



## **Statement of Declaration**

I, Addisu Ayalew Negash, have carried out independently a research work on Non-performing assets and their impact on the financial performance of commercial banks in Ethiopia in partial fulfillment of the requirement of the Executive Masters of Business Administration program with the guidance and support of the research advisor.

This study is therefore my own original work and it has not been submitted for any degree or diploma program in this or any other institutions.

Addisu Ayalew Negash

Signature \_\_\_\_\_

## Statement of Certification

This is to certify that the research project prepared by Addisu Ayalew entitled: Non-performing assets and their impact on the financial performance of commercial banks in Ethiopia has been submitted in partial fulfillment of the requirement for Executive Masters of Business Administration (EMBA) in compliance with the regulation of the university and met the accepted standards with respect to originality and quality.

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## **Abstract**

*Non-performing assets are always a center of concern for banks as well as all in the business world as a sound financial system, among other things, requires maintenance of a low level of non-performing assets. In this regard, to control the increasing non-performing assets in Ethiopian banking sector, the National Bank of Ethiopia issued a directive which strictly requires all banks to maintain ratio of their non-performing assets below five percent. The main objective of this study is, therefore, to examine the impact of non-performing assets on financial performance of Ethiopian commercial banks as increasing trend of non-performing assets are still a concern of some banks. Research hypothesis is developed which inquires the relationship and effect of non-performing assets on commercial banks financial performance. A quantitative approach is employed for the required data collection and a sample of six commercial banks are selected for data collection on a cross sectional basis for nine years. The data is then analyzed using descriptive, correlation and regression techniques through SPSS software package. The findings of the study revealed that non-performing assets have statistically significant negative impact on the financial performance (ROA) of Ethiopian commercial banks in agreement with the hypothesis. Moreover, loan loss provision and capital adequacy ratios reflected an inverse and direct causal relationship with financial performance of commercial banks (ROA) respectively. Therefore, it is recommended that commercial banks in Ethiopia should enhance their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to bank's compliance to relevant provisions of the bank and other prudential guidelines.*

*Key words: Non-Performing Assets, Financial performance*

## **ACKNOWLEDGEMENT**

First of all, my limitless thank goes to the Almighty God, who have been helping me in all aspects of my life including the achievement of this masters program. Along with, I would like to express my sincere gratitude to my advisor, Dr. Venkati Ponala for his expert guidance, helpful criticism, valuable suggestions and encouragement at every stage during the completion of this work. It was pleasant and inspiring experience for me to work under his guidance.

Then my heartfelt gratitude goes to my wife, Betemekdes Senay for her continuous encouragement and my lovely sons' Baslious and Ananiya for allowing their time and creating conducive environment to focus on my study.

I would also like to take this opportunity to thank to the staffs and management of all the sampled Commercial Banks for their assistance by giving audited financial reports and other internal financial data.

I also add a special note of admiration and gratitude to my families, friends, class mates, colleagues and associates for their moral support and encouragement while going through this research project.

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## **LIST OF ACRONYMS**

AIB	Awash International Bank
ANOVA	Analysis of Variance
ATM	Automatic Teller Machine
BOA	Bank of Abyssinia
CA	Capital Adequacy
CBB	Construction and Business Bank
CBE	Commercial Bank of Ethiopia
CLRM	Classical Linear Regression Model
DB	Dashen Bank
IMF	International Monetary Fund
LP	Loan Loss Provision
NBE	National Bank of Ethiopia
NIB	Nib International Bank
NIM	Net Interest Margin
NPA	Non-performing Asset
NPL	Nonperforming Loan
OLS	Ordinary Least Squares
ROA	Return on Assets
ROE	Return on Equity
SPSS	Statistical Package for Social Science
UB	United Bank
VIF	Variance Inflation Factor
WB	Wegagen Bank

## CHAPTER 1

### INTRODUCTION

Banking sector provides a wide range of financial services and plays important & central role in the economy and the society as a whole. Particularly, Commercial banks play a vital role in the economic resource mobilization and allocation of countries by which they make the community's surplus of deposits and investments useful by lending it to people for various investment purposes. Loans and advances, therefore, represent the majority of commercial banks' assets and source of income.

A sound financial system, among other things, requires maintenance of a low level of non-performing assets which in turn facilitates the economic development of a country. Non-performing assets are a major issue and challenge for banking industry which have been threatening profitability through loss of interest income and write-off of the principal loan amount itself. Moreover, the problem of non-performing assets [NPAs] in financial institutions has been a matter of grave concern not only for the banks but also the real economy in general, as NPAs can choke further expansion of credit which would impede the economic growth of the country.

Indeed, proper management and speedy disposal of non-performing assets is believed as one of the most critical tasks of banks. Credit risk management should also be at the center of banks operations in order to maintain financial sustainability and reaching more clients. Loans and advances are the risky activities which expose commercial banks to the risks of default from borrowers. In this regard, the National Bank of Ethiopia issued repeated directives to standardize the reporting system and regular monitoring of non-performing assets in Ethiopian banking sector. The directives also strictly require all banks to maintain ratio of their non -performing loans below five percent (National Bank of Ethiopia, 2008).

## **1.1 Background of Study**

Non-performing assets (NPAs) are a worldwide issue that affects the stability of financial markets in general and the viability of the banking industry in particular. These assets have well defined credit weaknesses that jeopardize the liquidation of debts and may sustain some losses to the bank. One of the major challenges of the current banking industry is credit risk which has been exposing the fast growing industry to mounting non-performing assets. An efficient and well-functioning financial sector is essential for the development of any economy, and the achievement of high and sustainable growth. Asset quality is one of the indicators of financial sectors health. Most unsound financial sectors of countries show high level of non- performing assets.

Lending is one of the main functions of commercial banks, which represents the heart of the banking industry. As discussed by Mac Donald and Koch (2006), loans are the dominant asset and represent 50-75 percent of the total amount at most banks, which also generate the largest share of operating income and represent the banks greater risk exposure. Moreover, the contribution of loans to the growth of any country is huge in that banks are the main intermediaries between depositors and those in need of fund for their viable projects. This helps to ensure that the money available in economy is always utilized efficiently for the intended purpose. Indeed, managing loans in a proper way has positive effect on the performance of banks' and the borrower firms' in particular and a country as a whole. Banks assume credit risk when they act as intermediaries of funds and credit risk management lies at the heart of commercial banking (Machiraju, 2003). Machiraju (2003) also indicated that the business of banking is credit and credit is the primary basis on which bank's quality and performance are judged. Failure to manage loans, which make up the largest share of banks' assets, would likely lead to the episode of high level of non -performing assets.

A non- performing loan is defined by the International Monetary Fund (IMF, 2009) as 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 Committee (2001) puts non-performing loans as loans left unpaid for a period of 90 days. The Ethiopian banking business directive also defines non-performing loans as "Loans or Advances whose credit quality has been deteriorated such that full collection of principal

and/or interest in accordance with the contractual repayment terms of the loan or advances in question” (NBE, 2008).

Decisions made about what to do with non- performing assets determine for the sustainable restoration of banks’ financial health. The solidity of bank’s portfolio depends on the health of its borrowers. Lakew (2001) also noted that failed business enterprises bring down the banking system in many countries. Minimum level of non-performing assets, among other things, is a prerequisite for a sound financial system which in turn facilitate the economic development of a country.

## **1.2 Problem Statement**

Banks exist to provide financial intermediation services and at the same time strive to maximize shareholders' return on their investment. According to Radha (1980) lending is considered the most important function for fund utilization of Commercial Banks as major portion of their income is also earned from loans and advances.

However, lending is also the most risky activity of the banking industry which requires banks to carry out credit risk management as one of their core activities. When we assess all the risks banks face, credit risk is considered as the most lethal as non-performing assets would impair banks financial performances. A sound financial system, among other things, also demands maintenance of a low level of non-performing assets so as to facilitate the economic development of a country. Deterioration in banks’ asset quality is one of the major causes of financial fragility. Past experience also showed that a rapid build-up of bad loans has played a crucial role in banking crises (Demirgüç-Kunt and Detragiache, 1998).

Commercial banks in Ethiopia have witnessed unprecedented growth in terms of deposit mobilization and disbursement of credit. Loans and advances figures in all the commercial banks revealed existence of continuous growth over the last two decades, which indicated increasing credit appetite in the various segments of the economy and thereby contributed for the growth of the Ethiopian economy. Along with spectacular rise in total loans and advances, Non-Performing Assets (NPAs) figures also exhibited growth in those years. To control such an increasing non-performing asset in Ethiopian banking sector, the National

Bank of Ethiopia issued a directive which strictly requires all banks to maintain ratio of their non -performing assets below five percent (NBE, 2008).

Despite this directive and subsequent positive result, the non-performing assets status of some commercial banks is still unfavorable when compared with the set threshold or the industry average. For instance, as reported by Alemayehu (2013) the non-performing loans and advances ratio of Zemen Bank and Dashen Bank stood at 8% and 6.24% as of June 30, 2013 and December 31, 2013 respectively. On the other hand, the financial statements of most commercial banks reflected a huge amount of provision held for doubtful loans and advances. Such unfavorable records observed in commercial banks caught the attention of the researcher to investigate the impact of non-performing assets on the financial performances of commercial banks in Ethiopia. Moreover, non-existence of adequate related empirical studies on the research topic motivated the researcher to assess the impacts of non-performing assets on the financial performance of commercial banks in the country.

### **1.3 Objectives of the Study**

The level of non-performing asset is one of the determinant factors that depict soundness and financial health of the banking sector. In view of the existing concern on impact of non-performing assets on financial performance of commercial banking sector in Ethiopia, it is found vital to undertake this study. Hence, the objectives of the study are stated below.

#### **1.3.1 General Objectives**

The main objective of the study is to investigate the impact of non-performing assets on financial performances of commercial banks in Ethiopia.

#### **1.3.2 Specific Objectives**

To achieve the general objective, the following specific objectives are developed:

- 1) To examine the extent of relationship that exists between non-performing assets, Loan loss provision, capital adequacy and the financial performance of commercial banks in Ethiopia.
- 2) To analyze the impact of non-performing assets, loan loss provision and capital adequacy on the financial performance of commercial banks in Ethiopia.

## **1.4 Hypotheses of the Study**

As the principal profit making activity of commercial banks is making loans to its clients, banks earn better profit and recorded better performance by extending more loans and advances. On the other hand, occurrence of non-performing assets may limit lending and may have a negative impact on banks financial performance.

Considering the above co-relation and in order to achieve the objectives set for the research, the following research hypotheses were developed:

- H<sub>1</sub> - There is significant inverse relationship between non-performing loans assets) and financial performance of commercial banks in Ethiopia
- H<sub>2</sub> - There is significant inverse relationship between loan loss provision and financial performance of commercial banks in Ethiopia
- H<sub>3</sub> - There is significant direct relationship between capital adequacy and financial performance of commercial banks in Ethiopia
- H<sub>4</sub> - Non-performing loans (assets) have significant negative effect on financial performance of commercial banks in Ethiopia.
- H<sub>5</sub> - Loan loss provision has significant negative effect on financial performance of commercial banks in Ethiopia.
- H<sub>6</sub> - Capital adequacy has significant positive effect on financial performance of commercial banks in Ethiopia.

## **1.5 Scope of the Study**

This study is limited to quantitative impacts of non-performing assets on financial performance of banks though non-performing assets has a huge impact on qualitative aspects of banks' performances. Thus, the study did not explore the qualitative impacts of non-performing assets. Besides, there are eighteen commercial banks in Ethiopia both public and private which are fully engaged in commercial banking activities. But to make the study more manageable, the scope of the study was delimited on six of the commercial banks in Ethiopia with an operational life of nine and above years. The data used for the study thus covers only six commercial banks in Ethiopia for nine years from 2005 to 2013.

## **1.6 Significance of the Study**

In order to fulfill the requirement of Executive Masters of Business Administration program, a research project report is believed one of the preconditions to graduate. The study will have also importance to understand the challenges of the business activities in the real world. Moreover, it serves as an opportunity to the researcher to apply his knowledge which had been gained throughout his university courses to the practical environment and further enhance his knowledge on the banking activities.

Through the literature of review, it has been understood that empirical studies, which assessed the impact of non-performing assets on financial performance of commercial banks in Ethiopia are rarely found. The study can thus provide useful latest information on the topic. Moreover, this knowledge is hopefully very useful as a source of information for future researches regarding banking issues.

Studies indicated that the recent global financial crisis and the subsequent recession in many developed countries have increased households' and firms' defaults, causing significant losses for banks. This calls for regular monitoring of loan quality, possibly with an early warning system capable of alerting regulatory authorities of potential bank stress to ensure a sound financial system and prevent systemic crises. To put in place adequate credit management tools, understanding the impact of non-performing assets play a crucial role. The study, thus, would help Ethiopian commercial banks to get insight on the impacts of non-performing assets on their financial performances and the central bank (NBE) to examine its policy on banking supervision pertaining to ensure maintenance of asset quality in banks. In addition, the study would also contribute to the existing body of knowledge regarding the impact of non-performing assets and motivate further research on Ethiopian Banking context.

## **1.7 Limitation of the Study**

The study focused on financial related variables only and did not consider non financial measure variables which may have influence and might need a further investigation. Financial reports within nine years may be affected by different variables in the state of the economy which in turn influence the measurement of the actual effects of non-performing assets on financial performance of the banks. Moreover, the small sample size

and usage of quantitative data only may limit the findings of the study to generalize for the population.

## **1.8 Organization of the Research Report**

The research report consists of five chapters with different sections and sub-sections which is structured as follows. Chapter one discusses introduction of the study that would give a brief overview of the background of the study. This chapter also discusses objectives, research hypotheses, scope, significance and delimitation and limitation of the study. In chapter two theoretical foundations of the study and empirical studies conducted on relevant studies are presented. Chapter three focuses on methodology of the study. It explains the research design, the target population, data collection method, measuring instruments, and data analysis techniques. Chapter four also provides the data analysis and presentation of the study. It mainly covers the analysis of the econometric model outcomes and discussion of the research results. The last chapter as usual explains conclusion and recommendation based on interpretation of the research results with further research directions.

## CHAPTER 2

### LITERATURE REVIEWS

Under this chapter the theoretical review and empirical evidences focusing on the research topic are presented.

#### **2.1 Overview of Banking Industry in Ethiopia**

The history of modern banking in Ethiopia started in 1905 with the establishment of Abyssinian Bank based on a 50 years agreement with the Anglo-Egyptian National Bank. Later, in 1931, the Bank of Abyssinia was legally replaced by Bank of Ethiopia shortly after Emperor Haile Sellasie I came to power. Bank of Ethiopia was purely owned by the government and members of the Ethiopian aristocracy, which make it the first indigenous bank in Africa (NBE, 2008). It was also authorized to issue notes and coins and to act as the government's bank. As described by Thitina (2009), the Bank of Ethiopia was in operation for a few years until 1935 and ceased to function because of the Italian invasion. However, during the period of the Italian occupation (1936-41), many branches of the Italian Banks such as Banco d'italia, Banco de-Roma, Banco Di-Napoli and Banco Nazianali del lavoro were operational in the main towns of Ethiopia.

After the evacuation of Italians, the State Bank of Ethiopia was established on November 30, 1943, which was engaged in both central bank and commercial bank activities (Wondinagegnehu, 2012). Then, later the Ethiopian monetary and banking law that came into force in the year 1963 separated the functions of the State Bank of Ethiopia in to central and commercial banking by establishing the National Bank of Ethiopia and the Commercial Bank of Ethiopia respectively. The 1963 law allowed for other commercial banks to operate, including foreign banks provided that they were 51% owned by Ethiopians. The first private commercial Bank, Addis Ababa Bank was established by Ethiopians and started its operation in the year 1964 with a capital of Birr (ETB) 2 million in association with National and Grindlay Bank, London which had 40 percent of the total share (Habtamu, 2011).

Following the fall of the imperial government in 1974 and implementation of command economy, all privately owned financial institutions including three commercial banks, thirteen insurance companies and two non-bank financial intermediaries were nationalized

on 1 January 1975 (Wondimagegnehu, 2012). The nationalized banks were then re-organized and one commercial bank, the Commercial Bank of Ethiopia; two specialized banks - the Agricultural and Industrial Bank , later renamed as the Development Bank of Ethiopia (DBE) and the Housing and Savings Bank (HSB) currently named as the Construction and Business Bank (CBB); and one insurance company, the Ethiopian Insurance Corporation were formed ((Wondimagegnehu, 2012).

After the removal of the Derg Regime in 1991 and the liberalization policy in 1992, Ethiopia began its transition to a market oriented economic policy. The Monetary and Banking proclamation No.83/1994 and the Licensing and Supervision of Banking Business proclamation No.84/1994 had allowed the establishment of private commercial banks and laid down the legal basis for investment in the banking sector, which has marked the beginning of new era in the Ethiopian banking sector development. Public and private Commercial Banks are currently operational in line with Banking Proclamation No. 592/2008. Subsequent to issuance of the new proclamation for establishment of private banks, many private banks became operational in the Ethiopian banking sector. The National Bank of Ethiopia was also re-established by Proclamation No. 591/2008 which gives the power to license and supervise banks under article 5(7). Furthermore, it has the right to exercise such other powers and functions to execute its purposes as central bank customarily perform (FDRE, 2008).

Although the banking industry in Ethiopia has about hundred years of experience, the sector is not yet well developed and is still in its growing stage. The commercial banking sector in Ethiopia is providing the most basic banking products including credit facility (lending), deposit Service, international banking services, fund transfers, and other Services like card payment, and automatic tailor machine (ATM) services. Recently, most of the banks are striving to improve their service delivery through introduction of different IT solutions. Mobile banking and agency banking is also under way by most banks as per the directive issued from National Bank of Ethiopia. Recent trends also indicate that banks are competing in the market on the basis of branch expansion, advertisements, raising capital bases, improved service delivery, and investment on IT software and infrastructure to enhance their resource mobilization process. However, these technological innovations are still at their infant stage and the sector needs further enhancement to meet its customer expectations (NBE, 2010).

According to annual reports of National Banks of Ethiopia, the development progress of banking sector in Ethiopia is witnessed in current situations. This development is described in terms of numbers of banks, total assets, deposits, employment creation etc. The total numbers of commercial banks reached 19 with aggressive expansion of branches though there is still huge unbanked population in the country.

## **2.2 Theoretical Review of Commercial Banking**

### **2.2.1 Commercial Banking**

Commercial banks are financial institutions that accept deposits from the general public and extended loans to those in need of the money. Banks provide financial intermediation service for linking those who have excess funds with those who are in need of funds, thus ensuring the money available in economy is always in proper place and use. In so doing banks earn income when they lend money out at a higher interest rate than they pay depositors for use of their money. A Bank's main source of income is interest. A bank pays out at a lower interest rate on deposits and receives a higher interest rate on loans and advances. The difference between these rates represents the bank's net interest income. Banks and other financial institutions exist in order to earn a profit and to ensure that shareholders' value is maximized (Van Gestel & Baesens, 2009).

Currently, in most jurisdictions commercial banks are regulated by government entities such as central banks and require a special bank license to operate. The requirements for the issue of a bank license vary between jurisdictions but typically include: Minimum capital, Minimum capital ratio, 'Fit and Proper' requirements for the bank's controllers, owners, directors, or senior officers, approval of the bank's business plan as being sufficiently prudent and plausible. In the case of Ethiopia, the National Bank of Ethiopia is authorized to give license for financial institutions and monitor their performance in line with the directives issued (NBE, 1994).

### **2.2.2 Role of Commercial Banks**

Commercial banks are firms that provide a wide range of financial services and play an important role in the economy and the society as a whole in the economic resource allocation of countries. Their main central role is to make the community's surplus of deposits and investments useful by lending it to people for various investment purposes.

Commercial banks' contribution to the economic growth lies in the role they play in mobilizing deposits and allocating the resources efficiently to the most productive uses in the real sector of the economy. Rose (2002) also considered commercial banks as the most important enabler of financial transactions in any country's economy and the principal source of credit. As stated in Saunders & Cornett (2003), commercial banks extend credit to different types of borrowers for many diverse purposes, either for personal, business or corporate clients.

Besides, banks also function as the custodians of nation's money that is accepted in the form of deposits and paid out on the client's instructions (Sinkey, 2002; Harris, 2003). Banks also perform other activities such as management of payment system, creation of indirect financial securities, information agency, supplying specific instruments to fill the gap as financial spectrum fillers, and dealing foreign currency (Fourie, Falkena & Kok , 1998; Valdez, 2000).

Investment on a productive sector is the precondition for achieving the economic growth from a country perspective. Capital formation positively supports this investment function. Once a satisfactory level of capital is formed, the option of sound investment comes, that ultimately leads to flow of capital in the future. Financial institutions, mainly banks do these functions through different mechanisms such as loans (Islaml, Shil & Mannan, 2005). Lending presumes the fact that the borrower doesn't reimburse the first party immediately rather arranges either to repay or return those resources at a later date, making it a debt.

To enable them function as financial intermediaries, banks collect funds from savers in the form of deposit and then supply it to borrowers as loans. Thus, banks accept customer deposits and use those funds to give loans to other customers or invest in other assets that will yield a return higher than the amount banks pay the depositor (McCarthy, Schneider and Tibb, 2010). Customers' deposit is the primary source of bank loan and hence, increasing or guaranteeing deposits directly has a positive effect on lending. Commercial banks extend credit to their clients for many diverse purposes. This intermediation functions benefit both the banks and the borrowers.

In allocating funds, the primary objective of bank management is to earn income while serving the credit needs of its community (Reed and Gill, 1989). Lending represents the

heart of the industry. The principal profit- making activity of commercial banks is making loans to its customers. Hence, loans and advances are the dominant asset and represent 50-75 percent to total amount of assets at most banks which also generate the largest share of operating income and represent the banks greater risk exposure (Mac Donald and Koch, 2006).

### **2.2.3 Banking Risks**

Risk is the uncertainty or probability that a negative event occurs. The core business of banking is to attract funds and to resell or invest which is not without risk. According to Van Gestel & Baesens (2009), banks need to take risk to maintain their margins and to fulfill their role in the economy. It is also believed that a bank that takes excessive risk is likely to run into difficulty and may eventually fail its obligations and become insolvent.

Bank risk is mainly related with financial risk related to potential losses of financial products. As Van Gestel and Baesens (2009) attempted, banks face different elements of risks that are required to be identified, understood, measured and managed. The Basel II Capital Accord identifies three main sources of risk: credit risk, market risk and operational risk. These three types of risks are explicitly treated in the first pillar of the Basel II Capital Accord. Banks are also exposed to sources of risk other than credit, market and operational risk as pillar 2 in the Basel II Capital Accord also demands that banks have sufficient capital to cover all types of risk, without making explicit which types of risk these can be. Other types of risk include Liquidity risk, interest rate risk, reputation risk and business risk.

Credit risk is the most obvious risk of a bank by the nature of its activity. In terms of potential losses, it is typically the largest type of risk. Credit risk is the risk that a borrower defaults and does not honor its obligation to service debt. Valsamakis, Vivian & Du Toit (2005) also describe credit risk as the risk that a financial contract will not be concluded according to the agreement. Credit risk encompasses both the loss of income resulting from the sector's inability to collect anticipated interest earnings as well as the loss of principal resulting from loan defaults.

## **2.3 Non-performing Assets**

Non-performing assets are a very sensitive element of a bank's operations. Non-performing loan assets are also a leading indicator of credit quality (Machiraju, 2003). Studies previously discussed indicated that loans and advances have constituted the primary source of income by banks. Like any business establishment, a bank also seeks to maximize its profit. As loans and advances are more profitable than any other assets, a bank is willing to lend as much of its funds as possible. Credit quality is, however, the main concern of the banks. Most of the time banks try to balance the issue of maximizing profit by lending and at the same time manage risk of loan default as it would impair profit and thereby the very capital .

Indeed, a bank needs to be cautious in advancing loans as there is a greater risk which follows it in a situation where the loan is defaulted. In other words, loan loss or defaulted loan puts a bank in a difficult situation especially when it is in greater amount. According to Tibebu (2011), the immediate consequence of large amount of non-performing loans and advances in the banking system is bank failure. Despite the fact that banks hold security for the loans they grant they cannot be fully certain as to whether they are paid or not. It is when such risks materialize that loans turn to be non-performing.

The concept of non-performing loans or assets has been defined in different literatures. According to Patersson and Wadman (2004), non-performing loans are defined as defaulted loans which banks are unable to profit from. They are loans and advances which cannot be recovered within stipulated time that is governed by the laws of a country. According to the International Monetary Fund (IMF, 2009), a non-performing loan and advance 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. Fofac (2009) also discussed that non-performing loans generally refer to loans which for a relatively long period of time do not generate income; that is the principal and/or interest on these loans has been left unpaid for at least 90 days. Non-performing loan assets are further defined as loans whose cash flows stream is so uncertain that the bank does not recognize income until cash is received (Machiraju, 2003).

According to Brown, Mallett and Taylor, the loss from bad loans and advances affects bank's ability to grow and develop its business. Disclosure of the extent of these losses in its

financial statements may also lead to a loss of confidence in the bank's management and reductions in its credit ratings which will in turn increase the bank's cost of borrowing in the wholesale market and make it more expensive or more difficult to raise capital. In extreme cases, it can also lead to a loss of deposits, the withdrawal of the bank's authorization and ultimately insolvency. Thus, Non-performing loan and advances have greater implication on the function of the banks as well as the overall financial sector development.

It is widely accepted that the magnitude of non-performing loans and advances is often associated with bank failures and financial crises in both developing and developed countries. Historically, the occurrence of banking crises has often been associated with a massive accumulation of non-performing assets which can account for a sizable share of total assets of insolvent banks and financial institutions. Indeed, there is abundant evidence that the financial/banking crises in East Asia and Sub-Saharan African countries were preceded by high non-performing loans and advances. The previous global financial crisis, which originated in the US, was also attributed to the rapid default of sub-prime loans/mortgages. In view of this reality it is therefore understandable why much emphasis is placed on non-performing loans and advances when examining financial vulnerabilities (Sorge, 2004).

## **2.4 Determination of NPAs & Loan Loss provision**

### **2.4.1 Determination and Classification of NPAs**

The classification of a loan asset as bad or doubtful may result from a specific act by the borrower, for example, petitioning for bankruptcy, or from circumstances that have the potential to place the loan at risk. For instance, the borrower may have defaulted on one or more of the terms of the loan, or a substantial part of its assets may be in an industrial sector or country that is suffering from an economic recession. Non-performing loan assets could be recognized early from the violation of the terms of agreement by the borrower. When we see the context of classification in different countries, the criterion for identifying non-performing loan assets varies. Some countries use quantitative criteria to distinguish between "good" and "bad" loans while others rely on qualitative norms. The quantitative criteria depends on number of days of overdue schedule payments while the qualitative criteria bases its determination on the availability of information about the client's financial status and perspectives about future payments. However, the Basel II

Committee emphasizes the need to evolve toward a standardized and internal rating-based approach. Accordingly, the Basel committee puts non performing loans as loans left unpaid for a period of 90 days.

When we come to the Ethiopian case, Banking Business Proclamation No. 592/2008 was issued with a view to ensure safety, soundness and stability of the banking system in Ethiopia. Under the Ethiopian banking business directive, non-performing loan assets 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 loans or advances is in question” (NBE, 2008).

The directive broadly categorized assets into performing asset and non-performing asset. As per the Ethiopian banking business directive, loans and advances with pre-established repayment programs are non-performing when principal and/or interest is due and uncollected for 90 consecutive days or more beyond the scheduled payment date or maturity (NBE Directive No. SBB/43/2008). In addition, overdrafts and loans or advances that do not have a pre-established repayment program shall be considered as non-performing when:

- The debt remains outstanding for 90 consecutive days or more beyond the scheduled payment date or maturity;
- The debt exceeds the borrower’s approved limit for 90 consecutive days or more;
- Interest is due and uncollected for 90 consecutive days or more;
- the overdraft account has been inactive for 90 consecutive days;
- The overdraft account is insufficient to cover the interest capitalized during 90 consecutive days;
- The account fails to show a debit balance of 5% of approved limit or less at least once over 360 days preceding the debt of loan review.

The directive under article 7 and 8 further classified non-performing loan and advances to three categories based on aging criteria.

## **1. Substandard**

Non-performing loans and advances at a minimum are classified as substandard when loans or advances with pre-established repayment programs past due 90 days or more, but less than 180 days. Overdrafts and loans or advances that do not have a pre-established

repayment program are also classified as substandard upon fulfillment of the following conditions:

- The debt remains outstanding for 90 consecutive days or more beyond the scheduled payment date or maturity, but less than 180 days; or
- The debt exceeds the borrower's approved limit for 90 consecutive days or more, but less than 180 days; or
- Interest is due and uncollected for 90 days or more, but less than 180 days; or
- For overdrafts, the account has been inactive for 90 consecutive days or more, but less than 180 days; or the account fails to show a debit balance of five to nineteen percent of the approved limit at least once over 360 days preceding the date of loan review.

## **2. Doubtful**

The directive determines that non-performing loans and advances are classified as doubtful when loans or advances with pre-established repayment programs past due 180 days or more, but less than 360 days. Moreover, overdrafts and loans or advances that do not have a pre-established repayment program are classified under this category if:

- the debt remains outstanding for 180 consecutive days or more beyond the scheduled payment date or maturity, but less than 360 days; or
- the debt exceeds the borrower's approved limit for 180 consecutive days or more, but less than 360 days; or
- interest is due and uncollected for 180 days or more, but less than 360 days; or
- the account has been inactive for 180 consecutive days or more, but less than 360 days; or the account fails to show debit balance of twenty to forty-nine percent of the approved limit at least once over 360 days preceding the date of loan review.

## **3. Loss**

Non-performing loans and advances shall be classified as loss status when non-performing loans or advances with pre-established repayment programs past due 360 days or more; and overdrafts and loans or advances that do not have a pre-established repayment program satisfy the under mentioned conditions:

- The debt remains outstanding for 360 consecutive days or more beyond the scheduled payment date or maturity;
- The debt exceeds the borrower's approved limit for 360 days or more; or

- Interest is due and uncollected for 360 days or more; or
- The overdraft account has been inactive for 360 consecutive days or more, or the account fails to show a debit balance of fifty percent and above of the approved limit at least once over 360 days preceding the date of loan review.

### **2.4.2 Loan Loss Provision**

The Ethiopian Banking Business directive requires all banks to maintain a provision against expected bad and doubtful loans. Article 8 of directive number SBB/43/2008 states that:

*All banks shall maintain a provision for loan losses account which shall be created by charges to provision expense in the income statement and shall be maintained at a level adequate to absorb potential loss in the loans or advanced portfolio. In determining the adequacy of the provisions for loan loss account, provisions may be attributed to individual loans or advances or groups of loans and advances.*

As clearly stated in the directive, provision for loan loss account is maintained against charges to provision expense account in the income statement. The provision is also expected to be maintained at a level adequate to absorb potential losses in the loans or advances portfolio and considers individual or groups of loans / advances. The specific and general element of a bank's provision for bad and doubtful loans should represent the aggregate amount by which management consider it necessary to write down its loan portfolio in order to state it at its estimated net realizable value in the ordinary course of business. The specific element refers to particular loans that have been identified as bad or doubtful. Its aim is to write down the value of those loans to their estimated realizable value at the balance sheet date. The general element relates primarily to the risk associated with loans that may prove to be wholly or partly irrecoverable, have not been separately identified, but are believed nevertheless to exist.

In determining the extent of the specific element of the provision for bad and doubtful loans, a bank needs to consider factors such as the amount of the loan and the bank's other commitments to that borrower; the borrower's business prospects; the security for the loan (if any) and how it could be realized; the costs that would be incurred in obtaining repayment if security or other rights had to be enforced, and the income from the loan. A

bank also needs to consider the future prospects for the borrower’s business in determining the need for and the size of any provision.

For minimizing the risk of non- performing loans, Ethiopian commercial banks are required to maintain the following minimum provision percentages against the outstanding principal amount of each loan or advances classified in line with articles 7 and 8 of Directive No. SBB/43/2008.

Table 1 Asset Classification Category & Minimum provision

<b>Asset Classification Category</b>	<b>Minimum provision</b>
Pass	1%
Special Mention	3%
Substandard	20%
Doubtful	50%
Loss	100%

Source: NBE Directive No. SBB/43/2008

## **2.5 Capital Adequacy**

Capital Adequacy is measured by the ratio of equity capital to total risk weighted assets. It is a measure of a bank’s financial strength as it determines its ability to withstand operational and abnormal losses. Bank equity capital can be seen in two dimensions as stated by Aburime (2008). That is the amount contributed by the owners of a bank (paid-up share capital) and the amount of owners’ funds available to support a bank’s business which includes reserves, and retained earnings. Bank’s capital is widely used as one of the determinants of bank’s financial performance (profitability) since it indicates the financial strength of the bank. Capital adequacy requirements generally aim to increase the stability of the banking system by decreasing the likelihood of a bank’s failure and to resist unexpected negative externalities that exist in banking system.

A bank should be required to have adequate capital to support its risk assets in accordance with the risk-weighted capital ratio framework. Research studies indicated that capital strength have a positive and dominant influence on profitability of commercial banks in Ethiopia. Indranarain (2009); Imad, Qais, & Thair . (2011) and Berger (1995) also stated that banks with high capital ratio tend to earn more profit through translating the safety

advantage into profit. Most studies also demonstrated that capital adequacy has positive and significant effect on profitability (Flamini, McDonald, and Schumacher, 2009; Athanasoglou, Brissimis and Delis, 2005. Other researcher, Berger (1995) identified that capital adequacy ratio affected ROA of USA banks positively in 1983-1989 and negatively in 1989-1992. Berger argued that the relationship between capital adequacy ratio and profitability depends on the specific circumstances of the time period observed. According to the results of the study, a high capital adequacy ratio positively affects profitability when financial situation of banks is perceived as risky and it negatively affects profitability in normal situations due to alternative cost of capital.

Research studies conducted in Ethiopian commercial banks also revealed a positive relationship between banks capital and profitability (Habtamu, 2012; Birhanu, 2012; Belayneh, 2011). A higher capital level brings higher profitability for Ethiopian commercial banks since by having more capital; a bank can easily adhere to regulatory capital standards and the excess capital also can be provided as loans. Therefore, researchers widely posit that the more capital a bank has, the more resistant it will be to failure

## **2.6 Impacts of NPAs on financial performance of commercial banks**

One of the bank specific variables that affect the financial performance of a bank is its assets which include current asset, credit portfolio, fixed asset, and other investments. Loans and advances are the major assets of commercial banks from which they generate largest portion of their income. According to Bloem and Gorter (2001), though non-performing loan asset may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions which tend to have large loan portfolios. The quality of loan portfolio determines the financial performance of banks. Dang (2011) claimed that the losses derived from delinquent loans are the highest risk banks face.

According to Ongore and Kussa (2013) non-performing asset (loan) ratios are the best proxies for asset quality. Asset quality is indeed an important measure of strategic and tactical success which can help to track bank wide and line of business performance. Shajari P. and Shajari H. (2012) explained in their study that one of the three core financial soundness indicators is asset quality measured by ratio of non-performing loan assets to total loan assets. Non-performing asset is the major concern of all commercial banks to keep

the amount of non-performing assets to low level. In this regard low non-performing loans to total loans ratio shows the good health of the loan portfolio of a bank. The lower the ratio the better the bank is performing (Sangmi and Tabassum, 2010). Machiraju (2003) in his book also expressed non- performing assets as a leading indicator of credit quality.

Empirical studies indicated that the efficiency of a bank is not reflected only by the size of its balance sheet but also by the level of return on its assets. The regression analyses of various empirical studies also show that non-performing assets of financial institutions are negatively related to financial performance (Girma, 2011; Kolapo, Ayeni & Oke, 2012; Tibebu, 2011). Abale and Ingale (2013) also reported that a high level of non-performing assets suggests high probability of a large number of credit defaults that affect the profitability and net-worth of banks and also erodes the value of the asset which in turn reflected in the whole economy. Non- performing assets are loans whose cash flows stream is so uncertain that the bank does not recognize income until cash is received and at the same time, banks are required to provide provisions for non-performing asset from their current profits. In the process of lending, banks need to held provisions for loan losses. A higher level of loan loss provision relative to size of total loans is an indication that the banks' assets are becoming more difficult to collect (Girma, 2011).

As the non-performing asset let money blocked the productivity of bank decreases not only by the amount of non-performing asset but also lead to opportunity cost since reinvestment of profit in some return earning project/asset is lost. Non-performing assets also cause losses by reducing the capital resource of banks and limit their ability to grow and develop their business. So, non-performing assets do not only affect current profit but also future stream of profit, which may lead to loss of some long-term beneficial opportunity. A reduction in profitability in turn resulted in low return on investment, which adversely affects current earning of banks.

Non-performing assets have also impact on liquidity of commercial banks. Liquid money will be blocked and decreased profit which leads to lack of enough cash at hand and in turn this leads to borrowing money for shortest period of time which has additional cost to the company. Difficulty in operating the functions of bank is another cause of non-performing assets due to lack of money. It limits recycling of the funds.

Time and efforts of management is another indirect cost which banks have to bear due to NPAs. Time and efforts of management in handling and managing non-performing assets would have been diverted to some fruitful activities, which would have given good returns. Now days, banks have special employees to deal and handle NPAs, which is additional cost to the bank. According to a research made by Chisti (2012) on the impact of asset quality on profitability of private banks in India, the analytical model shows that when a bank's asset quality becomes worse, it takes more resources for a bank to conduct non- value-added credit receiving activities which in turn leads to poor performance.

Non-performing asset also adversely affect the value of banks in terms of market for credit activity. A bank will lose its goodwill and brand image, which have negative impact to the people who are putting their money in the bank. Tihitina (2009) also reflected that disclosure of the extent of losses in bank's financial statements may lead to a loss of confidence in the bank's management and a reduction in its credit ratings. This will in turn increase the bank's cost of borrowing in the wholesale market and make it more expensive or more difficult to raise capital. In extreme cases, it is argued that it can lead to a loss of deposits, the withdrawal of the bank's authorization and ultimately insolvency. Nor, Irwan & Maizura (2009) also argued that non-performing assets can lead to efficiency problem for banks which make them reluctant to take new risks and commit new loans that is described as the "credit crunch" problem.

The economic and financial costs of impaired loans are significant. Potentially, non-performing assets may negatively affect the level of private investment, increase deposit liabilities and constrain the scope of bank credit to the private sector through a reduction of banks' capital, accumulation of losses and correlative increased provisions to compensate for these losses (Fofac, 2009). Fofac (2009) further disclosed that these loans also have potential for reducing private consumption, and in the absence of deposit guarantee mechanisms to protect small depositors, can be a source of economic contraction, especially when coupled with declining gross capital formation in the context of a credit crunch caused by erosion of banks' equity and assets. Previous banking crises have often been associated with a massive accumulation of non-performing assets. It is widely accepted that the quantity or percentage of non-performing assets (NPAs) is often associated with bank failures and financial crises in both developing and developed countries. In this regard, evidences revealed that the financial/banking crises in East Asia and Sub-Saharan African

countries were preceded by high non-performing assets. The recent global financial crisis, which originated in the US, was also attributed to the rapid default of sub-prime loans/mortgages.

## **2.7 Related Previous Empirical Studies**

Many researchers have studied non-performing assets from different perspective and in different Social, political and economic environment. Some of the studies which are related and useful for this study are discussed herewith.

Kolapo, Ayeni & Oke (2012) carried out an empirical investigation on the quantitative effect of credit risk on the performance of commercial banks in Nigeria. A sample of five commercial banking firms were selected purposively from the twenty existing commercial banks on a cross sectional basis for eleven years. The data used included time-series and cross-sectional data which is pooled into a panel data set and estimated using Panel Data regression. The researchers employed Return on Asset (ROA), as a function of the ratio of Non-performing loan to total loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. The results of the research showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional invariant which has similar effect across banks in Nigeria. The findings of the research revealed that a 100 percent increase in non-performing loan reduces profitability (ROA) by about 6.2percent and a 100 percent increase in loan loss provision also reduces profitability by about 0.65 percent while a100 percent increase in total loan and advances increase profitability by about 9.6 percent.

Girma (2011) who made his research study on ‘Credit risk management and its impact on performance of commercial banks in Ethiopia’ attempted that there is a significant relationship between bank performance (in terms of return on asset) and credit risk management (in terms of loan performance). From the population of all banks operational in Ethiopia, six banks were selected by using purposive sampling technique. The researcher employed quantitative research design. A panel data of 10 years financial data of banks under the study was used to examine the relationship between return on asset (ROA) which is performance indicator and non-performing loan to total loan(NPL/TL), loan provision to total loan (LP/TL), loan provision to non-performing loan (LP/NPL), and loan provision to

total asset (LP/TA). The findings of the study reflected that there is a direct but inverse relationship between return on asset (ROA) and the ratio of non-performing loans to total loan (NPL\TL) and loan provision to total loan. The regression analysis showed that non-performing loan and loan provision of the financial institutions are significantly negatively related to performance (ROA). On the other side, the regression result revealed that loan provision to non-performing loan and loan provision to total asset of the financial institution is significantly positively related to return on asset.

Tibebu (2011) also carried out an empirical investigation on 'Credit risk management and profitability of commercial banks in Ethiopia'. The researcher took seven banks purposively that have ten year and above life span in Ethiopia and collect the necessary data from 2001 to 2010 which is used for regression purpose. Tibebu examines the impact level of credit risk management towards the profitability of commercial banks in Ethiopia and argued that credit risk management has significant impact on profitability of banks of our country. The researcher uses multiple regression models by taking 10 years ROE as dependent variable, NPLR (non-performing loan ratio) and CAR (capital adequacy ratio) as independent variables from each bank along with questioners. The research finding revealed that both non-performing loan ratio and capital adequacy ratio has a negative impact on profitability of commercial banks in Ethiopia in terms of ROE. According to the study a single unit increase in non-performing loan ratio leads to a decrease in profitability of commercial banks by 0.5941 where as a unit increase of capital adequacy ratio leads to a decrease in profitability of commercial banks measured as ROE by 0.8318.

Boahene, Dasah & Agyei (2012) conducted a research on 'Credit Risk and Profitability of Selected Banks in Ghana'. The core objective of this study was to ascertain the relationship between credit risk and bank profitability. A panel data from six selected commercial banks covering the five-year period (2005-2009) was analyzed within the fixed effects frame work. Purposive sampling technique was used in selecting these six banks. The basic data was obtained from the Annual Report of the banks from 2005 – 2009 and analyzed using descriptive, correlation and regression techniques. The dependent variable in the model was Return on Equity while the explanatory variable was Credit Risk which was measured by three main variables - Net Charge Off to Total Loans and Advances, Non-Performing Loans to Total Loans and Advances and Pre-provision Profit to Total Loans and Advances. From the findings of the analysis, it was concluded that credit risk (non-performing loan rate, net

charge-off rate, and the pre-provision profit as a percentage of net total loans and advances) has a positive and significant relationship with bank profitability. This indicated that banks in Ghana enjoy high profitability in spite of high credit risk, contrary to the normal view held in previous studies that credit risk indicators are negatively related to profitability. The results are attributed to the prohibitive lending/interest rates, fees and commission (non-interest income) charged. The results also reflected that bank size, bank growth and bank debt capital influence bank profitability positively and significantly.

Bandyopadhyay (2013) also made a research to obtain a quantitative assessment of the relationship between non-performing asset and selected strategic banking variables including profitability, productivity and few others and to examine the impact of non-performing asset on such dependent variables. According to the study, it is observed that non-performing asset has different degree of association and impact on selected variables among two selected public sector banks in India. The study also revealed that both the selected public sector banks in India are found to be badly hit by non-performing asset in respect of variables like profitability, while they are exposed significantly in respect of most of the selected strategic banking variables though of different scale and magnitude.

A research was also made by Chisti (2012) on the impact of asset quality on profitability of private banks in India. The analytical model used revealed that when a bank's asset quality becomes worse, it takes more resources for a bank to conduct non-value-added credit receiving activities which in turn leads to poor performance. This study was made using actual data of sample Indian banks for the period covering 2006-07 to 2010-11, and through estimating banks' operating efficiency scores by regression. Regression results indicated that asset quality and profitability are negatively correlated.

## **2.8 Financial performance measures of Commercial Banks**

A high performing bank is the one that gives an exceptional return to shareholders while maintaining an acceptable level of risk (Mac Donald and Koch, 2006). Ongore and Kussa (2013) also discussed in their study that all the strategies designed and activities performed by commercial banks are meant to realize profitability which is the grand objective.

There are two broad approaches used to measure bank performance, the accounting approach, which makes use of financial performance measures, and econometric techniques.

The traditional accounting based measures are easy proxies of banks' profitability which can be obtained from publicly disclosed information. As revealed by prior academic researches, there are different accounting based measures for banks' profitability. According to Popa et al. (2009) popular measures of bank performances are return on assets (ROA), return on equity (ROE), net banking income and the efficiency ratio. A study made by Murthy and Sree (2003) and Alexandru et al. (2008) also revealed that profitability of commercial banks can be measured with a variety of ratios of which return on assets (ROA), return on equity (ROE) and Net Interest Margin are the major ones.

Kumbirai and Webb (2010) discussed in their study on financial Ratio Analysis of Commercial Bank Performance in South Africa, return on assets (ROA) showed the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments. This ratio indicated how much net income is generated per £ of assets. Moreover, they also indicated that Return on Equity (ROE) is the rate of return to shareholders or the percentage return on each £ of equity invested in the bank. A higher ROA and ROE is an indicator of more profitability of the bank.

Murthy and Sree (2003) and Alexandru et al. (2008) also explained ROA as a financial ratio that measures the ability of the bank management to generate income by utilizing company assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate income. Wen (2010) stated that a higher ROA shows that the company is more efficient in using its resources. Net Interest Margin (NIM) is also described as a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, depositors), relative to the amount of their (interest earning) assets (Ongore and Kussa, 2013). It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets.

Golin (2001) also pointed out that ROA has been emerged as key ratio for the evaluation of bank profitability and has become the most common measure of bank profitability. Many scholars remind that ROA is the key ratio for the evaluation of bank profitability given that ROA is not distorted by high equity multipliers, while ROE disregards the risks associated with high financial leverage (Athanasoglou et al., 2008). Many regulators also believe return on assets is the best measure of bank efficiency and it emerges as the key ratio for the

evaluation of bank profitability (IMF, 2002). The rate of return on assets, ROA, is the most comprehensive accounting measure of a bank's overall performance. Because of this, a bulk of studies employed ROA as a measure of bank profitability. Murthy and Sree (2003), Athanasoglou et al. (2008), Flamini et al. (2009), Indranarain (2009), Nuru (2011), Belayneh (2011), Girma (2011), Birhanu (2012), Habtamu (2012) and Tseganesh (2012) are some of them.

## **2.9 Research Gap**

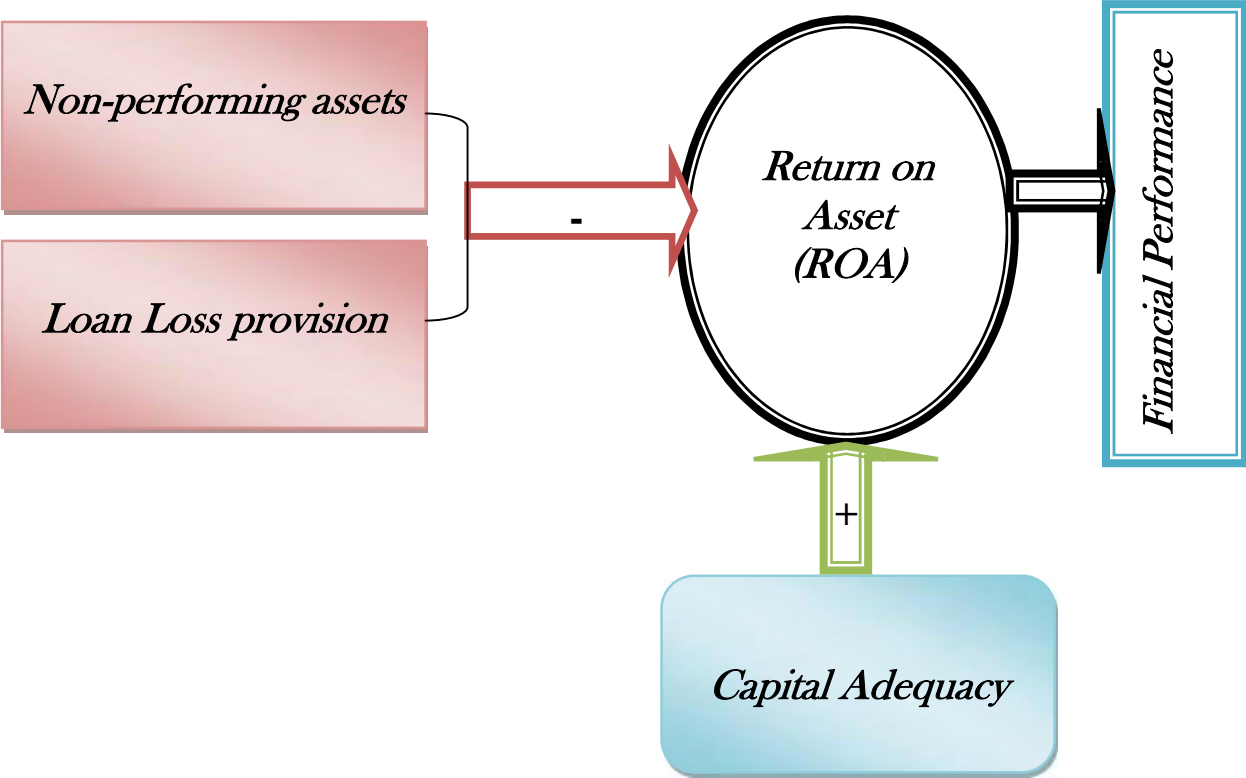
A strong banking system is the backbone for economic growth as well as financial stability and development process of any country. In the case of Ethiopia, after the liberalization policy and transition to a market oriented economic policy, many private commercial banks have been established and brought a tremendous economical and developmental effect in the country's growth. As the banking sector in Ethiopia is at its growing stage, it has been facing various challenges. One of the biggest challenges is management of non-performing assets (NPAs). The soaring NPAs in some banks may have adverse impact on the financial performance of commercial banks as well as the progress of the economy, and hence a matter of great concern for the Ethiopian financial system.

In this regard, most of the related empirical studies made were conducted in organizational settings of other countries which could not be generalized to Ethiopian organization setting. Also, despite the fact that several studies were conducted by different researchers on the Ethiopian Banking sector, specific empirical studies on impact of non-performing assets on financial performance of commercial banks in Ethiopia could hardly be traced. Some studies made on 'Credit risk management' and 'Determinants of financial performance of commercial banks in Ethiopia' were found which took non-performing asset as additional explanatory variable. However, in those studies, non-performing assets are only considered as additional explanatory variable and not deeply investigated. Thus, this study mainly concentrated on non-performing assets and their impact on financial performance of commercial banks in Ethiopia which is proposed to fill the existing knowledge gap and to test the existing theories in the Ethiopian context. It is believed that the confidentiality of information on non-performing assets and the knowledge gap contribute for the non-availability of enough empirical studies on this subject matter in relation to Ethiopian commercial banks.

### 1.10 Conceptual Framework for the Study

From the literature review, discussed above, the researcher constructed the following research framework. It discussed the interrelationships among the variables that are deemed to be integral to the dynamics of the situation being investigated.

Figure 1 Research Framework



Source: Self extracted

## CHAPTER 3

### RESEARCH METHODOLOGY

Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with a certain objectives in view. It is a description of data collection methods, sampling design and statistical technique used for data analysis. This section focuses on the research method and sample design, the subject studied, and measurement used in analyzing data. It shows the flow process in gathering data starting from determining the designing of the research used until the data is successfully gathered.

#### 3.1 Research Design

According to Sekaran (2003) a research design is set up to decide on, among other issues, how to collect further data, analyze and interpret them, and to provide an answer to the problem. A research design is also defined as the plan and structure of investigation and the way in which studies are put together (Kotzar et al., 2005). It is a framework or blueprint for conducting a research. It details the procedures necessary for obtaining the information needed to structure the research problem.

A research methodology is a means to extract the meaning of data (Leedy and Ormrod, 2005). As data and methodology are highly interdependent, the methodology to be used for a particular research problem must always take into consideration about the nature of data that will be collected to resolve the research problem. There are two main approaches to research namely, quantitative and qualitative.

The quantitative research approach involves the collection of quantitative data, which are put to rigorous quantitative analysis in a formal and rigid manner. This approach is used to answer questions about relationships among measured variables with the purpose of explaining, predicting and controlling phenomenon. Variables, hypotheses and methods of measurement tend to be defined before the study begins and remain the same throughout. In this approach the researcher identifies one or few variables that he intends to study and collect data related to those variables. On the other hand, qualitative approach uses the method of subjective assessment of opinions, behavior and attitudes. The result generated

by this type of research is either in non-quantitative form or in the form which cannot be put to rigorous quantitative analysis.

In this research study, the main objective is to analyze and explain the relationship between non-performing assets and financial performance of commercial banks in Ethiopia. As it can also be seen from the research problem it is more explanatory type and tries to examine the relationship between non-performing assets and performance of commercial banks. Therefore, categorizing this research in quantitative research design is more appropriate. Under the quantitative approach, survey method is employed by which a structured data is collected for the study. Moreover, it helps to generalize from a sample to a population so that inference can be made about some characteristic, attitude or behavior of this population.

### **3.2 Population and Sample Size**

For this research, the target population is all commercial banks registered by the National Bank of Ethiopia (NBE) and found in operation. Currently, there are 18 commercial banks in the Ethiopian banking industry. Six commercial banks with enough experience in the industry are selected for this study. The sample considers those commercial banks that have nine and above years of service as the data to be collected is uninterrupted data for nine consecutive years. As we can understand from the data collected from NBE, there are eight banks which have been in operation for nine and above years. Thus, purposive sampling technique is used in selecting the six sample banks. The giant government commercial bank, CBE is not considered in the sample as its market share in terms of asset is very huge (65.7%) and it solely handles all government finance and other transactions without any competitor. It exclusively finances all government projects whose viability and repayment of loan is not questionable which in turn affects the status of its non-performing assets. Thus, the researcher believed that including CBE in the sample will distort the findings. The market share of CBE is 65.7% and the remaining 17 commercial banks' market share is 34.3% in terms of total assets. In this regard, the sample six commercial banks constitute 27% of the market share from the total including CBE. On the other hand, the sample six banks constitute 78% of the market share in terms of total assets from all commercial banks excluding CBE. Moreover, the time and budget constraint to survey all the aforementioned banks, and information confidentiality problem to access the actual data of the banks are taken in to account in the selection of the sample size.

Table 2 List of Commercial Banks above 9 years of service & Market share

S/No.	Banks	year of Establishment	Market share	
			Asset	Capital
1	CBE	1963	65.7	43.4
2	CBB	1975	2.2	2.2
3	AIB	1994	5.3	7.8
4	DB	1995	6.5	7.2
5	BOA	1996	3.3	4.4
6	WB	1997	3.4	7.5
7	UB	1998	3.3	4.6
8	NIB	1999	3	7

*Source: National Bank of Ethiopia Quarter report June 2013*

### **3.3 Data collection, presentation and analysis techniques**

#### **3.3.1. Data collection methods**

The researcher used secondary data sources to collect data required for the purpose of analysis to complete this study. Secondary data are very useful for the researcher to better define the problem of the study. Conducting appropriate data gathering instruments helped researchers to combine the strengths and amend some of the inadequacies of any source of data to minimize risk of irrelevant conclusion. Consistent and reliable research indicates that research conducted by using appropriate data collection instruments increases the credibility and value of research findings (Koul, 2006).

Accordingly, structured document review is used for this research to collect required information, which is relevant for addressing the objectives of the study. Data is collected from audited financial statements (balance sheet and income statement) of each commercial banks included in the sample and various journals and publications of NBE. Most of the required data are obtained from the Audited financial statements submitted to the National Bank of Ethiopian and published in news papers for the public. However, due to incompleteness of data that are obtained from the annual reports of each bank some of the data are collected directly from each bank. Time period for the study is for nine years which ranges from 2005 to 2013.

### **3.3.2. Data presentation and analysis**

Statistical analyses are carried out using the statistical methods to analyze the proposed research objectives and to test the hypotheses. The collected data was interpreted with the help of different financial ratio and statistical descriptions including standard deviation, average, minimum, maximum and median (descriptive statistics) and multiple regressions. A correlation analysis between dependent and independent variables has been done and ordinary least square/OLS regression approach including all of its assumptions is employed with the help of statistical tools like SPSS for windows software package. The assumptions have been tested to see the applicability of the regression models developed. A pooled panel data analysis of cross-sectional and time series data is employed. Pooled panel data analysis, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects (Gujarati, 2003). The technique of panel data estimation takes care of the problem of heterogeneity in the Banks selected for the study. Also, by combining time series of cross-section observation, panel data give more informative data, more variability, less co-linearity among the variables, more degree of freedom and more efficiency (Gujarati and Sangeetha, 2007).

### **3.4 Description and measurements of variables**

To achieve the research objectives developed and to test the hypotheses, the researcher selected the following core variables as dependent and independent variables.

#### **i. Dependent variables**

In the research, financial performance (profitability) is taken as dependent variable which can be measured by the ratio of the Return on Equity (ROE), Return on Assets (ROA), and Net Interest Margin (NIM). The researcher has decided to use ROA as the indicator of profitability in the regression analysis because ROE and ROA have been widely used in earlier researches. Moreover, many scholars remind that ROA is the key ratio for the evaluation of bank profitability given that ROA is not distorted by high equity multipliers, while ROE disregards the risks associated with high financial leverage (Athanasoglou et al., 2008). As ROA is the most comprehensive accounting measure of a bank's overall performance, many regulators believe return on assets as the

best measure of bank efficiency and it emerges as the key ratio for the evaluation of bank profitability (IMF, 2002).

$$\text{Return on Asset (ROA)} = \frac{\text{Net Profit after Tax}}{\text{Average Total Assets}}$$

## ii. Independent variables

The researcher used non-performing loan to total loan (NPL/TL), loan loss provision to non-performing loan (LP/NPL), and Capital adequacy (CA) ratios as independent variables to examine the impact of non-performing assets on financial performance of commercial banks.

**Non-performing loan ratio (NPLTL):** In this particular study NPL ratio is measured by the ratio of non - performing loans over total loans and advances. The author of this research share this measurements with Flamini et al. (2009), Belayneh (2011), Tibebu (2011) and Birhanu (2012). From the literature review, empirical studies indicated that non – performing loans & advances are inversely related with financial performance. Hence, the researcher of this study also expected a negative relation between non – performing loans & advances and financial performance.

$$\text{NPLTL} = \frac{\text{Non-performing loan (NPL)}}{\text{Total Loan \& Advances (TL)}}$$

**Loan Loss Provision to non-performing loan (LPNPL):** provision for loan loss account is maintained against charges to provision expense account in the income statement. Loan loss provision is maintained at a level adequate to absorb potential losses in the loans or advances portfolio. Based on previous empirical studies, the researcher expected a negative relation between loan loss provision and financial performance.

$$\text{LPNPL} = \frac{\text{Loan loss provision (LP)}}{\text{Non-performing loan (NPL)}}$$

**Capital Adequacy (CA):** In this study Capital adequacy was measured by a ratio of total equity over total risk weighted assets. The study employed this ratio to proxy the capital variable because ROA has been used as a measure of financial performance. Bank's capital is widely used as one of the determinants of bank profitability since it indicates

the financial strength of the bank (Athanasoglo et al., 2005). CA is a ratio that regulators in the banking system use to watch bank's health, particularly to ensure its capacity to absorb a reasonable amount of potential losses. It is a measure of how much capital is used to support the banks' risk assets. Loans and advances are the most risky assets due to borrowers' default which requires a reasonable amount of capital to absorb the expected losses. Moreover, considering the regulatory requirement on the minimum capital required to be maintained by banks, capital adequacy also indicates the ability of bank to undertake additional credit deployment and other businesses.

Various empirical studies indicated a positive correlation between returns on asset and capital adequacy (Habtamu, 2012; Birhanu, 2012; Belayneh, 2011). The researcher also expected positive relation between capital adequacy and financial performance of commercial banks in terms of ROA.

$$CA = \frac{\text{Total Equity}}{\text{Average Risk Weighted Asset}}$$

### 3.5 Model Specification

The model adopted for this study is underpinned to the model of Kolapo & et.al (2012) in their study "Credit Risk and Commercial Banks' Performance in Nigeria: A Panel Model Approach" which measured profitability with Return on Asset (ROA) as a function of the ratio of Non- performing loan to loan & Advances (NPL/LA), Loan loss provision to classified assets and ratio of Total loan &Advances to Total deposit (LA/TD) used as indicators of credit risk. However, the study improved the model by incorporating capital adequacy (CA) in place of ratio of Total loan &Advances to Total deposit (LA/TD). The model for this study functionally becomes:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where: Y = Return on Asset (ROA)

X1= Non-performing loans to Total Loans (NPLTL)

X2=Loan Loss provision to Non-performing loan (LPNPL)

X3= Capital Adequacy (CA)

$\beta_0$  = intercept

$\beta_1 - \beta_3$  = Coefficients

$\epsilon$  = error term

Thus, the model is further explained as:

$$ROA = \beta_0 + \beta_1(NPLTL) + \beta_2(LPNPL) + \beta_3(CA) + \epsilon$$

Based on previous empirical studies, the 'a priori expectation' in the model is that all the independent variables are expected to have a negative relationship with banks' financial performance measured by Return on Asset (ROA) except capital adequacy which is expected to have a positive relationship with bank financial performance. Mathematically, it is represented as:  $\beta_1, \beta_2 < 0$  and  $\beta_3 > 0$ .

### **3.6 Reliability and Validity**

Reliability and validity are often used by scientific researchers in their studies both qualitative and quantitative. Reliability refers to the consistency and accuracy of the research results. In the quantitative research, reliability can be illustrated as the stability of the measurement over time, the similarity of the measurements during the given period, and also the degree to the same results of the measurement given repeatedly. Validity means the accuracy of the measurement of which it is intended to be measured and how truthful the results of the research are.

In this study, the literature reviews and research data were collected from the peer reviewed scientific articles, journals, books, the audited annual reports by the authorized accounting firms and other internal reports of sample commercial banks. Furthermore, each amount of the independent and dependent variables has been taken from the financial statements and the related notes to compute the ratios of the required variables. A thorough check up was done on the data collection and calculation process to ensure the accuracy of the results. Then, the statistical analysis tool (SPSS) was used to obtain results and conduct analysis of the regression model that we have adopted in our study. The reliability of the SPSS is proved by many researchers in their study. We also compared the regression analysis results of SPSS with the results of MS Excel to ensure correctness. Compliance of OLS assumptions are ensured through test of each assumption with relevant statistical methods.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND DISCUSSION**

#### **4.0 Introduction**

In this chapter of the study, the panel data, which is collected from the financial statements and other internal records of the sample commercial banks, are analyzed through SPSS software. The results from the regression and correlation analysis are presented in table and discussed. The regression model is used to analyze the panel data collected and to test the effect of the independent variables on the dependent variable so that the research hypotheses are fully tested. Multiple regression analysis is employed to test whether one or more independent variables (predicators) influence the dependent variable (outcome variable) and to identify whether the effect is positive or negative.

#### **4.1 Descriptive Statistics for the Study Variables**

The table depicted below shows information about the descriptive statistics of the dependent and independent variables. The table presents some of the selected descriptive statistics of the sample firms including the mean, standard deviations, minimum and maximum values of study variables for the study period. The research has employed three independent variables and one dependent variable for analysis purpose.

The mean and standard deviation performance of commercial banks in the sample are .0306 & .0077 respectively. This revealed that Ethiopian commercial banks were able to generate an average positive return of 3.06% on their assets for the last 9 years. Even though the average performance can be considered as good, some banks recorded abysmal performance. The minimum recorded return on asset was as low as 0.42% while the maximum was about 4.68%. . That means, the most profitable bank of the sample banks earned 4.68 cents of net profit from a single Birr of asset investment and least profitable bank earned .42 cents of net profit from a unit of Birr asset invested.

Also, the averaged and standard deviation of non-performing loan assets ratio stood at .0725 and .0488 respectively. On the average the proportion of loans and advances under non-performing loan category is about 7.25% of total loans and advances. The average ratio of non-performing loans and advances is found above the maximum threshold set by NBE which is 5%. Moreover, the average and standard deviation of loan loss provision to non-

performing loans & advances ratio was reported as .8076 and .4182 which revealed that an average of 80.76% of non-performing loans and advance are held as loan loss provision.

In addition, the other explanatory variable, capital adequacy shows an average of 11.71% with a standard deviation of 3.21%. The average capital adequacy ratio surpassed the minimum ratio of 8% set by NBE on Directives No. SBB/50/2011. This can indicate existence of sound financial condition in Ethiopian commercial banks.

**Table 3 Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	54	.004244	.046842	.03058548	.007714057
NPLTL	54	.019082	.274621	.07250500	.048763710
LPNPL	54	.295063	2.467659	.80757143	.418171409
CA	54	.066896	.183343	.11712843	.032144244
Valid N (list wise)	54				

Source: SPSS output

## 4.2 Correlation Analysis between Study Variables

The correlation analysis was done to examine the relationship between financial performance of commercial banks in Ethiopia, non-performing loan assets, loan loss provision and capital adequacy variables. This study used the most widely used bi-variant correlation statistics, the Pearson product-movement coefficient, commonly called the Pearson correlation to analyze the relationship among these variables.

SPSS Output table depicted below provides a matrix of the correlation coefficients for the four variables of the study. In the introduction part of this study, it was hypostasized that, there is negative correlation between non-performing loans (assets), loan loss provision and financial performance measured as return on asset. A positive correlation was also expected between capital adequacy and financial performance measured as return on asset. In agreement with the research hypothesis, the findings of the study revealed negative correlation coefficient between non-performing loans (assets), loan loss provision and financial performance (return on asset) as well as a positive correlation between capital adequacy and return on asset. The details of the correlation analysis indicated that non-performing loans (assets) to total loans and loan loss provision to non-performing loans

ratios have a negative correlation of .447 and .037 respectively. On the other hand, capital adequacy ratio also indicated a positive correlation coefficient of .537.

In the table below each correlation coefficient together with the significance value of the correlation and the sample size (N) on which it is based are displayed. Obviously, each variable is perfectly correlated with itself and so  $r = 1$  along the diagonal of the table. The criterion for significance is taken as .05 by which SPSS marks any correlation coefficient significant at this level with an asterisk. Non-performing loans (assets) to total loan and loan provision to non-performing loans (assets) are negatively related to financial performance (return on asset) with a Pearson correlation coefficient of  $r = -.447$  and  $-.037$  with a significance level of .001 and .789 respectively. The output also showed that capital adequacy ratio is positively related to the return on asset with a coefficient of .573, which is also significant at  $p = .000$ . The significance value of the relationship between non-performing loans (assets) ratio and financial performance tells us that the probability of getting a correlation coefficient this big in a sample of six commercial banks if there was no relationship between these variables is very low (close to zero). Hence, we can gain confidence that there is a genuine relationship between financial performance and Non-performing loan assets.

**Table 4 Correlations Matrix between Variables**

Variable		ROA	NPLTL	LPNPL	CA
ROA	Pearson Correlation	1			
	Sig. (2-tailed)				
NPLTL	Pearson Correlation	-.447**	1		
	Sig. (2-tailed)	.001			
LPNPL	Pearson Correlation	-.037	-.313*	1	
	Sig. (2-tailed)	.789	.021		
CA	Pearson Correlation	.573**	-.294*	-.059	1
	Sig. (2-tailed)	.000	.031	.670	
	N	54	54	54	54

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Regression output

## 4.3 Regression Analysis

### 4.3.1 Overall fit of the Model

According to Brooks (2008) it is desirable to have an answer to the question ‘how well does the model containing the explanatory variables that were proposed actually explain variations in the dependent variable?’ Goodness of fit statistics is used to test how well the sample regression function fits the data. The most common goodness of fit statistics is known as  $R^2$  which is defined as the square of the correlation coefficient between the values of the dependent variable and the corresponding fitted values from the model.  $R^2$  lies between 0 and 1. A modification of  $R^2$ , adjusted  $R^2$  is also used which takes into account the loss of degree of freedom associated with adding extra variables. It attempts to correct  $R^2$  to more closely reflect the goodness of fit of the model in the population. Brook (2008) explained that a value of  $R^2$  close to 1 indicates that the model explains nearly all of the variability of the dependent variable about its mean value, while a value of  $R^2$  close to zero indicates that the model fits the data poorly. Moreover, the other way to evaluate an econometric model is to determine whether it is consistent with theory (Brooks, 2008).

The SPSS output below demonstrates the model summary which constitutes  $R$ ,  $R^2$  & adjusted  $R^2$ . It illustrates the strength of the relationship between financial performance measure (ROA) and explanatory variables (non-performing loans, loan loss provision and capital adequacy ratios). The value of  $R^2$  is 0.426, which indicated that the explanatory variables in this study can account for 42.6% of the variation in financial performance in terms of ROA. However, the remaining 57.4% of the variation in financial performance in terms of ROA are caused by other factors that are not included in this model. Many researchers used different additional variables as a determinant of financial performance measured in terms of ROA. Operational efficiency, liquidity, income diversification, bank size, economic growth, inflation, loans and advances, deposit liability, interest rate, market concentration are some of the factors included in research studies on ‘Determinant of Financial performance (profitability) in commercial banks’ (Birhanu,2012; Belayneh, 2011; Amdemikael, 2012; Tseganesh, 2012 ). However, in this study the main focus is to examine the relationship and impact of non-performing loan assets on financial performance of commercial banks and, thus, used only variables more related with NPAs.

**Table 5 Regression Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	.653(a)	.426	.392	.006017016

Source: SPSS Regression output

The analysis of variance (ANOVA) also tells us whether the model, overall, results in a significant good degree of prediction of the outcome variable. In the analysis of variance (ANOVA) table below, SPSS output indicated the F-statistics and the associated significance value. The F-statistics of 12.371 with significance level at  $p=.000$  indicates that the model is well fitted at 1 percent significance level. The statistical value of F (12.371) exceeds the critical value of F-distribution at the 5% significance level which is (3.32). Hence, the regression as a whole is found significant which reveals that NPLTL, LPNPL and CA reliably predict ROA. On the other hand, the significance level of  $p = .000$  tells us that there is less than .1% chance that an F-statistics this amount could happen if the independent variables predict ROA by chance.

**Table 6 Analysis of Variance (ANOVA)**

Mode		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.001	3	.000	12.371	.000(a)
	Residual	.002	50	.000		
	Total	.003	53			

Source: SPSS Regression output

### 4.3.2 Diagnostic tests of CLRM Assumptions

The characteristics of the model and proposed variables in this research study have been evaluated for fulfillments of the classical assumptions underlying the OLS model. In this part of the study, the diagnostic test of each assumption is verified.

#### 4.3.2.1 Multicollinearity Test

A correlation matrix is used to ensure the correlation between explanatory variables. According to Brook (2008), if an independent variable is an exact linear combination of the other independent variables, then we can infer that the model suffers from perfect collinearity, and it cannot be estimated by OLS. Researchers also indicated that multicollinearity condition also exists where there is high, but not perfect, correlation

between two or more explanatory variables. The magnitude of correlation that causes multicollinearity is not, however, clearly determined. Cooper & Schindler (2009) recommended that a correlation coefficient above 0.8 between explanatory variables should be corrected for because it is a sign for multicollinearity problem. Malhotra (2007) also argued that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. Moreover, Hair et al. (2006) believed that correlation coefficient below 0.9 may not cause serious multicollinearity problem.

In this study the correlation matrix for the independent variables in the table below showed that the highest correlation of -0.313 is seen which is between NPLTL and LPNPL. Since there is no correlation above 0.75, 0.8 or 0.9 as stated by Malhotra (2007), Cooper & Schindler (2009) and Hair et al (2006) respectively, we can conclude in this study that there is no problem of multicollinearity.

**Table 7 correlation matrix of explanatory variables**

Variables		NPLTL	LPNPL	CA
NPLTL	Pearson Correlation	1		
	Sig. (2-tailed)			
LPNPL	Pearson Correlation	-.313*	1	
	Sig. (2-tailed)	.021		
CA	Pearson Correlation	-.294*	-.059	1
	Sig. (2-tailed)	.031	.670	
N		54	54	54

\* Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS Regression output

According to Gujarati (2004), analyzing the explanatory variables correlation coefficients (CC); condition index (CI) and variance inflation factor (VIF) is another method for testing data for multicollinearity. Eigenvalues proved an indication of how many districts dimensions are there among the independent variables. When several eigenvalues are close to zero, the variables are highly correlated and small changes in the data values may lead to large changes in the estimates of the coefficients. Condition index are the square roots of the ratios of the largest eigenvalue to each successive eigenvalue. A condition index greater than 15 indicates a possible problem and an index greater than 30 suggests a serious problem with collinearity. Even if eigenvalues are used for checking the existence

of collinearity, the best way is conditional index. So in this research study, since the conditional index values scored are 3.149, 5.007 and 12.981, the researcher can conclude that there is no multicollinearity among the independent variables.

**Table 8 Collinearity Diagnostics**

Model	Dimensi on	Eigenvalue	Condition Index	Variance Proportions			
				(Constant	NPLTL	LPNP	CA
1	1	3.488	1.000	.00	.02	.01	.00
	2	.352	3.149	.00	.47	.16	.00
	3	.139	5.007	.01	.15	.57	.19
	4	.021	12.981	.99	.36	.27	.80

Source: SPSS Regression output

SPSS also performs ‘collinearity diagnostics’ on the variables as part of the multiple regression procedure. This can identify problems with multicollinearity that may not be evident in the correlation matrix. In the ‘collinearity diagnostics’ two values are given: Tolerance and VIF. Tolerance is an indicator of how much of the variability of the specified independent variables is not explained by the other independent variables in the model and is calculated using the formula  $1-R^2$  for each variable. If this value is very small (less than .10), it indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. The other value given is the VIF (Variance inflation factor), which is just the inverse of the Tolerance value (1 divided by Tolerance). VIF values above 10 would be a concern here, indicating multicollinearity. In this study the tolerance value for each independent variable is well above .10 which confirms that multicollinearity assumption is maintained. This is also supported by the VIF value, which is well below the cut-off of 10. These results are not surprising, given that the Pearson’s correlation coefficients between these three independent variables were only .315, .294, & .059.

**Table 9 Collinearity Statistics**

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	NPLTL	.805	1.243
	LPNPL	.877	1.140
	CA	.889	1.125

Source: SPSS Regression output

### 4.3.2.2 Outliers

A Multiple regression model is very sensitive to outliers (very high or very low scores). Checking for extreme scores should be part of the initial data screening process for all the variables. Outliers can either be deleted from the data set or, alternatively, given a score for that variable that is high, but not too different from the remaining cluster of scores.

According to SSP Survival Manual by Pallant (2005), additional procedures for detecting outliers are also included in the multiple regression programs. Outliers on the dependent variable can be identified from the standardized residual plot that can be resulted from SSP output. Pallant (2005) also defines outliers as those with standardized residual values above about 3.3 or less than -3.3.

**Table 10 Case wise Diagnostics**

Case Number	Std. Residual	ROA	Predicted Value	Residual
13	-3.330	.004244	.02428272	-.0200387
16				

Source: SPSS Regression output

In the table above, the case wise diagnostics shows that the standardized residual values of the dependent variable (-3.330) is almost near the required amount which may have insignificant effect on the findings of the study.

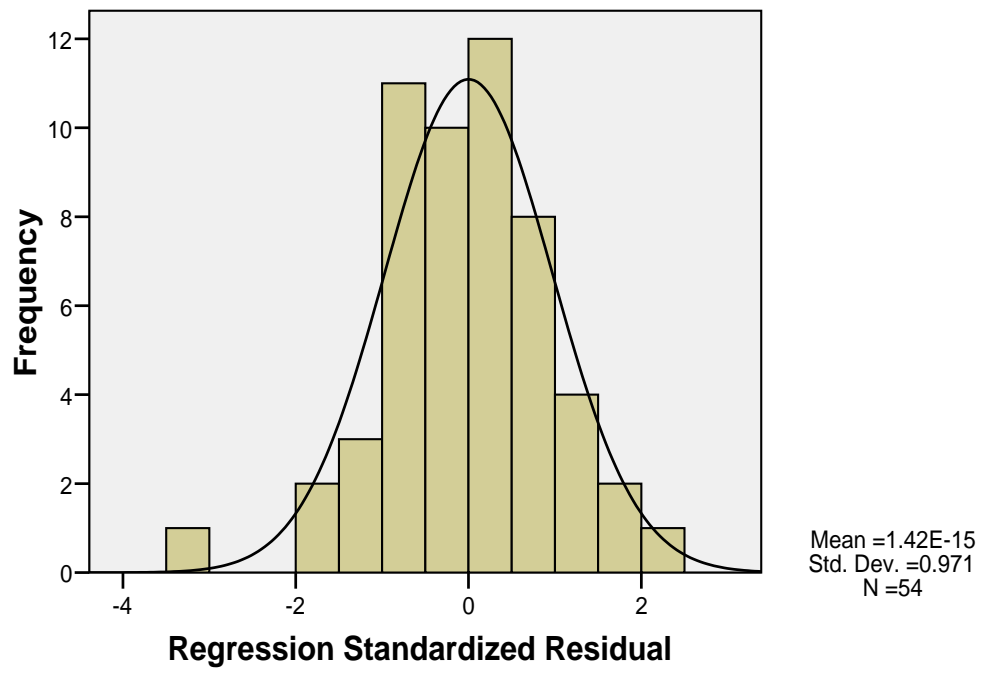
### 4.3.2.3 Normality Test

Another important diagnostic test conducted in this study is the normality assumption (i.e. the normally distributed errors). A normal distribution is not skewed and is defined to have a coefficient of kurtosis 3. 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 are. If the residuals are normally distributed, the histogram should be bell-shaped. The residuals scatter plots allow us to check whether the residuals should be normally distributed about the predicted dependent variable scores. The residual are normally distributed with a mean of zero and standard deviation of one.

As we can understand from the histogram and p-p plot depicted below, the residuals seem normally distributed and the residuals are distributed with a mean of 0 and standard

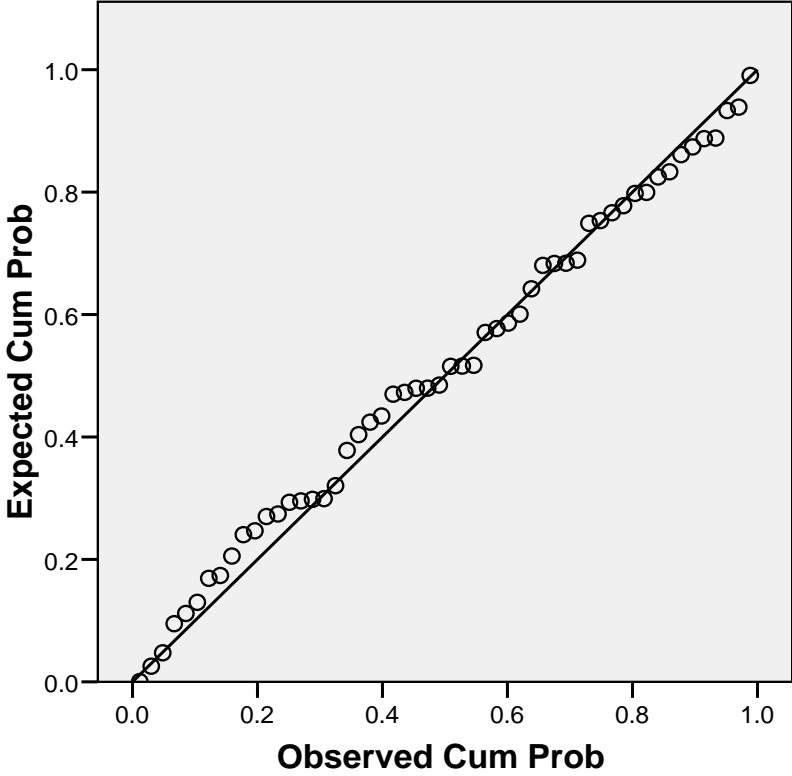
# Histogram

Dependent Variable: ROA



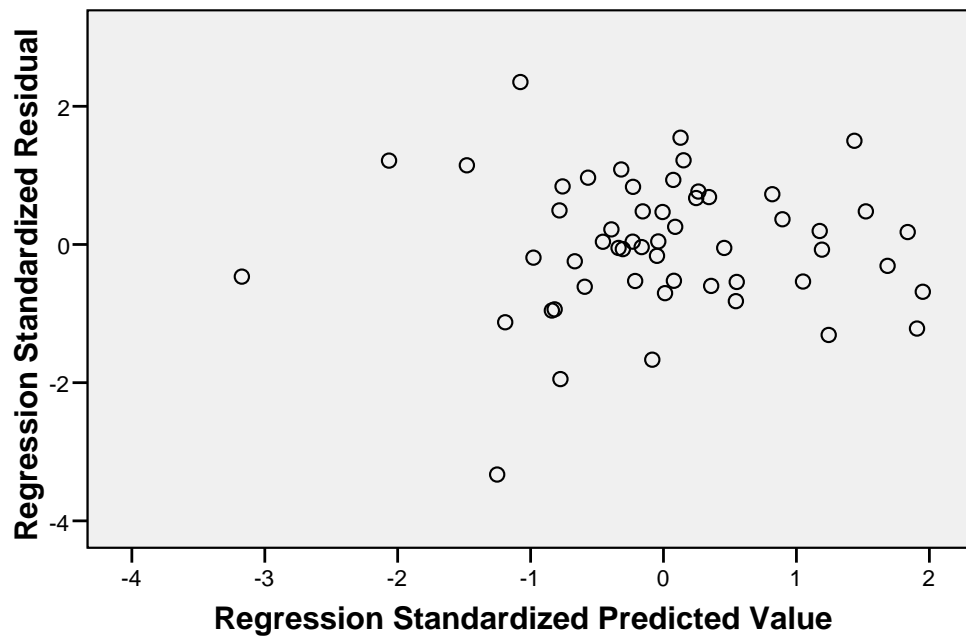
# Normal P-P Plot of Regression Standardized Residual

Dependent Variable: ROA



## Scatterplot

Dependent Variable: ROA



## 4.4 Regression Analysis between Dependent and Independent Variables

This section presents the empirical results of the regression analysis. Table 11 showed the results of the regressions for the financial performance (ROA) equation discussed in the methodology part where ROA is taken as dependent variable. The regression output revealed that non-performing loans or assets (NPL) ratio and loan loss provision to total loan (LPNPL) ratio affect financial performance negatively. The coefficient of NPLTL and LPNPL ratio is .055 & .002 which means a one unit increase in NPLTL and LPNPL decreases ROA by .055 & .002 units respectively while capital adequacy is held constant. The statistical significance of NPLTL on ROA is .005 which is less than the significance level set as criteria (.05) and implies that NPLTL predicts effects on ROA with 99.5 percent probability. The statistical significance of LPNPL against ROA is .306 which is a sign of low significance as it is higher than the criteria of .05. The result reveals that LPNPL predicts effects on ROA with 69.4% probability.

Capital adequacy (CA) on the contrary has a positive coefficient of .111. This indicates that a one unit increase in CA will increase ROA by .111 unit, holding NPLTL and LPNPL constant. The statistical significance of CA is .000 which implies that CA predicts ROA with more than 99.99% probability. Thus, the results of the analysis state that NPLTL and LPNPL have a negative effect on ROA; meanwhile CA has a positive effect on ROA.

**Table 11 Coefficients of Regression Output**

Model		Un standardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.023	.005		4.967	.000
	NPLTL	-.055	.019	-.347	2.909	.005
	LPNPL	-.002	.002	-.118	1.035	.306
	CA	.111	.027	.464	4.086	.000

Source: SPSS Regression output

Furthermore, the SPSS output in table 5 presents the figures for the whole equation. R<sup>2</sup> represents the prediction level of variance in ROA by NPLTL, LPNPL and CA jointly, which is 42.6 percent. This means that 42.6% of ROA can be predicted from combination of

NPLTL, LPNPL and CA. On the other hand, adjusted R2 (39.2%) avoids the overestimation effect of adding LPNPL and CA as additional independent variables in the model. Therefore, adjusted R2 is treated as more accurate value even though R2 is differing by 3.4% (42.6-39.2) only.

Based on the table of F-distribution, we can also see that the critical value of F-distribution at the 5% significance level is 3.32. In the SPSS output (table 6) the statistical value of F is 12.371, which exceeds the critical value of F (3.32). Hence, the regression as a whole is found significant which reveals that NPLTL, LPNPL and CA reliably predict ROA. Furthermore, the P-value (significance) is .000, which also indicates that ROA is predicted by more than 99.99% probability by NPLTL, LPNPL and CA together and shows a statistically significant relationship among them. Therefore, the F-value associated with the P-Value proves that there is a significant relationship between the financial performances measured as ROA and explanatory variables measured as NPLTL, LPNPL and CA.

## **4.5 Results and Discussions**

### **4.5.1 Relationship between Explanatory variables (NPLTL, LPNPL, CA) and Financial Performance of Commercial Banks in Ethiopia (ROA)**

Based on previous empirical studies, it was hypostasized that there is a significant negative correlation between non-performing loans (assets), loan loss provision and the financial performance of commercial banks in terms of return on asset. In agreement with the research hypothesis, the findings of the study revealed negative correlation coefficient between non-performing loan asset, loan loss provision and financial performance measured as return on asset. As we can see from SPSS correlation analysis output in table 11, non-performing loans (assets) and loan loss provision to non-performing loans ratios are negatively related to financial performance (ROA) with a Pearson correlation coefficient of  $r = -.447$  and  $- .037$ , and with a significance level of .001 and .789 respectively. The correlation coefficient of non-performing loan assets (NPLTL) ratio ( $r=-0.447$  at  $p=0.001$ ) reveals that there exists a strong inverse relationship between non-performing loan assets and financial performance (ROA) of commercial banks in Ethiopia as stated in the hypothesis. Loan loss provision to total loan (LPNPL) which had a value of  $r=-0.037$  at  $p=0.789$  indicates a weak negative relationship with financial performance which is not also found significant contrary to the hypothesis. In line with the hypothesis, the strong

significance value of the relationship between non-performing loans (assets) and financial performance (ROA) help us gain confidence on the genuine relationship between financial performance and non-performing loan assets.

On the other hand, the SPSS output reflected that capital adequacy ratio has correlation coefficient value of  $r = 0.573$  at  $p = 0.000$  which implies that capital adequacy has a strong and significant positive relationship with financial performance of commercial banks in Ethiopia which is in agreement with the hypothesis.

#### **4.5.2 Impact of Non-performing Asset (NPAs), Loan loss provision (LLP) and Capital adequacy (CA) on the Financial Performance of Commercial Banks in Ethiopia (ROA)**

The main objective of the research work undertaken was to examine the impact of non-performing asset on financial performance of commercial banks in Ethiopia. It is observed from above detailed analysis that the explanatory variables have different degree of association and impact on financial performance of commercial banks. Among the variables non-performing loans (assets) and loan loss provision have shown negative effect on financial performance of commercial banks in Ethiopian which is measured as ROA.

**Non-performing loans (assets):** Most literatures revealed that increased exposure to credit default is obviously associated with decreased firm profitability. Empirical research studies done by Ara and et al. (2009), Tibebu (2011), Girma (2011), Kolapo et al. (2012), Belayneh (2011), Birhanu (2012), Habtamu (2012), Tseganesh (2012) and Bandyopadhyay (2013) support this argument. Consistent with these evidences and the hypothesis developed, this study also confirms a negative and significant causal relationship between non-performing loans (assets) and financial performance of the sample commercial banks in Ethiopian commercial banking sector. The negative coefficient of .055 and significance of .005 imply that a one unit increase in NPL decreases ROA by .055 units with a 99.95% probability while other independent variables are held constant. The finding is consistent with previous studies by Ara and et al. (2009); Tibebu (2011);Girma (2011); Kolapo et al. (2012); Belayneh, 2011 and Birhanu (2012); Habtamu (2012); Tseganesh (2012) and Bandyopadhyay (2013). The empirical facts of the study indicated that the problem of asset quality is a visible problem which affects the sound financial condition of Ethiopian

commercial banks. In addition to the negative impact reflected on the regression result, the descriptive result indicated the average NPL ratio of the sample banks as 7.25% in contrary to the minimum NPL ratio of 5% set by NBE directives no. SBB/43/2008.

**Loan Loss Provision:** It would be expected that as more customers fail to pay for credit facilities they have taken from a bank, the profitability of the bank should be harmed due to suspension of interest accrual and required additional provision for the expected default loss. According to NBE directive number SBB/43/2008, all banks are required to maintain a provision for loan losses accounts which shall be created by charges to provision expense in the income statement and shall be maintained at a level adequate to absorb potential loss in the loans or advanced portfolio. The results of the study revealed that loan loss provision has a negative impact on financial performance (ROA) though not significant contrary to the hypothesis. The parameters reflected that an increase in loan provision decreases return on asset (ROA) which is the core financial performance (profitability) indicator by .2%. The finding of this study is also consistent with previous study done by Kolapo et al. (2012).

**Capital Adequacy:** In line with the research hypothesis, the coefficient of the regression output revealed that capital adequacy (CA) has a positive and statistically highly significant impact on financial performance (ROA). A positive coefficient of capital adequacy implied that an increase in capital leads to increase in financial performance (ROA). The finding of this study is consistent with previous studies with Ara and et al. (2009), Belayneh (2011), Habtamu (2012), Birhanu (2012). These researchers explained that a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased financial performance (profitability). The finding of this study also revealed the existence of sound financial condition in commercial banks of Ethiopia as the regression result reflected a positive effect of capital and the descriptive result indicated the average capital adequacy ratio of the sample banks as 11.71% which exceeded the minimum ratio of 8% set by NBE on directives no. SBB/50/2011. Based on the study, a higher capital level brings higher financial performance (profitability) for Ethiopian commercial banks since by having more capital a bank can easily adhere to regulatory capital standards so as to increase its credit deployment capacity which in turn enhances the profitability. According to NBE directive, the single borrowing capacity of commercial banks is determined based on magnitude of their capital. In addition, the sound capital adequacy of the sample

commercial banks implies fulfillment of the current NBE directive no. SBB/50/2011 which requires all commercial banks to raise the minimum paid up capital to 500 million Birr.

Table 12 Summary of regression results

<b>Independent Variable</b>	<b>Dependent Variable</b>	<b>Relationship</b>	<b>Estimated impact</b> (1 unit increase in independent Variable)	<b>Significance test</b>
NPL	ROA	Negative	.055 units decrease in ROA	Statistically significant
LPNPL	ROA	Negative	.002 units decrease in ROA	Not statistically significant
CA	ROA	Positive	.111 units increase in ROA	Statistically significant

Source: Survey outcome and own computation

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1 Summary and Conclusion**

The study investigated the impact of non- performing assets on financial performance of commercial banks in Ethiopia as same is the main objective of the study. The study specified an empirical framework to investigate the effect of non- performing assets on financial performance of commercial banks in Ethiopia for the years covering 20005 to 2013. The study also used an appropriate econometric methodology for the estimation of variables coefficients under regression model. The findings of the study led us to accept our hypothesis and to achieve the objectives of the study

According to the findings of the study, we can conclude that:

- Non-performing loans (assets) (NPLTL) has a significant inverse relationship with return on asset in agreement with the hypothesis. However, loan loss provision to non-performing loans (LPNPL) has a weak inverse relationship with financial performance of commercial banks (in terms of return on asset) which is not significant contrary to the hypothesis. The other variable of the study, capital adequacy (CA) has shown a positive and statistically significant relationship with financial performance in terms of ROA as stipulated in the hypothesis.
- The findings of the study indicated that the problem of asset quality is a visible problem which affects the sound financial condition of Ethiopian commercial banks. In agreement with the hypothesis, the regression output revealed that non-performing loans (assets) have a negative effect on commercial banks' financial performance and thus require due attention. The descriptive result also support this finding as it indicated that the average NPL ratio of the sample commercial banks is 7.25% in contrary to the minimum NPL ratio of 5% set by NBE directive no. SBB/43/2008. Moreover, regression output further revealed that loan loss provision to non-performing loans (LPNPL) has an insignificant negative impact on financial performance of commercial banks (in terms of return on asset) contrary to the hypothesis.
- The findings of the study also revealed the sound financial condition of the sample Ethiopian commercial banks in terms of capital adequacy which is supported by the descriptive statistics as it indicated that the average CA ratio of the sample banks stood

at 11.71% exceeding the minimum ratio of 8% set by NBE on directive no. SBB/50/2011. The regression output indicated that capital adequacy (CA) has a positive and statistically highly significant impact on financial performance which implied that an increase in capital leads to an increase in financial performance (ROA) in agreement with the research hypothesis.

## **5.2 Recommendations**

After going through the research process and analyses of the research findings, the researcher suggested the following recommendations:

- From the findings of the study it is concluded that non-performing assets have an adverse effect on commercial banks' financial performance. Thus, it is recommended that commercial banks in Ethiopia should enhance their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks' compliance to relevant provisions of the Bank and other prudential guidelines.
- A strong and healthy financial system is a prerequisite for sustainable economic growth of a given country. In order to control loan default risks and maintain a good financial stability, the financial managers and policy maker should identify the key loan performance determinants of commercial banks and maintain prudent credit policy.
- Prudence of policies that govern bank loans should continuously be ensured in light of international best practices, macroeconomic situations, level of development of banks and the economy in general by the regulatory body (NBE).

## **5.3 Recommendations for further studies**

- The study suggests that a further study can be done on the impact of non-performing assets on the financial performance of other financial institutions like the micro finance institutions.
- Further studies can also be undertaken on impact of non-performing assets on other activities of commercial banks other than financial performance.

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# APPENDICES

**Appendix 1:** Form designed for data collection from the sample banks

Year	Non-performing Loan Balance	Loan Loss Provision Balance	Capital Adequacy ratio
<b>2005</b>			
<b>2006</b>			
<b>2007</b>			
<b>2008</b>			
<b>2009</b>			
<b>2010</b>			
<b>2011</b>			
<b>2012</b>			
<b>2013</b>			

**Appendix 2:** Correlation and Regression analysis output in SPSS

### Correlations

		ROA	NPLTL	LPNPL	CA
ROA	Pearson Correlation	1	-.447(**)	-.037	.573(**)
	Sig. (2-tailed)		.001	.789	.000
	N	54	54	54	54
NPLTL	Pearson Correlation	-.447(**)	1	-.313(*)	-.294(*)
	Sig. (2-tailed)	.001		.021	.031
	N	54	54	54	54
LPNPL	Pearson Correlation	-.037	-.313(*)	1	-.059
	Sig. (2-tailed)	.789	.021		.670
	N	54	54	54	54
CA	Pearson Correlation	.573(**)	-.294(*)	-.059	1
	Sig. (2-tailed)	.000	.031	.670	
	N	54	54	54	54

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Variables Entered/Removed(b)**

Model	Variables Entered	Variables Removed	Method
1	CA, LPNPL, NPLTL(a)		Enter

a All requested variables entered.

b Dependent Variable: ROA

**Model Summary(b)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.653(a)	.426	.392	.006017016

a Predictors: (Constant), CA, LPNPL, NPLTL

b Dependent Variable: ROA

**ANOVA(b)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	3	.000	12.371	.000(a)
	Residual	.002	50	.000		
	Total	.003	53			

a Predictors: (Constant), CA, LPNPL, NPLTL

b Dependent Variable: ROA

**Coefficients(a)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.023	.005		4.967	.000		
	NPLTL	-.055	.019	-.347	-2.909	.005	.805	1.243
	LPNPL	-.002	.002	-.118	-1.035	.306	.877	1.140
	CA	.111	.027	.464	4.086	.000	.889	1.125

a Dependent Variable: ROA

**Collinearity Diagnostics (a)**

Mode	Dimension	Eigenvalue (Constant)	Condition Index		Variance Proportions		
			NPLTL	LPNPL	CA	(Constant)	NPLTL
1	1	3.488	1.000	.00	.02	.01	.00
	2	.352	3.149	.00	.47	.16	.00
	3	.139	5.007	.01	.15	.57	.19
	4	.021	12.981	.99	.36	.27	.80

a Dependent Variable: ROA

**Case wise Diagnostics (a)**

Case Number	Std. Residual	ROA	Predicted Value	Residual
13	-3.330	.004244	.02428272	-.020038716

a Dependent Variable: ROA

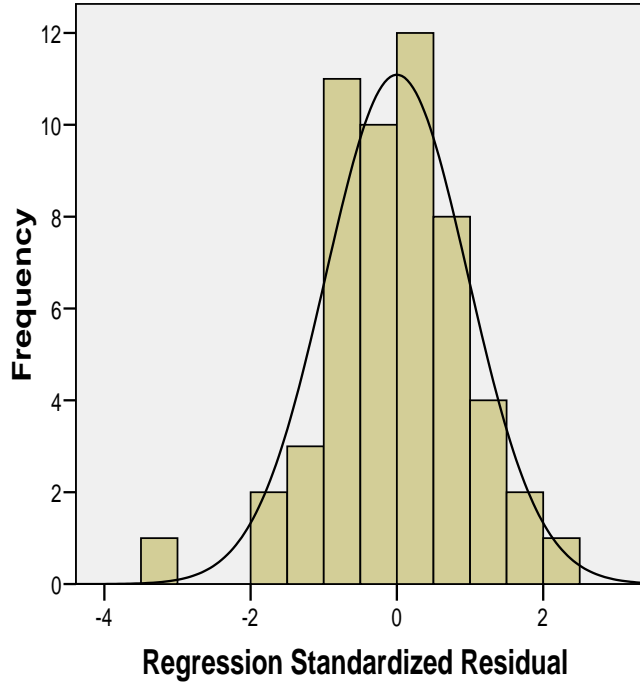
**Residuals Statistics (a)**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.01461303	.04041024	.03058548	.005035027	54
Residual	-.02003872	.01414463	.00000000	.005844243	54
Std. Predicted Value	-3.172	1.951	.000	1.000	54
Std. Residual	-3.330	2.351	.000	.971	54

a Dependent Variable: ROA

# Histogram

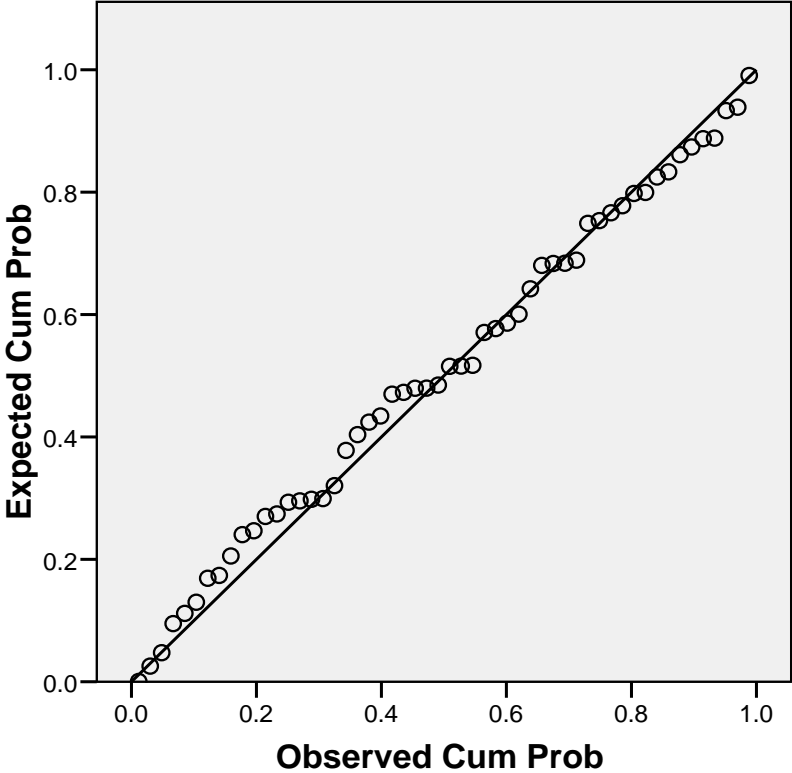
Dependent Variable: ROA



Mean =1.42E-15  
Std. Dev. =0.971  
N =54

# Normal P-P Plot of Regression Standardized Residual

Dependent Variable: ROA



# Scatterplot

Dependent Variable: ROA

