Addis Ababa University

School of Graduate Studies

Department of Accounting and Finance

Risk Management and Its Impact on Financial Performance of Commercial Banks in Ethiopia

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A Thesis Submitted To: The Department of Accounting and Finance

College Of Business and Economics

Presented In Partial Fulfillment of the Requirements for the Degree of Master of Science in Accounting and Finance

Addis Ababa

June 2015

STATEMENT OF DECLARATION

I Endaweke Mitku declare that this research, titled "risk management and its Impact on the performance of commercial banks is done with my own effort. I have produced it independently except for the guidance and suggestions of my research advisor. I assure that this study has not been submitted for any scholarly award in this or any other university.

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Date; _____

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STATEMENT OF CERTIFICATION

This is to certify that the thesis prepared by **Endaweke Mitku** entitled: *risk management and its Impact on Financial Performance of 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

R*isk management has become an important topic for financial institutes, especially since the business sector of financial services is related to conditions of uncertainty. The turmoil of the financial industry emphasizes the importance of effective risk management procedures. Consequently, this thesis studies "Risk management and its impact on performance in Ethiopian Commercial Banks." The aim of this paper is therefore to identify the impact of risk management and its impact on bank performance on the Ethiopian bank performance . Balanced fixed effect panel regression was used for the data of eight commercial banks in the sample covered the period from 2002 to 2013. Four risk management variable that affects banks performance were selected and analyzed. The results of panel data regression analysis showed that credit risk management indicator (NPLR), Liquidity risk management indicator(LIQR) and operational risk indicator (CIR) had negative and statistically significant impact on banks performance .Capital adequacy ratio had positive statistically insignificant impact on banks performance. In addition to this the study is also analysis of primary data by descriptive statistical tools and on hypothesis testing using regression model. This leads the researcher to conclude in the last section that banks with good risk management policies have a lower risk and relatively higher return on asset. Finaly None performing loan ratio, liquidity ratio and cost to income ratio are significant key drivers of performance of commercials banks in Ethiopia. Indeed focusing and reengineering the institutions alongside these indicators could enhance the profitability as well as the performance of the commercialbanksinEthiopia.*

Key Words; Bank Performance, Risk Management, Liquidity Risk, Credit Risk , Operational Risk

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Acknowledgements

First of all, I would like to forward my sincere thanks and appreciation to my advisor Dr. Abebe Yitayew for his heartfelt exertion, fruitful support, encouragement and guidance in bringing the thesis work to reality. Then my heartfelt gratitude goes to Addis Ababa University for the financial support provided to me during my thesis work through the Department of Accounting and Finance. Moreover, I am thankful to my employer national bank of Ethiopia for the sponsorship and financial supports.

My special appreciation also goes to the management and staff members of the Ethiopian Commercial Banks and the National Bank of Ethiopia for their cooperation in providing me all the necessary data required for the study. I would have never been able to complete this thesis without their kind support. Finally, I would like to express my appreciation to my friend Ato Tariku Gerito, for his encouragement and consistent support. Besides, my thanks also go to those who commented on my study and provided their assistance in any form during my thesis work.

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List of Acronyms and abbreviations

AIB	Awash International Bank
BOA	Bank of Abyssinia
CAP	Capital
CBB	Construction and Business Bank
CBE	Commercial Bank of Ethiopia
CIR	Cost to Income Ratio
CLRM	Classical Linear Regression Model
Fsize	firm size
HP	Hypotheses
LIQR	Liquidity Ratio
NBE	National Bank of Ethiopia
NIB	Nib International Bank
OLS	Ordinary Least Square
ROA	Return on Asset
ROE	Return on Equity
RQ	Research Question
UB	United Bank
WB	Wegagen Bank

Chapter One

1. Introduction

1.1. Background of The Study

The financial sector plays an important role in the development of the economy and growth in any country. The banking sector is considered as an important source of financing for most businesses. The past decade has seen dramatic changes in managing risk in this industry. In recent years, supervisors and financial institutions have increased the focus on the importance of risk management (Christine & Beverly, 2001). In response, banks-both public and private-have almost in all parts of the world embarked upon the upgrading of risk management and control systems. In modern economies, the banking sector is one of the key sectors as; it has encourage a become the standards in order to measure the safety of the national economy of any country especially as this sector gets a massive volume of attention (Berger & De Young, 1997).

In today's dynamic global environment, the issue of managing risks has become the most fundamental concern. According to Abor (2005) risk management has received extensive attention from both the corporate world and the academia, because, as Shimpi (2001) puts it, it is the life blood of every organization and corporate officers deal with it decisively wherever it appears. Risk management is an orderly process for the identification and assessment of pure loss exposure faced by an entity and the

adoption of the most appropriate technique to cater for such exposure (Redja 2008).There is no doubt all banks currently have been in a highly volatile environment and are facing a risks such as credit risks, liquidity risks, foreign exchange risks, market risk and operating risk, among others these risks may in courage a bank to stay and reap success in the market. Afsin (2010) shows that most daily operations that are performed in banks are risky by nature. For this reason, banks should implemented efficient risk management and this is urgently required.

Carey (2001) shows that risk management is more important in the financial sector than in the other parts of the economy. The important element in risk management is to create balance between risk and returns and minimize profits by providing many financial services, especially by administering risks. Iqbal and Mirakhor, (2007), indicate that exist a strong risk management framework that can help either the public or private banks to minimize exposures to risks and to improve the competitive ability within the market.

Schmist and Roth (1990) also defined risk management as coherent activities which are undertaken to minimize the negative impact of uncertainty regarding possible losses. From the forgone, the process of risk management includes identification, measurement, administration of selected techniques and control. Various researchers such as Akotey and Abor, (forthcoming); Souls, (1984); Smith et al., (1990); Froot, (1993); Fatemi and Glaum, (2000), have emphasized the reasons why managers should take keen interest in risk management. This is because risk management is intended to help an organization meet its objectives such as the minimization of

foreign exchange losses, reduction in the volatilities of cash flow, protection of earnings against fluctuations, (Fatemi and Glaum, 2000) and to promote the survival of the firm through growth and profitability. 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. On the other hand it involves all means available for humans, or in particular, for a risk management entity.

Commercial banks are in the risky business. In the process of providing financial services, they assume various kinds of financial risks. Over the last decade our understanding of the place of commercial banks within the financial sector has improved substantially. These arguments will be neither reviewed nor enumerated here. Suffice it to say that market participants seek the services of these financial institutions because of their ability to provide market knowledge, transaction efficiency and funding capability. In performing these roles they generally act as a principal in the transaction. As such, they use their own balance sheet to facilitate the transaction and to absorb the risks associated with it.

1.2. What is Risk Management?

Risk management introduces the idea that the likelihood of an event happening can be reduced, or its consequences minimized. Effective risk management seeks to maximize the benefits of a risk (usually a reduction in time or cost) while minimizing the risk itself. Risk management is the process of identifying risks, assessing their

implications, deciding on a course of action, and evaluating the result. Risk Management is the identification, assessment, prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events. Risks can come from uncertainty in financial markets, project failures, legal liabilities, credit risk, accidents, natural causes and disasters as well as deliberate attacks from an adversary. Risk management ensures that an organization identifies and understands the risks to which it is exposed.

1.3. Risk Management in the Bank industry

The banking industry is a highly regulated industry with detailed and focused regulators. While banks struggle to keep up with the changes in the regulatory environment, regulators struggle to manage their workload and effectively regulate their banks. The impact of these changes is that banks are receiving less hands-on assessment by the regulators, less time spent with each institution, and the potential for more problems slipping through the cracks, potentially resulting in an overall increase in bank failures. Jaiye (2009) mention in his paper that the business of Banking is to manage risks associated with accepting deposits, granting loans and trading portfolios. The changing economic environment has a significant impact on banks and thrifts as they struggle to effectively manage their interest rate spread in the face of low rates on loans, competition for deposits and the general market changes, industry trends and economic fluctuations. Andrea (2010) in his study mentioned that Management failure can be easily recognized in losses resulting from over-aggressive lending practices and risk tolerances that were too high. However, as

one digs deeper, more subtle failures can be recognized in operational inefficiencies, weak internal control environments, and lack of management attention to detail. A rising interest rate environment may seem to help financial institutions, but the effect of the changes on consumers and businesses is not predictable and the challenge remains for banks to grow and effectively manage the spread to generate a return to their shareholders.

1.4. Statement of the Problem

Uncertainty and volatility are the main attributes of today's nations' economies. While, banks represent the major players in these economies, its risk management practices are crucial issues that need more investigation. Risk management is considered by researchers as a yard stick for determining failure or success of a financial institution. This research work seeks to bring to light the need for financial institutions to pay attention to the management of risk. It is obvious that the aim of every business is to maximize shareholders wealth and acquire substantial profit either for expansion or to undertake new product development. Across the banking industry, the most prominent area that erodes the mass of their profit is risk management (credit, liquidity and operational) (Adarkwa, 2011) . But, in case of Ethiopia, there is the general belief that the banking sector in Ethiopia is relatively stable with individual banks having good risk profiles and sound risk management frameworks because the banking industry in Ethiopia have not experienced major losses in the face of the global financial crises. However, because of most of banks liability is deposits from customer's and Banks use these deposits to generate credit for their borrowers, which in fact is a revenue generating activity for most banks, this

action of the bank by itself exposes the banks to high default risk which might led to financial distress including bankruptcy. In addition, Liquidity risk has become a serious concern for the banks because of high competition for consumer deposits and new wide variety of funding products in wholesale with technological advancements. As financial institution, banks should manage the demand and supply of liquidity in an appropriate manner in order to safely run their business, maintain good relations with the stakeholders and avoid liquidity problem (Small 2010). Likewise, banks should also manage the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events (operational risk). Therefore, based on this argument .It can be said that there is a vacuum between the general belief on the risk position of the Ethiopian banking industry and the evidence to back this belief. So, it is necessary to assess the risk profiles of banks in Ethiopia as well as evaluates the adequacy of the risk management frameworks employed by the banks to handle the various risks they are exposed. Accordingly, the main problem of this research can be summarized in the following question:

RQ1. What are the major types of risks faced by an Ethiopian commercial banks ?

RQ2. What is the relationship between risk management and bank performance in Ethiopian commercial banks?

1.5. Objective of the Study

The main objective of the study is to examine the impact of risk management on the bank's performance in the Ethiopian commercial banking sector.

The study specifically seeks to achieve the following objectives:

- To identify the major types of risk faced in Ethiopian commercial banks.
- To determine the relationship between theoretical and empirical risk management practice in the banking sector in Ethiopia.
- To determine the impact of risk management on banks performance.

1.6. Research Hypotheses

In line with the broad purpose statement the following hypotheses were formulated for investigation. Hypotheses of the study stands on the theory are related to a bank's risk management practice and its impact on bank's performance. The results from the literature review (to be established in the next chapter) were used to establish expectations for the relationship of the different determinants. Hence, based on the objective, the present study seeks to test the following three hypotheses

- HP1: There is a significant relationship between the amount of capital of a bank and the bank's performance.
- HP2: There is a negative relationship between the credit risk of a bank and the bank's performance.
- HP3: There is a negative relationship between the liquidity risk of a bank and the bank's performance .
- HP4: There is a negative relationship between the operational risk of a bank and the bank's performance

1.7.Significance of the Study

- ❖ It shows the impact of risk management on bank performance.
- ❖ It gives a motivation to other researchers to conduct a research about the risk management practices in the commercial banks.
- ❖ It will be useful for financial institution by providing information in risk management.

1.8. Limitations the Study

The study has encountered some sort of limitations. For example, the study cannot cover all risks that are associated to bank performance like market risks and legal risks. In addition to this, to measure operational risk three proxies are available but the researcher have taken one proxy to measure operational risk as a result this may be considered as a limitation for this particular study.

1.9.Organization of the Paper

This section gives a structure of every chapter with in this paper. The paper consists six chapters. Chapter one introduction, it presents background of the study, statement of the problem, objective of the study, significance and limitation of the study. Chapter two presents literature review. The methodology employed, target population and sampling, data used in the research, and research hypothesis stated in chapter three. Chapter four presents the result collected from the regression output and interview. Chapter five presents the data analysis and interpretation of the result. Finally the paper presents the conclusions of the results and the recommendations suggested by the researcher in chapter five

Chapter Two

Literature Review

2.1. Theoretical literature review

Definition of risk: In the field of safety and health, risk is linked with possible hazards and dangers; while in finance it is a technical matter of unpredictability in expected outcomes, both negative and positive. In other businesses and political settings, risk is closely associated with the spirit of enterprise and value creation (Power, 2007, p.3). Ewald, (1991) states: "Nothing is a risk in itself; there is no risk in reality. But on the other hand anything can be a risk; it all depends on how one analyses the danger, consider the event" (p.199). Willet (as cited in Ale, 2009, p. 4) defined risk as "the objectified uncertainty regarding the occurrence of an undesired event".

Risk is inherent in any walk of life and can be associated with every human decision-making action of which the consequences are uncertain. Over the last decades, risk analysis and corporate risk management activities have become very important elements for both financial as well as non-financial corporations. Firms are exposed to different sources of risk, which can be divided into operational risks and financial risks.

Operational risks or alternatively business risks -relate to the uncertainty regarding the firm's investments and investment opportunities, and are influenced by the

product markets in which a firm operates. In addition to operational risks, unexpected changes in e.g. interest rates, exchange rates, and oil prices create financial risks for individual companies. As opposed to operational risks, which influence a specific firm or industry, financial risks are market-wide risks that can affect the financial performance of companies in the whole economy. Both kinds of risk exposure can have substantial impact on the value of a firm.

2.2. Risk Management In Banking

Risk management evolved from a strictly banking activity, related to the quality of loans, to a very complex set of procedures and instruments in the modern financial environment. It underscores the fact that the survival of an organization depends heavily on its capabilities to anticipate and prepare for the change rather than just waiting for the change and react to it. Risk is associated with uncertainty and reflected by way of charge on the fundamental /basic i.e in the case of business it is the capital, which is the cushion that protects the liability holders of an institution. These risks are interdependent and events affecting one area can have ramifications and penetrations for a range of other categories of risk. There is therefore, the need to understand the risks run by banks and to ensure that the risks are properly confronted, effectively controlled and rightly managed. Each transaction that a bank undertakes however changes the risk profile of the bank thereby making it a near impossibility to provide real time risk update and profile of the institution.

Risk Management (RM) is described as the performance of activities designed to minimize the negative impact (cost) of uncertainty (risk) regarding possible losses

(Schmidt and Roth,1990). Redja (1998) also defines risk management as a systematic process for the identification, evaluation of pure loss exposure faced by an organization or an individual, and for the selection and implementation of the most appropriate techniques for treating such exposures. The process involves: identification, measurement, and management of the risks. Bessis (2010) also adds that in addition to it being a process, risk management also involves a set of tools and models for measuring and controlling risk. The objectives of risk management include the minimization of foreign exchange losses, reduction of the volatility of cash flows, protection of earnings fluctuations, and increment in profitability and assurance of survival of the firm (Fatemi and Glaum, 2000). Another group of researchers stated that RM is about ensuring that risks are taken consciously with full knowledge, clear purpose and understanding so that it can be measured and mitigated to prevent a firm from suffering unacceptable loss causing it to fail or materially damage its competitive position. To ensure that banks operate in a sound risk management environment with reduced impact of uncertainty and potential losses, managers need reliable risk measures to direct capital to activities with the best risk/reward ratios. Management needs estimates of the size of potential losses to stay within limits set through careful internal considerations and by regulators. They also need mechanisms to monitor positions and create incentives for prudent risk taking by divisions and individuals.

According to Pyle (1997), risk management is the process by which managers satisfy these needs by identifying key risks, obtaining consistent, understandable, operational risk measures, choosing which risks to reduce, which to increase and by

what means, and establishing procedures to monitor resulting risk positions. Bessis (2010) indicates that the goal of risk management is to measure risks in order to monitor and control them, and also enable it to serve other important functions in a bank in addition to its direct financial function. These include assisting in the implementation of the bank‘s ultimate strategy by providing it with a better view of the future and therefore defining appropriate business policy and assisting in developing competitive advantages through the calculation of appropriate pricing and the formulation of other differentiation strategies based on customers‘ risk profiles. According to Santomero (1995), the management of the banking firm relies on a sequence of steps to implement a risk management system. These normally contain four parts which are standards and reports, position limits or rules, investment guidelines or strategies and incentive contracts and compensation. These tools are generally established to measure exposure, define procedures to manage these exposures, limit individual positions to acceptable levels, and encourage decision makers to manage risk in a manner that is consistent with the firm's goals and objectives.

2.3. Risk Management Practices and Processes in the Banking Industry

The banking industry is no doubt a regulated sector as a result 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. As earlier noted, it is a process which involves:

(i) Risk identification: In order to properly manage risks, an institution must recognize and understand risks that may arise from both existing and new business

initiatives; for example, risks inherent in lending activity include credit, liquidity, interest rate and operational risks. Risk identification should be a continuing process, and should be understood at both the transaction and portfolio levels.

(ii) Risk Measurement: Once risks have been identified, they should be measured in order to determine their impact on the banking institution's profitability and capital. This can be done using various techniques ranging from simple to sophisticated models. Accurate and timely measurement of risk is essential to effective risk management systems. An institution that does not have a risk measurement system has limited ability to control or monitor risk levels. Banking institutions should periodically test their risk measurement tools to make sure they are accurate. Good risk measurement systems assess the risks of both individual transactions and portfolios.

(iii) Risk Monitoring: Institutions should put in place an effective management information system (MIS) to monitor risk levels and facilitate timely review of risk positions and exceptions. Monitoring reports should be frequent, timely, accurate, and informative and should be distributed to appropriate individuals to ensure action, when needed.

(iv) Risk Control: After measuring risk, an institution should establish and communicate risk limits through policies, standards, and procedures that define responsibility and authority. These limits should serve as a means to control exposure to various risks associated with the banking institution's activities. Institutions may also apply various mitigating tools in minimizing exposure to various risks.

Institutions should have a process to authorize and document exceptions or changes to risk limits when warranted.

2.4. Rationales For Risk Management In Banking

The main aim of management of banks is to maximize expected profits taking into account its variability/volatility (risk). This calls for an active management of the volatility (risk) in order to get the desired results. Risk management is therefore an attempt to reduce the volatility of profit which has the potential of lowering the value of shareholders 'wealth. Various authors including (1984), Smith et al (1990) and Froot et al (1993) have offered reasons why managers should concern themselves with the active management of risks in their organizations.

According to Oldfield and Santomero (1995), recent review of the literature presents four main rationales for risk management. These include managers' self interest of protecting their positions and wealth in the firm. It is argued that due to their limited ability to diversify their investments in their own firms, they are risk averse and prefer stability of the firm's earnings to volatility. This is because, all things being equal, such stability improves their own utility. Beyond managerial motives, the desire to ensure the shouldering of lower tax burden is another rationale for managers to seek for reduced volatility of profits through risk management. With progressive tax schedules, the expected tax burden are reduced when income smoothens therefore activities which reduce the volatility of reported taxable income are pursued as they help enhance shareholders 'value. Perhaps the most compelling rationale for managers to engage in risk management with the aim of reducing the

variability of profits is the cost of possible financial distress. Significant loss of earnings can lead to stakeholders losing confidence in the firm‘s operations, loss of strategic position in the industry, withdrawal of license or charter and even bankruptcy. The costs associated with these will cause managers to avoid them by embarking on activities that will help avoid low realizations. Finally, risk management is pursued because firms want to avoid low profits which force them to seek external investment opportunities. When this happens, it results in suboptimal investments and hence lower shareholders' value since the cost of such external finance is higher than the internal funds due to capital market imperfections. This undesirable outcome encourages managers to actively embark upon volatility reducing strategies, which have the effect of reducing the variability of earnings. It is believed that any of the above mentioned rationales is sufficient to motivate management to concern itself with risk and embark upon a careful assessment of both the level of risk associated with any financial product and potential risk mitigation techniques.

2.5. Major types of risks faced by banks

Banking is the intermediation between financial savers on one hand and the funds seeking business entrepreneurs on the other hand. As such, in the process of providing financial services, banks assume various kinds of risk both financial and non-financial. Moreover this risk inherent in the provision of their services differs from one product or service to the other. These risks have been grouped by various writers in different ways to develop the frameworks for their analyses but the

common ones which are considered in this study are credit risk, liquidity risk,and operational risk.

2.5.1. Credit Risk

The analysis of the financial soundness of borrowers has been at the core of banking activity since its inception. This analysis refers to what nowadays is known as credit risk, that is, the risk that counterparty fails to perform an obligation owed to its creditor. Another definition considers credit risk as the cost of replacing cash flow when the counterpart defaults. In an article by Elmer Kunke Kupper on Risk Management and Banking he defines credit risk as the potential financial loss resulting from the failure of customers to honor fully the terms of a loan or contract. This definition can be expanded to include the risk of loss in portfolio value as a result of migration from a higher risk grade to a lower one .Greuning and Bratanovic (2009) define credit 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 liquidity.

The objective of credit risk management is to maximize a bank‘s risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. More than 70 percent of a bank‘s balance sheet generally relates to credit risk and hence considered as the principal cause of potential losses and bank failures. Time and again, lack of of credit risk has been the primary culprit for bank failures. The

dilemma is that banks have a comparative advantage in making loans to entities with whom they have an ongoing relationship, thereby creating excessive concentrations in geographic and industrial sectors. Credit risk includes both the risk that a obligor or counterparty fails to comply with their obligation to service debt (default risk) and the risk of a decline in the credit standing of the obligor or counterparty. While default triggers a total or partial loss of any amount lent to the obligor or counterparty, a deterioration of the credit standing leads to the increase of the possibility of default. In the market universe, a deterioration of credit standing of a borrower does materialize into a loss because it triggers an upward move of the required market yield to compensate the higher risk and triggers a value decline (Bessis, 2010). Normally the financial condition of the borrower as well as the current value of any underlying collateral are of considerable interest to banks when evaluating the credit risks of obligors or counterparties (Santomero, 1997).

According to Greuning and Bratanovic (2009), formal policies laid down by the board of directors of a bank and implemented by management plays a vital part in credit risk management. As a matter of fact, a bank uses a credit or lending policy to outline the scope and allocation of a bank‘s credit facilities and the manner in which a credit portfolio is managed that is, how investment and financing assets are originated, appraised, supervised, and collected. There are also minimum standards set by regulators for managing credit risk. These cover the identification of existing and potential risks, the definition of policies that express the bank‘s risk management philosophy, and the setting of parameters within which credit risk will be controlled. There are typically three kinds of policies related to credit risk management. The first

aims to limit or reduce credit risk, which include policies on concentration and large exposures, diversification, lending to connected parties, and overexposure. The second set aims at classifying assets by mandating periodic evaluation of the collectability of the portfolio of credit instruments. The third set of policies aims to make provision for loss or make allowances at a level adequate to absorb anticipated loss.

2.5.2. Liquidity Risk

According to Greuning and Bratanovic (2009), a bank faces liquidity risk when it does not have the ability to efficiently accommodate the redemption of deposits and other liabilities and to cover funding increases in the loan and investment portfolio. These authors go further to propose that a bank has adequate liquidity potential when it can obtain needed funds (by increasing liabilities, securitizing, or selling assets) promptly and at a reasonable cost. The Basel Committee on Bank Supervision, in its June 2008 consultative paper, defined liquidity as the ability of a bank to fund increases in assets and meet obligations as they become due, without incurring unacceptable losses. Bessis (2010) however considers liquidity risk from three distinct situations.

The first angle is where the bank has difficulties in raising funds at a reasonable cost due to relating to transaction volumes, level of interest rates and their fluctuations and the difficulties in funding counterparty. The second angle looks at liquidity as a safety cushion which helps togain time under difficult situations. In this case, liquidity risk is defined as a situation where short-term asset values are not sufficient to match

short term liabilities or unexpected outflows. The final angle from where liquidity risk is considered as the extreme situation. Such a situation canarise from instances of large losses which creates liquidity issues and doubts on the future of the bank. Such doubts can result in massive withdrawal of funds or closing of credit lines by other institutions which try to protect themselves against a possible default. Both can generate a brutal liquidity crisis which possibly ends in bankruptcy. There are many factors that affect banks own liquidity and in turn affect the amount of liquidity they can create. These factors have a varying degree of influence on the balance between liquidity risk and liquidity creation, or a bank's liquidity management. A bank's assets and liabilities play a central role in their balancing of liquidity risk and creation. A bank's liabilities include all the banks sources of funds. Banks have three main sources of funds: deposit accounts, borrowed funds, and long term funds. The amounts and sources of funds clearly affect how much liquidity risk a bank has and how much liquidity it can create. The easier a bank can access funds the less risk it has and the higher amount of funds it holds the more liquidity it can create. Liquidity is necessary for banks to compensate for expected and unexpected balance sheet fluctuations and to provide funds for growth (Greuning and Bratanovic, 2009). Santomero (1995) however, posits that while some would include the need to plan for growth and unexpected expansion of credit, the risk here should be seen more correctly as the potential for funding crisis. Such a situation would inevitably be associated with an unexpected event, such as a large charge off, loss of confidence, or a crisis of national proportion such as a currency crisis. Effective liquidity risk management therefore helps ensure a bank's ability to meet cash flow obligations,

which are uncertain as they are affected by external events and other agents' behaviour.

The Basel Committee on Bank Supervision consultative paper (June 2008) asserts that the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk, both of an institution-specific nature ssand that which affects markets as a whole. A liquidity shortfall at a single bank can have system-wide repercussions and hence liquidity risk management is of paramount importance to both the regulators and the industry players.

The price of liquidity is conversely a function of market conditions and the market‘s perception of the inherent riskness of the borrowing institution (Greuning and Bratanovic, 2009). So if theis a national crisis such as acute currency shortage or decline, or perception of the bank‘s credit

standings deteriorates, or fundraising by the bank becomes suddenly important and recurrent or has unexpected fluctuation, funding becomes more costly. Financial market developments in the past decade have increased the complexity of liquidity risk and its management.

2.5.3. Operational Risk

The Basel Accord (2007) defines operational risk as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events. Malfunctions of the information systems, reporting systems, internal

monitoring rules and procedures designed to take timely corrective actions, or the compliance with the internal risk policy rules result in operational risks (Bessis, 2010). Operational risks, therefore, appear at different levels, such as human errors, processes, and technical and information technology. Because operational risk is an event risk, in the absence of an efficient tracking and reporting of risks, some important risks will be ignored, there will be no trigger for corrective action and this can result in disastrous consequences. Developments in modern banking environment, such as increased reliance on sophisticated technology, expanding retail operations, growing e-commerce, outsourcing of functions and activities, and greater use of structured finance (derivative) techniques that claim to reduce credit and market risk have contributed to higher levels of operational risk in banks (Greuning and Bratanovic, 2009).

The recognition of the above-mentioned contributory factor in operational risk has led to an increased attention on the development of sound operational risk management systems by banks the initiative being taken by the Basel Committee on Banking Supervision. The Committee addressed operational risk in its Core Principles for Effective Banking Supervision (1997) by requiring supervisors to ensure that banks have risk management policies and processes to identify, assess, monitor, and control or mitigate operational risk. In its 2003 document, Sound Practices for the Management and Supervision of Operational Risk, the Committee further provided guidance to banks for managing operational risk, in anticipation of the implementation of the Basel II Accord, which requires a capital allocation for operational risks. Despite all these efforts by the regulators at addressing operational

risk, practical challenges exist when it comes to its management. In the first place, it is difficult to establish universally applicable causes or risk factors which can be used to develop standard tools and systems of its management since the events are largely internal to individual banks.

Moreover, the magnitude of potential losses from specific risk factors is often not easy to project. Lastly, it is difficult designing an effective mechanism for systematic reporting of trends in a bank‘s operational risks because very large operational losses are rare or isolated. Because of the data and methodological challenges raised by operational risk, the first stage of developing an effective framework to manage it is to set up a common classification of loss events that should serve as a receptacle for data gathering process on event frequency and costs. The data gathered is then analysed (risk mapping) with various statistical techniques such as graphical representation of the probability and severity of risks. This helps to find the links between various operational risks. The process then ends with some estimates of worst-case losses due to events risks. Modelling of loss distributions due to operational risks will enable the right capital charges to be made for operational risk as required by current regulations (Bessis, 2010). In order for the objectives of setting up an operational risk management framework to be accomplished, it may require a change in the behaviour and culture of the firm. Management must also not only ensure compliance with the operational risk policies established by the board, but also report regularly to senior executives. A certain amount of self-assessment of the controls in place to manage and mitigate operational risk will be helpful.

2.6. Empirical Literature Review

Studies 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. Adeusi, Akeke, (2013) in their study which focuses on the association of risk management practices and bank financial performance in Nigeria. Using a panel of secondary data for 10 banks and for four years reported an inverse relationship between financial performance of banks and doubt loans, capital asset ratio was found to be positive and significant. Similarly it suggests that the higher the managed funds by banks, the higher the performance. The study concludes a significant relationship between banks performance and risk management. Hence, the need for banks to practice prudent risks management in order to protect the interests of investors.

Nocco and Stulz (2006) stated that the importance of good risks management practices to maximize firms' value. In particular, 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. It is, therefore suggested that companies to manage risks strategically by viewing all the risks together within a coordinated manner. In relation to this, Stulz (1996) associates good risk management practices with the elimination of costly lower-tail outcomes by proposing "full-cover" risk management as compared to "selective" risk management. The study suggests that prudent risks management is important in reducing the bankruptcy costs.

Koehn and Santomero (1980), Kim and Santomero (1988) and Athanasoglou et al. (2005), suggest that bank risk taking has pervasive effects on bank profits and safety. Bobakovia (2003) asserts that the profitability of a bank depends on its ability to foresee, avoid and monitor risks, possible to cover losses brought about by risk arisen. This has the net effect of increasing the ratio of substandard credits in the bank's credit portfolio and decreasing the bank's profitability (Mamman and Oluyemi, 1994). The banks supervisors are well aware of this problem, it is however very difficult to persuade bank mangers to follow more prudent credit policies during an economic upturn, especially in a highly competitive environment. Likewise, Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk.

Credit risk according to Basel Committee of Banking Supervision BCBS (2001) and Gostineau (1992) is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Credit events usually include events such as bankruptcy, failure to pay a due obligation, repudiation/moratorium or credit rating change and restructure. Basel Committee on Banking Supervision- BCBS (1999) defined credit risk as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. Heffernan (1996) observe that credit risk as the risk that an

asset or a loan becomes irrecoverable in the case of outright default, or the risk of delay in the servicing of the loan. In either case, the present value of the asset declines, thereby undermining the solvency of a bank. Credit risk is critical since the default of a small number of important customers can generate large losses, which can lead to insolvency (Bessis, 2002).

Owojori et al (2011) highlighted that available statistics from the liquidated banks clearly showed that inability to collect loans and advances extended to customers and directors or companies related to directors/managers was a major contributor to the distress of the liquidated banks. Kargi (2011) evaluated the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of sampled banks from 2004-2008 and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of Nigerian banks. It concluded that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits thereby exposing them to great risk of illiquidity and distress.

Naceur and Kandil (2006) examined the impact of capital requirement on bank's performance in Egypt using generalized method of moment (GMM). Their findings reemphasized the importance of capital regulation to bank's performance. The result of the study also suggests that the state of the economy is a major determinant of bank's performance. Again, Naceur and Kandil (2008) appraised the impact of capital

requirement on banks cost of intermediation and performance using Generalized Method of Moment (GMM) on time series data between 1989 through 2004. They used ratio of capital to total asset and ratio of net loans to deposit as independent variables while return on asset (ROA) and return on equity (ROE) was used as dependent variables. The result of the study is in agreement with their earlier result that capital adequacy is a predictor of banks performance. Ravindra, Vyasi and Manmeet (2008) examined the impact of capital adequacy requirement on performance of selected commercial banks in India using panel data models. The results of the study indicate that capital adequacy ratio increases the profitability of commercial banks in India.

Gurdmundssoa, Ngok-Kisingula and Odongo (2013) examined the role of capital requirement on bank competition and stability in Kenya using panel data estimation on time series data between 2000 and 2011. The result of the study indicates that regulatory efficiency improves competition in the banking sector. Oladejo and Oladipupo (2011), examined whether there is a link between capital regulation and performance of Nigeria banks. They found that consolidation has increased the potential of banks to compete effectively at national, regional and global level.

Takang Feliz Achou and Ntui Claudine Tenguh in 2008 studied on Bank performance and credit Risk Management and their study result shows there is a significant relationshipbetwee bank performance (in terms of profitability) and credit risk management (in terms of loan performance). Better Credit Risk Management results in better bank performance, (Achou and Tenguh, 2008

Felix and Claudine (2008) 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.The findings of Felix and Claudine (2008) also shows that return on equity ROE and return on asset ROA all indicating profitability were negatively related to the ratio of non-performing loan to total loan NPL/TL of financial institutions therefore decreases bank performance.

Epure and Lafuente (2012) examined bank performance in the presence of risk for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets

According to Jhingan (2010), a bank needs a high degree of liquidity in its assets portfolio the liquidity of assets refers to the ease and certainty with which it can be turned into cash. The bank must hold a sufficient large proportion of its assets in the form of cash and liquid assets for the purpose of profitability. If the bank keeps liquidity the uppermost, its profit will be low. In the other hand, if it ignores liquidity and aims at earning more, it will be disastrous for it. This in managing is investment portfolio a bank must strike a balance between the objectives of liquidity and profitability. This balance must be achieved with a relatively high degree of safety.

Shen et al. (2009) empirically investigate the causes of liquidity risk and the relationship between bank liquidity risk and performance. The study aimed to employ alternative liquidity risk measures besides liquidity ratios (i.e. financial gap measures provided by (Saunders and Cornett 2006)). The study further aimed to investigate the determinants of bank performance in terms of the perspective of the bank liquidity risk (bank liquidity risk and performance model). The study used an unbalanced panel dataset of 12 advanced economies commercial banks over the period 1994-2006. The panel data applied to instrumental variables regression, using two-stage least squares (2SLS) estimators to estimate bank liquidity risk and performance model. The researchers classified countries as bank-based or market-based system, and investigate the difference of causes of liquidity risk in different financial systems. The empirical results indicated that the bank-specific variable had the same effect on bank liquidity risk in two financial systems and liquidity risk was the endogenous determinant of bank performance. According to Ford, (2004), the cost-to-income ratio of a bank may be a potential leading indicator of unexpected operational risk losses. This ratio is commonly referred to by analysts as an efficiency index, given its measurement of the cost incurred in generating each dollar of income. The numerator comprises staff, occupancy, information technology, and other operating expenses. The denominator comprises net interest income, fee income, trading income (and other Non-interest income). While a reduction in this ratio is generally considered favorable a sign of Lower cost per dollar of income and hence greater efficiency– there must be some critical threshold at which the relationship between costs and income as embodied in the ratio cannot be sustained without the bank incurring an escalation of operational risk. Also Bagheri (2007) estimated and analyzed the effective

factors and determinants of profitability of Refah Bank using of a linear regression pattern for time period of 1983-2001. Findings of this research showed that the efficient management of costs is one of the significant explanatory variables for profitability of bank. In addition, the management of liabilities has also an effect on the profitability

2.7. **Related empirical studies in Ethiopia**

Few studies were conducted by different researchers in Ethiopia on the impact of credit risk and liquidity risk. The following section will presents the related study of Worku (2006), Girma Mekasha (2011) and Tseganesh Tesfaye(2012).Worku (2006), conducted the study on the impact of liquidity risk on the performance of commercial bank's of Ethiopia. He argued that liquidity has an impact on the performance of commercial banks in Ethiopia and there was an inverse relation between deposit/net loan and ROE. And the coefficient of liquid asset to total asset was positive and directly related with ROE. In addition, the study also found that the capital adequacy of all banks in Ethiopia were above threshold, means there was sufficient capital that can cover the risk-weighted assets. Depositors who deposit their money in all banks were safe because all the studied banks fulfilled NBE requirement (Worku, 2006). Likewise, Tseganesh Tesfaye(2012), conducted the study on the determinants of banks liquidity and their impact on financial performance with the aim of identify determinants of commercial banks liquidity in Ethiopia and then to see the impact of banks liquidity up on financial performance through the significant variables explaining liquidity. The study used balanced fixed effect panel regression model with eight commercial banks in the sample covered the period from 2000 to 2011. The result of the study revealed that, among the statistically significant factors affecting banks liquidity capital adequacy and bank size had positive impact on

financial performance whereas, non-performing loans and short term interest rate had negative impact on financial performance. Interest rate margin and inflation had negative but statistically insignificant impact on financial performance. Finally the study concludes that, the impact of bank liquidity on financial performance was non-linear/positive and negative.

In relation to credit risk and banks performance the study conducted by Girma Mekasha (2011), on "Credit Risk management and its impact on performance in Ethiopian Commercial Banks." With the aim of better understanding of credit risk management and its impact on performance (return on asset). The result of the study revealed that the most common way of communicating effectively to reduce risk is developing understanding between management team and employee. The study also reveals banks with higher profit potentials can better absorb credit losses whenever they crop up and therefore record better performances. Furthermore, the study shows that there is a direct but inverse relationship between return on asset (ROA) and the ratio of non-performing loans to total loan (NPL\TL) and loan provision to total loan. Finally the study concludes that, banks with good credit risk management policies have a lower loan default rate and relatively higher return on asset.

2.8. **Summary and Knowledge gap**

Most Studies on the relationship between risk management practice 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. There are limited studies providing empirical evidence to the relationship between risk management practices and bank financial performance. Even if the issue of risk management is equally important for all country, it is less focused and only few studies are conducted to see the impact of particular risk i.e. credit and liquidity risk on bank's performance. However, as per the researcher's knowledge no study is conducted to see the impact of risk management practice on the banks financial performance in Ethiopia. Hence, this study aims to fill the gap in the literature by focusing on the risk management practices of the commercial banks of Ethiopia and linking the practices with the financial performance of the commercial banks.

Chapter Three

3. Methodology

3.1. Research design

This research paper was employed quantitative research design. The functional or positivist paradigm that guides the quantitative mode of inquiry is based on the assumption that social reality has an objective ontological structure and that individuals are responding agents to this objective environment (Morgan & Smircich, 1980). Quantitative research involves counting and measuring of events and performing the statistical analysis of a body of numerical data. The assumption behind the positivist paradigm is that there is an objective truth existing in the world that can be measured and explained scientifically.

The main concerns of the quantitative paradigm are that measurement is reliable, valid, and generalize in its clear prediction of cause and effect (Cassell & Symon, 1994). Being deductive and particularistic, quantitative researcher is based up on formulating the research hypothesis and verifying them empirically on a specific set of data. Scientific hypothesis are value free; biases, and subjectivity preferences have no places in the quantitative approach. Researcher can view the communication process as concrete and tangible and can analyze it without contacting actual people involved in communication (Ting-Toomey, 1984).

3.1. Survey Design

According to Leedy & Ormord (2005 cited in Semu 2010, p.45) survey research is a common method used in business among quantitative strategies of inquiry other than experimental design. As a result, in order to generalize the findings to the whole banks operated in the country, in this study the researcher adopts survey research method. Creswell (2003, p. 153) stated that the purpose of survey is to generalize description of trends, attitudes, or opinions from a sample to a population so that inferences can be made about some characteristic, attitude, or behavior of this population. Moreover, as noted in Fowler (1986) it is also reasonable to use survey designs because of its benefits such as the economy of the design and the rapid turnaround in data collection and identifying attributes of a large population from a small group of individuals. Therefore, it is logical to apply survey method for this study. The survey was carried out by means of structured document review and structured questionnaires. The survey will be panel: which comprises both time serious and cross-sectional elements.

3.2. Source of Data and Data Collection Instrument

The main sources of data for the study are found from the audited balance sheet of eight purposively selected banks. From those banks, 12 consecutive years off balance sheet report have been used for the study. In our country it‘s a must for banks to submit its annual report to the NBE not only that they are supposed to submit their off balance sheet too .So the researcher‘s easily get annual reports of all selected banks from the NBE. Data from off balance sheet report is highly essential for this research to run the model.

3.3. Sample Population and Participants

The researcher selects eight major commercial banks in Ethiopia and collect the necessary data from each bank and from national bank of Ethiopia too, for sake of comparison. Those data are collected from 2002 to 2013, and used for regression purpose. The reason why the researcher purposively selects eight banks is, to have more observation. For that banks with 12 year life span and more are selected. Therefore, there are 96 observations in the regression analysis.

3.4. Analytical Tools

To comply with the objective, the paper was primarily based on panel data, which was collected through structured document review. As noted in Baltagi (2005) the advantage of using panel data is that it controls for individual heterogeneity, less collinearity among variables and tracks trends in the data something which simple time-series and cross-sectional data cannot provide. Thus, the collected panel data was analyzed using descriptive statistics, and multiple linear regression analysis. Mean values and standard deviations were used to analyze the general trends of the data from 2002 to 2013 based on the sector sample of 8 banks and a correlation matrix was also used to examine the relationship between the dependent variable and explanatory variables. A multiple linear regression model and t-static was used to determine the relative importance of each independent variable in influencing bank performance. The multiple linear regressions model was run, and thus OLS was conducted EVIEWS 8 econometric software package, to test the casual relationship between the risk management and its impact on the banks performance. The rational for choosing OLS is as noted in Petra (2007) OLS outperforms the other estimators

when the following holds; the cross section is small and the time dimension is short. Therefore, as far as both the above facts hold true in this study it is rational to use OLS. A fixed cross-sectional effect is specified in the estimation so as to capture unobserved idiosyncratic effects of different banks. In addition, as noted in Gujarati (2004) if T (the number of time series data) is large and N (the number of cross-sectional units) is small.

There is likely to be little difference in the values of the parameters estimated by fixed effect model and random effect model. Hence, the choice here is based on computational convenience. On this score, fixed effect model may be preferable than random effect model (Gujarati 2004). Since the number of time series (i.e. 12 year) is greater than the number of cross-sectional units (i.e. 8 commercial banks) and adjusted R2 value and Durbin-Watson stat value increases with the use of cross-sectional fixed effect model, fixed effect model is preferable than random effect model in this case.

3.5. Variable Description and Model Specification

As already shown in the first chapter, in the context of the problems highlighted the broad objective of this research is to identify risk management and its impact on bank performance in Ethiopia. In line with the broad purpose statement four hypotheses were formulated for investigation purpose. Hence, the following subsection presents the dependent variable as proxy for banks' performance.

3.5.1. Dependent variable

In the literature, there are two major alternative measures of profitability, namely ROA and ROE. ROA reflects the ability of bank's management to generate profits from the bank's assets, although it may be biased due to balance-sheet activities. ROE shows the return to the shareholders on their equity. As highlighted by Athanasoglou et al. (2008) and Sufian (2011), many scholars suggest 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 leverage and financial leverage. In this respect, we rarely find the paper utilizes ROE as a single measure of profitability. Rumler & Waschiczek (2010) is one of the examples. Other papers utilize ROE for checking the consistency with ROA, e.g. Ben Naceur & Omran(2011) and Sufian (2011). While a bulk of studies employ ROA as profitability measure, e.g. Pasiouras & Kosmidou (2007), Athanasoglou et al. (2008) and Olweny & Shipho (2011). Therefore, this study attempts to measure profitability by using ROA similar to most of the aforementioned researchers. ROA is measured as net income divided by total assets similar to Olweny & Shipho (2011).

$$\text{ROA} = \frac{\text{NET INCOME}}{\text{TOTAL ASSET}}$$

3.5.2. Independent Variables

In this study, the researcher chooses four independent variables and one control variable namely CAR , NPLR , LQIQ and CIR and FIRM SIZE will be used

because these four variable are the major indicators of risk management which affect the performance of commercial banks in Ethiopia (Amdemikael .A ,2012) .

Credit risk; - The measure for credit risk management was Non- Performing Loans Ratio (NPLR) and capital adequacy ratio. NPLR, indicates how banks manage their credit risk because it defines the proportion of NPL amount in relation to TL amount. NPLR is defined as NPLs divided by TLs. To calculate this ratio, the researcher used data provided in the annual reports of each bank. NPL amount is provided in the *Notes* to financial statements under *Loans* section. TL amount, the denominator of the ratio, has been gathered by adding two types of loans: loans to institutions and loans to the public. The researcher has collected the loan amount provided in the balance sheet of the banks in their annual reports. Thus, calculation of the NPLR has been accomplished in following way:

$$\text{NPLR} = \frac{\text{NPL Amount}}{\text{Total Loan Amount}}$$

CAPITAL (CAP) the equity-to-asset ratio measures how much of bank's assets are funded with owner's funds and is a proxy for the capital adequacy of a bank by estimating the ability to absorb losses. As the literature review pointed out, academic research is mixed regarding the relationship between the equity-to-asset ratio and banks‟ profitability. Following the risk-return tradeoff, a higher equity-to-asset ratio leads to a lower expected return. Opposed to the risk-return hypothesis, Berger (1995b) examines the signaling hypothesis and bankruptcy cost hypothesis; suggesting that a higher equity-to-asset ratio increase profitability due to

Signaling issues or lower costs of financial distress. Thus, the expected sign of the equity-to-asset ratio is unpredictable based on prior research.

$$\text{Capital adequacy ratio} = \frac{\text{Equity}}{\text{Total Asset}}$$

Liquidity risk:- Liquidity risk is one of the types of risk for banks; when banks hold a lower amount of liquid assets they are more vulnerable to large deposit withdrawals. Therefore, liquidity risk is estimated by the ratio of liquid assets to deposit and liquid asset to total asset .

Liquid Asset to Total Asset (LA/TA) Based on the risk-return hypothesis, more liquidity risk is associated with higher expected returns. Otherwise stated more cash and other liquid non-earning assets result in a lower expected return because these assets do not generate any return. Following prior research of Pasiouras & Kosmidou (2007), a negative relationship for liquid assets to total asset ratio and profitability is hypothesized.

$$\text{Liquidity risk} = \frac{\text{liquid asset}}{\text{Total Asset}}$$

Operational risk: Cost to income ratio shows the overheads or costs of running the bank, including staff salaries and benefits, occupancy expenses and other expenses such as office supplies, as percentage of income. It is used as an indicator of management's ability to control costs and is expected to have a negative relation with profits, since improved management of these expenses will increase efficiency and

therefore raise profits. It is also one of the key drivers of profitability that is examined. Similar to Pasiouras & Kosmidou (2007), Trujillo-Ponce (2012) and others, the cost-to-income ratio is used, to measure banks‟ operational efficiency. The cost-to-income ratio is calculated by dividing the overhead costs (costs of operating a bank) to the income generated before provisions. Among others, Pasiouras & Kosmidou (2007), and Sastrosuwito & Suzuki (2011) find that better efficiency is associated with higher profitability. Thus, a negative sign between cost-to-income ratio and banks‟ profitability is expected mainly in the context of the Ethiopian banking industry where efficiency is less.

$$\textit{Cost to income ratio} = \frac{\textit{operating expense}}{\text{Operating Income}}$$

3.6. Model adopted

ROA reflects how effectively a bank management is using the firm total asset. It tells the banks' asset how much the institution is earning on the book value of their investment (Goudreau, 1992). In fact, ROA is the most important measurement of banking returns because it is influenced by how well the bank is performed on all other return categories, and indicates whether a bank can compete for private sources in the economy.

As indicated in the previous sections the linear model is used to examine the impact of risk management on the financial performance of commercial banks in Ethiopia

as as follows: So In this study, ROA will be used as the indicator of the bank's financial performance..

Thus the multivariate regression model will be employed is presented below

$$Y=a+B1X1+B2X2+B3X3+B4X4 + B5X5 \ldots\ldots BNXN + u\ldots\ldots\ldots(a)$$

Where:

Y = the value of dependent variable

a= the constant term

β= the coefficient of the function

μ=the disturbance of error term

Application

Y-ROA = profitability indicator

X1-NPLR= credit risk managment indictor

X2- CAR = credit risk management indictor

X3 -LIQR = Liquidity risk management indictor

X4- CIR = operational risk management indictor

X5-FIRM SIZE= Controlee Variable

The econometric form for the model is specified as:

$$ROA\ is = a + \beta 1NPLRi + \beta 2LIQRi + \beta 3CIRi + \beta 4CARi + \beta 5FSIZE + \mu\ldots\ldots(b)$$

μ= disturbance term

Also α is an intercept and β is the parameter of explanatory variable of dependent Variable, return on asset.

Chapter Four

Results and Presentation

4. Introduction

This chapter presents the results and findings of the study based on the research objectives. The Results are presented in the form of summary tables. Regression and Correlation analysis are used to analyses the data to answer the research objective.

4.1. Test results for the classical linear regression model assumptions

In this study as mentioned in chapter three diagnostic tests were carried out to ensure that the data fits the basic assumptions of classical linear regression model. Consequently, the results for model misspecification tests are presented as follows:

- **Test for average value of the error term is zero (E (ut) = 0) assumption**

  The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term (i.e. α) was included in the regression equation, the average value of the error term in this study is expected to be zero.

- **Test for homoscedasticity assumption (Var (ut) = σ^2)**

In this study as shown in table 4.1, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05. The third version of the test statistic, „Scaled explained SS", which as the name suggests is based on a

normalized version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05.

Table 4.1 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.821429	Prob. F(5,90)	0.1166
Obs*R-squared	8.821626	Prob. Chi-Square(5)	0.1164
Scaled explained SS	5.112779	Prob. Chi-Square(5)	0.4023

Source: Financial statements of banks.

- **Test for Autocorrelation**

The test for autocorrelation was made by using Durbin and Watson (1951). Durbin--Watson (DW) is a test for first order autocorrelation -- i.e. it tests only for a relationshipbetweenan error and its immediately previous value. DW is approximately equals to $2(1 - \hat{\rho})$, where $\hat{\rho}$ is the estimated correlation coefficient between the error term and its first order lag (Brooks 2008). The null hypothesis for the DW test is no autocorrelation between the error term and its lag. According to Brooks (2008), DW has 2 critical values: an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure .

The study used the dL and dU values for 95 observations as approximation of 96 observations. As per the DW table in the appendix (5) for 95 observations with 8

explanatory variables at 1% level of significance, the dL and dU values are 1.358 and 1.715 respectively. The DW values for ROA for 96 observations Was 1.201466 . The DW value lies in the inconclusive region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected .

Table 4.2 Autocorrelation Test: Durbin Watson

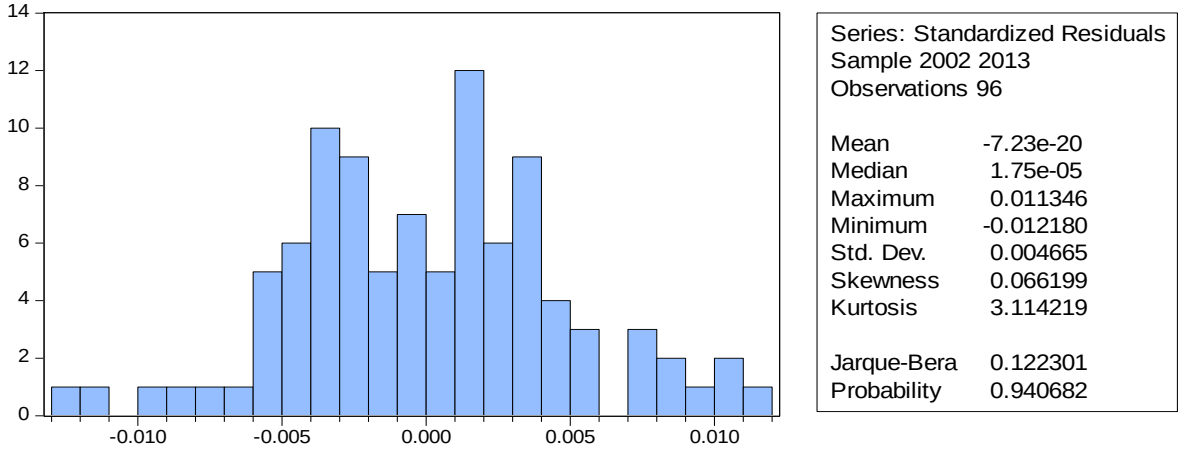
Variables	DW test static result
Bank risk variable	1.201466

Source: Financial statements of banks

- **Test for Normality assumption ($ut \sim N(0, \sigma^2)$)**

The normality tests for this study as shown in figure 4.1, the coefficient of kurtosis was close to 3.114 , and the Bera-Jarque statistic had a P-value of 0.9406 implying that the data were consistent with a normal distribution assumption.

Figure 4.1 Normality test for residuals



Source: Financial statements of banks

- **Test for absence of series multicollinearity assumption**

This assumption is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks 2008). Multicollinearity condition exists where there is high, but not perfect, correlation between two or more explanatory variables (Cameron and Trivedi 2009; Wooldridge 2006). According to Churchill and Iacobucci (2005), when there is multicollinearity, the amount of information about the effect of explanatory variables on dependent variables decreases. As a result, many of the explanatory variables could be judged as not related to the dependent variables when in fact they are. This assumption does allow the independent variables to be correlated; they just cannot be perfectly correlated. If we did not allow for any correlation among the independent variables, then multiple regressions would not be very useful for econometric analysis.

How much correlation causes multicollinearity however, is not clearly defined. While Hair et al (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Malhotra (2007) stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. Kennedy (2008) suggests that any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. This indicates that there is no consistent argument on the level of correlation that causes multicollinearity. According to Gujarati (2004), the standard statistical method for testing data for multicollinearity is analyzing the explanatory variables correlation

coefficients (CC); condition index (CI) and variance inflation factor (VIF). Therefore, in this study correlation matrix for eight of the independent variables shown below in the table had been estimated. The results in the following correlation matrix show that the highest correlation of 0.2401 which is between liquidity risk ratio none performing loan ratio . Since there is no correlation above 0.7, 0.75 and 0.9 according to Kennedy (2008), Malhotra (2007) and Hair et al (2006) respectively, we can conclude in this study that there is no problem of multicollinearity.

Table 4.3 Correlation matrixes of independent variables

	NPLR	CAP	LIQR	CIR	FSIZE
NPLR	1.000000				
CAP	-0.085716	1.000000			
LIQR	0.240181	0.082631	1.000000		
CIR	0.123629	-0.082475	0.198336	1.000000	
FSIZE	-0.212288	0.001981	0.010855	-0.406098	1.000000

4.2. Choosing Random effect (RE) versus fixed effect (FE) models

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational convenience. On this score, FEM may be preferable. Since the number of time series (i.e. 12 year) is greater than the number of cross-sectional units (i.e. 8 commercial banks), FEM is

preferable in this case. According to Brooks (2008); Verbeek (2004) and Wooldridge (2004), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame, FEM is appropriate.

4.3. Descriptive Statistics

Table 4.3 below summarizes the descriptive statistics of the variables included in the regression models as presented. It represents the variables of the 8 commercial banks operating in the Ethiopia whose financial results were available for the years 2002-2013. The descriptive statistics for the dependent and independent variables are presented bellow. The dependent variables are return on asset measured by net income to total asset which is used to measure financial performance of the bank . The remaining are the independent variables such as: none performing ratio, capital adequacy ratio liquidity risk ratio and cost to income ratio.

Table 4.5 Bellow Present the descriptive statistics of the dependent and independent variables

	ROA	NPLR	CAP	LIQR	CIR	FSIZE
Mean	0.025206	0.133698	0.11623	0.367139	0.749741	22.26931
Median	0.027759	0.096550	0.11123	0.361000	0.549934	22.20650
Maximum	0.040277	0.576800	0.280023	0.830000	3.854339	26.00700
Minimum	0.003800	0.007400	0.037134	0.26900	0.190729	19.56500
Std. Dev.	0.008537	0.113911	0.049042	0.136740	0.553636	1.296588
Observations	96	96	96	96	96	96

According to table 4.2 all variables comprised 96 observations and the banks performance measure used in this study namely; ROA indicates that the Ethiopian banks attained, on average, A good performance over the last twelve years. For the total sample, the mean of ROA was 2.52 % with a minimum of 0.38 % and a maximum of 4.02 %. That means, the most profitable bank among the sampled banks earned 0.0402 cents of profit after tax for a single birr invested in the asset of the firm. On the other hand, the least profitable bank of the sampled banks earned 0.0038 cents of profit before tax for each birr invested in the asset of the firm. The standard deviation statistics for ROA was 0.008537 which indicates that the profitability variation between the selected banks was very small. The result implies that these banks need to optimize the use of their asset to increase the return on of the bank .

Regarding the explanatory variables of the model there are some interesting statistics that have to be mentioned. The other bank specific factor affecting performance of of commercial banks was NPLR that measures the NPL/ / total loan and advance . The mean value of the percentage of non-performing loan ratio in the total amount of loans and advances to customers NPL was 13.3% with the maximum and minimum of 53.5% and 0.0074% respectively. The zero value was the value of NPL for NIB bank on the year of its establishment (i.e. 2000). The maximum value of 53.5% indicates the presence of high credit risk in some of the banks. There was moderate dispersion of NPL among banks in Ethiopia that is shown by the standard deviation of 11.3%.

Despite the small dispersion in the minimum and maximum observation of ROA there could be seen relatively high variation in the equity to asset ratio. On average, the equity-to-asset ratio equals 11.6% with a maximum of 29.4%, which was considerably above the statutory requirement of 8% set by NBE based on Basel II recommendation, even if its minimum value was 3.7%. The standard deviation statistics for capital strength was 0.047 which shows the existence of relatively higher variation of equity to asset ratio between the selected banks compared to the variation in ROA. On the other hand, the outputs of the descriptive statistics indicate that, the ratio of liquid assets to total asset was 36.7% on average, with a minimum of 26.9 % and a maximum of 83 %. This means despite the inverse relationship that exists between liquidity and profitability, the liquidity measure indicates that the Ethiopian commercial banks have, on average, a higher liquidity position which was somewhat higher than the statutory requirement of 20% for the last Twelve years. (NBE Directive No, SBB/15/96).

Furthermore, another observation is that there was somewhat a higher variation in the cost-to-income ratio indicated by the range between 19.07 % and 385%. The mean of the cost-to-income ratio equals 74.9 %. The relatively higher range between the minimum (19.07 %) and maximum value(385%) implies that the most efficient bank has a quite substantial cost advantage compared to the least efficient bank.

4.4. Results of the regression analysis

Under the following regression outputs the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent

variable. P-value indicates at what percentage or precession level of each variable is significant. R2 values indicate the explanatory power of the model and in this study adjusted R2 value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

ROA is = a + β1NPLRi + β2LIQRi + β3CIRi + β4CARi + β5FSIZE + μ

Table 4.7 regression result the independent variable

Total panel (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.082243	0.018954	-4.339106	0.0000
NPLR	-0.014172	0.006668	-2.125418	0.0365
CAP	0.000289	0.001481	0.195267	0.8457
LIQR	-0.010077	0.004418	-2.280760	0.0251
CIR	-0.004233	0.001208	-3.504634	0.0007
FSIZE	0.005215	0.000836	6.236159	0.0000

Effects Specification

Cross-section fixed (dummy variables).

R-squared	0.701405	Durbin-Watson stat	1.185179
Adjusted R-squared	0.658235		
F-statistic	16.24738		
Prob(F-statistic)	0.000000		

The Estimation result of the operational panel regression model used in this study is presented in table 4.3 . From table 4.4 the R-squared statistics and the adjusted-R squared statistics of the model was 70.1 % and 65.82 % respectively. The result indicates that the changes in the independent variables explain 65.82 % of the changes in the dependent variable. The remaining 34.02% of changes was explained by other factors which are not included in the model. Thus these variables collectively, are good explanatory variables of risk management on bank performance of commercial banks in Ethiopia. F value of 0.000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

Based on the results shown in table 4.3 three independent variables had statistically significant impact on commercial bank performance . none performing loan ratio ,Liquidity Ratio and Cost To Income were significant at 1% significance level since the p-value for the variables were 0.0365, 0.0251 and -0.0007 respectively .

0n the 0ther hand capital adequacy ratio has insignificant impact on banks performance since the p-value for the variables was greater than 10 % significant level .

Besides, table 4.4 also shows that the coefficient of NPLR , LIQR AND CIR against ROA were negative as far as the coefficients for those variables are negative -0.014172, -00.001007 and -0.004233. This indicates that there was an inverse relationship between the aforementioned independent variables and ROA. Thus the increase of those variables will lead to a decrease in ROA.

On the other hand, variables like capital adequacy ratio had a positive relationship with return on asset as far as it's 0.000289 coefficients was positive . This revealed that there was a direct relationship between the above one independent variables and return on asset .In general as per the regression results provided in table 4.3 among the four regressors used in this study three of them were significant.

In general, so far, the results of the documentary analysis which includes tests for the classical linear regression model, descriptive statistics, correlation matrix & regression analysis have been presented. The results of the tests for the classical linear regression model showed as the data fit the basic assumptions of CLRM.

4.5. Summary for the Hypotheses Testing

Te following table summarizes the results of hypotheses testing:

Table (5): Summary of Hypotheses Testing Results

Alternative hypotheses	ROA	
	The detected coefficient sign	**Decision**
HP1: There is a significant positive relationship between the amount of capital of a bank and the bank's performance	(+)	Rejected
HP2: There is a significant negative relationship between the amount of credit risk of a bank and the bank performance	(-)	Accepted
HP3: There is a significant relationship between the amount of liquidity risk of a bank and the bank's performance	(-)	Accepted
HP4: There is a significant relationship between the amount of operational risk of a bank and the bank's performance	(-)	Accepted

4.6. Analysis of results

This section of the chapter discusses the analysis of the results. The analysis is based on the theoretical framework and the data collected through the data collection instruments.

The data are analyzed in light of the specific research question and hypotheses stated. Hence, the analysis focuses mainly on the results of the regression analysis for the selected risk management factors that have an impact on bank performance. These selected factors are capital strength, operational efficiency (cost to income ratio), liquidity risk (liquidity ratio), and credit risk (none performing loan ratio). Moreover the study also analyzed the results of the interviews by using them as an argument for the quantitative output.

(A) Capital Strength

One would expect that the impact of capital on bank performance is positive and significant. However, even if the coefficient of capital was positive as expected, it was not statistically significant even at 10% significance level (p-value= 0.8457), insinuating that its influence is negligible. Moreover, the insignificant parameter indicates that the capital Strength does not affect Ethiopian banks performance. Thus the hypothesis that states there is a significant relationship between capital Strength and bank performance may be rejected or data did not support the hypothesis.

(B) None performing loan ratio

The ratio of nonperforming loans to gross loans, which measures how much a bank is not collecting in year *t* relative to its gross loans disbursed, is used to measure the impact of nonperforming loans on Ethiopian banks performance. The negative

coefficient of this ratio which was in line with the prior expectation and theory for that matter indicated the existence of an inverse relationship between bank performance and nonperforming loans. In addition the coefficient of the variable was statistically significant at 1% significant level. This implies that an increase in the ratio of nonperforming loans to gross loans, certainly Lead to a decrease in bank performance as measured by ROA. The finding was in consistent to the results of Epure and Lafuente (2012). Therefore one can conclude as the ratio of nonperforming loans to total loans was a key driver of performance of commercial banks in Ethiopia.

(C). Operational efficiency

The coefficient of the ratio of cost to income, which provides information on the efficiency of the management regarding expenses relative to income, was negative and statistically significant at 1% significance level (p-value=0) which is in line with a prior expectation and makes the variable an important determinant of Ethiopian banks performance. This showed that minimizing commercial banks operating costs in Ethiopia would certainly improve the banks performance in general and profitability in particular. This finding was consistent with many previous studies, e.g. Ford (2004) ,Welch (2006) ,and Sufian & Chong (2008). For instance, Sufian & Chong (2008) in their work on the Philippines banks realized as cost to income ratio exhibits a negative and significant impact on Philippines banks‟ profitability. The results imply that an increase (decrease) in these expenses reduces (increases) the profits of financial institutions operated in Philippines. Coming back to this particular study, the result revealed that in the context of the Ethiopian banking industry like that of Sufian & Chong (2008) result, the ratio of cost to income exhibits a negative

and significant impact on the ROA. Thus, the ratio of cost to income was statistically significant in explaining the variability in ROA of commercial banks in Ethiopia. Therefore, operational efficiency exists as one of the major determinant factor that can influence Ethiopian banks performance in an unfavorable way. Moreover, this result was also consistent with the existed reality in the Ethiopian banking industry where the efficiency was definitely lower (Amdemikael A, 2012).

(D) Liquidity risk

The impact of liquidity on bank performance is negative and statically significant impact on banks performance. The coefficient of liquidity ratio was negative as expected, it was statistically significant at 5% significance level (p-value= 0.004418), insinuating that its influence is significant on the performance of commercial banks in Ethiopia. Moreover, the significant parameter indicates that the liquidity structure does affect Ethiopian banks performance. Thus the hypothesis that states there is a negative significant relationship between liquidity risk and profitability should be accepted. Referring to previous studies, the results concerning liquidity are mixed. Molyneux & Thorton (1992) and Guru et al. (2002) find a negative relationship between liquidity and bank profitability. So the output of the regression analysis are in agreement in relation to the direction of the effect of liquidity as far as both of them proves the existence of negative or inverse relationship between liquidity and performance of Ethiopian banks

Chapter five

Conclusions and Recommendation

It is generally agreed that a strong and healthy financial system is a prerequisite for sustainable economic growth of a given country. In order to survive negative shocks and maintain a good financial stability, it is important to identify the major bank risk that mostly influences the overall performance and profitability of commercial banks. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed and dynamic effect regression models. The following sections discussed about the final concluding remarks of the study and possible recommendations.

5.1 Conclusion

As indicated in table 4.7 of regression results, bank risk variables are able to explain a substantial part of banks performance in Ethiopia (R- square of 70.1 % and 65.8 % respectively).

For that matter, the study specified an empirical framework to investigate the effect of bank risk management on Ethiopian commercial banks performance for the period 12 years. A panel data was collected form the sample of eight commercial banks in Ethiopia from 2002 to 2013. The collected Data was analysis by using descriptive statistics, balanced correlation and regression analysis. The study also used an appropriate econometric methodology for the estimation of variables coefficient

under fixed regression models. Before performing OLS regression the models were tested for the classical linear regression model assumptions. Fixed effect model/FEM was used based on convenience. Four risk factors affecting banks performance were chosen and analyzed.

On the other hand, credit risk is the main significant factor which challenges the profitability of banks in Ethiopia. In order to resist the credit risk challenges banks should improve the quality of loans they provide through installing better assessment methods of potential borrowers.

Fixed deposit and non interest expense are also the major causes that hinder Ethiopian banks performance. Hence, Ethiopian commercial banks required to effectively utilize the high cost fixed deposits and properly manage the level of non interest expenses such as salary and administration expenses.

5.2. Recommendation

None performing loan ratio, liquidity ratio and cost to income ratio are significant key risk management drivers of performance of commercials banks in Ethiopia. Indeed focusing and reengineering the institutions alongside these indicators could enhance the profitability as well as the performance of the commercial banks in Ethiopia.

Since loan and fee based activities are the main source of revenue, they should improve the level of those activities. On the other hand, in order to resist the

challenges of credit risk, fixed deposit and non interest expense items on profitability, Ethiopian commercial banks should improve the quality of loans, effectively utilize funds from fixed deposit, and properly manage the level of non interest expenses as salary and administration expenses.

Finally,the study sought to investigate risk management and its impact on performance of commercial banks in Ethiopia. However, the variables used in the statistical analysis did not include all risk management variable that can affect Ethiopian banks performance .Thus, future research could incorporate all bank risk factors such as market risk (exchange rate risk , inflation risk and interest rate risk).

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Appendix-I A: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.821429	Prob. F(5,90)	0.1166
Obs*R-squared	8.821626	Prob. Chi-Square(5)	0.1164
Scaled explained SS	5.112779	Prob. Chi-Square(5)	0.4023

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/09/15 Time: 08:11

Sample: 2002 2097

Included observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.71E-05	6.93E-05	0.824025	0.4121
NPLR	2.22E-05	3.22E-05	0.690982	0.4914
CAP	-8.36E-06	7.14E-06	-1.169601	0.2452
LIQR	-5.26E-06	2.69E-05	-0.195583	0.8454
CIR	1.35E-05	7.04E-06	1.921051	0.0579
FSIZE	-1.62E-06	3.00E-06	-0.541531	0.5895

R-squared	0.091892	Mean dependent var	2.97E-05
Adjusted R-squared	0.041441	S.D. dependent var	3.43E-05

S.E. of regression	3.36E-05	Akaike info criterion	-17.70321
Sum squared resid	1.02E-07	Schwarz criterion	-17.54294
Log likelihood	855.7541	Hannan-Quinn criter.	-17.63843
F-statistic	1.821429	Durbin-Watson stat	1.149431
Prob(F-statistic)	0.116557		

Appendix-II: Regression Results risk management variable that affect the performance of commercial banks in Ethiopia

Dependent Variable: ROA

Method: Panel Least Squares

Date: 05/08/15 Time: 03:18

Sample: 2002 2013

Periods included: 12

Cross-sections included: 8

Total panel (balanced) observations: 96

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.082243	0.018954	-4.339106	0.0000
NPLR	-0.014172	0.006668	-2.125418	0.0365
CAP	0.000289	0.001481	0.195267	0.8457
LIQR	-0.010077	0.004418	-2.280760	0.0251
CIR	-0.004233	0.001208	-3.504634	0.0007

FSIZE	0.005215	0.000836	6.236159	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.701405	Mean dependent var	0.025206
Adjusted R-squared	0.658235	S.D. dependent var	0.008537
S.E. of regression	0.004991	Akaike info criterion	-7.637008
Sum squared resid	0.002068	Schwarz criterion	-7.289752
Log likelihood	379.5764	Hannan-Quinn criter.	-7.496641
F-statistic	16.24738	Durbin-Watson stat	1.185179
Prob(F-statistic)	0.000000		