ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS & ECONOMICS

DEPARTMENT OF ACCOUNTING & FINANCE

THE EFFECT OF CREDIT RISK ON THE PERFORMANCE OF COMMERCIAL BANKS IN ETHIOPIA: IN THE CASE OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

BY

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ADVISOR: ABEBAW KASSIE (PhD)

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STATEMENT OF DECLARATION

I declare that the thesis entitled: *The impact of credit risk management on the performance of commercial banks in Ethiopia,* hereby submitted by me in partial fulfillment of the requirements for the Degree of Master of Science in Accounting and Finance at the Addis Ababa University, This is my original work and has not been submitted for any degree in any other university. I have undertaken it independently with the advice of my advisor, Abebaw Kassie (PhD). In performing the thesis, I have used different sources and material, which have been acknowledged.

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STATEMENT OF CERTIFICATION

This is to certify that Dereje Miheretu Demisse has carried out his research work on the topic entitled "*The effect of credit risk on the performance of Commercial Banks in Ethiopia in the case of private commercial banks in Ethiopia*". The work is original in nature and is suitable for submission for the award of the Degree of Master of Science in Accounting and Finance at the Addis Ababa University.

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DECLARATION

This is to certify that the thesis prepared by Dereje Miheretu, entitled the effect of credit risk on the performance of commercial banks in Ethiopia: in the case of private commercial banks in Ethiopia and submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

The objective of the study is to empirically examine the quantitative effect of credit risk on the performance of commercial banks in Ethiopia, considering variables related to lending activities, over the period of nine years (2008-2016). The empirical investigation uses the accounting measure of Return on Assets (ROA), which is the dependent variable, to represent Banks' performance. The study involves both descriptive and econometrics techniques. The econometrics method used in the study involves assessing the effect of selected internal variables, the non-performing loan, capital adequacy, liquidity, loan growth, cost to income ratio and natural logarithm of total asset (Economies of scale), and macro-economic variables: Gross domestic products (GDP) and Inflation on the performance of the banking sector. To this end multiple linear regression model is used to measure the relative weighting of the independent variables above on the banks performance (ROA).

Basic descriptive statistics was applied for trend analysis. A non- probability method in the form of judgmental sampling technique is employed in selecting the eight Banks into the sample and the data are sourced from the annual reports of the same banks which account for over eighty percent of the total loan and advance in the industry. The study finds that the selected variables: the non-performing loans, capital adequacy, liquidity, cost to income ratio credit administration and Size (Economies of scale) have significant effect on the performance of private banks. However, a certain variation in the magnitude and direction of their effect on the selected profitability measure, Return on Asset. Based on the study it is recommended that Ethiopian banks need to develop their credit risk management capacity, there should also be control over overhead costs related to lending, and increasing the loan book size without compromising the sound credit planning should be a priority task.

Keywords: Effect, Credit Risk, Bank, Performance, Ethiopia

List of Abbreviations and Acronyms Used

AB	Abay Bank S.C
ADIB	Addis International Bank S.C
AIB	Awash Bank S.C
BBI	Bunna International Bank S.C
BCBS	Basel Committee on Banking Supervision
BIB	Berhan International Bank S.C
BOA	Bank of Abyssinia S.C
CBO	Cooperative Bank of Oromia S.C
CRM	Credit Risk Management
DB	Dashen Bank S.C.
DGB	Debub Global Bank S.C
EB	Enat Bank S.C
LIB	Lion International Bank S.C
NBE	National Bank of Ethiopia
NIB	Nib International Bank S.C
OIB	Oromia International Bank S.C
UB	United Bank S.C
WB	Wegagen Bank S.C

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Credit risk management in a financial institution starts with the establishment of sound lending principles and an efficient framework for managing the risk. Policies, industry specific standards and guidelines, together with risk concentration limits are designed under the supervision of risk management committee (Giesecke, 2004). These policies, standards and procedures also govern how credit risk is measured, monitored, reported and controlled. As market conditions change rapidly, adequacy and effectiveness of internal controls should be reviewed at least quarterly (Machiraju, 2003).

The diversity of the business and economic conditions has led to the development of highly sophisticated tools and models to measure the exposure of a financial institutions credit risk. In case of an individual loan portfolio, the probability of default, loss given default or credit rationing are the most commonly used ones to measure the exposure to credit risk. The invention of various credit scoring models that use observed loan applicant's characteristics either to calculate a score representing the applicant's probability of default or to sort borrowers into different risk classes bring the ability to address credit risk on a new level (Richard, 2011).

Credit risk is an investor's risk of loss arising from a borrower who does not make payments as promised. Such an event called a default. Another term for credit risk is default risk (Brown and Moles, 2012). Investor losses include lost principal and interest, decreased cash flow, and increased collection costs, which arise in a number of circumstances: consumer does not make a payment due on a mortgage loan, credit card, line of credit, or other loan, a business does not make a payment due on a mortgage, credit card, line of credit, or other loan, a business or consumer does not pay a trade invoice when due, a business does not pay an employee's earned wages when due, a business or government bond issuer does not make a payment on a coupon or principal payment when due, an insolvent insurance company does not pay a policy obligation, an insolvent bank won't return funds to a depositor, and a government grant bankruptcy protection to an insolvent consumer or business.

Adequately managing credit risk in financial institutions (FIs) is critical for the survival and growth of the FIs. In the case of banks, the issue of credit is of even of greater concern because of the higher levels of perceived risks resulting from some of the characteristics of clients and business conditions that they find themselves in. They also provide loans, credit and payment services such as checking accounts, money orders and cashier‘s checks. Banks also may offer investment and insurance products and a wide whole range of other financial services, which they were once prohibited from selling (Perro, &Ruoff, 2001).

The Basel Committee on Banking Supervision (1999) asserts that credit creation is the main income generating activity for the banks. However, this activity involves huge risks to both the lender and the borrower. The risk of a trading partner not fulfilling his or her obligation as per the contract on due date or anytime thereafter can greatly jeopardize the smooth functioning of a bank‘s business. On the other hand, a bank with high credit risk has high bankruptcy risk that puts the depositors in jeopardy. Among the risk that face banks, credit risk is one of great concern to most bank authorities and banking regulators. This is because credit risk is that risk that can easily and most likely prompts bank failure (Machiraju 2003).

Credit risk management is a structured approach to managing uncertainties through risk assessment, developing strategies to manage it and mitigation of risk using managerial resources. The strategies include transferring to another party, avoiding the risk, reducing the negative effects of the risk, and accepting some or all of the consequences of a particular risk.

The objective of risk management is to reduce the effects of different kinds of risks related to a pre-selected domain to the level accepted by society. It may refer to numerous types of threats caused by environment, technology, humans, organizations and politics. The purpose of this study is to understand the effect of credit risk management on financial performance of commercial banks in Ethiopia.

1.2 Statement of the problem

Poor risk management lead to the accumulation of non-performing loan under which the generated profit are not only eroded through loan provision but also soundness, safety and stability of bank While effective Credit risk management improve Credit performance through establishing appropriate Credit risk environment, maintaining Credit limit at acceptable level, undertaking sound Credit granting process, proper monitoring and controlling credit risk as well as optimizing risk-return of the bank. Therefore, it is important to examine Credit risk management system and practice of Ethiopian Commercial banks to initiate top-level management and regulatory bodies to take policy measure toward maintaining adverse effect of Credit function (Richard, 2011).

In managing credit risk, the Bank has clearly specified the processes for credit approval, which include the formulation of credit policy, the credit risk rating for customers, and the establishment of different levels of delegation of authority for credit approval depending upon the type of business and/or the size of the credit line. In considering the approval of loans in general, the Bank considers the purpose of the loan and assesses the repayment ability of the applicant; taking into account the applicant's operating cash flows, business feasibility and the capability of management, as well as collateral coverage. The Bank also performs credit reviews, which include reviewing credit risk-rating levels on a regular basis (Machiraju, 2003).

According to Kevin& Gunnar (2004) an effective credit risk management practice of commercial banks can be affected by several factors such as lack of appropriate Credit risk strategy, policy and procedures: proper understanding and identification of risk: lack of sound Credit granting process: credit administration, monitoring and reporting process.

Loans are the largest and most obvious source of credit risk; however, other sources of credit risk exist throughout the activities of a bank, including in the banking book and in the trading book, and both on and off the balance sheet. Banks are increasingly facing credit risk (or counterparty risk) in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds,

equities, options, and in the extension of commitments and guarantees, and the settlement of transactions (Agrawal, 2001).

Since exposure to credit risk continues to be the leading source of problems in banks worldwide, banks and their supervisors should be able to draw useful lessons from experiences. Banks should now have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred.

Based on the above idea in this study had attempted to assess the effect of credit risk management on the performance of commercial banks of Ethiopia. This is because as indicated, by the above several scholars and the survey result of National Bank of Ethiopia (NBE) in(2010), such as, Even though commercial banking system in Ethiopia has been witnessing a significant expansion over the past ten years than before however banking industry still Underdeveloped; in this regards the study were reveal lack of credit risk management practice were one of the major challenging factor of the sector. The survey believes that such growth should be matched with strong credit risk management practices. Accordingly, this research believes that to tackle credit risk management practice of commercial banks an academic study should focus on the area.

Recently there are attempts being made to see the effect of credit risk on the performance of private commercial banks in Ethiopia, as there is high loan provision expenses though declining, which is above the standard. However, there are no in-depth studies that have been conducted to investigate the effect of credit risk on financial performance of private commercial banks in Ethiopia. The research made by Girma (2011) focuses on the risk management part and the models considered are Loan Provision to Total Asset, Loan Provision to Total Loan, NPL to Total Loan, and Loan Provisions to Non-Performing Loan. And Tseganesh (2012) investigated some of bank specific and macroeconomic factors affecting Banks liquidity and their impact on financial performance. Therefore, in this study one of the knowledge gaps that will be investigated such as, the study considered both specific factors /indicators of credit risk as well as macro-economic factors of credit and their effect on financial performance. Therefore, this is

one of the major gaps that the researcher motivated to investigate further on the area, to assess the effect of credit risk on financial performance of commercial banks.

1.3 Objective of the study

1.3.1 General Objective

The main objective of the study is to investigate the effect of credit risk management on the performance of commercial banks in Ethiopia.

1.3.2 Specific Objectives

In line with the general objective; the research paper assesses the following specific objectives;

1. To assess the relationship between the theories, concepts and models of credit risk management and what goes on practically in banking.
2. To identify significant credit risk factors that affects the financial performance of banks.
3. To examine empirical relationship between credit risk management practice and financial performance.

1.4 Research Hypothesis

This study is used to examine the link and effect of credit risk management practice on financial performance of commercial banks in Ethiopia. In this study, return on asset is used to measure the performance of commercial banks in Ethiopia based on financial data of each bank from 2008-2016. In addition to this, the data for the study is drawn from the audited financial statements of the banks, which disclose information about the accounting based variable to measure the operating performance and the net worth of the banks. Therefore, this study measure performance by using returns on asset. Majority the hypthosesized variables in this study are modified and adopted from previously done studies based on the extent of their effect on risk management practice on financial performance of private commercial banks; whereas these variables, that considers as a predictor of credit risk that affect financial performance (ROA) was non-performing loan Ratio, Capital Adequacy Ratio, Bank Asset Size, Liquidity Ratio, Cost income ratio, Loan growth from specific determinant factors while GDP and Inflation from Wider (Macro- Economic) factors that affect credit risk stability and their impact also determine financial performance of commercial banks. Accordingly, the study hypothesized the following major areas as determinate variables (Null hypothesis).

H1.Non – Performing Loan has a negative effect on ROA

H2 Capital Adequacy (CAP) has positive/negative effect on ROA

H3. Bank Size (SIZE) a positive effect on ROA.

H4.Loan Growth (LA) has a positive/negative effect on ROA

H5. Liquidity Position (LIQ) has a negative effect on ROA

H6 Income Cost Ratio (IC) has a negative/Positive effect on ROA

H7.Inflation rate (INF) has negative effect on ROA.

H8.GDP has a positive effect on ROA

1.5 Significance of the Study

The study can help in indicating the effect of credit risk management practice on financial performance of commercial banks of Ethiopia. One of the major importance's of the study is indicating how management internal management practice and external (Macroeconomic) factors affect credit risk management practice of commercial banks and their effect on finical performance. The main findings of the study expected to indicate the strategic intervention areas that might be improved. Furthermore, the study also used, as academic experience for the researcher and reference for others researchers and academicians in related area. In addition, since such investigation has policy implication, the finding of this study might be used as a directive input in developing regulatory standards regarding credit risk controlling mechanisms of commercial banks of Ethiopia. This study will initiate the commercial Bank management to give due emphasis on the management of the identified variables and provides them with understanding of activities that will enhance their loan performance indicate which factors more affecting the environment.

1.6 Scope and delimitation of the study

This study delimited in scope of delimited commercial banks, issues that will be discussed as well as panel data. Accordingly, the study limit this study the commercial banks found in Ethiopia namely, Awash international bank, bank of Abyssinia, United bank, Nib Bank, wegagen and Dashen from medium large asset groups of the a bank and Lion bank, Cooperative Bank of

Oromia from small peer groups, based on their total asset. The study also specified in the issue that will be discussed such as, internal (specific) factors, that could arise from the banks strategies, capacity, competitiveness and macroeconomic factors that can affect the banks activities such as, inflation and GDP. The study considered penal data from (2008 – 2016).

1.7 Definition of Terms

Credit Risk means the possibility of losing the outstanding loan partially or totally, due to credit events (default risk) (BCBS, 2001).

Credit risk Exposure means the total amount of credit extended to a borrower by a lender (Croatian National Bank, 2010).This definition is adopted for the purpose of this paper.

Credit risk management means the process of risk identification, measurement, monitoring and control (NBE, 2010).

Bank performance means profitability .Gilbert (1984) in a survey of literatures argued that bank profit is an appropriate measure of bank performance.

CHAPTER TWO
LITRATURE REVIEW

Introduction

This chapter reviews literature relating to the effect of credit risk management practice on financial performance of commercial banks. The literature review has been organized in the following sections. First section covers the theoretical framework on financial credit risk management, and its impact on the banks financial performance. The second section covers risk in banks and type, process and procedures commercial banks. The last section covers the empirical studies on the relationship between risk management and financial performance of commercial banks, then the summary of the literature review including research gaps of the chapter.

2.1 Theoretical Review

The theoretical part of the literature will addressed the basic concept of credit risk management and factors that affect them that are discussed by several scholars and theoreticians.

2.1.1 The Concept of Credit Risk

Credit risk is simply defined as the potential that a bank borrower or counterparty would fail to meet its obligations in accordance with agreed terms Basel Committee on Banking Supervision (2001). The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organization (Machiraju 2003)

Increasing credit risk stifles the lending and borrowing cycle thereby bringing distress to both the banking institutions, the customers and overall to the economy as a whole, at large. Credit risk has threatened the survival and profitability of the banking sector. The problem has also

contributed to decline in economic growth for Ethiopian as businesses have faced difficulties in accessing affordable financing that is appropriately tenured to fund their operations. Garcia-Herrero (2006) and Ramlall (2009) identify poor asset quality, as indicated by the high levels of non-performing loans to be responsible for low profitability for banking institutions. The negative effect of non-performing loans on bank profitability has been collaborated by Sarpong, Winful and Ntiamoah (2011) in their research on Ghana. Bashir (2000) also confirmed that high loans to asset ratios lead to higher profitability provided the quality of the loan portfolio is good, stressing the importance of a good quality credit portfolio.

2.1.2 Credit Risk Identification

The banking industry is no doubt a regulated sector because of the riskiness of its operation. Consequently, risk management in banks is fast becoming a discipline that every participants and players in the industry need to align with (NBE, 2010). The following are one of the well-known steps of credit management practice and process:

2.1.2.1 Credit Risk Identification

According to Basel (2004), the management of Credit risk in banking industry follows the process of risk identification, measurement, assessment, monitoring and control. It involves identification of potential risk factors, estimate their consequences, monitor activities exposed to the identified risk factors and put in place control measures to prevent or reduce the undesirable effects. This process is applied within the strategic and operational framework of the bank.

2.1.2.2 Risk – Adjusted Performance Measures

Several risk-adjusted performance measures have been proposed (Heffernan, 2002; Kealhofer, 2003). The measures, however, focus on risk-return trade-off, which include measuring the risk inherent in each activity or product and charge it accordingly for the capital required to support it. This does not solve the issue of recovering loan-able amount. Effective system that ensures repayment of loans by borrowers is critical in dealing with asymmetric information problems and in reducing the level of loan losses, thus the long-term success of any banking organization (Basel, 2003).

2.1.2.3 Establish appropriate credit processing Environment

Effective credit management involves establishing an appropriate credit risk environment; operating under a sound credit granting process; maintaining an appropriate credit administration that involves monitoring process as well as adequate ensure that there are proper and clear guidelines in managing credit risk, that is, all guidelines are properly communicated throughout the organization; and that everybody involved in CRM understand them. Considerations that form the basis for sound credit managment system include: policy and strategies (guidelines) that clearly outline the scope and allocation of a bank credit facilities and the manner in which a credit portfolio is managed, that is, how loans are originated, appraised, supervised and collected The recommendation has been widely put to use in the banking sector in the form of credit assessment. According to the asymmetric information theory, a collection of reliable information from prospective borrowers becomes critical in accomplishing effective screening (Basel, 2004).

2.1.2.4. Assessment of Borrowers

The assessment of borrowers can be performed through the use of qualitative as well as quantitative techniques. .One major challenge of using qualitative models is their subjective nature. However, borrowers attributes assessed through qualitative models can be assigned numbers with the sum of the values compared to a threshold. This technique is termed as "credit scoring". The technique cannot only minimize processing costs but also reduce subjective judgments and possible biases. The rating systems if meaningful should signal changes in expected level of loan loss concluded that quantitative models make it possible to, among others, numerically establish which factors are important in explaining default risk, evaluate the relative degree of importance of the factors, improve the pricing of default risk, be more able to screen out bad loan applicants and be in a better position to calculate any reserve needed to meet expected future loan losses (Uyemura and Deventer, 2000).

2.1.2.5 Clearly established credit approval process

Clearly established process for approving new credits and extending the existing credits has been observed to be very important while managing. Further monitoring of borrowers is important as current and potential exposures change with both the passage of time and the movements in the underlying variables and are also very important in dealing with moral hazard problem. Monitoring involves, among others, frequent contact with borrowers, creating an environment

that the bank can be seen as a solver of problems and trusted adviser; develop the culture of being supportive to borrowers whenever they are recognized to be in difficulties and are striving to deal with the situation; monitoring the flow of borrower's business through the bank's account; regular review of the borrower's reports as well as an on-site visit; updating borrowers credit files and periodically reviewing the borrowers rating assigned at the time the credit was granted (Donaldson, 2000; Tummala and Burchett, 2000; Mwisho, 2001;Basel, 2004; Treacy and Carey, 2004;).

2.2. Credit Risk Measurement, Monitoring and control

Since exposure to credit risk continues to be the leading source of problems in banks world-wide, banks and their supervisors should be able to draw useful lessons from past experience. Banks should have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred as per the report issued by a committee on Banking supervision of Bank for international settlements (Agrawal (2001).

2.2.1 Measures of Bank Performance

In many of the literature reviewed its explained that bank performance is represented mainly by quantifiable financial indicators. The literature on the determinants of bank performance has closely tied bank performance with profitability measures such as ROA, ROC and NIM. Smirlock (1985), Civelec and Al-Almi (1991), Agu (1992) and Chirwa (2001). Gilbert (1984) in a survey of literatures argued that bank profit is an appropriate measure of bank performance and criticize average interest rate and average service charge rates as poor measures of bank performance.

However, this study is adopts empirical works of Adeusi, et al. (2013) and Yousfi Imane (2013).Thus, return on assets (ROA) as proxies for financial performance as dependent variable; whereas risk management practice proxy by bank specific selected factors(credit risk management, operational and liquidity risk management and external factors not included in this study. Rate of return on assets (ROA) is the most comprehensive accounting measure of bank’s overall performance. Most of the bulk of studies employed ROA as profitability measure, for

instance, (Izhar and Asutay, 2007) and (Flamini et al, 2009). Likewise, this also supported by (Athanasoglou et al,2008) stated 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. In this respect, it is rarely to find the research paper utilizes ROE as a single measure of profitability.

On the other front, different researchers assessed performance in terms of bank prices (as measured by interest rates) rather than bank profitability. The justification as explained by Berger (1989) in Chirwa (2001) is that the use of price-concentration relationship instead of profit concentration relationship measures the performance of banks and their market structure. They argued that the price-concentration relationship imply that high levels of concentration allow for noncompetitive behavior that would result in lower interest rates given to depositors and/or higher lending rates to browsers.

2.2.2 Determinants of risk management practice on banks performance

In most of the literatures, there are two way and sometimes three ways of classifying the determinants of bank performance Arifin and salina(2009) cited in(Al-Tamimi, 2010; Aburime, 2005), for instance classified the determinant factors into two: bank specific (internal) and macroeconomic variables. The internal factors are individual bank characteristics which affect the bank's performance. These factors are basically influenced by the internal decisions of management and board on risk management practices. The external factors are sector wide or country wide factors which are beyond the control of the company and affect thefinancial performance banks. Studies (Adeusi, et al 2013 and Adedapo et.al, 2014) was attempted to integrate sector specific factors like credit risk (NPL, cost per unit to loan ratio), Capital risk (capital adequacy ratio), liquidity risk (liquidity ratio) and operational risk (ratio of operational cost) in their findings shows that, credit risk management practice negative relationship with financial performance (ROA & ROE) and also significant impact and also the remaining factors have positive and significant impact on Nigerian commercial banks. However, these studies addresses risk practice determinant on financial performance include bank size and insolvency risk managements as a bank specific determinant on bank performance.

This approach seems to contribute one more thing to the limited literature. However, Yesoufi Imanni (2014) Jordan focused on sector specific risk indicator with bank specific variables

addressed for credit, liquidity, operational, debt and capital risk management practice with financial performance Islamic banks in Jordan including the macroeconomic variables like GDP, interest rates and inflation. In general the two approaches seem similar in context and wide variation is not observed in classifying the determinants of bank performance and most of the researchers used both internal and external variables in their studies sign of variables also somewhat contradicted.

2.3 Bank specific/Internal factors

The internal factors are bank specific variables, which influence the performance of banks. They are termed as micro or bank-specific determinants of performance. The internal determinates originate from bank accounts (financial statements). They are factors that are influence by the bank's management decisions and policy objectives. Shareholder and managerial decisions and activities can directly influence these characteristics; hence they also differ from bank to bank (Athanasoglou, 2005 and Fredrick, 2010). In this study such internal factors of performance included capital adequacy ratio (CAP), Bank liquidity Risk (LIQ), size of bank in terms of logarithm total assets (SIZE), cost to income (CI), and Loan and advance growth (LA).

Accordingly, the study identified both dependent and independent variables. Below the definition of the dependent and independent variables discussed.

2.3.1 Dependent Variables

This study is used the most comprehensive measure of banks performance to examine the link and impacts of risk management practice on financial performance of commercial banks in Ethiopia. In this study, return on asset is used to measure the performance of commercial banks in Ethiopia from 2008-2016. In addition to this, the data for the study is drawn from the audited financial statement of the banks which disclose information about the accounting based variable to measure the operating performance and the net worth of the banks. Therefore, this study measure performance by using accounting base variables namely returns on asset.

Return on asset is a ratio that measures company's income after tax against its total assets. The ratio considered as an indicator of how efficient a company is using its assets to generate earnings before contractual obligation must paid. In addition to this, the data for the study drawn

from the financial statement of the banks, which disclose information about the accounting based variable, which is important to measure the performance of the banks. ROA computed as: Return on Assets = EBIT/Total Asset.

2.3.2 Independent Variables

Independent variables are explanatory variables that explain the dependent variables. Independent variables included in this study are indictors of bank specific risk indicators; non-performing loan ratio(NPLR),capital adequacy ratio(CAPR), cost to income ratio(CIR), natural logarithm of Bank asset ratio(BAS), Loan Growth Ratio (LGR), Economic Gross of the country (GDPR), Inflation Rate (INFR) . Majority of these variables are modified and adopted from previously done studies based on the extent of their effect on risk management practice on financial performance; whereas one of these variable, that is Bank assets size ratio is added from the researcher's own perception for this study.

2.3.2.1 Non-Performing loan ratio (NPLR)

The non- performing loan ratio measure to capture banks' credit risk on financial performance. Credit Risk; the analysis of the financial soundness of borrower's has been at the core of banking activity since its inception. This analysis refers to what currently known as credit risk, that is, the risk that counterparty fails to perform an obligation owed to its creditor. It is called non-performing loan ,a loan considered as accredit risk as the chance that a debtor or issuer of a financial instrument whether an individual, a company, or a country will not repay principal and other investment -related cash flows according to the terms specified in a credit agreement. Inherent to banking, credit risk means that payments may be delayed or not made at all, which can cause cash flow problems and affect a bank's profitability(Greuning and Bratanovic ,2009)

It indicates how banks manage their credit risk because it defines the proportion of loan losses amount in relation to total loan amount. The less the ratio the most effective of the credit risk management practice of banks. To calculate this ratio, the researcher used data provided in the financial statements of eight commercial banks and NBE. Thus, calculation of the NPLR has accomplished in the following way: Non-performing loan ratio= Non-performing loan/total outstanding loan balance.

2.3.2.2 Liquidity Ratio (LIQR)

Liquidity risk was estimated by the ratio of liquid assets to short term customer deposits and other short term borrowing or a ratio of cash and cash equivalents over short term customer deposits and other short term borrowing. High liquidity may allow a bank to avoid costly borrowing of funds should the need for cash arise (Ommeren, 2011) and (Davydenko, 2010).Kargi (2012) studied that lack of liquidity in extreme situations can lead to the bank's insolvency. And also suggest that if the bank does not invest sufficient fundin current assets, it may become illiquid which is risky. It may lose profitability some idle current assets do not earn anything. Liquidity ratio is ratio of liquid asset to customer deposits used by banks to analysis their ability to meet its obligation as and when due (Liyuqi, 2007). However, there is also an opportunity cost that banks incur by not investing the cash available to generate returns. Therefore, the sign may appear to be positive. Total deposit is calculated from the bank's balance sheets of eight commercial banks (demand, saving and fixed) and computed as follows: liquid asset/Total deposit amount.

2.3.2.3 Bank size (BAS)

Total assets of the bank measures bank size. In most of the literature, the total assets of the banks are as a proxy for bank size. However, since total assets collapsed the dependent variable in the model (ROA) it would be appropriate to take natural logarithm before including in the model to be consistent with other ratios. Among the factors identified, bank size identified as significantly affecting the performance of banks. The effect of a bank's size on performance not settled in the literature because of this, the expected sign is ambiguous. Increase in size can lead to decreasing or increase profits for banks due to the situation (Ani et.al 2012).As quoted from Kaaya&Pastory (2013), smaller banks generate less profit than larger banks. However, a larger bank with economies of scale as well as number of branch network might be able to attract better deposits. Like previous studies, this research also uses log of total asset to measure the size to the private commercial banks. The expected sign was positive and calculated as follows:*Bank size = natural logarithm of total asset (BAS*)

2.3.2.4 Capital Adequacy Ratio (CAPR)

Capital adequacy refers to the sufficiency of funds available to absorb losses to protect depositors, creditors, etc. in the interest of maintaining financial system stability. As per Basel

Committee on Banking Supervision (BCBS 2004) revised framework and NBE requirement (NBE directive no SBB/9/95) capital adequacy is measured by the ratio of regulatory capital to risk-weighted assets and accordingly a minimum of 8% is required. However, the proxy for capital adequacy measurement used in this study was the ratio of total equity to total asset.

2.3.2.5 Loan and Advance growth

One of the most important roles of banks is to offer loans to borrowers and loans serves as the main source of earnings for commercial banks. In different words, loans are the highest yielding asset on banks' balance sheet. According to Abreu and Mendes (2002) the more the banks offer loans the more they do generate revenue and more profit they make. Therefore, loans should positively affect profitability as the bank is working vigilantly and not taking excessive risk.

2.3.2.6 Cost to Income Ratio (CIR)

Cost income ratio: - It is measured by the ratio of operating expense to total gross income like (Aburime .2008) and it is a proxy to management quality. Clearly, efficient cost management is a prerequisite for improved profitability of banks. The researcher used the ratio of operating expense to total gross income as the measurement of expense management to measure one aspects of operational risk management practice. In line with earlier studies, the researcher expects direct negative relation between inefficient expense management and profitability or financial performance .Likewise, findings addressed by (Yesoufi, 2014) and(Kenny Adedapo et.al, 2014) their results shown that, Cost to Income Ratio (CIR has a negative statistical significant effect statistical significance level on Islamic banks' return on assets on Jordan and Nigerian depository banks respectively. Cost to \income ratio is computed as Total cost (Expenses) /total income.

2.4 Macroeconomic/external factors

External factors are bank macroeconomic variable, which are not related to bank risk management practice observed direct but reflect economic and legal environment that affects the operation and profitability of banks. External determinants of bank profitability are factors that are beyond the control of a bank's management like interest rate policy, GDP, inflation, political instability and policy stability (Yesouf Immani 2014). In this study, the study considers the effect of GDP and Inflation on financial performance of (ROA).

2.4.1 Growth rate of Economy (GDP)

Growth rate of Economy (GDP) is among the most commonly used macroeconomic indicators, as it is a measure of total economic activity within an economy. The GDP per capita growth is expect to have a positive impact on banks' profitability, according to the well-documented literature on the association between economic growth and financial sector performance

2.4.2 Inflation Rate (INF)

The effect of inflation on bank profitability depends on how inflation affects both salaries and the other operating costs of the bank. The study of Perry (1992) suggests that inflation impacts bank profitability whether it is fully anticipated or not. If the inflation rate is fully anticipated by the bank's management, the bank can adjust interest rates appropriately to increase revenues faster than costs, which should have a positive impact on profitability. However, Ethiopian Private commercial banks can't adjacent interest rate based at individual level, as result the following hypothesis is drawn.

2.5 Empirical evidence on Performance of Commercial banks

Various studies conducted on the relationship between risk management and financial performance of banks mostly have been conceptual in nature, often drawing the theoretical link between good risk management practices and improved bank performance. According to Kenny Adedapo, (2014) cited in Schroeck, (2002); stress the importance of good risks management practices to maximize firms' value. Similarly other works cited in Nocco and Stulz (2006) suggests that effective enterprise risk management (ERM) have a long-run competitive advantage to the firm (or banks) compared to those that manage and monitor risks individually. Therefore suggested that companies to manage risks strategically by viewing all the risks together within a coordinated manner.

According to yesoufiImani (2013) cited in Tandelilin, Kaaro, Mahadwartha, and Supriyatna, (2007) increasing shareholders' return epitomizing bank performance is one major objective of bank management. The objective often comes at the cost of increasing risk. Bank faces various risks such as interest risk, market risk, credit risk, off balance risk, technology and operational risk, foreign exchange risk, country risk, liquidity risk, and insolvency risk. The bank's

motivation for risk management comes from those risks which can lead to bank under performance issues of risk management in banking sector have greater impact not only on the bank but also on the economic growth.

Claudine (2012) in Spain investigated the relationship between bank performance and credit risk management. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loan to total loan of financial institutions thereby leading to a decline in profitability. He concluded that good risk management is good banking, which ultimately leads to profitable survival of the institution. Fernandez (2010) on credit risk management and its impact on financial performance found that there is a significant relationship between bank performance and credit risk management. He recommended that it is necessary to establish a proper credit risk environment, sound credit granting processes, appropriate credit administration, measurement, monitoring and control over credit risk, policy and strategies that clearly summarize the scope and allocation of bank credit facilities as well as the approach in which a credit portfolio is managed i.e. how loans are originated, appraised, supervised and collected, a basic element for effective credit risk management

Charles & Kenneth (2013) examined the impact of credit risk management and capital adequacy on Nigerian banks financial performance. They used panel data regression techniques to undertaken their study. Liquidity, non-performing loans and loan ratio are used as credit risk management indicators whereas capital adequacy ratio used as capital adequacy. Lastly, they found all variables except loans to deposit have positive and significant impact on Nigerian banks financial performance.

Salas and Saurina (2002) find a negative relation between bank size and non-performing loans and argue that bigger size allows for more diversification opportunities and spreading of risk. Louzis, Vouldis and Metaxas (2011) are however of a different opinion and argue that the moral hazard of too-big-to-fail banks represents another channel relating bank-specific features with non-performing loans. Stern and Feldman (2004) agrees to this and state that a policy concern is that too-big-to-fail banks may resort to excessive risk taking since market discipline is not imposed by its creditors as they expect government protection in case of a bank's failure.

Consequently, large banks may increase their leverage too much and extend loans to lower quality borrowers precipitating credit risk (Louzis et al 2011).

Garr (2013) considered two industry-specific factors in the study of determinants of credit risk in the banking industry of Ghana. These two industry specific factors are competition and the financial sector development. Other banking industry specific factors that are considered to influence credit risk are the existence of a credit reference bureau and the effectiveness of the supervision and monitoring role of the central banks. The Central banks are the regulators of banking institutions in an economy.

Aginer, Demirguc-Kunt and Zhu (2012)and Rose and Hudgins (2008) both agree that competition is good for the banking sector as greater competition encourages banks to take more diversified risks, making the banking system less fragile to shocks. They both argue that competition tends to squeeze the difference between average asset yields and average liability costs. Jimenez and Saurina (2006) also contend that strong competition among banks or between banks and other financial intermediaries erodes margins as both loan and deposit interest rates get closer to the interbank rate and this has an impact of reducing credit risk through affordable lending rates.

Macroeconomics is a branch of economics that studies the economy of a nation from a broad point of view through the application of macroeconomic factors. Macroeconomic factors are those factors that have impact at a national level and include variables such as inflation rate, unemployment levels, interest rates, rate of consumer consumption, gross domestic product, national income and price levels. Literature submits that macroeconomic factors influence the level of credit risk in the banking sector.

Gross domestic product growth rate considered a key macro-economic determinant ofbanks performance. During economic booms, income levels are high and portfolio at risk is minimal. During recessions, income levels are constrained and borrowers face challenges in settling their credit obligations. Vazquez, Tabak and Sauto (2012) contends that there is an inverse relationship between gross domestic product and non-performing loans. On the other hand, research shows a positive relationship of inflation, unemployment and interest rate on non-performing loans.

High tendencies of credit risk are said to go along with high inflation, high unemployment and high interest rates. These variables limit the borrower's ability to borrow and at the same time increase the cost of borrowing (Derbali, 2011). Aver (2008) conducted an empirical analysis of credit risk factors affecting Slovenian banking system. The research results established that certain macroeconomic factors exert notable influence on credit risk. Results of the study confirm that unemployment rate, interest rates and stock market index were critical in influencing credit risk in Slovenian banking system. No sufficient linkage of inflation rate, gross domestic product growth rate, exchange rate or growth of import-export trade noted to affect credit risk.

Empirical studies suggest that for every banks crisis, there are some macroeconomic variables relating bank crisis to the economic performance. A banking crisis is a financial crisis that affects banking activity. Banking crises include bank runs, which affect single banks; banking panics, which affect many banks; and systemic banking crises, in which a country experiences a large number of defaults and financial institutions and corporations face great difficulties repaying contracts. Ramlall (2009) considers interest rate, cyclical output, the level of economic development and stock market capitalization as determinants of credit risk.

2.6 Summary and Knowledge Gap

From the above theoretical as well as empirical review, credit risk is affecting the performance of the Banking industry. Correspondingly, in the literature; the Bank profitability is usually expressed as a function of internal and external determinants. Various studies have been made in different countries regarding these variables. Among others, the most important internal determinants that are affecting performance include Bank Size (Age), Non-performing loans, Cost to income and Loan to Total Asset (loan growth).

The studies made shows consistent results with respect to loan to total asset, Non-performing loan, however the empirical results for cost to income and Bank size (Age) were mixed. Looking into the analysis of the audited financial statements for the banks for the past consecutive nine

years (2008-2016) depicts that, the maximum non-performing loan was 5.7% in 2008 which is even higher than National Bank tolerable limit of 5% and the lower being 2.4% in 2012. The loan growth has shown an increase throughout the studied years except in the year 2014, which shows a positive implication as it, is one of the major sources of revenue for the banking industry.

Thus the research tried to examine the impact of credit risk on the profitability of Ethiopian commercial Banks and identifies the relationships between the Non-performing loans, loan growth, cost to income and Bank Size with Banks Profitability. The research fills the gaps below that exist in the country;

Academic (Literature) gap, the studies made in the Ethiopia so far do not consider variables like Age or Size, cost to income in relation to performance of the banks, which however were done well in different countries. Therefore, the research serves as additional complement as reflecting the local banking industry context. As the research is applied one, it is further believed that such a study with recognition of these variables would contribute to policy making and devise risk mitigating mechanisms.

CHAPTER THREE

Research Methodology and Design

Introduction

The preceding chapter has indicated the literature on the determinants of bank performance and the impact of the variables on financial performance. Both theoretical and empirical reviews were made and indicated the absence of empirical studies in Ethiopia regarding bank size, cost per loan determinants and their impact on financial performance.

The purpose of this chapter is to empirically examine the quantitative effect of credit risk on the performance of Banks in Ethiopia over the period of nine years (2008-2016) as both the independent and dependent variables are measurable.

The chapter is arranged as follows. Section 3.1 research design Section 3.2 research approach Section3.3 data type and sources. This is followed by population of the study considered by the research under section 3.4. Sampling Techniques and sample size is explained under section 3.5.Next, data analysis and presentation techniques are explained under in section 3.7. Then, variable definition & hypothesis of the study are explained under section 3.8. Finally, the model specification for the study is discussed under section 3.9.

3.1 Research Design

The study was used descriptive and explanatory research design. According to Muranaga and Ohsawa (2002), a descriptive and explanatory types of research design is important for a research types if the dependent variable affected by several independent variables. Based on this financial performance can be affected by several determinant variables of credit areas. Based on this the study designed to describe the collected penal data (2008 - 2016) trend analysis and descriptive methods using percentage ratio as well as cause effect relation also tested using correlation and regression analysis.

3.2 Research Approach

This study is quantitative in its approach; the quantitative data research relies on the measurement and analysis of statistical data to produce quantifiable conclusions. Quantitative research is a means for testing objective theories by examining the relationship among variables. Therefore, for this study quantitative research approach is used to see the relationship between the effects of credit risk on financial performance of commercial banks in Ethiopia. The study considers both bank specific and macroeconomic factors affecting banks profitability in Ethiopia by establishing causal relationship.

3.3 Data Type and Sources

The study used secondary data type in order to address the objective of the study. The secondary data was collected from internal and external sources. The internal source collected from audited annual financial statements of the selected commercial banks and the external sources from National bank of Ethiopia (NBE). The data were collected from 2008 to 2016. In addition, the various annual and quarterly publications of the NBE, publications (including the annual report) of the Central Statistical Authority of Ethiopia (CSA), Ministry of Finance and Economic Development (MoFED) were used. Also, references with regard to the existing commercial code of the country, Banking proclamations, various directives of the NBE were made.

3.4 Study Population

All operational commercial banks in Ethiopia considered as taken as the study population. As stated before currently there are 16 operational private commercial banks in Ethiopia.

According to NBE annual report (2016), Ethiopia consists of 18 Commercial banks. Commercial Bank of Ethiopia (CBE), Development Bank of Ethiopia(DBE) Dashen Bank S.C (DB), Awash International Bank S.C (AIB), Wogagen Bank S.C (WB), United Bank S.C (UB), Nib International Bank S.C (NIB), Bank of Abyssinia S.C (BOA), Lion International Bank S.C (LIB), Cooperative Bank of OromiaS.C (CBO), Berehan International Bank S.C (BIB), Buna International Bank S.C (BUIB), Oromia International Bank S.C (OIB), Zemen Bank S.C (ZB), Abay Bank(AB),Addis International Bank(ADIB),Debub Global Bank(DGB) and Enat Bank (EB). Since the study analyses more depend on the secondary data obtained from NBE annual report.

3.5 Sampling Techniques and sample size

From the target population, sample is selected based on purposive Sampling method, which is a non- probability-sampling procedure that ensures to achieve a certain goal that the study wants to address. To select sample banks the study compares commercial banks experience and asset size. In this regard Commercial Banks of Ethiopia categorized into three peer groups. It is based on the establishment period and asset sizes of the banks. Accordingly, to include both large asset and small asset banks size private commercial banks 8 of them were selected these are, Awash (AB), United (UD), Dashen (DB), Wegagen (WB), Bank of Abyssinya (BOA) and Nib Banks (NB) selected from medium peer group while, Cooperative bank of Oromia (CBO) and, Lion International (LB) Banks considered from small peer.

3.5 Methods of Data Analysis

Data analysis section of this study was mainly based on computation of financial ratio data's (risk management practice indicators) of the selected commercial banks. Moreover, the researcher compute ratios with the help of Microsoft spread sheet from balance sheet and income statements of commercial banks from 2008-2016 of the selected indicators; then processed through SPSS version 20 of statistical packages. Furthermore, processed data interpreted through descriptive statistical analysis, trend analysis, and correlation and regression analysis. It means that this section provides the descriptive analysis of the panel data and variables for the study in collaboration with some important test such as normality, multicollinarity, parameter stability of data, describes magnitude of risk indicators and performance trend, discusses the correlation analysis between dependent and independent variables, deals the results of the linear regression and data analysis that constitute the main findings of this study.

3.7 Model Specification

The study used return on assets (ROA) as the sole dependent variable proxies of financial performance; whereas Credit risk management practice proxy by bank specific selected factors credit risk(NPLR), Operational logarismic asset (BAS),liquidity risk(LIQR),capital risk(CAR), cost to income Ratio (CIR), Loan and advance operation risk (LAR) from bank specific variables as well as GDP and inflation from external environment. One of the main reason used rate of return on assets (ROA) as dependent financial performance, it is the most comprehensive accounting measure of a bank's overall performance. Because of this, the bulk of studies

employed ROA as profitability measure, for instance, (Izhar and Asutay, 2007 and Flaminietal, 2009). Additionally, this supported by empirical studies by (Athanasoglouetal. ,2008) stated that ROA is the key ratio for the evaluation of bank profitability given that ROA is not distorted by high equity multipliers, while ROE is regards the risks associated with high financial leverage. In this respect, it is rarely to find the research paper utilizes ROE as a single measure of profitability. Due to this fact, this study also adopted ROA as the only financial performance measure proxies to investigate the risk management practice and financial performance of commercial banks in Ethiopia.

To this end, the panel model, in a functional form, is stated as follows:

ROA = *f* (NPLR, CAR, LIQR, BAS, CIR, LAR, GDPR, INFR…….. (1a)

The econometric form for the model is specified as follows:

ROA Model = β0 + β1NPLRi,t + β2LIQR+ β3CARi,t+ β4LARi,t+ β5BASi,t+β6CIRi,t β7GDPRi,t β8INFi,t + μ i,t

Where:

i=banks (i=1 to 8), t=time Period (from 2008 up to 2016)

B0=is a Constant

Bi (i=1 to 8) Variable Coefficient;

μi,t= is an error term or disturbance term

ROA = Return On Assets

NPLR= Non-Performing Loan Ratio (Computed As NPL/Total Loan Outstanding)

CAR = Capital Adequacy Ratio [Total Capital / Total Assets)

LIQR=Liquidity Ratio (Liquid Assets / Qualifying Liabilities)

BANK SIZE=Natural Logarithm of Total Assets

LR = Loan growth and Advance

CIR = Cost to Income Ratio (Operating Expenses / Gross Earnings)

GDPR = Gross economic product Ratio

INFR = Inflation ratio

CHAPTERFOUR

Data Analysis and Interpretation

Introduction

This chapter presents the research findings on examining credit risk management on financial performance. The study was conducted on sample of eight (8) commercial banks from the period of 2008 to 2016. Balanced panel Regression analysis is used in analysis of the analytical model. Similarly, before regression model analysis, descriptive statistics analysis, trend analysis and correlation analysis presented along with figures and tabular forms. Finally, the overall findings of this study justified with various empirical studies done before by different authors.

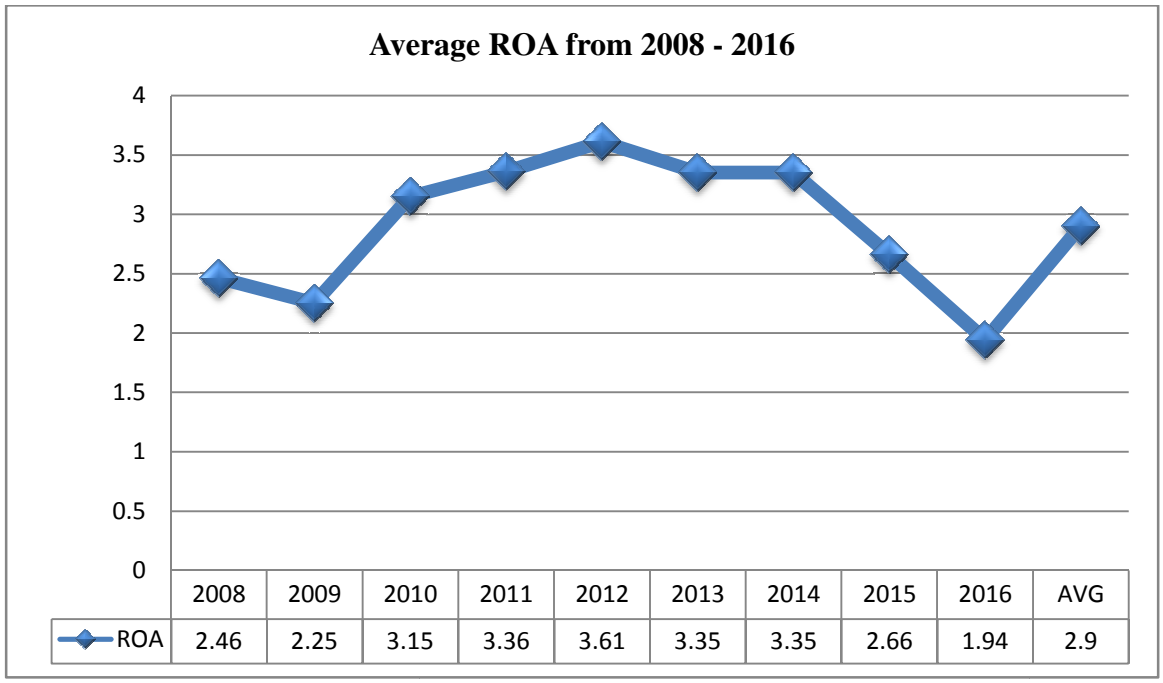
4.1. Description of Variables and Their Measurement

The study variables included in this study are variables, which determine risk management practice and had significant impact on commercial banks performance. Similarly, the researcher developed study variables to examine risk management practice on financial performance in selected commercial banks in Ethiopia; one dependent variable which indicate financial performance of commercial banks (return on asset ratio) and seven explanatory variables which include credit risk (non-performing loan ratio) ,capital risk (capital adequacy ratio), debt risk(Loan growth ratio) , liquidity risk(liquidity ratio), cost management (Cost to Income) ratio and bank asset size ratio from bank specific factors while, GDP and Inflation Risk from wider Macro – economic factors generated from 2008-2016 fiscal year's audited financial statements.

4.1.1 Trend of Financial Performance Profitability (ROA)

Profitability is the likelihood of a business earning the desired level of income within a specific period under certain prevailing business conditions. ROA measured by the ratio of net profit before tax to total asset.Net profit before tax was used in order to avoid the impact of different period's tax rate on the net profit of the bank. Accordingly, depicting the trend of financial performance magnitude observed in figure below with risk management variables indicators, it strength findings obtained from regression and helps in order to address the objectives of the study. The figure indicated the average growth rate of studied banks ROA.

Figure 4.1 Trend of profitability of the industry

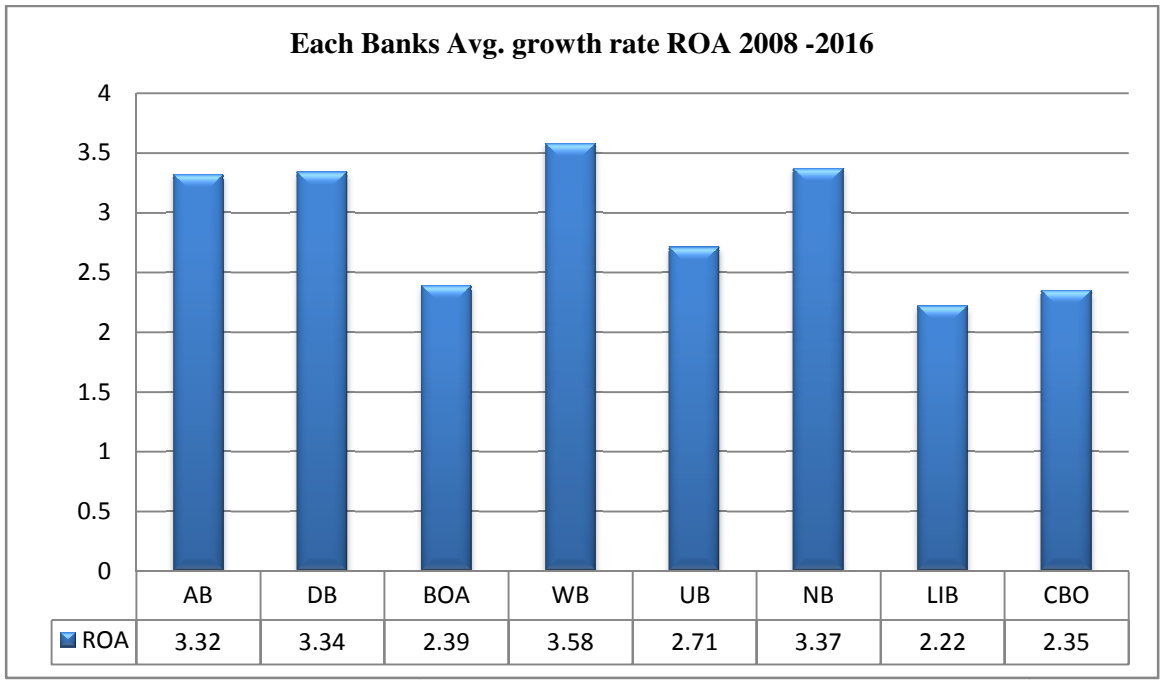


	2008	2009	2010	2011	2012	2013	2014	2015	2016	AVG
ROA	2.46	2.25	3.15	3.36	3.61	3.35	3.35	2.66	1.94	2.9

Source: Sample banks annual Report

As shown in above figure, the average growth rate of Return on Asset (ROA) of the studied banks was constantly increase from the year 2009 to 2012, however, starting to 2012 – 2016 highly decreased. Accordingly, the minimum return on asset of 1.94% was registered in the year 2016 and the maximum return on asset of 3.61% was registered on the year 2011.The variance in profitability also leads to judge there was risk factor that hider performance or Profitability of commercial banks in Ethiopia. Based on this the study also assessed each banks financial performance, accordingly the below figure implied each of the studied commercial banks average ROA during the last 9 years.

Figure 4.2 Trend of sample banks performance of Profitability



Source: Sample banks annual Report

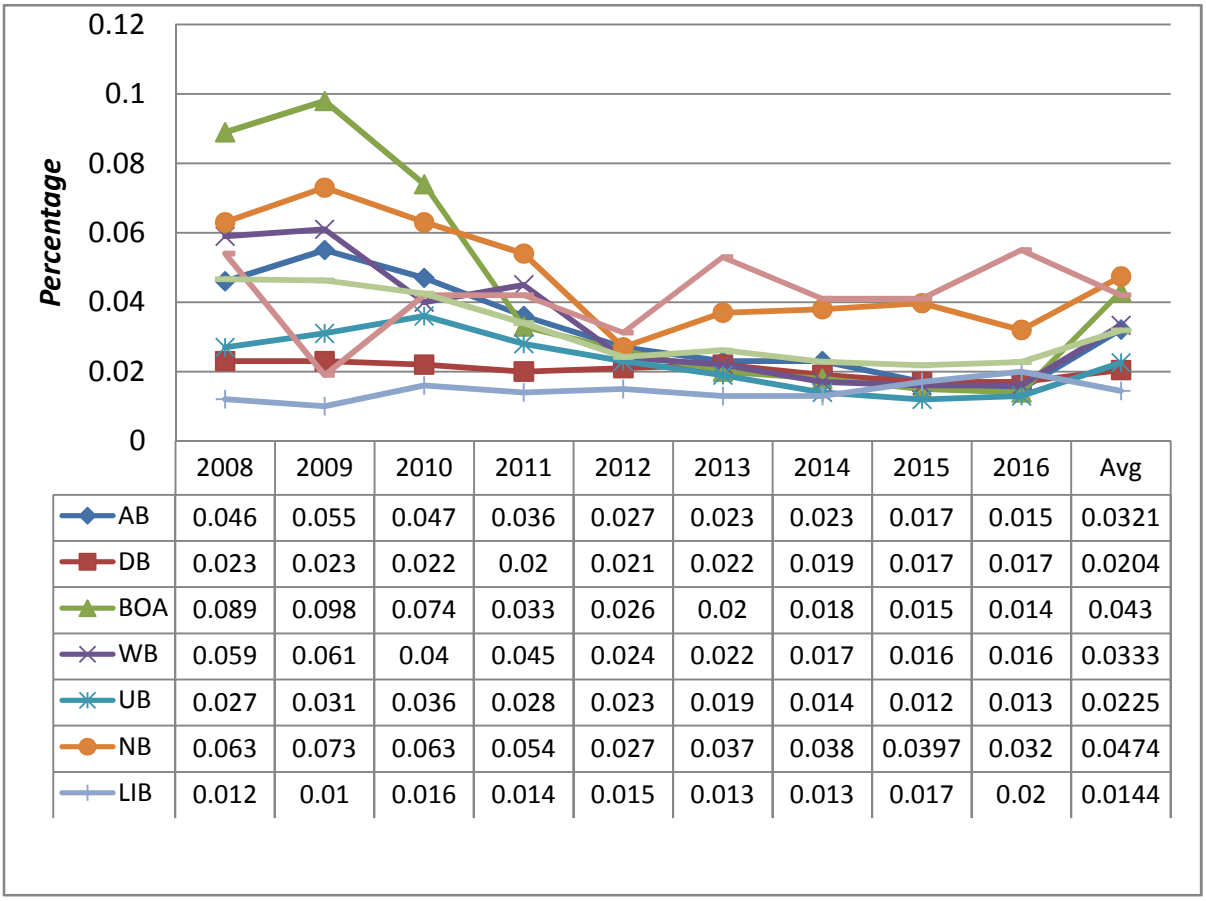
Regarding the individual bank level the average growth rate of WB 3.58%, NB (3.37%), DA (3.34%) and AB (3.32%) were the highest while, LIB (2.2211%), CBO (2.3556%), and BOA (2.3922%) was the lowest of all banks considered in this study. Though the net profit of older banks were higher in magnitude than newly opened banks, equivalently the total asset of the older banks was higher and as a result, the ratio of ROA has not shown significant difference between the studied banks. Generally, as the rate of profitability declining throughout the years, and it can be deduced that, bank profitability may reflect the risk taking behavior of banks management. Banks with high profitability are less over stressed for revenue creation and thus less forced to engage risk credit offering. However, inefficient banks are more likely to experience high level of problem loans since they are tempted to grant and to engage in more uncertain credits to defend their profitability and meet the prudential rules imposed by monetary authorities (Boudriga et al. 2009). Therefore, the study implied that, even though all of the studied commercial banks were profitable through the studied years, however, those banks which relatively received less ROA may affected more on lack of effective credit risk management practice than, more profitable banks. To minimize this variance on profitability among

commercial banks should practice strong or prudent risk practice on those variance factors that adversely affects the performance of commercial banks.

4.1.2 Trend of Non – Performing Loan (NPLs)

In this study, NPL is measured by the share of non-performing loans from the total loans & advances of the bank. The National Bank of Ethiopia has provided direction to all commercial banks to maintain the NPL ratio below 5%. The below table implied trend of non–performing loan at each bank level.

Figure 4.3 Non-Performing Loan Trend of the studied private Commercial banks in Ethiopia from 2008 to 2016



	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
AB	0.046	0.055	0.047	0.036	0.027	0.023	0.023	0.017	0.015	0.0321
DB	0.023	0.023	0.022	0.02	0.021	0.022	0.019	0.017	0.017	0.0204
BOA	0.089	0.098	0.074	0.033	0.026	0.02	0.018	0.015	0.014	0.043
WB	0.059	0.061	0.04	0.045	0.024	0.022	0.017	0.016	0.016	0.0333
UB	0.027	0.031	0.036	0.028	0.023	0.019	0.014	0.012	0.013	0.0225
NB	0.063	0.073	0.063	0.054	0.027	0.037	0.038	0.0397	0.032	0.0474
LIB	0.012	0.01	0.016	0.014	0.015	0.013	0.013	0.017	0.02	0.0144

Source: Sample banks annual report

The trend implied on the above figure that, NPLs performance of the studied banks were improved from year to years as implied by the average non-performing rate it was improved from 4.66% in 2008, to 2.18% and 2.28% in 2015 and 2016 respectively. This implied financial

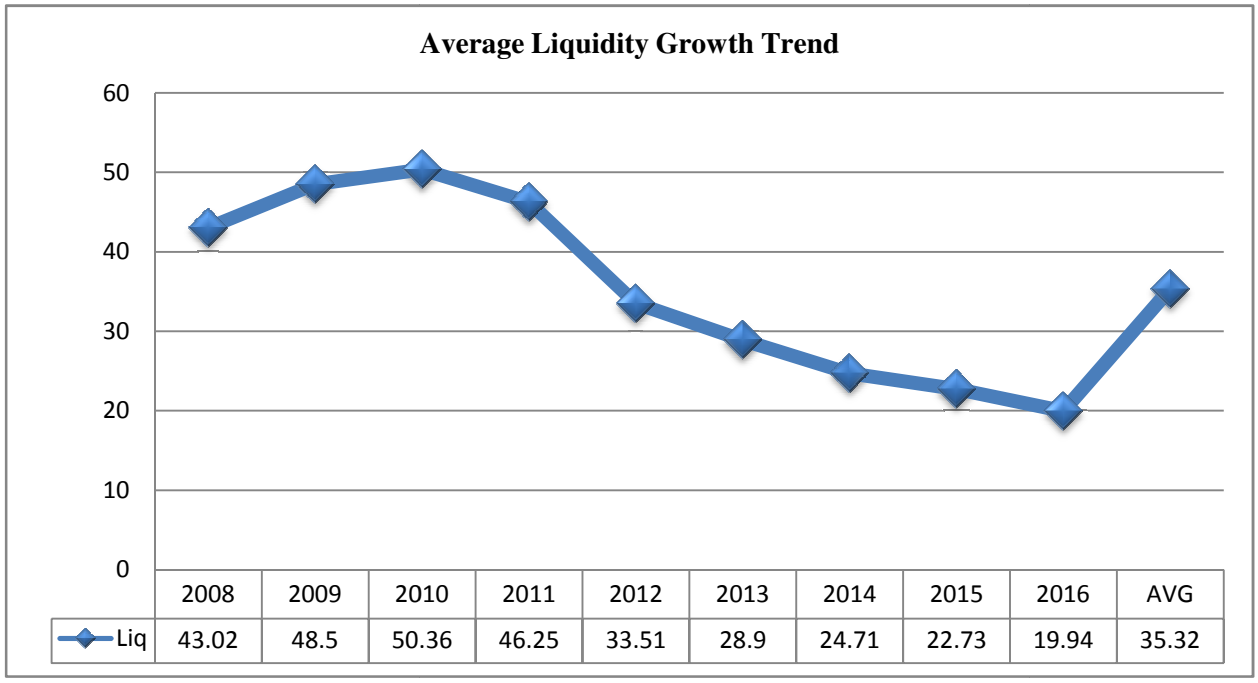
performance of commercial banks increase in collecting the loan from borrowers. However, trend of NPLs performance of each banks were not the same. Some of the banks perform well while the others not. Accordingly, at individual bank level the highest percentage ratio of NPLs observed 9.8% in BOA, while the lowest were 2.05 DB. Generally, from the stated data one can deduced that, significant decline of NPLs might imply either improvement in the levels of loan quality or being escaping of banks from providing loan and advances. Even though, the trend implied on the studied years improvement, however, the average NPLs of the studied banks for the past nine year at 3.19% implied still there is weak credit risk control and the situation negatively affect profitability of Commercial banks.

4.1.3 Liquidity Position of studied Banks

Liquidity position of the studied banks were measured based on Liquid asset/net deposit ratio which indicates the extent to which the bank's total liquid assets are composed of deposits from customers and other financial institutions. The measure implied that, liquid assets are cash on hand, deposits with local and foreign banks and treasury bills and other items compared with liquid assets. On the other hand, Net deposit is composed of demand deposits, saving deposits and time deposits, which are liabilities for the bank. One of the liquidity measures of this study is liquid asset-to-deposit and other short-term borrowings ratio. The National Bank of Ethiopia also uses this ratio as the measurement of banks liquidity level and the liquidity requirement directive is based on this ratio. As per NBE directive number SBB/57/2014 issued by the National Bank of Ethiopia, any licensed commercial banks are required to maintain liquid asset not less than 15% of its net current liabilities (which includes the sum of demand deposits, saving deposits, time deposits and similar liabilities with less than one-month maturity).Commercial banks may confront with liquidity deficit, when they face a problem of meeting a large amount of demand (withdrawals). High ratio of liquidity may send a positive signal to the depositors that the bank is liquid; hence, higher is the depositors' confidence. However, a lower value of this ratio may signal that a bank is not in a good situation. On the other hand, higher liquidity may also imply the inefficient utilization of resources therefore may be associated with a high probability of failure. A higher ratio of liquid assets to total assets implies a greater capacity to discharge liabilities, and is therefore associated with a higher survival time. Liquidity is a prime concern for banks and the shortage of liquidity can trigger bank failure. Banking regulators also view

liquidity as a major concern. This is because banks without sufficient liquidity to meet demands of their depositors risk experiencing bank run. Holding assets in a highly liquid form tends to reduce income as liquid asset are associated with lower rates of return. The study implied both trend of the studied banks average liquid position as well as each banks position of liquidity for the past nine years.

Figure 4.4 Average Liquidity growth rate and trend of the studied banks from 2008 – 2016



	2008	2009	2010	2011	2012	2013	2014	2015	2016	AVG
Liq	43.02	48.5	50.36	46.25	33.51	28.9	24.71	22.73	19.94	35.32

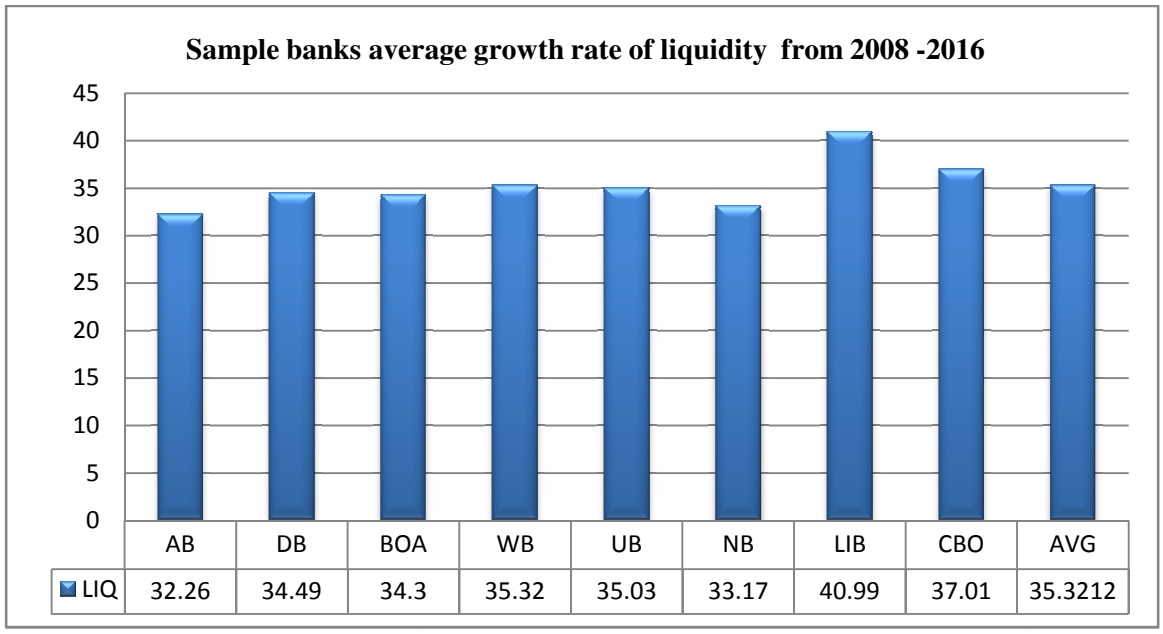
Source: Sample banks annual Report

The above fig indicated the average liquidity position of the industry were grow from the year 2008 – 2010, however, starting 2011 – 2016 it implied constant declining; it may relate in addition to increasing loan facilities for several sectors and the application of 27% NBE bill Purchase regulatory in 2011 may also have its own impact. Generally, average minimum liquidity position of the industry observed in 2016 (19.94%) while the maximum were 50.36% in 2010. In general, the higher this ratio signifies that the bank has the capacity to absorb liquidity shock and the lower this ratio indicates the bank's increased sensitivity related to deposit withdrawals, and this situation affects the return on asset of the studied banks negatively because

as more liquid assets are kept idle with respect to net deposits, no profit will be generated from these assets unless they are invested in alternative investment avenues.

The study also assessed each of the studied banks liquidity position and their growth trend. Accordingly, the below figure implied each of the studied banks liquidity position between the studied years.

Figure 4.5 Average Liquidity growth rate of studied bank from 2008 – 2016



Source: Sample banks annual Report

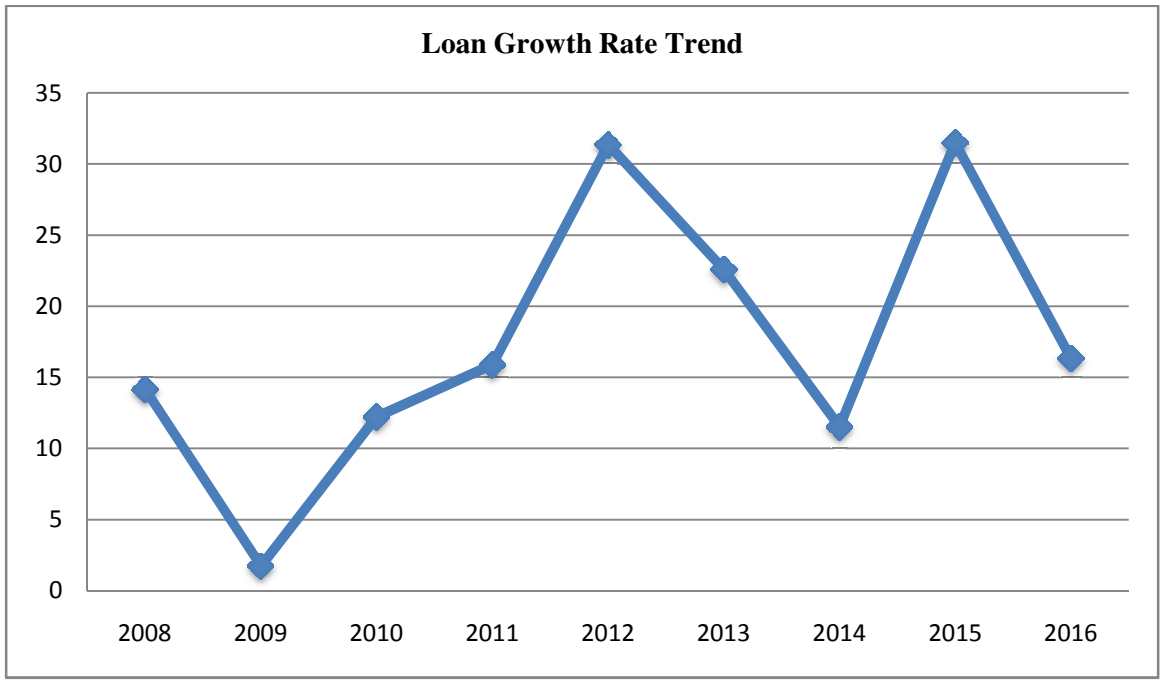
As implied from the above figure liquidity position of each banks were not the same accordingly, the average growth rate Lion bank at 40.99% were the highest of the studied commercial banks while, Awash bank at 3.26% of average liquidity growth rate recorded the least among the studied banks for the last nine years. Therefore; the study deduced that; even though the declining trend of the banks liquidity position, however the position of each banks and the total average of the studied banks have liquidity position engaged by far from NBE requirement of 15%. This implies that, the inefficient utilization of resources and loan services by the banks is declined and not disburse additional loans to the clients to strength the borrower's

capacity. The banks and this can affect performance of loan granting and the situation implied problem on liquidity risk management practice of the banks.

4.1.4 Loan Growth

Hence, loan is the principal business activity for all commercial banks in Ethiopia and the loan portfolio is the largest asset and the predominate source of revenue. The higher the loan growth has leaded the bank the higher profit return. The graph implied the trend of the average loan growth rate on the studied banks.

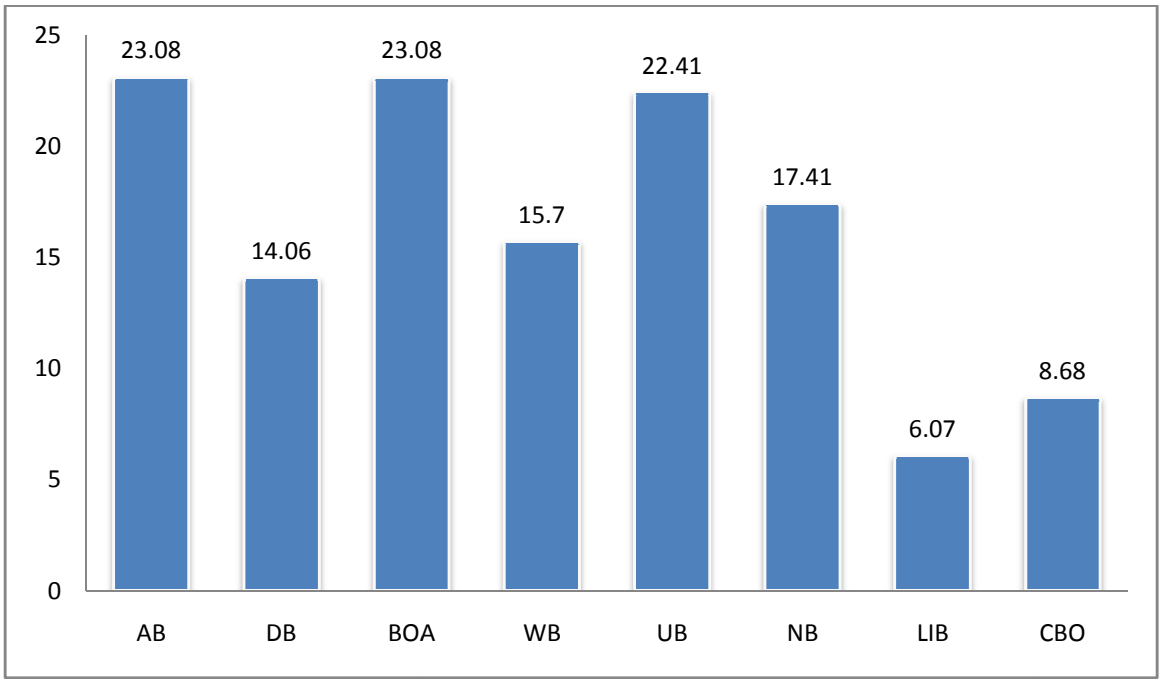
Figure 4.6 Average Loan growth trend of the studied banks



Source: Sample banks annual Report

The trend show an increase in loans granted to borrowers throughout the studied years except in the year 2014 decline to 11.54% and which is the minimum average growth rate of loan, while the maximum loan growth rate were observed in 2015 (31.49%) and 2012 (31.35%).Regarding the studied banks Performance the figure below implied its trend

Fig 4.7 Average Loan Growth ratio of each banks performance from 2008 - 2016



Source: Sample banks annual Report

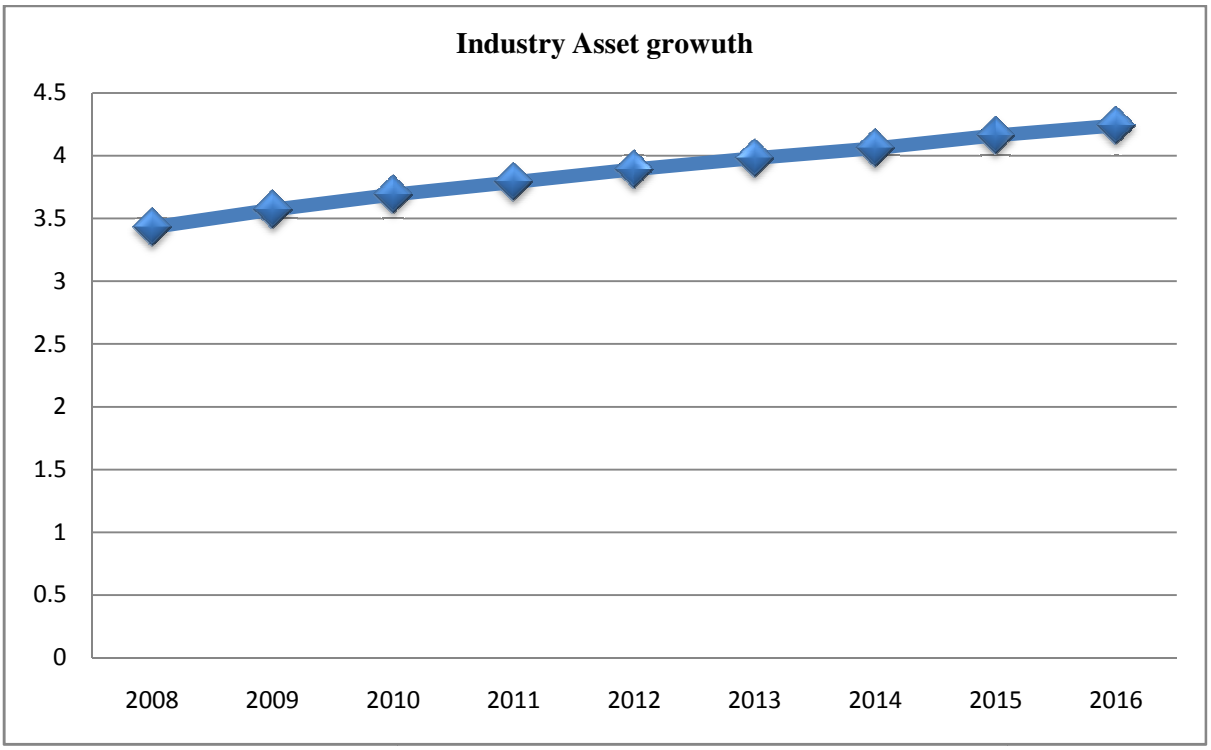
Regarding the individual bank level, the average growth rate of loan in Awash (23.08%) and Wegagen (23.081%) while the lowest was Lion bank (6.07%). Generally, from the trend of LA, one can understand that, as the main income of commercial banks depends from interest on loan and advance. The loan growth of the studied banks implied that, all of the studied banks are profitable. This implies that commercial Banks in Ethiopia have been utilized the liquid assets effectively and efficiently.

4.1.5 Bank Size (SIZE)

Bank size is what the bank possesses and it is useful to measure the banks general capability to undertake its intermediary function. In this study, the proxy used to measure bank size was the natural logarithm of the total asset. Larger banks have the advantage of better access to additional financing, dealing with liquidity problems and diversifying risk. Because larger banks benefit from a "too large to fail" policy and are believed to be more likely to survive than smaller banks. The study implied below in the figure both the average trend of the industries and each of

the studied banks size growing trends and their effect on commercial banks financial Performance.

Figure 4.8 Average natural logarithm of total asset trend of the Industry

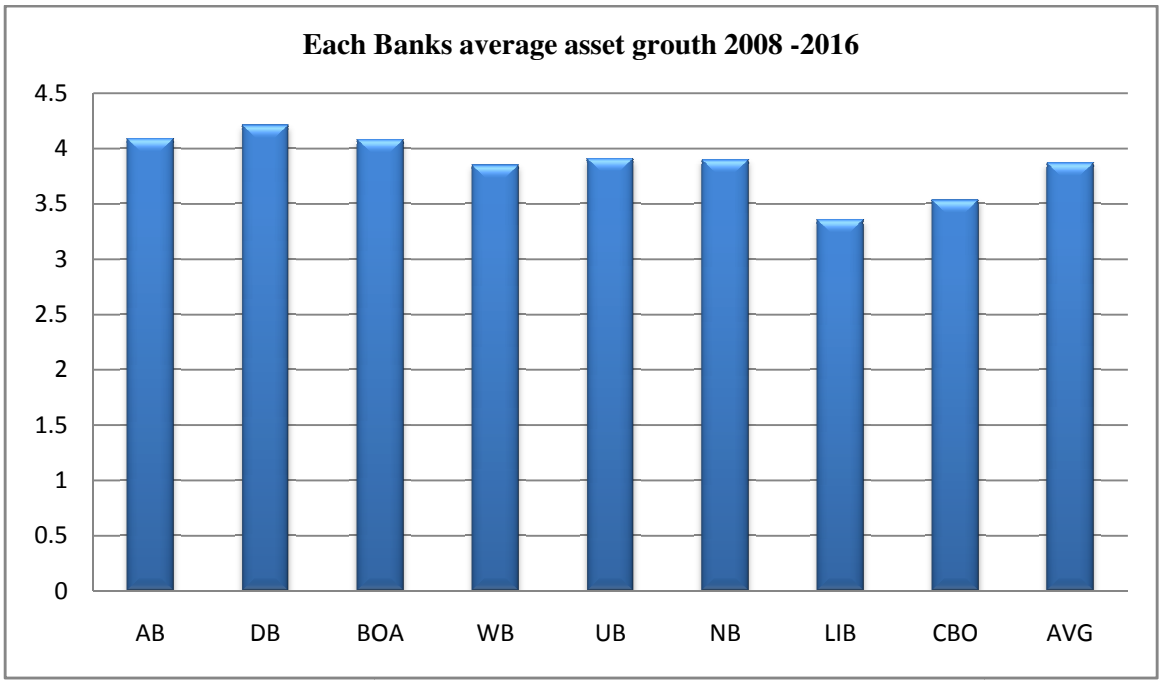


Source: sample banks annual Report

The average total assets of Ethiopian commercial banks have shown consistent growth throughout the studied period. Accordingly, the maximum total asset was registered in 2016 (4.24%) while the minimum were registered in 2008, which is 3.43%. Hence, the larger bank size induces economy of scale; there by making larger banks more profitable and will reduce the cost of gathering and processing information. Since larger banks are more able to solve problems of information asymmetry in comparison to their smaller counterparts. Skilled employees and quality information bases, larger banks are more effective in credit analysis and monitoring their debtors. Therefore, larger size has the positive impact of the bank's performance and the country's economy. Regarding individual banks asset level the growth rate were not consistent. Some of the studied banks average total assets were grow at a fastest rate while the others were

not as fast as their competitors were. The graph implied each of the studied banks trend of total asset growth between the studied years.

Figure 4.9 Average natural logarithm of total asset Trend each banks



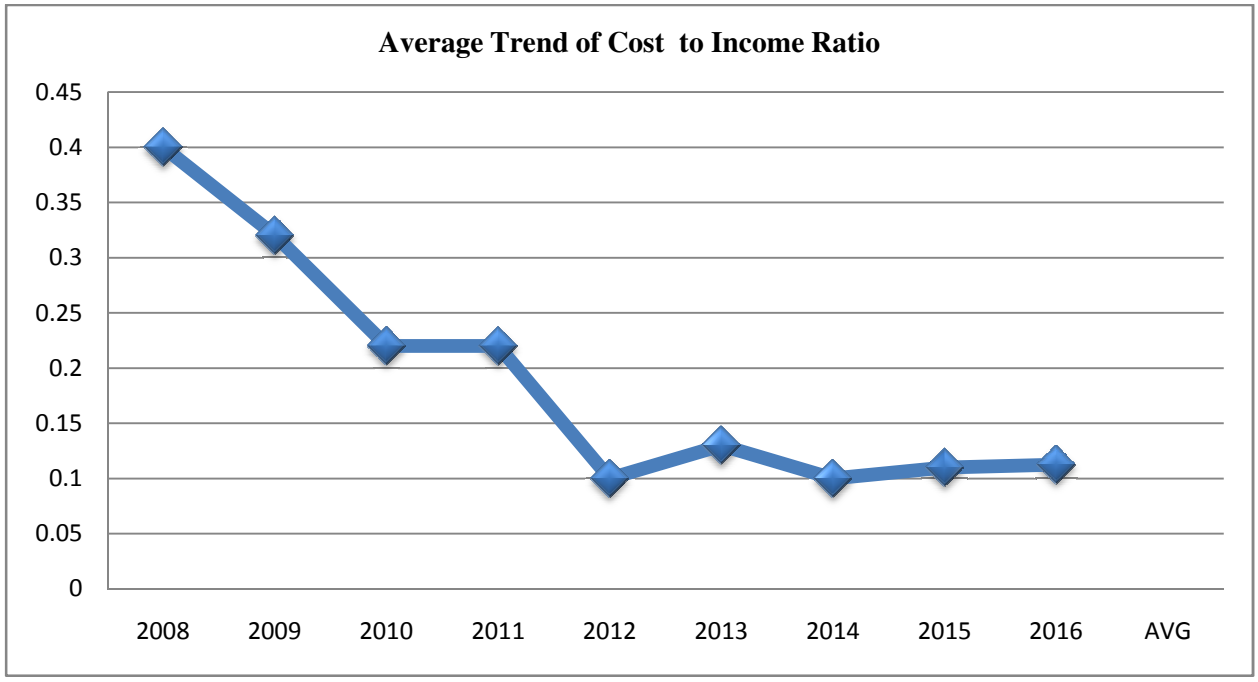
Source: Sample banks annual Report

The average ratio of total asset growth of each banks for the last nine years have similarities except slight asset growth rate in each banks. Accordingly, the maximum average total asset growth rate scored by Dashen (4.32%), Awash (4.09%), and BOA (4.08%), while the minimum average asset growth were observed at Lion (3.3582%) and Cooperative Bank of Oromia (3.5353%). Totally, the studied commercial banks total asset grows for the past nine consecutive years exhibits 3.87% average growth rate. Therefore, banks asset growth can enhance profitability of each banks, this is because when asset increase profitability also increase and capacity of the banks increase in terms of increasing number of employee, branches in turn it increase profitability and obtained a chance to improve credit risk practice.

4.1.6 Cost to Income ratio(C/I)

It measures income generated per birr cost. It signals how expensive it is for a bank to produce a unit of output. The lower the cost to income ratio, the better the performance of the bank will be. The below table indicate the measure and trend of profitability of the studied commercial banks based on cost income ratio analysis.

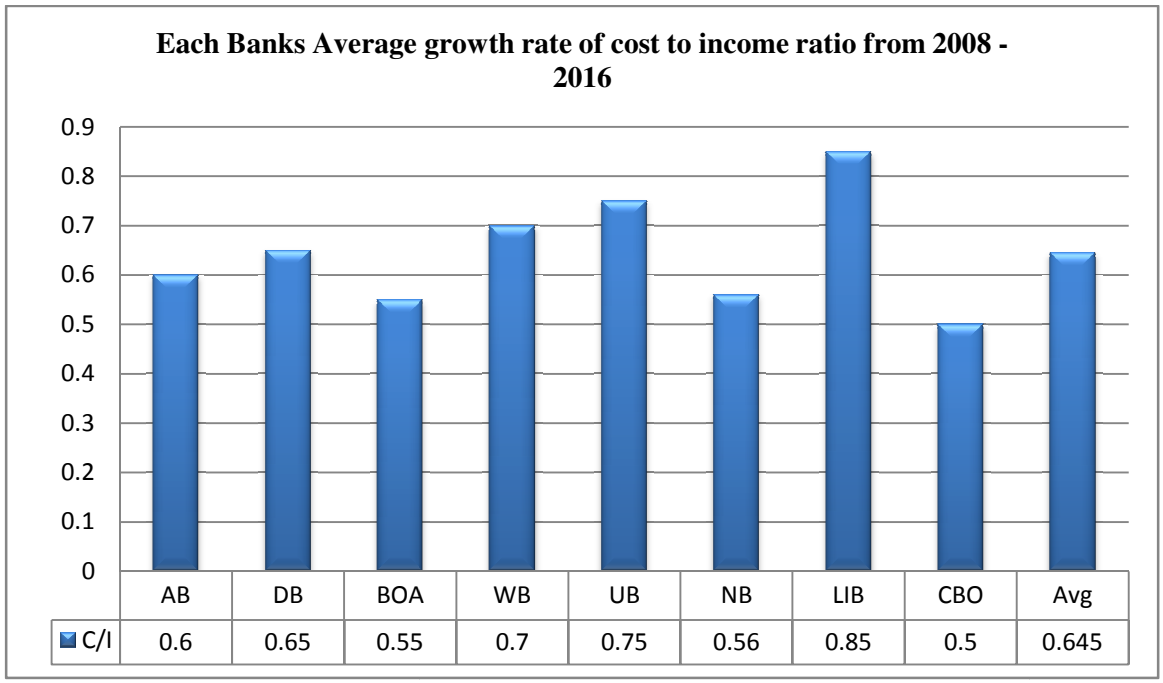
Figure 4.10 Average cost to income ratio trend of the studied banks



Source: Computed from annual reports of Sample banks.

Based on the above table, for all the sample banks, 2016 shows a highest cost income ratio compared with the rest of the period studied. The highest Cost to income average ratio, which is registered on 2016, is 67.5% while the lowest were 50.8% in 2012. This implies providing banking service in Ethiopia is becoming costly from time to time. When the study compare average cost to income ration of each of the studied banks, the figure below implied that:

Figure 4.11 Average growth rate of Cost to income of the studied banks from 2008-2016

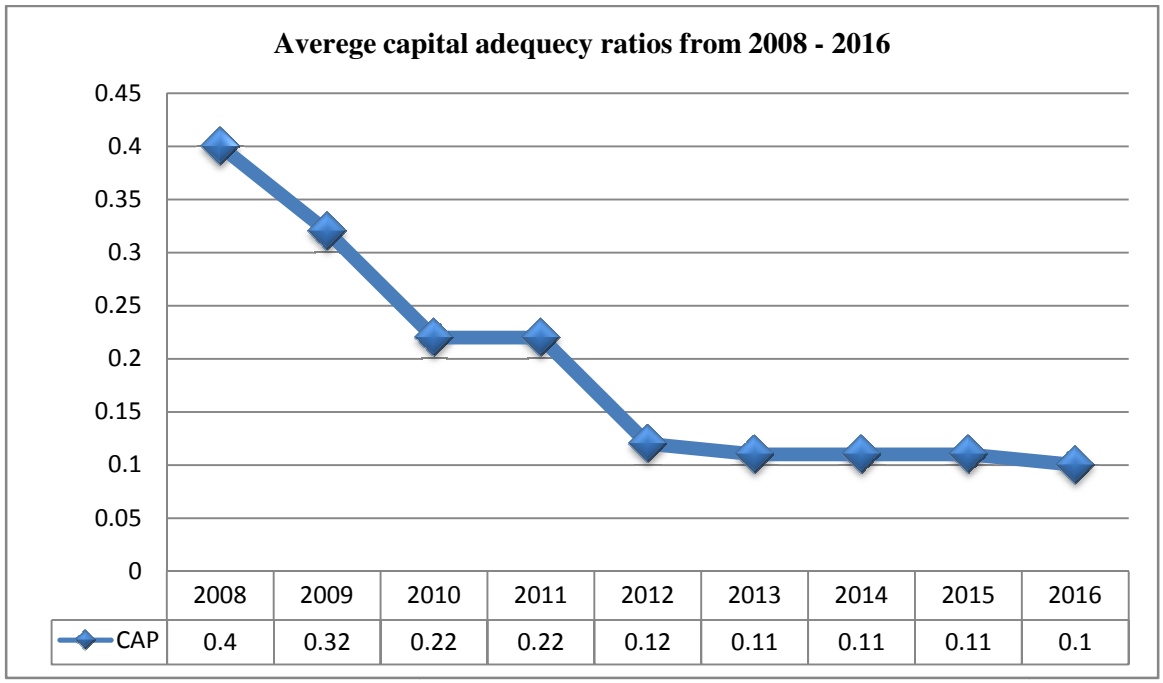


Highest cost to income average ratio registered in LIB, which is 66%, followed by, OIB (63%), the rest belongs between the average ratios of 56 % - 59% this implied there was no significance difference registered among the studied banks between the studied years. However, as the trend of the cost to income implied the average ratio of the studied banks cost to income increase from time to time, which means the cost of the banks increase, and interest income decrease and this situation affect profitability of the studied banks.

4.1.7 Capital Adequacy Ratio (CAP)

Capital adequacy refers to the sufficiency of funds available to absorb losses to protect depositors, creditors, etc. in the interest of maintaining financial system stability. As per Basel Committee on Banking Supervision (BCBS 2004) revised framework and NBE requirement (NBE directive no SBB/9/95) capital adequacy is measured by the ratio of regulatory capital to risk-weighted assets and accordingly a minimum of 8% is required. However, the proxy for capital adequacy measurement used in this study was the ratio of total equity to total asset. The higher this ratio entails the capability of the bank to absorb losses from its own capital. As it is shown on figure below

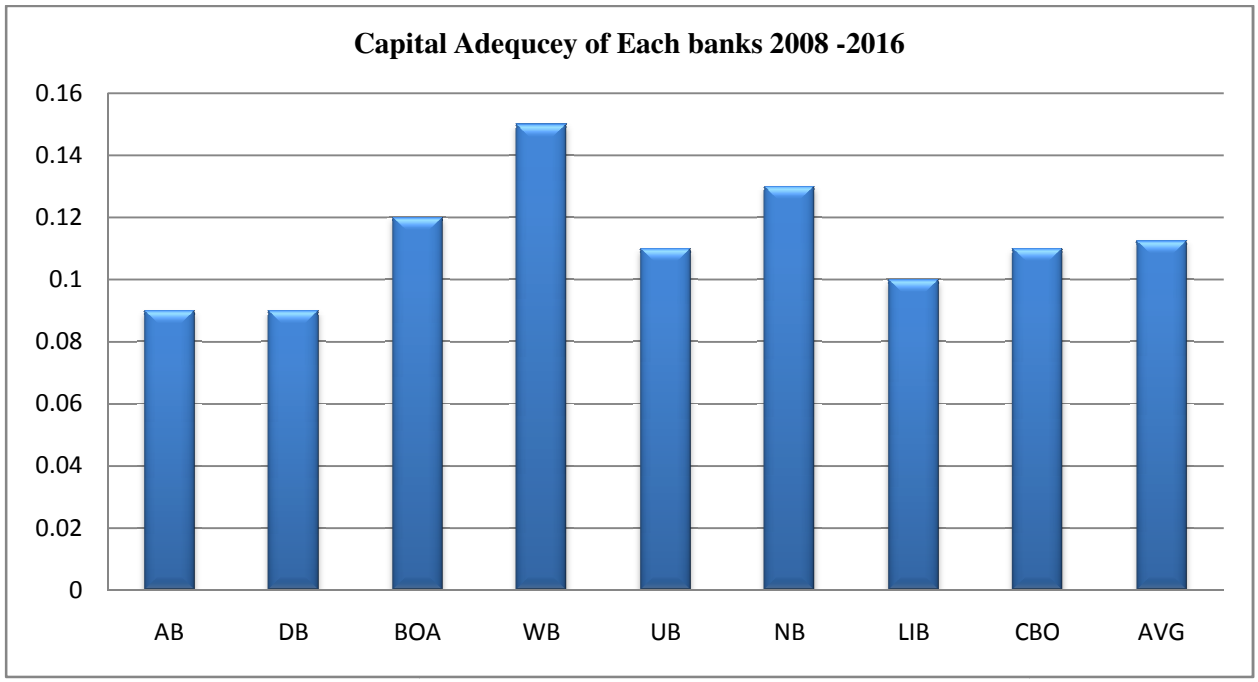
Figure 4.12 Average capital adequacy ratios of the studied banks



Source: Computed from annual reports of sample banks

The average capital adequacy ratio of the studied banks was above the minimum requirement set by the NBE, which is 8%. The maximum CAP ratio of 14% that was recorded in the year 2012 shows that, during that time the total asset of the studied banks were at its highest level as compared to its capital. The capital adequacy ratio reaches the minimum 10% in the year 2016. Starting from 2012, the average capital adequacy ratio shows consistent decrement. This situation implied, capital & debt management practice not directly coincide. Based on the general trend of the banks the study also implied each banks perform capital management practice. The below figure implied each banks performance.

Figure 4.12 Capital adequacy of the studied banks from 2008-2016



Source: Computed from annual reports of sample banks

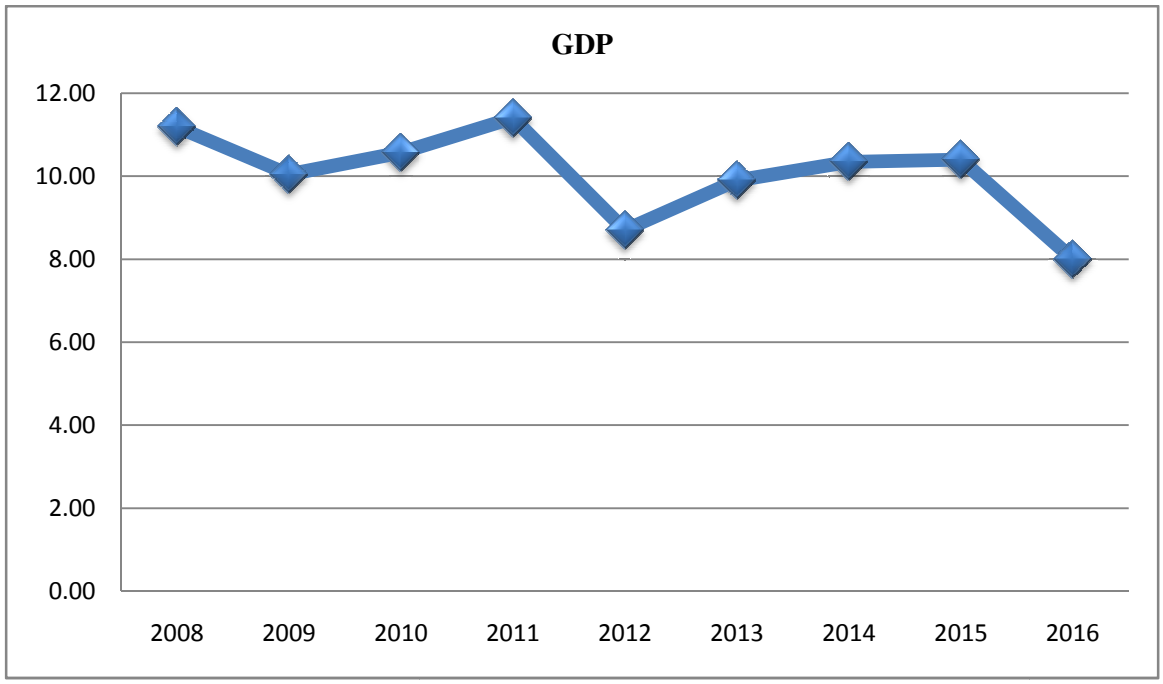
Generally, the study depicted that, the average capital adequacy ratio of the studied banks for the studied period such as, UB Bank has shown the lowest average capital adequacy ratio of 10.4% and NIB (16%) and WB (15%), respectively maintained highest average capital adequacy ratio. From the result, it can depict that, relatively the commercial banks engaged with higher level of capital have higher opportunity to lend a higher amount of money to a borrower (this increases the bank's single borrower limit set by the Central Bank) and they can increase their interest income and can reduce their transaction costs, and which finally enables them to increase their profit.

4.1.8 Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is an indicator of the economic health of a country as well as the gauge of a country's standard of living. It is the measurement of level of economic activity of a country. For the purpose of this study, GDP is measured by the annual real growth rate of gross

domestic product. The below figure indicates the country's GDP for nine consecutive years and its effect on financial performance of commercial Banks.

Figure 13 Trend of GDP



Source: Ministry of Finance & Economic Development

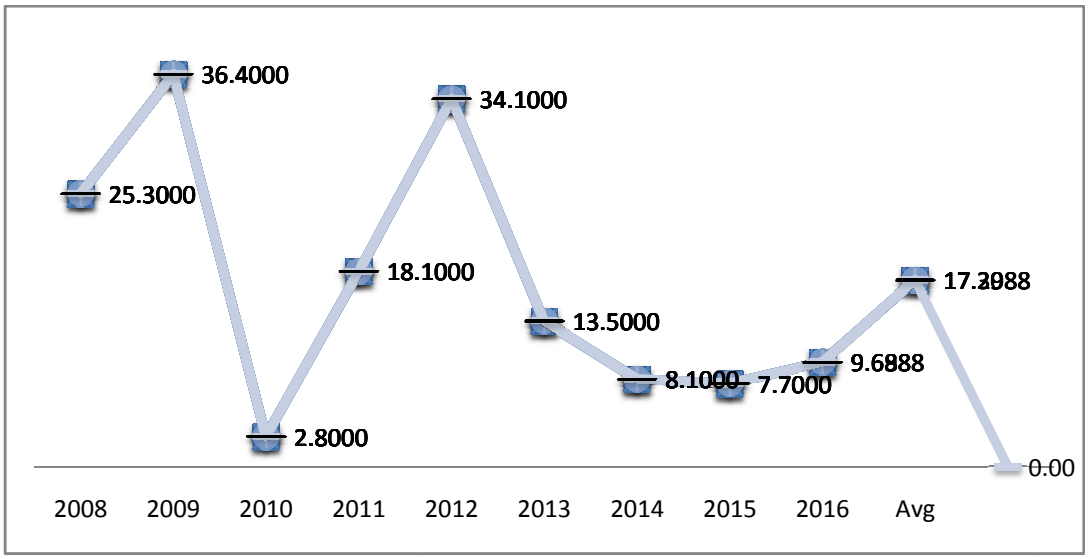
As indicated on the above figure the minimum GDP growth rate were scored in 2016 (8%), 2012(8.70%) and 2013 (9.90%) otherwise the country GDP was Growth in Double digit. According to the study results the GDP of the country specifically, in the year 2016 decline this is because political instability of the country. Scholar analyzed the relation between GDP and Credit risk in several ways. Accordingly, the justification provided in the empirical literature of this association is that higher positive level of real GDP growth habitually entails a higher level of income. This improves the capacity of the borrower to pay its debts and contributes to reduce bad debts. When there is a downturn in the economy (slowed or negative growth of GDP), the level of bad debts will increase. Therefore, even though the trend of GDP in Ethiopia was positively influence the financial performance, however, at the recent year, (2016) the impact of the GDP becomes negative sign. When the economy is at boom or goes out of recession,

economic units including banks are optimistic, increase their loans & advances, and as a result decrease their holding of liquid assets and as a result, ROA increase.

4.1.9. Inflation rate of the country (INF)

The other macroeconomic factor inflation had statistically insignificant impact on financial performance. It is a situation in which the economies overall price level is rising. It represents sustained and pervasive increment in aggregate price of goods and services resulting decline in purchasing power of money. Accordingly, when inflation is high and unexpected, it can be very costly to economy. At the same time, inflation generally transfers resources from lender and savers to borrowers since borrowers can repay their loans with birr that are worthless. It is determined as the general consumer price index. This indicates that, as inflation increase, the cost of borrowing gets more expensive and deteriorates; the quality of loan portfolio and credit risk management practice of each banks and this can affect financial performance of banks negatively. The below figure implied the effect of inflation over the studied banks.

Inflation Trend of the country and its effect on financial performance



Source : Central statistical authority of Ethiopia (CSA)

The maximum inflation rate was recorded in the year 2009 (36.400%) and in 2012 (i.e. 34.10%) followed by the year 2008 (25.300%) and the minimum inflation rate which was recorded in

2010 (2.8%). Therefore, inflation of the country appears to be significant and related negatively with financial performances. High inflation may pass through to nominal interest rates, reducing borrowers' capacity to repay their debt. Through its attraction with the tax system, it can increase tax burden by artificially increasing income and profits. Besides, inflation cause firms to increase their costs of changing prices. Finally, it made individuals to hold less cash and make more trips to banks since inflation lowers the real value of money holdings. It can negatively affect the borrowers' real income when wages are stick. In Ethiopia financial sector it appears that with the inflation, the operational costs are increased more than the effect of the interest rates resulting in lower profitability for the banks.

4.2 Correlation Analysis

To address the objective of the study, the Pearson correlation matrix analysis was used to determine links between risk management practice as explanatory variables (credit risk, liquidity risk, capital & debt management risk, operational risks) and financial performance of commercial banks as dependent variable (ROA) in Ethiopia. This analysis helps us to find the association or strength of relationship between explanatory and explained variable in this study.

Table 4.1 Correlation Analysis

	ROA	NPLR	LIQR	LGR	BAS	CAPR	CIR	GDPR	INFR
ROA	1								
NPLR	-.624	1							
LIQR	-.678	-.690	1						
LGR	.608	.460	-.416	1					
BAS	.300	.024	101	.446	1				
CAPR	.371	-.537	.377	-.288	-.061	1			
CIR	-.524	-.562	.561	-.213	.241	-.096	1		
GDPR	.149	.407	-.174	-.214	-.490	-.232	-.655	1	
INFR	-.962	.987	-.869	.513	125	-.507	-.539	.343	1

Source: Author Own computation (E-views output, 2018)

Accordingly; the correlation output in the above table revealed that, positive relationship between risk management practice indicator items are capital adequacy ratio, bank size, Loan growth and GDP with financial performance (ROA).Thus, their correlation coefficients are 0.371 (CAPR), 0.300 (SIZE), 0.608 (LG),and 0.149 (GDP).This correlation infers that,

managing these risk indicators results in raise the banks performance in terms of return on assets. However, non-performing loan ratio, Liquidity risk management, cost to income ratio, and Inflation has negative correlation with return on assets of commercial banks in Ethiopia. The correlation risk indicator coefficients are -0.834 (NPLR), - 0.668 (LIQR), -0.524 (CRI) and -0.962 (INFR). This also indicates that, practicing in reduction and controlling of this risk factor, raise the performance of commercial banks (ROA) or can be maintained.

4.3. Results of Regression Analysis and Diagnostics test

In the classical linear regression model, different tests were run to form the data ready for analysis and to get reliable output from the study. These tests were expecting to check whether the OLS basic assumptions, are fulfilled when the explanatory variables are regressed against the dependent variables.

Heteroscedasticity Test

When the scatter of the errors is different, varying depending on the value of one or more of the independent variables, the error terms are hetero scedastic (Gujarati&Porter, 2009).

Hetero scedasticit white test is used to test the hetero scedasticity problem in this research. This test is very important because if the model consists of hetero scedasticity problem, the OLS estimator no longer BEST and error variances are incorrect, therefore the hypothesis testing, standard error and confident level will be invalid. If the p-value is less than significant level we reject the null hypotheses otherwise, do not reject the null.

Table 4.2: Heteroscedasticity Test

White Test	P-value
F-statistic	0.25333
Obs*R-squared	0.18931
Scaled explained SS	0.57122

Source: Own computation (E-views output, 2018)

The p-value of this model result is more than the significant level 0.05(5%), so the model does not have hetero scedasticity problem.

Autocorrelation Test

Autocorrelation error occurs when there is a serial correlation between residuals and their own past values. In this study, Breusch Godfrey Serial Correlation LM test is used to carry out the autocorrelation test. The P-value is obtained to check whether the autocorrelation problem occurs in the model. If the p-value is more than5%significantlevel,it indicates that there is no autocorrelation problem in the model. The hypothesis for the model specification test was formulated as follow; H0: There is no autocorrelation problem.

H1: There is autocorrelation problem.
Decision Rule: Reject H0 if P value is less than significant level 0.05. Otherwise, do not reject H0.

Table 4.3: Result of Autocorrelation Test

Variables	P-value	Decision Rule
Breusch-Godfrey Serial Correlation LM Test	0.9522	Do not Reject theH0

Source: Own computation (E-views output, 2018)

Multicollinearity

Correlation matrix between independent variables is presented in table below. As shown in the tables there were fairly low data correlations among the independent variables. These low correlation coefficients indicate that, there is no problem of multi collinearity in the study. Moreover, Kennedy (2008) stated that multi collinearity problem exists when the correlation coefficient among the variables are greaterthan0.70, but in this study there is no correlation coefficientthatexceeds0.70.Accordingly,in this study there is no problem of multi collinearity, which enhanced the reliability for regression analysis.

Table 4.4: Multicollinearity Test

	ROA	NPLR	LIQR	LGR	BAS	CAPR	CIR	GDPR	INFR
ROA	1								
NPLR	-0.31644	1							
LIQR	-0.40759	0.488733	1						
LGR	-0.31232	-0.14484	-0.00321	1					
BAS	-0.36158	0.117516	0.156316	-0.21305	1				
CAPR	-0.29545	0.359599	0.296844	0.064626	0.043894	1			
CIR	0.234198	0.199357	0.055881	-0.37902	-0.0895	-0.02382	1		
GDPR	0.450559	-0.27138	-0.07562	-0.38733	-0.21477	-0.29394	0.375408	1	
INFR	0.00688	-0.24772	-0.06993	0.130911	0.158445	-0.36754	-0.04591	-0.03474	1

Source:Own computation (E-views output, 2018)

Normality

The below table shows that the Jarque-Bera statistic has a P-value of 0.10471 which indicate that the p-value for the Jarque-Bera test is greater than 0.05 which indicates that we don't reject and there was no support for the presence of abnormality in the data. Normality test is used to determine whether the error term is normally distributed or not. Jarque Bera test is to ensure that the data set is well-modeled by a normal distribution.

The hypothesis for the Normality Test is stated as follow:

H0: The error term is normally distributed

H1: The error term is not normally distributed

If P-value of JB is less than significant level of 5%, we reject the H0. Otherwise, do not reject H0.

Table 4.5:.*Normality Test*

Probability(P-Value)	0.10471

Source: Own computation (E-views output, 2018)

P-Value =10.47%, means do not reject H0 the error term is normally distributed.

4.4 Results of Regression Analysis

The section covers the empirical regression model used in this study and the results of the regression analysis. Empirical model: As presented in the methodological part of the study, the empirical model used in the study in order to identify the effect of credit risk on financial performance as follows:

ROA Model = β0 + β1NPLRi,t + β2LIQR+ β3CARi,t+ β4LARi,t+ β5BASi,t+β6CIRi,t β7GDPRi,t β8INFi,t + μ i,t

Table 4.6 Regression analysis results

ROA	Coefficient	Standard error	t-Statistic	Sign
Constant	.073	.004	16.592	.000
NPLR	-1.910*	.01106	.938	0.041
LIQR	-1.602*	.27202	.604	0.231
LGR	.390*	.88900	-1.355	0.032
BAS	.302*	.14921	-2.154	0.001
CAPR	.357**	.58932	-1.386	0.006
CIR	1.219**	.09903	.065	0.016
GDPR	1.605**	.09838	2.406	0.021
INFR	-.418*	.35479	.130	0.003

R-square	*0.813310*		
Adjusted R-squared	*0.801334*		
F-statistic	*2.658 Durbin-Watson stat*	*1.806052*	
Prob(F-statistic)	*0.000000*		

Notes: *1% significance level; ** 5% significance level and *** 10% significance level Source: Author own computation, 2018

The regression results in table the above table depicts return on assets (ROA) as dependent variable and Bank specific risk management practice measurement indicators (Non-performing loan ratio NPLs, liquidity Risk ratio LIQ, capital adequacy ratio CAP, Loan Growth LA, Logarismic Asset of bank (Bank Size) SIZE, Cost income ratio CRI, Gross of Economy GDP, and Inflation INF) as explanatory variables for the sample of eight commercial banks during 2008-2016 fiscal years.

Accordingly, the regression result implied that, the R-squared statistics of the model was 0.8133.This indicates that the changes in the independent variables collectively explain 81.33%ofthechangesinthedependent variable and the remaining 18.67%ofchangesisexplainedby other factors, which are not included in the model. Thus, these variables collectively, are good explanatory variables. The null hypothesis of F-statistic (the overall test of significance) that is equal to zero was rejected at 1%, as the p-value was sufficiently low Probability (F-Statistic) 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model. Following to the result obtained from the regression analysis as depicted in the above table, the next section tries to present the analysis concurrently with respect to each profit determents factors.

The explanatory variable credit risk indicator of Non – Performing Loan (NPL), bears a statistically at 1% significance level and it has a strong negative relationship with the profitability of commercial banks in Ethiopia. The negative coefficient of this ratio, which was also in line with the prior expectation and theory for that matter, indicated the existence of an inverse relationship between profitability and nonperforming loans. This implies that an increase in the ratio of nonperforming loans to gross loans, certainly lead to a decrease in financial performance of commercial banks.

The other Credit risk indicators of commercial banks is Liquidity ratio position as indicated on statistical 1% significance level, liquidity has negative impact on financial performance of commercial banks. The result is consistent with theory Richard (2011), liquidity ratio has a negative influence on financial performance of bank such that high excess liquidity decreases bank profitability and low liquidity improves bank profitability. Excess liquidity is a sign that bank lending is low and banks are holding more money than statutory required for precautionary purposes. While, low liquidity is a reflection that banks are holding less money in their accounts, an indication of increased lending to the public, and thus implied growth in business and profitability (Saxegaard, 2006). Indeed, excess liquidity of banks negatively influences bank profitability and this study result also agreed with this idea; this is because all of the studied commercial banks of Ethiopia liquidity position were by far above the requirement of the NBE 15%.This indicates the banks maintained high illiquid average asset more than the NBE requirement which affects the return on asset negatively because as more liquid assets are kept

idle with respect to net deposits, no profit will be generated from these assets unless they are invested in alternative investment avenues.

The other variable the natural logarithm of total asset, which is usually used measure for bank's size, appear to have a positive relationship with performance. The addition of the variable in the model is explained by: in the Ethiopian context, bank size usually has association with the age of banks. It is assumed that as banks' stay in the industry increases their exposure to credit risk management will increase due to the learning curve effect. However, the counter argument that can arise might be bank's staying long will have high level of credit risk exposure due to high stock of loans. Therefore, despite such controversies, the study aims to explore which effect is by large revealed in the Ethiopian banking system. The result of the study at 1% significance level implied that it has positive relationship with financial performance of commercial banks, hence supporting the argument that as bank's stay in the industry increases, their credit risk management system enables them to have limited level of credit risk exposures. This also indicates, there was positive practice in keeping of quality assets in their operation of business. Some literature, Smirlock (1985), Ayadi and Boujelbene (2012), Pasiouras, also support the result and Kosmidou (2007) found out that bank size appear to be an important variable to affect profitability in Ethiopian banking industry. On the counter, (Berger et al., 1987), Ben Naceur, and Goaied (2010), study shows that bank size doesn't have impact on credit risk and performance of banks.

The findings as well indicated that Capital Adequacy strongly and positively associate with financial performance at 5% significance level. The regression coefficient indicated that, an increase in the Capital Adequacy and Management Efficiency would lead to significant growth in the financial performance of Commercial Banks. Therefore, increasing quality of assets brings in improved performances in finance. Findings also prove with Hakim and Neamie,(2001), supports that, banks with good capital risk management practice (capital adequacy ratio indicator) have positive impact on financial performance of commercial banks and able to absorb possible loan losses and thus avoids banks from insolvency and failure .

Cost income ratio (CIR) also one part of operational risk indicator had positive and significant contribution at 5% significant level on financial performance of commercial banks in Ethiopia. This showed that minimizing commercial banks operating costs in Ethiopia would certainly

improve the banks performance in general and profitability in particular. According to Athanasoglou, Brissimis and Delis, (2005) investigation on Greek banks during the period 1985–2001 observed that Operating expenses appear to be an important determinant of profitability. They find that, there is direct positive relation between efficient expense management (i.e. management quality) and profitability. There is direct negative connection between operating expenses and profitability of banks; means that there is immediate negative relation between lack of efficiency in expenses management and profitability of banks.

The study result with related to explanatory variables of Loan Growth (LA) has positive relationship with financial performance of commercial banks at 1% significance level. The factor of growth of gross loans is related with banks profitability. The main source of income for banks is the loans. Therefore, the higher the growth of gross loans the more capable a bank is in transforming deposits into loans and increasing its profits. The findings suggest that loan is one of the main income sources for banks from the interest what they give the loan to their customers. Traditionally, banks are intermediaries between lenders and borrowers and the more the deposits that are transformed into loans the higher the level of profit will be, therefore, it is expected to have a positive relationship with profitability. This finding is also consistent with the study conducted by Vong and Hoi Si Chan (2008).

Turning to GDP, the coefficient implied positively related with financial performance (at a significance level of 5%); which implies when GDP goes up by 5%; financial performance (ROA) also goes up. Economic growth usually increases the income which ultimately enhances the loan payment capacity of the borrower which in turn contributes to lower bad loan and vice versa. This finding confirms to earlier findings by Sufien et al. (2008), Kosmidou a Pasiouras (2005) and Hassan and Bashir (2003), which agrees on the positive association between GDP growth should exert positive impact on bank profitability and this provides support in the study Ethiopian GDP also grow for the last ten years between 8 – 10% per annum , thus if there is economic growth there will be an accessibility of investment and borrowers in turn banks liquid money transfer into investment and profitability will grow.

The study result regarding explanatory variables of credit risk indicator of inflation (INF) has a negative relationship with financial performance at a significance level of 1%. Inflation measures

the overall percentage increase in Consumer Price Index (CPI) for all goods and services. Inflation affects the real value of costs and revenues. Negative association between inflation and profitability entails that banks in the study could not adjust their prices such as interest rate on loans and deposits, according to the inflation rate during the study time. This is because implied that, Richard (2014) the extent to which inflation affects bank profitability depends on whether future movements in inflation are fully anticipated, which, in turn, depends on the ability of firms to accurately forecast future movements in the relevant control variables.

CHAPTER FIVE

Conclusion and Recommendation of the study

5.1 Summary of the Study

This study aims to indicate the effect of credit risk on financial performance of commercial banks in Ethiopia. In doing so, the study collect data from secondary data sources and specified an empirical framework from 2008 to 2016. The study used as credit risk predators both internal (NPLR, LIQR, CAPR, CIR, LAR) and external variable GDPR and INFR. Based on this, the major findings of the study conclude as follows:

Regarding the financial performance (ROA) the study implied that, even though ROA increase throughout the studied years, there were variance in profitability between banks and the profit become decreasing through the years, this variation and declining through time leads to judge there was risk factor that hinder performance of commercial banks in Ethiopia.

Regarding credit risk predictors of NPLR the trend implied that, performance of the studied banks were improved from year to years as implied by the average non performing rate it was improved from 4.66% in 2008, to 2.29% and 2.28% in 2015 and 2016 respectively. This implied performance of commercial banks increase in collecting the loan from borrowers. However, trend of NPLs performance of each banks were not the same. Some of the banks perform well while the others not and the results implied still there is weak credit risk control and the situation negatively affect profitability of Commercial banks.

The average total assets of commercial banks have shown consistent growth throughout the studied period. Accordingly, the maximum total asset was registered in 2016 (4.24%) while the minimum were registered in 2008, which is 3.43%. Hence, the larger bank size induces economy of scale there by making larger banks more profitable and will reduce the cost of gathering and processing information. This is because when asset increase profitability also increases and capacity of the banks increase in terms of increasing number of employee& branches in turn it increases profitability and obtained a chance to improve credit risk practice.

The average liquidity position of the industry were grown from the year 2008 – 2010, however, starting 2011 – 2016 it implied constant declining; it may relate in addition to increasing loan facilities for several sectors and the application of 27% NBE bill Purchase regulation in 2011

may also have its own impact. Generally, average minimum liquidity position of the industry observed in 2016 (19.94%) while the maximum were 50.36% in 2010.The banks and this can affect performance of loan granting and the situation implied problem of liquidity risk management practice of the banks.

Regarding loan growth, trend show an increase in loans granted to borrowers throughout the studied years except in the year 2014 decline to 11.54% and which is the minimum average growth rate of loan, while the maximum loan growth rate were observed in 2015 (31.49%)and 2012 (31.35%).

The capital adequacy ratio reaches the minimum 10% in the year 2016. Starting from 2012, the average capital adequacy ratio shows consistent decrement. This situation implied, capital &debt management practice not directly coincide. Based on the general trend of the banks the study also implied each banks perform capital management practice.

The highest cost to income average ratio registered in LIB which is 66%, followed by, OIB (63%), the rest belongs between the average ratios of 56 % - 59% this implied there was no significance difference registered among the studied banks between the studied years. However, as the trend of the cost to income implied the average ratio of the studied banks cost to income increase from time to time which means the increase of cost is higher than the increase in income and this situation affect profitability of the studied banks.

5.2 Conclusion of the study

The explanatory variable credit risk indicator of Non – Performing Loan (NPL), bears a statistically at 1% significance level and it has a strong negative relationship with the profitability of private commercial banks. The negative coefficient of this indicated the existence of an inverse relationship between profitability and non-performing loans.

Performance of commercial banks in the same fashion, liquidity risk management practice had statistically negative impacts on financial performance of commercial banks in Ethiopia (ROA).This due to holding of excessive liquid assets above the standards.

The variable capital adequacy, as expected, is positive and statistically significant determinants of profitability for ROA model at 5% significance level. Therefore, it is concluded that with high capital ratio tend to earn more profit through translating the safety advantage into profit. The size of capital provides financial flexibility for bank and financial institution. It identifies which financing options are available for the entity. Hence, capital adequacy is one of the main determinants factor for the profitability of commercial banks in Ethiopia.

The study result with related to explanatory variables of Loan Growth (LA) has positive relationship with profitability of the studied banks at 1% significance level. The factor of growth of loans is related with banks profitability. The main source of income for banks is loans and advances. Therefore, the higher the growth of gross loans the more capable a bank is in transforming deposits into loans and increasing its profits. The finding suggests that loan is one of the main income sources for banks from the interest income from loans and advances collected from its customers.

The coefficient of Cost to Income ratio implied a negative relationship with ROA at 5% significance level. This implied that, cost invested for varied purpose affect profitability of the banks, as implied in the trend of cost to income, implied the highest Cost to income average ratio were registered in 2016 (67.5 %) while the lowest were 50.8% in 2012. This implies providing banking service in Ethiopia is becoming costly from time to time and the fact negatively influence profitability of commercial banks.

The study found that bank size positively influences profitability at 5% significance level. This indicates the smaller the bank is the lower the profitability and vice versa. Large banks have more advantages as compared to their smaller rivals and have a stronger bargaining capability and making it easier for them to get benefits from specialization and from economies of scale and scope.

GDP was positively and significantly related with ROA at 1% as expected. This implies that, profitability of commercial banks in Ethiopia was positively related to the GDP growth, mainly through the impact of the economic cycle on the demand for credit by households and firms. The study also justified a positive and significant impact of Ethiopia real GDP growth on Ethiopian commercial banks ROA as the current stimulated economy could create a new and potential demand for financial services in the country.

The study result regarding explanatory variables of inflation (INF) has a negative relationship with ROA at a significance level of 1%. Inflation measures the overall percentage increase in Consumer Price Index (CPI) for all goods and services. Inflation affects the real value of costs and revenues. Negative association inflation and profitability entails that banks in the study could not adjust their prices such as interest rate on loans and deposits, according to the inflation rate during the study time.

5.3 Recommendation

The study implied that that an increase in credit risk in the banks increase through the years as implied in the trend analysis. Based on the above conclusion, Ethiopian banks need to develop their credit risk management capacity- the high level of provision held for poorly performing assets mainly loans and advances is affecting the profitability of Banks. Hence, improving performance require to institute a strong credit risk management system that can efficiently identify bankable borrowers and a system that can monitor their performance after the loan is granted. In addition, the regulatory framework should support and make sure banks to have strong credit risk management practice. This can be done though strengthening the internal risk management system to assist the identification, measurement and monitoring of credit risk as well as directing the supervision focus towards credit risk.

The size of large banks needs to be reduced to optimal levels- Even if it's insignificant, bank size appears to positively correlate with profitability. Large banks capacity to provide efficient banking services should be the area that needs to be focused on.

Ethiopian Banks should consider both internal and macroeconomic variables in their strategy design- The study finds that the real GDP growth rate, which measures the economy growth of Ethiopia, has impacted significantly on the performance of commercial banks. The findings in this direction implies that the commercial banks respond to the dynamics of economic growth which can be taken as an indication of effective competition and efficiency in the Banking sector. In addition, the inflation rate which appears to be significant to affect performance need to be monitored. In such endeavor the effect of inflation on the debt repayment capacity of borrowers, the saving potential of depositors, and the resource mobilization capacity of Banks need to be focused on.

Reference

Agarwal and A. Kusmakar, Organizational Culture: A Comparative Study of Public and Private Banks. InternationalReferred Research Journal, vol. 2 *issue 21, (2009), pp 94-96.

Carey, Effective risk management in financial institutions: The Turnbull approach, Balance Sheet, Vol. 9(3), (2001) pp. 24-7.

Hodges, Emergency Risk Management Risk Management, Vol. 2, No. 4 (2000), pp. 7-18, Palgrave Macmillan Journals,.Accessed: 12/11/2013.

Kevin S. Buehler, Vijay D'Silva. & Gunnar, P. (2004)."The Business Case for Basel II."The McKinsey Quarterly 2004, Number 1.

Mendoza, E.G. &Terrones, M. (2008). An Anatomy of Credit Booms: Evidence from Macro Appregates and Micro Data.*IMF Working Paper No. 08/226*.

Merrouche, O. &Nier, E. (2010). What Caused the Global Financial Crisis- Evidence on the driversof Financial Imbalance 1999-2000.*IMF Working Paper*.

Musyoki, D. (2011). The Imapct of Credit Risk Management on the Financial Performance of Banksin Kenya.*Journal of Business and Public Management*, vol. 2, no. 2, pp. 72-80.

Mwaura, I.G. (2013). The Determinants of Credit Risk in Commercial Banks in Kenya.*University ofNairobi*.

Ngugi, R.W. (2001). An Empirical Analyis of Interest Rate Spread in Kenya.*African Economic Consortium, Research Paper 106*.

Petersen, M.A. and Raghuram, G.R. (1994). The Benefits of Lending Relationships: Evidence fromSmall Business Data. *Journal of Finance*, vol. 49, p. 3.

Ramlall, I. (2009). Bank Specific, Industry Specific and Macroeconomic Determinants of Profitability in Taiwanese Banking System: Under Panel Data Estimation. *International Reserach Journal ofFinance and Economics*.

Richard, E. (2011). Factors thatCause Non-Performing Loans in Commercial Banks in Tanzania andStrategies to Resolve Them. *Journal of Management Policy and Practise*, vol. 12, no. 7.

Saunders, A. & Cornett, M.M. (2008).Financial Institutions Management.*Financial Institutions Management*, 6th edition, McGraw-Hill.

Saunders, M., Lewis, P. &Thornhill, A. (2009).*Research Methods for Business Students*, 5th Edition.Harlow: FT Prentice Hall.

Stern, G. and Feldman, R. (2004) 'Too Big to Fail: The Hazards of Banks Bailouts ', *TheBrookingsInstitution, Washington DC*.

Tamirisa, N.T. &Igan, D.O. (2007).Credit Growth and Bank Soundness in Emerging Europe.*IMFWorking Paper 2007*, pp. 2-7.

Tamirisa, N.T. &Igan, D.O. (2007).Credit Growth and Bank Soundness in Emerging Europe.*IMFWorking Paper 2007*, pp. 2-7.

Tennant, D. &Folawewo, A. (2009).Macroeconomic and Market Determinants of Banking SectorInterest Rate Spreads.Empirical Evidence from Low and Middle Income Countries.*Applied FinancialEconomics*, vol. 19, no. 6, pp. 489-507.

Machiraju, H.R, (2003), ***Modern Commercial Banking,*** Vikas Publishing House PVt.Ltd, New Delhi.

Tseganesh T.(2012), Determinants of Banks Liquidity and their Impact on Financial Performance: empirical study on commercial Banks in Ethiopia.

TibebuAyalew (2011) Credit Risk Management and its impact of Commercial Banks in Ethiopia, Unpublished Master's Thesis Addis Ababa University

Richard, H.S. (2011).Credit Risk and the Performance of Nigerian Banks,AhmaduBello University, Zaria.

Perro, V.C &Ruoff, S.C. (2001). "Improving accountability in banking", *Commercial Lending Review*, Vol. 12 No.3, pp.44-50.

Agrawal (2001). "The credit policy of financial institutions and the factors underlying it", paper presented at the 8th Conference of Financial Institutions, AICC, 5-7 December, .

Rehm, B.A. (2002). "Chicago fed forum evolves into battle royal on Basel 2", *American Banker*, Vol. 167 No.91, pp.1-3.

Ross, S.A., Chambers, S., Johnston, R. (2003), *Corporate Finance*, 3rd ed., Irwin, Burr Ridge, IL.

Annex

Table Indicators of Credit risk Variables

Non-performing loan ratio of studied banks

Years	NPLs Banks								
	AB	**DB**	**BOA**	**WB**	**UB**	**NB**	**LIB**	**CBO**	**Average**
2008	0.046	0.023	0.089	0.059	0.027	0.063	0.012	0.054	0.049429
2009	0.055	0.023	0.098	0.061	0.031	0.073	0.010	0.019	0.048429
2010	0.047	0.022	0.074	0.040	0.036	0.063	0.016	0.042	0.043429
2011	0.036	0.020	0.033	0.045	0.028	0.054	0.014	0.042	0.034857
2012	0.027	0.021	0.026	0.024	0.023	0.027	0.015	0.0312	0.024457
2013	0.023	0.022	0.020	0.022	0.019	0.037	0.013	0.0530	0.027143
2014	0.023	0.019	0.018	0.017	0.014	0.038	0.013	0.0410	0.024143
2015	0.017	0.017	0.015	0.016	0.012	0.0397	0.017	0.0410	0.023243
2016	0.015	0.017	0.014	0.016	0.013	0.032	0.020	0.0550	0.024143
Avg	***0.032***	***0.020***	***0.043***	***0.033***	***0.023***	***0.047***	***0.014***	***0.042***	***0.033***

Size in percentage Ratio

Years	AB	DB	BOA	WB	UB	NB	LIB	CBO	Avg
2008	3.7	3.89	3.6831	3.5416	3.5119	3.5623	2.76	2.8312	**3.43**
2009	3.81	3.9882	3.8077	3.6154	3.6676	3.6818	2.9786	3.0099	**3.57**
2010	3.9	4.0918	3.9001	3.7091	3.7706	3.776	3.134	3.2475	**3.69**
2011	4	4.1661	4.005	3.7591	3.8879	3.852	3.257	3.398	**3.79**
2012	4.08	4.2435	4.0769	3.9064	3.9438	3.9178	3.391	3.5648	**3.89**
2013	4.17	4.2955	4.172	3.9215	3.999	3.9612	3.468	3.8155	**3.98**
2014	4.3	4.3417	4.3017	4.0168	4.0747	4.0313	3.5578	3.866	**4.06**
2015	4.38	4.3938	4.3778	4.0509	4.1572	4.1224	3.7678	4.059	**4.16**
2016	4.47	4.456	4.4714	4.1371	4.2373	4.1995	3.9095	4.026	**4.24**
Avg	**4.09**	**4.21**	**4.0884**	**3.8509**	**3.9167**	**3.9005**	**3.3582**	**3.5353**	**3.87**

INF in percentage ratio

Years	AB	DB	BOA	WB	UB	NB	LIB	CBO	Average
2008	25.30	25.30	25.3000	25.3000	25.3000	25.3000	25.3000	25.3000	25.30
2009	36.40	36.4000	36.4000	36.4000	36.4000	36.4000	36.4000	36.4000	36.40
2010	2.80	2.8000	2.8000	2.8000	2.8000	2.8000	2.8000	2.8000	2.80
2011	18.10	18.1000	18.1000	18.1000	18.1000	18.1000	18.1000	18.1000	18.10
2012	34.10	34.1000	34.1000	34.1000	34.1000	34.1000	34.1000	34.1000	34.10
2013	13.50	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.5000	13.50
2014	8.10	8.1000	8.1000	8.1000	8.1000	8.1000	8.1000	8.1000	8.10
2015	7.70	7.7000	7.7000	7.7000	7.7000	7.7000	7.7000	7.7000	7.70
2016	9.69	9.6888	9.6888	9.6888	9.6888	9.6888	9.6888	9.6888	9.69

Average	17.30	17.30	17.2988	17.2988	17.2988	17.2988	17.2988	17.2988	17.30

Loan Growth in Percentage Ratio

Years	AB	DB	BOA	WB	UB	NB	LIB	CBO	Avg
2008	8.99	9.88	8.9919	8.8993	31.8909	16.3354	11.22	15.65	14.16458
2009	-0.91	1.5862	-0.9086	-9.9881	15.7325	5.0371	27.22	12.92	1.758183
2010	15.95	13.4187	15.9486	17.1129	21.437	14.6758	11.1	41.34	18.87288
2011	26.73	23.1478	26.728	17.6314	25.3806	8.6557	1.04	1.01	16.29044
2012	38.08	30.6597	38.0825	22.5297	24.6698	34.0636	7.14	6.6	27.81219
2013	40.06	9.0906	40.0644	31.5359	15.3079	22.489	11.11	-0.12	22.63254
2014	19.02	6.4014	19.019	-1.8278	7.6179	19.0347	7.35	30.88	11.5442
2015	36.02	22.2423	36.0239	31.8716	35.3174	27.4848	10.76	3.4	27.48
2016	23.78	10.1338	23.7841	23.6219	24.406	8.9634	6.21	-0.11	16.36846
Average	23.08	14.062278	23.081533	15.70964	22.41778	17.4155	6.07	8.686667	17.43594

Liquid Asset/Net Deposit in percentage Ratio

Years	AB	DB	BOA	WB	UB	NB	LIB	CBO	Avg
2008	38.26	37.24	33.7860	43.7198	42.6378	36.5108	63.5300	48.5000	**43.02**
2009	49.62	48.3203	49.2327	56.9631	53.4347	48.5708	46.4800	35.4000	**48.50**
2010	50.88	42.5418	47.1691	52.8693	55.5396	51.3872	54.3100	48.2000	**50.36**
2011	40.02	42.4682	39.7901	51.3716	46.0708	51.2432	50.0000	49.0000	**46.25**
2012	26.48	32.9601	30.6221	33.4350	32.5789	36.0173	42.0000	34.0000	**33.51**
2013	24.04	30.6927	19.4603	26.7002	20.6669	24.6578	33.0000	52.0000	**28.90**
2014	25.27	29.7913	24.3536	15.9154	28.4964	17.8276	31.0000	25.0000	**24.71**
2015	16.26	22.3305	45.8994	17.8443	18.9641	13.5612	26.0000	21.0000	**22.73**
2016	19.56	24.0430	18.4438	19.1318	16.9006	18.8122	22.5900	20.0000	**19.94**
Average	**32.26**	**34.49**	**34.3064**	**35.3278**	**35.0322**	**33.1765**	**40.9900**	**37.0111**	**35.32**

ROA in Percentage Ratio

Years	AB	DB	BOA	WB	UB	NB	LIB	CBO	Avg
2008	3.30	3.45	0.3803	3.6513	3.3516	3.6132	-0.2000	2.1000	2.46
2009	2.54	2.8458	2.0615	3.9084	2.3688	3.6341	0.3400	0.3000	2.25
2010	3.45	2.9344	2.3916	4.1130	3.3078	3.7281	3.4500	1.8000	3.15
2011	3.99	3.3366	2.6690	4.6842	3.4038	3.7675	3.0000	2.0000	3.36
2012	3.58	4.0523	2.7880	4.0985	3.6077	3.7204	4.0000	3.0000	3.61
2013	3.79	3.2564	2.3552	3.6638	2.2781	3.4370	4.0000	4.0000	3.35
2014	3.54	3.4164	4.1804	2.8184	1.8145	2.9899	3.0000	5.0000	3.35
2015	2.94	3.1209	2.3392	2.8248	2.1444	2.8086	2.1000	3.0000	2.66
2016	2.78	2.7261	2.3647	2.5124	2.1436	2.6802	0.3000	0.0000	1.94
Average	3.32	3.24	2.3922	3.5861	2.7134	3.3754	2.2211	2.3556	2.90