ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT ACCOUNTING AND FINANCE

DETERMINANTS OF NON-PERFORMINGLOANS IN ETHIOPIAN COMMERCIAL BANKS

BY

TIRUMEBET BELAY

JUNE, 2020

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A THESIS SUBMITTED TO THE MASTER'S PROGRAM, ST. MARY'S UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MBA IN ACCOUNTING AND FINANCE

ADVISOR

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JUNE, 2020

ADDIS ABABA, ETHIOPIA

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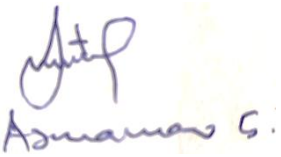
Dr. Asmamaw G. _____	
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DECLARATION

I, the undersigned, declare that this thesis is my original work and prepared under the guidance of Dr. Abebaw Kassie. All the sources of material used for this thesis have been duly acknowledged. I further confirm that this thesis has not been submitted either in part or in full to any other higher learning institutions for the purpose of awarding any degree.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval of a University advisor.

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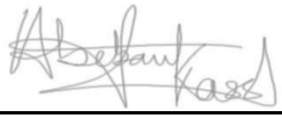
Dr. Abebaw Kassie	

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ACKNOWLEDGEMENT

First and foremost I thank the Almighty GOD for the wisdom and perservance that has been bestowed upon me during this paper and indeed, throughout my life. “I can do everything through him who gives me strength”.

A major final paper projects like this can never be the work of any one alone. The contributions of many different people, in their different ways have made this possible. Hence, gratitude is hereby extended to the following people who never ceased in helping until this paper structured. Of those, it is with much appreciation that I thank my thesis adviser Dr. Abebaw Kassie for his commitment and devotion while providing me timely responses and academic guidance throughout the completion of this project, wish God to bless him and his entire family.

I sincerely thank employees' of commercial banks at different branches who have committed their time to give me some information and make this research come true.

What words can I use to express my sincere gratitude to my loving and understanding my best friend Gelila Alebachew and my family for the priceless concern and support all the way through the completion of the thesis.

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ACRONYMS AND ABBREVIATION

AIB: Awash International Bank-

BIS: Bank for International settlements

BLUE: Best linear unbiased estimation

BOA: Bank of Abyssinia

BS: Bank size

CAR: Capital Adequacy Ratio

CIT: Corporate Income Tax

CLRM: Classical Linear Regression Model

CSA: Center of Statistical Agency

DB: Dashen Bank

ECB: Ethiopia Commercial Bank

EVIEWS: Econometric s views-

GDP: Gross Domestic Product

GMM: Generalized Methods of Moments

IMF: International Monetary Fund

INFL: Inflation Rate

LDR: Loan deposit ratio

LTD: Loan to deposit

MENA: Middle East and North Africa

NBE: National Bank of Ethiopia

NIB: Nib International Bank

NPL: Nonperforming Loan

OLS: Ordinary Least square

ROA: Returns on Asset

ROE: Return on Equity

UB: United Bank

WB: Wegagen Bank

ABSTRACT

This study was conducted to examine determinants of NPLs of commercial banks in Ethiopia. To this end, the researcher has selected seven senior commercial banks in Ethiopia judgmentally. This study used secondary sources of data, which is panel data in nature, over the period 2004-2017. These data were collected from NBE, CSA and the banks itself. Furthermore, fixed effect model was used to examine the determinant of NPLs. This research is an explanatory research design that identifies the cause and effect relationships between the NPL and its determinants. Findings of the study show that Capital asset adequacy has positive and significant impact on NPLs. Bank size, Loan to deposit ratio have negative but they have significant impact on NPLs. The finding of this study is important since once identifying the determinants of NPLs might enable management body to make appropriate lending policies that prevent the occurrence of NPLs. The study recommended as bank managers better emphasize the management of loans by diversify their credit portfolio & calculating risk relative to its return in order to increase return on equity and to reduce the level of nonperforming loans. Also the study suggest for future researcher to validate the consistency of the result and provide additional results by including other variable such as borrower specific variables (Loan diversion, poor credit culture of customers and willful defaulting), priority sector loan, government macro policy like monitory policy and sensitive sector's loan.

Key words: Nonperforming loans, bank specific factors, macroeconomic factors

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Banking sectors play a key role in the development of an economy. The development role undertaken by banking sector determines the step for development of the given economy. Hence the stability of banking sector is a key for the development of an economy. The primary function of bank is mobilizing deposits from surplus units to deficit units in the form of loan and advances to various sectors such as agricultural, industry, personal and governments. However, in recent times, the banks have become very cautious in extending loans due to non-performing assets (Sontakke and Tiwari, 2013).

As a result providing credit to borrowers is one means by which banks contribute to the growth of economy there by ensure that the money available in economy is used for productive and fertile project purpose which can stimulate the economy as well. Therefore, managing loan in a proper was not only has positive effect on the banks performance but also on the borrower firms and a country as a whole (Gadise, 2014).

According to Rawlin et al. (2012), the principal aim of any business is to make profits. That is why any asset created in conduction of business should generate income for the business. Since this issue is applicable for the banking sector business, banks should give due consideration on the management of loans because lending is the main business of commercial banks and loan is normally the main assets and vital source of revenue for the commercial banks (Daniel and Wandera, 2013). Therefore, banks do grant loans and advances to individuals, business organizations as well as government in order to enable them operates on investment and development activities as a mean of contributing toward the economic development of a country in general and aiding their growth in particular.

Deposits in banks are offset by higher margins from creation of credits as loans. However, if such assets do not generate any income, the banks` ability to repay the deposit amount on the due date would be in question. Therefore, the banks with such asset would become weak and such weak banks will lose the faith and confidence of the customers. Ultimately, unrecoverable

amounts of loans are written off as Nonperforming loan (Mallick *et al.,* 2010) as cited in Rawlin *et al.* (2012).

As many literatures shows, there have been an increased number of significant bank problems both at matured and emerging economies (Tendia *et al.* 2012). Banking sectors can perform worst as a result of inefficient management, low capital adequacy and poor assets quality. Nonperforming assets is also the single largest cause of irritation of the banking sectors (Sontakke and Tiwari, 2013).

According to the International Monetary Fund (IMF, 2009), 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 .On the other hand the Basel Committee1(2001) puts non-performing loans as loans left unpaid for a period of 90 days.

Under the Ethiopian banking business directive, non-performing loans are defined as "Loans or Advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment terms of the loan or advances in question" National Bank of Ethiopia (NBE, 2008).

Thus, given the unique features of banking sector and environment in which they operate and also rapid expansion of banking institutions in Ethiopia, there are strong wishes to conduct a separate study on the determinants of NPLs of banking sectors in Ethiopia. Besides, inconsistent results in different studies among researchers are also another motive to conduct this study. To this end, the main objective of this study will be to examine the bank specific and borrowers' specific determinants of NPLs of commercial banks in Ethiopia.

Thus, the present study will attempts to identify the determinants of loan repayment performance financed by the selected commercial banks in Ethiopia. The researcher strongly believe that identifying the factors affecting loan repayment performance of the commercial banks would enable the bank's management to tackle and minimize the problems and consequently will enhance its loan recovery performance. This will initiates the bank management and executives with applied knowledge on the management of identified variables and it will provide them with

understanding of activities that will enhance their loan quality and play a vital role in filling gap in understanding the determinants of NPLs in commercial banks in Ethiopia.

1.2 Overview of Banking System in Ethiopia

Bank of Abyssinia was the first bank established in Ethiopia based on the agreement between Ethiopian government and National bank of Egypt in 1905 with a capital of 1 million shillings. However, bank of Abyssinia was closed at in 1932 by Ethiopian government under Emperor Haile Selassie and replaced by Bank of Ethiopia with a capital of pound sterling 750,000. Following the Italian occupation between1936-1941, the operation of bank of Ethiopia ceased whereas the departure of Italian and restoration of Emperor Haile Selassie's government established the state bank of Ethiopia in 1943. However, State bank of Ethiopia was separated into National bank of Ethiopia and commercial bank of Ethiopia S.C. to separate the responsibility of national bank from commercial banks in 1963. Then, on December 16, 1963 as per proclamation No.207/1955 of October 1963 commercial bank of Ethiopia control all commercial banking activities (Fasil and Merhatbeb, 2009).

Following the declaration of socialism in 1974, the government extends the extent of its control over the whole economy and nationalized all large corporations. Accordingly, Addis bank and commercial bank of Ethiopia share company were merged by proclamation No.84 0f August 2, 1980 to form single commercial bank in the country until the establishment of private commercial banks in 1994.To this end, financial sector were left with three major banks namely; National bank of Ethiopia, commercial bank of Ethiopia and Agricultural and development bank during the socialist government. However, following the departure of Dergue regime, Monetary and Banking proclamation of 1994 established the National bank of Ethiopia as a legal entity. Following this, Monetary and Banking proclamation No.84/1994 and the Licensing and supervision of banking business proclamation No.84/1994 laid down the legal basis for investment in banking sectors (Habtamu, 2012).

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Currently, banking sectors in Ethiopia are showing progressive developments in terms of number of branches, total assets, human resource utilization and the like relative to other African developing countries. This indicates as Ethiopia categorized under banked country with limited outreach (Tseganesh, 2012).Thus, currently number of banking sectors in Ethiopia were reached eighteen as shown it the following tables.

Table 1: Banking sectors in Ethiopia

No	Name of Banks	Year of Establishment
1	Commercial Bank of Ethiopia	1963 E.C.
2	Development Bank of Ethiopia	1901 E.C.
3	Awash International Bank	1994 E.C
4	Dashen Bank	1995 E.C.
5	Bank of Abyssinia	1996 E.C.
6	Wegagen Bank	1997 E.C.
7	United Bank	1998 E.C
8	Nib International bank.	1999 E.C
9	Cooperative Bank of Oromia	2004 G.C.
10	Lion International Bank	2006 G.C.
11	Zemen Bank	2008 G.C
12	Oromia International Bank.	2008 G.C
13	Buna International Bank	2009 G.C.
14	Berhan International Bank	2009 G.C
15	Abay Bank S.C	2010 G.C
16	Addis International Bank S.C	2011 G.C
17	Debub Global Bank S.C	2012 G.C
18	Enat bank	2012 G.C

Source: www.nbe.et

1.3 Statement of the Problem

Bank loans can become "non-performing" because of problems with the borrower's financial health, problems with the design or implementation of lender protection features, or both. In ascertaining how to deal with a problem loan, it is important to distinguish between a borrower's "ability to pay" and "willingness to pay," Making this distinction is not always easy and requires effort (Pennsylvania Avenue, 2014).

NPLs affect the bank`s liquidity and profitability which are the main components for the overall efficiency of the bank. An increase in NPLs leads high level of provision expenses, which diminishes income. Again, mismatch of maturities between asset and liability creates liquidity risk for the banks that deteriorate bank's overall credit rating including its image (Badar Munib and Yasmin Atiya, 2013).Therefore; the determinants of NPLs should be given a due consideration because of its adverse effect on survival of banks.

Following the 2012 NBE declaration, NPLs of ECBs (Ethiopian commercial Banks) have shown a significant improvement and lowered to an average of 5 % (NBE 2011). However, there is a significant variation on the reduction of NPLs from banks to bank. In some bank the change is abrupt and surprise while in the others the change is steady and constant. Total outstanding credit of the banking system including to the central government increased by 27.8 percent and reached Birr 231.7 billion at the end of June 2015 and 2016/17, Annual Report, increased by 30.4 percent and reached Birr 365.6 billion at the end of June 2017.(National Bank Of Ethiopia, 2017)

Credit has long been recognized as one of the important tool that supports the success of development project which contributes towards economic development. Similarly commercial banks in Ethiopia provides sustainable credit facility for those engaged in agriculture, industrial and other service sectors which can result in development of the country. So, in order to maintain this objective the bank needs to strengthen its liquidity position by enhancing its loan recovery. However, provision of credit alone does not support the economic development of the country unless it is accompanied by the existence of factors necessary for efficient utilization of the fund in order to repay the loan in accordance with the agreement (Arega et.al, 2016).

The increasing level of Non-performing loans may lead to very serious implications. For instance, it discourages the financial institution to refinance the defaulting client, which put the defaulters once again into vicious circle of low productivity. Therefore, a rough investigation of the various aspects of loan defaults, source of credit, purpose of the loan, form of the loan, and condition of loan provision are of utmost importance both for policy makers and the lending institutions. Even if default is random and influenced by unpredictable behaviors or it is influenced by certain factors in a specific situation needs an empirical investigation so that the findings can be used by any financial institutions to manipulate their credit program for the better. Most of the default arose from poor management procedures, loan diversion and unwillingness to repay loans, etc. Because of this, the lenders must give various institutional methods that aimed to reduce the risk of loan default (Ahmmed *et al.,* 2012).

Consequently, to reduce the default rate and to enhance the sustainability of the bank, it is imperative that identifying the various factors which significantly affect the loan repayment performance from both borrowers and lender side. Hence, this study aimed at identifying the factors that affect non-performing loans of selected commercial banks in Ethiopia. The rationale for undertaking this study is that, to the best of the researcher's knowledge it appears that adequate researches have not been made that comprehensively assess the determinants of Non-performing Loan in banking industry in general and Commercial Banks of Ethiopia in particular.

1.4 Objective of the Problem

1.4.1 General Objective

The main objective of this paper was to examine the determinants of non-performing loan in commercial banks of Ethiopia.

1.4.2 Specific Objective

In line with the main objective, this paper has the following specific objectives

- To examine bank specific determinants (ROE, CAR, LTD, Bank size) of non-performing loan in commercial banks of Ethiopia.
- To examine macroeconomic determinants (Inflation rate and growth on GDP)of non-performing loan in commercial banks of Ethiopia
- Determining which determinant is most significant factor for NPL

1.5 Research Hypothesis

The objective of the study is to examine the determinant of Ethiopia Commercial Banks NPL. NPL is independent variable that can explain in different factors and its determinant classify into three bank specific and macroeconomic variables (Saba et al. 2012; Louzis et al. 2012; Boudriga et al. 2009 and Skarica 2013). The bank-specific variables are internal factors and controllable for bank managers while the macroeconomic variables are uncontrollable and external factor. Therefore, presented the bank-specific and macroeconomic variables related with hypothesis development under this section.

a) **Return on Equity (ROE)**: represents the rate of return received from equity invested in banks. It is the amount of net income returned as a percentage of shareholders equity. Return on equity measures profitability by revealing how much profit a bank can generates with the money shareholders have invested. Thus, ROE measures how much the bank is earning on their equity investment. Many researchers were found different results between NPLs and bank profitability measured in terms of ROE. For instance:- Shigjerji (2013) and Ahmed and Bashir (2013) and Makri et al.(2014) found negative relationships between ROE and NPLs. Therefore, this ratio is expected to have negative relationships with NPLs. It is measured by the ratio of net profit to total equity.

H1: *There is a significant positive relationship between Bank return of equity and bank's Ls.*

b) Capital Adequacy Ratio (CAR): Capital adequacy is a measure of bank`s financial strength since it shows the ability to withstand/tolerate with operational and abnormal losses. It also represents the ability to undertake additional business (Habtamu, 2012). As noted by Makri et al.(2014), CAR determines risk behavior of banks. It is a measure of banks solvency and ability to absorb risk. Thus, this ratio is used to protect depositors and promote stability and efficiency of financial systems. According to Makri et al.(2014), there is negative relationship with NPLs indicating a risky loan portfolio is marked by a high NPL (equivalent to high credit risk). However, Djiogap and Ngomsi (2012) found positive association between NPLs and capital adequacy ratio. It is measured by total Equity to total asset ratio. However, it is expected to have negative association with NPLs in this study. This implies that well capitalized banks are less incentive to take risk.

H2: *There is a significant positive relationship between solvency/Capital Adequacy Ratioand bank's PLs.*

c). Loan to deposit (LTD) Ratio: Loan to deposit (LTD) ratio examines bank liquidity by measuring the funds that a banks has utilized into loans from the collected deposits. It demonstrates the association between loans and deposits. Besides, it provides a measure of income source and also measures the liquidity of bank asset tied to loan (Makri et al. 2014)). This ratio also measures customer friendliness of banks implies that relatively more customer friendly bank is most likely face lower defaults as the borrower will have the expectation of turning to bank for the financial requirements (Ranjan and Chandra, 2003). Thus, it represents a bank's preference for credit. It is credit culture that represents a bank's preference for credit. It is measured in terms of loan to deposit ratio. There is empirical evidence that shows as LTD ratio has significant effect on the level of NPLs of banking sectors in different aspects. In this study, this ratio is expected to have positive relation with NPLs

H3: *There is a significant positive relationship between Loans to deposit Ratioand bank's NPLs.*

a) Bank Size: The bank's asset is another bank specific variable that affects the profitability of a bank. The bank asset includes among others current asset, credit portfolio, fixed asset, and other investments. Often a growing asset (size) related to the age of the bank (Athanasoglou et al., 2005). More often than not the loan of a bank is the major asset that generates the major share of the banks income. Loan is the major asset of commercial banks from which they generate income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans (Dang, 2011). Thus, nonperforming loan ratios are the best proxies for asset quality.

H4: *There is a significant positive relationship between bank sizeand bank's NPLs.*

b) Gross domestic product (GDP): Previous study indicated GDP significantly negative relationship with NPL (Saba et al. 2012; Louzis et al. 2012; Tsige 2013 and Fofack 2005). Their explanation that GDP enhancement reflect the economy growth and development when the economy growth increase the borrower income and able to pay their debit at payment period and it's contribute to lower NPLs. Fainstein and Novikov (2011) suggests that real GDP growth was the main driver of nonperforming loan ratios. Therefore, a drop in global economic activity remains the most risk for banks asset quality. Previous researcher's unveiled inverse relationship between GDP growth and the level of NPLs (Salas and Suarina 2002 and Hou 2007).This study expected a negative relationship between GDP and NPLs.

H5*: Gross domestic product (GDP) has significant negative relationship with Non- performing loans of banks.*

c) Inflation: as mentioned in the literature, inflation affects borrowers‟ debt servicing capacity through different channels and its impact on NPL can be positive or negative. Empirically, Fofack (2005) found a positive relationship between inflation and NPLs in a number of Sub-Saharan African countries with flexible exchange rate regimes. On the other hand, Smadi (2010) found a negative association between inflation and NPLs in Jordanian commercial banking sector. Hence, the relationship

is indifferent in this study. In this study, annual inflation rate was used as a proxy measurement.

H6: *There is a significant positive/negative relationship between inflation and bank's NPLs.*

1.6 Scope of the Study

The objective of the study is to examine the determinant of NPL of commercial banks in Ethiopia. The researcher decided to limit this study to the commercial banks found in Ethiopia namely Commercial bank of Ethiopia, Awash international bank, Bank of Abyssinia, Wegagen bank, United bank, Nib International bank and Dashen bank that were registered by NBE before 2007/08.

These banks were selected since they are senior banks and are expected to have more experience on the lending activities. Besides, this study considers bank –specific factors (i.e ROE, loan to deposit ratio, capital adequacy ratio, bank size and Macro factors (GDP and Inflation) for the decision and analysis of data. To this end, this study covers a panel data of these banks over the period 2004 to 2017.

1.7 Significance of the Study

The finding of this study which details with the determinants of nonperforming loan of commercial bank in Ethiopia is beneficial for different stakeholders such as Banking sectors (commercial Banks and National bank of Ethiopia) and for other researchers as follows.

For National bank of Ethiopia, since such investigation has policy implication, the finding of this study might be used as a directive input in developing regulatory standards regarding the lending policies of commercial banks of Ethiopia. This study will also initiate the commercial Banks management to give due emphasis on the management of these identified variables and provides them with understanding of activities that will enhance their loan performance. This is due to the fact that knowing the variables that determine the nonperforming loan will help the banks manager to concentrate on the quality of loan rather than its quantity. Thus, this study made the management body to visualize the determinants of NPLs. Furthermore, the finding of this study initiates the researcher for further studies. Last but not least, this study will serves as a reference

for other researchers in related area. Thus, it can minimize the literature gap in the area of study particularly in Ethiopia.

1.8 Organization of the Study

The main objective of the study is to identify the Banks internal factors that influence nonperforming loan of selected Commercial Banks in Ethiopia. The rest of this study is organized as follows:

Chapter One: Provide some background about the study, problem statement, specifies the objectives as well as the significance of the study and benefits gained from this research.

Chapter two: Review of related literature will includes conceptual frame work of nonperforming loan, determinants of nonperforming loan and knowledge gap.

Chapter three: This chapter will describe the research design to be utilized. Specifically, the chapter describes Research design, target population, sampling techniques and sample size determination, the measuring instrument used, and the statistical techniques used to analyze the data.

Chapter four: reports on the results of the empirical analysis. Further, it proceeds with an analysis of the descriptive statistics on the variable under consideration. To facilitate ease in conducting the empirical analysis, the result of the descriptive, Pearson correlation coefficient analysis presents first, followed by inferential analysis with multiple regression analysis.

Chapter five: describes the result of the study in greater detail and the limitation of the study and the implications for future researches are addressed. Finally, the chapter concludes with recommendation.

CHAPTER TWO

2. REVIEW of RELATED LITERATURE

This chapter starts with presenting theoretical review of non-performance loans, definition of non-performance loans, factors Affecting Bank Loan were presented. Furthermore, concepts relating to nonperforming loans are discussed. Following this, empirical studies (cross countries and single country) as well empirical evidence in Ethiopia are reviewed by focusing on determinants of NPLs are presented. Then after, the knowledge gaps from the reviewed literatures are outlined.

2.1 Theoretical Review of Non-Performing Loans

According to Issa (2009), from a pragmatic point of view, the rationale behind the existence of banks is the provision of different types of loans, which in turn are considered as the main source of the banking profits. Therefore, commercial banks attempts to invest as much of the available funds as possible, in the form of loans and credit facilities so as to maximize their profit. This in turn results in the majority of commercial banking assets being in the form of loans and credit facilities (Achou and Tenguh 2008).

Despite the loan portfolio is typically the largest asset and the predominate source of revenue of banks, the function of granting credit is not free of risks (Casu et al. 2006). In practice, loans are considered as the types of investment which have the highest levels of risks with regards to the difficulty of the funds' recovery. Commercial banks are exposed to numerous difficulties regarding the protection and recovery of funds granted in the form of loans and credit facilities. According to Casu et al (2006), the main difficulty that the commercial banks are exposed to the failure of borrowers to repay their obligations on time.

As noted in Heffernan (2005) the failure of the commercial banks' clients to repay their obligations caused the emergence of NPLs, and is considered the most serious financial problems facing commercial banks. Hence, the following sections discussed the meaning, classification and determinants of NPLs in detail.

2.2 Definition of Non-performing Loans

The term "bad loans" as described by Basu (2003), is used interchangeably with NPLs and impaired loans as identified in Fofack (2005). Berger and De Young, (1997) also considers these types of loans as "problem loans". Thus these descriptions are used interchangeably throughout the study. Theoretically, there is no global standard to define NPLs which could be applied to all economies of the world (Hou 2006 and Bloem and Gorter 2002). Variations exist in terms of the classification system, the scope, and contents. Such problem potentially adds to disorder and uncertainty in the NPL issues (Hou 2006). Thus, the definition of NPLs varies from one banking system to another according to banking laws and regulations (Issa 2009). In practical terms, Quantitative and qualitative criteria are used individually or collectively by credit institutions to identify the situation of the loan. A quantitative criterion uses numbers of days or months to determine the weakness of borrowers to repay their debt, while a qualitative criterion uses all the information about the future of loans and borrowers (Bloem and Gorter 2002).

In referring to the period of NPLs (Rose, 2002) defined NPLs as "a loan is placed in the NPLs category when any scheduled loan repayment is past due for more than 90 days". In addition, (Bloem and Freeman , 2005) give the definition of NPLs as "a loan is NPLs when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement". Others consider NPLs as a borrower stopping to repay the installments in a period of over six months. For instance, (Cho, 2002) define NPLs as "a loan was considered NPLs only when it was past due six months or more while provisioning requirements".

In light of the above discussion, a study for the International Monetary Fund (IMF), (Cortawarria et al., 2000) define NPLs according to region where they originate from. For instance, in countries like France, Spain, Portugal, Switzerland and Norway, loans became NPLs when principal and interest uncollected for more than 90 days. Others countries like Greece and Italy used more than 90 days. In countries like U.K and Germany there is no explicit criteria to be used in determining loans as good or bad.

As per NBE (2012), NPLs are defined as "loans or advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment terms of the loan or advances in question". It further provides that:

> *"Short term loans are NPLs when principal and/or interest is due and uncollected for 90(ninety) consecutive days or more beyond the scheduled payment day or maturity. Medium and long term loans are NPLs when principal and/or interest is due and uncollected for 12(twelve) consecutive months or more beyond the scheduled payment day or maturity".*

According to NBE (2012) directive, Ethiopian commercial banks are required to classify their loans as pass, special mention, substandard, doubtful and loss in accordance with Bank for International Settlements (BIS) standards as presented below:

Pass: loans in this category are fully protected by the current financial and paying capacity of the borrower and not subject to any criticism.

Special mention: Short term loans past due for 30 days or more, but less than 90 days and medium and long term loans past due for 6 month or more, but less than 12 months.

Substandard: Short term loan past due for 90 days or more, but less than 280 days and medium and long term loans past due for12 months or more, but less than 18 months.

Doubtful: Short term loan past due for 280 days or more, but less than 360 days and medium and long term loans past due for18 months or more, but less than 3 years.

Loss: Short term loan past due for 360 days or more, and medium and long term loans past due for 3 years or more.

2.3 Empirical Literature

This chapter provides so many evidences which identify the major determinants of bank loans, particularly, nonperforming loans. In case, some studies are conducted on particular country and the others on panel of countries. Hence many researchers have conducted a lot of study on determinants nonperforming loans (NPLs), due to its significance for the bank's failure. In case,

the researcher starts reviewing empirical related literatures from the study made across country and then single country studies.

There are a plenty of variables that affect the NPLs of banking sectors. In this study, the researcher focused on bank specific, buyers specific and macro specific determinants of NPLs of selected commercial banks in Ethiopia. Internal factors are caused by internal functions and activities of bank, and are due to decisions and practices of officials and staff's functions. These factors are controllable in which the manager can prevents them through using suitable method, determination and elimination of weakness and improvement of process. However, a variety of variables that got more attention and included in this thesis are loan to deposit ratio, capital adequacy/solvency ratio, ROE, bank size, GDP and Inflation as an explanatory of the dependent variable NPL.

2.3.1 Across Countries Studies

Boudriga et al. (2009) conducted a study on the title "bank specific determinants and the role of the business and the institutional environment on Problem loans in the Middle East and North Africa ("MENA countries") for 2002-2006 periods. They employed random-effects panel regression model for 46 countries. The variables included were credit growth rate, Capital adequacy ratio, real GDP growth rate, ROA, the loan loss reserve to total loan ratio, diversification, private monitoring and independence of supervision authority on nonperforming loans. The finding revealed that credit growth rate is negatively related to problem loans. 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. Also ROA has negative and statistically significant effect on NPLs. This result supports as greater performance measured in terms of ROA reduces nonperforming loans since reduced risk taking in banks exhibiting high levels of performance.

Skarica (2013) also conducted a study on the determinants of NPLs in Central and Eastern European countries. In the study, Fixed Effect Model and seven Central and Eastern European countries for 2007-2012 periods was used. The study utilized loan growth, real GDP growth rate, market interest rate, Unemployment and inflation rate as determinants of NPLs. The finding

reveals as GDP growth rate and unemployment rate has statistically significant negative association with NPLs with justification of rising recession and falling during expansions and growth has an impact on the levels of NPLs. This shows as economic developments have a strong impact on the financial stability. The finding also reveals as inflation has positive impact with justification as inflation might affect borrowers' debt servicing capacities.

Makri *et al.* (2014) identify the factors affecting NPLs of Euro zone's banking systems for 2000-2008 periods before the beginning of the recession exclusively pre-crisis period. The study includes 14 countries as a sample out of 17 total Euro zone countries. The variables included were growth rate of GDP, budget deficit (FISCAL), public debt, unemployment, loans to deposits ratio, return on assets, and return on equity and capital adequacy ratio. The study utilized difference Generalized Method of the Moments (GMM) estimation and found as real GDP growth rate, ROA and ROE had negative whereas lending, unemployment and inflation rate had positive significant effect on NPLs. However, ROA & loan to deposit ratio, inflation, and budget deficit did not show any significant impact on NPL ratio. Similarly, Carlos (2012) on macroeconomic determinants of the Non-Performing Loans in Spain and Italy found as inflation rate has insignificant effect on NPLs.

Selma and Jouini (2013) conducted a study on three countries namely Italy, Greece and Spain for the period of 2004-2008 to identify the determinants of non-performing loans for a sample of banks. The variables included both macroeconomic variables (GDP growth rate, unemployment rate and real interest rate) and bank specific variables (return on assets, loan growth and the loan loss reserves to total loans). They apply Fixed Effect model and found a significant negative relationship of ROA & GDP growth rate, and also positive relationships of unemployment rate, the loan loss reserves to total loans and the real interest rate with NPLs. For a significant positive association between NPLs and real interest rate, they justify that when a rise in real interest rates can immediately leads to an increase in non-performing loans especially for loans with floating rate since it decrease the ability of borrowers to meet their debt obligations. In addition, a significant negative relationship between ROA and the amount of NPLs justify that a bank with strong profitability has less incentive to generate income and less forced to engage in risky activities such as granting risky loans.

Ranjan and Dhal (2003) examined the response of non-performing loans to bank size, terms of credit (maturity terms of credit, changes in cost terms of credit, credit orientation) and macroeconomic variables in public sector banks in India. The results indicated that the terms of credit variables have significant effects on the banks' non-performing loans in the presence of bank size induced risk preferences and macroeconomic shocks. The maturity terms of credit have a significant negative impact, indicating that higher term loans induce lower non-performing loans. Changes in cost terms of credit, that is, the difference between current cost and past cost conditions, have a positive impact on non-performing loans, implying that the expectation of higher interest rates induces changes in cost conditions which fuel further increases in non-performing loans. Interestingly, the measure of credit orientation, defined by a bank's credit-to-deposit ratio relative to that of the industry, has a significant negative influence on non-performing loans, implying that borrowers attach considerable importance to relatively more credit (customer) oriented banks. Also, bank size, as measured by the ratio of a bank's assets to total banking sector assets was found to have a statistically significant negative impact on non-performing loans, indicating that the larger the bank the lower the level of non-performing loans. Finally, the growth variable has a negative influence on non-performing loans, suggesting that increased economic activity leads to lower financial distress of borrowers and, thus, lower non-performing loans for banks.

2.3.2 Single Country Studies

One of the studies in this regard is that of Sakiru *et al. (*2011) on macroeconomic determinants of nonperforming loan on banking system in Malaysia. Their study was covered bank`s data for monthly time series of 2007:1 to 2009: 12 period. In the study, lending rate, producer price and industrial production index were used as macroeconomic variables that affect the NPLs. The study utilized ARDL approach and the finding reveals that lending rate has a significant positive effect on NPLs and justifies that, during the period of high lending rate, NPLs is anticipated to increase causing a rise in the rate of default by borrowers.

Hyun and Zhang (2012) investigated the impact of macroeconomic and bank-specific factors of nonperforming loans in US for two distinct sub-sample periods that is from 2002-2006 (pre financial crisis) and 2007-2010 (during financial crisis). The variables included both

macroeconomic factors namely GDP growth rate, unemployment rate and lending rate, and bank specific variables such as Return on Equity (ROE), solvency ratio, inefficiency, bank size and non-interest income. In pre financial crisis period, the study found as solvency ratio, ROE, lending rate, GDP growth rate and unemployment rate negatively affect NPLs. Negative effect of lending rate on NPLs implies that an increase in lending rate curtail peoples' /business entity's' ability to borrow, which decreases the amount of loan and then reduce NPLs. Beside, statistically significant and negative solvency ratio effect on NPLs, implies that the higher the Solvency ratio, the lower the incentives to take riskier loan policies, and consequently, reduce the amount of problem loans. However, bank size has no effect. During financial crisis also solvency ratio, GDP growth rate, unemployment rate and ROE all have a negative impact on NPLs while lending rate has no significant effect on NPLs. Size allows for more diversification opportunities as larger banks can compose less concentrated portfolios that include borrowers from different industries, geographical Locations, capital size and other customer segments.

Tomak (2013) conducted study on the "Determinants of Bank's Lending Behavior of commercial banks in Turkish" for a sample of eighteen from 25 banks. The main objective of the study was to identify the determinants of bank`s lending behavior. The data was covered 2003 to 2012 periods. The variables used were size, access to long term funds, interest rates, GDP growth rate and inflation rate. The finding reveals that bank size, access to long term loan and inflation rate have significant positive impact on the bank`s lending behavior but, interest rates and GDP are insignificant.

The study of Saba *et al.* (2012) on the title of "Determinants of Nonperforming Loan on US banking sector" also investigate the bank specific and macroeconomic variables of nonperforming loans from 1985 to 2010 period using OLS regression model. They considered total loans, lending rate and Real GDP per capital as independent variables. The finding reveals as real total loans have positive significant effect whereas interest rate and GDP per capital has negative significant association with NPLs.

Louzis *et al.* (2010) conduct study to examine the determinants of NPLs in the Greek financial sector using fixed effect model from 2003-2009 periods. The variables included were ROA, ROE, solvency ratio, loan to deposit ratio, inefficiency, credit growth, lending rate and size, GDP

growth rate, unemployment rate and lending rates. The finding reveals 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. It justifies that performance and inefficiency measures may serve as proxies of management quality.

Ali and Iva (2013) who conducted study on "the impact of bank specific factors on NPLs in Albanian banking system" considered Interest rate in total loan, credit growth, inflation rate, real exchange rate and GDP growth rate as determinant factors. They utilized OLS regression model for panel data from 2002 to 2012 period. The finding reveals a positive association of loan growth and real exchange rate, and negative association of GDP growth rate with NPLs. However, the association between interest rate and NPL is negative but week. And also inflation rate has insignificant effect on NPLs.

Similarly, Shingjergji (2013) conducted study on the "impact of bank specific factors on NPLs in Albanian banking system". 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. Besides, total loan and net interest margin has positive significant relation with NPLs. The study justifies that an increase of the CAR will cause a reduction of the NPLs ratio. Besides, an increase of ROE will determine a reduction of NPLs ratio. Besides, Mileris (2012) on the title of "macroeconomic determinants of loan portfolio credit risk in banks" was used multiple and polynomial regression model with cluster analysis, logistic regression, and factor analysis for the prediction. The finding indicates that NPLs are highly dependent of macroeconomic factors.

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. Besides, loan to deposit ratio had negative significant effect on NPls justifying that relatively more customer friendly bank is most likely face lower defaults as the borrower will have the expectation of turning to bank for the financial requirements.

2.3.3 Empirical Studies in Ethiopia

Wondimagegnehu (2012) in his study "determinants of NPLs on commercial banks of Ethiopia" revealed that underdeveloped credit culture, poor credit assessment, aggressive lending, botched loan monitoring, lenient credit terms and conditions, compromised integrity, weak institutional capacity, unfair competition among banks, willful defaults by borrowers and their knowledge limitation, fund diversion for unexpected purposes and overdue financing has significant effect on NPLs. Conversely, the study indicated that interest rate has no significant impact on the level of commercial banks loan delinquencies in Ethiopia.

Similarly, Mitiku (2014) studied the "Determinants of Commercial Banks Lending: Evidence from Ethiopian Commercial Banks using panel data of eight commercial banks in the period from 2005 to 2011 with the objective of assessing the relationship between commercial bank lending and its determinants (bank size, credit risk, GDP, investment, deposit, interest rate, liquidity ratio and cash required reserve). Based on seven years financial statement data of eight purposively selected commercial banks and using Ordinary Least Square (OLS) technique, the study found that there was significant relationship between commercial bank lending and its size, credit risk, gross domestic product and liquidity ratio. While interest rate, deposit, investment, and cash reserve required do not affect Ethiopian commercial bank lending.

Some unpublished empirical research works in the Ethiopian context also emphasized on the different aspects of the factors that determine non-performing loans in the Ethiopian Banking sector. The research work of Gudeta (2018) which focused on the development bank of Ethiopia's NPLs has concluded that "the Bank's highest amount of non-performing loan or default rate was due to the Bank's poor project follow up, policy related variables and its weak credit evaluation criteria in identifying potential projects to be financed".

In view of the above discussions, numerous studies were conducted on the determinants of Non-performing loans. Most of these studies focused on Bank specific and Macro-economic

determinates of NPL. However, in the previous empirical analysis no study has been conducted on customer-specific factors influencing non-performing loans. Besides, most of the empirical studies reviewed and discussed in the above paragraphs were made in other countries; and studies in Ethiopian commercial banking sector are scant. Moreover, despite a single study by the mentioned researcher on the determinants of NPLs of commercial banks in Ethiopia, no further research has been conducted in the banking sector in general and on commercial Banks of Ethiopia in particular.

Negera (2012) assessed the determinants of NPLs in Ethiopian commercial banking sector using a survey data collected from both private and state owned commercial Banks using a self-administered questionnaire. In addition to the survey data, the study used interview with senior bank officials. A descriptive statistics and correlation matrix were used so as to analyze the data. The findings of the study shows that poor credit assessment, failed loan monitoring, underdeveloped credit culture, lenient credit terms and conditions, aggressive lending, compromised integrity, weak institutional capacity, unfair competition among banks, willful default by borrowers and their knowledge limitation, fund diversion for unintended purpose, over/under financing by banks ascribe to the causes of loan default. However, the study outcome failed to support the existence of relationship between banks size, interest rate they charge and ownership type of banks and occurrences of nonperforming loans.

On the other hand, the study of Tilahun (2010), identified the underlying NPLs management difficulty of ten privately owned commercial bank in Ethiopia given in to consideration that the managements are different from bank to banks based on their perception towards the NPLs. The study applies mixed research approach. The data obtained from questionnaires and unstructured interviews presented and analyzed through descriptive statistics. The result revealed that, Credit Policy and supervision by the management has less contribution to the NPLs. Most of the NPLs are caused by factors after the loan released like moral hazard of the borrower, ineffective monitoring, and operational loss of the borrower. Ineffective monitoring system has contributed to the NPLs because of less amount and type of information assessed, understaffing and lack of communication among branches of the bank. Dealing with NPLs on a timely manner is also another problem identified by the paper. The directive from NBE have a positive impact by

creating safe ground the bank can do business and by giving absolute right to the banks to take their collateral at any time the bank need to do so without notifying courts.

Therefore, this study is expected to fill the gap by assessing the association between bank, customer-specific factors and macro specific factors with level of nonperforming loans (NPLs).

2.4 Determinants of Non-performing loans

Unfortunately, there is no particular theoretical framework that emphasizes on the determinants of NPLs (Issa 2009). However, with the major contribution of Akerlof (1971), the asymmetric information as concepts has been used to analyze the individual behaviour in the market in relation to having knowledge in transactions or exchanges. These concepts can be extended to NPLs, since; NPLs are the result of a particular behavioural pattern emerging from moral hazard on the side of borrower and adverse selection on the side of lenders (Issa 2009). Therefore, the concepts of asymmetric information can be examined to give further meaning and to understand behavioural aspects of NPLs.

According to Arestis and Sawyer (2001), the first important theoretical concept in relation to NPLs, as the articulation of asymmetric information, is the adverse selection issue. Adverse selection problem occurs before the transaction takes place, in the event that the lender's inability to distinguish between a high-risk borrower and a low-risk borrower is compromised. In this regard, Hafer (2005) noted that, increasing the interest rate and required additional collateral lead the low risky clients to go elsewhere in order to obtain loans, while the high risky clients will accept the conditions at hand. In other word, those who want to take on big risks are likely to be the most eager to take out a loan, even at a high rate of interest, because they are less concerned with paying the loan back.

As noted in Breuer (2006) conflict of interest between bank managers and shareholders may aggravate the adverse selection. Bank managers have short term decision horizons because their reputations are strongly influenced by public perceptions of their performance, as evidenced by short term earnings. Managers‟ reputations suffer if they fail to expand credit when the economy is expanding and bank earnings are improving. This herd behavior will result in some loans going to customers with higher default risk. In addition, the macroeconomic condition may also

aggravate the adverse selection. During the expansion phase of the economy banks characterized by a relatively low number of NPLs, as both consumers and firms face a sufficient stream of income and revenues to service their debts. However as the booming period continues, credit is extended to lower quality debtors and subsequently, when the recession phase sets in, NPLs increase (Fisher 1933, Minsky 1986, Kiyotaki and Moore 1997, Geanakoplos, 2009).

According to Arestis and Sawyer (2001), the second theoretical concept derived from asymmetric information is `moral hazard', which can be applied to NPLs. A borrower may have incentives to misallocate funds for personal use and to undertake investment in unprofitable projects that serve only to increase their personal power or stature. Thus, a lender is subjected to the hazard that the borrower has incentives to engage in activities that are undesirable from the lender's point of view: that is, activities that make it less likely that the loan will be paid back. In addition, banks credit managers may intentionally provide loans to lower quality debtors.

Ultimately, it could be concluded that asymmetric information often leads to the emergence of the economic and financial problems especially NPLs in the credit market. Therefore, it can be said that the economic and commercial banks will not operate as efficiently as they should, in the absence of sufficient information, related to both clients and the general environment. Hence, by having theory of asymmetric information as standing point the following sections discussed the determents of NPLs that are intended to cover under this study. It should be noted that all the determinants of NPLs that are discussed in the following sections do not necessarily have a direct relationships with theory of asymmetric information.

2.4.1 Bank Specific Factors

Bank-specific variables refer to those factors which characterized individual banks. Those factors can be influenced by managerial decisions and usually associated with the specific policy choices of a particular bank with regard to its efforts to maximize efficiency and improve its risk management. Hence, bank specific variables that are usually theorized as determinates of NPLs are include , Loan to deposit ratio, Capital adequacy ratio, ROE, Bank size, Hence, the following part of this particular section clearly presents the bank-specific variables that are used in this study.

Loan to Deposit Ratio: The loan to deposit ratio is affected by the operational strategy of a bank's management. Excessive rapid loan growth declined bank's capital levels and useful pointers the deterioration of banks financial health and can be employed as early warning indicators of future problem loans (Das and Ghosh 2007) As disclosed by Jimenez and Saurian

(2006) loan growth is considered as one of the most important causes of problem loans. However, according to Sinkey and Greenwalt (1991) a rapid expansion of loan may not be a problem by itself, but such expansion leads to poor screening and lending to borrowers of inferior quality.

Capital adequacy: is an indicator of the ability of banks to provide funds for expansion and accepting risk loss caused by the operations of the bank. The difference between total assets and total liabilities is called capital. It is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation. It shows ability of the firm that liability could be privileged. Capital adequacy is the level of capital required by the banks to enable them

Withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential lose and protect the bank's debtors. Capital adequacy is a measure of the overall financial strength of a bank. The higher the capital adequacy ratio, the higher the level of

Protection available to depositors and It is vital for maintaining soundness of the banking system

Since, it acts as a cushion against panic or bank run or uncertainties (Keovongvichith 2012).

Return on equity: is the amount of net income returned as a percentage of equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. Return on equity measure Profitability and offers clues about the ability of the bank to undertake risks and expand its activity. Banks return on equity increases reflect the risk taking behavior of bank managements and less stressed for revenue creation and less forced to engage risk credit offering business (Makri et al. 2014).

Bank size: The existing literature provides evidence that suggests a negative association between size of a bank and bank‟s NPLs (Salas and Saurina (2002), Hu et al. (2004), Cole et al. (2004), Micco et al. (2004), Garcia and Robles (2007) and Swamy (2012). As noted in Hu et al. (2004),

large banks have more resources and are more experimented for efficient information gathering, processing and analyzing to tackle moral hazard and adverse selection and ultimately better deal with bad borrowers. Small banks, on the contrary, may be exposed to the adverse selection problem because of the lack of sufficient competencies and experience to effectively assess the credit quality of borrowers. In addition, Cole et al. (2004) suggested that, smaller banks adopt small business loan underwriting practices. Hence, the extents that the failure rates of small businesses are higher than those of larger and established firms.

Macroeconomic factors

The existing literature provides evidence that suggests a strong association between NPLs and macroeconomic factors. Several macroeconomic factors which the literature proposes as important determinants of NPLs are: real GDP growth, inflation rate, effective exchange rate, real interest rate, unemployment rate, broad money supply (M2) and GDP per capital (Salas and Suarina 2002, Fofack 2005 and Jimenez and Saurina 2005). This study only considers the growth in real GDP, annual inflation rate.

Real GDP growth: there is an inverse relationship between GDP growth and the level of NPLs reported by commercial banks (Salas and Suarina (2002), Jajan and Dhal (2003), Fofack (2005) , Hou (2006) , Jimenez and Saurina (2005), Pasha and Khemraj (2009), Louzis et al. (2010) and Azeem et al. (2012)). The explanation provided by the literature for this relationship is that, Changes in business cycle impact the credit worthiness of borrowers in terms of repayment capacity. Hence, strong positive growth in real GDP usually translates into more income which improves the debt servicing capacity of borrower which in turn contributes to lower NPLs. Conversely, when there is a slowdown in the economy (low or negative GDP growth), the economic activities in general are decreasing and the volume of cash held for either businesses or a household is decreasing. These conditions contribute in deteriorating the ability of borrowers to repay the loans, which lead to increase the likelihood of delays their financial obligations and thus banks‟ exposure to credit risk increase. In this regard, Hou (2006) noted that, each NPL in the financial sector is viewed as an obverse mirror image of an ailing unprofitable enterprise.

Inflation: Inflation affects borrowers‟ debt servicing capacity through different channels and its impact on NPL can be positive or negative (Fofack 2005, Pasha and Khemraj (2009) and Nkusu

2011). The explanation provided by the literature for this relationship is that, higher inflation can make debt servicing easier by reducing the real value of outstanding loans particularly when the loan rates are fixed (banks do not adjust rates in accordance to the inflation change to maintain their real returns). However, it can also weaken some borrowers‟ ability to service debt by reducing real income. Moreover, when loan rates are variable(adjusted in accordance to the inflation change), inflation is likely to reduce borrowers‟ loan servicing capacity as lenders adjust rates to maintain their real returns or simply to pass on increases in policy rates resulting from monetary policy actions to combat inflation. Against this background, the relationship between NPL and inflation can be positive or negative.

2.5 Summary and Knowledge Gap

This chapter was presented the theoretical foundation on bank loan and the banking industry in Ethiopia. In case, Ethiopian current banking system is dominated by the private banks that are entering to the industry in recent years.

There are a plenty of variables that affect the NPLs of banking sectors. In this study, the researcher focused on bank specific determinants of NPLs of commercial banks in Ethiopia. Internal factors are caused by internal functions and activities of bank due to decisions and practices of officials and staff functions. These factors are controllable in which the manager can prevents them through using suitable method, determination and elimination of weakness and improvement of process.

Whereas, external factors can`t be controlled by bank managers and are caused by external environment including effect on implementation of decisions and also government policies. These factors are policy (monetary and fiscal) related factors. For instance; unexpected events, changing in rules and obligations, political and economic changes (inflation and collapse) are external factors (Biabani et al. 2012).

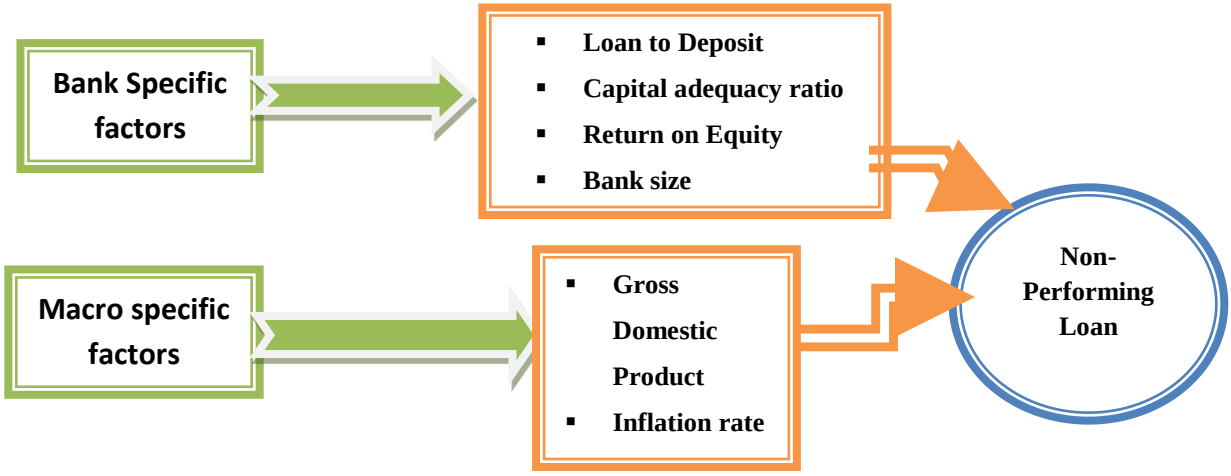
The study by Tilahun (2010), Ahmmed 2012, Negera (2012), Mitiku (2014) and Arega, 2016 combined both the macroeconomic and bank specific factors. Accordingly, as per the knowledge of the researcher, both bank specific factors & Macro specific factors of NPLs in Ethiopian banking sector was not well addressed. Therefore, this study seeks to fill this gap by

establishing the link between nonperforming loans and its determinants (bank specific, factors and macro specific factors) in case of commercial banks in Ethiopia. These is one of the knowledge gap that motivated the researcher to assess factor affecting nonperforming loan of Ethiopian commercial banks

2.6 Conceptual Frame Work

The main objective of this study is to examine the determinants o NPLs of commercial banks in Ethiopia. Based on the objective of the study, the following conceptual model is framed. As previously discussed 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, bank size, financing deposit rate, and capital structure; whereas macroeconomic factors are interest/lending rate, inflation rate, public debt, exchange rate, money supply (Farhan *et al.*(2012), Shingjergji(2013), Sakiru *et al.* (2011), Ahmad &Bashir (2013), Saba *et al.* (2012), Louzis *et al.* (2010), Shingjergji (2013), Swamy (2012), Badar & Yasmin(2013), Ranjan & Chandra(2003) and Wondimagegnehu (2012). Thus, the following conceptual model is framed to summarize the main focus and scope of this study in terms of variables included.

Figure 1: Conceptual Framework



Source: Developed by the researcher based on (Louzis et al. 2012 and Farhan et al.2012)

CHAPTER THREE

3. *RESEARCH DESIGN AND METHODOLOGY*

The previous chapter present the literature review theoretical and empirical reviews on determinates of NPLs identified the existing knowledge gap and Conceptual Framework

This chapter discussed the methodology of the study. Under methodology section presented the hypothesis development, research approach, variables description, model specification and diagnostic test of CLRM assumption.

3.1 Research Design

The choice of research design depends on objectives that the researchers want to achieve (John, 2007). Since this study is designed to examine the relationships between NPLs and its determinants, 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 NPLs and its determinants in this study.

As noted by Kothari (2004), explanatory research design examines the cause and effect relationships between dependent and independent variables therefore, since this study will examine the cause and effect relationships between nonperforming loans and its determinant, it is an explanatory research. The objective to be achieved in the study is a base for determining the research approach for the study. In case, if the problem identified is factors affecting the outcome having numeric value, it is quantitative approach (Creswell, 2003). Therefore, the researcher will employ quantitative research approach to see the regression result analysis with respective empirical literatures on the determinants of Nonperforming loans. Thus, the researcher will use a panel data from 2004to 2017 period.

3.2 Target Population

According to Zikmund (2003) the target population refers to a group of specific population elements that are applicable to the research. In this study Commercial banks in Ethiopia selected as a unit of analysis for this study. The sample of the selected commercial banks will be drawn, based on early registration by the regulatory body and the value of their net assets, from all the banks listed by the NBE (National Bank of Ethiopia).

3.3 Sampling Technique

The study used purposive sampling. This method used as it is a non-random sampling technique to select the required sample of banks from the registered commercial banks since it is viable in line with time and funds available for this study. The selection criteria set by the researcher is as the required banks are the only Commercial banks in Ethiopia having financial statements for fourteen years consecutive data of selected commercial banks that provide financial statements consecutively from 2004-2017 periods. Thus, this study will have 98 sample data.

3.4 Method of Data Collection

This study was used panel data to conduct this research. Because of its advantage to take heterogeneity among different units into account over time by allowing for individual-specific variables. Besides, by combining time series and cross-section observations, it gives data that are more informative. Furthermore, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data (Gujarati, 2004).

Accordingly, the researcher used secondary sources of data that is panel in nature. since it is less expensive in terms of time and money while collecting. Moreover, it affords an opportunity to collect high quality data (Saunders et al (2007) cited in (Gezu, 2014). The data will be obtained from the National Bank of Ethiopia and Central statistical agency (CSA), Besides, related books, journals articles and various manuals also used as sources of Secondary data this data will contain both Bank specific and macroeconomic factors

3.4.1 Secondary data (Documentary Review)

This study employs use of secondary data sources which are panel data collected through structured document review. Panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data (Gujarati, 2004). The data on the bank specific variables are gathered from audited financial statement of selected Commercial Banks while the macroeconomic variables are obtained from National Bank of Ethiopia, central statistical agency (CSA) and from MOFED.

The researcher used different documents in order to access accurate and reliable data. The study used all the available published secondary data and other available data from selected commercial banks for the years 2004-2017 which were compiled from financial Reports of the Banks and other inside available on Trends and Progress of Banks .However, other documents will also comprised of personal profiles, guidelines, directives, policies, regulations, books, journals, internet of selected banks, NBE reports and CSA

3.5 Variables and Model Specification

The following table 3.1 presents the summary of hypothesized expected sign for the relationship between variables (dependent and independent) along with some empirical evidence for each variable.

Table 3.1: Description of the variables and their expected relationship

Explanatory Variables	Expected Sign	Some empirical evidence
Loan to Deposit Ratio	+	Swamy (2012)
Capital Adequacy Ratio	-	Shingjerji(2013),Hyun&Zhang(2013), Makri et al.(2014), Klein(2013)
Return on Equity	-	Makri et al.(2014), Klein(2013), Shingjerji(2013)
Bank size	+	(Athanasoglou et al., 2005)
GDP	-	(Salas and Suarina, 2002; Rajan & Dhal, 2003; Fofack, 2005; and Jimenez and Saurina, 2005)
Inflation	+/-	Fofack (2005), Smadi (2010)

Sources: Swamy (2012), Shingjerji (2013), Hyun & Zhang (2013), Makri et al. (2014), Klein (2013), Selma and Jouini (2013), Makri et al. (2014), Klein (2013), Farhan et al. (2012), Sakiru et al (2011) and other studies included in the study.

3.5.1 Model Specification

The aim of this study is to examine the determinants of NPLs of commercial banks in Ethiopia. Similar to the most noticeable previous research works conducted on the non-performing loans of financial sectors, this study used nonperforming loans ratio as dependent variables whereas Loan to deposit ratio, capital adequacy ratio, return on equity, bank size, GDP and Inflation as explanatory variables. These variables were chosen since they are widely existent for the commercial banks in Ethiopia. Accordingly, this study examined the determinants of NPLs of commercial banks in Ethiopia by adopting a model that is existed in most literature. The regression model which is existed in most literature has the following general form;

$Yit = \beta o + \beta Xit + \varepsilon it$

Where: - Yit is the dependent variable for firm **'i**' in year **'t**', β0 is the constant term, β is the coefficient of the independent variables of the study, X it is the independent variable for firm 'i' in year 't' and εit the normal error term. Thus, this study is based on the conceptual model adopted from Fawad and Taqadus (2013). Accordingly, the estimated models used in this study are modified and presented as follow;

$NPLit = \beta 0 + \beta 1(LTD)it + \beta 2(CAR)it + \beta 3(ROE)it + \beta 4(\text{bank size}) + \beta 5(GDP) + \beta 6(INFR) + \varepsilon it$

Where;

- ***β0* is an intercept**
- **β1, *β2, β3, β4, β5,β6* represent estimated coefficient for specific bank *i* at time *t* ,**
- **LTD, CAR, ROE**, **Bank size, GDP and INFR** represent Loan to deposit ratio, capital adequacy/Solvency ratio, return on equity, bank size, Gross domestic products and inflation rate respectively.
- **ε** it represents error terms for intentionally/unintentionally omitted or added variables. It has zero mean, constant variance and non- auto correlated. The coefficients of explanatory variable were estimated by the use of ordinary least square (**OLS**) technique.

In this research the method used in each model is selected based on the Correlated Random Effects-Hausman Test. The Hausman test that examines whether the unobservable heterogeneity

term is correlated with explanatory variables, while continuing to assume that regressors are uncorrelated with the disturbance term in each period. The null hypothesis for this test is that unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent variables. If the null hypothesis is rejected, then we employ Fixed Effects method. (Padachi, 2006).

The multiple linear regressions model was conducted by the OLS method using EVIEWS 9 econometric software package. According to Petra (2007) OLS outperforms the other estimators when the cross section is small and the time dimension is short. According to Brooks (2008) OLS or linear least squares is a method to estimate the slope and intercept in a linear regression model. Therefore, as far as the above facts true in the study used OLS method. The rational for choosing OLS is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimation determined by OLS have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks 2008). The following section discussed CLRM assumptions and their diagnostics test result.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

In the preceding chapters important literatures relating to the topic were reviewed that gives enough understanding about the topic and identified the knowledge gap on the area. To meet the broad research objective and to test research hypotheses the method used for this study discussed under the research methodology chapter.

This chapter deals with the finding and discussion of the result in order to achieve research objectives and set a base for conclusion. The first section 4.1 of this chapter was mainly start with the explanation for study variables and discussed the result of descriptive statistics then presented the regression analysis in detail under section 4.2

4.1 Descriptive Statistics

The summary of descriptive statistics that was intended to give general descriptions about the data (both dependent and independent variables) is presented in Table 4.1. The dependent variable nonperforming loans and the independent variables were classified into two, the macro economic factors (gross domestic product and inflation) and bank specific were (loan to deposit, capital adequacy, return of equity and bank size) which were used to see the impact of on non-performing loan . The total number of observation for each variable was 98. Accordingly, mean, median, standard deviation, minimum and maximum values of each variable were used so as to show the overall trend of the data over the period under consideration.

Table 4.1: Summary of descriptive statistics for dependent and independent variables

Variables	Observations	Mean	Maximum	Minimum	Std. Dev.
Non-performing loans	98	0.088208	0.915000	0.000000	0.157433
Bank size	98	10.19238	12.36000	8.828660	0.775448
Capital adequacy ratio	98	0.120201	0.192177	0.040000	0.035818
Gross domestic product	98	10.62070	13.57260	7.561767	1.515763
Inflation	98	13.96488	33.54141	1.444572	9.513605
Loan to deposit ratio	98	0.028558	0.049900	0.003413	0.008026
Return on equity	98	0.301624	1.026800	0.034729	0.237564

Source: Financial statements of sampled commercial banks, NBE report, CSA reports and E-view output

As can be seen from table 4.1 above for the total sample, the mean of NPLs was 8.8% with a minimum of 0.00% and a maximum of 91.5 %. The mean value suggest that from the total loan Ethiopian commercial banks disbursed on average 8.8 % were being default or uncollected over the sample period and 8.8 % average NPL is above set to the NBE set maximum requirement limit of NPLs ratio which is 5% (NBE) . On the other extreme, the highest NPLs ratio of ECBs was 91.5 % (Selected commercial Banks Audited financial statement NBE) which was in excess of the average 30% NPLs recorded in sub-Saharan Africa countries during the 1990's financial crises (Fofack 2005) .The disparity between the minimum 0.00 % and the maximum 91.53 % of NPLs indicated the margin that NPLs ratio of Ethiopian commercial banks ranged over the sample period. The standard deviation 15.74 % of NPLs shows the variation of NPLs and loan recovering capacity among Ethiopian commercial banks.(Bank size of commercial banks concerned, the size of the banks which was measured by natural log of total assets revealed the highest standard deviation (0.775) most deviated variable from its mean compared to other variables. This indicates the existence of high variation among selected commercial banks in terms of their size.

Capital adequacy ratio shows the proportion of owner's equity to total asset. The mean value for capital adequacy ratio was 12.02 % whereas the maximum level was 19.2 % and minimum one was 4% with a standard deviation of 3.5 %. The average amount of capital adequacy is greater than the minimum capital requirement 8% of the NBE showing that EBCs has ability to bear loss results from loan default.

Regarding bank specific independent variables, as stated in the above table 4.1, Loan to deposit indicate how far the bank used the depositors fund on credit activity which is prone to default risk. The mean value of Loan to deposit was 2.9 % with the lowest standard deviation of 1%. The average 2.9 % shows that ECBs provide on average 0.02 cent loan from one birr collected deposit. The maximum and minimum was 4.99 % and 0.003% respectively, suggesting that the ECBs concentrate on lending business which is exposed to risk uses depositors' money.

On the other hand, ROE measured by the net profit divided by total equity of the bank measures how much the banks are efficiently earning from funds invested by its share holders. As shown in the above table 4.1, ROE records. The mean value of return on equity was 30.16 % with the

highest 102 % and the lowest 3.47%. This implies that commercial banks in Ethiopia have shown relatively good performance based on regulators result during the period. Thus, commercial banks in Ethiopia earned high return from its own equity.

Among macroeconomic variables the study employed inflation and GDP. The mean of inflation is 13.96 % with minimum of 1.44% and maximum of 33.54 %. Inflation had a higher standard deviation compare to GDP which was 9.51% this implies that inflation rate in Ethiopia during the study period remains unstable compare to GDP. The average GDP growth in Ethiopia for the sample period was 10.62% with a standard deviation of 1.52 % implies the economic growth in Ethiopia during the sample period remains stable as compared to the inflation rate.

4.1.1 Diagnostics Test of Classical Linear Regression Model Assumptions

According to Brooks (2008) five assumptions were made relating to the classical linear regression model (CLRM). Every estimation of the model should have to meet the OLS assumptions to be the estimation BLUE (Best Linear Unbiased Estimators). The following sections discussed the results of diagnostic tests (heteroscedasticity, autocorrelation, multicollinearity , normality and model specification test) that ensure whether the data fits the basic assumptions of classical linear regression model or not.

Heteroscedasticity: According to Brooks (2008) the variance of the errors must be constant (homoscedasticity). If the error terms do not have a constant variance, said to be Heteroscedasticity. Heteroscedasticity test is very important because if the model consists of heteroskedasticity problem, the OLS estimators are no longer BEST and error variances are incorrect, therefore the hypothesis testing, standard error and confident level will be invalid. The study used Autoregressive Conditional Heteroscedasticity to test the presence of heteroscedasticity.

Table 4.2: Result of Heteroskedasticity Test:

F-statistic	1.353076	Prob. F(1,73)	0.2485
Chi-square	1.364849	Prob. Chi-Square(1)	0.2427

Source: E-view output

As shown in table 4.2 the test statistics indicate the p-values of F-statistic and Chi-Square 0.2485 and 0.2427 respectively. F-statistic and Chi-Square which are less than significant level of 0.05. The p-values of F-statistic, Chi-Square suggest that no evidence for the presence of heteroscedasticity.

Autocorrelation: This is an assumption that the errors are linearly independent of one another (Uncorrelated with one another). According to Brooks (2008) when the error term for any observation is related to the error term of other observation, it indicates autocorrelation problem in the model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. Accordingly, the relevant critical values for 98 observations and seven repressors in Durbin-Watson test statistic have shown is an intermediate region where the null hypothesis of no autocorrelation can be accepted. Thus, as shown in Result of Ordinary Least Square (OLS) Model the Durbin-Watson test statistic of this study (1.05) is below 2. However the F-statistics (13.48) and prob (F-statistic: 0.000) .Hence, the autocorrelation problem of this study can be tolerable. In this regard Brooks (2008) noted that, the coefficient estimates derived using OLS in the existence of autocorrelation problem may not be Best Linear Unbiased Estimators (BLUE), but they are still unbiased.

Multicollinearity: An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another According to Brooks (2008) Multicollinearity occur when the independent variables are highly correlated with one another. If the Multicollinearity occurs, the regression model is unable to tell which independent variables are influencing the dependent variable. To test the presence of Multicollinearity problem the study used a correlation matrix.

Table 4.3: Result of Multicollinearity Test:

Correlation	NPL	BS	CAR	GDP	INF	LTD	ROE
NPL	1.000000						
BS	-0.350304	1.000000					
CAR	-0.024382	-0.175666	1.000000				
GDP	0.321506	-0.488277	-0.173564	1.000000			
INF	-0.111458	-0.131349	0.055186	-0.458423	1.000000		
LTD	-0.240050	0.140378	0.049504	-0.146989	0.234035	1.000000	
ROE	0.017467	0.235416	-0.586473	0.075445	-0.025259	0.264008	1.000000

Source: E-view output

As can be depicted in Table 4.3 above there is no strong correlation between the explanatory variables (BS, CAR, LTD, ROE, GDP and INF). In this study the highest correlation coefficient is 0.264008 between return of equity and loan to deposit ratio of banks. Guajarati (2004) suggests that any correlation coefficient above 0.8 could cause a serious Multicollinearity problem leading to inefficient estimation and less reliable results. All variables have low correlation and the result suggest that no evidence for Multicollinearity problem between the selected explanatory variable.

Normality: A normal distribution is not skewed and is defined to have a coefficient of kurtosis 3. Jarque-Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skeweness and kurtosis are zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how far the tails of the distribution. This study used Jarque-Bera Test (JB test) to find out whether the error term is normally distributed or not.

Table 4.4: Result of Normality: Test:

	Probability (P-value)	Decision Rule p-value of Jarque-Bera Test p >0.05
Skewness	0.118652	
Kurtosis	3.171676	
Jarque-Bera Test	0.863483	

Source: E-view output

As shown in the Table 4.4 above it indicated that distribution of the panel observation is symmetric about its mean. Kurtosis closes to 3 (i.e. 3.171676), and Jarque-Bera statistic has a value of 0.32 and p-value > 0.05implies that the p-value for the Jarque-Bera test is greater than 0.05 which indicates that there was no evidence for the presence of abnormality in the data.

Random Effect versus Fixed Effect Models: Econometrics model used to examine the impact of Loan to deposit ratio, Capital adequacy ratio, Return on equity, bank size, Growth domestic product and inflation on nonperforming loans of Ethiopia commercial banks was panel data regression model which should be either fixed-effects or random-effect model. The study used Hausman Specification Test to identify whether fixed effect or random effect model is a appropriate for study.

Table 4.5: Result of model selection Test: Hausman Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	10.819212	(6,85)	0.0000

Source: E-view output

As shown in Table 4.5 the Hausman specification test for this study has a p-value of 0.0000 for the regression models. This indicates that p-value is significant and then the null hypothesis is justifying as fixed effect is appropriate for the given data set in this study.

4.2 Regression Results and Discussions

The empirical evidence on the determinants of Ethiopian commercial banks' non-performing loan is studied based on unbalanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2004 up to 2017 and a cross section segment which considered seven Ethiopian commercial banks, namely Commercial Bank of Ethiopia, Dashn Bank, Wegagen Bank, Awash International Bank, Bank of Abyssinia, United Bank and Nib International Bank. The study used multiple liner regression equation to analyze the relationship between Ethiopian commercial banks non-performing loan and determinant variables. All the proposed independent variables (i.e., LTD, ROE, CAR, BS, GDP and INF) were regressed with respect to the dependent variable (NPLs). The following linear regression model is developed.

NPLit= β0 +β1(LTD)it + β2(CAR)it+ β3(ROE)it+ β4(bank size)+ β5(GDP)+ β6(INFR) +ε

Under the following regression outputs, the beta coefficient may be negative or positive beta indicates that each variable's level of influence on the dependent variable. P-value indicates at what percentage level of each variable is significant. R^2values indicate the explanatory power of the model and in this study adjusted R^2value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

Table 4.6: Result of Ordinary Least Square Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.635189	0.087932	7.223628	0.0000
BS	-0.053131	0.007010	-7.579031	0.0000*
CAR	0.534197	0.280615	1.903667	0.0603**
GDP	0.004587	0.004224	1.085980	0.2806
INF	-0.000392	0.000743	-0.527907	0.5989
LTD	-4.207026	0.843641	-4.986748	0.0000*
ROE	0.024017	0.017453	1.376131	0.1724
R-squared	0.655502	Mean dependent var		0.129382
Adjusted R-squared	0.606867	S.D. dependent var		0.134390
S.E. of regression	0.088388	Sum squared resid		0.664055
F-statistic	13.47799	Durbin-Watson stat		1.046690
Prob(F-statistic)	0.000000			

Source: E-view output

Note: *Significant at 1%, ** Significant at 10%

Table 4.6 shows that the value of the adjusted R-Squared is 0.606867 which confirms that 60.68 percent of changes on dependent variable (NPL) are explained by independent variables of the model and usually known as goodness of fit statistics (Brooks 2008). The value of F-statistic (13.477) confirms the accuracy of the estimated model. In other words, the change in Return of equity, deposit to loan, capital adequacy, bank size, and GDP and inflation rate collectively explain 60.68% of the variation in NPLs ratio of ECBs. In contrary, the remaining 39.32 % of changes on the NPLs of ECBs were explained by other factors which were not included in the econometrics model of this study. The following section demonstrates the impact of each explanatory variable on Ethiopian Commercial banks NPL.

4.2.1 Loan to Deposit Ratio and Non-Performing Loan

The coefficient sign of loan to deposit ratio shows that there is a positive relationship between banks nonperforming loan and loan to deposit ratio. Loan to deposit ratio had positive and statistically significant (p-value = -4.21) at 5% significant level. The finding of this study was consistent with findings of Swamy, (2012), Ali, Shingjerji (2013) Because at the time of low loans to deposits ratio in order to earn more banks start lending even to the low quality borrowers

and do not follow the standard loan allocation practices, which leads to the growth in NPLs. Therefore, the result implies that every one unit change (increase or decrease) in bank's loan to deposit ratio keeping the other thing constant has a resultant change of -4.21 unit on the nonperforming loan in the same direction. From the coefficient value loan to deposit ratio is a very important determinant of NPL in Ethiopian banking industry. So, the second research hypothesis (i.e. there is a positive and significant relationship between NPL and banks loan to deposit ratio) also fail to reject.

In this category that was considered as the most important reason to the emergence of NPLs in ECBs was factors related to the client (borrower) factors include, providing false information, using the loan for other purposes that are undesirable from the banks' point of view (fund diversion), bad intentions of the client with respect to non-payment of the loan at the maturity date (willful default). In addition, operational losses of borrower were also cause a loan default to Ethiopian banks especially in the event of absence of adequate collateral. The finding is also consistent with, the previous studies expressed that the loans are more secured if the banks keep a continuous check on the borrowers Agresti et al (2008) Salas and Saurina (2002), (Berger and DeYoung, 1997).

The result is also parallel with previous studies such as Deininger and Liu (2009); Papias and Ganesan (2009) and Olomola (2000) which found that loan monitoring is an important factor in increasing/decreasing loan repayment rate among borrowers

4.2.2 Capital Adequacy Ratio (CAR)

Table 4.6 showed that the coefficient of Capital adequacy is 0.5342 and significant at less than p-value at 10% relation with NPLs. The magnitude of the coefficient estimate 0.5342 shows that CAR has an impact in explaining the variation of NPLs in Ethiopian commercial banks. This positive sign indicates positive relationship between capital adequacy ratio and NPLs. Thus, implies that for one unit change in the banks' capital adequacy ratio, keeping other thing constant had resulted 0.53 unit changes on the levels of NPLs in the same direction. The result is inconsistent with Rahman (2017). However, the finding is consistent with the result of

(Sinkeyand Greenawlat 1991; Emmanuel 2014; Salas and Saurina 2002; Boudriga et.al. 2009; Ahmadand Ariff, 2007; and Makri et.al. 2014).

4.2.3 Return on Equity (ROE)

Table 4.6 indicates that there is a positive and statistically insignificant relationship between ROE and NPLs. The result shows insignificant effect of bank profitability measured in terms of ROE on NPLs with a coefficient of 0.024 and greater than 10% of p-value significance level. This implies that for one unit changes in ROE, keeping the other things constant had resulted 0.024 unit change on the level of NPLs in opposite direction. This result inconsistent the finding of (Makri et al. 2014; Boudriga et al.2009; Klein, 2013; Shingjerji 2013 and Ahmad and Bashir, 2013). This implies that deterioration of profitability ratio in terms of ROE leads to higher NPLs.

4.2.4 Bank Size (BS)

As mentioned in the literature, many scholars suggested an inverse relationship between size of a bank and bank's NPLs. large banks have better risk management strategies and technology which definitely allows them for efficient information gathering, processing and analyzing which finish up with lower levels of NPLs as compared to smaller banks. Despite this fact, the coefficient estimate of bank size (measured by the natural log of total assets) in this particular study found to be negative and statistically significant less than 1% significance level (P-value of 0.004). This was consistence with prior expectation and theory that suggesting larger banks have more resources for efficient information gathering, processing and analyzing to tackle moral hazard and adverse selection and ultimately deal with lower volume of NPLs. In addition, the finding was in agreement with those reported by the majority of previous studies such as Salas and Saurina (2002), Rajan and Dhal (2003), Hu et al, (2006) , Jellouli et al (2009) and Espinoza and Prasad (2010).

4.2.5 Real Gross Domestic Product Rate (GDP)

Table 4.6 indicates that there is no statistically significant relationship between GDP and the level of NPls, which is not within the acceptable range and insignificant at greater than 10 % of p-value. The finding of the study is consistent with Swamy (2012).The positive coefficient value

of the estimate is consistent with the results of (Salas and Suarina, 2002; Fofack, 2005; Hou, 2006; Jimenez and Saurina, 2005; Pasha and Khemraj, 2009; and Louzis et al. 2010).

4.2.6 Inflation

In this study the coefficient estimate of inflation was negative and statistically insignificant at greater than 10% significant level (P- value of 0.2746). The negative coefficient estimate of inflation (-0.0003) indicates inverse association with NPLs. That means an increase in inflation rate; lead a decrease in NPL but in this research there is statistically insignificant relationships between the variable of interest. This result was inconsistent with the findings of Fofack (2005), Pasha and Khemraj (2009), Louzis et al. (2010) and Azeem et al. (2012). As the existing theories suggested this relationships appeared in the banking system where the lending rate is not adjusted to the inflation change.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

In previous chapter presented regression analysis to examine in order to identify the determinant of NPL in ECBs. This chapter discussed the conclusions and recommendations of the study. The chapter organized in to two sections, the first section 5.1 presents the conclusions of the study, section 5.2 presents the recommendations provide depend on the findings of the study and 5.3 give highlights for further research.

5.1 Conclusion

The broad objective of the study was to investigate bank specific and macroeconomic determinants of NPLs in Ethiopian commercial banks .To achieve the broad objective of the study used quantitative research approach.

The study applied descriptive statistics and multiple linear regression analysis to analyzed and identify the influences of bank specific and macroeconomic factor on non-performing loans of seven sampled Ethiopia commercial banks. .

A sample of 98 observations has been analyzed over the period from 2004-2017 and used panel data. Regression analysis and descriptive statistics were employed on secondary data collected from NBE, CSA and a sample financial statement of banks. The multiple linear regressions model was conducted by the ordinary listing square and CLRM assumptions test of the models no evidence for the presence of normality, heteroscedasticity, multicollinearity and autocorrelation problem. The study shows the cause-effect relationship between the bank specific, macroeconomic factor and non-performing loans of Ethiopian commercial banks. The study uses four bank specific variables and two macroeconomic factors such as Loan to deposit ratio, Capital adequacy ratio, Return on equity, bank size, Growth domestic product and Inflation. The findings of the study suggested the following conclusions.

According to the result of bank specific variables Capital adequacy ratio (CAR), ratio was found to be a major determinant of NPLs in ECBs significant at less than at 10% p-value and loan to deposit ratio (LTD) and Bank size (BS) were found to be negative and significance with NPLs at less than at 10% and 1 % p-value respectively. Return of equity (ROE), one of the other bank specific factors the result was found there is positive and insignificant relation with NPLs less than at 10% p-value.

Second, with respect to the macroeconomic variables, Gross domestic product and inflation rate were found to be statistically insignificant determinants of NPLs in ECBs. Particularly, the finding in macro variable GDP was found to be positive but insignificant relationship with NPLs p-value greater than 10% significant level. But, the contrary Inflation it was found that there is negative and insignificant relationship with NPLs p-value greater than at 10% significant level.

5.2 Recommendation

Thus, Ethiopian commercial Banks that were considered in this study should put in place an energetic credit process that would encompass issues of proper customer selection, monitoring and follow up and clear recovery strategies for sick loans.

Suggested, other internal factors such as lack of comprehensive studies on the credit applicants, lack of follow-up on the borrower's activities or failure to follow up the collateral provided by the borrowers were also the major internal determinants of NPLs in ECBs. In addition, factors related to the borrowers such as providing false information to the bank, using the loan for other purposes that are undesirable from the banks' point of view (fund diversion), willful default and operational losses of borrower were also the determinants of NPLs in ECBs.

Bank management should give attention for bank specific factor such as deposit, loan ,capital and their return, also must give more emphasis on the asset management decision and give priority for current asset specially loan in order to reduce the level of nonperforming loans.

Currently, Ethiopian commercial banks that were sampled in this study were considering collateral as prime factor for assessing loan application in all conditions and hence, providing appropriate focus for factors such as repayment capacity of the client, the feasibility of the

project and the experience of the management of the company in credit approval process could improve the quality of their loan portfolios.

5.3 Future Research Directions

This research tried to meet the gap between the existing literatures (that are mentioned in chapter one and two), Even if there are so many bank specific and macroeconomic variable the researcher only see four banks specific variable (Loan to deposit ratio, Capital adequacy ratio , Return of equity and Bank size and two macroeconomic variables (GDP and inflation rate,) Hence, there are other variables other than the above ones that can determine banks non-performing loan, borrower specific variables (Loan diversion, poor credit culture of customers and willful defaulting),government policy, credit terms and policy of the bank. And this study recommends future researcher to validate the consistency of the result and provide additional results by including other variables.

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APPENDIX

Appendix I: Result of Ordinary Least Square (OLS) Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.635189	0.087932	7.223628	0.0000
BS	-0.053131	0.007010	-7.579031	0.0000*
CAR	0.534197	0.280615	1.903667	0.0603**
GDP	0.004587	0.004224	1.085980	0.2806
INF	-0.000392	0.000743	-0.527907	0.5989
LTD	-4.207026	0.843641	-4.986748	0.0000*
ROE	0.024017	0.017453	1.376131	0.1724

R-squared	0.655502	Mean dependent var	0.129382
Adjusted R-squared	0.606867	S.D. dependent var	0.134390
S.E. of regression	0.088388	Sum squared resid	0.664055
F-statistic	13.47799	Durbin-Watson stat	1.046690
Prob(F-statistic)	0.000000		

Source: Eviews 10 Output

Note: *Significant at 1%, ** Significant at 10%

Appendix II: Result of Heteroskeadsticity Test

F-statistic	3.054829	Prob.F(3, 85)	0.0327
Obs* R.squared	9.164487	Prob. chi.square (3)	0.0272

Appendix III: Summary of Descriptive Statistics for Dependent and Independent Variables

Variables	Observations	Mean	Maximum	Minimum	Std. Dev.
Non-performing loans	98	0.088208	0.915000	0.000000	0.157433
BS	98	10.19238	12.36000	8.828660	0.775448
CAR	98	0.120201	0.192177	0.040000	0.035818
GDP	98	10.62070	13.57260	7.561767	1.515763
INF	98	13.96488	33.54141	1.444572	9.513605
LTD	98	0.028558	0.049900	0.003413	0.008026
ROE	98	0.301624	1.026800	0.034729	0.237564

Appendix IV: a) Correlation matrix between dependent and independent variable

Correlation	NPL	BS	CAR	GDP	INF	LTD	ROE
NPL	1.000000						
BS	-0.350304	1.000000					
CAR	-0.024382	-0.175666	1.000000				
GDP	0.321506	-0.488277	-0.173564	1.000000			
INF	-0.111458	-0.131349	0.055186	-0.458423	1.000000		
LTD	-0.240050	0.140378	0.049504	-0.146989	0.234035	1.000000	
ROE	0.017467	0.235416	-0.586473	0.075445	-0.025259	0.264008	1.000000

b) Covariance Analysis: Ordinary

Date: 06/08/19 Time: 18:30

Sample: 2004 2017

Included observations: 98

t-Statistic Probability	NPL	BS	CAR	GDP	INF	LTD	ROE
NPL	-----						

BS	-3.664461	-----					
	0.0004	-----					
CAR	-0.238966	-1.748356	-----				
	0.8116	0.0836	-----				
GDP	3.326731	-5.482038	-1.726777	-----			
	0.0012	0.0000	0.0874	-----			
INF	-1.098907	-1.298199	0.541533	-5.053945	-----		
	0.2746	0.1973	0.5894	0.0000	-----		
LTD	-2.422844	1.389178	0.485635	-1.456003	2.358572	-----	
	0.0173	0.1680	0.6283	0.1487	0.0204	-----	
ROE	0.171163	2.373300	-7.094395	0.741322	-0.247561	2.681894	-----
	0.8645	0.0196	0.0000	0.4603	0.8050	0.0086	-----

Appendix V: Husman test

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	10.819212	(6,85)	0.0000