DETERMINANTS OF NON-PERFORMING LOANS IN ETHIOPIAN COMMERCIAL BANKS

By

Dereje Abebe

Advisor: Abraham Gebregiorgis (Ass. Professor)

St. Mary's University College
Faculty of Business and Economics

A Thesis Submitted to Department of Accounting and Finance in Partial Fulfilment of the Requirement for the award of MBA in Accounting and Finance

May, 2021
Addis Ababa, Ethiopia

ST. MARY'S UNIVERSITY

MBA IN ACCOUNTING AND FINANCE

A Research on

DETERMINANTS OF NON-PERFORMING LOANS IN ETHIOPIAN COMMERCIAL BANKS

By
Dereje Abebe

Advisor: Abraham Gebregiorgis (Ass. Professor)

May, 2021

Addis Ababa, Ethiopia

ST. MARY'S UNIVERSITY

MBA IN ACCOUNTING AND FINANCE

DETERMINANTS OF NON-PERFORMING LOANS IN ETHIOPIAN COMMERCIAL BANKS

By
Dereje Abebe

Advisor: Abraham Gebregiorgis (Ass. Professor)

Approved by Board of Examiners

_____	_____	_____
Advisor	**Signature**	**Date**
_____	_____	_____
External Examiner	**Signature**	**Date**
_____	_____	_____
Internal Examiner	**Signature**	**Date**
_____	_____	_____
Chairman	**Signature**	**Date**

DECLARATION

I, Dereje Abebe Mekuria, the undersigned person declare that the thesis entitled "Determinants of Non-Performing Loans in Ethiopian Commercial Banks" is my original and submitted for the award of MBA in Accounting and Finance, St. Mary University at Addis Ababa and it hasn't been presented for the award of any other degree. Under this study, fellowship of other similar titles of any other university or institution of all sources of material used for the study has been appropriately acknowledged and notice.

Candidate	Signature	Date
Dereje Abebe	_____	_____

CERTIFICATION

This is to certify that Mr Dereje Abebe Mekuria has properly completed his research work entitled "Determinants of Non-Performing Loans in Ethiopian Commercial Banks" with my guidance through the time. In my suggestion, his task is appropriate to be submitted as a partial fulfillment requirement for the award of MBA in Accounting and Finance.

Research Advisor

Abraham Gebregiorgis

(Assistant Professor)

_____

Signature and Date

ACKNOWLEDGEMENTS

First of all, I would like to extend my first and most gratitude to almighty God for his love, grace and mercy, and for giving me the intellectual capability to accomplish this work.

Next, I would like to thank Abraham Gebregiorgis (Ass. Professor) for giving me the magnificent opportunity to effectively complete my MBA thesis under his supervision, it is truly an honor. Thank you for all the advice, ideas, moral support and patience in guiding me through this research project. Thank you for your enthusiasm for the study of financial management and its application in banks sector. I feel privileged for being advised by him.

Besides, I would like to thank my family particularly my mother Geredo Beriso, my sisters Hawi and Keneni and my wife Kulani Haile for their limitless support all the way through my life and successful educational triumph. I would like to extend heartfelt gratitude and special thanks to my beloved friends Getu and Buzayehu and all National Bank and Wegagen Bank staffs and classmates for their unlimited encouragement and moral support they have render to me.

TABLE OF CONTENT

LIST OF TABLE

LIST OF FIGURES

LIST OF ACRONYMS/ ABRIVATION

CAR	Capital Adequacy Ratio
GDP	Gross Domestic Product
NBE	National Bank of Ethiopia
NPLs	Non-Performing loans
OLS	Ordinary Least Square
ROA	Return on Asset
OER	Operating Efficiency Ratio
RMs	Executives and Relationship Managers
IMF	International Monetary Fund
SWM	Shareholders Wealth Maximization
CBE	Commercial Bank of Ethiopia
LR	Lending Rate
INF	Inflation Rate
EX	Exchange Rate

ABSTRACT

With the growth of an economy, the banking industry expands and the competitiveness becomes intense with the increased number of banks in the economy. Nevertheless, its non-payment also leads to incidence of huge loss on banks in particular and country in general. Therefore, this study aimed to examine the determinants of non-performing loans in commercial banks of Ethiopia based on panel data analysis on the time period from 2010 to 2019. The study targeted ten high incomes and profit performance of commercial banks. It fundamentally covered a panel data of Awash bank, Dashen bank, Abyssinia Bank, Cooperative Bank of Oromia, Nib International bank, Lion Bank, Oromia International Bank, Wegagen bank, Zemen Bank and United bank. This study utilized both descriptive and econometric analysis based on a panel data to examine the determinants of non-performing loans. The data was mainly analyzed by using multiple regression model. The finding of the analysis of NPLs shows a downward sloping of NPLs of commercial banks in Ethiopia over the time of study. This study found that inflation rate has a negative significant effect on NPLs, but, loan growth, lending rate and operational efficiency have a positive and significant effect on NPLs. Thus, NPL is an indicator of the health of the banking system within a country and hence the economic health of that country, both in the short term and in the long term due to its implications for investment. These results have significant implications for banking stability in Ethiopia, and the role of macroeconomic policies in this regard. Hence, the study suggests that the credit policies of the commercial banks should be integrated with the profitability objectives of the commercial banks and sound credit culture should be introduced.

Key Words: Banks, Commercial, Non-Performing Loans

CHAPTER ONE
INTRODUCTION

This chapter provides general information about the research topic in order to give some clues to the readers about the study area. The chapter begins with the background of the study then followed by the statement of problems, research questions, and overall objectives of the study, significance and scope of the study, limitation of the study and finally operational definitions of the study, and organization of the paper.

1.1 Background of the Study

The banking industry expands and the competitiveness becomes intense with the increased number of banks in the economy with the growth of an economy (Changjun, Probir and Niluthpaul, 2019).The principal aim of any business is to make profits and that is why any asset created in the conduction of business should generate income for their business. For that reasons, banks give due consideration on the management of loans because loan is normally the main assets and vital source of revenue for the commercial banks (Daniel and Wondera, 2013).

Nonperforming loans adversely affect the performance of the bank when these loans fall in to it. According to Hennie & Bratanovic (2009) NPLs refer to as assets not generating income when principal or interest are due and left unpaid for 90 days or more. In consequence, as Scott & Timothy (2009) assured nonperforming loans had an adverse effect on the banking sectors' survival. Thus, their cause for NPLs should be given due consideration. Its grounds are different in different countries that might be due to situational factors such as the level of economic condition in which the banking sectors are operating and bank level factors. As a result, this issue attracted different researcher's interest in different countries such as Daniel and Wondera (2013) and Ahmed 2006). However, credit risk is considered as the most harmful as it twisted nonperforming loans (hereafter, NPLs) that would impaired the bank profitability and its long term operation significantly (Ahmed 2006). This asset generates huge interest income for banks.

Depressed economic conditions, high real interest rate, inflation, lenient terms of credit, credit orientation, high credit growth, and risk appetite, and poor monitoring among others are provided theoretical explanation (Bercoff,*et al*., 2000).However, this research attempted

to examine the determinants of NPLs in Ethiopian commercial banks by including both bank specific and macro-economic variables.

1.2 Statement of the Problem

It is serious issue that banks should manage their loans to be successful and sustain in their businesses. However, several countries are suffering from non-performing loans (Petersson and Wadman, 2004). It will increase the bank's profitability and sustainability in the future if the loan is well managed, though, it will be a major threat to their survival if failed to do so (MacDonald, 2016).Banks and their supervisors should be able to draw useful lessons from past experiences since exposure to credit risk continues to be the leading source of problems in banks world-wide. For most customers' bank credit is the primary source of available financing. For banks, good loans are the most profitable assets. As with any investment, extending loans to businesses and individuals involves taking risks (Scott & Timothy, 2006).

Previous studies such as Scott & Timothy (2009) focused on factors that can lead to loan defaults in relation to economic events, Frederic(2007) argued financial institutions shows how to manage credit risk including screening and monitoring, establishment of long-term customer relationships, loan commitments and compensating balance requirements and credit rationing. Fofack (2005) stated that the leading causes of these loans remain unknown for most countries especially in Sub-Saharan Africa regardless of the implications of NPLs on the smooth functioning of banks, for anticipating banking and financial crises. This is due to the fact that most studies often applied NPLs as an explanatory variable to other banking outcomes such as performance and failures. As a result, Boudriga (2009) stated that there appears to be a very limited number of studies investigated NPLs as an explanatory variable. Those limited studies were also conducted in developed countries and banks in developing economies have so far established to unacceptable consideration in the literature (Swamy, 2012).

On the other hand, since the majority of bank assets are held by loans, unless the determinants of NPLs are pictured to enhance the quality of the asset, it is tough for the survival of banking sectors. Supporting this (NPL), various studies are conducted in Ethiopia such as Negera (2012) studied the determinants of Non-Performing Loans in the case of Ethiopian commercial Banks; Beju (2014) and Fekadu (2018) in the case of Ethiopian Banks and Gudeta (2018) in project financing in the case of development bank of Ethiopia. Fekadu(2018) and Gudeta (2018) ignored macro-economic variables and included industry

perspective variables to identify the determinants of nonperforming loan in Ethiopia. Whereas Negera (2012), Beju (2014), and Gezu (2014) included a macro-economic variables and they found unrelated results. For example, high real interest rate is positively related to NPLs as per Fofack (2005) and Jimenez and Saurina (2005) and the level of exchange rate can also affect borrowers' debt servicing capacity through different channels and its impact on NPL was negative.

This study was interested in to apply the ratio of non-performing loan to total loans (NPL/TL) that was used to represent the credit risk management. The reason for using non-performing loans as an indicator of credit risk management in the model is that the variable carries characteristics related to credit risk management and its frequency of occurrence in previous studies. Banks' return on asset (ROA) ratio variable is used as an indicator of profitability. The sample of the study covers the period 2010 and 2019 and consists of 10 Commercial banks operating in the banking system.

As per NBE report 2017/18, the total resource mobilized by commercial banks was 108.8 billion for the period 2016/17 and 139.9 billion for the period 2017/18 in the context of Ethiopia. Out of total resources mobilized in 2016/17, the outstanding loan balance was shown 134.6 billion for both years. Moreover, the number of NPLs of commercial banks in Ethiopia was increased year after year as per published data of NBE (2017). Further, by having a lot of literature on the determinants of NPLs of banks globally, it is significant to examine in the Ethiopian commercial bank sector context. This study is envisaged to examine the main determinants of non-performing loans in the Ethiopian commercial banking sector.

1.3 Research Questions

The study incorporated the following research questions.

- What is the practice of NPLs seemed in commercial banks of Ethiopia?
- How Bank specific factors does affect NPLs of the banking sector.
- How macroeconomic determinants does affect NPLs of the banking sector.

1.4 Objective of the Study

1.4.1 General Objective

The main objective of this study is to examine the determinants of non-performing loans in commercial banks of Ethiopia.

1.4.2 Specific Objectives

In line with the above general objective of the study, the following specific objectives are set for the study.

- To assess the practices of NPLs in commercial banks of Ethiopia
- To examine the effect of Bank specific determinants on NPLs of the banking sector.
- To investigate the effect of macroeconomic determinants on NPLs of the banking sector.

1.5 Significance of the Study

The study finding which deals with the determinants of nonperforming loan of commercial bank in Ethiopia is beneficial for different stakeholders such as commercial banks and National bank of Ethiopia, managers, staffs, executives, investors, investment consultants, researcher and directive input in developing regulatory standards regarding the lending policies of commercial banks in Ethiopia.

The study benefits commercial banks on monitoring and controlling their non-performing loans. It also helps to overview their financial performance through loan provisions. Managers and staffs will have a chance to control operational losses as it affects profitability and their future benefits in the bank. Executives and relationship managers (RMs) as well as credit officers will find the document relevant in the management of loans. This study will also help investment consultants to be in a position to advise investment decisions based on not only the financial losses position but also by considering the inherent non-performing loans as they also impacts on the profitability of the bank.

The study results will provide a useful reference document to loan policy makers and national banks. The study will be helpful to the investors in that they can identify level of non-performing loans equally affects their return on investment and hence not to ignore the NPLs element when making their investment decisions. The study will provide background information to other researchers and scholars who would like to investigate more on factors contributing to loans defaulting. Generally, the private and public bank will benefit from this

research to understand and mitigate the root cause of credit risk by identifying NPL and to take actions appropriately.

1.6 The Scope of the Study

The scope of the study addressed the geographical and time, methodological and conceptual scopes.

1.6.1 Methodological Scope

The study predominantly examined the cause and effect relationships between non-performance loan and its potential determinants. The sample of the banks took from the total of 17 commercial banks found in Ethiopia based on their annual revenue and capital.

1.6.2 Geographical and Time Scope

The secondary data was used 10 years data for the period of 2010 to 2019 GC; it basically covered a panel data of Awash bank, Dashen bank, Abyssinia Bank, Cooperative Bank of Oromia, Nib International bank, Lion Bank, Oromia International Bank, Wegagen bank,Zemen Bank and United bank.

1.6.3 Theoretical Scope

The widely known factors to explain the evolution of NPLs over time have been included here. One group focuses on external events such as the overall macroeconomic conditions, which are likely to affect the borrowers' capacity to repay their loans, while the second group, which looks more at the variability of NPLs across banks, attributes the level of non-performing loans to bank specific factors. Issues related to depositors that delegate monitoring of their funds to banks and risk that increase when banks make adverse loan selection are viewed in this study. Therefore inefficient monitoring by banking institutions may explain reasons for high loan defaults. Thus, the study included bank specific factors in terms of capital adequacy, loan growth, operational efficiency and income diversification and macro factors in terms of exchange rate, economic growth as well as lending and inflation rate that affect non-performing loans in commercial bank of Ethiopia.

1.7 Limitation of the Study

This study has various shortcomings. Out of which, the main shortcomings were collecting very recent data of about 10 years data only from ten commercial banks. Accordingly, the

result of this study can't necessarily represent for all Ethiopian commercial banks. In addition, this study ignored customer related NPLs due to the fact that customer failure to disclose vital information during the application process leads to occurrence of non-performing loans. Thus, this study overlooked diversion of funds by the borrower from the intended purpose, death of the borrower, loss of a job, age and gender among other factors contributes to loan.

1.8 The Organization of the Study

This rest of the study organizes into four chapters. Chapter two includes theoretical literature reviews that are related to theories and concepts of non-performing loan and empirical findings. Afterward, chapter three contains method of the study containing description of the study area, research methods and approach, sampling and data analysis methods including study model and ethical consideration. Chapter four portrays data presentation, interpretation and discussion. Lastly, conclusions and recommendations of the study are included in chapter five.

CHAPTER TWO

REVIEW OF RELATED LITERATURES

2.1 Introduction

This chapter provides a wider understanding of the concepts and variables of this study from previous research. The content of this chapter focuses on literature review on relevance of non-performing loan, related theories, empirical studies and the theoretical framework guiding this study.

2.2 Theoretical Literature Review

2.2.1 Concepts and Definitions

A non-performing loan is any loan in which interest and principal payments are more than 90 days overdue; or more than 90 days' worth of interest has been refinanced as of International Monetary Fund (IMF) mentioned by Agresti, Baudino, & Poloni (2008). In general, a non-performing loan is a loan that is in default or close to being in default. A loan is said to be in default when it fails to make the repayments of principal and /or interest specified in its loan contract and has no intention of repaying in the future (Martha, 2017).

It is actually to indicate a loan that is non-performing when payments of interest and principal are past due by 90 days or more, or at least 90 days of interest payments have been capitalized, refinanced or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons to doubt that payments will be made in full. Non-performing loans are loans, especially mortgages that organizations lend to borrowers but do not capitalize on (Kirui, 2014). It is associated to the borrower cannot pay the loan back in full, or even enough for the bank to make a profit. Banks can either workout a new payment option, or foreclose on what collateral the borrower has provided when this happens.

Asari, et al., (2011) defined non-performing loan as defaulted loan in which banks are unable to profit from them. Mostly, loan falls due if no interest has been paid within 90 days, however, different countries may have different experience in this regard. The long run relationship clearly revealed that interest rate has a significant impact on non-performing loans. Inversely, there exist insignificant relationship between inflation rate and non-performing loans.

Likewise, Martha (2017) viewed loans that are regarded as default when they are placed on non-accrual status or when the terms are significantly altered in a restructuring. Non-accrual

means that banks deduct all interest on the loans that was recorded but not actually collected. Banks have traditionally stopped accruing interest when debt payments were more than 90 days past due. However, the interpretation of when loans qualified as past due varied widely. Many banks did not place loans on non-accrual if they were brought under 90 days past due by the end of the reporting period. Moreover, non-performing loans include loans and advances; that is not earning income; on which full payment can no longer be expected and payments are more than 90 days delinquent; and total credits to the accounts are insufficient to cover interest charges over a three month period; or the maturity date has passed and impaired loans and they are considered as these types of loans as "problem loans". As a consequence, these explanations are used interchangeably throughout the study. Loans that payment have not been made.

For Fofack (2005), the term ''bad loans'' is used interchangeably with nonperforming and commonly are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract are considered as nonperforming loans. For the reason, the description of performing loans follows that any loan facility that is not up to date in terms of payment of both principal and interest.

In addition, Bloem and Gorter (2001) described bad loans number of days overdue scheduled payments while other countries rely on qualitative norms like information about the customer's financial status and management judgment about future payments. Fofack (2005) considers non-performing loans as loans which for a relatively long period of time do not generate income, that is the principal and or interest on these loans have been left unpaid for at least ninety days. Overall, a non-performing loan may also refer to one that is not earning income and full payment of principal and interest is no longer anticipated, principal or interest is ninety days or more delinquent or the maturity date has passed and payment in full has not been made.

2.2.2 Related Theories

This presents review of some important theories that explains the effects of bank and borrower's specific factors on non-performing loans. The theoretical reviews covers the following; principal agent problem, adverse selection theory, moral hazard theory and information asymmetry problem.

2.2.2.1 The Principal -Agent Problem

Viswanadham & Nahid (2015) stated that the idea underlying this model is that organization decision – taking authority lies in the hands of managers. Shareholders as owners of a company are the principals and managers are their agents. The agency theory is obtaining a lot of acceptance in explanation of the financial performance of organizations. In actual fact, the approaches can be seen as complementary in their uses of similar concepts under different assumptions. It explains the association that exists between the management of an organization and the owners of the organization who are usually the people holding stocks for the organization. It suggests that here is an agency conflict. The management of an organization is usually reflected as an agent who has been contracted by the stockholders to work towards enhancing the stockholder value through good financial performance. The management is therefore anticipated to act in the best benefits of the owners and enhance the financial performance of the organization (Swamy, 2012).

There is a principal – agent relationship between shareholders and managers. In theory managers should act in the best interests of shareholders, that is, their actions and decisions should lead to shareholders wealth maximization (SWM). But in practice, managers may not necessarily act in the best interest of shareholders and they may pursue their own personal goals. This problem arises because managers are motivated by self-interest. The root causes of this self – interest is jealousy. Managers work hard to make sure that companies become successful and make huge profit. But due to managers hard work only the shareholders become rich and not managers. However, it recommends that the mangers who are agents may be involved in activities that are aimed at serving personal interest at the expense of the owners of the organization. The theory suggests that when this happens, the financial performance of the organization may easily suffer. Stockholders therefore can employ a number of strategies to ensure the management acts in the interest of the organization (Daniel and Wondera, 2013).

It suggests that management can be rewarded inimically in order to motivate them to work for the interests of the company. The owners can also issue threats such as hostile takeover to force management of perform the required duties. As well, the principal may also incur agency costs such as the audit fee to monitor the performance of the management. Overall, this theory is understood to be in line with the study as it suggests that the mangers who are agents may be involved in activities that are aimed at serving personal interest at the expense of the owners of the organization.

2.2.2.2 Information Asymmetry Theory

Ekumah and Essel (2003) stated that it is a problem in financial markets such as borrowing and lending. In these markets the borrower has much better information about his financial state than the lender. This is a theory relevant for situation where there is imperfect knowledge. In particular, it occurs where one party has different information to another. Asymmetric information is a problem in financial market such as borrowing and lending. In this market the borrower has much better information about his financial stat than the lender. This theory of information asymmetric tells us that it may be difficult to distinguish good from bad borrowers, which may result into adverse selection and moral hazards problems. The theory explains that in the market, the party that possess more information on a specific item to be transacted is in a position to negotiate optimal term for the transaction than the other party (in this case, the lender) (Asari, *et al*, 2011). The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning the transaction. Adverse selection and moral hazards have led to significant accumulation of Non- Performing loan in banks (Macharia 2012). Loan applicants normally have full information about their financial status and their ability to repay loans. However, when applying for loans, they may fail to make full disclosures to the bank so that they can access more financing than they could possibly qualify. This brings about information asymmetry and moral hazard.

For the purpose of this study, this theory is relevant in situations where there is imperfect knowledge. It occurs in situation whereby one party has different information from another. It is related to the realization of credit information sharing in the banking sector will not only bring good news to the banks and the banking sector but also to the borrowers and the economy as a whole. This national success stands to significantly benefit the economy and is bound to stir changes in the way credit is managed in the industry in the sense that lenders will be in a position to access comprehensive credit data and will be able to price risk accordingly for both good and bad borrowers hence reducing their bad debt portfolios. In conclusion, information asymmetry theory is seen to be in line with the study as tells us that it may be difficult to distinguish good from bad borrowers which may result into adverse selection and moral hazards problems hence the need to the factors resulting to non-performing loans and its influence on performance.

2.2.2.3 Adverse Selection Theory

Martha (2017) shows that information sharing reduces adverse selection by improving banks information on credit applicants. The theory of asymmetric information states that it may be difficult to distinguish creditworthy from bad borrowers, which may result into adverse selection and moral hazards problems. The theory explains that in the market, the party that possesses more information on a specific item to be transacted (in this case the borrower) is in a position to negotiate optimal terms for the transaction than the other party (in this case, the lender). The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning the transaction. Adverse selection and moral hazards have led to significant accumulation of non-performing loans in banks.

This theory is related to this study and its helps this study in relation to providing appropriate information about borrowers, loan purpose and others and their adverse consequences. The idea underlying this model is that borrowers do not always provide the entire information required even if they do not all information will be correct. In general, borrowers have private (internal) information about their projects that are more accurate than the information possessed by lenders. In consequence, a lender could still be unclear about the default risk of a loan contract and has difficulties in assessing and controlling the nature and behaviour of the borrower. The adverse selection problem happens if lenders attempt to safeguard themselves against default risk by setting their contractual terms in a manner appropriate for the expected average quality of their loan applicants.

2.2.2.4 Moral Hazard Theory

Alary & Goller (2001) stated about the moral hazard problem implies that a borrower has the incentive to default unless there are consequences for his or her future applications for credit. This result from the difficulty lenders have in assessing the level of wealth borrowers will have accumulated by the date on which the debt must be repaid, and not at the moment of application. If lenders cannot assess the borrowers' wealth, the latter will be tempted to default on the borrowing. Forestalling this, lenders will increase rates, leading eventually to the breakdown of the market. This study signifies by this theory as it released borrower has the enticement to non-payment loans and its consequences for their future applications for credit. In addition, this theory proposes that borrowers who have internal information take hidden actions that increase their default probability. Consequently, moral hazard arises as a

result of changes in the two parties' incentives after entering into a contract such that the riskiness of the contract is altered.

Loans that establish a large proportion of the assets in most banks' portfolios are relatively illiquid and exhibit the highest credit risk (Koch and MacDonald, 2000). The theory of asymmetric information argues that it may be impossible to distinguish good borrowers from bad borrowers that may result in adverse selection and moral hazards problems. Adverse selection and moral hazards have led to substantial accumulation of non-performing accounts in banks (Fofack, 2005). The very existence of banks is frequently interpreted in terms of its superior ability to overcome three basic problems of information asymmetry, namely ex ante, interim and ex post. The management of credit risk in banking industry follows the process of risk identification, measurement, assessment, monitoring and control. It includes identification of potential risk factors, estimate their consequences, monitor activities exposed to the identified risk factors and put in place control measures to prevent or reduce the undesirable effects. This process is useful within the strategic and operational framework of the bank.

2.2.3 Consequence of Non-Performing Loans

Capital formation is fundamentally the function of thrift organizations, like banks and other financial institutions, to motivate the households to save from their earnings. These savings should be utilized in economic processes. Economists have recognized at least three all-encompassing reasons for saving including life cycle saving, saving to meet long -term objectives such as retirement, college attendance, or for the purposes of a home; precautionary saving: savings for protecting against unexpected setbacks such as the loss of a job or a medical emergency; bequest saving: saving done for the purpose of leaving an inheritance (Viswanadham & Nahid, 2015).

There is another form of saving investment that basically comes from corporation along with household savings. Savings can be held in different forms as: financial assets, stores of value, as well as informal financial assets such as savings in informal financial institutions. Getting the small savings from the households, financial institutions form large capital so that it can be invested in the development of various sectors like industry, business, development and others. When saving gets invested rightly it works for the economic development. But if money is wasted wrongly, then it does not work for economic development. Consequently, investments have both positive and negative consequences (Islam, Shil, and Mannan, 2005).

Both these reinvestments and consumption functions create a positive impact on the economy, because economy gets some value added jobs to do. Seemingly, it may seem that it's good so far as economic development is concerned, as the money remains invested in the economic process (Chengeta, 2007). Then the loss will be a total loss both to the investing authority and to the society as well. Thus it will lead the economy to be stagnant for the time being, and if not checked, forever. It will also accelerate the path of being and remaining poor for the time being. Seven predominant models of non-performing loans focus on different causes.

Viswanadham & Nahid (2015) listed risk premium, principal agent problem, adverse selection, moral hazard, patronizing effect, Die another day effect, Petroski effect. Regarding risk premium depends on a person's judgment. Risk and expected return move in tandem; the greater the risk, the greater the expected return. An investor assuming risk from his/her investment requires a risk premium above the risk –free rate. Risk –free rate is a compensation for time and risk premium for risk. The higher the risk of an action, the higher will be the risk of premium leading to higher required return on that action. Second, they stated the principal -agent problem that underlying this model is that organization decision –taking authority lies in the hands of managers. Shareholders as owners of a company are the principals and managers are their agents. Thus there is a principal –agent relationship between shareholders and managers. This problem arises because managers are motivated by self-interest. The root cause of this self–interest is jealousy. Next, adverse selection that primary it addresses the borrowers does not always provide all the information required. Even if they do not all information will be correct (Changeta, 2007). Borrowers mostly have private (internal) information about their projects that are more accurate than the information possessed by lenders. In consequence, a lender could still be uncertain about the default risk of a loan contract and has difficulties in assessing and controlling the nature and behaviour of the borrower.

On other hand, patronizing effect suggests that there is a possibility lenders are unwilling to collect. Reluctance may arise from several factors such as poor policies, procedures, structure, rewards, physical setting, etc. Such internal problems weaken management and motivate borrowers not to repay the loan, because they are confident that no serious action will be taken against them (Islam, *et al*., 2005). Moral Hazard proposes that borrowers who have internal information take hidden actions that increase their default probability.

Therefore, moral hazard arises as a result of changes in the two parties incentives after entering into a contract such that the riskiness of the contract is altered (Chengeta, 2007).

Viswanadham & Nahid (2015) also stated Die another day effect that essentially proposes as people give more importance on current consumption in our society. Consequently, they do not mind spending the borrowed fund for consumption, if they are not strictly followed up. People hold a very short vision of thinking for today leading to sufferings tomorrow. So a significant portion of capital goes to unproductive sector that may be termed as die another day effect. Finally, petroski effect captivated with risk that increases and is always to some degree unknown as the low risk situations become saturated. The idea underlying this model is that when credit managers make different types of loans, for example business loans or personal loans, they expect the same characteristics to affect other types of loans. This kind of expectation increases risk (Islam, et al, 2005).

Overall, Non-performing loans (NPLs) are a threat to sustainable development for developing countries. NPLs are considered as the major indicator of the financial stability of the banking sector. Banks usually take greater risks to increase their market shares in developing economies. With the chance of higher profit, risk increases, which ultimately results in non-performing loans? NPLs have become a matter of concern for all countries in the world, and as a prerequisite to reinstate the functionality of financial markets; NPLs and its determinants should be addressed carefully. Ex-post credit risk as an element of non-performing loans is one of the key features of the banking system and economic downturn (Changjun, *et al*., 2019).

2.3 Non-Performing Loans and Its Determinants

In recent years the global financial crisis and the subsequent recession in many developed countries have increased households' and firm defaults, causing significant losses for banks Wondimagegnehu (2012). In this study the non-performing loans will be measured based on banks internal factors and external related factors.

2.3.1 Non-Performing Loan Measurement

These internal factors affect lending behaviour of the bank. Laxmi,Ram,and Shouyang (2018) mentioned Berger and DeYoung (1997) who designated the relationship between bank-specific variables and problem loans using several hypotheses. They used inefficiency to describe "poor management", and capital adequacy to represent "moral hazard". They focused on the relationship between capital adequacy, inefficiency, and problem loans to

formulate possible hypotheses, namely “bad luck”, “skimping”, “moral hazard”, and “bad management” hypotheses. For their analyses, they took a sample of US banks from 1985 to 1994 and concluded that the cost efficiency plays an important role in raising problem loans. In addition, the determinants of non-performing loans in a Vietnamese banking system using an ordinary least square estimation for the period 2009-2012 was examined by Thi Minh Hue (2015). Twenty commercial banks were taken as the study sample. The study found that the growth rate of loans, the total assets of banks, last year’s NPLs, and a dummy variable increased NPLs in the recent years. Kirui (2014) analysed the effect of non-performing loanson profitability of commercial banks in Kenya during 2004-2013. Employing a multi-regression model, they found that NPLs reduced the profitability (return on assets) of banking sectors.

Laxmi,*et al.,* (2018) cited İslamoğlu (2015) who examined the effect of macroeconomic variables (commercial loan interest rate and public debt/GDP ratios) on non-performing loans with quarterly data of 13 banks in Borsa, Istanbul from 2002-2013 using VAR analysis. The study revealed that the decrease in interest rate causes an excessive loan growth in the long run and increases non-performing loans. The study also found that an increased public debt causes an increase in non-performing loans. It effects borrower’s obligation overhauling capacity through diverse channels and its effect on NPL can be positive or negative. It may be related to deterioration of the trade rate can have blended suggestions on borrower’s obligation overhauling capacity.

Tanasković and Jandrić (2015) established to the range of non-performing loan is influenced by both a systematic risk(macroeconomic factors) and an unsystematic risk (bank-specific factors).Laxmi,*et al.,* (2018) cited Makri, Tsagkanos, and Bellas (2014) identified the factors affecting NPL in Euro area’s banking system using aggregate panel data of 14 countries over the period2000-2008. Using GMM estimation, they found a strong positive effect ofthe public debt and the unemployment rate on NPLs and a negative influence of the capital ratio, the return on equity, and the GDP growth on credit risk. Though, the return on assets ratio, the loan to deposit ratio, the inflation rate, and the budget deficit were found to have no effect on NPLs.

Similarly, Ekanayake and Azeez (2015) studied thenine licensed commercial banks for the period 1999-2012 to determine the factor affecting non-performing loans in Sri Lanka’s banking system. The level of NPLs had a positive correlation with the size of banks, the efficiency, the loan to assets ratio, and the prime lending rate during the study period.

However, the credit growth, the GDP growth rate, and the inflation rate were associated with a low-level of non-performing loans.

On other hand, Dimitrios, Helen, and Mike (2016) identified the main determinants of non-performing loans in the euro-area banking system for the period 1990Q1-2015Q2 using GMM estimations. The study included the micro and macro variables, such as the return on assets, the return on equity, the loan to deposit ratio, the government debt (as % of GDP), the income tax, the output gap, the inflation rate, the unemployment rate, and the GDP growth rate.

2.3.2 Microeconomic Determinant Factors

2.3.2.1 Capital Adequacy

Ahmed and Bashir (2013) found capital adequacy ratio is positively significant justifying that highly capitalized banks are not under regulatory pressures to reduce their credit risk and take more risks. Similarly, Shingjergji (2013) conducted study on the "impact of bank specific factors on NPLs in Albanian. In the study, capital adequacy ratio, loan to asset ratio, net interest margin, and return on equity were considered as a determinant factors of NPLs. The study utilized simple regression model for the panel data from 2002 to 2012 period and found as capital adequacy ratio has negative but insignificant whereas ROE and loan to asset ratio has negative significant effect on NPLs. Frederic (2007) mentioned Cebenoyan et al., (2004) further confirm that in recent years, risk management at banks has come under increasing scrutiny. As a result banks and bank consultants have attempted to sell sophisticated credit risk management systems that can account for borrower risk, and possibly more significantly, the risk reducing benefits of diversification across borrowers in a large portfolio. Regulators have even begun to consider using banks' internal credit models to devise capital adequacy standards.

- **H1: Capital Adequacy has a significantly negative effect on Nonperforming loans (NPLs) of banks.**

2.3.2.2 Loan Growth

A bank should concentrate lending in fields where it possesses a demonstrated expertise, and a bank should not lend outside its trade area. Banks that emphasize loan growth do so at the expense of credit quality. Loan officers often meet growth targets by lending to increasingly marginal borrowers, lending for purposes in which the officer has limited expertise, and

lending in geographic areas where the bank has no permanent market presence (Natnael, 2017). Kirui (2014) cited Addae-Korankye (2014) bemoaned that many of the agonies and frustrations of slow and distressed credits can be avoided by good loan supervision. As the loan is given out, continuous supervision reduces credit risk, through effective monitoring and thereby improves bank loan growth. Nevertheless, if his credit marks come in lower than expected, the credit officer can suggest ways to improve them, which could possibly reduce lending costs. Credit risk is the furthermost critical risk and hence must be well managed, since it could greatly affect the performance of the bank. Consequently, loan growth has a relation with nonperformance loans. .

- **H2: Loan growth has a significantly positive effect on Nonperforming loans (NPLs) of banks.**

2.3.2.3 Operational Efficiency

Credit provision encompasses every activity involved in lending including sales, customer selection and screening, the application and approval process, repayment monitoring, and delinquency and portfolio management. It is also linked with the institutional structure pertaining to the credit process. Quality of credit provision is one of the most determinant factors for the efficiency, impact and profitability of the institutions. Thus getting the credit provision and product mix right is therefore one of the most demanding as well as rewarding challenges of every financial institutions (banks) (Nkusu, 2011).Operating efficiency is proxies by operating expense ratio which is adjusted operating expense divided by adjusted average gross loan portfolio. Samuel (2015) found that the coefficient of the ratio of cost to income, which provides information on the efficiency of the company regarding expenses relative to income, was negative and statistically significant at 1% significance level (p-value=0.0000) which is in line with a prior expectation and makes the variable an important determinant of Ethiopian banks profitability. This showed that minimizing commercial banks costs in Ethiopia would certainly improve the banks performance in general and profitability in particular. Consequently, the expected sign of operating efficiency is determinate so that the formulated hypothesis as per the literatures available is:

- **H3: Operational efficiency has a significantly positive effect on Nonperforming loans (NPLs) of banks.**

2.3.2.4 Income Diversification

Changjun,*et al*,. (2019) stated that a good number of industry-specific determinants impacting NPLs, i.e., profitability expressed as return on asset (ROA) or return on equity (ROE), capital size expressed as the capital adequacy ratio (CAR), and performance as managerial efficiency. ROE and ROA have been used as variables to explain managerial efficiency. Weak credit monitoring and poor control over operating expenses led to decreased cost efficiency, which supports the bad management theorem. The bad management theory is also stated that while applying NPL as technical efficiency. An increase in income negatively impacts NPLs. Cost efficiency also impacts NPLs. Poor management and moral hazards have been positively associated with variations in NPLs. Managerial efficiency as a proxy to ROA has negative connections with NPLs

- **H4: Income diversification has a significantly negative effect on Nonperforming loans (NPLs) of banks.**

2.3.3 Macro-economic Factors

Ibish, Fisnik, Valdrin, Jonathan and Simon (2018) aimed to show the influence, in transition countries, of macroeconomic factors on the level of these loans. Specifically, factors such as Gross Domestic Product (GDP growth), inflation, and unemployment and export growth were considered, using a variety of econometric models and specifications to ensure robustness, including Fixed and Random Effects Models and Arellano-Bond Dynamic Panel estimation. They used data from the World Bank and International Monetary Fund for a sample of transition countries over the period 2006 and 2016. Findings show that GDP growth and inflation are both negatively and significantly correlated with the level of NPLs, while unemployment is positively-related to NPLs. These results have important implications for banking stability within transition countries, and the role of macroeconomic policies in this regard.

2.3.3.1 Gross Domestic Product (GDP)

Economic growth is represented in this study by Gross Domestic Product Growth can be defined as a the change total market value of goods or services produced by the economy of a certain country, as well as total income earned by people living in that country. Annual GDP growth will implicitly assure that bank lending would function effectively. High GDP growth implies that the economy is performing well, and incomes of its citizens are increasing. Growing revenues demonstrate that loans will be paid (Anjom and Karim, 2015). Moreover,

Hanifan, Fajar and Umanto, (2017) reveal that the previous period of NPL, GDP growth has a significantly negative impact on NPL. On other hand, Samuel (2015) observed that real GDP has highly statistical significant and positive impact on ROA at 10% significance level (P-value=0.0744). These results about GDP support the argument of the positive association between economic growth and the financial sector performance. This show as the stimulated Ethiopian economy over the study period creates a new and potential demand for financial services.

- **H5: Real GDP growth has a significantly negative effect on Nonperforming loans (NPLs) of banks.**

2.3.3.2 Inflation Rate

Inflation rate is an indicator of price stability and has a negative relation to the level of problem loans. This is due to the fact that, during inflationary periods the real value of payments that borrower has to settle their obligations to credit institutions falls (Kurumi and Bushpepa, 2017). However, Anjom and Karim (2015) found that there is a negative relationship with inflation, public debt as a percentage of GDP, return on equity, return on assets, total loan to total asset ratio, total loan to total deposit ratio and a non-interest income ratio. Moreover, Hanifan, *et al*. (2017) found that the previous period of NPL, GDP growth and inflation rate, have a significantly negative impact on NPL and that the Operations Expenses to Operations Income ratio (BOPO) and the Return on Equity (ROE) have a significantly positive relationship with NPL. Nkusu, (2011) contended that inflation can affects the borrowers loan payment capacity negatively or positively, higher inflation can increase the loan payment capacity of borrower by reducing the real value of outstanding debt; moreover increased inflation can also deteriorate the loan payment capacity of the borrowers by reducing the real income when salaries are sticky. So according to literature relationship between inflation and nonperforming loans can be positive or negative depending on the economy of operations.

- **H_6: Inflation rate (INF) has significantly negative relation on Nonperforming loans (NPLs) banks. .**

2.3.3.3 Exchange Rate

It can progress the competitiveness of export-oriented firms. Export-oriented firms can rule the worldwide showcase at lower cost (since their production fetched is secured in household

money which has lower esteem than foreign currency and their income is collected in foreign cash which has higher esteem as compared to the residential cash as long as the esteem of household money deteriorated (lower). Subsequently, devaluation of trade rate can move forward the debt-servicing capacity of export-oriented borrowers. Instead, it can unfavourably influence the debt-servicing capacity of borrowers who borrow in outside cash (import-oriented firms) (Nkusu, 2011). Exchange rates, interest rates and inflation are other macroeconomic factors that impact the quality of the bank's activities. Exchange rate fluctuations may have a negative impact on the quality of assets, especially in countries with a large amount of foreign currency loans. The same with interest rate increases, particularly in case of loans with flexible interest rate (Anjom and Karim, 2015).

- **H7: The exchange rate has a significantly negative effect on Nonperforming loans (NPLs) of banks.**

2.3.3.4 Lending Rate

Ahmed and Bashir (2013) found negative effect of lending rate on NPLs. Their justification for negative association between lending rate and NPLs implies that as lending rate increase, individuals with funds starts saving with the banks to earn on their funds but investors with the profitable projects feel reluctant to borrow and invest. Besides, existing borrowers pay back their loans to keep their credit rating good as to get loans in the future at discount rates. Ranjan and Chandra (2003) analyze the determinants of NPLs of commercial banks' in Indian in 2002. The objective of the study was to evaluate how NPLs influenced by financial and economic factors and macroeconomic shocks. In the study, they utilized panel regression model and found that lending rate also have positive impact on the NPLs justifying that the expectation of higher interest rate induced the changes in cost conditions to fuel and further increase in NPLs. Similarly, Joseph (2011) who conducted study on the title of effects of interest rate spread on the level of non-performing assets of commercial banks in Kenya was considered interest rate spread/cost of loan as independent and NPLs ratio as dependent variables. The study indicated that cost of loan/lending rate has a positive significant effect on the occurrences of NPLs.In the same way, Kurumi and Bushpupa (2017) reveal significant linkages of interest rates, remittances and the unemployment rate with NPLs. Also, in another empirical analysis of Bangladesh's banking system NPLs,

- **H8: Lending Rate has a significantly positive effect on Nonperforming loans (NPLs) of banks.**

2.4 Summary and Research Gap

The sharp rise in non-performing loans (NPLs) in the last decade has caught the attention of many scholars around the globe. This may be related to the problem loans that have generated considerable academic and policy attention in recent years. Problem loans, referred to as non-performing loans (NPL), are loans which are not paid in the structured time period as set in the contract between the borrower and the bank.

Several researchers have done many research studies in the study area (determinants of NPLs) and they mainly involved in macroeconomic determinants of NPLs. Ibish, *et al*., (2018) aimed to show the influence, in transition countries, of macroeconomic factors on the level of these loans, Bushpupa (2017) on interest rates, remittances and the unemployment rate with NPLs. Anjom and Karim (2015) inflation in relation to public debt, GDP, return on equity, return on assets, total loan to total asset ratio and Hanifan (2017) in Stock Exchange. Others studies focused on one specific bank; Marth (2017) identified the major factors affecting non-performing loans of KCB Bank Kenya Limited and Natnael (2017) similarly examined the factors affecting non-performing loans in Dashen bank.

Other studies used assessed the NPLs issues based on employees and managers' opinion using a qualitative research design in their methodology aspects. For example, Meseret (2018) aimed to examine the factors affecting non-performing loans in Dashen bank applied perception study using a quantitative research design. These studies focused on one bank or used perception studies and ignored micro and macroeconomic determinants of NPL in commercial banks. The finding indicates that NPLs are varied as sometime resulted as insignificant other times highly dependent on macroeconomic factors. Therefore, the essence of this study is to fill the knowledge gap by assessing the relationship between bank specific factors in terms of loan growth, operational efficiency, capital adequacy and income diversification and macro factors in terms of exchange rate, economic growth, lending rate and inflation rate affect non-performing loans in Commercial Banks of Ethiopia.

2.5 Conceptual Framework

The conceptual frame work which describes the relationship between NPL with internal bank factors and macroeconomic factors based on the theoretical and empirical perspectives will be formulated as follows:

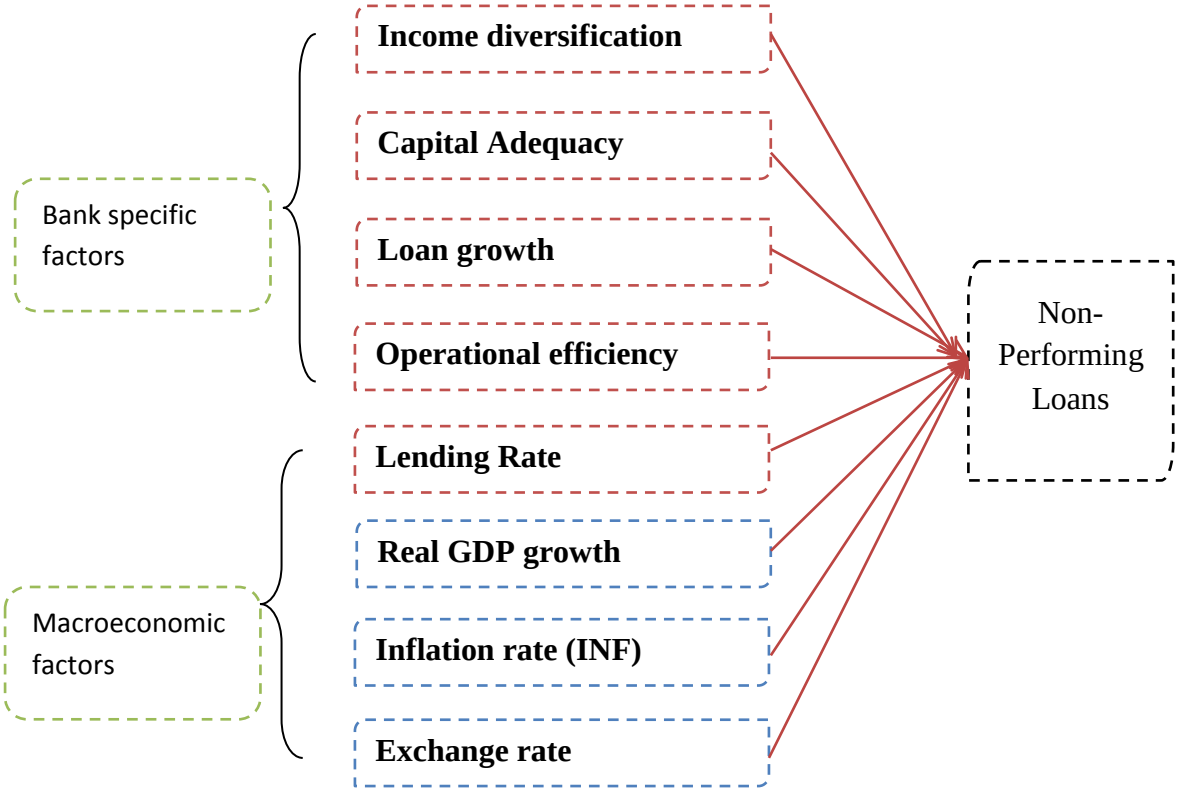


Figure 1 Conceptual Framework

Adapted from Martha (2017) and Agresti, et al., (2008).

The main objective of this study is to examine the determinants of non-performing loans in Ethiopian commercial banks. Based on the objective of the study, the following conceptual model is framed. As indicated in the related literature review parts, nonperforming loans are affected by both bank specific and macroeconomic factors. Bank specific factors are profitability, capital adequacy ratio, liquidity, diversification, and bank size,; whereas macroeconomic factors are interest/lending rate, inflation rate, public debt, exchange rate, money supply (Shingjergji(2013), Ahmad &Bashir (2013), and Wondimagegnehu(2012)).Thus, the above conceptual model is outlined to summarize the main focus and scope of this study in terms of variables included. In this study, independent variables include lending rate, capital adequacy, loan growth, operational efficiency and income diversification, exchange rate, economic growth and inflation rate and dependent variable includes non-performing loans.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This study examined the determinants of NPLs in commercial banks in Ethiopia. In view of that, this chapter presents the research procedure that was used to carry out the study. This chapter describes the research methodology used for this study. Topics that are going to be covered include research design, population and sampling design, data type and sources, data collection instruments, data collection procedures and data analysis.

3.2 Description of Research Area

This study was conducted in Addis Ababa which is also the political administrative center of Ethiopia. Addis Ababa's manufactures include textiles, shoes, food, beverages, wood products, plastics, and chemical products. Banking and insurance services are concerted in Addis Ababa, and the nation's major newspapers are published here. The export and import trade of Ethiopia is channeled through Addis Ababa on its way to or from the ports of Djibouti. The city is the collection and distribution center for much of the country's internal trade.

3.3 Research Design

Creswell (2003) stated that research design is the procedures and plan of research that span the decisions from broad assumptions to detailed methods of data collection and analysis. The choice of research design depends on objectives that the researchers want to achieve. There are different dimensions based on which research design was selected such as exploration, description, explanation, prediction, evaluation and history.

Since this study was designed to examine the determinants of NPL, a logical reasoning either deductive or inductive is required. Deductive reasoning starts from laws or principles and generalizes to particular instance whereas inductive reasoning starts from observed data and develops a generalization from facts to theory. Besides, deductive reasoning is applicable for quantitative research whereas inductive reasoning is for qualitative research. Thus, due to quantitative nature of data, the researcher used deductive reasoning to examine the cause and effect relationships between factors affecting NPL and non-performance loan of commercial banks.

This study clarified more about non-performance loan and changes associated with loan payment, rescheduling and project accomplishment through interview. Moreover, the study examined the cause and effect relationships between non-performance loan and its potential determinants. The objective to be achieved in the study is a base for determining the research approach for the study. Hence, the researcher employed explanatory research design to analysis non-performance loan of commercial banks in Ethiopia with respective empirical literatures on the determinants of non-performance loans.

3.4 Research Approach

The three methods that are commonly implemented in a research are quantitative, qualitative and mixed, where one of them is not better than the others, all of this depends on how the researcher want to do a research of study (Creswell, 2003). Quantitative research method is a kind of research involves the use of organized questions where the response options are predictable and a large number of respondents are involved. He also identified that quantitative research is a type of educational research in which the researcher decides what to study, asks specific, narrow questions, collects numeric (numbered) data from participants, analyzes these numbers using statistics, and conducts the inquiry in an unbiased, objective manner. Quantitative method is a study involving analysis of data and information that are descriptive in nature and qualified. Quantitative approach is one in which the investigator primarily uses postpositive claims for developing knowledge.

Accordingly, this study investigated the determinants of Non-performance loans of commercial banks that enable the researcher to manipulate an independent variable in order to see the effect on the dependent variable (Non-performance loans). This study used appropriate procedures, methodologies and statistics. In addition, this study relied on statistical techniques aided by panel data analysis for analysis the problem under study and interview for more research problem clarity.

To enhance the generalization of findings, this study used quantitative research methods that followed standardized procedures in sample selection, instrument design, implementation and analysis. Therefore, in terms of methods, this research employed both qualitative and quantitative method while conducting the study.

3.5 Data Type and Source

The researcher used secondary sources of data that is panel in nature. Secondary data may be published data and a secondary source of data prefer since it is less expensive in terms of time and money while collecting. In addition, it gives an opportunity to collect high quality data. Thus, secondary data was obtained from audited financial statements of the selected private commercial banks and annual report held by National bank of Ethiopia. These data included both bank specific and macroeconomic factors (lending rate, ROA, loan growth, operational efficiency and capital adequacy). Moreover, secondary data were obtained from World Bank and annual report held by NBE for the macroeconomic variables; it included real GDP, inflation rate and exchange rate.

3.6 Population and Sampling

3.6.1 Target Population

Basically, banks operate with three basic objectives which are profitability, growth of assets and customer base. Income and profits are an aspect of bank management which entails the evaluation of firm assets in order to facilitate the measurement of the level and size of credit risk associated with its operation. Income and profits are prudential determinants commercial banks soundness and effectiveness. Thus, this study targeted ten high incomes and profit performance of commercial banks. It fundamentally covered a panel data of Awash bank, Dashen bank, Abyssinia Bank, Cooperative Bank of Oromia, Nib International bank, Lion Bank, Oromia International Bank, Wegagen bank, Zemen Bank and United bank.

3.6.2 Sample Frame

Sample design deals with sample frame, sample size and sampling a technique of selecting a suitable sample for the purpose of determining parameters of the whole population. Population is the list of elements from which the sample may be drawn, thus, the study obtained their annual publications in their audited financial report of 2019/2020.

3.6.3 Sampling Techniques

Data that related to annual revenue, profitability and other variables were also collected from their annual financial publication reports and NBE that was related to the study. Sampling is the process of obtaining information about an entire population by examining part of it. The non-probability sampling method was chosen because it is the most commonly associated

survey based research method that helps to make inferences from the sample about a population so as to answer the research questions and to meet the research objectives. Specifically, Purposive sampling method was used. The reason to select purposive sampling incorporated those who were good performers, longer banking experiences, and rich in information in the study area.

3.7 Instruments of Data Collection

3.7.1 Document Review

This method refers to the review of existing information, and in the quantitative context may involve the manipulation of statistical data. In order to collect secondary data, the researcher was used different documents that related to the study. Using structured document review has been used for this research to collect the required information, which would be relevant for addressing the objectives of the study from secondary historical data. In order to avoid the risk of distortion in the quality of data, data was collected from audited financial statements particularly balance sheet and income statement of each bank included in the sample and various journals and publications of NBE from 2010 to 2019. Due to some banks year of establishments are less than ten years, they are not included in this study like Enat bank and Addis international bank. So, in order to keep the data consistency, data was included ten private commercial banks from 2010 till 2019.

3.7.2 Interview

The qualitative aspects of this study incorporated the activity of interviews with the selected private commercial banks' credit directors, portfolio and recovery managers and relation managers, branch managers and experts and bankers association in Ethiopia were incorporated. Since the institutions are vital contributors who directly related to improve the commercial bank's loan services that provide to the community in the study area. In addition, the government sectors have the contribution to improve the living standards of the community and business activities by using loan and investment. To collect the qualitative data, the researcher used interviews which involve a number of open ended questions to meet the research objective.

3.8 Data Analysis

As this study utilized both descriptive and econometric analysis based on a panel data to examine the determinants of non-performance loan.

First, the data was collected from different sources was coded, checked and entered in to MS-Excel program to make the data ready for analysis. Then the collected data was correctly processed (data supervision in each data entry time) and analyzed through STATA software packages. In addition, the data was logged (to reduce the data variability) and various diagnostic tests such as normality, Heteroskedasticity, autocorrelation, and multicolinearity were conducted to decide whether the model used in the study is appropriate and fulfill the assumption of classical linear regression model.

Succeeding, results of the descriptive statistics such as mean, standard deviation, minimum and maximum values were reported to describe the characteristics of variables under investigation. Consequently, in order to examine the possible degree of Multicolinearity among variables, a correlation matrix was used. Finally, the researcher applied multivariate regression model analysis to examine the effect of each explanatory variable on dependent variable. Multivariate regression analysis was applied to model relationships between variables as well as to determine the magnitude of relationships and to make predictions based on the models. As a consequence, regression results were presented in a tabular form with the appropriate test statistics and then an explanation of each parameter was given in line with the evidence in the literature.

3.9 Model Specification

This study will use multiple linear regression analysis and Multivariate analysis is applied as it helps to simultaneous analysis of more than two variables) is very important in operations management (Hue, 2015). Multiple regression analysis is used to predict the changes in the dependent variable in response to changes in the several independent variables. The multiple regression analysis was used to test the relationships between the constructs based on the hypothesized model indicated above. Eight hypotheses were tested after various multiple regression analysis diagnostics were tested by STATA.

Multiple regression is a flexible method of data analysis that may be appropriate whenever a quantitative variable (the dependent or criterion variable) is to be examined in relationship to any other factors (expressed as independent or predictor variables). Relationships may be nonlinear, independent variables may be quantitative or qualitative, and one can examine the effects of a single variable or multiple variables with or without the effects of other variables taken into account (Laxmi,*et al*, 2018) and Hue(2015).The model of the regression analysis was presented as follows.

$$Y=a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+e$$

In the above equation,

Y = Non-Performing Loan

X_1 = Lending Rate

X_2 = Capital Adequacy

X_3 = Loan growth

X_4 = Operational efficiency

X_5 = Income diversification

X_6 = Real GDP growth

X_7 = rate (INF)

X_8 = The exchange rate

e: the error term

3.10 Expected output

Table 1 Expected Output

Variables	Proxy	Expected Outcome
Lending Rate	Banking Interest Rate	+ve
Capital Adequacy	capital to asset ratio measured as adjusted total equity divided by adjusted total asset	-ve
Loan growth	The annual growth of loan disbursement by each selected commercial banks in Ethiopia	+ve
Operational efficiency	operating efficiency ratio (OER)- operating expense ratio which is	+ve

	adjusted operating expense divided by adjusted average gross loan portfolio	
Income diversification	ROA	-ve
Real GDP growth	GDP Growth	-ve
Inflation rate (IN	rise in price	-ve
Exchange rate	The annual exchange rates of BDT (currency of Ethiopia) against USD.	-ve
Non-performing loan ratio	Doubtful and bad loans to total loan ratio	

Source: Survey result, 2021

3.11 Ethical Considerations

Research ethical considerations were taken properly regarding informants and similar issues in this study. Consequently, data were not manipulated or exaggerated for the purpose of the pre-determined and interviewees were participated on voluntary basis. On time of data collection, the purpose of the study were stated for concerned bank officials and interviewees also were informed about the purpose of the study and their consent was asked verbally. The following points will be general summary of some ethical principles that were engaged. First, regarding, data, results, methods and procedures, and publication status were honorably reported. No attempted were used to fabricate, falsify, or misrepresent data of this study, It was attempted to avoid careless errors and negligence; the research work was carefully and critically examined. It was also attempted to honor patents, copyrights, and other forms of intellectual property. Not used unpublished data, methods, or results without permission and given proper acknowledgement or credit for all contributions to research.

CHAPTERFOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

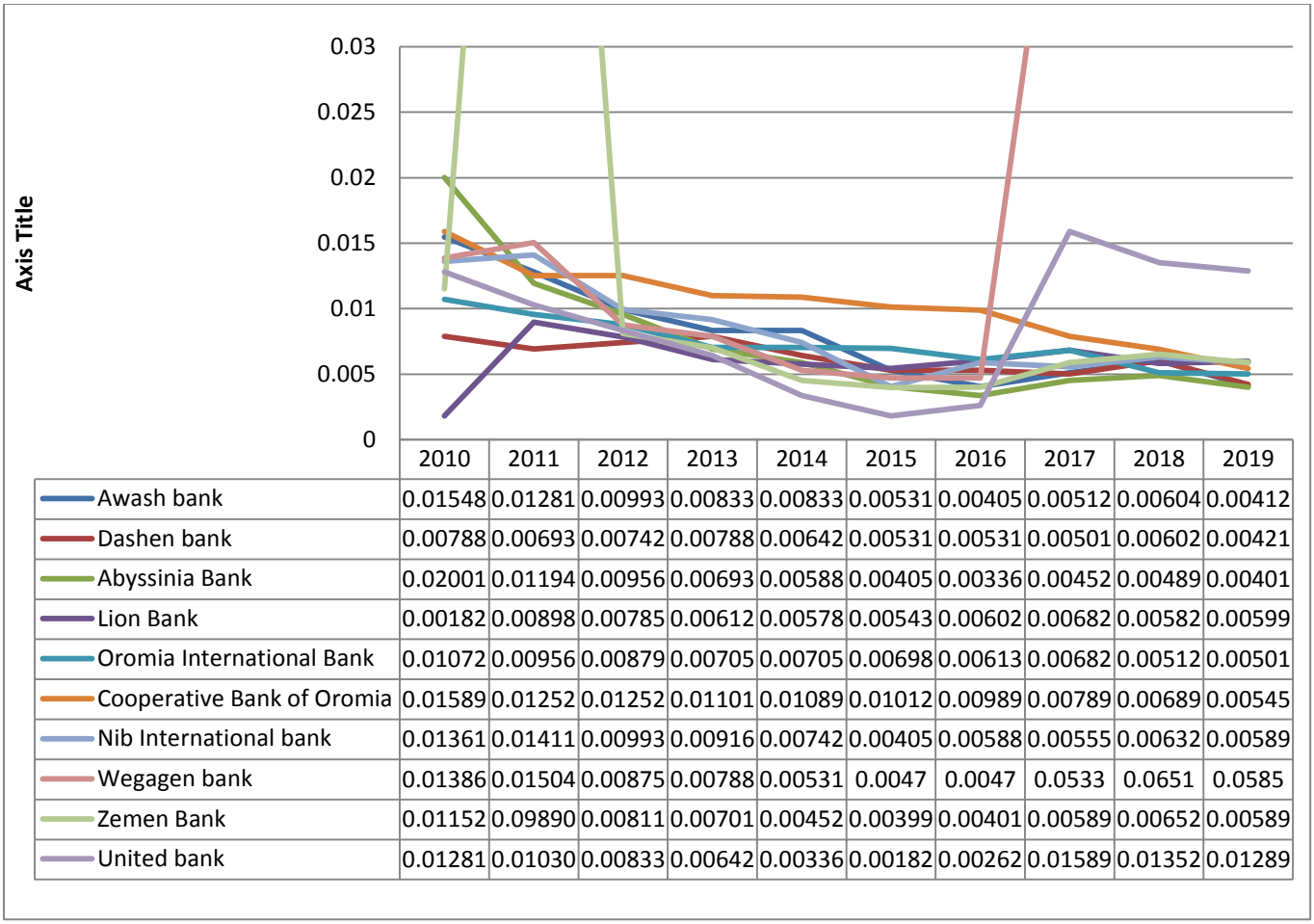
This chapter deals with the presentation, interpretation and analysis of data collected from the sampled banks annual publications of the national bank of Ethiopia (NBE) and each commercial banks audited annual financial reports. The audited financial statements of the banks over the study period have been attained from National Bank of Ethiopia, the country's central bank. It is responsible for maintaining the audited financial statements of all banks operating in the country and regulates their operating activities. Essentially, the balance sheet and income statements were the main sources of the relevant data to address the stated objectives of the study. This study analyses the collected data based on determinants of commercial banks non–performing loan and the correlation and regression analysis to determine cause effect relationship between dependent and independent variables.

4.2 Descriptive Statistics Analysis

To analyze the data, the researcher used descriptive statistics like frequency tables, graphs and other summary statistics and it included both dependent and independent variables. The dependent variable of the study is NPLs of selected ten private commercial banks in Ethiopia. On the other hand the independent variables of the study consider both industry specific and macroeconomic determinants that affect NPLs of the banking sector.

4.2.1 Trend of Non – Performing Loan (NPLs)

Loans are classified as NPLs when they cannot be repaid according to the terms of the initial agreement or in an otherwise acceptable manner. Loans become problem credits as a result of many factors. NPLs essentially reflect the default risk inherent in a borrower‘s willingness and ability to repay all obligations. The National Bank of Ethiopia has provided direction to all commercial banks to maintain the NPL ratio below 5%. The figure below implied trend of non –performing loan at each bank level.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Awash bank	0.01548	0.01281	0.00993	0.00833	0.00833	0.00531	0.00405	0.00512	0.00604	0.00412
Dashen bank	0.00788	0.00693	0.00742	0.00788	0.00642	0.00531	0.00531	0.00501	0.00602	0.00421
Abyssinia Bank	0.02001	0.01194	0.00956	0.00693	0.00588	0.00405	0.00336	0.00452	0.00489	0.00401
Lion Bank	0.00182	0.00898	0.00785	0.00612	0.00578	0.00543	0.00602	0.00682	0.00582	0.00599
Oromia International Bank	0.01072	0.00956	0.00879	0.00705	0.00705	0.00698	0.00613	0.00682	0.00512	0.00501
Cooperative Bank of Oromia	0.01589	0.01252	0.01252	0.01101	0.01089	0.01012	0.00989	0.00789	0.00689	0.00545
Nib International bank	0.01361	0.01411	0.00993	0.00916	0.00742	0.00405	0.00588	0.00555	0.00632	0.00589
Wegagen bank	0.01386	0.01504	0.00875	0.00788	0.00531	0.0047	0.0047	0.0533	0.0651	0.0585
Zemen Bank	0.01152	0.09890	0.00811	0.00701	0.00452	0.00399	0.00401	0.00589	0.00652	0.00589
United bank	0.01281	0.01030	0.00833	0.00642	0.00336	0.00182	0.00262	0.01589	0.01352	0.01289

Figure 2 NPLs Trend Analysis of Private Commercial banks in Ethiopia (2010 -2019)

Source: Each Private Commercial Banks Annual Report, 2021

The above table displays the trend analysis of selected private commercial banks in Ethiopia. The data shows that their NPLs performances of the studied banks were diminished from year to years. The average non-performing loans were high in 2010 and 2011 and then the non-performing tendency has been decreased. This shows that the performance of commercial banks increase in collecting the loan from borrowers. It may be associated with the National Bank directive (to be below 5%) or their management efficiency. Nevertheless, trend of NPLs performance of each banks were not the same. Some of the banks perform well whereas the others not well. Basically, Bank performance also acts as a key cause of non-performing loans. An efficient and well- run bank should be able to adjust loan rates and terms to the current market in order to decrease the chance of nonperforming loans. Banks should also be selective as to which borrowers they accept. Banks that do poorly in these areas will create more nonperforming loans.

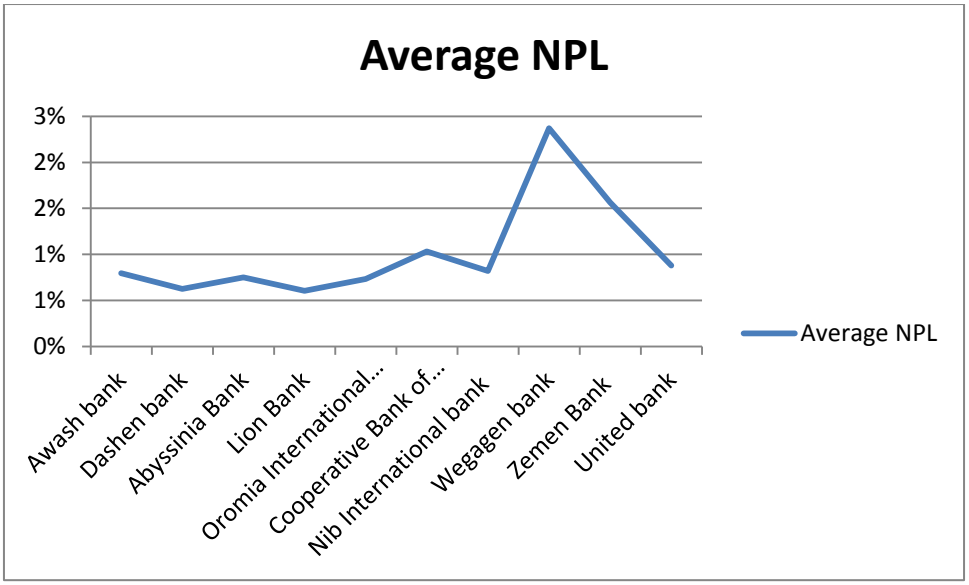


Figure 3 NPLs Trend Analysis of Private Commercial banks in Ethiopia (2010 -2019)

Source: Each Private Commercial Banks Annual Report, 2021

The table above shows the average NPLs of the select private commercial banks in Ethiopia. Awash, Dashen and Abyssinia have been performed the lowest NPL performance while Nib, Wegagen and Zemen bank have been performed the highest NPL performance. In general, from the stated data it can be assumed that, significant decline of NPLs might suggest improvement in the levels of loan quality. Since trend implied on the studied years improvement, the average NPLs of the studied banks for the past ten years below 5 % as per the requirement of the regulatory bank body.

4.2.2 Macro-economic Factors

Factors such as Gross Domestic Product (GDP growth), inflation, and unemployment and export growth were considered, using a variety of econometric models and specifications to ensure robustness.

4.2.2.1 Gross Domestic Product (GDP)

Economic growth is represented in this study by Gross Domestic Product. Growth is related to the change total market value of goods or services produced by the economy of a certain country, as well as total income earned by people living in that country. Annual GDP growth will implicitly assure that bank lending would function effectively.

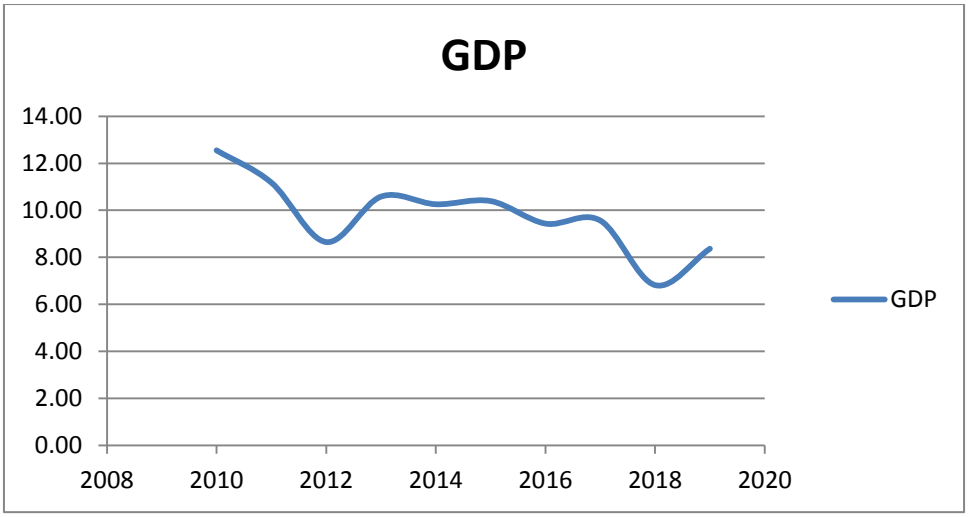


Figure 4 Ethiopian GDP Trend Analysis (2010 -2019)

Source: Source: World Bank, 2021

The graph above displays the trends of Ethiopian growth since 2010s. This graph shows that there had been down and up on growth of the GDP. First, the growth has been declined for three years and then has been slowly moving up. It has been more stable for almost five years and then declined sharply. Nevertheless, the previous year's experiences on graph shows that there has been a dramatic shift of the GDP growth that indicates the growth rate increases at higher rate after the year 2000 growth rate. Greater GDP growth suggests that the economy is performing well, and incomes of its citizens are increasing (Anjom and Karim, 2015).

4.2.2.2 Lending and Inflation Rate

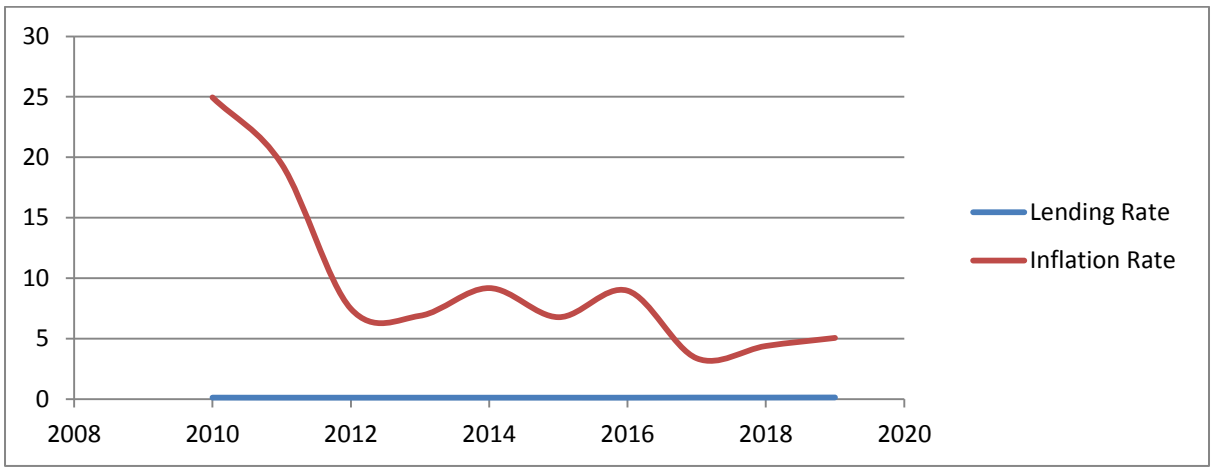


Figure 5 Ethiopian Inflation Rate Trend Analysis (2010 -2019)

Source: Source: World Bank and Respective Banks, 2021

The above figure shows the trend of inflation and lending rate in Ethiopia. As per the data, inflation rate has been declined from 2010 and it has been trended to increase from 2018. Even if the inflation rate has been indicating a downward trend, it does not show the price stability and it may have a negative relation to the level of problem loans. On other hand, since banks have to ensure that utilization of credit is in accordance with the purpose for which it is lent, this study needs to review the ten years lending rate trend in the country. The data shows that the trend has been constant for a long time. This may be related to the country's economic policy and its implication towards the investment and banks sector. i.e. end use of the lending has to be ensured. Stronger performance of real economy led by healthy competition among financial institutions result in lower NPLs. Anjom and Karim (2015) found that banks charge more rents on their lent assets in declining competition scenarios. In such situations higher lending rates augment the chances of borrower‘s bankruptcy.

4.2.2.3 Exchange Rate

Real exchange rates are encompassed in the model to disclose the price competitiveness in the international markets and to ascertain its indirect influence on economic performance via export channel.

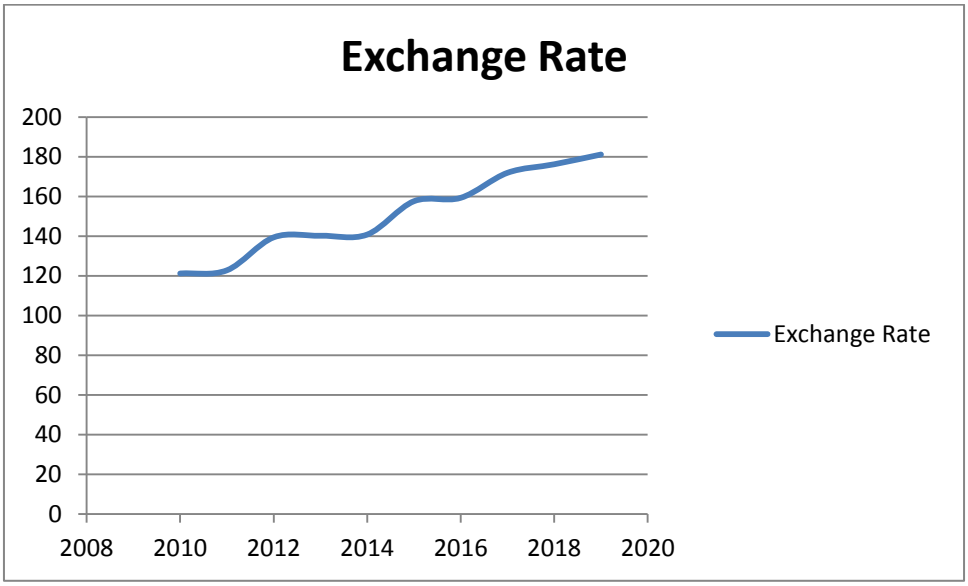


Figure 6 Real exchange rates 2010 -2019

Source: Source: World Bank and National bank of Ethiopia, 2021

Accordingly, the fluctuations of the real exchange rates may be crucial for a small open economy like Ethiopia, which is influenced by the changes in the international market prices. The above figure shows that the real exchange rate has been increasing since 2010.

4.2.3 Bank Specific Factors

4.2.3.1 Capital Adequacy

Capital adequacy ratio is calculated by adding tier 1 capital to tier 2 capital and dividing by risk weighted assets which is guided by Basel accord.

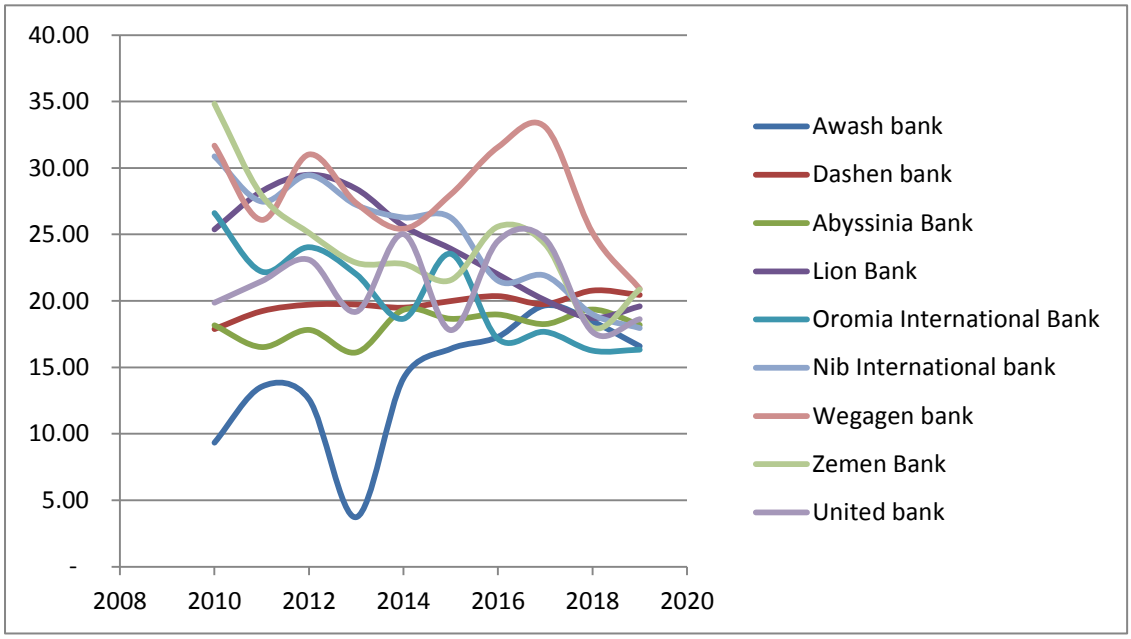


Figure 7 Capital adequacy ratio

Source: Each Private Commercial Banks Annual Report, 2021

Nonperforming assets is also the single largest cause of irritation of the banking sectors. Accordingly, the above figure shows there has been a downward trend of capital adequacy since 2010. The above data shows that Ethiopian private commercial banks have more than 10 % of capital adequacy ratio. The ten years average capital adequacy shows that Awash bank has the lowest (14.18) and Abyssinia bank has the second lowest bank (18.14) and Wegagen bank has the highest (28.03).

Table 2 Average loan growth, operational efficiency and ROA of selected Banks in Ethiopia (2010- 2019)

Banks	Loan growth	Operational efficiency	ROA
Awash bank	0.28506	71.40	3.37
Dashen bank	0.28737	71.91	2.95
Abyssinia Bank	0.15640	82.31	2.59
Lion Bank	0.25016	73.89	3.19
Oromia International Bank	0.24622	98.09	2.46
Cooperative Bank of Oromia	0.26197	90.98	2.49
Nib International bank	0.26197	74.07	3.01
Wegagen Bank	0.22201	72.22	3.30
Zemen Bank	0.25937	91.45	4.16
United bank	0.22268	86.13	2.43

Source: Each Private Commercial Banks Annual Report, 2021

The above tables shows the average loan growth, operational efficiency and ROA of selected Banks in Ethiopia (2010- 2019). The data indicated that the average loan growth has been constant except for Abyssinia bank which is the lowest among them. In general, this data shows that banks should concentrate lending in fields where it possesses a demonstrated expertise, and a bank should not lend outside its trade area. Banks that emphasize loan growth do so at the expense of credit quality.

ROA result shows that United bank has lowest ROA (2.43) and Zemen bank has the largest ROA (4.16). Banks' return on asset (ROA) ratio variable is used as an indicator of profitability. This shows that Awash bank (3.37), Lion Bank (3.19), Nib International bank (3.01), Wegagen Bank (3.30) scored the highest ROA and Zemen Bank scored the uppermost among all banks (4.16). This shows that these banks are more profitable than other banks listed here. On other hand, operational efficiency data shows that Oromia International Bank has been the leader (98.09) followed by Zemen bank (91.45) and Cooperative Bank of Oromia (90.98).

4.3 Inferential Statistics Analysis

4.3.1 Correlation Analysis

Correlation analysis is concerned with measuring the degree of association between two variables, x and y or independent and dependent variables. There are two types of correlation

coefficient: Pearson's correlation coefficient (r) and Spearman's rank correlation coefficient P (rho) (Laxmi, *et al.* 2018). This study used Pearson's Correlation Coefficient that needs to quantify the degree to which two random continuous variables are linearly associated in a sample. It is selected in this study as it measures the degree of linear correlation between two variables (independent and dependent variables). Sample correlation coefficient (r) measures the strength and direction of linear relationships between pairs of continuous variables. Thus, the correlation between the dependent variables and the independent variables have been presented and analyzed in this section. Values of Pearson's correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that two variables are perfectly related in a positive sense; a correlation coefficient of -1 indicates that two variables are perfectly related in a negative sense, and a correlation coefficient of 0 indicates that there is no linear relationship between the two variables. A low correlation coefficient; 0.1 - 0.29 suggests that the relationship between two items is weak or non-existent. If r is between 0.3 and 0.49 the relationship is moderate. A high correlation coefficient i.e. >0.5 indicates a strong relationship between variables. The direction of the dependent variable's change depends on the sign of the coefficient. If the coefficient is a positive number, then the dependent variable will move in the same direction as the independent variable. If the coefficient is negative, then the dependent variable will move in the opposite direction of the independent variable (Meseret, 2018). Therefore, both the direction and the level of relationship between the dependent and independent variables conducted using the Pearson's correlation coefficient in this study. The subsequent table presents the result of the correlation analysis.

Table 3 Correlation Analysis

Table 3 Correlate among independent variables and dependent variable (obs=100)

	lendin~e	inflat~e	gdp	exchan~e	capita~y	loangr~h	operat~y	Roa	nonper~n
Lending rate	*1.0000*								
inflationr~e	*-0.3317*	1.0000							
GDP	*-0.4943*	0.7748	1.0000						
Exchange rate	*0.7118*	-0.8157	-0.788	1.0000					
capitalade~y	*-0.2611*	0.163	0.2345	-0.2471	1.0000				
Loan growth	*0.1443*	-0.4191	-0.377	0.2952	-0.1538	1.0000			
operationa~y	*0.2596*	-0.2874	-0.207	0.3989	-0.0278	-0.0507	1.0000		
Roa	*-0.2675*	0.3113	0.2725	-0.4476	0.3369	0.0562	-0.499	1.0000	
nonperform~n	*0.0848*	0.1536	0.0362	-0.0834	0.2053	0.0141	-0.0182	0.2643	1.0000

Source: Study Result, (2021)

Table 4 Mean, Std. Dev., Min and Max values of independent dependent variable

Variable	Mean	Std. Dev.	Min	Max
Lending rate	.12253	.0053972	.1188	.135
inflationr~e	9.648	6.662647	3.37	24.95
GDP	9.778	1.527564	6.82	12.55
Exchange rate	151.052	20.4248	121.2	181.12
capitalade~y	21.7819	5.403125	3.73	35.72
Loan growth	.2453196	.0724144	.06401	.40064
operationa~y	81.244	15.50939	53.88	133.6
Roa	2.9959	.9566092	.32	6.72
nonperform~n	.0101737	.0130425	.00182	.0989

Source: Study Result, (2021)

As could be seen in the above table, the inflation rate (.1536) have the most positively correlated variable with NPLs. In addition, ROA (0.2643) have the most positively correlated variable with NPLs. This correlation clearly shows that, as the inflation rate and ROA increase, NPLs also moves to the same direction.

There are positive relationships between lending rate (0.0848) with non-performing loan. Loan officers often meet growth targets by lending to increasingly marginal borrowers, lending for purposes in which the officer has limited expertise, and lending in geographic areas where the bank has no permanent market presence.

There are positive relationships between GDP (.0362) with non-performing loan. Thus shows that prime sources of NPLs are the economic (GDP) downturn, lack of employment, and the rate of inflation. There are positive relationships between capital adequacy (0.2053) with non-performing loan. This shows that capital adequacy is positively impacted by the level of non-performing loans in banks of Ethiopia. The researchers also argued that variations in CAR could significantly influence profitability, deposit rates, liquidity, and overall corporate governance of the banks. There are positive relationships between loan growth (0.0141) with non-performing loan. The long-run results of industry-specific variables show that bank loan growth has a positive association with the non-performing loan ratio (lnNPLR).

On contrary, there is a negative relationship between exchange rate (-0.0834) with non-performing loan. The movement of exchange rates is another significant issue, the

consequence of which has a negative impact on NPLs. Results show as the exchange rate decreases, entrepreneurs have to pay more on their imports causing a reduction in the capacity to repay.

There is a negative relationship between operational efficiency (-0.0182) with non-performing loan. This shows that increases in NPLs are usually followed by decreasing cost efficiency. This occurs since banks increase spending on monitoring, working out, and/or selling off these loans, becoming more diligent in administering the portion of their existing performing loan portfolio.

On other hand, the mean result shows that lending rate has .122, inflation rate has 9.6, 9.8 % of average GDP growth, real exchange rate is around 151 and 21.78 capital adequacy. The average log growth has been .24, 81.2 operational efficiency and ROA has been 2.99. In addition, the data shows that the mean non-performing loan is around .0101737 with lowest standard deviation (.0130425) and the minimum NPL has been recorded as .00182 and the highest NPL has been .0989.

4.3.2 Regression Analysis

4.3.2.1 Diagnostic Tests

The researcher conducted diagnostic tests to lookout against the possibility of obtaining and interpreting spurious regression results. The results of the tests are presented in the following sections. The objective of the diagnostic tests was intended to check for the validity of the parameters. The researcher is to test for normality, multicollinearity, heteroscedasticity and autocorrelation and also is going to perform stationary tests.

4.3.2.1.1 Normality Test

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model (Gujarati, 2004). OLS estimators were BLUE regardless of whether the error terms are normally distributed or not. On the other hand, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data. Therefore, since the sample size for this study was large enough, it was approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

Table 5 Skewness/Kurtosis Tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Lending rate	100	0.0000	0.6682	14.48	0.0007
Inflation rate	100	0.0138	0.2868	6.68	0.0355
GDP	100	0.0207	0.7654	5.32	0.0700
Exchange rate	100	0.5278	0.0000	32.90	0.0000
Capital adequacy	100	0.0000	0.0000	50.38	0.0000
Loan growth	100	0.0000	0.0045	23.85	0.0000
Operation Efficiency	100	0.0813	0.7762	3.21	0.2014
ROA	100	0.0000	0.0000	49.60	0.0000

Source: Study Result, (2021)

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by Gujarati (2004), OLS estimators are BLUE regardless of whether the ui are normally distributed or not if the disturbances (ui) are independently and identically distributed with zero mean and constant variance and if the explanatory variables are. constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding β's. Normality test is used to determine whether the error term is normally distributed or not. The study assumed that the residual part of the linear model had a normal distribution. Since the sample size for the study is large enough, it is approximately considered as normally distributed. Skewness and kurtosis approaches to zero and it shows that the null hypothesis that the error term was normally distributed should not be rejected and it is possible to conclude that error terms follow normal distribution.

4.3.2.1.2 Multicollinearity Test

Gujarati (2004) indicated that multicollinearity refers to the existence of a "perfect," or exact, linear relationship among some or all explanatory variables of a regression model if it exists the remedy is to drop a variable with a high R-square or do nothing. A correlation coefficient

is high if it is in excess of 0.7. The correlation matrix is used to detect the presence of severe multicollinearity.

Table 6 Correlation Matrix of Independent Variables

	1	2	3	4	5	6	7	8
Lending rate (1)	1.0000							
Inflation rate (2)	-0.4998	1.0000						
GDP(3)	-0.5128	0.6306	1.0000					
Exchange rate(4)	0.6738	-0.6905	-0.6677	1.0000				
Capital adequacy(5)	-0.1938	0.1329	0.1637	-0.1604	1.0000			
Loan growth (6)	0.1595	-0.3455	-0.3321	0.2830	-0.1188	1.0000		
Operational efficiency (7)	0.2830	-0.3753	-0.2395	0.4436	0.0164	0.0016	1.0000	
ROA (8)	-0.2119	0.2708	0.2168	-0.3858	0.1708	0.0395	-0.5495	1.0000

Source: Study Result, (2021)

The above table displays the correlation test results; it displays that correlation matrix between independent variables; there were fairly low data correlations among the independent variables. The existence multicollinearity between independent variable was tested by the correlation analysis using only independent variables. These low correlation coefficients indicate that there is no problem of multicollinearity in the study. Additionally, Nkusu (2011) stated that multicollinearity problem exists when the correlation coefficient among the variables is greater than 0.70, but in this study, there is no correlation coefficient that exceeds or even close to 0.70. Accordingly, in this study there is no problem of multicollinearity which enhanced the reliability for regression analysis.In the above correlation matrix there is no pair-wise relation that exceeds 0.7 which suggests for not rejecting the null hypothesis (H0) which states that there is no perfect pair-wise relation among repressors (Gujarati, 2004). As a result, it can be concluded that the results showed

that the problem of multicollinearity did not exist between variables in the model in this study; all the variables were retained for use in the estimations.

4.3.2.1.3 Heteroscedasticity

Heteroscedasticity is a violation of one important assumption of the classical linear regression assumptions. This is a circumstance that the error variances are not constant (Gujarati, 2004). Whites test for Heteroscedasticity was employed to test Heteroscedasticity in this study. The problem of continuing to use data that suffers Heteroscedasticity is that whatever conclusion or inferences, they will be misleading.

Table 7Heteroscedasticity Test

Version of Test	Value	Probability
F-statistic	0.91685	0.378
Obs*R-squared	10.4929	0.373
Scaled explained SS	8.32235	0.507

Source: Study Result, (2021)

The above table showed that both F-statistic and chi-square version of test give the same inference that there is no evidence for the presence of Heteroscedasticity since the p-values in all of the cases were above 0.05. The Scaled explained SS, test is based on a normalized version of the explained sum of squares from the auxiliary regression also give the same conclusion. In general, in the regression models employed in this study it was proved that the test statistics is not significant and the variance of the error term is constant or homoscedastic and we had sufficient evidence to accept the null hypothesis of Homoscedasticity; the linear model is said to be correctly specified.

4.3.2.1.4 Autocorrelation

Table 8Breusch-Godfrey Serial Correlation LM Test

Version of Test	Value	Probability
F-statistic	1.76686	0.0698
Obs*R-squared	22.912	0.0229

Source: Study Result, (2021)

This study applied Breusch-Godfrey Serial Correlation LM Test and it is another test for Autocorrelation in residuals. The Breush-Godfrey test is applied because the Durbin Watson test is not reliable when lagged values are used in the model. The Breusch-Godfrey test is much more general in that it allows for both AR and MA error structures as well as the presence of lagged regress and as an explanatory variable (Gujarati, 2004). It is Durbin-Watson method that test for autocorrelation and its statistic around two is normally accepted though there are zones of indifference and zones of both positive and negative correlation. In time series data the successive residuals tend to be highly correlated. The maltreatment of the basic assumption that residuals are mutually independent results in serial autocorrelation. The null hypothesis is that there is no serial correlation. The above table shows that the Breush-Godfrey Serial Correlation LM Test gives an F-statistic of 1.7 with a probability of 0.07 and chi-square version gives statics of 22.9 with probability of 0.02. Hence, from both versions of the test we fail to reject the hypothesis of no autocorrelation in the residuals at 1% significant level. Accordingly, it can be concluded that no autocorrelation in the residuals at 1% significant level.

4.3.3 Result of Regression Analysis

Table 9 Regression analysis

Source	SS	df	MS	Number of obs =	100
Model	1.85395809	8	.231744762	Prob> F	= 0.0008
				F(8, 91)	= 3.75
Residual	5.62357053	91	.061797478	R-squared	= 0.2479
				Adj R-squared	= 0.1818
Total	7.47752862	99	.075530592	Root MSE	= .24859

nonperforming	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
lending rate	6.996455	1.933105	3.62	0.000	3.156578	10.83633
Inflation rate	-.2125805	.2342949	-0.91	0.036	-.6779785	.2528175
GDP	-.8678286	.5735825	-1.51	0.134	-2.00718	.2715227
exchange rate	-4.603446	1.281856	-3.59	0.001	-7.149695	-2.057197

Capital adequacy	.3484385	.2064895	1.69	0.095	-.0617275	.7586045
loan growth	.2913345	.1732679	1.68	0.006	-.052841	.6355099
Operational efficiency	.1056158	.4059801	0.26	0.005	-.7008137	.9120453
ROA	-.0632264	.2009718	-0.31	0.754	-.4624323	.3359794
_cons	14.87688	4.337065	3.43	0.001	6.261834	23.49193

Source: Study Result, (2021)

The section presents the empirical regression model used in this study and the results of the regression analysis. Empirical model used in this study was clearly presented in the methodological part of the study; the empirical model used in the study in order to identify the factors that can affect Ethiopian private commercial banks NPLs provided as follows:

$$Y=a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+\mathbf{e}$$

In the above equation,

Y = Non-Performing Loan , X_1 = Lending Rate , X_2 = Capital Adequacy , X_3 = Loan growth , X_4 = Operational efficiency , X_5 = Income diversification , X_6 = Real GDP growth , X_7 = rate (INF) , X_8 = The exchange rate and e: the error term

The above table presents the R-squared (R^2) statistic measures the success of the regression in predicting the values of the dependent variable within the sample. R^2 may be interpreted as the fraction of the variance of the dependent variable explained by the independent variables. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. In this study the R-squared statistics of the model was 0.24790. This indicates that the changes in the independent variables collectively explain 24.79 % of the changes in the dependent variable and the remaining 75% of changes is explained by other factors which are not included in the model. Thus these variables collectively, are satisfactory explanatory variables. One of the problem using R^2 is every time when add an independent variable to the model the R^2 never decreases. On other hand, the study also found the regression Adjusted R^2 is a corrected goodness-of-fit (model accuracy) measure for linear models. It ascertains the percentage of variance in the target field that is explained by the inputs. Adjusted R^2 is always less than or equal to R^2. A value of 1 indicates

a model that perfectly predicts values in the target field. A value that is less than or equal to 0 indicates a model that has no predictive value. Actually, adjusted R^2 lies between these values. In our model the adjustedR2 result (Adj R-squared) is 0.1818; it is less than the R2 result and the value indicates the model was perfectly predicts values in the target field. Besides, this study also established to the probability of (F-statistic) test or (Prob> F) it 0.0008; it shows strong statistical significance, which enhanced the reliability and validity of the model means all selected explanatory variables can affect the level of NPLs in common. Following the result obtained from the regression analysis as depicted in the above table, the next section tries to present the analysis concurrently with respect to each NPLs determent factors. Finally, the study realized that lending rate has a positive significant effect on NPLs based on its Coef6.996455 and p-value less than 0.05 (0.000), inflation rate has a negative significant effect on NPLs based on its Coef -.2125805 and p-value less than 0.05 (0.036), real GDP growth has a negative but insignificant effect on NPLs (Cofee GDP -.8678286 and P-vale 0.134), exchange rate has a negative but significant effect on NPLs (-4.603446 and 0.001), capital adequacy has a positive but insignificant effect on NPLs (.3484385 and 0.095),loan growth has a positive significant association with NPLs (.2913345 and 0.006), operational efficiency has a positive significant association with NPLs (.1056158 and 0.005) and ROA has a negative but insignificant effect on NPLs (-.0632264 and 0.754)

Table 10 Summary of Regression analysis

Variables	Expected Outcome	Result Found	Significant	Decision
Lending Rate	**+ve**	**+ve**	Significant	Support
Capital Adequacy	**-ve**	**+ve**	Insignificant	**Not Support**
Loan growth	**+ve**	**+ve**	Significant	Support
Operational efficiency	**+ve**	**+ve**	Significant	Support
Income diversification	**-ve**	**-ve**	Insignificant	**Not Support**
Real GDP growth	**-ve**	**-ve**	Insignificant	**Not Support**
Inflation rate	**-ve**	**-ve**	Significant	Support
Exchange rate	**-ve**	**-ve**	Significant	Support

Source: Study Result, (2021)

The above table summarizes the result of the findings of this study against the expectation of the results.Lending rate was expected to be positive and this study found that the same result as expected; it is concluded that the result was supported as expected. Loan growth and operational efficiency were also checked and it was found positive as expected. However, capital adequacy was expected to be negative but the study found a positive but insignificant effect was observed. In addition, this study found that there were insignificant effect of income diversification and real GDP growth on NPLs with the same negative sign anticipation. Conversely, inflation and exchange rates have been found a negative significant effect on NPLs as expected. The details explanation, justifications and results are presented below.

4.3.3.1 Lending Rate

The correlation analysis is used to see lending rate has relationship with NPLs; and it has a significant relationship with NPLs; and to make sure that it actually influence the NPLs (Sig, 0.000), multiple regression analysis has been conducted. And the result of the regression analysis shows that lending rate has positive and significant impact on NPLs; therefore, the stated alternative hypothesis is accepted. The finding agrees with results of previous researches conducted in the same area.

The majority of the interviewees' responses indicated when lending rate is constant for long time, investors may provide well studied and feasible projects as well as individuals with funds to start saving with the banks to earn on their funds but investors with the profitable projects feels unwilling to borrow and invest. Second, increasing the level of lending rate has maximum and minimum limit by itself. That means degree of increase in lending rate and amount of NPLs may not be equal. Rather, ability to repay debt depends on other factors like borrowers' source of income.

Gadise (2014) who found the regression result is inconsistent with the hypothesis developed in her study. The study hypothesized that there is a positive association between lending rate and NPLs of banks. However, Daniel and Wandera(2013) found that statistically significant negative impact of lending rate on NPLs in Ethiopia. This negative sign indicates an inverse relationship between lending rate and NPLs. It implies that for one unit change in the banks' lending rate, keeping other thing constant had resulted 2.95 units change on the levels of NPLs in opposite direction. Though, the study variable lending rate (LR) had a positive associate with NPLs at 5% significance level with a p-value 6.3. Therefore, when lending rate

is going up by one unit non-performing loan goes down by 6.6 provided other independent variables are constant.

4.3.3.2 Capital Adequacy Ratio (CAR)

Regarding capital adequacy ratio that determines the risk taking behaviour of banks, this study applied correlation analysis is used to see its relationship with NPLs; and it has a significant relationship with NPLs; and to make sure that capital adequacy has a positive but insignificant effect on NPLs (.3484385 and 0.095), it actually, multiple regression analysis has been conducted. And the result of the regression analysis shows that it has positive and insignificant impact on NPLs; therefore, the stated alternative hypothesis is not supported. This positive sign indicates a direct relationship between capital adequacy ratio and NPLs. Thus, it had been implied that for one unit change in the banks' capital adequacy ratio, keeping other thing constant had resulted 0.20 unit changes on the levels of NPLs in the same direction but the study found insignificant result. This study mainly attempted to examine a predominant financial factor namely capital adequacy ratio even if its ratios widely used in similar studies are not clear whether they affect positively or negatively to the aggregate NPLs. It is considered as the presence of large amount of NPLs is responsible for the decline in the profit margin of several banks. Capital adequacy ratio was positively and significantly affecting loan default indicating that greatly exploited banks are not under regulatory pressures to reduce their credit risk and take more risks.

The finding disagrees with results of previous researches conducted in the same area.The result of this finding is inconsistent with the study of Swamy(2012) where particular country data was used, the result of this finding confirms significant negative effect of CAR on the levels of NPLs of commercial banks in by supporting the arguments that state well capitalized banks are better able to resist the levels of risk. The majority of the interviewees stated that commercial banks in Ethiopia are demotivated to take riskier loan activities due to highly regulated nature of the institution in the country. Accordingly, the positive impact of CAR on NPLs is due to ineffective regulatory pressures by NBE on capital adequacy ratio of banks and also bank managements' efficient utilization of its capital to absorb NPLs. This shows that the control mechanism is not associated with the business profitability of the banks instead it applied for minimum requirements that should be fulfilled by the banks by this public institution. On other hand, the positive sign of this study shows that banks did not consider it as financial factors that measures the risk ; it ensures banks did not undertake it as a serious financial measure technique. In addition, the study shows that the presence of

positive result shows that NPLs of surveyed banks is as source of the decline in the profit margin of some of these banks.

4.3.3.3 Loan Growth

Regarding loan growth, this study applied correlation analysis that is used to see its relationship with NPLs; and it ensures it has a significant relationship with NPLs; and to make sure that it has a positive multiple regression analysis has been conducted. And the result of the regression analysis shows that loan growth has positive and significant impact on NPLs as loan growth has a positive significant association with NPLs (.2913345 and 0.006). Therefore, the stated alternative hypothesis is supported. The study result with related to explanatory variables of loan growth has a positive relationship with NPLs at 1% significance level with a P-value 0.291.

The result implied that when loan growth is goes up by one unit non- performing loan is goes up by 0.291. Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. This shows that the surveyed banks that emphasize loan growth do so at the expense of credit quality. Even if it is virtually impossible to eliminate loan losses entirely, Ethiopian private commercial banks have been strongly adhere to sound credit analysis principles that framed by a sound credit policy. But the majority of the interviewees stated that even if banks have been working on the quality of their loan they should reduce the frequency and depth of loan problems. They should concentrate lending in fields where it possesses a demonstrated expertise, and a bank should not lend outside its trade area. Lending difficulties can be reduced if management establishes and adheres to loan policy guidelines that restrict unacceptable activity. This study is consistence with the study of Bercoff, Govanni and Franque, (2002) show that asset growth explains NPLs. They also collected various studies that indicate that loan delinquencies are associated with rapid credit growth. They also mentioned Keeton (1999) used data from commercial banks in the United States from 1982 to 1996 and a vector auto regression model indicates this association between loan and rapid credit growth. Sinkey and Greenwalt (1991) found large commercial banks in the US and found out that excessive lending explains loan loss rate.

4.3.3.4 Exchange Rate

This study applied correlation analysis is used to see exchange rate relationship with NPLs; and to make sure that it has a negative effect on NPLs, multiple regression analysis has been

conducted. The result indicates that exchange rate has a negative and significant effect on NPLs (-4.603446 and 0.001). And the result of the regression analysis shows that exchange rate has a negative significant impact on NPLs; therefore, the stated alternative hypothesis is supported. The study result with related to explanatory variables of it has a negative relationship with NPLs at 1% significance level with a P-value 0.08. In this case, the negative and significant relationship between them shows that as exchange rate rises NPLs will be fallen. On other hand, the majority of the interviewees indicate that Ethiopia has experienced high level of foreign currency loans, and it is anticipated that the NPLs ratio reacts strongly to exchange rate volatility. In addition, Ethiopia has been experiencing a depreciation of the domestic currency that may be led to an increase in the NPLs rate, to the decline of credit worthiness of private debtors and the fact that export-oriented companies do not use the positive effects of depreciation of the national currency on export, due to low competitiveness of their products. This study result is not in contrast with the analysis conducted by Nkusu (2011) as found its negatively affect NPL since exchange rate are influences borrower's obligation overhauling capacity through diverse channels. He also stated that deterioration of the trade rate can have blended suggestions on borrower's obligation overhauling capacity. This may be related to the competitiveness of export-oriented firms. Devaluation of trade rate can move forward the debt-servicing capacity of export-oriented borrowers. On the other hand, it can unfavourably influence the debt-servicing capacity of borrowers who borrow in outside cash (import-oriented firms). As indicated by Martha (2017), the term risk management can mean many things; but in business, it involves identifying events that could have adverse financial consequences and then taking actions to prevent and/or minimize the damage caused by those events. Years ago corporate risk managers dealt primarily with insurance; they made sure the firm was sufficiently insured against fire, theft, and other casualties and that it had adequate liability coverage. In very recent times, the scope of risk management has extended to include such responsibilities as controlling the costs of key inputs such as petroleum by purchasing oil futures or protecting against changes in interest rates or exchange rates through dealings in the interest rate or foreign exchange markets. They, the risk managers of surveyed banks should try to ensure that actions designed to hedge against risk are not actually increasing risk.

4.3.3.5 Gross Domestic Products

This study applied correlation analysis to investigate GDP relationship with NPLs; and to make sure that it has a negative effect on NPLs; multiple regression analysis has been

conducted. The result indicates that real GDP growth has a negative but insignificant effect on NPLs (Cofee -.8678286 and P-vale 0.134). And the result of the regression analysis shows that it as negative and insignificant impact on NPLs; therefore, the stated alternative hypothesis is not supported. Similarly, Gadise (2014) found that GDP growth has insignificant negative relationship with the non-performing loans. Swamy (2012) conduct study to examine the macroeconomic and indigenous determinants of NPLs in the Indian banking sector using panel data a period from 1997 to 2009. The variables included were GDP growth, inflation rate, per capital income, saving growth rate, bank size, loan to deposit ratio, bank lending rate, operating expense to total assets, ratio of priority sector`s loan to total loan and ROA. The study found that real GDP growth rate, inflation, capital adequacy, bank lending rate and saving growth rate had insignificant effect; whereas loan to deposit ratio and ROA has strong positive effect but bank size has strong negative effect on the level of NPLs. However, Meseret (2018) found that GDP coefficient implied positively relate with NPLs at a significance level of 10% with a p-value (0.0528); which implies when GDP goes up by 1 NPLs also goes up by 0.025293. The positive effect of GDP growth on NPLs may be associated with loan demand and supply of deposits that positively affects bank profitability. The positive relationship is supported by Meseret (2018) but this study does not confirm her findings and it can be argued that within an increase economic growth, business environment is enhanced and barriers to entry are lowered leading to high competition which reduces profitability. This study argued that due to higher competition among Ethiopian banks, the economic growth of the country may affect the loan characteristics of the banks and their profit may be affected accordingly.

4.3.3.6 Inflation

Firstly, correlation analysis is used to investigate inflation has relationship with NPLs; and it has a significant relationship with NPLs (r=-0.1536; sig, 0.0000); and to make sure that it has a negative effect on NPLs, multiple regression analysis has been conducted. The result shows thatinflation rate has a negative significant effect on NPLs based on its Coef-.2125805 and p-value less than 0.05 (0.036). And the result of the regression analysis shows that it has negative and significant impact on NPLs; therefore, the stated alternative hypothesis is supported. On the contrary, Meseret (2018) found that the maximum inflation rate was recorded in the year 2009 (36.400%) and in 2012 (34.10%) and the minimum inflation rate which was recorded in 2002 (-10.57%). Therefore, it has a positive and significant relationship between inflation and NPLs. She concluded that the effect of higher interest rates

due to inflation and declining economic conditions which are commonly associated with rising inflation, succeed over the tremendous impact that inflation would possibly have on borrowers debt servicing capacity. This is because relative inflation rates, or the rates of inflation in foreign countries compared with that in the home country, have two key implications for multinational firms: Relative inflation rates influence future production costs at home and abroad, and inflation has an important effect on relative interest rates and exchange rates. Both of those factors influence multinational corporations' financing decisions and the profitability of foreign investments (Viswanadham & Nahid, 2015). As there is a trade protection for domestic firms as of commercial banks in our country, inflation rate may not cause firms to be less profitable instead they may obtain uncreative money and can have a chance to settle their loan accordingly. Thus, inflation can affect NPL negatively. However, one study found that inflation has a significant positive relationship with the non-performing loans (Gadise, 2014). Whereas Nkusu (2011) has enlightened that this relationship can be positive or negative; according to the author inflation affects loan payment capacity of borrowers positively or negatively, higher inflation can enhance the loan payment capacity of borrower by reducing the real value of outstanding debt; moreover increased inflation can also weaken the loan payment capacity of the borrowers by reducing the real income when salaries/wages are sticky, moreover by highlighting the role of inflation in the presence of variable interest rate. He further clarifies that in this scenario inflation reduces the debt servicing capacity of the loan holders as lenders adjust the lending interest rates to adjust their real return. So according to literature relationship between inflation and non-performing loans can be positive or negative depending on the economy of operations.

4.3.3.7 Return on Asset

Firstly, correlation analysis is used to investigate ROA has relationship with NPLs; and it has a significant relationship with NPLs (r=-0.2643; sig, 0.0000); and to make sure that it has a negative effect on NPLs, multiple regression analysis has been conducted. The result shows that ROA has a negative but insignificant effect on NPLs (-.0632264 and 0.754) . And the result of the regression analysis shows that it has negative and insignificant impact on NPLs; therefore, the stated alternative hypothesis is supported. This result shows that there is a negative but insignificant effect on NPLs. The key reason for this insignificant effect of ROA on the levels of NPLs resulted from bank managements' inadequacy on asset utilization and also poor loan quality in the Ethiopia. Consequently, the finding implies that commercial banks in Ethiopia are less enticement for return gained from assets and also to provide loans.

On the contrary of this study, Meseret (2018) found that there is a positive and significant relationship between ROA and NPLs. This result points out that When ROA of the ratio increases NPLs also increase and they are positively correlated at 5% significance level with a P-value of 0.0342.This implies when profitability goes up by one unit NPLs also improved by 0.005112. However, she mentioned Louzis*et al.,* (2010) who examined the determinants of NPLs in the Greek financial sector using fixed effect model from 2003-2009 periods. They found that loan to deposit ratio, solvency ratio and credit growth has no significant effect on NPLs. However, ROA and ROE has negative significant effect whereas inflation and lending rate has positive significant effect on NPLs. Gadise (2014) hypothesized that there is a negative association between ROA and NPLs of banks. Contrary to the hypothesis, the estimated coefficients and test statistics of ROA was 3.83 and 0.000 respectively. This reveals positive and statistically significant impact of ROA on the levels of NPLs and implies that for one unit change in bank profitability measured in terms of ROA, keeping the other thing constant had resulted3.83unitchanges on the level of NPLs in the same direction.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented descriptive analysis and examined the trends of NPLs of selected private commercial banks in Ethiopia. Moreover, the results of findings and discussion were also made as well. This chapter sums up the findings of the study. Therefore, the first section is the conclusion part that presents a brief summary for the finding of the study. Finally, the second section reveals the recommendation for the finding whereas section three highlights the direction for further studies.

5.2 Summery and Conclusions

The main objective of this study was to examine the determinants of non-performing loans in commercial banks of Ethiopia based on panel data analysis on the time period from2010 to 2019. The data was analyzed by using correlation and multiple regression analysis. For the purpose of analysis, STATA version 12 was used. The finding of the trend analysis of NPLs shows a downward sloping of NPLs of commercial banks in Ethiopia over the time of study. This study found that real GDP growth has a negative but insignificant effect on NPLs (Cofee GDP -.8678286 and P-vale 0.134). Since real GDP growth showed largely non-significant results, indicating that NPLs within this study were mainly affected by domestic conditions rather than external economic shocks. Thus, these findings have important implications for the stability and health of the banking sector within transition economies, since they underscore the importance of macroeconomic conditions. This result is not expected since one would expect a negative impact of bank profitability on NPLs. This implies that commercial banks in Ethiopia are either higher or lower incentive to increase return via in utilizing its assets. Similarly, the study also found out that capital adequacy has a positive but insignificant effect on NPLs (.3484385 and 0.095). This shows banks with strong capital adequacy have a tendency to absorb possible loan losses and thus, it insignificantly reduces the level of NPLs due to efficient utilization of its capital. The finding of the lending rate is as predictable. It showed positive and statistically significant impact of lending rate on the level of NPLs. This implies due to other extraneous factors, decrease in lending rate reduces the levels of NPLs for commercial banks in Ethiopia. Thus, it can be concluded that lending rate has a positive significant effect on NPLs. The study found out that inflation rate has a negative significant effect on NPLs based on its Coef -.2125805 and p-value less than 0.05

(0.036). Inflation also showed a significant negative relationship with NPLs, revealing that in times of low inflation, people can honour their loan obligations due to the reduced real burden of such repayments as general prices rise. In addition, this study found that exchange rate has a negative but insignificant effect on NPLs (-4.603446 and 0.001), loan growth has a positive significant association with NPLs (.2913345 and 0.006) and operational efficiency has a positive significant association with NPLs (.1056158 and 0.005). On the other hand, the findings indicated that bank profitability measured in terms of ROA has a negative but insignificant effect on NPLs (-.0632264 and 0.754). Thus, it can be concluded that NPLs have 'caught the eye' of many authors who were intrigued by this phenomenon. This is perhaps attributable to the fact that it is an indicator of the health of the banking system within a country and hence the economic health of that country, both in the short term and in the long term due to its implications for investment.

5.3 Recommendations

Based on the findings of the regression analysis and conclusion, the following recommendations were promoted.

- Private commercial banks may appropriately maintain their asset quality using achieving satisfactory liquidity ratios and good asset management by lowering costs and making net income high. Specifically loan performance for prevention of loans loss in order to improve asset quality, specifically loans. Once assets are reflected as appropriate sources of financing, these assets must be managed efficiently. In consequence, they may properly determine and evaluate their asset management ratios, which give them an idea of how efficiently the firm issuing its assets.
- The study recommends the private commercial banks in Ethiopia to improve the their loan. There is need for the Government to initiates measures that will control the real interest rate in Ethiopia. Lower interest rates would be more appropriate in order to reduce the level of non-performing loans in Ethiopia since they strongly influence non-performing loans.
- Banks should obey with banking rules and regulations to avoid the increasing incidence of nonperforming loans and the regulatory authorities should regularly access the lending behavior of the banking industry.

- The bank lending environment should well be examined before and after credit and the regulatory authorities should put in place monetary and macroeconomic variables that can affect negatively the credit function of the commercial banks.
- The credit policies of the commercial banks should be integrated with the profitability objectives of the commercial banks and sound credit culture should be introduced.
- Credit management should be viewed as part of a co-ordinating group effort made by all department involved with customers to minimize bad debtors that affects negatively bank profit.

5.4 Direction for Further Research

This study examined both bank specific and macroeconomic determinants of nonperforming loans of senior commercial banks in Ethiopia using selected variables from 2010to 2019. Nonetheless, there are so many variables that were not involved in this study. Consequently, future researchers may be interested invalidating the consistency of the result and provide supplementary results for this study by including other variables like tax issues, bank type and size, ownership, unemployment rate and others. Moreover, the same study may be required on newly emerging banks. The results obtained piloting econometric examination can be used to project fundamental grounds of NPLs in the economy of Ethiopia. It will help policymakers of developing countries like Ethiopia to take enough measures to control NPLs or take precautions against it. The contribution of the current study puts light on future research. For example, future research can be conducted in the developing and emerging economies like Ethiopia.

REFERENCE

Agresti, A.M., Baudino, P., &Poloni, P. (2008). The ECB and IMF indicators for the Macro prudential analysis of the banking sector: A comparison of the two approaches.

Ahmed,Fawad. and Bashir, Taqadus. (2013).*Explanatory Power of Macroeconomic Variables as Determinants of Non-Performing Loans*: *Evidence Form Pakistan*, World Applied Sciences Journal 22 (2): 243-255, ISSN 1818-4952

Amuakwa–Mensah, Franklin, &Boakye–Adjei, Angela.(2015). Determinants of non–performing loans in Ghana banking industry.*International Journal of Computational Economics and Econometrics*, 5(1), 35-54.doi: 10.1504/ijcee.2015.066207

Anjom, W., Karim, A.M. (2016). Relationship between non-performing loans and macro-economic factors (with specific factors: a case study on loan portfolios- SAARC countries prespective). *Asia Pacific Journals of Finance and Risk Management*. 15(3), 84-103

Asari, F.F.A.H., Muhamad, N.A., Ahmad, W., Latif, N.I.A., Abdullah, N. and Jusoff, K. (2011). An Analysis of Non-Performing Loan, Interest Rate and Inflation Rate Using Stata Software. *World Applied Sciences Journal*,vol 12, p41-48.

Bercoff, Jose. J., Julian di, Govanni and Franque, Grimard. (2002).Argentinean Banks, Credit Growth and the Lequila Crisis:A Duration Analysis, *Journals of Finance and Risk Management*. 1(2), 4-10

Bloem, A. M. and Gorters, C. N. (2001).*The Macroeconomic Statistical Treatment of, Nonperforming Loans:* Discussion Paper Statistics Department of the International Monetary Fund WP/01/209.

Brigham, E. F. and Ehrhardt. M. C. (2006).*Financial Management Theory and Practice*, 10th Ed. Thomson South-Western, USA.

Changjun, Zheng. Probir, Kumar. AndNiluthpaul, Sarker. (2019). Industry-Specific and Macroeconomic Determinants of Non-Performing Loans: A Comparative Analysis of ARDL and VECM, MDPI, Basel, Switzerland

Chengeta, R. (2007). Importance of banks in an economy,(http://www.slideshare.net/R.Chengeta- Importance-of-banks-in-economy.com), site visited on12/11/2012.

Creswell, J. W. (2003). *Research Design, Qualitative, Quantitative and Mixed Methods Approaches*, 2nd edn, Sage Publications. California

Dimitrios, Anastasiou, Helen, Louri, & Mike, Tsionas. (2016). Determinants of non-performing loans: Evidence from Euro-area countries. *Finance Research Letters*, 18, 116-119.

Ekanayake, EMNN, &Azeez, AA. (2015). Determinants of non-performing loans in licensed commercial banks: Evidence from Sri Lanka. *Asian Economic and Financial Review*, 5(6), 868-882.

Fofack, H. (2005), *Non-performing loans in sub-Saharan Africa:* Causal Analysis and Macroeconomic Implications. World Bank Policy Research Working Paper n° 3769.

Gadise, Gezu. (2014). Determinants Of Nonperforming Loans: Empirical Study In Case Of Commercial Banks in Ethiopia, Masters Of Science (Msc) in Accounting And Finance, Jimma University, Jimma, Ethiopia

Ibish, Mazreku.Fisnik, Morina.Valdrin, Misiri.Jonathan, V. and Simon, Grima. (2018). Determinants of the Level of Non-Performing Loans in Commercial Banks of Transition Countries, *European Research Studies Journal Volume* XXI, Issue 3, 2018 pp. 3 - 13

Islam, M.S., Shil, N.C and Mannan, A.M. (2005).*Non performing loans – its causes, consequences and some learning*, MPRA paper No. 7708, Bangladeshi, March.

Kirui, S. (2014).The effects of Non-performing loans on profitability of commercial Banks in Kenya.MBA project, University of Nairobi.

Kirui, Simion. (2014). The effect of non-performing loans on profitability of commercial banks in Kenya. (Master's Degree Thesis), Master's Degree Thesis, University of Nairobi, Kenya.

Kurumi, L., Bushpepa, O. (2017). Do macroeconomic variables affect the level of non-performing loans? *Sixth Conference of Students of the Agricultural University of Tirana*.Tirana, https://drive.google.com/file/d/0B0H5Y5y03xiZdlFxbDE5UjZqMk0/view.

Laxmi, Koju. Ram, Koju. And Shouyang, Wang. (2018). Macroeconomic and Bank-Specific Determinants of Non-Performing Loans: Evidence from Nepalese Banking System, *Journal of Central Banking Theory and Practice*, 2018, 3, pp. 111-138, UDK: 336.71(541.35), DOI: 10.2478/jcbtp-2018-0026

Martha, Nyaliet. (2017). Factors Affecting Non-Performing Loans: A case study of KCB Bank Kenya Limited Nairobi Region (MBA thesis), the Catholic University of Eastern Africa, Kenya

Meseret, Amsalu. (2018). Factors Affecting Non-Performing Loan in The Case of Ethiopian Commercial Banks, (MBA thesis), St Mary University, Addis Abba, Ethiopia

Nasieku, N. (2014) *Factors affecting nonperforming loans*. A case study of Commercial Bank of Africa in Kenya, United States International University (USIU)-Africa.

Natnael, Tefera. (2017). Factors Affecting Non-Performing Loans In Banking Industry In Ethiopia: A Case of Dashen Bank, MA Thesis, St. Mary's University, School Of Graduate Studies, Addis Abba, Ethiopia

Nkusu, M. (2011), *Nonperforming Loans and Macro-financial Vulnerabilities in Advanced Economies*, IMF Working Paper WP/11/161.

Ranjan, Rajiv. and D. Chandra Sarat. (2003). *Non-Performing Loans and Terms of Credit of Public Sector Banks in India: An Empirical Assessment;India, Reserve Bank of India Occasional Papers* Vol. 24, No. 3

Shingjerji, Ali. (2013).*Impact of Bank Specific Variables on the Nonperforming loans ratio in Albanian Banking System, Journal of Finance and Accounting*: Vol.4, No.7.

Swamy, V (2012). Impact of Microeconomic and Endogenous Factors on non- performing bank assets, *International Journal of Banking and Finance*, Indian Business School. Hyderabad. India. Vol 9, p 27-28

Samuel, Alemu. (2015). Determinants of Commercial Banks Profitability: The Case of Ethiopian Commercial Banks, MA thesis, Addis Ababa University, Addis Ababa, Ethiopia

Tanasković, Svetozar.&Jandrić, Maja. (2015). Macroeconomic and institutional determinants of non-performing loans.*Journal of Central Banking Theory and Practice*, 4(1), 47-62.

Thi Minh Hue, Nguyen. (2015). Non-performing loans: Affecting factor for the sustainability of Vietnam commercial banks. *Journal of Economics and Development*, 17(1), 93-106.

Viswanadham, N. &Nahid, B. (2015). Determinants of Non-Performing Loans in Commercial Banks: A Study of NBC Bank Dodoma Tanzania, *International Journal of Finance & Banking Studies*Vol 4, No 1, 2015 ISSN: 2147-4486

Wondimagegnehu, N. (2012). *Determinants of Non-Performing Loans:* The case of Ethiopian Banks, Master's Thesis, Addis Ababa, Ethiopia

Appendix: Interview Checklist questions for Bank credit Director, portfolio and recovery managers and relation Managers.

Dear Respondent,

I am Dereje Abebe, a postgraduate student of St. Mary University and I am currently conducting an academic research about Determinants of Non-performing loans in Ethiopian commercial banks. I have few questions regarding the study area. The objective of this interview is to gather and analyze relevant and in-depth information that will provide insights about Determinants of NPLs of Banks. This study is undertaken as a partial requirement for the completion of MBA in Accounting and Finance. Can I proceed?

Thank You!

1. Please indicate the practice of NPLs seemed in commercial banks of Ethiopia including issues related to NPLs in your bank.

2. Please indicate what bank specific factors do you think influence the occurrence of Non-performing loans in Ethiopian banks.

3. Please indicate the major macro-economic determinants that affect Non-performing Loans of the banking sector.

4. Would you please indicate the challenges that create effective loan payment in Ethiopian private banks?

5. Please indicate the major loan default problems in Ethiopian commercial banks

Thank you for your valuable response and time