decreases in the case of Cyprus conventional banks. The statistical results presented by Ministry of Finance in Cyprus shows that during the year 2014, it is recorded that the country has the lowest inflation rate amounting to -0.3%, while the level of NPLs is recorded at 47.5%. Moving on, during the year 2000, the inflation rate is accounted to 4.86%, with the level of NPLs at 8.5% which proven the empirical study is significant. On the other hand, the empirical result from the case of Republic of Macedonia provides the evidence that the inflation rate has negative relationship with NPLs. The results were proven to be significant during the short-term dynamics when the joint effect between NPLs and Macedonian household as explanatory variable (Kjosevski et al., 2019).

The other empirical studies carried out by Klein (2013) stated that NPLs responded towards the macroeconomics variables such as inflation rate from the effects of banking system in the case of Central, Eastern and South Eastern Europe (CESEE). The results obtain from the study shows that an increase in the level of NPLs has negative relationship towards inflation rate which is proven to be significant. The empirical results concluded that the large credit boom was caused by the financial crisis in the particular region such as Ukraine and Lithuania which lead to a sharp decline in NPLs. The effects of NPLs in CESEE were merely due to the emerging market that is more dependent on bank credit lending as compared to the developed

countries and most of the consumers have controlled and sufficient liquidity (Klein, 2013). Based on the results from Haniifah (2015), the journal stated that there is a negative but insignificant relationship between the two variables which proved by the result of regression analysis. This shows that when inflation increases, it will lead to the decreases of NPLs. The result of insignificant relationship between inflation and NPLs is also confirmed by other researchers such as Lleshanaku (2015), Fofack (2005), Bofondi and Ropele (2011), Valahzaghard et al. (2012), Khemraj and Pasha (2009), and Quagliarello (2007).

2.2.3 Trade Openness

In this paper, trade openness is the sum of imports and exports normalized by GDP which is Trade-to-GDP ratio. It is an indicator that is used to measure the international transaction relative to domestic transaction (Alotaibi & Mishra, 2014).

Based on Koju et al. (2018), the findings show that NPLs have significant positive relationship with the export to import ratio. It is concluded in the research stating that the NPLs have a significant positive relationship with export to import ratio. Based on the journal of Mpofu and Nikolaidou (2018), the results shows that there is positive relationship between trade openness and NPLs whereas the result in the research shows 100 basis point increase in trade openness leads to 5 basis point increase in NPLs. As a result of this finding, the banking system in Sub-Saharan Africa may be exposed to negative shocks as trade openness increases. In all cases, other variables such as lending interest rates, real effective exchange rates, inflation rates, and the US GDP growth rate are negligible

On the other side, Festic et al. (2011) exports of goods and services have a negative impact on the NPLs. Research conducted by Balgova et al. (2016) stated that export growth is negatively relationship with NPLs and the study assume that the relatively greater availability of foreign lending to exporting companies makes these less dependent on domestic credit conditions. High domestic NPLs ratios then restrict access to credit for companies serving the domestic market to a much greater extent than they do for exporters.

The relationship between trade openness and bank risk-taking behavior can be explained by previous study. Based on Rahman et al. (2020), the study argued that there is negative relationship between trade openness and bank risk-taking. The study found that higher trade openness can create a more diversified investment opportunity for banks, and borrowers also enjoy the different portfolio investment facilities, and therefore it would create a strong win–win bonding between lenders and borrowers resulting as a lower bank risk-taking. By reviewing the previous study, the relationship between bank risk-taking and NPLs can be proven. The research found that there is negative relationship between bank risk taking behavior and NPLs (Lestari, 2018). Hence, there is negative relationship between trade openness and bank risk taking behavior and also bank risk taking behavior and NPLs.

Based on the research from Alamgir Hossain et al. (2020), the result shows that the degree of trade openness is negatively and significantly correlated with the credit risk represented by NPLs and the overall risk represented by standard deviation of return on assets (SROA) and standard deviation of return on equity (SROE). This means that the higher the degree of trade openness, the lower the overall risk and credit risk of the bank, which supports the results of Ashraf et al. (2017) and the opposite of Luo et al. (2016). Bank growth is positively correlated with NPLs, which indicates that with the acceleration of bank assets, the possibility of credit risk and overall risk is higher. Besides, Mpofu and Nikolaidou (2018) studied the macroeconomic determinants of NPLs in 22 economies in sub-Saharan Africa, where the paper stated that GDP growth rate, bank domestic credit to the private sector as a percentage of GDP, trade openness, financial crisis and inflation rate may all have a significant impact on the NPL ratio (Nargis et al., 2019). In contrast, Kauko (2012) mentioned that the growth rate of exports and imports proved insignificant from the empirical result ranging from year 2000 to 2005 with the combined effect of current account deficit. In particular, there is a negative correlation between GDP and NPLs, and inflation, trade openness, domestic credit to the private sector, and global fluctuations all have a positive impact on NPLs (Mustafa & Ali, 2019).

2.2.4 Bank Size

Bank size is one of the significant indicators to measure the total value of the bank's assets (Barus & Erick, 2016). There are several empirical evidences to determine the relationship between NPLs in a well-developed banking institution. Bank size may signify bank strength and capacity to deal with asymmetric information resulted from decreasing level of NPLs (Yulianti et al., 2018).

Empirical studies by Bercoff et al. (2002) indicated that the value of bank size to measure by the formula of log of total assets is positively related with NPLs. In the past studies, accelerated failure time (AFT) model is used to study the NPLs in Argentina banking institutions. It is concluded that growth of assets, peso loans exposure, characteristics of bank institutions and tequila effect were the contribution towards the frail of the banking system in Argentina. According to Saada (2017), the bank size is positively related and is significant in the case of Tunisian banking sector ranging from the year 2010 to 2015. The result indicated that larger banks are obligated with the risk of diversification, economy financing and financial consolidation. The empirical results concluded by Morina (2020) shown that bank size is one of the important variables that affect NPLs in Kosovo conventional banks. The results concluded that there is positive relationship between bank size and NPLs.

According to Ćurak et al. (2013), dynamic panel methods is applied into the study to determine the relationship between bank size and NPLs. The outcome of the results shows that there is a negative relationship between bank size and NPLs. The results indicated that a well-developed and larger bank are more capable to resolve asymmetric information problems as compared to small banks. In addition, bank size also can be served as an indicator to diversify the credit activities. On the other hand, empirical studies conducted by Hu et al. (2004) also stated that the bank size has negative relationship between NPLs by using the evidence from Taiwan commercial banks. A part of the bank equity capital is owned by the country's state which lead to decrease in the level of NPLs.

Additionally, according to Fernández de Lis et al. (2000), a simultaneous equation model is used to establish the relationship between bank size and NPLs with the evidence of bank loan losses from Spain. The results shown that bank size and NPLs are negatively related with each

other. The study also indicates that every effect from the growth of bank branch could be differ due to different lag terms. Based on the study by Ozili (2019), the empirical studies stated that banks that are larger in size are more capable to handle management skills in order to recover default loans from the borrowers. Thus, the study shown that bank size has inverse relationship with NPLs. While, in the case of Pakistan, bank size is negatively associated with NPLs as a larger bank are better in managing the risk in the market as compared to their counterparties (Ahmed et al., 2021). From the year ranging from 2009 to 2013 in Indonesia banking institutions shows that bank size and NPLs is negatively related with each other (Alexandri & Santoso, 2015).

Furthermore, based on the study conducted by Rajan and Dhal (2003), the empirical analysis of NPLs from India banking sector is determine with the response of banking related variables such as bank size and macroeconomic factors. The study suggested that the NPLs is statistically significant with the presence of the bank size. The measures from the bank size able to increase the differential impact towards the bank NPLs. According to empirical studies by Saba et al. (2012), bank size has significant impact towards NPLs, however the value of coefficient is relatively low. It is concluded that banking institutions must revise and control their lending policies by considering every aforesaid factors.

In contrast, the study conducted by Khemraj and Pasha (2009), the banking related variables which is the bank size shows positive relationship towards NPLs however, the result was insignificant. It is interpreted that a large and well-developed bank with more asset does not possessed a more effective system in loan screening as compared to smaller size banks. Besides, another empirical study also concluded that there is insignificant relationship between the bank size and the level of NPLs. This is due to the reasons that banking related variables is significant to establish relationship between NPLs (Rifat,2016). In regardless of the size of the banking institutions, the management of the overall banking institutions is important to tackle the level of NPLs. Hence, this supports the theory of bad management hypothesis. According to Kosmidou (2008), the results shows that there is positive relationship between bank size and NPLs however, the results is insignificant in Greek commercial banks during the financial integration. While, in the case of NPLs in Bangladesh banking sector, the establish relationship between NPLs and bank size shows that there are insignificant and positively related with each

other. The results are explained that the monitoring systems is not being implemented strongly as the banking business is expanding in Bangladesh (Hosen et al., 2020).

2.2.5 Capital Adequacy Ratio (CAR)

CAR is a measurement of a bank's available capital expressed as a percentage of a bank's risk weighted credit exposures. The CAR can also be known as capital-to-risk weighted assets ratio (CRAR), that is used to protect depositors and promote the stability and efficiency of financial systems around the world.

Based on the research done by Suhardjono (2011), the journal emphasizes that the bank's ability to maintain sufficient capital and the bank's ability to identify, measure, control, and control risks that may affect the bank's capital scale is so called CAR. Taswan (2010) also noted that the amount of a bank's equity and risk-weighted assets (RWA) are used as a comparison for CAR. In other words, the healthier bank's capital is depending on the higher of the CAR. When the CAR value is high, the capital of bank holds will be high as well. Whereas this will lead to the risen of credit disbursed to the public, thereby increasing the loans (Pratiwi et al, 2014). According to Yulianti et al. (2018), this journal stresses that after reviewing numerous of literature review, CAR is used to adapt to risk of loss that banks may face. When the bank can finance its operations and make a significant contribution to profitability, this means that the CAR value is high (Barus and Erick, 2016).

In addition, previous studies have found that CAR has an impact on the occurrence of NPLs, which has been demonstrated by Prayudi (2011), Amriani (2012), Hersugondo and Tamtomo (2012), Ngraheni et al. (2013), Astuti (2013), Ismaulandy (2014), Achir et al. (2014). According to the study of Yulianti et al. (2018), the t-statistic of the variable CAR is 0.05 greater than the p-value with a probability of less than 5%, thus rejecting H0. This means that at 95% confidence level, there is a significant influence between the variables CAR and NPLs. The outcome of the study has significance and negative correlation between CAR and NPLs which has the similar result as previous researchers which conducted by Soebagio (2005), Wimboh (2004), Jusmansyah and Sriyanto (2011), Pratiwi and Hindarsah (2014), Suwarna (2014), Makri (2015), Kumala and Suryantini (2015) Astrini, et al (2014). The result of the bank quarterly financial report data reported that the bank capital of listed companies should be able to prevent the occurrence of all business risks including NPLs based on the CAR. Next, according to the results carried by Yulianti et al. (2018), the CAR value of Indonesian commercial banks has a significant effect and can reduce NPLs which has verified by using

the estimated output of fixed effect model (FEM). In facts, when other variables considered fixed, CAR rises by 1%, the NPL ratio will fall by 0.012%. This negative correlation indicates that bad debt can be reduced by 0.012% if the firm succeeds in increasing CAR or capital per weighted asset from risk capital.

In contrary, some researchers are supporting in positive effect on CAR and NPLs such as researcher Chang (2006). Another research from Constant and Ngomsi (2012), also pointed out that there is positive correlation between NPLs and CAR which has found in the research of Khan et al. (2020). Next, according to the study of Alshebmi et al. (2020), the journal stated that there is a weak correlation and negative relationship between NPLs and return on assets (ROA) and liquidity. However, the relationship between NPLs and CAR is positively correlated in the research study by Alshebmi et al. (2020). Indeed, ROA has a positive and weak relationship with liquidity, while there is also a significant correlation with CAR. According to the result of the researchers, if more provisions are needed to protect the bad debts, it shows that NPLs are increasing, where this is clearly proved by the result that there is a weak positive correlation between NPLs and CAR around 0.077535.

Based on the research from Taufikur and Khusna (2020), the journal stated that the relationship between CAR variables and NPLs has been extensively studied. Therefore, according to Mukherjee (2003) and Rahman et al. (2017), the results are similar with other previous studies that an impact on reducing profit margins of many banks occurs when the large NPLs are present. The impact of CAR on NPLs is not significant which is consistent with the findings of Louzis (2012).

In conclusion, many researchers found out that CAR is negative and significant impact on NPLs. Based on this study, Kumar et al. (2018) use the proxy of solvency (SOL) as CAR, it is found that SOL is negatively correlated with NPLs. In addition, Pratiwi and Hindasah (2014), who conducted a dynamic panel analysis on the background of Indonesian commercial banks, also found negative and non-significant results between CAR and banks' credit channels. However, there are quite a number of research study that obtain inverse relationship between CAR and NPLs. Therefore, the relationship between CAR and NPLs is unclear and being investigate in this research.

2.3 Conceptual Framework

Figure 2.1 Conceptual Framework

Macroeconomic Factors

Banking-Related Factors
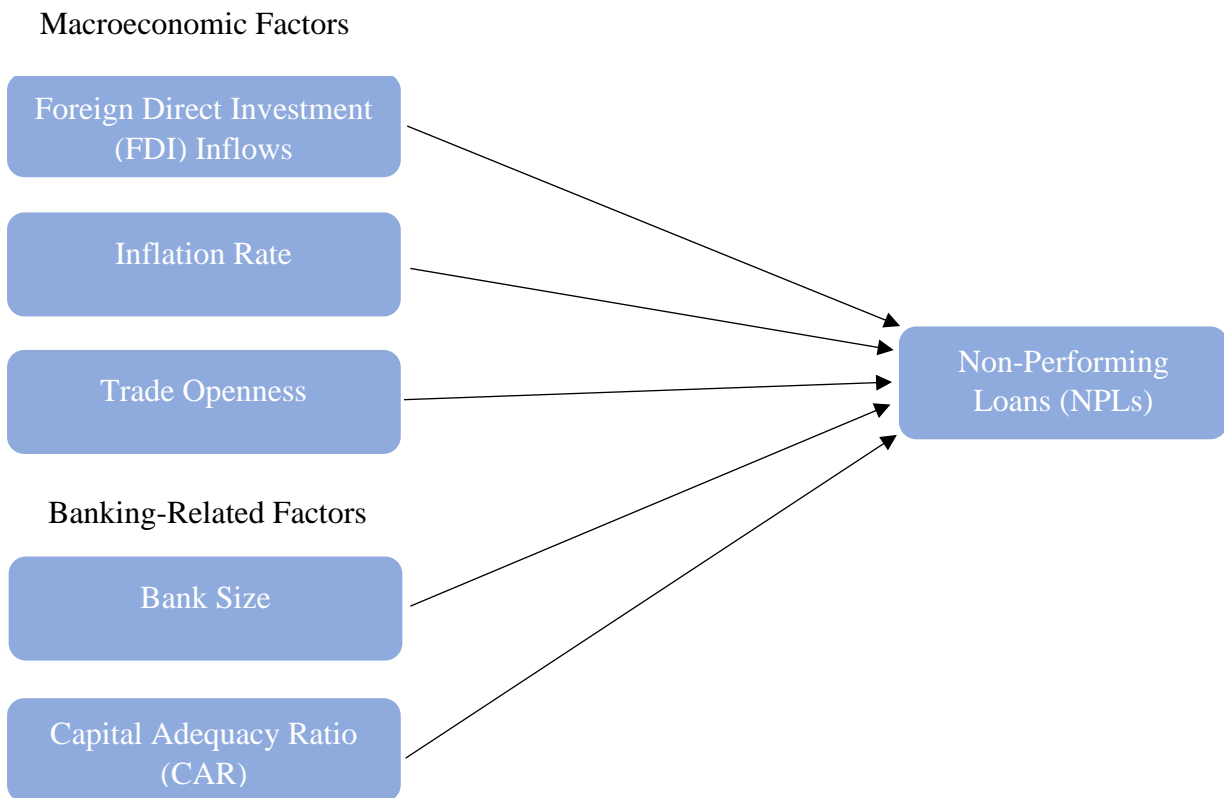
2.4 Conclusion

By referring the past studies, FDI inflow, inflation rate, trade openness, bank size and CAR are related to NPLs at certain extent. Therefore, these five independent variables are added in the research as control variables in a comprehensive model. Throughout the literature, most previous studies have suggested that some variables have a significant and relatively positive impact on NPLs, such as inflation, bank size and CAR. FDI inflows are observed to have a non-significant and positive impact on NPLs. Based on the literature review conducted above, there is a dearth of studies on the impact of FDI inflows and trade openness on NPLs. Therefore, this gap is filled and further clarified by the results in the following chapter.

CHAPTER 3: METHODOLOGY

3.0 Introduction

In this current section, the research was conducted in relation to methodology. Methodology is a set of practices or a system of methods used in certain studies or activities. It also serves as a method and principle for a particular activity, especially in academic research. In this chapter, methodology research is the main research result used to test the relationship between the regressand, NPLs and the regressor namely FDI inflows, Inflation Rate, Trade Openness, Bank Size and CAR. The relation between the regressand and regressor can be further improved by obtaining accurate research results. In addition, the methodological research is conducted based on the collected data needed for empirical testing to obtain a satisfactory result.

3.1 Research Design

The research design is to suggest an appropriate mechanism for this study. In this study, quantitative data is used to identify NPLs variable in Malaysia Commercial Bank as dependent variable and FDI inflows as main independent variable followed by other established independent variables in the model of this research study. Quantitative data is an approach used to describes a series of numbers and can be presented using graphs or charts. The data used in this study are panel data and secondary data. All these data are retrieved from various sources like Bank Annual Report from 2010 to 2019, World Bank Open Data and Department of Statistics Malaysia (DOSM). Each and every result is produced using E-Views software for further analysis to test each hypothesis. The sampling size in this research is one of the important features to make an extrapolation based on the sample. In this research, there are a total of 6 Malaysia's Commercial Bank ranging from the year 2010 to 2019 with 60 observations which is used by the researchers. FDI inflows, inflation rate, trade openness, bank size and CAR is used as independent variables for this study to establish the relationship between NPLs.

Table 3.1 Data Resources

Type of Data	Sources	Unit Measurement
Dependent Variable		
Non-Performing Loans	Bank Annual Report	Currency (RM'000)
Macroeconomic Factors		
Foreign direct investment inflows	DOSM	Percentage in GDP (%)
Trade openness	World Bank Open Data	Percentage in GDP (%)
Inflation rate	World Bank Open Data	Percentage (%)
Banking-Related Factors		
Bank Size	Bank Annual Report	Currency (RM)
Capital Adequacy Ratio	Bank Annual Report	Percentage (%)

* DOSM- Department of Statistics Malaysia

3.2 Sampling Design

Malaysian banking sector comprises of 27 conventional banks in total. This includes 19 foreign banks which is licensed under the compliance of Malaysia government banking regulatory rules and regulation. In this research study, 6 main banks are chosen due to their characteristics of operation as a financial services provider. NPLs is one of the commonly known worldwide issues that significantly affected the stability of financial markets alongside with banking sectors sustainability (Murthy et al., 2017). In this research, 6 out of 27 conventional banks are chosen to determine the NPLs. The sampling size in this research is one of the important features to make an extrapolation based on the sample. In this research, there are a total of 6 Malaysia's Commercial Bank as observations ranging from the year 2010 to 2019 which is used by the researchers. The banks are as follows:

Table 3.2: Malaysia Commercial Banks

1.   AmBank (Malaysia) Berhad
2.   CIMB Bank Berhad

| 3. Hong Leong Bank Berhad |
| 4. Malayan Banking Berhad (Maybank) |
| 5. Public Bank Berhad |
| 6. RHB Bank Berhad |

3.3 Descriptive Statistics

Descriptive statistics is used to describe the common fundamental of the data that is used to contribute towards this study. The purpose of the descriptive statistics is used to summarise, analyse, and organise data set in a simpler way. In accordance with Bhandari (2020), descriptive statistics comprises of three primary types. This includes distribution of each data frequency, central tendency of average data, and variability or spread of the data. Besides, graph and table are presented to individuals in order to have a better understanding on the significance of data analysis. Furthermore, the central tendency is a measure that provides a summary measure that attempts to describe the entire data set by using a single value which is represents the centre of its spread (Macfarlan, 2014). Next, the central tendency which is a measure that provides a summary measure that attempts to describe the entire data set by using a single value which is represents the centre of its spread. Mean, median and mode are effective measures of central tendency, but in different situations, some of the measures of central tendency are more suitable to use than others. Additionally, the measure of variability is a measure that allows to determine the degree of variation in a population or sample, it also can determine the representation of a particular score in a data set and determine the scope and effectiveness of generalizations based on the research observations (Frost, 2018). Therefore, there are four main ways to describe the variability in a data set which is range, variance, interquartile range, and the standard deviation (Stephanie, 2015).

Based on the 6 Malaysia's Commercial Banks, the average value of the mean is reflected from the data ranging from the year 2010 to 2019. The determination of the mean from the data set can be derived from the standard deviation which was included in the descriptive analysis.

3.4 Research Framework

In this research study, the dependent variable will be NPLs, whereas the five independent variables will be FDI inflows, inflation rate, trade openness, bank size and CAR. Each of the variable's relationship will be investigated throughout the research study.

3.5 Econometric Function

NPLs = f (FDI inflow, Inflation rate, Trade Openness, Bank Size, CAR)

Equation 3.1

3.6 Econometric Equation

$$logNPL_{it} = \beta_0 + \beta_1 FDI\ in_{it} + \beta_2 INF_{it} + \beta_3 OP_{it} + \beta_4 logSIZE_{it} + \beta_5 CAR_{it} + \varepsilon_{it}$$

Equation 3.2

Where,

i	=	Bank code (AmBank, CIMB Bank, Hong Leong Bank, Maybank, Public Bank, and RHB Bank)
t	=	Time (annual observation from 2010 to 2019)
log_NPL	=	Non-performing loans (in RM'000)
FDI in	=	Foreign direct investment inflows (in %)
INF	=	Inflation rate (in %)
OP	=	Trade openness (in %)
log_SIZE	=	Bank Size (in RM)
CAR	=	Capital Adequacy Ratio (in %)
ε	=	Error term

3.7 Research Methodology

To review the mode, unit root test, best estimation method to analyze panel regression model will be discuss in this part. Moreover, some diagnostic test will also be proposed.

3.7.1 Unit Root Test

Diebold and Kilian (2000) stated that unit root test play as diagnostic tools in selecting forecasting models for the study. In judging which model to applied is absolutely important for applied forecaster when difference stationary and trend-stationary models of economic and financial time series often imply very different predictions. In empirical study, Glen (2021) stated that Unit Root test is a test for stationarity in a times series and a time series stationary has stationarity when change in times does not affect change in shape of distribution. In other words, the series has a unit root therefore the time series is not stationary. Hence, non-stationary series are continually affected by unintended shock. In simple word, stationary time series data do not depend on time and model cannot forecast on non-stationary time series data (Chaudhary, 2020). Therefore, this study will run the unit root test by applying Augmented Dickey-Fuller Test (ADF) and Philip-Perron Test (PP) in determining the time series data for the variables whether are stationary or non-stationary in the model.

Augmented Dickey-Fuller Test (ADF)

The Augmented Dickey Fuller Test (ADF) is one of the most common form of Unit Root test that is used to check whether the series is stationary or not. ADF test is an 'Augmented' version of Dicker Fuller test (Chaudhary,2020). The hypothesis testing is:

H_0: The series is non – stationary

H_1: The series is stationary

To estimate the coefficients' significance, test statistic is calculated. If the test statistic calculated is greater than critical value, the null hypothesis (H_0) will be rejected. Otherwise, do not reject the H_0. Therefore, if test static greater than critical value thus the time series data is stationary.

Philips-Perron Test (PP)

Phillips and Perron's test statistics can be viewed as Dickey–Fuller statistics that have been enhanced to serial correlation by using the Newey–West (1987) heteroskedasticity- and autocorrelation-consistent covariance matrix estimator. The PP tests make correction for any serial correlation and heteroskedasticity in the errors non-parametrically by adjusting the Dickey Fuller test statistics. The advantage of PP test over ADF test is that the PP tests are robust to general forms of heteroskedasticity in the error term and the user does not have to specify a lag length for the test regression, but PP test only work well in large samples because it is based on asymptotic theory. Phillips-Perron Test (PP) null and alternate hypothesis same as the Augmented Dicky Fuller Test (ADF) as follows:

H_0: The series is non – stationary

H_1: The series is stationary

The decision rule of PP test similar as ADF test which is if test statistic calculated is greater than critical value, the null hypothesis (H_0) will be rejected. Otherwise, do not reject the H_0. Therefore, if test static greater than critical value thus the time series data is stationary, and the study could proceed to next stage.

3.7.2 Panel Regression Model

According to Hsiao (1985), Klevmarken (1989) and Solon (1989), there are several benefits from using panel data as it provides more informative data, more variability, less collinearity among the variables, and more degrees of freedom hence more efficiency. Over the time,

observations of many cross-sectional units have become more and more available. The new data source enables econometricians to build and test behavioural models that are more complex than a single cross-sectional or time series data set allows. In this research, the panel data model is further analysed using Chow test, Hausman test and Lagrange test to determine the preferred model.

Chow-test

The proposed Chow Test (Chow, 1960) is a well-known method in econometrics. It was designed to analyze the similar variables obtained in two different data sets to determine if the variables were similar enough to be polled together. Besides, the regression discontinuity design is a variation of the two-group pre-test and post-test design. The regular method of data analysis or data collected using this design is multiple regressions with only one dummy coded variable representing the cut-off value. Chow-test is a test to determine the model of whether Common Effect (CE) or Fixed Effect (FE) is most appropriately used in estimating panel data. To select the appropriate model of Chow-Test it can be determine from the test is the results;

H_0: Select CE (p > 0.05)

H_1: Select FE (p < 0.05)

If the results shown above, the interpretation will be based on the output of Chow-test regression panel with E-views based on the value shown and if the value of Prob. Cross-Section Chi-square less than significance level of 0.05 then fixed effect is preferred over common effect or vice versa.

Hausman-Test

Hausman (1978) proposed that the test is generally applied to indicate independent variables which is endogenous in a structure model of panel regression. In this context, the test statistics is tested with chi-square distribution with degree of freedom (d.f.) is

equivalent to the number of potential endogenous variables. Nonetheless, different evaluation of methodologies with may resulted to different outcomes under a limited sample size. The specification of the d.f. under Stata and SAS analytics are reported as the vector of entire parameter dimension due to the reasons that the d.f. is ranked differently between the estimation of two covariances matrices. By placing more d.f. in the regression model will resulted to asymptotic rejection of probability area as compared to the size of test proposed.

The Hausman-test is used to determine the best panel regression model between fixed effect models (FEM) or random effect model (REM). If the test is entered to the post-chow test stage and the result is to choose fixed effect, then it should be continued with Hausman-test. The requirement is to perform steps in a sequence, which is doing a fixed effect then proceed with a random effect analysis first and then proceed with a random effect. Therefore, Hausman-test is a statistical test to select whether the most appropriate FEM or REM the model if the results are;

$$H_0: \text{Select RE } (p > 0.05)$$
$$H_1: \text{Select FE } (p < 0.05)$$

If Hausman-test accept H_0 or p value greater than 0.05, the random effect model is preferred. Then the study is proceeded with Lagrange-test (Lagrange Multiplier) test to determine if random effect or common effect model is appropriate for the research study. On the other hand, if Hausman-test accepted H_1 or p-value < 0.05, then fixed effect is preferred.

Lagrange Multiplier Test

Lagrange multipliers were once regarded as auxiliary variables introduced in the constraint minimization problem in order to formally write the first-order optimal conditions as a system of equations. Modern applications emphasize numerical methods and auxiliary conditions that are more complex than equations, and require a deeper understanding of this concept and how it fits into a larger theoretical picture.

The main research direction is the non-smooth geometry of the unilateral tangent and normal vector of a point set that satisfies the given constraints. The other is the game theory role of the multiplier vector as a solution to the dual problem. The explanation of the generalized derivative as the optimal value of the problem parameter is also explored. Lagrange multipliers are now considered to be generated by the general rule of sub differentiation of non-smooth objective functions, which allows penalty expressions to replace black and white constraints (Rockafellar, 1993).

Besides, the Lagrange Multiplier test should be done in two conditions when panel data regression is on-going namely the Chow-test shows the best method of the Common Effect model (CEM) and Fixed Effect Model (FEM) which required the Lagrange-test to determine whether CEM is better than the Random Effect Model REM and the Hausman-test shows that the best method is the REM of the FEM and to determine the REM is better than the CEM Lagrange-test is required to determine the above comparison.

The Lagrange-test is used to determine whether the REM is better than CEM and the results shown from the output of Lagrange-test data panel regression with EViews;

$$H_0\text{: Select CE } (p > 0.05)$$
$$H_1\text{: Select RE } (p < 0.05)$$

The value of P Value is shown by the number below where the value is less than 0.05. So, the Lagrange Multiplier Test indicates that receiving H_1 means the best estimation method is Random Effect. If the value of p value is greater than 0.05 then receive H_0 which means the best estimation method is CEM.

3.8 Diagnostic Check

The tests performed such as Variance Inflation Factors (VIF), Durbin Watson test or Durbin's H test, Jargue Bera test, can be confirmed by satisfying the assumptions of the classical linear regression model (CLRM). There are several assumptions of CLRM which are proposed as follows:

- The multicollinearity problem will exist when the independent variables are highly correlated with each other.

- The autocorrelation can arise when the observations during the period t or after the period t have relationship in the terms of error term (μ) in cross-sectional data.

The overall result for OLS estimator will become best linear unbiased estimator (BLUE) when the CLRM assumptions is satisfied. The estimator of OLS is considered efficient when the variance in the regression model is able to attain minimum variance errors and is unbiased. Furthermore, the P-values results that are generated from E-Views are accurate as long as the values are not overly estimated or underestimated.

Multicollinearity

There is an existence of multicollinearity problem is more than one independent variable are highly correlated with each other in multiple regression model. Multicollinearity problem happens when there are identical variables which is included in the model or the dummy variables is used wrongly for instance, excluding one important category or include dummy variables in every category. In order to avoid the consequences of multicollinearity, there are few methods which can be used to access the problem. This includes when the magnitude of the standard errors is higher than the coefficients, hence, this indicates there is an existence of multicollinearity problem. Furthermore, the multicollinearity can be identified when the predictors have exceeded the proportion of the variance decomposition by 80% to 90% (Kim, 2019).

The seriousness of the multicollinearity problem can be detected via variation inflation factor (VIF) in which the acceptable value of multicollinearity falls within the range of 0.2 or 0.1 whereas if the value of VIF is more than 10, thus it is categorized under high multicollinearity problem. The VIF analysis follows the rule of thumbs in theory. The proposed formula by economists are as follows:

$$VIF = \frac{1}{1 - R^2}$$

Table 3.3: Variance Inflation Factor (VIF) Multicollinearity Indicator

VIF = 1	No Multicollinearity
$1 \leq VIF \leq 10$	Low Multicollinearity
$VIF \geq 10$	High Multicollinearity

Autocorrelation

CLRM assumes that each and every error term in the regression model is independently distributed. The problem of autocorrelation will occur when the error term (μ) during the period t is related with error term (μ) before the period t. If the autocorrelation error is detected, thus, the value of t statistics and F statistics will be invalid. The result of P-value on the hypothesis results will ultimately be influenced as well. The researchers used different methods to detect the autocorrelation problems. This includes Durbin Watson test, which is used to detect first order autocorrelation, Durbin's H test is used to detect higher autocorrelation and Breusch Godfrey LM test is used to detect autoregressive model.

Each method shares the same characteristics of the P-value. If the P-value is lower than the threshold of significance level of 1%, thus the model suffers from autocorrelation error.

H_0: There is no autocorrelation error
H_1: There is autocorrelation error

Upon the P-value approach, the H_0 is not rejected when the P-value is more than the appropriate threshold of the significance level which is 1%, 5% and 10%. This indicates that there is enough data to infer that the model has an autocorrelation problem.

Normality Distribution of Error Term

The assumptions made in classical linear regression model stated that the error term (μ) is expected to be normally distributed in the regression model. An appropriate residuals plotting is ample to analyse normality distributions. In order to avoid problem from normality distribution in terms of skewness and kurtosis from the regression model thus, the sample size must be large enough approximately ranging 30 and above sample size. In order to determine whether the error term is normally distributed, thus, Jargue Bera test or known as JB test is conducted using E-Views.

H_0: The error term is normally distributed
H_1: The error term is not normally distributed

The researchers will reject H_0 if the P-value is lesser than the appropriate threshold of significance level at 1%, 5% and 10%, otherwise do not reject H_0. This indicates that when the P-value is rejected thus, there is sufficient evidence to conclude that the error term is not normally distributed.

3.9 Conclusion

In this chapter, all significant statistical tests and measurement are discovered. Data are derived from the World Bank Open Data, Department of Statistics Office Portal Malaysia (DOSM) as well as banks' annual report ranging from 2010 to 2019 with 60 assumptions. In addition, others testing and checking for the regression model will be conducted according to the methodologies discussed earlier. Last but not least, all additional data analysis and major findings will be discussed and research on the upcoming chapter.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this particular chapter, all the findings and results were derived from historical empirical findings that is previously outlined from Chapter 3. The empirical findings have been summarized in the table to determine the relationship between NPLs in Malaysia Commercial Banks and FDI inflows as main variables and other complimentary independent variables. The empirical findings derived from historical data from various sources are being used to discussed in the NPLs model. The final findings will be guidelines for this study to explain how FDI inflows able to influence the level of NPLs in Malaysia Commercial Banks for future references in the upcoming chapter.

4.1 Descriptive Analysis

In this research, there are a total of 60 observations from 6 Malaysia Commercial Banks namely, AmBank, CIMB Bank, Hong Leong Bank, Maybank, Public Bank, and RHB Bank in terms of panel regression data. The data is being retrieved from annual report of bank ranging from 2010 to 2019.

Table 4.1 Descriptive Analysis Results from E-views Output

	NPLs	FDI In	INF	OP	SIZE	CAR
Mean	14.8306	3.42960	2.13230	138.6612	2.964396	16.51265
Median	14.6846	3.20600	2.09750	135.7335	2.961241	16.33185
Maximum	16.2442	5.07400	3.87100	157.9450	3.022483	19.38688
Minimum	13.0197	2.31500	0.66300	123.0000	2.904422	13.49797
Std.Dev	0.78731	0.86303	0.97388	11.37591	0.030856	1.352682
Skewness	0.28531	0.57503	0.23002	0.400074	0.124744	0.452102
Kurtosis	2.1136	2.14100	2.13342	1.874091	2.020282	2.879480

Jargue Bera	2.77833	5.15133	2.40646	4.769766	2.555232	2.879480
Probability	0.24928	0.07610	0.30022	0.092100	0.278701	0.353406
Observation	60	60	60	60	60	60
Note: FDI = Foreign Direct Investment, INF = Inflation Rate, OP = Trade Openness, BS = Bank Size, CAR = Capital Adequacy Ratio						

The results that are summarized in table above signifies descriptive analysis of NPLs as dependent variable while FDI inflows, INF, OP, SIZE and CAR are being examined as independent variable ranging from 2010 to 2019 in this research study. There are a total of 60 observations collected from different commercial banks in Malaysia.

Based on the outcome outlined Table 4.1, the mean value for NPLs, FDI inflow, INF, OP, SIZE and CAR recorded as 14.8306, 3.42960, 2.13230, 138.6612, 2.964396 and 16.51265 respectively. The average change in OP is greater than other variables. Furthermore, the median for NPLs, FDI inflow, INF, OP, SIZE and CAR accounted as 14.6846, 3.20600, 2.09750, 135.7335, 2.961241 and 16.33185 respectively. From the Table 4.1, FDI inflow achieved a maximum value at 5.07400 and 2.31500 for the minimum value. Besides, OP has recorded as the highest standard deviation at 11.37591 which regarded as highest volatility and followed by CAR, INF, FDI inflow, NPLs and SIZE which are recorded at 1.352682, 0.97388, 0.86303, 0.78731 and 0.030856. This clearly indicate that trade openness might influence the volatility of the NPLs of banks.

4.2 Empirical Methodology

Table 4.2: Panel Unit Root Tests

Table 4.2: Panel Unit Root Tests				
	Augmented Dickey Fuller (ADF)		**Phillips Perron (PP)**	
	Level			
Variables	**Constant without Trend**	**Constant with Trend**	**Constant without Trend**	**Constant with Trend**
NPLs	20.6219 (0.0562)	17.4826 (0.1323)	37.3771** [0.0002]	45.0199** [0.0000]
FDI Inflows	20.2806 (0.0620)	15.0990 (0.2361)	14.6555 [0.2608]	33.2704** [0.0009]
INF	41.0502** (0.0000)	20.1381 (0.0645)	30.7167** [0.0022]	33.2210** [0.0009]
OP	7.36378 (0.8327)	9.97132 (0.6185)	9.74704 [0.6381]	2.12944 [0.9992]
SIZE	14.6032 (0.2639)	3.82307 (0.9864)	83.5477** [0.0000]	33.3410** [0.0009]
CAR	4.56460 (0.9710)	19.6504 (0.0740)	14.9354 [0.2450]	23.8272** [0.0215]
1st Differences				
NPLs	24.6826** (0.0164)	15.4124 (0.2197)	67.7526** [0.0000]	58.9592** [0.0000]
FDI Inflows	26.0514** (0.0106)	12.7285 (0.3891)	61.8313** [0.0000]	39.5313** [0.0001]
INF	53.4643** (0.0000)	49.7065** (0.0000)	82.4691** [0.0000]	74.7629** [0.0000]
OP	21.0493** (0.0497)	18.6383 (0.0976)	16.7394 [0.1597]	8.61128 [0.7357]
SIZE	10.3380 (0.5863)	10.5784 (0.5654)	29.5613** [0.0032]	28.3832** [0.0049]

CAR	28.0874**	20.1460	54.1471**	59.9001**
	(0.0054)	(0.0644)	[0.0000]	[0.0000]

*Note: *** and ** denotes the level of significance level at 1% and 5% respectively. While the figure in parenthesis form (...) and [...] are reported as probability selected based on Newey-West automatic bandwidth selection and Bartlett kernel. All the tests are assumed as asymptotic normality.*

The following result of ADF unit root test for those variables are shown in Table 4.2 which are NPLs, FDI Inflows, INF, OP, SIZE and CAR at level form and first difference for both with trend and without trend. By analyzing to Table 4.2, at level form for both with and without trend, NPLs, FDI Inflows, OP, SIZE and CAR illustrated non-stationary since null hypothesis cannot be rejected which is greater than 5% level of significant. However, at level form without trend, INF illustrated stationary at the 5% level of significant. For the level form with trend, INF is non-stationary at 5% level of significant.

At first difference form for both with trend and without trend, SIZE shown non-stationary at 5% level of significant. For first difference form without trend, NPLs, FDI Inflows, INF, OP and CAR shown stationary at 5% level of significant. At first difference form with trend, NPLs, FDI Inflows, OP, SIZE and CAR shown non-stationary which are greater than 5% level of significant. INF shown stationary at 5% level of significant.

On the other hands, the following result are generated from Phillips Perron (PP) from Table 4.2 at level form and first difference for both with trend and without trend. By referring to Table 4.2, at level form for both with and without trend, OP illustrated non-stationary which is greater than 5% level of significant while NPLs, INF and SIZE illustrated stationary at 5% level of significant. At level form without trend, FDI Inflow and CAR illustrated non-stationary at 5% level of significant. Besides, at level form within trend, NPLs, FDI Inflows, INF, SIZE and CAR illustrated stationary at 5% level of significant.

At first difference from for both with trend and without trend, NPLs, FDI Inflows, INF, SIZE and CAR shown stationary at 5% level of significant. In addition, OP shown non-stationary which is greater than 5% level of significant in both with trend and without trend.

In summary, based on ADF test, INF is stationary at first difference for both trend and without trend, only INF is shown stationary at level form. Hence, it proved that INF is stationary at the order of $I(0)$ and relatively the other variables are stationary at order of $I(1)$. On the other hands, based on Phillip Perron test, NPLs, FDI inflows, INF, SIZE and CAR are stationary at first difference for both trend and without trend. NPLs, INF and SIZE are stationary at level form for both trend and without trend.

4.3 Panel Data Models

4.3.1 Chow Test

Effects Test	Statistics	P-Value
Cross Section Chi Square	148.800018	0.0000**

*Note: ** denotes the level of significance level at 5% respectively.*

Source: E-views 11 software output generation

In this research, Chow test is being applied to determine the suitable model to estimate the panel regression data. The results concluded that there is sufficient evidence to conclude that pooled OLS model is invalid to estimate the level of NPLs in Malaysia Commercial Banks is this research study. Therefore, this research continued with the Hausman test to determine the preferred model between the fixed effects model and random effects model.

4.3.2 Hausman Test

	Statistics	P-Value
Test Summary		
Cross Section Random	0.00000	1.0000**

*Note: ** denotes the level of significance level at 5% respectively. Cross section test variance is invalid thus, Hausman statistics is set to zero.*

Source: E-views 11 software output generation

In this research, Hausman test is applied to determine the effect of the model between fixed effect model and random effect model. There is enough evidence to conclude that random effect model is consistent and efficient to estimate the level of NPLs in Malaysia Commercial

Banks. Hence, this research continues with the Lagrange Multiplier test to determine the preferred model between random effects model and the common effects model.

4.3.3 Lagrange Multiplier Test

	Test Hypothesis		
	Cross Section	**Time**	**Panel**
Breusch-Pagan	208.0709	5.260128	213.3310
	(0.0000)	(0.0218)	(0.0000)
	**	**	**
Note: *** and ** denotes the level of significance level at 1% and 5% respectively. While the figure in parenthesis form (…) are reported as probability value of every test hypothesis respectively.			

Source: E-views 11 software output generation

In this research, the Lagrange Multiplier test is used to determine the appropriate method for estimating the panel regression model. The purpose of this test is to determine the model fit between common effect model and random effect model. Lagrange Multiplier test is essential as it determines the best estimation model to estimate the level of NPLs with other explanatory variables in Malaysia Commercial Banks.

Based on the results generated from E-views, it is concluded that the best estimation method is random effect model in this research study. As a conclusion, the tests that is used to determine the best estimation method shows that random effects model is preferable to estimate the level of NPLs in Malaysia Commercial Banks namely AmBank, RHB Bank. Hong Leong Bank, Maybank, Public Bank and CIMB Bank.

Table 4.3 Summary of Best Estimation Method

Estimation Method	**Conclusion**

Chow Test		
Probability of Chi square	0.0000	Fixed effect model is preferable.
Hausman Test		
Probability of Chi square	1.0000	Random effect model is preferable.
Lagrange Multiplier Test		
Probability of Breusch Pagan	0.0000	Random effect model is preferable.

Summary:

It is concluded that random effect model (REM) is the most preferable to be used in this research study to estimate the level of NPLs in Malaysia Commercial Banks.

4.4 Inferential Analysis

In this research study, it was found that random effects model (REM) is the preferred model to determine the level of NPLs using Hausman test and Lagrange Multiplier test. The following random effects model (REM) is being derived and estimated from E-views 11.0 output to determine the relationship between FDI inflows, inflation rate, trade openness, bank size and CAR towards the level of NPLs of commercial banks in Malaysia context.

Table 4.4 Panel EGLS (Dependent Variable: Non-Performing Loans)

Independent Variable	**Coefficients**	**P-Value**
FDI Inflows	0.116224 (3.108974)	0.0030**
INF	-0.021148 (-0.741913)	0.4614
OP	0.025123 (4.446655)	0.0000**
BS	34.07669 (1.377627)	0.0000**
CAR	0.031487	0.1740

	(-5.418464)	
Weighted Statistics		
R^2	0.493794	
Adjusted R^2	0.446923	
Prob (F-statistics)	0.000000**	
Unweighted Statistics		
R^2	0.102578	
*Note: FDI = Foreign Direct Investment, INF = Inflation Rate, OP = Trade Openness, BS = Bank Size, CAR = Capital Adequacy Ratio. T- statistics is being reported in terms of parentheses form in the random effects model while, *** and ** denotes the level of significance level at 1% and 5% respectively.*		

Source: E-views 11 software output generation

4.4.1 R-squared

Based on Table 4.4 the R-squared for the weighted statistics and unweighted statistics is amounted to 0.493794 and 0.102578 respectively. These results indicated that the degree variation of the level of NPLs in Malaysia Commercial Banks can be explained by main independent variables, FDI inflows alongside with other independent variables such as inflation rate, trade openness, bank size and CAR. The value of weighted statistics and unweighted statistics R-squared in Table 4.4 shows that 49.38% and 10.26% of NPLs in Malaysian Commercial Banks can be explained by FDI inflows, inflation rate, trade openness, bank size and CAR over the period from 2010 to 2019.

4.4.2 Adjusted R-squared

The amount of adjusted R-squared can be explained based on the reported quantifying random effects model in this research study. The value of the adjusted R-squared presented in Table 4.4 defines the degree of variation in the level of NPLs in Malaysian Commercial Banks after accounted degrees of freedom (d.f.) into consideration. The value of adjusted R-squared for

the weighted statistic is 0.446923 which implies that 44.69% of the variation in NPLs can be explained by the main independent variables, FDI inflows along with other independent variables such as inflation rate, trade openness, bank size and CAR. While, adjusted R-squared for unweighted statistics is not being reported by E-views output generation.

4.4.3 F-Statistics (Probability)

In this study, the F-statistic is one of the methods used to indicate the overall significance for the panel regression model that best fits the data used. The P-value reported in the output for Malaysian Commercial Banks is 0.0000 suggesting that the overall model is significant in explaining the level of NPLs in Malaysian Commercial Banks context.

4.4.4 Foreign Direct Investment Inflows

The FDI inflows p-value is reported 0.0030 which indicated that there is moderate significant in determining the relationship with the level of NPLs. While, the coefficient of the FDI inflows is amounted to 0.11624 which indicates there are positive relationship between FDI inflows and the level of NPLs in Malaysia Commercial Banks. Due to the differential effect between FDI inflows (% in GDP) and NPLs (RM'000), the coefficient is being interpreted as logarithmic form. Hence, for every additional increase of FDI inflow that is invested into Malaysia, the level of NPLs will increase by 12.322%, on average, ceteris paribus.

According to Festic et al. (2011), the empirical study shows that FDI has a positive relationship with NPLs among the European Union states namely Bulgaria and Romania. The statement is being explained with several justifications. Over the period of 2002 – 2006, non-financial business sectors are financed by a significant proportion of investment through retained earnings, inter-company loans and foreign capital, some of which comes from loans and FDI capital flows from bank in other countries. The more FDI inflows that is channeled into the financial industry, the greater the opportunities for banks to create more loans, leading to the possible consequences of increased NPLs in the banks. Moreover, FDI capital inflows are channeled the banking sector, which are inextricably linked to the availability of bank's

credit in general (Festic et al., 2011). These reasons will affect the level of NPLs when a larger share of FDI inflows is distributed to the banking institutions.

Withal findings, FDI inflows have a significant relationship towards NPLs in Malaysia Commercial Banks. According to Koju et al. (2018), a high level of FDI inflows significantly increases the bank liquidity and provides additional credit availability. This is because increased credit growth leads to a deterioration in credit standards, which in turn leads to an increase in the NPLs in the banking sector.

4.4.5 Inflation Rate

For inflation rate in Malaysia, the p-value is reported as 0.4614 which indicates insignificant relationship between inflation rate and NPLs. The coefficient of the variable is -0.021148 which showing that there is negative relationship between inflation rate and the level of NPLs in Malaysia Commercial Banks. Due to the differential effect between inflation rate (annual %) and NPLs (RM'000) the coefficient is therefore interpreted in logarithmic form. Thus, for every additional increase of inflation rate that is sought by Malaysia, the NPLs will decrease by 2.0879%, on average, ceteris paribus.

The result of inflation rate is negative relation which supported by Gremi (2013). The studies explained the negative relationship in the long-term inflation debt will decrease in the book value which may help the pledger to repay the debts to the banks. The research is further justified that inflation acts as an indicator of price stability which affects the solvency of credit borrowing. Besides, on the empirical studies carried out by Klien (2013) stated that an increase in the level of NPLs has a negative relationship towards inflation rate that the large credit boom was caused by the financial crisis. It has also been observed and analyzed that inflation rate does not contribute directly to the economy but has an indirect effect on the economy as a whole. Therefore, moral hazard problems exist as inflation rate increase and NPLs decrease. Klein (2013) statement was justified by the fact that the timing of the increase in NPLs was not seen as an immediate stabilizing factor for the economic system. This may pose some threat to the banking system in the economy in order to undermine the sustainable recovery during the onset of the crisis.

The results that are being generated also shows that there is insignificant relationship towards the NPLs. Withal, the insignificance may indicate that Malaysia Commercial Banks able to manage their credit policy resulting from the effect of macroeconomic effects namely inflation. The overall outcome consistent with the findings by Haniifah (2015), which shows that macroeconomic factors such as inflation rate, GDP growth and exchange rate is irrelevant to explain the level of NPLs in Ugandan commercial banks context ranging from the year 2000 to 2013. It is concluded that there is non-significant relationship between inflation rate and NPLs in the empirical study due to the reasons that a high inflation rate may pass on the nominal interest rate and weakens the capability of borrowers to service the loan by lowering the real income per capita (Skarica, 2014).

4.4.6 Trade Openness

The trade openness p-value is reported 0.0000 which indicated that there is high significant in determining the relationship with the level of NPLs. While, the coefficient of the trade openness is amounted to 0.025123 which indicates there are positive relationship between trade openness and the level of NPLs in Malaysia Commercial Banks. Due to the differential effect between trade openness (% in GDP) and NPLs (RM'000), the coefficient is being interpreted as logarithmic form. Hence, for every additional increase of trade openness that is altered by GDP in Malaysia, the level of NPLs will increase by 2.54177%, on average, ceteris paribus.

Upon to the research above, one of the journal studies by Koju et al. (2018) has the similar result which significantly positive relationship between NPLs and export to import ratio. This shows that when the trade openness increases in 100 basis point, this will cause the NPLs rise by 5 basis point as well. Whereas this is proved by researchers Mpofu and Nikolaidou (2018). However, based on the research done by Mustafa and Ali (2019) that stated in literature review part, the studies stated that although GDP and NPLs is negatively correlation, but the other factors such as inflation, trade openness, domestic credit to the private sector and so on are positively impact on NPLs. Moreover, when trade openness is risen, the negative impact on banking system in Sub-Saharan Africa will occur. This is due to the unfavorable economic

conditions which have raised credit risk in the banking business in Sub-Saharan Africa. Therefore, the NPLs are inversely connected with GDP, but trade openness is favorable volatility with NPLs (Mustafa & Ali, 2019).

Regarding to result stated in Table 4.4, the trade openness is high significantly in determining the relationship with NPLs which also supported by Nargis et al. (2019). From the studies, the paper supported that GDP growth rate, bank domestic lending to the private sector as a proportion of GDP, trade openness, financial crisis and so on may have significant impact on NPLs ratio.

4.4.7 Bank Size

Based on this study, the relationship between bank size and NPLs is highly significant, due to the p-value of bank size is 0.0000. In spite of the fact that, the coefficient of the bank size is amounted to 34.07669 which indicates there are positive relationship between bank size and the level of NPLs in Malaysia Commercial Banks. As a result, when the bank size in Malaysia Commercial Bank increased by RM 1,000, the level of NPLs will increase by RM 34,076.70.

As the result showing in table 4.4, the studies carried by Bercoff et al. (2002) have the same outcome, whereas the bank size and NPLs is positively related which measure by the formula of log of total assets. The accelerated failure time (AFT) model has been used by previous studies to investigate NPLs in Argentina banking institutions. In facts, the result reveal that asset growth, peso loan exposure, bank institution characteristics, and the tequila effect all contributed to Argentina's banking system's fragility. Furthermore, another researcher found out that Kosovo conventional banks is highly focused on bank size due to this is one of the important variables that may affecting Kosovo conventional banks' NPLs. Therefore, this reflects that there is positive relationship between bank size and NPLs (Moriana, 2020). Saada (2017) also comes out the same result which from year 2010 to 2015, the bank size is favourable associated and significant with banking sector in Tunisian. This is because larger banks are facing the risk of diversification, economy funding and financial consolidation.

Under the research by Rajan and Dhal (2003), the empirical study stated that the presence of the bank size has a statistically significant effect on NPLs. This is because the response of banking related variables such as bank size and macroeconomic factors is used to determine the empirical study of NPLs in the Indian banking sector. Based on the research by Saba et al. (2012), by taking into account all of the aforementioned factors, financial institutions must alter and control their lending policies. Although coefficient value is rather low, the bank size still has a significant impact on NPLs. Therefore, banking sectors must still take into consideration on bank size.

4.4.8 Capital Adequacy Ratio

In this research study, the CAR related to NPLs in Malaysia Commercial Banks is insignificant because the p-value is reported as 0.1740. While, the coefficient of the CAR is amounted to 0.031487 which indicates there are positive relationship between CAR and the level of NPLs in Malaysia Commercial Banks. Due to the differential effect between CAR that is expressed in ratio and NPLs is expressed in terms of currency (RM'000), the coefficient is being interpreted as logarithmic form. Hence, for every additional increase of CAR that is reserved by Commercial Bank in Malaysia to absorb potential losses, the level of NPLs will increase by 3.1991%, on average, ceteris paribus.

Upon the findings, the CAR is positively associated with NPLs. CAR represents as financial absorbent towards the rising level of NPLs. The results are consistent with Chang (2006), who found that the conflicting trends in NPLs and the CAR result from greater loan loss provisioning, which may lead to NPLs being written off, but, the written-off loans do not lead to increase in CAR, if there are no detrimental impacts. Moreover, the results by Constant and Ngomsi (2012) empirical studies suggested that larger and well-capitalized banks are better in absorbing possible credit risks and therefore allocate a higher proportion of assets to corporate loans. In support of this, it was further argued that banks with longer debt maturities are somewhat more willing to lend the loan to businesses. To illustrate the following point: longer maturities of instruments such as loans are more relevant to the bank's tendency to lend to business for a longer term. However, the empirical study stated there is valid evidence

showing that banks are unwilling to extend business loans with maturities longer than three years due to the condition of risky market volatility.

Nevertheless, the findings of the results were proven to be insignificant based on Table 4.4. Withal, the findings of study outcome are consistent with the empirical results by Pratiwi and Hindasah (2014). The statement is further justified on the basis that the insignificant results indicate that the capital is used to maintain the minimum capital requirements and to anticipate the bank's risk losses. Although the results are insignificant, this does not mean that the bank can ignore the capital requirement in the loan distribution, since the bank's CAR is often affected by an excessive distribution of loans with respect to Indonesia commercial bank context. The results of the study suggest that CAR has no effect on credit distribution.
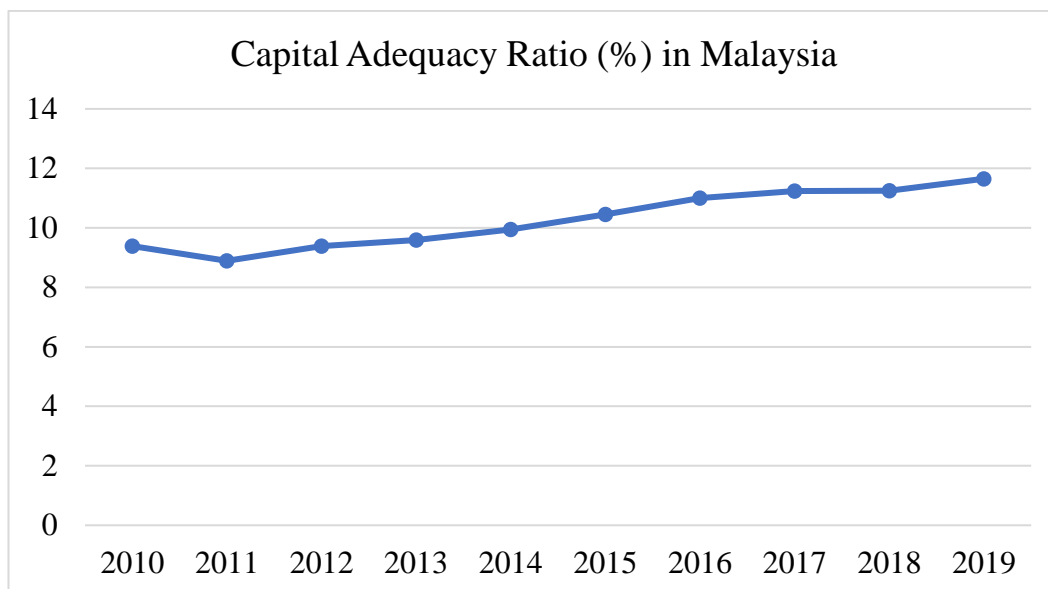
Figure 4.1: CAR Trend in Malaysia for the past 10 years

Adapted from World Bank Data

Under the regulation of central bank Malaysia (Bank Negara Malaysia), the commercial bank was subjected to comply with 8% of CAR requirement. CAR has been shown to be insignificant for NPLs, as every commercial bank must meet minimum capital requirements to ensure the safety and soundness of the banking system. The CAR reflects to the capability of the bank in ensuring sufficient funding to absorb the potential loss due to the failure of banking operation. Nonetheless, based on the Figure 4.1, it is shown that the compliance CAR in Malaysia Commercial Bank is relatively more than 8% as compared to the minimum rate

set by Bank Negara Malaysia. This represents that the performance of the commercial bank in Malaysia have adequate capital and funds to finance the increasing rate of NPLs during the financial crisis when the profit earnings are insufficient to eliminate the outstanding cost.

4.5   Diagnostic Checking

4.5.1 Multicollinearity

Multicollinearity issues existed when there is more than one independent variable are
correlated with one and another. In this research, Variance Inflation Factor (VIF) is used to
identify the correlations between the established coefficients.

Table 4.5 Correlation Between the Established Coefficients

Variables	FDI In	INF	OP	LBS	CAR
FDI In	1.0000				
INF	0.379747	1.0000			
OP	0.551283	0.245706	1.0000		
LBS	-0.236053	-0.053466	-0.367324	1.0000	
CAR	-0.249314	-0.164505	-0.336066	0.302051	1.0000

Source: E-views 11 software output generation

Based on the table above, FDI inflows, inflation rate and bank size have medium positive
correlation at 0.379747 and 0.302051 respectively. On the other hand, FDI inflows and trade
openness has strong positive correlation with one and another at 0.551283. While, trade
openness and inflation rate have weak positive correlation at 0.245706. Furthermore, FDI
inflows and inflation rate has weak correlation negative with bank size and CAR. Trade
openness, bank size and CAR have medium negative correlation with one and another at -
0.367324 and -0.336066 respectively.

Table 4.6 Variance Inflation Factor (VIF) Result

Exogeneous variable is treated as endogenous variable	$VIF = \dfrac{1}{1 - R^2}$
FDI Inflows	1.808073
INF	1.338615

OP	7.175312
LBS	7.714441
CAR	1.206790

Source: E-views 11 software output generation

According to the VIF result, the value of VIF among the independent variables FDI inflows, inflation rate, trade openness, bank size and CAR is less than 10 which considered low multicollinearity. Therefore, it is concluded that multicollinearity does not exist in the panel regression model in this research.

4.5.2 Autocorrelation

Table 4.7 Autocorrelation Results

Weighted Statistics

	Results
Test Statistics	1.358959
Decision making	Reject H_0 since the Durbin Watson statistics (1.358959) is less than d_L (1.41).

Unweighted statistics

	Results
Test Statistics	0.077458

Decision making	Reject H_0 since the Durbin Watson statistics (0.077458) is less than d_L (1.41).

In this research, Durbin Watson test is used to detect serial correlation in random effects model in this research. In this research, weighted statistics and unweighted statistics is used to determine the econometrics problems that violated the CLRM assumption. Based on the results above, there is serial correlation in random effects model from both weighted and unweighted statistics.

The relationship between observation of the same variable in a specific period can be measured by serial correlation in statistics. When zero in the serial correlation that measured of a variable occurs, this mean that each observation is independent to each other and reflects that there is no correlation. On the contrary, when the variable slope toward one in the serial correlation, then the past values are affected future observations and the observations are serially correlated. Essentially, sequence-related variables have patterns and are not random. The correlation can be positive or negative. Shows that the NPLs related to the positive serial correlation which have a positive pattern. A security with negative serial correlation will have a negative impact over time. From the result above, a positive error in one period will carry over into a positive error for the following period, which is called a positive serial correlation.

4.5.3 Normality Test

Table 4.8 Normality Test Result

	Result
Jargue-Bera	6.032025
P-value	0.048996
Decision making	Do not reject H_0 since the P-value (0.048996) is more than the significance level of 1%.

In this research, the purpose of adopting normality test in this research is to determine the normal distribution of the error term in the established model. Based on the outcome generated

from E-views software, the results shown that the data in the model is normally distributed. This is because P-value is more than the significance level of 1%.

4.6 Conclusion

As a final observation, most of the empirical evidence is being tested out using E-views software. Descriptive analysis, panel unit root, panel regression estimation method as well as diagnostic assessment is conducted to determine the results significancy towards the dependent variable. Each and every input is included with important determinants such as FDI inflows, inflation rate, trade openness, bank size and CAR to explain the relationship with NPLs in Malaysia Commercial Banks.

CHAPTER 5: DISCUSSION, CONCLUSIONS AND IMPLICATIONS

5.0 Introduction

Chapter 5 comprises the summary of the conclusions of the whole study. It offers more explanation for the analysis presented in Chapter 4, as well as the key findings and consequences, as well as recommendations for future study based on the research findings. The final section is the conclusion, which summarizes the study's results.

5.1 Summary of Statistical Analysis

Table 5.1 Summary of Diagnostic Checking

Diagnostic Check	Decision	Solution
Multicollinearity	All variables' VIF does not exceed 10	Nil
Autocorrelation	Reject H_0	Nil
Normality	Do not reject H_0	Nil

This section summarizes with the empirical results provided by E-View software in Chapter 4. The summary findings consist of the multicollinearity, autocorrelation and normality test for the variables. As reported in Table 5.1, there are no solutions being proposed because the results are merely depending on the variables used and the method of data classification. If there is a solution, it indicates the appropriate ways to solve the econometric problem. Thus, the researchers' results are credible and can be explained accordingly.

5.2 Discussion of Major Findings

Table 5.2 Summary of Regression Analysis from REM

Independent Variables	Actual Relationship	Hypothesis Testing
Foreign Direct Investment Inflows	Positive	Significant
Inflation Rate	Negative	Insignificant
Trade Openness	Positive	Significant
Bank Size	Positive	Significant
Capital Adequacy Ratio	Positive	Insignificant

From the table 5.2, the results indicate that different variables had different relationship between NPLs in terms of Malaysia Commercial Bank context. On the other hand, all the actual results provide similar outcome as previous studies conducted by past researchers using different countries context with different regression models and conditions. The findings on the impact of FDI inflows on Malaysia Commercial Banks' NPLs are at odds with the findings of the case study of European and Albanian banking sectors.

The result of FDI Inflows has significant positive relation with NPLs in terms of Malaysia Commercial Bank context. The research finding is supported by Baum et al. (2017). The study mentioned that the volatility of portfolio investment such as FDI inflows tend to be robust and has higher effects in countries with larger banking institutions. The results in this study shows that even though the patterns of the coefficients magnitude satisfied with the outcome by past researchers however, the financial inflows do not have similar impact of volatility on all economies. In this study, the characteristics of Malaysia economy is assumed to be heterogeneity across different Commercial Bank in Malaysia. The direction of the magnitude from the estimated independent variables between FDI inflows and NPLs are being reported as negative correlation. A negative correlation between investment inflows and NPLs in Malaysia Commercial Bank allows a better creation of portfolio investment to endure the volatile market conditions during the long run period because FDI inflows are less liable towards the macroeconomic fluctuations.

5.3 Implication of the Study

The practical implications for banking and education are addressed based on the study's findings. The study's major conclusion is to provide appropriate solutions and policies for better management by the government and banks to control NPLs in relation to the selected independent variable by controlling systematic and ad hoc variables to ensure the efficiency of NPLs in the banking industries.

Based on this research study, it has been discovered that FDI inflows appear to have a higher influence on NPLs between 2010 and 2019. Thus, Malaysia government namely policy makers or regulators should reframe FDI policies by increasing the target of the main sectors to be dependent in the host economy. In terms of Malaysia context, the FDI inflows are mostly concentrated on sectors that are highly benefited from foreign exchange such as services sector, manufacturing sector, mining and quarrying sector. However, due to slow economy growing, the performance of FDI inflows has relatively brought intrinsic challenges towards the level of NPLs in Malaysia Commercial Bank. Malaysia's policies to spur foreign investment was ineffective due to mismatch of the industries that is targeted for growth. The results of the FDI inflows are not expected to be significant positive in Malaysia Commercial Banks, there is a possibility that Malaysia economy will struggle during difficulty period such as pandemic outbreak or financial crisis. Due to these reasons, Malaysia can incorporate with commercial banks to formulate supply policy framework to mitigate the spillover effects in the economy.

The results of the finding are accurate due to the skeptical behavior of FDI inflows in Malaysia. The downturn in the sectors that contribute the most (such as manufacturing and mining) will lead to a downward trend in investment performance. This is because the containment of the main sectors' actions will affect the FDI inflows performance in Malaysia. The endowment of downward trending FDI inflows lead to endogenous changes in the equilibrium market mechanism conditions (Δ supply and Δ demand) for loanable funds in Malaysian Commercial Banks. Thus, Malaysia government can adopt GMM forecasting system to forecast the underlying trend of FDI inflows in order to eliminate large fluctuations caused by volatile financial flows. This method can give Malaysia a clear indication of the future dynamics of FDI inflows for a longer period. These methods reduce the bank's NPLs as FDI inflows of a

structural nature are enhanced by the moving average technique with a stable flow of funds to various sectors in Malaysia for liquidity creation.

Finally, the general findings of this study will provide some directions for future research projects for banking students. In future studies, adopting joint effect of FDI inflows and others established variables on NPLs are able to determine consistent results and findings with in-depth discussion. There are also other possible factors that explains the increase of NPLs such as systematic and unsystematic risk, banks' profitability which were not being discussed in this study, thus the variables are essential to be included into study to investigate the rise of NPLs level. Also, the study is useful for the future research to determine the gap between FDI inflows and NPLs of banks in East Malaysia and West Malaysia Commercial Banks.

5.4 Limitation and Recommendation

The objective of this study is to determine the impact of FDI inflows on NPLs in Malaysia Commercial Banks. Therefore, the researchers faced some limitations in conducting this research.

One of the limitations in this research which is the data availability. Researchers faced some difficulty during data collection process because there were limited sources to obtain the information of the data needed in the research. And there will be one issue which is the data that released by the bank is imperfect and inconsistent, and some of the data need to collect from the other sources. Next, less sample size may reduce the intensity of the study and it will make the study become pointless and caused some of the results appears to be insignificance and at the same time it causes the researcher difficult to analyze the economic cycle effects on banking institutions. Therefore, due to the problem that researcher faced in this research study, for economic and other reasons, researchers may be forced to limit the sample size, therefore, if included the larger sample size, the management of the bank will be determined to equate with the management theory. Researcher from this paper recommended that since that NPLs are related to the bank operation, bank should provide a reliable and sufficient data information to the customers to conduct appropriate credit assessments and provide good credit policies in the future.

The second limitation of the current study is the restriction of the analysis to the banking sector in Malaysia. The current research study is limited to measuring the financial performance of the selected banks as an observation sample. This is because the characteristics of the data limitation is secondary data. Hence, the results of this study may not reflect the actual condition of all banking institutions in Malaysia. In the view of the fact that, the bank size policy of commercial banks in Malaysia may have different impact on the operations depending on the profit status of the bank. Therefore, only 6 local banks with large assets in Malaysia are considered as the sample in this study. As a result, broadening the scope of observation from local commercial banks to foreign commercial banks is highly recommended for future studies. This is because banks with larger assets located in Malaysia are most likely to provide consistent financial inflows to the entire Malaysian banking system. To improve the consistency of the whole study, detailed data and more samples are needed to expand the number of banks from local commercial banks to foreign commercial banks.

Lastly, the limitation in this research is that different regions of countries such as Asia, Europe, North America, Africa and others have different characteristics of economies, political structure and investment landscape. The justifications and research findings from this study are only applicable to commercial banks and governance structure in Malaysia. Therefore, the policy makers or researchers from other countries are advised to use this study for reference purpose but not to apply the findings amidst the characteristics of the researcher's country regions. Therefore, it is necessary to extend the field of research to different regions of the countries. This will improve the accuracy of the overall findings of the results based on the perspective of each country.

5.5 Conclusion

In this research, researcher aims to identify the impact of FDI inflows towards NPLs while controlling others determinants that affects NPLs in Malaysia Commercial Banks. Researcher used panel regression data based on 60 observations from 6 Commercial Bank in Malaysia ranging from year 2010 to 2019 namely include AmBank, CIMB Bank, Hong Leong Bank, Maybank, Public Bank, and RHB Bank. Moreover, the dependent variable in this research which is NPLs while the independent variables are FDI Inflows, Inflation Rate, Trade Openness, Bank Size and CAR. Researcher are using the descriptive analysis, panel unit root, panel regression estimation method as well as diagnostic assessment in this research is to determine the important of the result to the dependent variable. Based on the results, all the outcome of independent variables are positively affecting NPLs, excluding inflation rate. However, the study was mainly concentrated on the main independent variables which is FDI inflows with surprising relation on NPLs in Malaysia Commercial Bank context.

This research study attempts to investigate FDI inflows towards NPLs across the period of 2010 to 2019. The result derived from the findings may provide assistance towards banking system in Malaysia to reduce the excessive default lending to consumers. The empirical findings show FDI inflows has positive and significant effects on NPLs in middle-income country of Malaysia. By noting to tax incentives, the initiatives to spur the investment was rather ineffective as the policies are designed without a clear motive to attain relevant field for increasing investment. Thus, in Malaysia, Malaysian Investment Development Authority (MIDA) has set up various initiatives aiming towards China in order to increase the FDI inflows. It is likely to increase investor confidence and ultimately leads to increasing liquidity. A higher degree of FDI inflows will results to create additional loan supply by Malaysia Commercial Banks significantly. An increasing loan supply, this will relatively be lowering down the credit standard and caused NPLs to increase simultaneously among the Malaysia Commercial Banks.

Conclusively, the selling-factor of country to spur the investment is by maintaining the long-standing political stability amid to the current condition of Malaysia. Besides, a lower FDI inflows may be partly due to higher borrowing from multinational companies (MNC) under global uncertainty of investment landscape in today's economy outlook. By providing a more reliable economic conditions outlook and decent investment environment, these conditions are

able to improve and reduce the rate of NPLs through economic factor with the effect of sustainable policy regime in Malaysia commercial bank. After completion of this research, certain loopholes were found to recommend regulators and policy makers to reduce the deficiencies, which may persistently assist researchers for future study relating to this research topic.

REFERENCES

Abd Karim, M. Z., Chan, S. G., & Hassan, S. (2010). Bank efficiency and non-performing loans: Evidence from Malaysia and Singapore. *Prague Economic Papers*, *2*(1).

Abhigale , M. M. (2016). *University Of Nairobi*. Relationship Between Non-Performing Loans And Economic Growth: A Case Study Of Commercial Banks In Kenya.

Adebola, S. S., Yusoff, W. S. W., & Dahalan, J. (2011). An ARDL approach to the determinants of non-performing loans in islamic banking system in Malaysia. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 1(2), 20-30.

Ahmad, F., & Bashir, T. (2013). Explanatory Power of Macroeconomic Variables as Determinants of Non-Performing Loans: Evidence form Pakistan. *World Applied Sciences Journal*, 22(2), 243-255.

Ahmad, N. H. (2003), Formation credit risk, regulatory price effect and the path linking credit to total risk, *University Utara Malaysia.*

Ahmad, N. H., Ariff, M. (2007), Multi-country study of bank credit risk determinants. *The International Journal of Banking and Finance*, 5 (1), 135-152.

Ahmed, E. M. (2012). Are the FDI inflow spillover effects on Malaysia's economic growth input driven? *Economic Modelling*, 29(4), 1498–1504. doi:10.1016/j.econmod.2012.04.010

Ahmed, S., Majeed, M. E., Thalassinos, E., & Thalassinos, Y. (2021). The Impact of Bank Specific and Macro-Economic Factors on Non-Performing Loans in the Banking Sector: Evidence from an Emerging Economy. *Journal of Risk and Financial Management*, 1-14.

Akinlo, O., & Emmanuel, M. (2014). Determinants of non-performing loans in Nigeria. *Accounting & taxation*, 6(2), 21-28.

Alam, N. (2012). Efficiency and Risk-Taking in Dual Banking System: Evidence from Emerging Markets. *International Review of Business Research Papers*, 8(4), 94-111. Retrieved January 30, 2021, from https://www.researchgate.net/publication/260350928_Efficiency_and_Risk-Taking_in_Dual_Banking_System_Evidence_from_Emerging_Markets

Alamgir Hossain, S., Moudud-Ul-Huq, S., & Kader, M. B. (2020). Impact of trade openness on bank risk-taking behavior: Evidence from a developing country. *Cogent Economics & Finance*, *8*(1), 1765468.

Alexandri, A., Santoso, S. (2015). Non-Performing Loan: Impact of Internal and External Factor (Evidence in Indonesia). *International Journal of Humanities and Social Science Invention*, 4(1), 2319-7722.

Ali, A. & Daly, K. (2010). Macroeconomic determinants of credit risk: Recent evidence from a cross. *International Review of Financial Analysis*, 19. 165-171.

Allegret, J.P., Raymond, H. and Rharrabti, H. (2016). The Impact of the Eurozone Crisis on European Banks Stocks, Contagion or Interdependence. *European Research Studies Journal*, 19(1), 129-148

Alotaibi, A., & Mishra, A. V. (2014). Determinants of international financial integration of GCC markets. *Emerging Markets and the Global Economy*, 749-771.

Alshebmi, A. S., Adam, M. H. M., Mustafa, A. M., & Abdelmaksoud, M. T. D. O. E. (2020). Assessing the Non-Performing Loans and their Effect on Banks Profitability: Empirical Evidence from the Saudi Arabia Banking Sector. *International Journal of Innovation, Creativity and Change*, 11(8), 69-93.

Altunbas, Y., Liu, M. H., Molyneux, P., Seth, R. (2000). "Efficiency and Risk in Japanese Banking." *Journal of Banking and Finance*, Vol. 24, pp.1605-1628

Alzaidy, G., Ahmad, M. N. B. N., & Lacheheb, Z. (2017). The impact of foreign-direct investment on economic growth in Malaysia: The role of financial development. *International Journal of Economics and Financial Issues*, *7*(3), 382-388.

Amadeo, K. (2021, January 31). Keynesian Economics Theory. Retrieved from *The Balance*: https://www.thebalance.com/keynesian-economics-theory-definition-4159776

Amadou, A. (2011). The effect of foreign capital on domestic investment in Togo. *International journal of economics and finance*, *3*(5), 223-226.

Anisa, A., & Sutrisno, S. (2020). Capital Buffer and Determinant Factors of Conventional Banks in Indonesia. *The Journal of Asian Finance, Economics and Business* , 7 (12), 377–384. https://doi.org/10.13106/JAFEB.2020.VOL7.NO12.377

Anjom, W., & Karim, A. M. (2016). Relationship between non-performing loans and macroeconomic factors with bank specific factors: a case study on loan portfolios– SAARC countries perspective. *ELK Asia Pacific Journal of Finance and Risk Management*, 7(2), 1-29.

Antoniades, A. (2015). Commercial Bank Failures During The Great Recession: The Real (Estate) Story. *BIS Working Papers*, 1-2. Retrieved January 30, 2021, from https://www.bis.org/publ/work530.pdf

Aryal, S. (16 March, 2019). Primary Data and Secondary Data. Retrieved from https://microbenotes.com/primary-data-and-secondary-data/

Asari, F. F. A. H., Muhammad, N. A., Ahmad, W., Latif, N. I. A., Abdullah, N. & Jusoff, K. (2011). An analysis of non-performing loan, interest rate and inflation rate using Stata Software. *World Applied Sciences Journal 12*, 41-48.

Ashra, B. N. (2017). Trade Openness and Bank Risk-Taking Behavior: Evidence from Emerging Economies. *Risk and financial management*, 1-5.

Ashraf, B., Arshad, S., & Yan, L. (2017). Trade openness and bank risk-taking behavior: Evidence from emerging economies. *Journal of Risk and Financial Management*, 10(3), 15. https://doi.org/10.3390/jrfm10030015

Astuti, R. (2013). Analisis Pengaruh Tingkat Suku Bunga, Nilai Tukar Rupiah, Inflasi, dan Indeks Bursa Internasional Terhadap IHSG. *Diponegoro Journal of Social and Politic of Science*, 1-8.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121–136. https://doi.org/10.1016/j.intfin.2006.07.001

Athukorala, P. C. (2010). *Malaysian economy in three crises* (No. 2010-12).

Avetisyan, S. (2018). EU Geography of Non-Performing Loans (NPL). Retrieved from   doi: 10.20944/preprints201809.0109.v1

Azeem, K., Khan, B., Warraich, F. A., Khadim, I., Zahoor, N., & Ashraf, Z. (2017). Reasons and Effects of Non Performing Loans in the Banking Industry of Pakistan. *European Journal of Business and Management*, 9, 41-49. Retrieved January 30, 2021, from file:///C:/Users/Win10/Downloads/35311-38338-1-

Aziakpono, M. J., & Wilson, M. K. (2015). Interest rate pass through, financial structure and monetary policy in South Africa. *African Finance Journal*, 67-69.

Azman-Saini, W.N.W., Law, S.H., Ahmad, A.H. (2010), FDI and economic growth: New evidence on the role of financial markets. *Economics Letters*, 107(2), 211-213.

Babouček, I., & Jančar, M. (2005). Ef ects of macroeconomic shocks to the quality of the aggregate loan portfolio. *Czech National Bank*.

Badar, M., Javid, A. Y., & Zulfiquar, S. (2013). Impact of Macroeconomic Forces on Nonperforming Loans: An Empirical Study of Commercial Banks in Pakistan. *WSEAS Transactions on Business and Economics*, 10(1),13807 – 13814

Baholli, F., Dika, I., & Xhabija, G. (2015). Analysis of Factors that Influence Non-Performing Loans with Econometric Model: Albanian Case. *Mediterranean Journal of Social Sciences*, 6(1), 391-398.

Bahruddin, W. A., & Masih, M. (2018). Is the relation between lending interest rate and non-performing loans symmetric or asymmetric ? evidence from ARDL and NARDL. *Munich Personal RePEc Archive (MPRA),* 1-29.

Balgova, M., Nies, M., & Plekhanov, A. (2016). The Economic Impact of Reducing Non-Performing Loans.

Barclay, B. (2019, February 28). The alarming decline in foreign direct investment. Retrieved January 30, 2021, from https://www.worldfinance.com/strategy/the-alarming-decline-in-foreign-direct-investment

Barus, A.C., and Erick. (2016). Analisis Faktor-Faktor yang Mempengaruhi Non-Performing Loan Pada Bank Umum di Indonesia. *Jurnal Wira Ekonomi Mikrosil Volume* 6, *Nomor* 02.

Basel Committee on Banking Supervision & Bank for International Settlements. (2000). *Principles for the management of credit risk.* Bank for International Settlements.

Baudino, P., & Yun, H. (2017). *Resolution of Non-performing Loans: Policy Options*. Bank for International Settlements, Financial Stability Institute.

Baum, C. F., Pundit, M., & Ramayandi, A. (2017). Capital Flows and Financial Stability in Emerging Countries. *ADB Economics Working Paper Series*.

Beck, R., Jakubík, P. & Piloiu, A., (2013). Non-performing loans: What matters in addition to the economic cycle? *European Central Bank.* Working Paper No. 1515.

Benedictow, A. & Hammersland, R. (2020). A financial accelerator in the business sector of a macroeconometric model of a small open economy. *Economic Systems*, 44(1), 100731. https://doi.org/10.1016/j.ecosys.2019.100731

Bercoff, J.J, Julian di Giovanniz and Grimardx, F. (2002). Argentina Banks, Credit Growth and the Tequila Crisis: A Duration Analysis.

Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking & Finance*, *21*(6), 849-870.Bernanke, B. & Gertler, M. (1989). Agency costs, net worth, and Business fluctuations, *American Economic Review*, vol.79, no.1, pp.14-31

Bernanke, B. & Gertler, M. (1989). Agency costs, net worth, and Business fluctuations, *American Economic Review*, vol.79, no.1, pp.14-31

Bernanke, B., Gertler, M. and Gilchrist, S. (1998). The Financial Accelerator in a Quantitative Business Cycle Framework. *NBER Working Paper*, No. 6455. Available at: <http://www.nber.org/papers/w6455.pdf?new_window=1>.

Besangre, R. S. (29 September, 2015). Descriptive and Inferential Statistics. Retrieved from *rachelbesangre*: https://rachelbesangre.wordpress.com/2015/09/29/descriptive-statistics/

Bhandari, P. (2020, July 9). An introduction to descriptive statistics. Retrieved from *Scribbr*: https://www.scribbr.com/statistics/descriptive-statistics/

Bhattarai, S. (2015). Determinants of Non-Performing Loan in Nepalese Commercial Banks. *Economic Journal of Development Issues*, 19(1-2), 22-38.

Bofondi, M., & Ropele, T. (2011). Macroeconomic determinants of bad loans: evidence from Italian banks. *Bank of Italy Paper*, 89, 5–40

Borensztein, E., De Gregorio, J., Lee, J.W. (1998), How does foreign direct investment affect economic growth? *Journal of International Economics*, 45(1), 115-135.

Brown, R. D. (1975). Techniques for Testing the Constancy of the relationships over Time. *Royal Statistical Society*, 149-192.

Brownbridge, M. (1998). The causes of financial distress in local banks in Africa and implications for prudential policy. UNCTAD Discussion Papers, number 132, *United Nations Conference on Trade and Development*, March.

Bucur, I. A., & Dragomirescu, S. E. (2014). The influence of macroeconomic conditions on credit risk: Case of Romanian banking system. *Studies and Scientific Researches. Economics Edition*, (19).

Canepa, A., & Khaled, F. (2018). Housing, Housing Finance and Credit Risk. *International Journal of Financial Studies*, 1-23.

Cetin, H. (2019). The Relationship between non-Performing Loans and Selected EU Members Banks Profitabilities. *International Journal of Trade, Economics and Finance*, 10(2). Retrieved from doi: 10.18178/ijtef.2018.10.2.637

Chaitip, P., Chokethaworn, K., Chaiboonsri, C., & Khounkhalax, M. (2015). Money supply influencing on economic growth-wide phenomena of AEC open region. *Procedia Economics and Finance*, 24, 108-115.

Chang, Y. T. (2006). Role of Non-Performing Loans (NPLs) and Capital Adequacy in Banking Structure and Competition. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.938475

Chaudhary, M. (2020). Why is Augmented Dickey-Fuller test (ADF Test) so important in Time Series Analysis. Retrieved March26, 2021 from https://medium.com/@cmukesh8688/why-is-augmented-dickey-fuller-test-adf-test-so-important-in-time-series-analysis-6fc97c6be2f0

Chmelarova, V., & Hill, R. C. (2008, August). Finite sample properties of the Hausman test. In *Southern Economic Association Meeting, New Orleans, LA. Available online: http://www. shsu. edu/eco www/r esources/documents/Hausman10. pdf* (Vol. 10).

Chude, N. P. N., & Chude, D. I. (2014). Impact of agent banking on performance of deposit money banks in Nigeria. *Research journal of finance and accounting*, 5(9), 35-39.

Constant, F.D. and Ngomsi, A. (2012), "Determinants of bank long-term lending behavior in the central African economic and monetary community (CEMAC)", *Review of Economics and Finance*, Better Advances Press, Canada, Vol. 2, pp. 107-114.

Ćurak, M., Pepur, S., & Poposki, K. (2013). Determinants of non-performing loans – evidence from Southeastern European. *Banks and Bank System*, Volume 8, Issue 1, 45-53.

De Bondt, & Gabe J. (2005) Interest Rate Pass-through: Empirical Results for the Euro Area. *Germany Economic Review*. 6, pp. 37-78.

Diaconasu, D. E., Popescu, M., & Socoliuc, O. R. (2014). Macroeconomic determinants of non-performing loans in emerging markets: Evidence from central and eastern Europe. In *International Conference "Monetary, Banking And Financial Issues In Central And Eastern EU Member Countries: How Can Central And Eastern EU Members Overcome The Current Economic Crisis*.

Diamond, D. W., & Rajan, R. G. (2000). A theory of bank capital. *the Journal of Finance*, *55*(6), 2431-2465.

Diebold, F., & Kilian, L. (2000). Unit-Root Tests Are Useful for Selecting Forecasting Models. *Journal Of Business & Economic Statistics*, 18(3), 265. doi: 10.2307/1392260

Dillard, J. (n.d.). *Top 5 Operational Challenges And Opportunities For Community Banks*. Operations Consulting, Decision Analysis And Process Improvement. https://www.bigskyassociates.com/blog/bid/352799/top-5-operational-challenges-and-opportunities-for-community-banks.

Dimitrios, A., Helen, L., & Mike, T. (2016). Determinants of non-performing loans: Evidence from Euro-area countries. *Finance Research Letters*, 116-119.

Drees, M. B., & Pazarbasioglu, C. (1998). The Nordic Banking Crisis: Pitfalls in Financial Liberalization (No. 161). *International Monetary Fund*.

Ekinci, R., & Poyraz, G. (2019). The Effect of Credit Risk on Financial Performance of Deposit Banks In Turkey. *Procedia Computer Science*.

Espinoza, R. and Prasad, A. (2010) Nonperforming Loans in the GCC Banking Systems and their Macroeconomic Effects, IMF Working Paper, 224, International Monetary Fund, *Washington DC*.

Fan, L., Shaffer, S. (2004). "Effi ciency versus Risk in Large Domestic US Banks." *Managerial Finance*, Vol. 30, pp. 1-19.

Farhan, M., Sattar, A., Chaudhry, A. H., & Khalil, F. (2012). Economic determinants of non-performing loans: perception of Pakistani bankers. *European journal of Business and Management*, 4(19), 87-99.

Fernández de Lis, S., Martínez Pagés, J., & Saurina Salas, J. (2000). *Credit growth, problem loans and credit risk provisioning in Spain*. Banco de España. Servicio de Estudios.

Festić, M., Kavkler, A., & Repina, S. (2011). The macroeconomic sources of systemic risk in the banking sectors of five new EU member states. *Journal of Banking & Finance*, 35(2), 310–322. doi:10.1016/j.jbankfin.2010.08.007

Fofack, H. (2005). NonPerforming Loans in Sub-Saharian Africa: Causal Analysis and Macroeconomic Implications (World Bank Policy Research Working Paper No. 3769). *World Bank*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=849405

Frost, J. (2018). Measures of Central Tendency: Mean, Median, and Mode. *Statistics*.

Gabriel, J., Steven, O., José-Luis, P., & Jesús, S. (2014). *ECMA JOPS Paper Compiled.* Hazardous Times For Monetary Policy: What Do Twenty-Three Million Bank Loans Say About The Effects Of Monetary Policy On Credit Risk-Taking? https://doi.org/http://eprints.utar.edu.my/1035/1/BF-2013-0907777-1.pdf.

Galindro, A., & Torres, D. F. (2017). A simple mathematical model for unemployment: a case study in Portugal with optimal control. *Statistics, Optimization and Information Computing.*

Gebreslassie, E., & Nidu, G. (2015). Assessment of Financial Distress Conditions of Commercial Banks in Ethiopia: A Case Study of Selected Private Commercial Banks. Retrieved from https://www.iiste.org/Journals/index.php/JPID/article/view/22789/22852

Gharaibeh, A. M. (2015). The Determinants of Foreign Direct Investment-Empirical Evidence from Bahrain. 95.

Ghosh, A. (2015), "Banking-industry specific and regional economic determinants of non-performing loans: evidence from US states", *Journal of Financial Stability, Elsevier B.V.,* Vol. 20, pp. 93-104, doi: 10.1016/j.jfs.2015.08.004.

Girardone, C., Molyneux, P., Gardener, E. P. (2004). "Analysing the Determinants of Bank Efficiency: The Case of Italian Banks." *Applied Economics*, 36, pp. 215-227.

Gorg, H., Greenaway, D. (2004), Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *World Bank Research Observer*, 19, 171-197.

Greenidge, K., & Grosvenor, T. (2009). Forecasting Non-Performing Loans in Barbados. *Central Bank of Barbados*.

Greenidge, K., & Grosvenor, T. (2010). Forecasting non-performing loans in Barbados. *Journal of Business, Finance & Economics in Emerging Economies*, 5(1), 80-108.

Gremi, E. (2013). Macroeconomic factors that affect the quality of lending in Albania. *Research Journal of Finance and Accounting*, 4(9), 50-57.

Grigoli, F., & Mota, J. M. (2015). Interest Rate Pass-Through in the Dominican Republic . *IMF Working Paper*, 4-26.

GrusuwmyNidu, E. G. D. (2015). Assessment of Financial Distress Conditions of Commercial Banks in Ethiopia: A Case study of Selected Private Commercial Banks. *Assessment*, *6*(9).

Guru, B. K., & Yadav, I. S. (2019). Financial development and economic growth: panel evidence from BRICS. *Journal of Economics, Finance and Administrative Science*. doi:10.1108/jefas-12-2017-0125

Hada, T., Bărbută-Misu, N., Iuga, I. C., & Wainberg, D. (2020). Macroeconomic Determinants of Nonperforming Loans of Romananian Banks. *MDPI*.

Hamid, N., Ramli, N. A., & Hussin, S. A. S. (2017, January). Efficiency measurement of the banking sector in the presence of non-performing loan. In *AIP Conference Proceedings* (Vol. 1795, No. 1, p. 020001). AIP Publishing LLC.

Handley, N.J. (2010), Growth in a time of debt, *CFA Digest*, Vol. 40 No. 3, pp. 19-20, doi: 10.2469/dig. v40.n3.19.

Hanh, P. T. (2010). Financial Development, Financial Openness and Trade Openness: New evidence. FIW, Pg 2-6. Retrieved from *ECONSTOR*.

Haniifah, N. (2015). Economic determinants of non-performing loans (NPLs) in Ugandan commercial banks. *Taylor's Business Review*, *5*(2), 137-153.

Harish, M. (2015). An Examination of the Beta Stability in the Indian Capital Market. *Aims International*, 4. Retrieved from Aims international: http://www.aims-international.org/aims12/12A-CD/PDF/K372-final.pdf

He, Y. (2017). A study on the relationship between money supply and macroeconomic variables in China. *Mediterranean Journal of Social Sciences*, 8(6), 99.

Hellmann, T. F., K. C. Murdock and J. E. Stiglitz, (2000): "Liberalization, moral hazard in banking, and prudential regulation: Are capital requirements enough?",*American Economic R Holmstrom and Tirole (1997)*

Herzer, D., & Klasen, S. (2008). In search of FDI-led growth in developing countries: The way forward. *Economic Modelling*, *25*(5), 793-810.

Hosen, M., Broni, M. Y., & Uddin, M. N. (2020). What bank specific and macroeconomic elements influence non-performing loans in Bangladesh? Evidence from conventional and Islamic banks. *Green Finance*, 212-226.

Hossain, M. J. (2017). The root causes of Non-Performing Loan and its impact on economy. *The independent*.

Hsiao, C. (1985). Benefits and limitations of panel data. *Econometric Reviews*, *4*(1), 121–174. https://doi.org/10.1080/07474938508800078

Hu, J. L., Li, Y., & Chiu, Y. H. (2004). Ownership and nonperforming loans: Evidence from Taiwan's banks. *The Developing Economies*, *42*(3), 405-420.

Huchet-Bourdon, M., Le Mouël, C., & Vijil, M. (2018). The relationship between trade openness and economic growth: Some new insights on the openness measurement issue. *The World Economy*, *41*(1), 59-76.Marouf, F. Z., & Guellil, Z. (2017). The Macroeconomic Determinants of Credit Risk: The Algerian Banking System. *In Management International Conference, Italy*.

Hussain, A., Khalil, A., & Nawaz, M. (2013). MACROECONOMIC determinants of non- performing LOANS (NPL): Evidence from pakistan [Abstract]. *Pakistan Journal of Humanities and Social Sciences*, 1(2), 59-72. doi:10.52131/pjhss.2013.0102.0005

Ibish, M., Fisnik, M., Valdrin, M., Jonathan, V.S., & Simon, G. (2018). *European Research Studies Journal*. Determinants of the Level of Non-Performing Loans in Commercial Banks of Transition Countries, XXI (3). https://doi.org/https://core.ac.uk/download/pdf/162326498.pdf

Idhbea, S. O. (2018). The difference between Risk in Islamic banks and commercial banks. *International Journal of Scientific and Research Publications (IJSRP)*, 8(5). doi:10.29322/ijsrp.8.5.2018.p7783

Ikpefan O. A. (2013) Capital Adequacy, Management and Performance in Nigeria Commercial Bank, *African Journal of Business Management*, 7(30) 2938-2950

Inekwe, & Murumba. (2013). *International Journal of Capacity Building in Education and Management (IJCBEM).* The Relationship between Real GDP and Non-Performing Loans: Evidence from Nigeria (1995 – 2009), 2(1). https://doi.org/http://www.rcmss.com.

Ingait, P. C. (2017). Causes of Cash Flow Problems. *Implications of Poor Cash Flow*.

Ishtiaq, M. (2015). Risk Management in Banks: Determination of Practices and Relationship with Performance. *University of Bedforshire*, 6-7. Retrieved January 30, 2021, from https://core.ac.uk/download/pdf/30317379.pdf

Ismaulandy, W. (2014). Analisis Variabel DPK, CAR, NPL, LDR, ROA, GWM, dan Inflasi terhadap Penyaluran Kredit Investasi pada Bank Umum (Periode 2005-2013). *Jurnal Ilmiah Ilmu Ekonomi UB.*

Ivanovic, M. (2016), Determinants of credit growth: the case of montenegro, *Journal of Central Banking Theory and Practice*, Vol. 5 No. 2, pp. 101-118, doi: 10.1515/jcbtp-2016-0013.

Jensen, N. M. (2003). Democratic governance and multinational corporations: Political regimes and inflows of foreign direct investment. *International Organization*, 57(3), 587-616. Retrieved from https://www.jstor. org/stable/3594838?seq=1

Jiménez, G., & Saurina, J. (2006). Credit Cycles, Credit Risk, and Prudential Regulation. *International Journal of Central Banking*, 65-98.

Jimenez, G., J. A. Lopez, and J. Saurina (2007): "How does Competition impact Bank Risk-Taking?" Mimeo, *Federal Reserve Bank of San Francisco*

Jolevski, Ljube (2017) : Non-performing loans and profitability indicators: The case of the Republic of Macedenia, Journal of Contemporary Economic and Business Issues,

ISSN 1857-9108, *Ss. Cyril and Methodius University in Skopje, Faculty of Economics, Skopje*, Vol. 4, Iss. 2, pp. 5-20

Kalirai, H., Scheicher, M. (2002), Macroeconomic stress testing: preliminary evidence for Austria, *Financial Stability Report*, 3, 58-74.

Kartikasary, M., Marsintauli, F., Serlawati, E., & Laurens, S. (2020). Factors affecting the non-performing loans in Indonesia. *Accounting*, 97–106. https://doi.org/10.5267/j.ac.2019.12.003

Kauko, K. (2012). External deficits and non-performing loans in the recent financial crisis. *Economics Letters*, 115(2), 196–199. doi:10.1016/j.econlet.2011.12.018

Keeton W. & C. S. Morris .(1987). Why Do Banks' Loan Losses Differ? Federal Reserve Bank of Kansas City, *Economic Review*, May, pp. 3-21.

Khalaf, T., & Masih, M. (2018). Munich Personal RePEc Archive. Is the Relationship between Non-Performing Loans of Banks and Economic Growth Asymmetric? Malaysia's Evidence Based on Linear and Nonlinear ARDL Approaches. https://doi.org/https://mpra.ub.uni-muenchen.de/103714/

Khan, I., Ahmad, A., Khan, M. T., & Ilyas, M. (2018). The Impact of GDP, Inflation, Exchange Rate, Unemployment and Tax Rate on the Non-Performing Loans of Banks:Evidence from Pakistani Commercial Banks. *Journal of Social Sciences and Humanities*, 142-155.

Khan, M. A. (2020). Determinants of non-performing loans in the banking sector in developing state. *Asian Journal of Accounting Research*. Retrieved from emerald.

Khan, M. A., Siddique, A., & Sarwar, Z. (2020). Determinants of non-performing loans in the banking sector in developing state. *Asian Journal of Accounting Research*, *5*(1), 135–145. https://doi.org/10.1108/ajar-10-2019-0080

Khemraj, T., & Pasha, S. (2009). The Determinants of Non-Performing Loans: an Econometric Case Study of Guyana. *Munich Personal RePEc Archive* , 1-25.

Kim, J. H. (2019). Multicollinearity and Misleading Statistical Results. *Korean Journal of Anesthesiology*.

Kimberly, A. (2020, September 02). Why Foreign Direct Investment Is Plummeting. Retrieved January 30, 2021, from https://www.thebalance.com/foreign-direct-investment-fdi-pros-cons-and-importance-3306283

King, R.G., Levine, R., 1993. Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics* 108, 717–738. Retrieved from https://doi.org/10.2307/2118406

Kingu, P. S., Macha, D. S., & Gwahula, D. R. (2018). Impact of non-performing loans on BANK'S Profitability: Empirical evidence from commercial banks in Tanzania. *International Journal of Scientific Research and Management*, 6(01). doi:10.18535/ijsrm/v6i1.em11

Kithinji, A. (2010). Credit Risk Management and Profitability of Commercial Banks in Kenya, Business School, *University of Nairobi*. Retrieved from http://erepository.uonbi.ac.ke/bitstream/handle/11295/40437/aibuma2011-submission232.pdf?isAllowed=y&sequence=1

Kiyotaki, N. and Moore, J. (1997). Credit chains. *Journal of Political Economy*, 105(21), pp. 211-248. doi: 10.1086/262072

Kjosevski, J., Petkovski, M., & Naumovska, E. (2019). Bank-specific and macroeconomic determinants of non-performing loans in the Republic of MACEDONIA: Comparative analysis of enterprise and HOUSEHOLD NPLs. *Economic Research-Ekonomska Istraživanja,* 32(1), 1185-1203. doi:10.1080/1331677x.2019.1627894

Klein, N. (2013). Non-Performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance. *IMF Working Paper*.

Klevmarken, N. A. (1989). Panel studies: what can we learn from them?. *European Economic Review*, 33, 523-529.

Koju, L., Abbas, G., & Wang, S. (2018). Do Macroeconomic Determinants of Non- Performing Loans Vary with the Income Levels of Countries? *Journal of Systems Science and Information*, 6(6), 512–531. Retrieved from doi:10.21078/jssi-2018-512- 20

Koju, L., Koju, R., & Wang, S. (2018). Macroeconomic and bank-specific determinants of non-   performing loans: evidence from Nepalese banking system. *Journal of Central Banking Theory and Practice*, 7(3), 111-138.

Konstantinos, N., Panayotis, G., & Angelos, T. (2016). *Munich Personal RePEc Archive.* Non-Performing Loans (NPLs) in a Crisis Economy: Long-Run Equilibrium Analysis with a RealTime VEC Model for Greece (2001-2015), 451(2016), 149-161, 8. doi:https://mpra.ub.uni-muenchen.de/id/eprint/90000

Kosmidou, K. (2008). The determinants of banks' profits in Greece during the period of EU financial   integration. *Managerial   Finance*,   34(3),   146–159. doi:10.1108/03074350810848036

Kumar, R. R., Stauvermann, P. J., Patel, A., & Prasad, S. S. (2018). Determinants of nonperforming loans in banking sector in small developing island states A study of Fiji. *Accounting   Research   Journal*,   192-213.   Retrieved   from: https://www.emerald.com/insight/content/doi/10.1108/ARJ-06-2015-0077/full/html

Laurent, J. P., Sestier, M., & Thomas, S. (2016). Trading book and credit risk: How fundamental is the Basel review?. *Journal of Banking & Finance*, 73, 211-223.

Lee, H. B. (2008). Using the Chow Test to Analyze Regression Discontinuities. *Tutorials in Quantitative   Methods   for   Psychology*,   4(2),   46–50. https://doi.org/10.20982/tqmp.04.2.p046

Lee, K. S. (2011, January 21). Malaysia's foreign direct investments highest in region. *The Star*. Retrieved January 28, 2021, from https://www.thestar.com.my/business/business-news/2011/01/21/malaysias-foreign-direct-investments-highest-in-region

Leka, B., Bajrami, E., & Duci, E. (2019). Key Macroeconomic Drivers on Reducing Non
Performing Loans in Albania. *Academic Journal Of Interdisciplinary Studies*, 8(2),
88-95. doi: 10.2478/ajis-2019-0020

Levine, R. (1997), Financial development and economic growth: Views and agenda. *Journal
of Economic Literature*, 35(2), 688-726.

Levy, H., Levy, M., & Solomon, S. (2000). *Microscopic simulation of financial markets: from
investor behavior to market phenomena*. Elsevier.

Lleshanaku, A. (2015). From the perspectives of macroeconomic factors: The past and future
of problematic loans in Albania. *Academic Journal of Interdisciplinary Studies*, 4(1),
35–50

Louzis, D. P., Vouldis, A. T., & Metaxas, V. L. (2012). Macroeconomic and bank-specific
determinants of non-performing loans in Greece: A comparative study of mortgage,
business and consumer loan portfolios. *Journal of Banking & Finance*, 36(4), 1012-
1027.

Luo, Y., Tanna, S., & De Vita, G. (2016). Financial openness, risk and bank efficiency: Cross-
country evidence. *Journal of Financial Stability*, 24, 132–148.
https://doi.org/10.1016/j.jfs.2016.05.003

Macfarlan, A. (2014). Measures of Central Tendency. *betterevaluation*.

Macit, F. (2012). What determines the non-performing loans ratio: evidence from Turkish
commercial banks. *CEA Journal of Economics*, 7(1), 33-39

Manab, N. A., Theng, N. Y., & Md-Rus, R. (2015). The determinants of credit risk in
Malaysia. *Procedia-Social and Behavioral Sciences*, *172*, 301-308.

Margrabe, W. (2007). Credit risk management of commercial loan portfolio.

Maria, B., Michel, N., & Alexander, P. (2016). European Bank for reconstruction development. The Economic Impact of Reducing Nonperforming Loans. doi:https://www.ebrd.com/publications/working-papers/economic-impact.html

Matemilola, B. T., Noordin, B. A., & Kamarudin, F. (2018). Impact of Central Bank Policy on Bank Lending Rate: Developing Nations Evidence. *International Journal of Economics and Management.*

Mazreku, I., Morina, F., Misiri, V., Spiteri, J. V., & Grima, S. (2018). Determinants of the Level of Non-Performing Loans in Commercial Banks of Transition Countries. *European Research Studies Journal*, 3-13.

McGarigal, K. (2000). Multivariate Statistics for Wildlife and Ecology Research. *Springer*, Pg2.

Messai, A. S., & Jouini, F. (2013). Micro and macro determinants of non- performing loans. *International journal of economics and financial issues*, 3(4), 852-860.

Mester, L. J. (1996). "A Study of Bank Efficiency Taking into Account Risk-Preferences." *Journal of Banking and Finance*, Vol. 20, pp. 1025-1045.

Mileris, R. (2014). Macroeconomic factors of non-performing loans in commercial banks. *Ekonomika*, vol.93, no.1, pp.22–39

Mitchell, O. (2015). Experimental Research Design. *Wiley Online Library*.

Moinescu, B. G. (2012). Determinants of Nonperforming Loans in Central and Eastern European Countries: Macroeconomic Indicators and credit Discipline', Review of *Economic and Business Studies*. Vol.5, no.2, pp.47-58

Moradi, Z. S., Mirzaeenejad, M., & Geraeenejad, G. (2016). Effect of bank-based or market-based financial systems on income distribution in selected countries. *Procedia Economics and Finance*, *36*, 510-521.

Morakinyo, A., & Sibanda, M. (2016). Non-performing loans and economic growth in Nigeria: A dynamic analysis. *SPOUDAI-Journal of Economics and Business*, *66*(4), 61-81.

Morina, D. (2020). Determinants of Credit Risk in Commercial Banks of Kosovo. International *Journal of Economics and Business Administration*, 179-190.

Morrison, A. D., & White, L. (2005). Crises and capital requirements in banking. *American Economic Review*, *95*(5), 1548-1572.

Mpofu, T. R., & Nikolaidou, E. (2018), "Determinants of credit risk in the banking system in Sub-Saharan Africa", Review of *Development Finance*, 8, 141–153, https://doi.org/10.1016/j.rdf.2018.08.001

Mukherjee, P. (2003). Dealing with NPAs: Lessons from international experiences. *Money and Finance*, 12(12), 64-90.

Muriithi, J. G., Muturi, W. M., & Waweru, K. M. (2016). The Effect of Market Risk on Financial Performance of Commercial Bank. *Journal of Finance and Accounting*, 225-233.

Murthy, U., Kamil, N. M., Mariadas, P. A., & Devi, D. (2017). Factors Influencing Non-Performing Loans in Commercial Banks: The Case of Banks in Selangor. *International Journal of Business and Management*, 12(2), 246-255.

Mustafa, S. A., & Ali, M. (2019). Macroeconomic Factors Influence On Non-Performing Loans: The Case Of Commercial Banks In Malaysia.

Muthami, A.M (2016). Relationship between Non-Performing Loans and Economic Growth: A Case Study of Commercial Banks in Kenya. Retrieved from http://erepository.uonbi.ac.ke/bitstream/handle/11295/98389/Muthami_Relationship%20Between%20Non%20Performing%20Loans%20And%20Economic%20Growth%20A%20Case%20Study%20Of%20Commercial%20Banks%20In%20Kenya.pdf?sequence=1

Nair-Reichert, U., Weinhold, D. (2001), Causality tests for cross-country panels: A new look at FDI and economic growth in developing countries. *Oxford Bulletin of Economics and Statistics*, 63(2), 153-171.

Nargis, N., Ahmad, N. B., Ibrahim, N. B., & Kefeli, Z. B. (2019). Link between non-performing loans (NPL) and economic growth-evidence from an emerging economy. *The Business & Management Review*, *10*(5), 96-101. Retrieved from https://cberuk.com/cdn/conference_proceedings/2020-01-05-09-28-03-AM.pdf

Naudé, W. (2009). *UNU-WIDER working paper*. The Financial Crisis of 2008 and the Developing Countries.

Ndede, F. W. S., & Kavoya, J. M. (2017). International Journal of Scientific Research and Innovative Technology. *The Effect of Market Structure on the Level of Non-Performing Loans among Commercial Banks in Kenya,* *4*(9). https://doi.org/https://www.ijsrit.com/uploaded_all_files/2275421358_t11.pdf

Ngungu, W., & Abdul, D. F. (2020). Firm Characteristics and Non-Performing Loans of Commercial Banks in Kenya. *Journal of Finance and Accounting*, 4(2), 31-47.

Nimkar, H. (29 July, 2020). Overview of Multivariate Analysis | What is Multivariate Analysis and Model Building Process? Retrieved from *Great Learning*: https://www.mygreatlearning.com/blog/introduction-to-multivariate-analysis/

Njanike, K. (2009). The impact of effective credit risk management on bank survival. *Annals of the University of Petroşani, Economics*, 9(2), 173-184.

Nkoro, E & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric Methods*, vol.5, no.4, 2016, 63-91. Retrieved from https://www.scienpress.com/Upload/JSEM/Vol%205_4_3.pdf

Nkusu, M. (2011) Non performing Loans and Macrofinancial Vulnerabilities in Advanced Economies, IMF Working Paper, 161, *International Monetary Fund, Washington DC*.

Othman Luk, A. B., Foong, K., Heung, E., Lim, R., & P. (2021). Practical Law. Retrieved January 30, 2021, from https://uk.practicallaw.thomsonreuters.com/w-008 0538?transitionType=Default&contextData=%28sc.Default%29&firstPage=true#co_a nchor_a583195

Ozili, P. K. (2019). Non-performing loans and Financial Development: New Evidence. *Journal of Risk Finance*, 2-34. Retrieved March 22, 2021, from https://mpra.ub.uni-muenchen.de/90333/1/MPRA_paper_90333.pdf

Ozili, P. K., Salman, A., & Ali, Q. (2020). The Impact of Foreign Direct Investment Inflows on Nonperforming Loans: The Case of UAE. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3742785

Peres, M., Ameer, W., & Xu, H. (2018). The impact of institutional quality on foreign direct investment inflows: evidence for developed and developing countries. *Economic ResearchEkonomska Istraživanja*, 31(1), 626-644. https://doi.org/10.1080/1 331677X.2018.1438906

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of Banks' Profitability: Evidence from EU 27 Banking Systems. *Procedia Economics and Finance*, 20, 518–524. https://doi.org/10.1016/s2212-5671(15)00104-5

Piesse, J. and Khurshid, D. (2016), Determinants of bank profitability in transition countries: What matters most? *Research in International Business and Finance* 38(C), 69 -82.

Ploberger, K. a. (1989). A New Test for Structural Stability in the Linear Regression Model. *Econometrics*, 310-315.

Poudel, R. P. S. (2013, June). Macroeconomic determinants of credit risk in Nepalese banking industry. *In Proceedings of 21st International Business Research Conference* (pp. 10-11).

Pratiwi, S., & Hindasah, L. (2014). Pengaruh Dana Pihak Ketiga, Capital Adequacy Ratio, Return On Asset, Net Interest Margin Dan Non Performing Loan Terhadap Penyaluran Kredit Bank Umum Di Indonesia. *Jurnal Manajemen Bisnis*, *5*(2), 192-208.

Prayudi, A. (2011). "Pengaruh Capital Adequecy Ratio (CAR), Non-Performing Loan (NPL), BOPO, Return On Asset (ROA) dan Net Interest Margin (NIM) Terhadap Loan to Deposit Ratio (LDR)", *Jurnal Likuiditas Perbankan.*

Ptasica, T. (2019). Modeling the influence of inflation on the level of non-performing loans in Cyprus commercial banks. *Technology Audit and Production Reserves*, 1(5(45)), 36-38. doi:10.15587/2312-8372.2019.163288

Quagliariello, M., (2007). Banks' riskiness over the business cycle: A panel analysis on Italian intermediaries. *Applied Financial Economics*, 17(2), 119–38.

Ragonmal, L. (2016). *Impact of commercial banking sector development on economic growth in small Pacific countries: A case study of the Vanuatu economy* (Doctoral dissertation, Lincoln University).

Rahman, M. A., Asaduzzaman, M., & Hossin, M. S. (2017). Impact of Financial Ratios on NonPerforming Loans of Publicly Traded Commercial Banks in Bangladesh. *International Journal of Financial Research*, 181-188. Retrieved from: https://www.semanticscholar.org/paper/Impact-of-Financial-Ratios-on-Non Performing Loans-RahmanAsaduzzaman/8bb7d8503e13fe0c4e096cba1de7a599e3ac1b9c

Rajan, R., & Dhal, S. C. (2003). Non-performing loans and terms of credit of public sector banks in India: An empirical assessment. *Reserve Bank of India Occasional Papers*, *24*(3), 81-121.

Rajha, K. S. (2016). Determinants of non-performing loans: Evidence from the Jordanian banking sector. *Journal of Finance and Bank Management*, 4(1), 125-136.

Ramli, N. A., Mohammed, N. I., Hussin, S. A. S., & Khairi, S. S. M. (2018, July). Investigating the effect of non-performing loans on technical efficiency in Malaysian banking sector. In *AIP Conference Proceedings* (Vol. 1982, No. 1, p. 020008). AIP Publishing LLC.

Rifat, A. M. (2016). An Analytical Study of Determinants of Non-Performing Loans: Evidence from Non-Bank Financial Institutions (NBFIs) of Bangladesh. *Journal of Business and Technology (Dhaka)*, 55-67.

Rinaldi, L., & Sanchis-Arellano, A. (2006). Household Debt Sustainability: What Explains Household Non-Performing Loans? An Empirical Analysis (Working Paper Series No. 570). *European Central Bank.* https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp570.pdf

Rivai, A., & Wahyuni, E. (2018). Impacts of Business Cycle and Macroeconomics Factors on Non Performing Bank Loan in Indonesia. *International Journal of Economic Research*, 557-570.

Rixtel, A. V., & Gasperini, G. (2013). Financial crises and bank funding: Recent experience in the euro area. *BIS Working Papers* No.406, 1-30.

Rockafellar, R. T. (1993). Lagrange multipliers and optimality. *SIAM review*, *35*(2), 183-238.

Rulyasri, N., Achsani, N. A., & Mulyati, H. (2017). Effects of Macroeconomic Conditionson Non-Performing Loan in Retail Segments: AnEvidence from theIndonesian Banking. *International Journal of Scientific and Research Publications*, Volume 7, Issue 10, 208-216.

Rutayisire, M. J. (2017). Modelling interest rate pass-through in Rwanda: is the interest rate adjustment dynamics symmetric or asymmetric? *African Economic Research Consortium*, 1-30.

Saada, M. B. (2017). The impact of control quality on the non-performing loans of Tunisian listed banks. *Managerial Auditing Journal*.

Saba, I., Kouser, R., & Azeem, M. (2012). Determinants of non performing loans: Case of US banking sector. *The Romanian Economic Journal*, *44*(6), 125-136.

Salas, V. and Saurina, J. (2002) 'Credit risk in two institutional regimes: Spanish commercial and savings banks', *Journal of Financial Services Research*, Vol. 22, pp.203–224.

Samargandi, N., Kutan, A. M., Sohag, K., & Alqahtani, F. (2020). Equity market and money supply spillovers and economic growth in BRICS economies: A global vector autoregressive approach. *The North American Journal of Economics and Finance*, 51, 101060.

Şan, T. (2016). The Effects of the Changes in Some Macroeconomic Indicators on the Non – Performing Loans in the Albanian Banking Sector (2007 – 2014). *Mediterranean Journal of Social Sciences*.

Setiawan,C & Sherwin, S.M. (2017). Banks Efficiency and the Determinants of Non-Performing Financing of Full-Fledged Islamic Banks in Indonesia. Proceedings of 12th *Asia-Pacific Business Research Conference* 27 - 28 February, 2017, Concorde Hotel, Kuala Lumpur, Malaysia.

Sharma, S. (2019). Descriptive Statistics. *Descriptive Statistics and Factorial Design*, pg5.

Sheefeni, J. P. (2015). The Impact of Macroeconomic Determinants on Non- performing Loans in Namibia. International *Review of Research in Emerging Markets and the Global Economy (IRREM),* 1(4), 612-632

Shingjergji, A. & Shingjergji, I. (2013). An analysis of the nonperforming loans in the Albanian banking system. *International Journal of Business and Commerce*, 6(2), 1-11.

Shu, C. (2002) The Impact of Macroeconomic Environment on the Asset Quality of Hong Kong's Banking Sector, http://www.hkma.gov.hk/media/eng/publication-and- research/research/ working-papers/pre2007/RM20-2002.pdf (Accessed 7 August, 2014).

Sileyew, K. J. (2019). Research design and methodology. In Text Mining-Analysis, Programming and Application. *IntechOpen.*

Škarica, B. (2014). Determinants of non-performing loans in Central and Eastern European countries. *Financial theory and practice*, 38(1), 37-59.

Soebagio, H. (2005). *Analisis Faktor-faktor yang Mempengaruhi Terjadinya Non Performing Loan (NPL) pada Bank Umum Komersial (Studi Empiris pada Sektor Perbankan di Indonesia)* (Doctoral dissertation, PROGRAM PASCASARJANA UNIVERSITAS DIPONEGORO).

Soedarmono, W., Machrouh, F. and Tarazi, A. (2011), "Journal of Asian Economics Bank market power, economic growth and financial stability: evidence from Asian banks", *Journal of Asian Economics, Elsevier*, Vol. 22 No. 6, pp. 460-470, doi: 10.1016/j.asieco.2011.08.003.

Solon, G. (1989). Biases in the estimation of intergenerational earnings correlations. *The Review of Economics and Statistics*, 172-174.

Souza, G.J.D.G. and Feijó, C.A. (2011), Credit risk and macroeconomic interactions: empirical evidence from the Brazilian banking system, *Modern Economy*, 2(05), 910.

Stephanie Glen. "Unit Root: Simple Definition, Unit Root Tests". Retrieved from March 26, 2021 from https://www.statisticshowto.com/unit-root/#:~:text=A%20unit%20root%20(also%20called,A%20possible%20unit%20root

Stephanie. (18 January, 2015). What is Variability in Statistics? Retrieved from Statistics How To: https://www.statisticshowto.com/variability/#:~:text=Variability%20(also%20called%20spread%20or,Interquartile%20range

Stijepović, R. (2014). Recovery and reduction of non-performing loans–Podgorica approach. *Journal of Central Banking Theory and Practice*, *3*(3), 101-118.

Suhardjono, M. K. (2011). Manajemen Perbankan Cetakan Pertama. *BPFE-YOGYAKARTA
Anggota IKAPI*, (008).

Suppia, N. M. I., & Arshad, N. C. (2019). Bank specific characteristics and profitability of
Islamic and   conventional banks in Malaysia. *International Journal*, *4*(1), 39-53.

Szarowska, I. (2018). Effect of macroeconomic determinants on non-performing loans in
Central and Eastern European countries. *International Journal of Monetary Economics
and Finance*, *11*(1), 20-35.

Tahir, M & Khan, I. (2014). Trade openness and economic growth in Asian region. *Journal of
Chinese Economic and Foreign Trade Studies* 7(3):136-152.Retrieved from DOI:
10.1108/JCEFTS-05-2014-0006

Tan, Y. (2014). *Competition in the Chinese banking sector. Performance, Risk and
Competition in the Chinese Banking Industry, 141–178.* Retrieved from
doi:10.1533/9781780634463.141

Tan, Y. (2016). *Theory of Bank Efficiency and Bank Competition. Efficiency and Competition
in Chinese Banking, 45–66.* Retrieved from doi:10.1016/b978-0-08-100074-8.00003-
0

Taswan. (2010). Manajemen Perbankan (Konsep,Teknik dan Aplikasi) Edisi Kedua.
Yogyakarta: UPP STIM YKPN.

Taufikur , R., & Khusna , F. (2020). *Asian Journal of Islamic Management (AJIM).* The
Influence of Financial Ratios on Non Performing Financing of the Sharia Rural Banks
of Special Region of Yogyakarta (BPRS DIY) Period 2015 ² 2018 , 2(1), 25–35.
https://doi.org/https://media.neliti.com/media/publications/325393-the-influence-of-
financial-ratios-on-non-4351e77d.pdf

Thalassinos, E. I., Stamatopoulos, T., & Thalassinos, P. E. (2015). The European Sovereign
Debt Crisis and the Role of Credit Swaps. *The World Scientific Handbook of Futures
Markets*, 605–639. https://doi.org/10.1142/9789814566926_0020

The Global Economy. (n.d.). Non-performing loans by country, around the world. Retrieved March 29, 2021, from https://www.theglobaleconomy.com/rankings/nonperforming_loans/

Thiagarajan, S. Ayyappan, S. & Ramachandran, A. (2011). Credit Risk Determinants of Public and Private Sector Banks in India. *European Journal of Economics, Finance and Administrative Sciences* (34).147-154.

Udom, I. S., & Eze, O. R. (2018). Effect of Capital Adequacy Requirements on the Profitability of Commercial Banks in Nigeria. *International Research Journal of Finance and Economics*, 79-89.

United Nations Conference for Trade and Development (UNFTD). (2004). World Investment Report. Retrieved from https://unctad.org/en/Docs/ wir2004_en.pdf (accessed on June 21, 2021).

Us, V. (2017). Dynamics of non-performing loans in the Turkish banking sector by an ownership breakdown: The impact of the global crisis. *Finance Research Letters*, 20, 109-117.

Valahzaghard, M.K., Kashefi, M., Alikhani, A. & Hosseini, S.E. (2012). The effect of macroeconomic factors on credit risk in the banking system of Iran. *Management Science Letters*, 2, 1747–54.

Vardar, G., & Özgüler, I. C. (2015). Short Term and Long Term Linkages among Nonperforming Loans, Macroeconomic and Bank-Specific Factors: An Empirical Analysis for Turkey/Takipteki Krediler, Makroekonomik ve Banka Özellikli Faktörler Arasindaki Uzun ve Kisa Dönemli Iliskiler: Türkiye için Ampirik bir Analiz. *Ege Akademik Bakis*, 15(3), 313-325.

Vatansever, M., & Hepsen, A. (2013). Determining impacts on non-performing loan ratio in turkey. *Journal of Finance and Investment Analysis*, 2(4), 119-129.

Vogiazas, S. D., & Nikolaidou, E. (2011). Credit risk determinants in the Bulgarian banking system and the Greek twin crises. In *MIBES International conference* (pp. 177-189).

Vogiazas, S. D., & Nikolaidou, E. (2011). Investigating the determinants of nonperforming loans in the Romanian banking system: An empirical study with reference to the Greek crisis. *Economics Research International*, *2011*.

Vouldis, A.T. and Louzis, D.P. (2018), Leading indicators of non-performing loans in Greece: the information content of macro-, micro- and bank-specific variables, *Empirical Economics, Springer Berlin Heidelberg*, Vol. 54 No. 3, pp. 1187-1214, doi: 10.1007/s00181-017-1247-0.

Wairimu, M. M., & Gitundu, E. W. (2017). Macroeconomic determinants of non-performing loans in Kenya. *Research Journal of Finance and Accounting*, *8*(4), 97-105.

Warue, B. N. (2013). The Effects of Bank Specific and Macroeconomic Factors on Nonperforming Loans in Commercial Banks in Kenya, Advances in Management & Applied Economics., vol.3, no.2, pp.135- 164

Wingard, L. (2021). *Top 10 Banking Industry Challenges - And How You Can Overcome Them*. Hitachi Solutions. https://global.hitachi-solutions.com/blog/top-10-challenges-banking-financial-organizations-can-overcome.

World Bank. (2001). Global Development Finance Report. *Washington, DC: World Bank.*

Yay, T.,Yay, G. & Yılmaz, E. (2004). Finansal krizler, finansal regülasyon ve Türkiye Financial Crises, Financial Regulation and Turkey). *İstanbul University Siyasal Bilgiler Fakültesi Dergisi*, 30, 101-130.

Yaylal, P., & Safakli, O. V. (2015). Risk Management in the Banking Sector: Case of TRNC. *Journal of Academic Research in Economics and Management Sciences*, 21-22.

Yuanita, N. (2019). Competition and bank profitability. *Journal of Economic Structures*, *8*(1). https://doi.org/10.1186/s40008-019-0164-0

Yulianti, E., Aliamin, & Ibrahim, R. (2018). The Effect of Capital Adequacy and Bank Size on NonPerforming Loans in Indonesian Public Banks. *Journal of Accounting Research , Organization and Economics* Vol.1(2), 205-214.

Yurdakul, F. (2014). Macroeconomic modelling of credit risk for banks. *Procedia-Social and behavioral sciences*, 109, 784-793.

Yusuf, M., & Surjaatmadja, S. (2018). Analysis of Financial Performance on Profitability with Non Performace Financing As Variable Moderation. *International Journal of Economics and Financial Issues*, *8*(4), 126.

Zahiro. (2014). *Wordpress*. Structure of Financial System in Malaysia. doi:https://zahiro.files.wordpress.com/2014/01/chapter-1.pdf

Zhang, D., Cai, J., Dickinson, D. G., & Kutan, A. M. (2016). Non-performing loans, moral hazard and regulation of the Chinese commercial banking system. *Journal of Banking & finance*, *63*, 48-60.

Zheng, C., Bhowmik, P. K., & Sarker, N. (2019). Industry-Specific and Macroeconomic Determinants of Non-Performing Loans: A Comparative Analysis of ARDL and VECM. *Sustainability*, 12(1), 325. https://doi.org/10.3390/su12010325

Zhu, C., & Chen, L. (2016). An Empirical Study on the Capital Buffer of Rural Commercial Banks in China. *Journal of Finance and Economics*, 97-102.

Zulfikar, R. (2019). Estimation model and selection method of panel data regression: an overview of common effect, fixed effect, and random effect model.

APPENDICES

Appendix 4.1: Pooled OLS Regression Estimates

Dependent Variable: LNPLS
Method: Panel Least Squares
Date: 06/15/21   Time: 20:24
Sample: 2010 2019
Periods included: 10
Cross-sections included: 6
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.080080	0.115384	0.694030	0.4906
INF	0.012876	0.088200	0.145989	0.8845
OP	0.011003	0.008863	1.241383	0.2198
LBS	17.43302	2.819473	6.183079	0.0000
CAR	0.073194	0.063713	1.148804	0.2557
C	-39.88411	8.616365	-4.628878	0.0000

Root MSE	0.575532	R-squared	0.456567
Mean dependent var	14.83063	Adjusted R-squared	0.406249
S.D. dependent var	0.787311	S.E. of regression	0.606665
Akaike info criterion	1.932958	Sum squared resid	19.87426
Schwarz criterion	2.142392	Log likelihood	-51.98874
Hannan-Quinn criter.	2.014879	F-statistic	9.073656
Durbin-Watson stat	0.186115	Prob(F-statistic)	0.000003

Appendix 4.2: The Fixed Effect Least-Square Dummy Variable (LSDV) Estimates

Dependent Variable: LNPLS
Method: Panel Least Squares
Date: 06/15/21   Time: 20:25
Sample: 2010 2019
Periods included: 10
Cross-sections included: 6
Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.128842	0.038094	3.382203	0.0014
INF	-0.030586	0.029020	-1.053962	0.2971
OP	0.029954	0.006307	4.749508	0.0000
LBS	39.28108	6.181019	6.355114	0.0000
CAR	0.030866	0.022883	1.348845	0.1836
C	-106.6538	19.13487	-5.573793	0.0000

Effects Specification

Cross-section fixed (dummy variables)

Root MSE	0.166550	R-squared	0.954491
Mean dependent var	14.83063	Adjusted R-squared	0.945204
S.D. dependent var	0.787311	S.E. of regression	0.184299
Akaike info criterion	-0.380376	Sum squared resid	1.664334
Schwarz criterion	0.003587	Log likelihood	22.41127
Hannan-Quinn criter.	-0.230187	F-statistic	102.7714
Durbin-Watson stat	1.493608	Prob(F-statistic)	0.000000

Appendix 4.3: Results of Random Effect Model Estimates

Dependent Variable: LNPLS
Method: Panel EGLS (Cross-section random effects)
Date: 06/15/21   Time: 20:17
Sample: 2010 2019
Periods included: 10
Cross-sections included: 6
Total panel (balanced) observations: 60
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.116224	0.037383	3.108974	0.0030
INF	-0.021148	0.028505	-0.741913	0.4614
OP	0.025123	0.005650	4.446655	0.0000
LBS	34.07669	5.397503	6.313417	0.0000
CAR	0.031487	0.022856	1.377627	0.1740
C	-90.54313	16.71011	-5.418464	0.0000

Effects Specification			
		S.D.	Rho
Cross-section random		0.759462	0.9444
Idiosyncratic random		0.184299	0.0556

Weighted Statistics			
Root MSE	0.176573	R-squared	0.493794
Mean dependent var	1.134752	Adjusted R-squared	0.446923
S.D. dependent var	0.250271	S.E. of regression	0.186124
Sum squared resid	1.870679	F-statistic	10.53519
Durbin-Watson stat	1.358959	Prob(F-statistic)	0.000000

Unweighted Statistics			
R-squared	0.102578	Mean dependent var	14.83063
Sum squared resid	32.82024	Durbin-Watson stat	0.077458

Appendix 4.4: CHOW Test

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	107.224426	(5,49)	0.0000
Cross-section Chi-square	148.800018	5	0.0000

Appendix 4.5: Hausman Test

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	5	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.

Appendix 4.6: Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
    (all others) alternatives

| | Test Hypothesis | | |
	Cross-section	Time	Both
Breusch-Pagan	208.0709	5.260128	213.3310
	(0.0000)	(0.0218)	(0.0000)
Honda	14.42466	-2.293497	8.578030
	(0.0000)	(0.9891)	(0.0000)
King-Wu	14.42466	-2.293497	10.19483
	(0.0000)	(0.9891)	(0.0000)
Standardized Honda	17.69516	-1.674515	8.135181
	(0.0000)	(0.9530)	(0.0000)
Standardized King-Wu	17.69516	-1.674515	10.16485
	(0.0000)	(0.9530)	(0.0000)
Gourieroux, et al.	--	--	208.0709
			(0.0000)

Appendix 4.7: Correlations

	LNPLS	FDI	INF	OP	LBS	CAR
LNPLS	1.000000	-0.011158	0.031107	-0.081943	0.641241	0.254191
FDI	-0.011158	1.000000	0.379747	0.551283	-0.236053	-0.249314
INF	0.031107	0.379747	1.000000	0.245706	-0.053466	-0.164505
OP	-0.081943	0.551283	0.245706	1.000000	-0.367324	-0.336066
LBS	0.641241	-0.236053	-0.053466	-0.367324	1.000000	0.302051
CAR	0.254191	-0.249314	-0.164505	-0.336066	0.302051	1.000000

Appendix 4.8: Normality Test (Jargue Bera Test)

Series: Standardized Residuals	
Sample 2010 2019	
Observations 60	
Mean	5.01e-14
Median	0.182684
Maximum	1.119455
Minimum	-1.187141
Std. Dev.	0.745839
Skewness	-0.297455
Kurtosis	1.565116
Jarque-Bera	6.032025
Probability	0.048996