

**DETERMINANTS OF NON-PERFORMING LOANS IN THE MALAWI
BANKING SECTOR**

MASTER OF ARTS (ECONOMICS) THESIS

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**UNIVERSITY OF MALAWI
CHANCELLOR COLLEGE**

FEBRUARY, 2019

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MASTER OF ARTS (ECONOMICS) THESIS

By

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Submitted to the Department of Economics, Faculty of Social Science, in partial
fulfillment of the requirements for a Master of Arts Degree (Economics)

**UNIVERSITY OF MALAWI
CHANCELLOR COLLEGE**

FEBRUARY, 2019

DECLARATION

I, the undersigned hereby declare that this thesis is my own work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

SANGWANI M. PHIRI

Full legal name

Signature

Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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Second Supervisor

DEDICATION

I dedicate this work to Whom It May Concern.

ACKNOWLEDGMENTS

First and foremost, I thank God for giving me the courage, patience and wisdom with which I have completed this program.

To my supervisors, Dr. Silumbu and Dr. Kambewa, I pay my deepest gratitude for the support, encouragement and comments in every step that led to the completion of this dissertation. Your time was not taken for granted.

Lastly, I express my sincerest gratitude to my family. Without whom the prospects of pursuing a Master's Degree would have been just a dream.

ABSTRACT

Default risk as evidenced by the level of Non-Performing loans (NPLs) in Malawi commercial banks has been increasing. NPLs which describe the Asset Quality of the banks is a measure of bank performance therefore it has an overall impact on the financial stability of the banks. NPLs result into funds being locked up in the unproductive sectors of the economy hence impeding economic growth and impairing economic efficiency. This study's main objective was to determine the causes of NPLs in the commercial banks of Malawi. The study used panel data from seven banks from the year 2005 to 2014 in Malawi to analyze the bank-specific, industry-specific and macroeconomic determinants of NPLs using a Generalized Methods of Moments (GMM)/Dynamic Panel model. The model employed the Arellano-Bond (1991) one-step estimation technique which provides unbiased estimators when compared to a pooled regression model. The results obtained found that all bank-specific variables (bank size, loans to total assets ratio, ownership and growth rate of loans) were statistically significant. The variable bank and loans to assets ratio had positive significance. While ownership and growth rate of loans had negative impact. The industry-specific variable lending rate was found to have a negative impact. Among the only macro-economic variables (inflation, real exchange rate and growth rate of GDP), only the growth rate of GDP was found to be statistically significant. While inflation was found to be statistically significant only after taking its one period lag.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The soundness of the banking sector is analyzed using the CAMEL model. The CAMEL model was developed in 1979 and it is a methodology that is commonly used to measure the performance of the banking segment of the formal financial system. The model emphasizes on the five parameters of the banking sector by looking at its profit and loss statement to assess the financial position of the banks (Gupta, 2014). This model consists of five indicators namely: Capital Adequacy, Asset Quality, Management efficiency, Earnings and Liquidity. The main focus of this dissertation is the asset quality indicator. Asset quality is captured by the ratio of non-performing loans (NPL) to gross loans and leases. A decrease in the ratio signifies an improvement in the asset quality.

The IMF (2009) defines a NPL as a loan whose interest payments and principal are past due ninety days or more, or at least ninety days of interest payments have been capitalized, refinanced or delayed by agreement, or payments are less than ninety days overdue but there are good reasons to doubt that repayment will be made in full. According to RBM (2006), non-performing loans are those loans whose full repayment is highly questionable and improbable based upon current circumstances, conditions and the estimated recoverable amount on the pledged collateral.

Specifically, RBM classifies NPLs into two main categories: Substandard loans and doubtful loans. Credits that are ninety days or more past due are classified as substandard while those that are one hundred and eighty days past due are classified as doubtful. Those loans that are uncollectible and of such little value and hence not included on the books of account and financial statements of the licensed institution are deemed losses.

After loans have been deemed non-performing, banks do not earn interest income on them. This has a direct impact on the profitability of the banking sector since it loses income it would have otherwise gained had the loans not become NPLs. In addition, an accumulation of NPLs can lead to bank crises. Specifically, large amounts of NPLs in the banking sector is a form of bank failure. Fofack (2005) linked the occurrence of banking crises with a large accumulation of NPLs.

1.1.1 Sectorial Distribution of Loans

As will be discussed in later chapters, an increase in the amount of loans banks extend leads to an increase in NPLs. It is worth looking at which sectors in Malawi constitute to the highest loans. In 2015, lending to the agriculture sector in Malawi constituted the largest proportion (23 percent) of total loans followed by wholesale and retail trade at 22.2 percent and manufacturing at 21.1 percent (RBM, 2015). However, in 2016, wholesale and retail trade made up the highest proportion of gross loans at 24.4 percent. The sectorial distribution from 2012-2016 of the loans is depicted in Table 1 below.

Table 1: Trends in Sectorial Distribution of Loans (Percent)

SECTOR	2012	2013	2014	2015	2016
Agriculture, forestry, fishing and hunting	17.8	21.5	19.6	23.6	19.6
Wholesale and Retail Trade	21.7	21.9	24.1	22.2	24.4
Manufacturing	10.1	15.1	15.5	21.1	18.0
Community, social and personal services	11.8	10.3	11.8	10.5	14.0
Transport, storage and communications	11.6	11.7	9.9	5.2	6.9
Construction	4.4	3.9	3.4	3.0	3.2
Restaurants and hotels	1.4	2.5	1.7	2.7	2.8
Financial services	4.6	5.6	3.6	2.2	3.4
Electricity, gas, water and energy	1.3	0.6	1.8	1.1	1.1
Real estate	8.3	1.1	1.5	0.9	0.3
Credit/debit cards	0.0	0.7	0.9	0.6	0.3
Mining and quarrying	0.0	0.3	0.8	0.3	0.2
Other sectors	7.0	4.8	5.3	6.7	5.7
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: RBM (2017)

As can be seen from the table above, agriculture and wholesale & retail trade made up the largest proportion accounting for over 40 percent of the gross loans. These two sectors were followed by the manufacturing sector which is still in its infant stage in the country. Mining and quarrying made up the lowest proportion of gross loans in all years.

Several studies have looked at the factors that influence NPLs (see Mensah & Adjei, 2015; Muriithi, 2013; Nkusu, 2011; Richard, 2011; Umer, 2015), by grouping them into three. Bank-specific factors, industry-specific factors and macro-economic factors.

The present study will hence also group the factors in a similar manner and establish whether they apply in the context of Malawi.

1.2 Statement of the Problem

High levels of NPLs can lead to a credit crunch and it results in funds being locked up in the unproductive sectors of the economy hence being detrimental to economic development. The reduction of NPLs is essential in improving the economic status of a country and stabilizing the banking sector. It is therefore important to study the factors that determine NPLs if the country is to eradicate the high levels of the NPLs. Following the implementation of the Economic Recovery Plan (ERP) in 2012, the overall ratio of NPL has been sharply increasing. The ERP sought to tighten the monetary policy by increasing interest rates. It also liberalized the foreign exchange market by adopting a flexible exchange rate (Government of Malawi, 2012). Figure 1 depicts the increases in NPL from 2012.

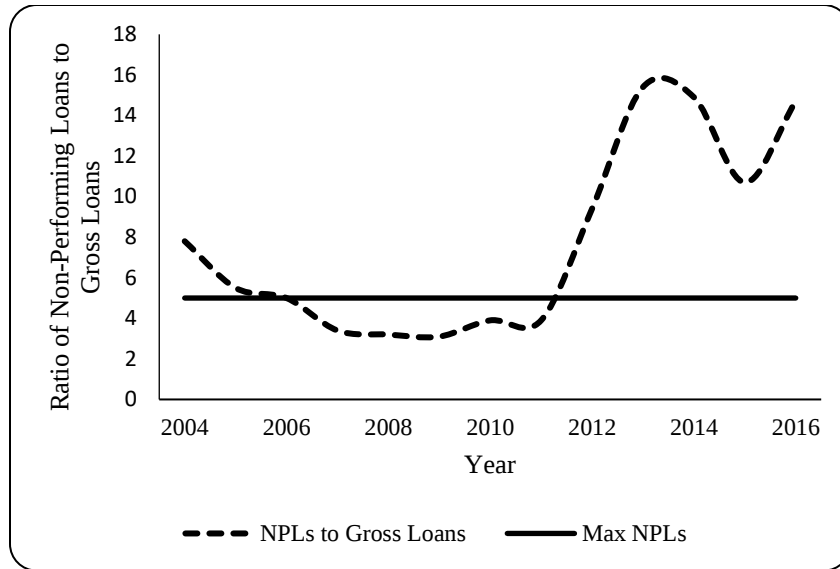


Figure 1: Ratio of NPLs to Gross Loans

Source: RBM (2016)

The regulatory maximum amount of NPLs banks are allowed to hold is 5 percent. Levels of NPLs above 5 percent implies that the asset quality of that bank is poor. From the year 2010 to 2011, the asset quality was constant with a ratio of 3.9 percent which is below the regulatory benchmark of 5 percent (RBM, 2015). This was followed by a worsening of the asset quality with a ratio of 9.4 percent in 2012. The asset quality exacerbated in 2013 registering a ratio of 15.4 percent followed by slight improvements from 14.9 percent in 2014 to 10.7 percent in 2015 due to a 28.2 percent increase in gross loans. However, the ratio increased again to 14.7 percent in 2016 and 19 percent as of July 2017 (RBM, 2017). The question arising from the trend above is therefore: What caused the increase in the NPLs ratio? This study will hence evaluate the factors that cause an increase to NPLs to determine whether they have been contributing significantly in this trend.

Studies have been conducted to analyze the determinants of bank profitability in Malawi. Chirwa(2001) examined the impact of concentration on bank profitability performance. Using the market structure-performance hypothesis, the study found a significant relationship between monopoly power and bank profitability. Chimkono and Muturi(2016), looked at the effect of non-performing loans ratio and other determinants on the financial performance of commercial banks in Malawi. This study did not necessarily look at the factors that determine non-performing loans but rather how the non-performing loans affect bank performance.

To the best of the authors' knowledge, no study has focused specifically on the factors that affect the asset quality of banks in the context of Malawi. This study will hence fill this knowledge gap in the literature on the performance of the Malawian banking sector.

1.3 Research Objectives

1.3.1 Main Objective

The main objective of this dissertation is to analyze the factors that affect the level of non-performing loans in the Malawi banking sector.

1.3.2 Specific Objectives

In pursuing the main objective, the following specific objectives will be examined:

- To examine the impact of bank-specific factors on NPLs
- To examine the impact of industry-specific factors on NPLs
- To examine the impact of macroeconomic factors on NPLs

1.4 Hypotheses

Based on the objective, the study seeks to test the following Null hypotheses:

- Bank-specific factors do not have an impact on NPLs
- Industry-specific factors do not have an impact on NPLs
- Macro-economic factors do not have an impact on NPLs

1.5 Significance of the Study

This study aims to contribute to the understanding of non-performing loans in the banking sector. NPLs are particularly important to study as they determine the performance hence development of the banking sector. The banking sector is in turn important in achieving economic development. According to the supply-leading hypothesis of financial development, financial development leads to economic development (Levine, 1997). Specifically, financial development induces investment. It precedes and induces economic growth by channeling funds from small savers to large investors.

In addition, it channels financial resources to the highly productive sectors of the economy. However, an increase in the NPLs implies that funds are being locked down in the most unproductive sectors of the economy. Therefore, to help Malawi onto the path of development following the supply leading hypothesis, the ratio of NPLs must be reduced and only when the determinants of the growth of NPLs are understood, can this be achieved. This dissertation will hence contribute richly towards the long-run goal of achieving economic growth.

1.6 Organization of the Study

This study is organized as follows: Chapter one introduces the study by highlighting the background, problem statement, the study objectives and the significance of the study. Chapter two gives the overview of the banking sector in Malawi with particular focus on the trends in NPLs of the commercial banks. Chapter three provides the literature review by first looking at the theoretical literature review then the empirical literature review. Chapter four builds from chapter three by specifying the model in such a way that the factors discussed in the literature review are incorporated in the model. Chapter five discusses the results obtained from the model specified in chapter four. Lastly chapter six offers a summary of the study, conclusion and policy recommendations.

CHAPTER TWO

OVERVIEW OF THE MALAWIAN FINANCIAL SECTOR

2.1 Introduction

This chapter provides highlights of the Malawian financial sector, specifically the banking sector. Firstly, it provides the structure of the banking sector. Secondly it provides a review of trends in the commercial banks loans to total asset ratio and the trend in the non-performing loans. The study will focus on seven banks only due to data availability.

2.2 Structure of the Banking Sector

The Reserve Bank of Malawi (RBM), is the core of the formal financial sector responsible for ensuring the financial sectors soundness. The RBM regulates and supervises the activities of financial institutions as per the 1989 Banking Act. It is also responsible for registering and licensing banks. The formal financial sector in Malawi has ten commercial banks and one leasing finance company. The commercial banking system is the most vital component responsible for accepting deposits and granting short-term credit to productive entities (GOM, 2016). The banks in the Malawi banking sector as of 2015 were: National Bank of Malawi (NBM), Standard Bank Limited (STD), NBS Bank Limited, CDH Investment Bank, ECObank, INDEbank, Nedbank, FDH Bank, First Merchant Bank (FMB), Malawi Savings Bank (MSB), and Opportunity International Bank of Malawi (OIBM). FDH Bank limited later acquired MSB and INDEbank was acquired by NBM.

NBM's market share of assets and loans was the largest accounting for 25.2 percent and 26.9 percent respectively as of 2015. The market share summary statistics of 2015 are shown in Figure 2 below.

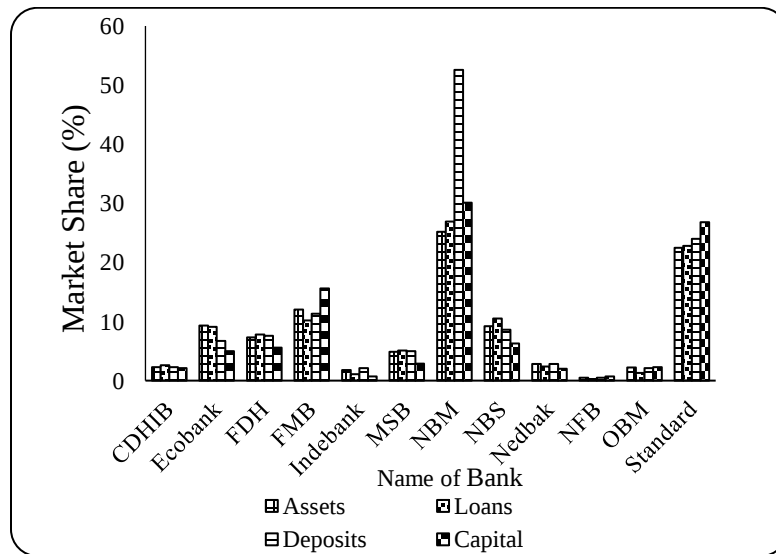


Figure 2: Summary of Banks' Market Share

Source: RBM (2015)

Bank size is analysed by looking at the market share in terms of assets, loans, deposits and capital of each bank. As seen in the figure above, NBM and STD are the two largest banks. The middle banks are: NBS bank, FMB, FDH, and ECObank. The smallest banks are: CDH, INDEbank, MSB, Nedbank, NFB, and OIBM. The present study will focus on the two largest banks, two middle banks and three smallest banks. The overall trend exhibited by the overall banking system and the contributions of each bank under review to this trend are discussed in the subsections below.

2.3 Overall trend in NPLs and some stylized facts

As a recap, Figure 3 below shows the overall trends in NPLs and credit to the government for the entire banking sector.

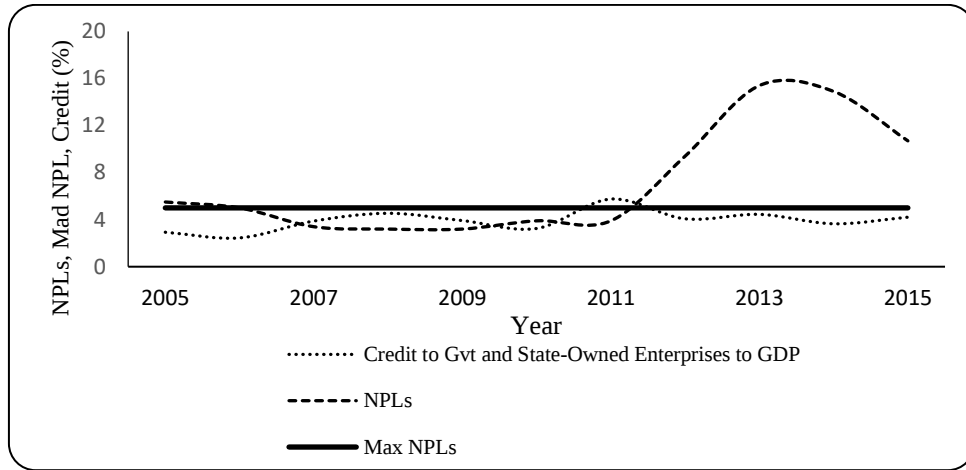


Figure 3: Trends in Credit to Government and overall NPLs

Source: RBM (2016)

As can be seen in the figure above, the ratio of lending to government to GDP hit its highest in 2011 at 5.75%. This should have been a good development since governments do not default and hence credit risk should have decreased. However, in that same year NPLs spiked up way above the prudential maximum of 5 percent and hit a high of 15.4 percent in 2013. It is worth noting the events that took place before the year 2012 to fully understand the seemingly sudden spike in NPLs in 2011. These are briefly discussed below.

2.3.1 Ownership Structure of the banks

Firstly, the ownership structure of INDEBank changed. Initially MSB was the only government owned bank in which the Government of Malawi (GoM) had 100 percent shares. Out of 14 financial institutions in 2009, one bank (MSB) was wholly owned by government, four institutions were 100 percent locally, two were 100 percent foreign owned and seven had mixed local and foreign ownership. However, in 2010, Trans-Africa Holdings Ltd sold its INDEbank shares to the Government of Malawi (RBM, 2010). This implied that the industry now had two banks which were owned partly or wholly by the government and which would therefore be subject to political lobbying.

2.3.2 The Liquidity Crisis

The second event that took place was the liquidity crisis of 2012. In the year 2011, the government adopted the Zero Deficit Budget in which it procured goods on credit leading to liquidity shortages. The then President died and the new government implemented an Economic Recovery Plan in which the Malawi Kwacha got devalued by 49 percent almost overnight in May 2012. The currency got changed from a fixed exchange rate regime to a floating exchange rate regime. This also worsened the liquidity conditions. RBM reacted by introducing the uncollateralized discount facility to normalize the liquidity position. However, this induced commercial banks to borrow even more from RBM hence the bank rate was adjusted upwards from 16 to 21 percent (Government of Malawi, 2012).

2.3.3 Cashgate Scandal

Between the years 2012 to 2014, GoM public funds were misappropriated. Two main methods of misappropriation were used. The first one was the extraction of cash, with the main currency being the Malawi kwacha, using systematic money laundering activities through commercial organisations. This act was deemed premeditated and not opportunistic and it is commonly referred to as *cashgate* (Tilly, 2014). The cashgate report carried out by Tilly(2014), undertook a detailed analysis of 63 bank accounts relating to 53 businesses linked to cashgate. It further identified 202 individuals who either knowingly or unknowingly, had been recipients of GoM funds. According to the report, total loss suffered by the GoM was MK15, 524, 237, 655.

2.3.4 Trends in overall NPLs and Lending Rates

One key variable of interest in this study is the lending rates. The co-movements of lending rates and NPLs over the study period are shown in Figure 4 below.

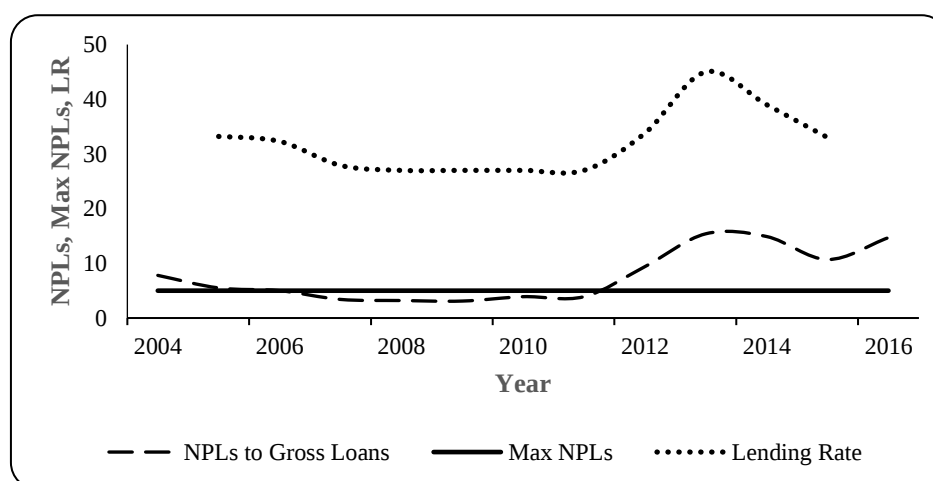


Figure 4: Trends in overall NPLs and Lending rates

Source: RBM (2016)

As can be seen above, lending rates and NPLs were moving together during the study period. In the year 2011, average lending rates started increasing from 27 percent in

2011 to 33.8 in 2012. This upward trend was maintained till it reached an all high of 45 percent in 2013. NPLs also started increasing above the regulatory maximum of 5 percent in 2011 and also reached an all high of 15.4 in 2013.

The contribution of each bank to this spike in NPLs is analysed as follows:

2.3.5 Trends in NPLs for National Bank

Total assets increased by 23.88 percent from K253.87 billion in 2015 to K314.49 billion in 2016. This was attributed to an increase in fixed assets, loans and advances to customers, other assets and interest bearing securities(NBM, 2016). The trend of loans and advances to total assets and the trend of non-performing loans as a measure of asset quality from the year 2005 to 2014 is depicted in Figure 5 below.

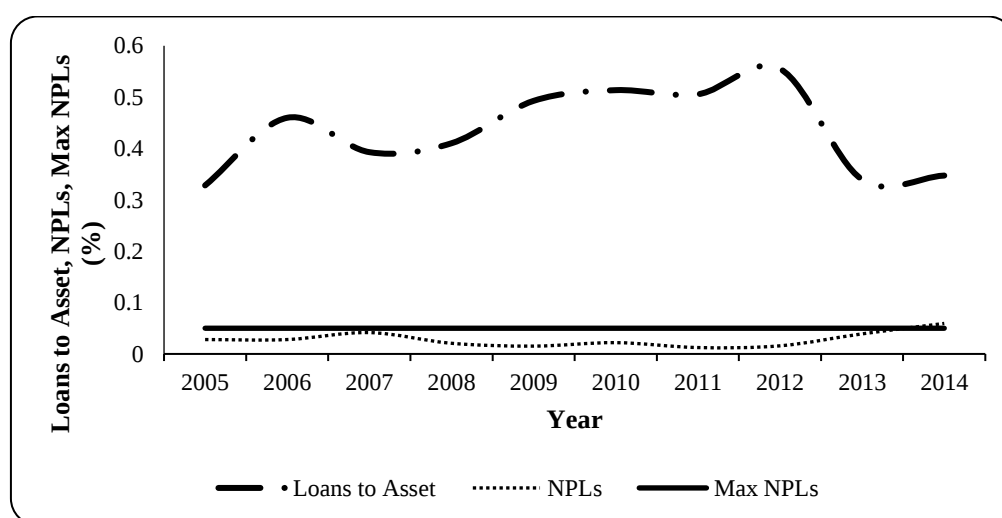


Figure 5: Trends in NPLs National Bank

Source: RBM (2016)

As can be seen above, the loans to total assets ratio increased between 2005 and 2006, slowed down between 2006 and 2007 then gradually increased from there. The ratio experienced a sharp decline from the year 2012 following the implementation of the Economic Recovery Plan which resulted to an increase in the bank rate. The ratio of

non-performing loans to gross loans and advances however stayed below the regulatory maximum of 5 percent over the years.

2.3.3 Trends in NPLs for Standard Bank

As at December 2016, total assets of the bank grew by 35 percent. However, loans and leases decreased by 5 percent due to a slowdown in private sector growth and a decrease in capital investment. The trend of the banks loans to asset ratio and NPLs ratio from the year 2005 to 2014 is shown in Figure 6.

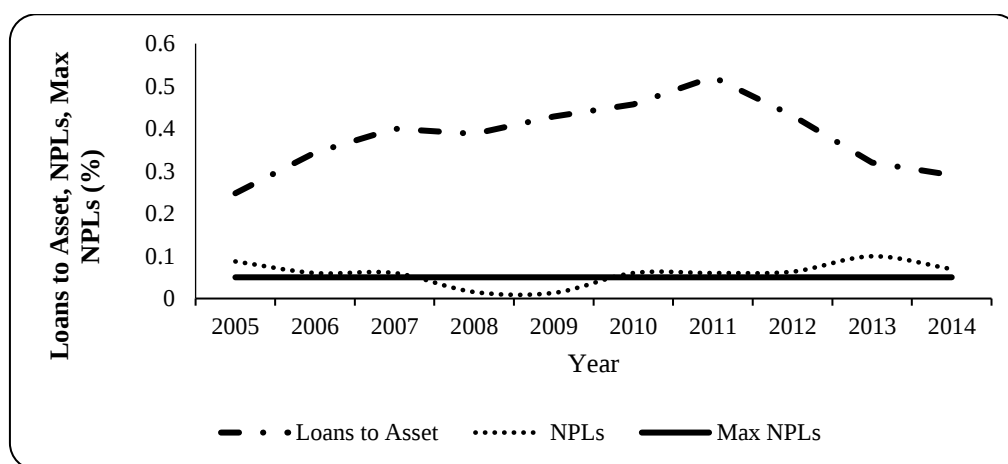


Figure 6: Trends in NPLs for Standard Bank of Malawi

Source: RBM(2016)

It can be noted that the loans to asset ratio had an upward trend from the year 2005 to 2012 where the ratio started to decrease as like the case with NBM above.

The NPLs were above the regulatory maximum of 5 percent from 2005 to 2007 and again in the years 2011 to 2014 registering a high of 9.33 percent in 2014.

2.3.4 Trends in NPLs for NBS Bank

As of December 31st 2016, NBS banks total assets grew to MK 87 billion while net loans and advances decreased by 2.1 percent from MK30, 140 million in 2015 to

MK29,496 million due to tightening of credit risk appetite. The trend of the banks loans to asset ratio and NPLs ratio from the year 2005 to 2014 is shown in Figure 7 below.

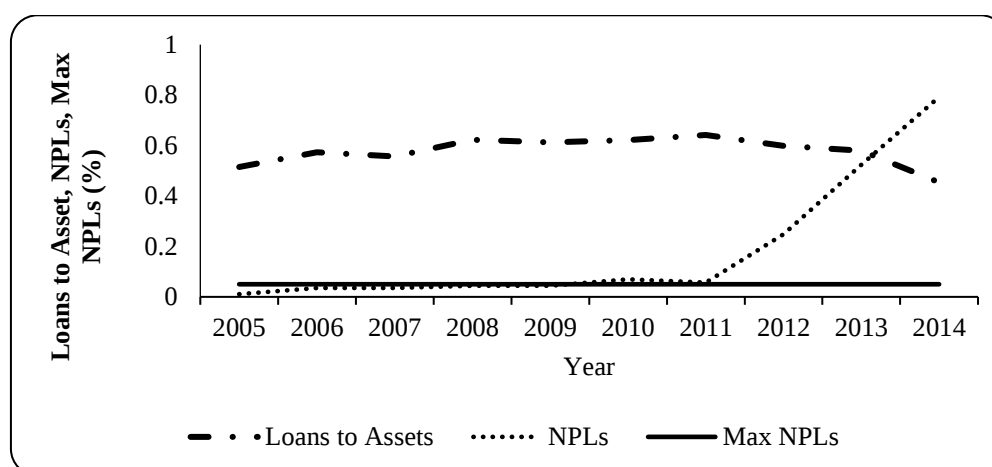


Figure 7: Trends in NPLs for NBS Bank

Source: RBM (2016)

The ratio of loans to total assets was stable over the years till the year 2012 where it began to drop. NPLs were below the regulatory maximum of 5 percent from 2005 to 2009 after which it started to increase registering an all high of 79.2 percent in 2014. Gross loans and advances grew from K24, 143, 692 in 2010 to K36, 007, 913 in 2012. Consequently, credit performance worsened and this was also attributed to the uncertain pace of economic recovery in the country (NBS, 2012).

2.3.5 Trends in NPLs for First Merchant Bank (FMB)

FMB registered a growth in total assets of 25 percent in 2016, from K262 billion to K327 billion. While total assets grew by a quarter, net loans increased by a more modest 21% due to the banks conservative lending practices in an environment of pedestrian and uncertain growth and persistently high interest rates (FMB, 2016). The trend of loans to asset ratio and NPLs from 2005 to 2014 is shown in Figure 8 below.

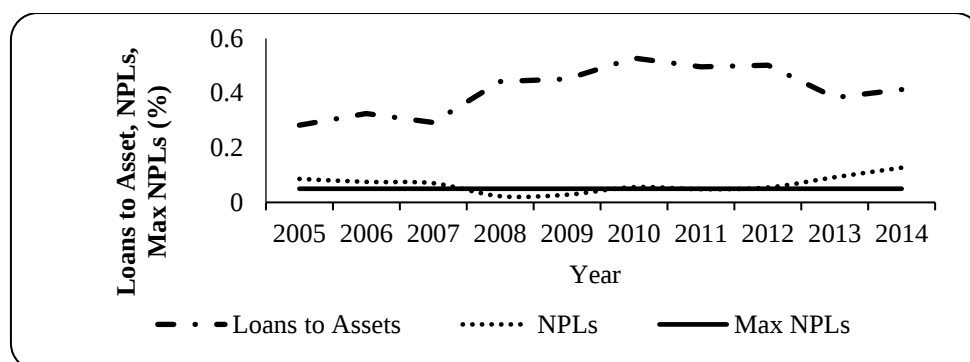


Figure 8: Trends in NPLs for First Merchant Bank

Source: RBM (2016)

The ratio of loans to total assets experienced an upward trend from 2005 to 2012 where it dipped down. The level of NPLs was above the regulatory maximum of 5 percent between 2005 and 2007 after which it was below the maximum till 2010. The NPLs registered a high of 12.13 percent in 2014 and a low of 2.23 percent in 2008.

2.3.6 Trends in NPLs for INDEbank Limited

INDEbank was established on December 30, 1972 as Investment and Development Bank of Malawi Ltd. In 2001, Investment and Development Bank of Malawi Ltd changed its name to INDEbank Limited. INDEbank fell under the Specialized Gov. Credit Institutions Africa peer group. INDEbank was sold by the Government of Malawi at MK6.7 billion and National Bank of Malawi won the bid as the designated preferred bidder to recapitalize the bank. Figure 9 below shows the trend in NPLs and loans to assets ratio for INDEbank.

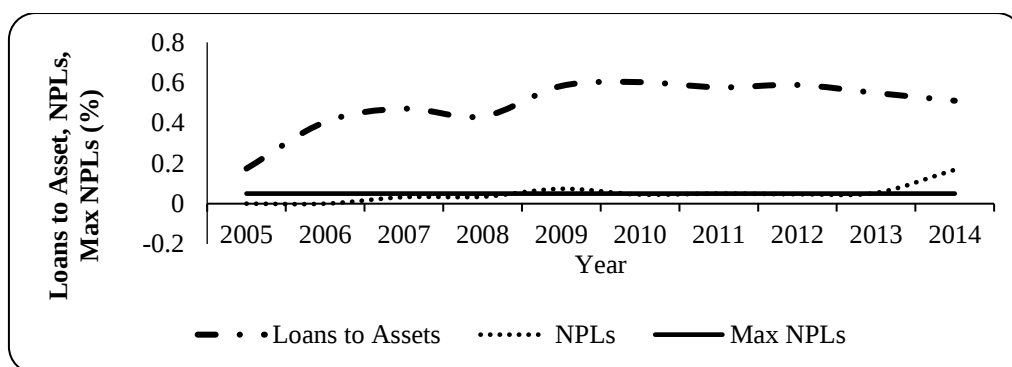


Figure 9: Trends in NPLs for INDEBank

Source: RBM (2016)

The ratio of loans to total assets increased from 2005 to 2007 where it slightly decreased then increased again in 2008. NPLs were below the regulatory maximum between 2005 and 2008. After which it was above the maximum with a high of 16.8 percent in 2014.

2.3.7 Trends in NPLs for NedBank (Malawi) Ltd

Nedbank was initially known as Finance Corporation of Malawi Limited. In August 2001, Finance Corporation of Malawi Limited changed its name to Fincom Bank of Malawi Limited then later to NedBank Malawi Limited in November 2002. Like FMB, Nedbank is under the Commercial Banks Africa Peer group. Figure 10 shows the trend of NPLs and loans to assets ratio for Nedbank.

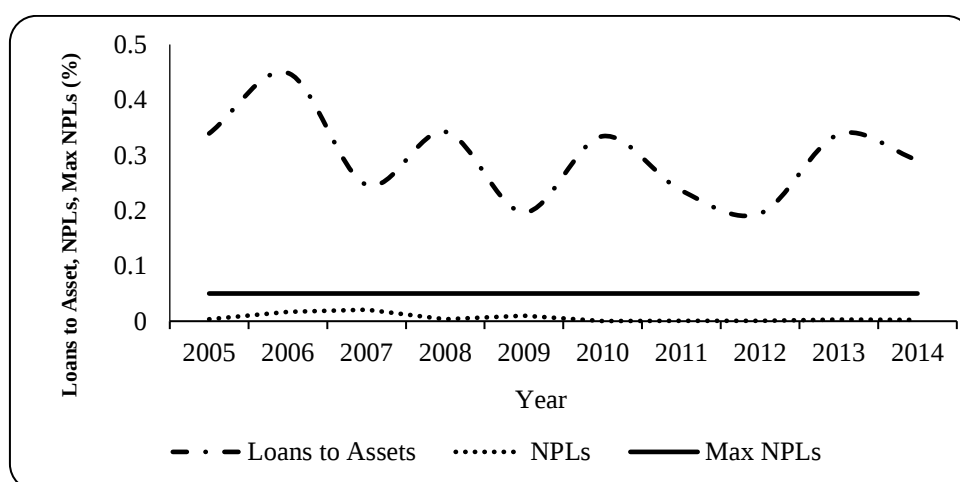


Figure 10: Trends in NPLs for Nedbank

Source: RBM (2016)

The ratio of loans to assets was highly unstable in the period under review as can be noted above. NPLs remained below the regulatory maximum of 5 percent over the years under study.

2.3.8 Trends in NPLs for Opportunity International Bank of Malawi (OIBM)

OIBM was sold to FMB hence there is no recent data available. Figure 11 below shows the trends in NPLs and ratio of loans to assets for OIBM.

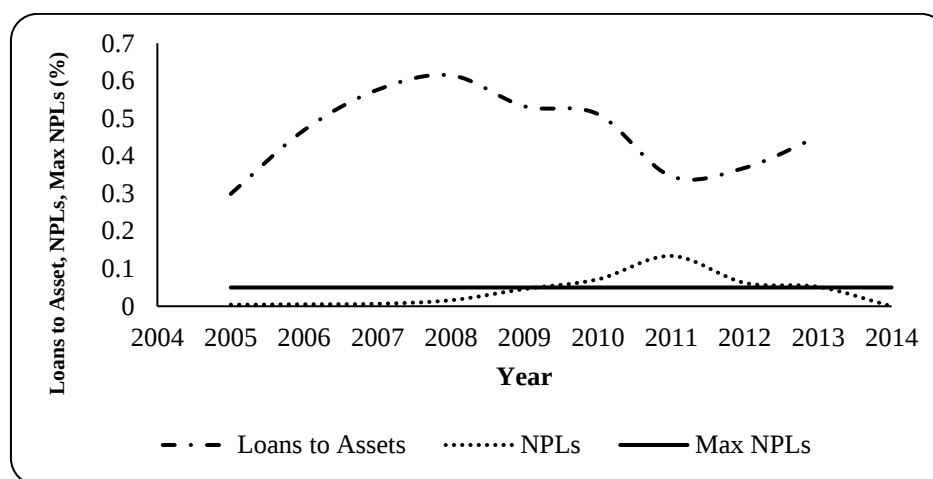


Figure 11: Trends in NPLs for Nedbank

Source: RBM (2016)

The ratio of loans to total loans decreased from 2008 to 2011 after which it started increasing. NPLs went above the regulatory maximum of 5 percent from 2009 to 2012 registering a high of 13.4 percent in 2011.

2.4 Summary

This chapter provided the overall trend of the NPLs in the entire banking sector. In addition, it provided the contribution of each individual bank to this trend. As can be noted from the analysis, only NBS bank seemed to misbehave registering the highest ratio of non-performing loans to gross loans of 79.2 percent in 2014. However, the analysis did not include one crucial bank, MSB as the author was unable to secure data for this bank. However, it is worth noting the events that took place in MSB in the years the overall NPLs started increasing.

In September 2011, MSB and its longtime customer, Mulli Brothers Limited agreed that a previously existing overdraft be restructured into a medium-term loan of K3.2 billion. This loan would be repayable over a period of 60 months in equal monthly installments of K82, 131, 869.43 (Chikoko, 2015).

The company failed to make its first installment on October 30, 2011 and was therefore in breach of its contract with MSB. Mulli brothers has since consistently failed to make the monthly payments and as of October 2012, the company was in arrears of K444, 492, 883.30. Seeing as the overall ratio of NPLs in the entire banking sector started increasing in the period 2011-2012, the author took a leap of intuitive faith by elimination and concluded that the remaining high levels of NPLs were a result of MSB operations with Mulli Brothers. It can also be argued that there was some bad politics at play since MSB was the only commercial bank in which the Government of Malawi had 100 percent ownership in(Mireles, 2014).

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

Studies in different countries have analyzed the major determinants of NPLs and have reached different conclusions. Some of these studies are discussed in this section, starting with the theoretical review then the empirical literature review.

3.2 Theoretical Review

3.2.1 Asymmetric Information Theory

As defined by Mishkin (2004), asymmetric information is the situation in which one party has insufficient knowledge about the other party involved in a transaction. In the credit market, the lender usually has insufficient knowledge about the borrower. Asymmetric information leads to two main problems: adverse selection and moral hazard behaviors. These two problems will be discussed briefly in turn.

3.2.1.1 Adverse selection

Adverse selection problem occurs before the transaction takes place. According to Stiglitz and Weiss (1981) in their credit rationing theory, the high interest rates banks charge attracts the most risky pool of borrowers. In a world of perfect and costless information, the banks would know that the demanders of credit when the interest rates are higher are those that are likely to default on loans. However, the bank is unable to stipulate the riskiness of the borrowers as such they treat all borrowers the same. With

high interest rates, the less risky borrowers drop out of the loan market while the risky borrowers demand more since they know they will default anyway.

3.2.1.2 Moral hazard

Moral hazard problem occurs after the transaction takes place. This is a situation in which a borrower engages in risky behaviors after obtaining the loan (Mishkin 2004). With high interest rates, the borrowers have an incentive to engage in riskier projects since the returns to projects increase with an increase in risk. The riskier projects increase the probability of default on the loans. Since borrower risk is private information, the banks have no way of knowing the riskiness of the borrowers (Stiglitz & Weiss, 1981).

As stipulated by Stiglitz and Weiss (1981), expected bank returns are a non-monotonic function of interest rates. That is to say, an increase in interest rates does not increase returns to the bank as would be expected. This is due to the adverse selection and moral hazard problems analyzed above. High interest rates increases the riskiness of the pool of applicants and it induces borrowers to choose projects under which the probability of default is higher. This has a negative effect on the lenders expected profits as such the returns start decreasing. This can be shown in Figure 12 below:

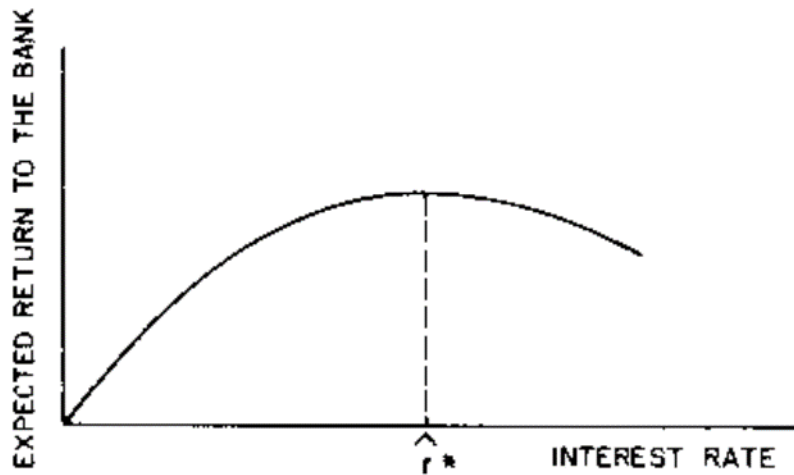


Figure 12: Illustration of the Information Asymmetry Theory

Source: Stiglitz and Weiss (1981)

3.2.2 Agency Theory

Agency problems occur in situations where there is separation of ownership and control in the firm. Shareholders are the owners while managers are their agents. The agency problem comes in play when the managers do not act in the best interest of the shareholders but in their own interests (Brealey, Myers, & Allen, 2011). In this case, the bank managers take more risks by creating a risky loan portfolio. They give out loans to the risky borrowers without regard to the shareholders returns (Nance, Smith, & Smithson, 2012). Banks with relatively low capital respond to moral hazard incentives by increasing the riskiness of their loan portfolio, which in turn results in higher non-performing loans on average in the future.

3.2.3 Skimping Hypothesis

According to Berger and Udell (1994), there exists a positive relationship between high cost efficiency and NPLs. High cost efficiency implies that little resources are allocated to monitor lending risks therefore the level of NPLs goes up. In the case of high cost efficiency, less costs are incurred by the bank. Conversely, low cost efficient

banks allocate more resources to monitoring borrowers therefore they hold low risk portfolios and the level of NPLs in such banks is lower.

3.3 Empirical Literature Review

Pasha and Khemraj (2009) attempted to ascertain the determinants of NPLs in the Guyanese banking sector using a panel dataset and a fixed effect model for the period 1994-2014. In line with the agency theory, they found that banks with a higher risk appetite tend to have higher NPLs in the Guyanese banking sector. In addition, those banks that charge higher interest rates also have high NPLs. However, contrary to other findings, the study found that large banks do not have lower levels of NPLs compared to their smaller counterparts. The study established a positive relationship between bank size and NPLs and this was similar to the findings of Chaibi and Fiti(2015) in their study on determinants of NPLs in France and Germany banking sectors.

Klein (2013) investigated the NPLs in Central, Eastern and South-Eastern Europe (CESEE) for the period 1998-2011. The data covered 10 largest banks in each of the 16 countries under CESEE and the analysis was carried out using a dynamic panel model. The study found that NPLs responded to macroeconomic factors. These factors were: GDP growth, exchange rate, unemployed and inflation. NPLs were found to have a positive correlation with change in unemployment, inflation and exchange rate depreciation. The positive relationship between NPLs and unemployment validates the link between business cycles and the banking sector.

A study done by Muriithi (2013) used secondary data of 43 commercial banks in Kenya from the year 2008 to 2012. The study sought to determine the causes on NPLs in commercial banks in Kenya using a descriptive design. NPLs and inflation were found to have a positive relationship. However, the study did not conform to the adverse selection and moral hazard phenomenon as it found a negative relationship between interest rates and NPLs. In addition, the study found a negative relationship between growth of loans and NPLs.

Mensah and Adjei (2015) used a panel regression model for the banks in Ghana to find the determinants of NPLs. The study found that bank-specific variables and macroeconomic variables significantly affect NPLs. Specifically, bank size and previous years NPLs were found to be positively related to NPLs while net interest rate margin, current years' loan growth, previous years' inflation, real GDP per capita growth and real effective exchange rate were found to be negatively related to NPLs. According to this study, the larger the bank, the greater the tendency to expand loan base therefore the possibility of more clients defaulting. However, this positive effect of bank size on NPLs was contrary to the size effect hypothesis which suggests a negative relationship between NPLs and bank size. Specifically, Salas & Saurina (2002) found that a negative relationship between bank size and NPLs. They argued that banks with larger sizes have more diversification opportunities in lending hence the loans of those banks are dispersed among different sectors and chances of NPLs decrease

3.4 Causes of Non-Performing Loans

This subsection discusses the causes of an increase in NPLs from the borrowers' perspective/the demand side and from the lenders' perspective/supply side of the loans.

General macroeconomic factors affect the customers' ability to service loans. These macroeconomic factors are: interest rates, exchange rates, inflation rates and gross domestic product (GDP) levels and they will be discussed briefly in turn.

Inflation is defined as the general increase in the price levels. According to Nkusu (2011), inflation affects the repayment ability of borrowers either positively or negatively. On one hand, an increase in inflation increases the loan repayment ability of borrowers by reducing the real value of the outstanding loans. On the other hand, an increase in inflation also reduces the loan servicing ability of borrowers. This is firstly explained through the interest rate channel since lenders can adjust the interest rates in response to an increase in inflation rates. This therefore hinders the borrowers' ability to finance the loan. Secondly, an increase in inflation reduces the borrowers' real income when wages are sticky hence they are unable to finance the loans.

Interest rates are defined as the fee of borrowed funds. There exists a negative relationship between interest rates and the demand for loans. At low interest rates, economic agents are more willing to borrow to finance their projects. The opposite is true for high interest rates. The higher the interest rates, the lower the demand for loans. In the case where the loans have already been obtained, the higher the interest rates, the greater the inability of borrowers to finance the loans. Hence, with an increase in interest rates, the level of non-performing loans increases (Jiménez & Saurina, 2006). Exchange rate is the price of one currency in terms of another. In this case, the price of the Malawian Kwacha in terms of the US Dollar. Fofack (2005) found a negative relationship between NPLs and real effective exchange rates. An increase in the exchange rate which is a devaluation or depreciation of the local currency implies that

local goods become relatively cheaper on the foreign markets. This increases the export ability of export oriented firms hence improving these firm's ability to service loans. Conversely, an appreciation makes domestic goods more expensive hence reducing the export ability of firms and consequently reducing their ability to finance the loans. On the lenders side, bank specific factors and industry-specific factors influence their lending decisions. These factors are: bank size, growth rate of loans, loans to total asset ratio, bank ownership structure, and liquidity reserve requirement.

These factors are rooted in both theoretical and empirical literature. According to the size hypothesis, larger banks have more means of diversification into various portfolio earning. Such banks hold less loans in their portfolio on average compared to smaller banks (Berger & Deyoung, 1997). The larger the bank, the lesser the loans it extends and consequently the lower the NPLs.

Bank ownership structure also influences the level of loans a bank extends. According to Msigwa (2013) state-owned banks are more vulnerable to political lobbying than private banks. In a country with a corrupt public-sector, it is easier for public banks to become political businesses, illegally supplying risky loans to enterprises controlled by political ties. Therefore, in such countries, the greater the government shares in banks, the higher the NPLs in such banks.

3.5 Summary

This chapter provided the theoretical literature relating to NPLs, the empirical findings from other countries and the causes of NPLs. The main theory that tracks down the source of NPLs is the Credit Rationing theory of Stiglitz and Weiss which focuses on

interest rates as the main cause. This theory is broken down to adverse selection hypothesis and moral hazard hypothesis stemming from high interest rates. The available literature finds links between NPLs and several factors. These factors are broken down into three: bank-specific factors, industry-specific factors and macroeconomic factors. The current study will establish whether or not such links exist in the context of Malawi commercial banks.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter presents the tools of analysis used in the study. The methodology adopted by this study is motivated by both the theoretical and empirical literature outlined in chapter three above. Section 4.2 will look at how the model was specified and the techniques that will be used to estimate the model to achieve the objectives of this study.

4.2 Model Specification and Estimation Techniques

The study adopts a dynamic panel used by Jiménez and Saurina (2006) to estimate the determinants of NPLs in Malawi using STATA 14.0 statistical software. This model introduces the lag of the dependent variable due to the persistency of the dependent variable. Specifically, the current years NPLs affect the level of NPLs in the next year since some NPLs are carried forward after specific provisions. Such persistency exhibited by NPLs makes the dynamic panel suitable for this study. This technique is more appropriate since it takes into account the persistency nature of the dependent variable (Wooldridge, 2002).

The model takes the general form:

$$y_{it} = \alpha + \sum_{i=1}^k \beta_i X_{it}^k + \sum_{i=1}^n \gamma_i Q_t^n + \sum_{i=1}^n \delta_i Z_t^n + \varepsilon_{it} \dots \dots \dots (1)$$

Where:

X_{it}^k = Vector of bank specific variables.

Q_t^n = Vector of industry specific variables.

Z_t^n = Vector of macroeconomic variables.

The estimated model for the study is as follows:

$$\begin{aligned} NPL_{it} = & B_0 + B_1NPL_{it-1} + B_2SIZE_{it} + B_3Loan_Asset_{it} + B_4OWN_{it} \\ & + B_5\Delta LOANS_{it} + B_6LR_t + B_7LRR_t + B_8INFL_t + B_9RER_t \\ & + B_{10}\Delta GDP_t + \varepsilon_{it} \dots \dots \dots (2) \end{aligned}$$

Where:

NPL_{it} = The ratio of NPLs to gross loans of bank i at time t

NPL_{it-1} = The ratio of NPLs to gross loans of bank i in the previous time period

$SIZE_{i,t}$ = Size of bank i at time t

$Loan_Asset_{it}$ = The ratio of loans to total assets of bank i at time t

OWN_{it} = Ownership structure of bank i at time t

$\Delta LOANS_{it}$ = Growth rate of loans of bank i at time t

LR_t = Lending rate at time t

LRR_t = Liquidity Reserve Requirement at time t

$INFL_t$ = Inflation at time t

RER_t = Real Exchange rate at time t

ΔGDP_t = Real GDP growth at time

4.3 Variable description and expected signs

NPLs

NPLs is the dependent variable in this study. It is calculated as the ratio of impaired loans to gross loans.

Bank Size

Bank size is calculated by taking the share of assets of bank i in the total assets of the banking sector. It is used to capture the relative market share of a bank at a particular point in time. Bank size depicts diversification of banks. Salas and Saurina (2002) found a negative and significant relationship between bank size and NPLs. Specifically, the larger the banks, the greater their diversification which leads to less risky loan portfolios and consequently less NPLs. However, Chaibi and Ftiti (2015) were of the contrary view. They found a positive and significant relationship between bank size and NPLs.

Loan Asset

This captures the share of loans in the total assets of the banks. It is used as a measure for excessive lending.

The more a banks lend out relative to other assets it holds, the higher the probability of default therefore the higher the level of NPLs. Klein (2013) found a positive relationship between loans to total assets ratio and NPLs.

Ownership

This is a dummy variable representing the ownership structure of the bank taking the value of 0 if the majority of shares are local shares and 1 if the majority are foreign shares. Local shares are further broken down to government shares or private shares. Ownership structure of the banks influences the amount of loans the banks extend due to political lobbying. Government-owned banks are more vulnerable to political lobbying than private banks. In a country with a corrupt public-sector, public banks easily become political businesses. Mafias and local political schisms in such countries easily control financial institutions for illegal money washing and loan supply.

Therefore, the higher the government shares in banks, the higher the levels of NPLs in those banks (Msigwa, 2013).

Growth of loans

This captures the growth in loans extended by a particular bank. The a priori expected sign of this variable is positive. Specifically, the greater the credit extended by banks, the higher the probability of default.

Lending rates

With an increase in the bank rate, commercial banks increase their lending rates. As outlined in the theoretical literature review, high lending rates attract risky borrowers and act as an incentive for borrowers to engage in risky investments hence this leads to an increase in NPLs. This implies a positive relationship between bank rates and NPLs.

Liquidity reserve requirement

This is the minimum amount of reserves held by a bank as a proportion of deposits as prescribed by RBM. The higher the liquidity reserve requirement, the lower the amount of funds available to banks to lend out and consequently, the lower the levels of NPLs. This implies a negative relationship between liquidity reserve requirement and NPLs.

GDP growth

The a priori expected sign of GDP growth is a negative. This implies that an increase in GDP leads to decrease in default risk. Conversely, a decrease in GDP leads to an increase in NPLs. Specifically, an increase in GDP results to an increase of lenders

income which consequently increases their loan repayment abilities and NPLs decrease and vice versa.

Inflation

As explained in chapter three of this study, an increase in inflation decreases the real value of loans hence leading to a decrease in NPLs. This implies a negative relationship between inflation and NPLs. However, an increase in inflation can also lead to an increase in NPLs when banks adjust their lending rates upwards in response to the rise in inflation. The a priori expected sign is either negative or positive.

Real exchange rate

Real exchange rate is captured as the price of the Malawian Kwacha in terms of the US Dollar. An increase in real exchange rate which is a depreciation leads to cheaper local products and in turn, increases the exporting ability of firms and this essentially positively affects debt servicing capabilities of firms. This implies a negative relationship between real exchange rate and NPLs.

Table 2 below gives a summary of the variable descriptions and expected signs from each.

Table 2: Variable description and expected signs

Variable Name	Definition	Expected Sign
NPL_{it}	Ratio of non-performing loans to total gross loans of bank i at time t	
Bank Size	Relative market share of bank i at time t computed as: $Size_{i,t} = \frac{Asset_{i,t}}{\sum Asset_{i,t}} \times 100\%$	+/-
OWN	A dummy to represent ownership structure of the banking taking 0 if locally owned, 1 if foreign.	+/-
Loan Asset	Ratio of loans to total assets	+
$\Delta Loans_{it}$	Growth rate in loans of bank i at time t : $\Delta Loans_{i,t} = \frac{Loans_{i,t} - Loans_{i,t-1}}{Loans_{i,t}}$	+
LR	Lending rate taken as an average of NBM and STD bank lending rates	+
LRR	Liquidity reserve requirement set by RBM	-
Real Exchange Rate	Computed as the nominal exchange rate times domestic price divided by foreign price of an item	-

$INFL_t$	Inflation calculated by taking the percent change in annual consumer price index at time t .	+/-
ΔGDP_t	Annual growth in real GDP at time t computed as the change in GDP	—

4.4 Data sources

Bank specific data are obtained from the bank financial statements and balance sheets. Industry specific data are obtained from the Reserve Bank of Malawi and macroeconomic variables are obtained from WDI. Data from the year 2005 to 2014 for seven commercial banks is used. The period from the year 2005 is chosen since data for NPLs before 2005 is not available for some banks.

CHAPTER FIVE

EMPIRICAL RESULTS AND DISCUSSION

5.1 Introduction

This chapter discusses results from the data analysis employed as presented in chapter four. The discussion is twofold. The first section of the chapter presents the descriptive statistics of the data used and the diagnostic tests results that were conducted. The second section presents the regression results.

5.2 Descriptive Statistics

Table 3 below shows the descriptive statistics of the data employed in the study. The values of the minimum, maximum, mean and standard deviation for both dependent and independent variables are presented.

Table 3: Descriptive statistics for the data

Variable	Obs.	Mean	Std. Dev.	Min	Max
NPLs	67	0.06498	0.1152484	0.0002599	0.7923362
Bank-Specific Factors					
Bank Size	70	9.973203	1.236082	6.874612	12.33891
Loan-Asset Ratio	70	0.4361802	0.1205701	0.1742094	0.6417251
Ownership	70	0.4285714	0.4984448	0	1
Growth of Loans	68	0.2763049	0.3472234	-0.8526194	1
Industry-Specific Factors					
Lending Rate	70	31.92	5.868871	27	45
LRR	70	14.61	5.026312	7.5	18.6
Macroeconomic Factors					
Inflation	70	14.1	7.12853	7	27
GDP Change	70	27.60727	0.1745588	27.31958	27.84948
RER	70	202.1491	103.5377	118.4197	424.8958

The mean value of the dependent variable, NPLs, was 6.498 with a standard deviation of 11.52484 percent. This average value of NPLs of 6.498 during the study period was above the regulatory maximum of 5 percent and the standard deviation of 11.52484

percent shows a big variation in NPLs across the sample banks. The NPLs ranged between a minimum of 0.02 percent and a maximum of 79.23 percent during the sample period. The ratio of loans to total assets had a mean of 43.61802 percent and a standard deviation of 12.05701 percent. The mean shows that the average value of loans to total assets was high and the standard deviation gives evidence of high variation. The ratio ranged from a minimum of 17.4 percent to a maximum of 64.17 percent during the study period.

Ownership took the value of 0 to indicate local banks and 1 to indicate foreign banks. Growth rate of loans had a mean value of 27.63049 percent and a standard deviation of 0.3472234 percent indicating that there was great variation in the growth rate of loans between banks.

Lending rate had a mean 31.92 percent meaning that on average, the banks' lending rates was 31.92 and it ranged from a minimum of 27 percent to a maximum of 45 percent during the study period. While liquidity reserve requirement as set by RBM had a minimum of 7.5 percent and a maximum of 18.6 percent during the study period.

Growth rate of GDP had a mean of 27.60727 percent which was fairly high indicating a good real growth rate during the study period. The maximum GDP growth rate was 27.85948 percent which was not too different from the minimum of 27.31958 percent. The minimum inflation rate during the period under review was 7 percent registered in the year 2010 and the maximum was 27 percent registered in the year 2013.

Real exchange rate during the study period had a mean value of K202.1491. The real exchange rate registered a minimum of K118.4197 in the year 2005 and a maximum of

K424.8958 in the year 2014. This means that a dollar was being exchanged for K118.4197 and K424.8958 in the years 2005 and 2014 respectively.

5.3 Diagnostic Tests

This study employs the use of system GMM developed Arellano and Bover and Blundell and Bond. Before the meaningful analysis and interpretation of results, the model must satisfy two robust conditions: the Sargan test for over-identifying restrictions and the AR test for serial correlation. The results from both tests are shown in Table 4 below.

Table 4: Model Robustness Tests

Test	Statistic	P-value	Inference
Sargan Test	(50.15278)*	0.1304	Over-identifying restrictions are valid
Arellano-Bond Test			
AR(1)	(-2.8539)		Serial correlation of type AR(1)
AR(2)	(-0.15131)*		No serial correlation of type AR(2)

* denotes insignificance at 10%

The Sargan test is carried out in order to establish whether the restrictions have been over-identified or not. Specifically, it tests for overall validity of the instruments. The null hypothesis under this test is that all instruments as a group are exogenous. Therefore, higher p-value is better (insignificant). The probability of the chi-square

obtained from the results of this test was insignificant therefore we failed to reject the null hypothesis implying that the over-identifying restrictions were valid.

The Arellano-bond test is carried out to check whether the model possesses serial correlation or not. The null hypothesis under this test is that there is no autocorrelation and an insignificant statistic means that we fail to reject the null hypothesis. The results obtained from this test showed that there is no serial correlation of type AR (2).

Given the results from these two tests, the estimators obtained using moment conditions can now be accurately analyzed and interpreted. The estimation results are shown and discussed in the following sub-section.

5.4 Regression Results

This study employed the use of data from seven commercial banks in Malawi from the year 2005 to 2014 due to the availability of the data. The model used to analyze the data is the system GMM. This model addresses the issues of dynamic panel bias evident in the fixed effect model. In addition, system GMM improves the precision in samples with a limited time dimension (small T) and high persistence.

Table 5 below shows the estimated results with NPLs as the dependent variable.

Table 5: Regression Results

	Model I		Model II	
	NPL		NPL	
L.NPL	1.377***	(0.0827)	1.376***	(0.0807)
SIZE	0.0238*	(0.0137)	0.0284**	(0.0139)
Loan_asset	0.192**	(0.0942)	0.210**	(0.0921)
OWN	-0.124***	(0.0460)	-0.117***	(0.0451)
ΔLOANS	-0.0596**	(0.0251)	-0.0611**	(0.0244)
LR	0.00573*	(0.00324)	0.000205	(0.00162)
LRR	-0.00176	(0.00208)	0.000565	(0.00252)
INFL	-0.00281	(0.00281)		
RER	-0.0000549	(0.000158)		
ΔGDP	-0.0135**	(0.00608)	-0.0122**	(0.00521)
L1.INFL			0.00543*	(0.00323)
L1.RER			-0.000447	(0.000280)
N	60		60	

*Standard errors in parentheses: Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*

0.01

The explanatory variables are broken down into three types as discussed in the previous chapters. Two models are run, the second one taking into account the lagged effects of the explanatory variables on NPLs. The results obtained from both models are discussed briefly in turn below.

Model I

The explanatory variables run in model I are: bank size, ratio of loans to total assets, ownership, growth rate of loans, lending rates (LR), liquidity reserve requirements (LRR), inflation, exchange rate and growth rate in GDP. The industry-specific factor, liquidity reserve requirement, is found to be insignificant therefore it will not be explained.

Bank-specific variables

All bank-specific variables are found to be significant. The lagged NPLs has a coefficient of 1.377 suggesting that a shock to NPLs is likely to have a prolonged effect on the banking sector. This is because previous NPLs of banks will add up to the current value of NPLs.

The variable bank size has a positive significance fitting the a priori expected sign. The positive sign is in line with the size hypothesis which stipulates that larger banks tend to lend out more and this increases the chances of the borrowers defaulting hence the level of NPLs increase. However, this is contrary to the findings of Salas and Saurina (2002) who found a negative relationship between bank size and NPLs. According to the results, a 1 percent increase in the bank size is followed by a 2.38 percent increase in the level of NPLs.

Ownership is found to have a negative significance at 1 percent. The value of the coefficient suggests that foreign banks have 12.4 percent less NPLs compared to locally owned banks.

The variable growth of loans is found to be significant at 5 percent. However, it does not fit the a priori expected sign of a positive. This was similar to the findings of Muriithi (2013) who found that NPLs are negatively correlated with the growth rate of loans in Kenya. The present study further looked at the loans by taking them as a ratio of total assets. This ratio is used as a proxy measure of excessive lending. The ratio of loans to total assets fit the a priori expected sign of positive implying that an increase in loans as a ratio of total assets results to an increase in the NPLs. Specifically, a 1 percent increase in the ratio of loans to total assets results into a 19.2 percent increase in the level of NPLs. This implies that the more loans the banks hold compared to the other assets, the more the chances of default on those loans. This is in line with the moral hazard hypothesis. The positive significance of the loan to total assets ratio was similar to the findings of Akeem (2015) in the study of Trinidad and Tobago commercial banks.

Lending rates are found to be positively significant at 10 percent. This is in line with the information asymmetry theory of Stiglitz and Weiss (1981) which states that the higher the lending rates, the riskier the pool of potential borrowers. The theory also states that the higher the lending rates, the more hazardous behaviors the borrowers engage in. this implies that chances of default increase with an increase in lending rates. Therefore there exists a positive relationship between lending rates and NPLs.

Macro-factors

Growth rate of GDP is found to be significant at 5 percent with a negative sign on the coefficient. This is in line with the anti-cyclical behavior of NPLs. Specifically, higher GDP growth implies more income which improves the debt servicing ability of

borrowers and hence NPLs decrease(Jiménez & Saurina, 2006). The results obtained above suggest that a 1 percent increase in GDP growth results to a 1.35 percent decrease in NPLs.

The other macro-economic factors are found to be insignificant in this particular study.

Model II

To examine the robustness of the results, a second model is run. This model takes the lags of the variables that were found to be insignificant in model I above as the explanatory variables. The results for Model II are shown in the second column of

Table 5 above. The one period lagged value of inflation is found to be positively significant at 10 percent. The coefficient of this variable suggests that a 1 percent increase in inflation translates to a 0.5 percent increase in NPLs. The positive sign of the coefficient is however contrary to the findings of Mensah and Adjei (2015)who found a negative relationship between NPLs and the previous period inflation in Ghana. The one period lag of real exchange rate however is found to be insignificant as was the case with the current period real exchange rate in model I.

CHAPTER SIX

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

The previous chapter presented results and discussion of the results while this chapter presents a summary of the study findings and conclusions on the findings of the study. In addition, it also provides the policy implications from the findings and areas of further research.

6.2 Summary of findings

The study sought to analyze the factors that affect the levels of non-performing loans in the Malawi commercial banking sector from the period 2005 to 2014. The study looked at factors as outlined in existing theoretical and empirical literature and analyzed which ones apply to the Malawi banking sector too. A total of nine explanatory variables were chosen and analyzed. The study grouped these variables into: bank specific factors, industry specific factors and macroeconomic factors as was done in the available empirical literature. The macroeconomic variables were adopted due to their influence on the borrowers' loan servicing ability (see Nkusu (2011); Jiménez and Saurina, (2006); Salas and Saurina (2002); Rajan and Dhal (2003); Fofack (2005)). The bank-specific and industry-specific factors were chosen to take into account the supply side of loans since these factors essentially influence the amount of loans banks extend out.

Panel data for a sample of seven banks in Malawi from the year 2005 to 2014 was used. A system GMM type analysis was conducted using STATA 14.0 statistical package.

The model was tested for over-identifying restrictions and serial correlation and it was found to be valid and have no serial correlation of type AR (2). The results obtained from this study mainly conform to the results obtained from the literature. All bank-specific factors were found to be statistically significant in affecting NPLs while one of the industry-specific factors had no statistically significant impact on NPLs (liquidity reserve requirement). Of the macro-economic factors, only GDP was found to significantly influence NPLs while inflation and real exchange rate were found to be statistically insignificant.

A second model, model II, was run and it factored in lagged values of the explanatory variables found not to be significant in model I. Under this model, the one period lagged value of inflation was found to be statistically significant with a positive sign. The positive sign was however contrary to empirical findings. Particularly, the findings of Mensah and Adjei (2015) who found a negative relationship between the one period lagged value of inflation and NPLs in Ghana. The one period lagged value of real exchange rate was found to be statistically insignificant in model II as was the case with the current period real exchange rate in model I.

Generally, the findings of the study rejected the first hypothesis that indicated that bank-specific factors do not have an impact on NPLs. The findings were however mixed under the last two hypotheses. The findings of the study contribute to existing literature

on Malawi commercial banks performance by looking at one measure of performance that is often overlooked, the asset quality aspect.

6.3 Policy Implications

One of the significant variables, loans to total assets ratio, supported the ‘moral hazard’ hypothesis which deals with riskier portfolios and excessive loan growth. Therefore emphasis should be placed on risk management systems to help avert this risk.

In addition, banks should attempt to find the optimal loans to total assets ratio which would result in the lowest levels of NPLs.

Another significant variables, ownership, suggested that locally owned banks tend to have higher NPLs than foreign owned banks. This could be due to the political lobbying imposed on some locally owned banks in which the government has shares. Measures should be undertaken to make the banks more independent from political influence to avert this increase in NPLs.

6.4 Limitations of the Study

The main limitation of the study was that it failed to involve all banks in Malawi in the analysis due to data availability. As an area of future research, it would be of great value to attain data from all banks in the country.

It would also be of great value to link the events in chapter two of this dissertation to the regression analysis itself to see how those events really affected NPLs. Specifically, future researchers can include these events as explanatory variables in the regression model in the form of dummies.

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APPENDICES

Appendix 1

Sargan test results

Sargan test of overidentifying restrictions

H0: overidentifying restrictions are valid

chi2(40) = 50.15278

Prob > chi2 = 0.1304

Appendix 2

Estimation Results

Model I:

```
. xtddpdsys NPL banksize loan_Asset Ownership Growth_Loans Inflation ExchangeRate GDP_Change LR LRR, lags(1) nocons
note: Ownership dropped from div() because of collinearity
```

```
System dynamic panel-data estimation      Number of obs      =      60
Group variable: Panel_id                  Number of groups    =      7
Time variable: Year

Obs per group:   min =      7
                  avg =  8.571429
                  max =      9
```

```
Number of instruments =      50          Wald chi2(10)      =      848.85
                                          Prob > chi2         =      0.0000
```

One-step results

NPL	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
NPL						
L1.	1.376661	.0827363	16.64	0.000	1.214501	1.538821
banksize	.0238092	.0136928	1.74	0.082	-.0030283	.0506466
loan_Asset	.1922809	.0941519	2.04	0.041	.0077466	.3768152
Ownership	-.1238155	.0459748	-2.69	0.007	-.2139244	-.0337065
Growth_Loans	-.0595935	.0251119	-2.37	0.018	-.108812	-.010375
Inflation	-.002813	.002812	-1.00	0.317	-.0083243	.0026984
ExchangeRate	-.0000549	.0001583	-0.35	0.729	-.0003651	.0002553
GDP_Change	-.0135437	.006082	-2.23	0.026	-.0254641	-.0016232
LR	.0057316	.0032419	1.77	0.077	-.0006225	.0120857
LRR	-.0017585	.0020785	-0.85	0.398	-.0058322	.0023152

Instruments for differenced equation

GMM-type: L(2/.)NPL

Standard: D.banksize D.loan_Asset D.Growth_Loans D.Inflation

D.ExchangeRate D.GDP_Change D.LR D.LRR

Instruments for level equation

GMM-type: LD.NPL

Model II

```
. xtddpsys NPL banksize loan_Asset Ownership Growth_Loans L_Inflation L_RER GDP_Change LR LRR, lags(1) nocons
note: Ownership dropped from div() because of collinearity
```

```
System dynamic panel-data estimation      Number of obs      =          60
Group variable: Panel_id                  Number of groups    =           7
Time variable: Year

Obs per group:   min =           7
                  avg =   8.571429
                  max =           9

Number of instruments =      50           Wald chi2(10)       =      887.32
                                           Prob > chi2        =      0.0000
```

One-step results

NPL	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
NPL						
L1.	1.376198	.0807431	17.04	0.000	1.217944	1.534451
banksize	.0284402	.0138686	2.05	0.040	.0012583	.0556221
loan_Asset	.2098467	.0921239	2.28	0.023	.0292872	.3904063
Ownership	-.11706	.0451262	-2.59	0.009	-.2055058	-.0286142
Growth_Loans	-.0611381	.0243899	-2.51	0.012	-.1089415	-.0133346
L_Inflation	.0054275	.0032261	1.68	0.092	-.0008955	.0117505
L_RER	-.0004471	.0002799	-1.60	0.110	-.0009957	.0001014
GDP_Change	-.0121607	.0052116	-2.33	0.020	-.0223751	-.0019462
LR	.0002047	.0016205	0.13	0.899	-.0029715	.0033808
LRR	.0005654	.0025194	0.22	0.822	-.0043726	.0055034

Instruments for differenced equation

GMM-type: L(2/.)NPL

Standard: D.banksize D.loan_Asset D.Growth_Loans D.L_Inflation

D.L_RER D.GDP_Change D.LR D.LRR

Instruments for level equation

GMM-type: LD.NPL