Addis Ababa University

School of Graduate studies

"Credit risk management and profitability of commercial Banks in Ethiopia"

By

Tibebu Tefera

June 2011

Addis Ababa, Ethiopia

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Approved by the board of examiners

Dr S. Ulaganathan — S. U — Advisor — signature

Examiner — June 23rd, 2011 — signature

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Abstract

This paper examines the impact level of credit risk management towards the profitability of commercial banks in Ethiopia in general .it argues that credit risk management has significant impact on profitability of banks of our country. To examine its impact level the researcher uses multiple regression models by taking 10 years ROE (dependent variable), NPLR and CAR (independent variables) from each bank and in addition to that questioner was also distributed to the authorized bodies in the risk management position of each bank. The researcher took seven banks purposively that have ten year and above life span in Ethiopia, those are Commercial bank of Ethiopia ,Nib international bank ,Dashen bank ,Awash international bank ,Banks of Abyssinia, Wegagen Bank and United Bank.

Key words: Credit Risk Management, Banks Profitability,

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LIST OF ACRONYMS

CAR	Capital Adequacy Ratio
NPL	Nonperforming Loan
ROA	Return on Asset
ROE	Return on Equity
NBE	National Bank of Ethiopia
NPLR	Nonperforming loan ration
TL	Total Loan
SSA	Sub-Saharan Africa
CEO	Chief executive officer
WLS	Weighted list square
CAO	China Aviation Oil Corporation
VIF	Variance Inflation Factor
QCB	Qatar Central Bank
RWCAR	Risk-weighted Capital Adequacy Ratio
SPSS	Statistical Package for Social Science
MS Excel	Microsoft Excl.

Chapter- One: Introduction

1.1 Background of the study

Banks are financial institutions that accept deposit and make loans. Commercial banks in Ethiopia extend credit (loan) to different types of borrower for many different purposes. For most customers, bank credit is the primary source of available debt financing and for banks; good loans are the most profitable assets (Frederic S. Mishkin, 2004, pp 8-9).

Even if Credit creation is the main income generating activity for banks, it also involves huge risks to both the lender and the borrower. The risk of a trading partner not fulfilling his/her obligation as per the contract on due date or anytime thereafter can greatly jeopardize the smooth functioning of a bank's business. On the other hand, a bank with high credit risk has high bankruptcy risk that puts the depositors in jeopardy (danger) that can easily and most likely prompts bank failure.

Credit risk is the most obvious risk in the banking and possibly the most important in terms of potential losses. The default of a small number of key customers could generate very large losses and in an extreme case could lead to a bank becoming insolvent. This risk relates to the possibility that loans will not be paid or that investments will deteriorate in quality or go in to default with consequent loss to the bank. Credit risk is not confined to the risk that borrowers are unable to pay; it also includes the risk of payments being delayed, which can also cause problems for the bank.

So, In order to protect their own interest and the wealth of bank shareholders/depositors, banks need to investigate and monitor the activities of the will be and existing borrowers. Adequately managing of those risks related with credit is critical for the survival and growth of any financial institutions. In case of banks, the issue of credit risk is of even of greater concern because of the higher level of perceived risk resulting from some of the characteristics of clients and business conditions that they find themselves in.

Generally, Credit risk management is a structured approach to mange uncertainties arising from the probability that the borrower will default to pay the money that he/she takes as a loan (either the principal or interest or both). Effectiveness in this area has an impact on the profitability, liquidity, solvency, loan portfolio and financial leverage of commercial banks in every country. In this problem area, i.e. impacts of credit risk management on banks profitability there are some studies conducted in different countries such as:

Ara Hosna, Bakaeva Manzura and sun Juanjuan in 2009 studied "Credit Risk Management and Profitability of Commercial Banks in Sweden". They took 4 banks to study this area and used multiple regression models to analyze their findings. Lastly, the researchers obtained that "there is a reasonable effect of credit Risk Management on profitability of those banks". (Hosna, Manzura & Juanjuan, 2009 , p 43).

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 relationship between 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)

As far as the researcher reading is concerned there is no formal study was conducted in this problem area in our country. And again both the theories and research conducted in the same area supports that there is positive relationship among credit risk management and banks profitability .But the above studies failed to see the impact level of profitability except the first one. In addition, there is no formal research study done in this problem area in our country. This gap initiates the researcher to involve in this topic area. So In this paper the researcher went to see the impact level of credit risk management on profitability of commercial banks in Ethiopia.

The researcher study will be important to the audience by providing a literature review on the impacts of credit risk management mechanisms like screening and monitoring, long term customer relationship, collaterals and credit rationing on the profitability of commercial banks in Ethiopia.

1.2 Statement of the problem

Currently the banking business is so sensitive because more of their income (revenue) will be generated from credit (loan) given to their customers (Jeoitta Colquitt. 2007). This credit creation process exposes the banks to high credit risk which leads to loss. Without effective credit risk management good bank performance or profit will be unthinkable.

If one knows the impact level of credit risk management on profitability he/she can give a great attention on management of those credit risks, particularly those responsible communities /credit risk management bodies / in banks , lecturers in the universities and colleges ,bank policy makers , like national bank of Ethiopia in the case of ours . When they are aware of about the impact level credit risk management towards profitability,

then they are going to take care of their credit decision and search best credit risk management mechanisms which will be good for the business. Credit risk management mechanism like screening and monitoring, long-term customer relationship, collateral requirements and credit rationing are important for the success of banks by determining its profitability, liquidity, solvency and amount of loan portfolio.

1.3 Purpose of the study

The purpose of this study will be to measuring the impact level of credit risk management on profitability's of seven commercial banks in Ethiopia. Those are banks which submit their annual report to the national bank of Ethiopia since 2001 till 2010 those are:-

1. Commercial bank of Ethiopia
2. Nib international bank
3. Dashen bank
4. Awash international bank
5. Banks of Abyssinia
6. Wegagen Bank
7. United Bank

In addition to the above general purpose of the study, the researcher needs to identify the following specific objectives too:

1. To analyze the impact of credit risk management on profitability of the bank.
2. To indicate some important recommendations for the bank in relation with credit risk management.

1.4 Research Question

How (much) to a great extent, credit risk management affects banks profitability in commercial banks in Ethiopia?

1.5 Theoretical Viewpoint:

The theory that the researcher used were Bank Risk Management Theory. It was developed by David H. Pyle university of California and it was used to study why risk management is needed, and outlines some of the theoretical underpinning of contemporary bank risk management, with an emphasis on market and credit risks. This theory indicates that credit and market risks management have an effect directly or indirectly on the banks survival. As applied to this study, this theory holds that researcher would expect the independent variables credit risk management to influence or explain the dependent variable which are banks profitability because without effective and efficient credit risk management, banks profitability, liquidity, solvency....are unthinkable. (David H. Pyle, 1997)

1.6 Delimitations and limitations

The research is limited on the relationship of credit risk management and profitability of commercial banks in Ethiopia. Thus, other risk like interest rate risk, market risk, foreign exchange rate risk and other risk are not covered in this study. There is some information (data) of the bank that cannot be disclosed to anybody else. This limit the researcher not to get data as required.

- Some respondents of the interview or questionnaires will be careless to give appropriate answer for the questions.
- Other than the above expected limitations mentioned the researcher may face some unexpected difficulties too.

1.7 Prior Studies on the topic area

In relation with this topic area i.e. impact of credit risk management and bank profitablity there is no prior studies prepared in Ethiopia. But the researcher investigated two studies from different countries which are directly or indirectly related with the proposed study.

The first study is "Credit Risk Management and Profitability of Commercial Banks in Sweden" which was studied by Ara Hosna, Bakaeva Manzura and sun Juanjuan in 2009. For their study the researchers needs to investigate how much does credit risk management affect profitability in commercial banks in Sweden. They took 4 banks as a sample and collected the necessary data from different sources like annual report of the banks from 2000-2009 and journals developed by the banks. As the study shows the researchers used multiple regression model and SPSS for the analysis of the findings. Lastly, their finding result shows that "credit risk management affects profitability of those banks significantly".(Hosna, Manzura & Juanjuan, 2009).

The second study is "Bank Performance and Credit Risk Management in Qatar" which was studied by Takang Feliz Achou and Ntui Claudine Tenguh in 2008. In their study the researchers' intention is to see the relationship between bank performance and credit risk management, by taking data from Qatar Central Bank (QCB). They used regression model to show the result of Return on Equity (ROE) and Total Losses (TL). In addition,

tables and charts were used by the researchers for proper analysis of the data obtained. Lastly, their study result shows that "There is a significant relationship between bank profitability and credit risk management (in terms of loan performance). Better credit risk management results in better bank performance." Achou and Tenguh, (2008).

To summarize the literature, credit risk management have a significant impact on the overall performance of banks. An effective screening and monitoring, long-term customer relationship, collateral requirement and credit rationing have direct influence on bank's profitability, liquidity, solvency and loan portfolio.

1.8 Methods

1.8.1 Types of research designs

This research uses Quantitative method to address its research question and to meet its general objectives too. For that dates are collected from seven different commercial banks of the country those are Commercial Bank of Ethiopia, Awash international bank, Dashen bank, Nib International Bank,Wegagen Bank ,United Bank and Bank of Abyssinia . There are also few questioners which will be distributed to credit risk management bodies of each bank in the study.

1.8.2 Sample, population, and participants

The researcher uses purposively seven banks from the banks in the country. This is because the researcher wants to see the effects of credit risk management towards profitability, by taking dates from 2001 till 2010. Here as one can easily understand from the research title, it does not allow banks which have different objectives than profit. Be remained here we have to exclude banks like development bank Ethiopia .because its

main objective is to create development in the country other than making profit. In addition to that there are also banks that are newly established two or three years back from now. they are not also included on the study because the researcher thought that they are not well organized and taking ten year annual report is leads to best inference than two or three years of experience.

The participants of this study will be Risk and Compliance Management Officer of the head office, Risk management department officer, credit analysts (loan officers), from the selected bank.

1.8.3 Data collection Instruments, Variables, and Materials

The researcher used both primary and secondary data sources. For primary sources questionnaires to be distributed to Risk and Compliance Management Officer of the head office, Risk Management Department Officers, loan officers and selected staffs of the head office. For secondary sources 10 year (2001-2010) annual reports of the bank were important data for this study. In addition, data from different documents of the bank officials (like Risk Management reports), Banking proclamations of National Bank of Ethiopia (different Years), manuals, articles, journals, magazines, books, previous research and various internet sites will be used for the proper accomplishment of this study.

The researcher have used questioner, both open ended and close ended. The questioner is prepared with respect to the research objective and research question, and mainly it was designed to make the supporter of results which came from regression output.

1.8.4 Data Analysis and validity procedures

The analysis was carried out after collecting the necessary data from different sources mentioned above. The researcher use quantitative data analysis method. After clearly identifying the dependent and the independent variables, the researcher use multiple regression model to show the relationship between the dependent and independent variables. Then the outputs of the SPSS were interpreted through charts, tabular and graphics

Validity procedures

"Validity means the accuracy of measurement of which the data is intended to be measured and how truthful the results of the research are",Patti and Ariccia, (2004).

For the reliability & validity of this study, the researcher follows procedures starting from the data collation up analysis. The researcher first collects the data from audited annual reports of banks by the authorized body and published reports. Then those data is compared from the annual report which is found in the National Bank of Ethiopia/NBE/ .The survey questionnaires will be pretest by different individuals before it will be distributed to the target customers.

In addition scientific articles, journals and books will be used to guarantee the reliability and validity of the data. The largest part is, statically analysis tools like Regression model, SPSS computer program and MS-Excel office application will be used to analysis obtained data in order to increase the validity. That long list of care reduces the possibility of getting wrong answers.

1.9 Anticipated Ethical Issues

First of all the study will be permitted from Addis Ababa University, Accounting and Finance department in order to get acceptance by the bank for provision of data. For data that will be collected from credit risk mangers officials of banks permission also be obtained from them selves'. The confidentiality of responses and information obtained from the credit risk managers and even from the financial statements of concerned banks will be kept properly. In order to keep in secret of the bank's internal operation only audited and provisional financial statements provided by the bank will be used.

In addition, at the time of data collection the researcher will give respect to the participants and asks permission about their voluntariness for response. The researcher will also ethically consider not to put the participants at risk and not to act against the human rights of the county. For the analysis of the data collected the researcher will be ethically considered to be frank and not to include any fictitious data for analysis purpose.

1.10 Preliminary studies or pilot tests

For the pilot tests the researcher will follow different procedures in order to increase the correctness of the responses to be obtained from the respondents as per the need of this research study. First, the questionnaires were developed as per the research objectives and research questions .After the questionnaire were developed, it translated into Amharic language in order to make the items compatible with the participants . This makes the questionnaires to be easy for the respondents. Then, a pilot test will be conducted to assess the questionnaire in order to eliminate possible problems created as a

result of translation. For this purpose the researcher will distribute the sample questionnaires to 4 selected individuals to check the translation. Those individuals are two from MSc in accounting and finance, one from MBA and the last one is from employee of commercial bank of Ethiopia, he have worked there for long . There response will help the researcher to modify or add on the questionnaire. The checked questionnaire will be distributed to a sample of 4 friends; before it will be distributed to the target respondent of the study. After the response from the sample pre-test friends were collected, the questionnaire amended as per the need and distributed for the end respondents.

1.11 Significance of the study

This study will help to enrich local literatures on the subject matter. Because there is no detail study were made on the impact of credit risk management and commercial banks profitability's in Ethiopia. In addition, it will also signify commercial banks of the country to evaluate its credit risk management mechanisms in order to reduce loan loss and be profitable and more liquid than before. Beside to that it add knowledge for credit risk officials by identifying the impact level of credit risk management towards profitability's of commercial banks of the country. It makes them well conservative on their credit risk management mechanisms. Not only for credit risk management official of banks, but also added knowledge for the concerned body. Lastly, the study will be useful to further researchers who are interested in this area as a reference.

Chapter Two: Review of Related Literature

2.1 Introduction

Risk is the fundamental element that drives financial behavior. Without risk, the financial system would be vastly simplified. However, risk is omnipresent in the real world. Financial Institutions, therefore, should manage the risk efficiently to survive in this highly uncertain world. The future of banking will undoubtedly rest on risk management dynamics.

Only those banks that have efficient risk management system will survive in the market in the long run. The effective management of credit risk is a critical component of comprehensive risk management essential for long-term success of a banking institution.

Credit risk is the oldest and biggest risk that bank, by virtue of its very nature of business, inherits. This has however, acquired a greater significance in the recent past for various reasons. Foremost among them is the wind of economic liberalization that is blowing across the globe. (Rekha A., 2004)

In this chapter the researcher explain more about the impact of credit risk management on profitability of banks. In this literature review part the researcher cover theories which relate to credit risk management and profitability's, previous studies on the equivalent title, and issues related with the independent variable, dependent variable, relationship between the independent and dependent variables and lastly the summary of the most important issues of the study area.

2.3 Theoretical review

2.3.1 Risk in banking industry

As per different author risk is the possibility of suffering harm or loss; danger. So when we say risk in bank we mean that uncertainties that can make the banks to loose and be bankrupt.

2.3.2 Credit risk in banking

Credit in bank **is** a contractual agreement in which a borrower receives something of value now and agrees to repay the lender at some later date. *However Credit* risk is defined as the probability that some of a bank's assets, especially its loans, will decline in value and possibly become worthless. It arises from non-performance by a borrower, either an inability or an unwillingness to perform in the pre-committed contracted manner. (Joan Selorm Tsorhe p.6). Or else as per (R.S. Raghavan, 2003) Credit Risk is the potential that a bank borrower/counter party fails to meet the obligations on agreed terms. There is always scope for the borrower to default from his commitments for one or the other reason resulting in crystallization of credit risk to the bank.

2.3.3 Components of credit risk in banks:

The credit risk in a bank's loan portfolio consists of three components:

(1) Transaction Risk

(2) Intrinsic Risk

(3) Concentration Risk

(1) Transaction Risk: Transaction risk focuses on the volatility in credit quality and earnings resulting from how the bank underwrites individual loan transactions. Transaction risk has three dimensions: selection, underwriting and operations.

(2) Intrinsic Risk: It focuses on the risk inherent in certain lines of business and loans to certain industries. Commercial real estate construction loans are inherently more risky than consumer loans. Intrinsic risk addresses the susceptibility to historic, predictive, and lending risk factors that characterize an industry or line of business. *Historic elements* address prior performance and stability of the industry or line of business. *Predictive elements* focus on characteristics that are subject to change and could positively or negatively affect future performance. *Lending elements* focus on how the collateral and terms offered in the industry or line of business affect the intrinsic risk.

(3) Concentration Risk: Concentration risk is the aggregation of transaction and intrinsic risk within the portfolio and may result from loans to one borrower or one industry, geographic area, or lines of business. Bank must define acceptable portfolio concentrations for each of these aggregations. Portfolio diversify achieves an important objective. It allows a bank to avoid disaster. Concentrations within a portfolio will determine the magnitude of problems a bank will experience under adverse conditions.

2.3.4 Risk and profitability

Risks are usually defined by the adverse impact on profitability of several distinct sources of uncertainty. As it was clearly explain before the main source of revenue or main sources of profit of banks came from lending money to their customers. Which means Risk-taking is an inherent element of banking and, indeed, profits are in part the reward

for successful risk taking. In contrary, excessive, poorly managed risk can lead to distresses and failures of banks. Risks are, therefore, warranted when they are understandable, measurable, controllable and within a bank's capacity to withstand adverse results. . (Guidelines for Commercial Banks & DFIs.)

Therefore, the financial condition of the borrower as well as the current value of any underlying collateral is of considerable interest to its bank. (Anthony M. Santomero, 1997)

2.3.5 Credit Risk management in banking industry

Banks make profit from the spread between the interest rate they charge to borrowers and the interest rate they pay to depositors. Lending has always been the primary functions of banks, and accurately assessing a borrower's credit worthiness has always been the only method of lending successfully (Andrew Fight, 2004). To insure reasonable profit, banks attempt to make loans that will be fully repaid with interest on due date. Therefore, banks are directly concerned about borrowers repaying their loans on a timely basis so that the value of the banks can be maximized.

If banks don't manage credit risks effectively, they won't be profitable and won't be in business very long. Banks can reduce their exposure to credit risk on different loans by applying major credit risk management principles (as identified by Fredrick S. Mishkin). These are:

1. Screening and monitoring: Adverse selection in loan market requires the lenders screen out the bad credit from the good ones so that loans are profitable to them. Once a loan has been made, the bank's has to monitor or follow up the borrowers' activities.
2. Long-term Customer Relationship: if the borrower has borrowed previously from the bank, the bank has a record of the loan payments. This reduces the costs of information collection and makes it easier to screen out bad credit risks. Long-term relationship enables banks to deal with even unanticipated moral hazard contingencies.
3. Collateral Requirements: is an important credit risk management tool. Collateral, which is properly promised to the lender as compensation if the borrower defaults, it lesser the lender's losses in the case of a loan default.
4. Credit Rationing: is one way of credit risk management that refers refusing to make loans even though borrowers are willing to pay the stated interest rate or even a higher rate. (Frederick S. Mishkin, 2004, pp 217-220)

As per (A. V. Vedpuriswar, 2009 pp1-2) Credit risk is the risk of financial loss owing to the failure of the counterparty to perform its contractual obligations. Lack of diversification of credit risk has been the primary reason for many bank failures. Banks have a comparative advantage in making loans to entities with which they have an ongoing relationship. This creates excessive concentrations in geographic or industrial sectors.

- Credit risk is more difficult to quantify than market risk.
- Default probabilities are difficult to assess because of the infrequency of defaults.
- Credit risk has effectively three components.

2.3.6 Impacts of credit risk management in bank

It is important that the investor knows credit risk of a bank, if he has investments in any bank or is contemplating making one. The ratio of non-performing loans to total loans should be on the decrease. This indicates that the bank is recovering most of its loans and as such is maximizing its assets to generate profits.

The loan profile detailing amount of performing and non-performing loans could be gotten from their annual reports and accounts statements.

The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risk and other risks. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organization.

Banks and financial institutions gave importance to the credit risk and considered as an essential factor in the financial sector that is needed to be managed. When banks recognized the credit risk, it means that there is a possibility that a borrower or counter

party tends to fail in meeting the obligations in accordance with the agreed terms. Credit risk in banks or any financial institution deals with lending to corporate, individuals, and other banks or financial institutions.

Credit risk management needs to be a robust process that enables the banks to proactively manage the loan portfolios to minimize the losses and earn an acceptable level of return to its shareholders. The importance of the credit risk management is recognized by banks for it can establish the standards of process, segregation of duties and responsibilities such in policies and procedures endorsed by the banks (Focus Group, 2007).

2.3.7 Credit Risk Performance Measurement in Bank

The banking industry is not exempted from credit risks at all. There is then a need to implement efficient credit risk performance measurement.

Credit risk performance measurement is very important in the industry of banking. In fact, if you would ask any person in the banking industry how important it is, he or she would tell you that this aspect has an impact on the overall success of the bank itself. Thus, banks and other financial institutions, especially the ones that are delving in the business of lending, should pay attention to this aspect.

Risks come in any line of business. In the banking industry, you could safely say that these institutions deal with risks every single workday. Moreover, just about all of these risks are financial in nature. Thus, there is a need to balance risks and returns of investments altogether.

With the many options of banks in today's market, for a bank to garner a large customer base, it should consider offering a lot of reasonable loan products. This means the loan products would be offered at low interest rates, right? Not necessarily. This is because pegging interest rates that are too low would also incur losses for the bank. After all, banks should have substantial capital in terms of reserves. There should be balance to this, actually. If a bank has too much capital in its reserves, then there is that risk that the bank might miss out on its investment revenue. On the other hand, if a bank has too little capital to begin with, this would only lead to financial instability. Moreover, there is also that risk of regulatory non-compliance that the bank would have to deal with as well. Striking a balance is then very important here.

By financial definition, credit risk management pertains to that process of assessing the risks that come with any investment. For the most part, risk comes in the form of investments and the allocation of capital. These risks should be assessed so that a reliable and sound investment decision would be achieved. Risk assessment is also an important factor to consider when you are aiming for a certain position in balancing risks and returns.

Banks constantly have to deal with the risk of a client defaulting payment of his loan. This is one risk that banks would have to expect, however unfortunate the case may be. And this is just one of the many risks that banks have to deal with each day. Thus, it is only logical for banks to keep a substantial portion of its capital in its reserves so as to maintain economic stability and protect its own solvency. We have to take into

consideration the second Basel Accords, which states that the more risks the bank, is exposed to, the greater the amount of capital it should hold in its reserves.

The determination of the risks involved here entails several practices. For starters, banks need to come up with certain estimates as to the figures to keep and the ones to make available for loans. Also, banks have to monitor the performance of the bank, as well as evaluate it. Always remember that portfolio analyses and loan reviews are a must when it comes to efficient credit risk performance measurement. (Tags: banking performance, performance measurement, 2000)

2.3.8 Credit risk management principles

1. While financial institutions have faced difficulties over the years for a multitude of reasons, the major cause of serious banking problems continues to be directly related to lax credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank's counterparties. This experience is common in both G-10 and non-G-10 countries.

2. Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. The goal of credit risk management is to maximize a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risk and other risks. The

effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organization.

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

4. Since exposure to credit risk continues to be the leading source of problems in banks world-wide, banks and their supervisors should be able to draw useful lessons from past experiences. Banks should now have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred. The Basel Committee is issuing this document in order to encourage banking supervisors globally to promote sound practices for managing credit risk. Although the principles contained in this paper are most clearly applicable to the business of lending, they should be applied to all activities where credit risk is present.

5. The sound practices set out in this document specifically address the following areas: (i) establishing an appropriate credit risk environment; (ii) operating under a sound credit-granting process; (iii) maintaining an appropriate credit administration,

measurement and monitoring process: and (iv) ensuring adequate controls over credit risk. Although specific credit risk management practices may differ among banks depending upon the nature and complexity of their credit activities, a comprehensive credit risk management program will address these four areas. These practices should also be applied in conjunction with sound practices related to the assessment of asset quality, the adequacy of provisions and reserves, and the disclosure of credit risk, all of which have been addressed in other recent Basel Committee documents. (Practices for Loan Accounting and Disclosure (July 1999)

6. While the exact approach chosen by individual supervisors will depend on a host of factors, including their on-site and off-site supervisory techniques and the degree to which external auditors are also used in the supervisory function, all members of the Basel Committee agree that the principles set out in this paper should be used in evaluating a bank's credit risk management system. Supervisory expectations for the credit risk management approach used by individual banks should be commensurate with the scope and sophistication of the bank's activities. For smaller or less sophisticated banks, supervisors need to determine that the credit risk management approach used is sufficient for their activities and that they have instilled sufficient risk-return discipline in their credit risk management processes. The Committee stipulates in Sections II to VI of the paper, principles for banking supervisory authorities to apply in assessing bank's credit risk management systems. In addition, the appendix provides an overview of credit problems commonly seen by supervisors.

7. A further particular instance of credit risk relates to the process of settling financial transactions. If one side of a transaction is settled but the other fails, a loss may be incurred that is equal to the principal amount of the transaction. Even if one party is simply late in settling, then the other party may incur a loss relating to missed investment opportunities. Settlement risk (i.e. the risk that the completion or settlement of a financial transaction will fail to take place as expected) thus includes elements of liquidity, market, operational and reputational risk as well as credit risk. The level of risk is determined by the particular arrangements for settlement. Factors in such arrangements that have a bearing on credit risk include: the timing of the exchange of value; payment/settlement finality; and the role of intermediaries and clearing houses. (Guidance for Managing Settlement Risk in Foreign Exchange Transactions, 2000)

8. This paper was originally published for consultation in July 1999. The Committee is grateful to the central banks, supervisory authorities, banking associations, and institutions that provided comments. These comments have informed the production of this final version of the paper. (Credit risk management, September 2000)

2.4 Banking credit risk management guide lines in Ethiopia

2.4.1 Introduction

Experiences elsewhere in the world suggest that the key risk in a bank has been credit risk. Indeed, failure to collect loans granted to customers has been the major factor behind the collapse of many banks around the world. Banks need to manage credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Additionally, banks should be aware that credit risk does not exist in isolation from other

risks, but is closely intertwined with those risks. Effective credit risk management is the process of managing an institution's activities which create credit risk exposures, in a manner that significantly reduces the likelihood that such activities will impact negatively on a bank's earnings and capital. Credit risk is not confined to a bank's loan portfolio, but can also exist in its other assets and activities. Likewise, such risk can exist in both a bank's on-balance sheet and its off-balance sheet accounts.

2.4.2 Board and Senior Management Oversight

2.4.3 Board Responsibilities

The board of directors is responsible for reviewing and approving a bank's credit risk strategy and policies. Each bank should develop a strategy that sets the objectives of its credit-granting activities and adopts the necessary policies and procedures for conducting such activities.

2.4.4 Management Responsibilities

Senior management has the responsibility for *implementing* the credit risk strategy approved by the board of directors and for developing policies and procedures for identifying, measuring, monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities at both the individual credit and portfolio levels. Senior management must ensure that there is a periodic independent internal or external assessment of the bank's credit management functions.

2.4.5 Policies, Procedures and Limits

2.4.5.1 Credit Policies

The foundation for effective credit risk management is the identification of existing and potential risks in the bank's credit products and credit activities. This creates the need for development and implementation of clearly defined policies, formally established in writing, which set out the credit risk philosophy of the bank and the parameters under which credit risk is to be controlled. Measuring the risks attached to each credit activity permits a platform against which the bank can make critical decisions about the nature and scope of the credit activity it is willing to undertake. A cornerstone of safe and sound banking is the design and implementation of written policies and procedures related to identifying, measuring, monitoring and controlling credit risk. Credit policies establish the framework for lending and guide the credit-granting activities of the bank. The policies should be designed and implemented with consideration for internal and external factors such as the bank's market position, trade area, staff capabilities and technology; and should particularly establish targets for portfolio mix and exposure limits to single counterparties, groups of connected counterparties, industries or economic sectors, geographic regions and specific products. Effective policies and procedures enable a bank to: maintain sound credit-granting standards; monitor and control credit risk; properly evaluate new business opportunities; and identify and administer problem credits. Credit policies need to contain, at a minimum:

1. a credit risk philosophy governing the extent to which the bank is willing to assume credit risk;
2. general areas of credit in which the bank is prepared to engage or is restricted from engaging;
3. clearly defined and appropriate levels of delegation of approval, and provision or write off authorities; and
4. Sound and prudent portfolio concentration limits.

The basis for an effective credit risk management process is the identification and analysis of existing and potential risks inherent in any product or activity. Consequently, it is important that banks identify the credit risk inherent in all the products they offer and the activities in which they engage. This is particularly true for those products and activities that are new to the bank where risk may be less obvious and which may require more analysis than traditional credit-granting activities. Although such activities may require tailored procedures and controls, the basic principles of credit risk management will still apply. All new products and activities should receive board approval before being offered by the bank.

2.4.5.2 Credit Analysis and Approval Process

Prior to entering into any new credit relationship, consideration shall be given to the integrity and reputation of the party as well as their legal capacity to assume the liability. Banks need to understand to whom they are granting credit. Therefore, prior to entering into any new credit relationship, a bank shall become familiar with the borrower or counterparty and be confident that they are dealing with an individual or organization of

sound repute and creditworthiness. In particular, strict policies shall be in place to avoid association with individuals involved in criminal activities.

Establishing sound, well-defined credit-granting criteria is essential to approving credit in a safe and sound manner. In order to conduct an effective credit-granting program, banks shall receive sufficient information to enable a comprehensive assessment of the risk profile of the counterparty. Depending on the type of credit exposure and the nature of the credit relationship with the counterparty, the factors to be considered and documented in credit granting include:

1. purpose of the credit and sources of repayment;
2. borrower's repayment history and current capacity to repay, based on historical financial trends and future cash flow projections under various scenarios;
3. terms and conditions of the credit including covenants designed to limit changes in the future risk profile of the borrower;
4. adequacy and enforceability of collateral or guarantees under various scenarios;
5. current risk profile of the counterparty (including the nature and aggregate amounts of risk), and sensitivity to economic and market developments, especially for major exposures; and
6. Borrower's business expertise and management capability.

Occasionally, banks may participate in loan syndications or other such loan consortia. In such cases, undue reliance should not be placed on the risk analysis performed by the lead underwriter or external credit assessors. Rather, syndicate participants should

perform their own risk analysis prior to committing to the syndication. Such analysis should be conducted in the same manner as directly sourced loans.

In order to maintain a sound credit portfolio, a bank must have a clearly established process in place for approving new credits as well as extensions or renewal and refinancing of existing credits. Approvals should be made in accordance with the bank's written guidelines and granted by the appropriate level of management. There should be a clear audit trail documenting the approval process and identifying the individual(s) and/or committee(s) making the credit decision.

Each credit proposal should be subject to careful analysis by a qualified credit analyst with expertise commensurate with the size and complexity of the transaction. An effective evaluation process establishes minimum requirements for the information on which the analysis is to be based as listed above. The information received will be the basis for any internal evaluation or rating assigned to the credit and its accuracy and adequacy is critical to management making appropriate judgments about the acceptability of the credit.

2.4.5.3 Authority for Loan Approval

Banks must develop a corps of credit analysts who have the experience, knowledge and background to exercise prudent judgment in assessing, approving and managing credit. A bank's credit approval process should establish accountability for decisions taken and designate the individuals who have authority to approve credits or changes in credit terms. Depending upon its size and nature, credit may be approved through individual authority, joint authorities or through a committee.

2.4.6 Lending to Connected Parties

Banks should have credit granting procedures in place that identify connected counterparties as a single obligor which means aggregating exposures to groups of counterparties (corporate or non-corporate) that exhibit financial interdependence by way of common ownership, common control, or other connecting links (for example, common Management, familiar ties). Identification of connected counterparties requires a careful analysis of the impact of the above factors (e.g. common ownership and control) on the financial interdependence of the parties involved.

2.4.7 Credit Limits and Credit Concentration

To ensure diversification, exposure limits are needed in all areas of the bank's activities that involve credit risk. Banks should establish credit limits for individual counterparties and groups of connected counterparties that aggregate different types of on and off balance sheet exposures. Such limits are frequently based on internal risk ratings that allow higher exposure limits for counterparties with higher ratings. Under no circumstance can limits established by banks be higher than regulatory limits set by NBE. Limits should also be established for particular industries or economic sectors, geographic regions specific products, a class of security, and group of associated borrowers.

2.4.8 Credit Concentration

Credit concentration can occur when a bank's portfolio contains a high level of direct or indirect credits to:

1. A single counterparty;
2. A group of related counter parties;
3. An industry;
4. A geographical region;
5. A type of credit facility (i.e. overdrafts); and
6. A class of collateral.

Excessive concentration renders a bank vulnerable to adverse changes in the area in which the credit is concentrated and to violations of statutory and regulatory limits. Sound and prudent risk management involves the minimization of concentration risk by diversifying the credit portfolio. At a minimum, credit diversification policies should:

1. be stated clearly
2. include goals for portfolio mix;
3. Place exposure limits on single counter parties and groups of associated counter parties, key industries or economic sectors, geographical regions and new or existing products; and
4. Be in compliance with NBE statutory and regulatory limits on large exposures.

In considering potential credits, banks must recognize the necessity of establishing provisions for identified and expected losses in line with the NBE directives on

provisions and holding adequate capital to absorb unexpected losses. These considerations should factor into credit-granting decisions as well as the overall portfolio risk management process.

2.4.9 Credit Risk Mitigation

A number of techniques are available to banks to assist in the mitigation of credit risk.

Collateral and guarantees are the most commonly used. Notwithstanding the use of various mitigation techniques individual credits transactions should be entered into primarily on the strength of the borrower's repayment capacity. Banks should also be mindful that the value of collateral might well be impaired by the same factors that have led to the diminished recoverability of the credit.

Banks should have policies covering the acceptability of various forms of collateral, procedures for the ongoing valuation of such collateral, and a process to ensure that collateral is, and continues to be, enforceable and realizable.

2.4.10 Measurement, Monitoring and Control

Failure to establish adequate procedures to effectively monitor and control the credit function within established guidelines has resulted in credit problems for many banks around the world. Compromising credit policies and procedures has been another major cause of credit problems. Accordingly, each bank needs to develop and implement comprehensive procedures and information systems to effectively monitor and control the risks inherent in its credit portfolio.

2.4.11 Credit Administration Policies

Credit administration is a critical element in maintaining the safety and soundness of a bank. Once a credit is granted, it is the responsibility of the bank to ensure that the credit is properly maintained. This includes keeping the credit file up to date, obtaining current financial information, sending out renewal notices and preparing various documents such as loan agreements. In larger banks4, the responsibility for credit administration may be split among different departments, but in smaller banks these responsibilities may be assigned to individuals.

2.4.12 Credit Files

The credit files of a bank should include all the information necessary to ascertain the current financial condition of counterparties as well as sufficient information to track the decisions made and credit history of borrowers.

2.4.13 Credit Monitoring Procedures

Banks need to develop and implement comprehensive procedures and information systems for monitoring the condition of individual counterparties across the bank's various portfolios. These procedures should define the criteria for identifying and reporting potential problem credits and other transactions to ensure that they are subject to more frequent monitoring, corrective action, and proper classification/provisioning.

Specific individuals should be responsible for monitoring credit quality; including ensuring that relevant information is passed to those responsible for assigning internal risk ratings to the credit. In addition, individuals should be made responsible for monitoring on an ongoing basis any underlying collateral and guarantees. Such

monitoring will assist the bank in making necessary changes to contractual arrangements as well as maintaining adequate reserves for credit losses.

Banks should develop an adequate framework for managing their exposure in off-balance sheet products as a part of overall credit to an individual customer and subject them to the same credit appraisal, limits and monitoring procedures. Banks should classify their off balance sheet exposures into three broad categories:

1. full risk (credit substitutes) – e.g. standby letters of credit or money guarantees;
2. medium risk (not direct credit substitutes) – e.g. bid bonds, indemnities and warranties; and
3. Low risk – e.g. cash against document (CAD).

2.4.14 Internal Risk Rating

An important tool in monitoring the quality of individual credits, as well as the total portfolio, is the use of an internal risk rating system. A well-structured internal risk rating system is a good means of differentiating the degree of credit risk in the different credit exposures of a bank. This will allow more accurate determination of the overall characteristics of the credit portfolio, problem credits, and the adequacy of loan loss reserves. Detailed and sophisticated internal risk rating systems can also be used to determine internal capital allocation, pricing of credits, and profitability of transactions and relationships.

2.4.15 Bank performance

In banking performance refers the ability of banks in provision of quality banking services to customers. The performance of bank will be measured by using different

measuring variables which are the core performance indicators in the banking industry. Such as:

1. Profitability: - is the efficiency of banks at generating earnings which will be measured by Profitability ratios which focus on profit of the bank. The ratio includes: Return on Asset & Return on Equity.
2. Bank Liquidity: - is the ability to meet its financial obligations as they come due. Bank lending finances investments in relatively illiquid assets, but it fund its loans with mostly short term liabilities.
3. Bank Solvency: - is the banks long run ability to meet all financial obligations. A solvent business has a positive net worth. Solvency indicators include the debt-to-asset ratio and debt-to-equity ratio.
4. Loan Portfolio: - is total of all loans held by a bank or finance company on any given day. The loans that a lender (or a buyer of loans) is owed. The value of a loan portfolio depends on both the principal and interest owed and the average creditworthiness of the loans. (Caouette, Altman, Narayanan and Nimmo, 2008).

2.5 Banks profitability and its measurement

Like all businesses, banks profit by earning more money than what they pay in expenses. The major portion of a bank's profit comes from the fees that it charges for its services and the interest that it earns on its assets. Its major expense is the interest paid on its liabilities.

The major assets of a bank are its loans to individuals, businesses, and other organizations and the securities that it holds, while its major liabilities are its deposits and

the money that it borrows, either from other banks or by selling commercial paper in the money market. And profitability of any business area can be measured through return on assets (ROA) and return on equity (ROE). Profitability is the dependent variable of this study. The researcher tries to evaluate the profitability of commercial banks in Ethiopia

2.5.1 Relationship between credit risk management and bank performance

As per different researchers and authors, Credit risk is the most significant of all risks in terms of size of potential losses. As the extension of credit has always been at the core of banking operation, the focus of banks' risk management has been credit risk management. When banks manage their risk better, they will get advantage to increase their performance (return). Better risk management indicates that banks operate their activities at lower relative risk and at lower conflict of interests between parties. (Anthony M. Santomero, 1997)

The advantages of implementing better risk management lead to better banks performance.

Better bank performance increases their reputation and image from public or market point of view. The banks also get more opportunities to increase the productive assets, leading to higher bank profitability, liquidity, and solvency. (Tandelilin, Kaaro, Mahadwartha, Supriyatna, 2007). Therefore, Effective credit risk management should be a critical component of a bank's overall risk management strategy and is essential to the long-term success of any banking organization. It becomes more and more significant in order to ensure sustainable profits in banks.

2.6 Banks profitability measure

The habitual measures of the profitability of any business are **return on assets (ROA)** and return on equity (**ROE**). Assets are used by businesses to generate income. Loans and securities are a bank's assets and are used to provide most of a bank's income. However, to make loans and to buy securities, a bank must have money, which comes primarily from the bank's owners in the form of bank capital, from depositors, and from money that it borrows from other banks or by selling debt securities - a bank buys assets primarily with funds obtained from its liabilities as can be seen from the following classic accounting equation:

$$Asset = Liablity + banks\ capital\ (owners\ equity)$$

However, not all assets can be used to earn income, because banks must have cash to satisfy cash withdrawal requests of customers.

The ROA is determined by the amount of fees that it earns on its services and its **net interest income**:

$$Net\ interst\ income = Interst\ received\ on\ asset - Interst\ paid\ on\ liablity$$

$$\begin{aligned} Net\ interst\ income \\ &= (Interst\ earned\ on\ securities\ and\ loan) \\ &- (Interst\ paid\ on\ deposits\ and\ borrowing) \end{aligned}$$

Net interest income depends partly on the **interest rate spread**, which is the average interest rate earned on it assets minus the average interest rate paid on its liabilities.

$$Interst\ Rate\ Spreed = (Average\ Interst\ Rate\ Recieved\ on\ Asset) - (Average\ Interst\ Rate\ Paid\ on\ liablities)$$

Net interest margin shows how well the bank is earning income on its assets. High net interest income and margin indicates a well managed bank and also indicates future profitability.

As it was clearly explained by (Ara Hosna, Bakaeva Manzura and Sun Juanjuan, 2008) the measurement of bank performance has been developed over time. At the beginning, many banks used a purely accounting-driven approach and focused on the measurement of NI, for example, the calculation of ROA. However, this approach does not consider the risks related to the referred assets, for instance, the underling risks of the transactions, and also with the growth of off-balance sheet activities. Thus the riskiness of underlying assets becomes more and more important. Gradually, the banks notice that equity has become the scarce resource. Thereby, banks turn to focus on the ROE to measure the net profit to the book equity in order to find out the most profitable business and to do the investment. (Gerhard .S (2002)

Mostly ROE is used to measure the profitability of banks. The efficiency of the banks can be evaluated by applying ROE, since it shows that banks reinvest its earnings to generate future profit.

Investors want to see how well a bank is performing before potentially investing in it. A high stock price alone is not a good measure to use, you have to look at the bank's financial statements and at some key metrics to see how well a bank is performing

A strong measure of any company's performance is its return on equity (ROE). ROE is a measure of how well the company uses its reinvested earnings to generate additional earnings. It is used as an indication of the company's efficiency.

The growth of ROE may also depend on the capitalization of the banks and operating profit margin. If a bank is highly capitalized through the risk-weighted capital adequacy ratio (RWCAR) or Tier 1 capital adequacy ratio (CAR), the expansion of ROE will be retarded. However, the increase of the operating margin can smoothly enhance the ROE. ROE also hinges on the capital management activities. If the banks use capital more efficiently, they will have a better financial leverage and consequently a higher ROE. Because a higher financial leverage multiplier indicates that banks can leverage on a smaller base of stakeholder's fund and produce higher interest bearing assets leading to the optimization of the earnings. On the contrary, a rise in ROE can also reflect increased risks because high risk might bring more profits. This means ROE does not only go up by increasing returns or profit but also grows by taking more debt which brings more risk. Thus, positive ROE does not only represent the financial strength. Risk management becomes more and more significant in order to ensure sustainable profits in banks. (Ara Hosna, Bakaeva Manzura and Sun Juanjuan, 2008)

2.7 Nonperforming loan

NPL is a loan that is not earning income and: (1) full payment of principal and interest is no longer anticipated, (2) principal or interest is 90 days or more delinquent, or (3) the maturity date has passed and payment in full has not been made.

The issue of non-performing loans (NPLs) has gained increasing attentions in the last few decades. The immediate consequence of large amount of NPLs in the banking system is bank failure. Many researches on the cause of bank failures find that asset quality is a statistically significant predictor of insolvency (e.g. Dermirgue-Kunt 1989, Barr and Siems 1994), and that failing banking institutions always have high level of non-performing loans prior to failure.

It is argued that the non-performing loans are one of the major causes of the economic stagnation problems. Each non-performing loan in the financial sector is viewed as an obverse mirror image of an ailing unprofitable enterprise. From this point of view, the eradication of non-performing loans is a necessary condition to improve the economic status. If the non-performing loans are kept existing and continuously rolled over, the resources are locked up in unprofitable sectors; thus, hindering the economic growth and impairing the economic efficiency.

2.8 Capital Adequacy Ratio

Capital is the cornerstone of a bank's strength. The presence of substantial capital re-assures creditors and engenders confidence in a bank.

A bank's capital base (or total capital) is the sum of its Tier 1 and Tier 2capital less any deductions. At least 50 per cent of a bank's capital basemust be Tier 1 capital.

Tier 1 capital includes issued share capital and non-cumulative irredeemable preference shares. Tier 1 capital may also include innovative capital instruments (ie capital instruments other than ordinary shares and non-cumulative irredeemable preference shares), including instruments issued through special purpose vehicles subject to the conditions in Attachment IB. Partly-paid shares (and other capital instruments) qualify for inclusion in capital only for the value of funds actually received. General reserves and retained earnings (including measured current year earnings net of expected dividends and taxation payments), although distributable in some circumstances, generally meet the attributes of Tier 1 capital. Minority interests in subsidiaries that are consistent with other named capital instruments are eligible to be counted in the Tier 1 capital of the consolidated group.

Non-cumulative irredeemable preference shares and innovative capital instruments included in Tier 1 capital must satisfy the conditions in Attachment IA. An instrument will not be eligible for inclusion in Tier 1 capital where it would result in the aggregate amount of innovative capital instruments and non-cumulative irredeemable preference shares exceeding 25 per cent of net Tier 1 capital (ie Tier 1 capital net of non-ordinary shares and other capital instruments).

With regards servicing Tier 1 capital instruments, aggregate dividend (interest) payments in any one year should not exceed the earnings of the bank during that year (ie a bank may not pay dividends from retained earnings). APRA is, however, prepared to modify this requirement, on a case by case basis, if it believes the proposed level of dividend payments can be justified by reference to other considerations, such as an assessment of

the bank's on-going capital position, including commitments to raise capital, and the bank's core profitability.

There are other capital elements that impart strength to a bank's position but to a varying degree fall short of the qualities of Tier 1 capital instruments. These may be included in a bank's capital base as Tier 2 capital up to an amount equal to the bank's Tier 1 capital (net of goodwill, other intangible assets and future income tax benefits).

Tier 2 capitals are divided into two segments, termed Upper and Lower Tier 2 capital. Upper Tier 2 capital includes elements that are essentially permanent in nature and have characteristics of both equity and debt. Lower Tier 2 capital consists of elements which are not permanent. Lower Tier 2 capital may be included in Tier 2 capital to a maximum, in aggregate, of 50 per cent of Tier 1 capital (net of goodwill, other intangible assets and future income tax benefits).(capital adequacy of banks ,1999)

2.9 **Empirical review**

Anthony M., et.al, (1997) 'Commercial Bank Risk Management: an analysis of the process.' The researcher covered a number of North American super-regional's and quasi-money center institutions as well as several firms outside the U.S. The information obtained covered both the philosophy and practice of financial risk management. The paper outlines the results of the investigation. It reports the state of risk management techniques in the industry. It reports the standard of practice and evaluates how and why it is conducted in the particular way chosen. In addition, critiques are offered where appropriate. The researcher discusses the problems which the industry finds most difficult to address, shortcomings of the current methodology used to analyze risk, and the elements that are missing in the current procedures of risk management.

This thesis only analyze the commercial bank risk management process only, it doesn't focus on its impact on banks performance particularly on banks profit.

David H.,(1997) Bank Risk Management: Theory .This paper is conducted to discuss why risk management is needed. It outlines some of the theoretical underpinnings of contemporary bank risk management, with an emphasis on market and credit risk. This paper merely focuses on theory it doesn't get in to the practical aspects of the title.

(Feng Z.,et.al (2004), those are researcher conducted their paper on 'Profitability and risk of U.S. agricultural banks.' The researcher believed that Study of profitability and risk of agricultural banks is very important in assessing the ability to adequately finance agricultural production and rural development. A recursive system of profitability and risk equations is estimated to compare the performance of agricultural with

nonagricultural banks and to identify factors which affect performance. A linear regression model which measures risk-adjusted profitability confirms the results from the recursive system. The finding of the researcher was, agricultural banks perform better than nonagricultural counterparts on average even after controlling for risks and other factors. Further, off-balance-sheet business is found to be negatively related to the risk-adjusted profitability of agricultural banks.

Rekha A. (2004) 'Risk management in commercial banks (A case study of public and private sector banks) "Banks are in the business of managing risk, not avoiding it. To the researcher, Risk is the fundamental element that drives financial behavior. Without risk, the financial system would be vastly simplified. However, risk is omnipresent in the real world. Financial Institutions, therefore, should manage the risk efficiently to survive in this highly uncertain world. The future of banking will undoubtedly rest on risk management dynamics.

Only those banks that have efficient risk management system will survive in the market in the long run. The effective management of credit risk is a critical component of comprehensive risk management essential for long-term success of a banking institution. The researcher understood that Credit risk is the oldest and biggest risk that bank, by virtue of its very nature of business, inherits. This has however, acquired a greater significance in the recent past for various reasons. Foremost among them is the wind of economic liberalization that is blowing across the globe. India is no exception to this swing towards market driven economy.

Better credit portfolio diversification enhances the prospects of the reduced concentration credit risk as empirically evidenced by direct relationship between concentration credit

risk profile and NPAs of public sector banks. They conclude their paper by proverb which is , a bank's success lies in its ability to assume and aggregate risk within tolerable and manageable limits".

Yoonhee T., (2006) conduct a paper on 'Role of Nonperforming loans (NPLs) and capital adequacy in banking structure' , competition and analyses the impacts of the transition from price cap regulation (deposit / loan rate control) to rate of return regulation (ROA,NPLs ,and /or BIS ratio)on banking industry structure . By using multiple regression model and by taking dates of commercial banking sector in Korea between 1976 and 2003. And he investigated that the banking structure with respect to changes in regulatory regimes and the associated NPLs and BIS ratios. As to him, Level of nonperforming loan reduce over time especially after the rescue programmers were implemented in the post 1997 period .There are several limitations in the analysis .first of all; some of the conclusions are based on weak evidence due to the limited number of observations available, especially where NPLs and BIS ratios are used given the short time series available. Another limitation is that the restructuring process has had a short history and long term effects have to be further studied .however, the research presented in the paper is usually on its own in discussing the short term impact of deregulation and changes in NPLs and BIS ratios on the structure of banking system.

He only compare and contrast the impact of nonperforming loan to changes in regulatory and watches the difference of none performing and capital adequacy ratio before and after regulation but not the profitability of the sector.

Bridgeforce.,(2008) 'Comprehensive Management of Profitability and Credit Risk' The researcher basically analyze the documents it arrive to the following conclusion,

Managing credit relationships that are based upon all available customer information and consistent throughout the credit life cycle greatly increases profitability and reduces surprises. It also requires a greater investment of management focus, analytical skills, and technology.

The first step before moving to a more integrated approach, therefore, is recognition of the size of the opportunity. This can be done fairly quickly by examining your current processes and portfolio data. With that analysis and discussions among Executive Management, They believe that, they can help us to develop your vision for the future, the roadmap to get there, and the business case to support the investment. Then the best part begins: making it happens, measuring the results, and continuing the cycle of success.

Mohammad M, (2008) 'Non-Performing Loans in Bangladesh Banking Sector: Some Issues and Observations ' by using two sources which were Banking Regulation and Policy Department, Bangladesh Bank And Bangladesh Bank Annual Report of eleven year result from 1997 to 2007. Then he come to conclusion and says that "their banking sector was characterized by low profitability and inadequate capital base. The crux of the problem lies in the accumulation of high percentage of non-performing loans over a long period of time. As per him unless NPL ratio of the county can be lowered substantially they will lose competitive edge in the wave of globalization of the banking service that is taking place throughout the world. So they have had a two-decade long experience in dealing with the NPLs problem and much is known about the causes and remedies of the problem. So, it is very important for the lenders, borrowers and policy makers to learn from the past experience and act accordingly.

However Mohammad Mohiuddin focuses only on non-performing loan. He doesn't watch other factors like Capital adequacy which harm banking sector of Bangladesh and others. And he cannot relate its impact to the profitability of the sector.

Tobias M.et.al., (2009) This two person conduct a paper on 'Credit Risk Securitization and Banking Stability Evidence from the Micro-Level for Europe' Using a unique sample of 743 cash and synthetic securitization transactions issued by 55 stock listed bank holdings in Western Europe plus Switzerland over the period from 1997 to 2007. and the paper provides empirical evidence that credit risk securitization has a negative impact on the banks' financial soundness as measured by the z-score technique while controlling for macroeconomic, bank-specific, regulatory and institutional factors. Moreover, as a result of further robustness checks they find a positive impact of credit risk securitization on the banks' leverage and return volatility as well as a negative relationship between securitization and the banks' profitability.

They only focus on bank securitization but not on credit risk management, capital adequacy and other factors which affect banks profitability negatively as well as positively.

Nelson M.et.al (2009) 'Commercial banking crises in Kenya: cause and remedies' .The statement of the problem for the study is many financial institutions that collapsed in Kenya since 1986 failed due to non-performing loans. This study investigated the causes of nonperforming loans, the actions that bank managers have taken to mitigate that problem and the level of success of such actions. Using a sample of 30 managers selected from the ten largest banks the study found that national economic downturn was perceived as the most important external factor. Customer failure to disclose vital

information during the loan application process was considered to be the main customer specific factor. The study further found that Lack of an aggressive debt collection policy was perceived as the main bank specific factor, contributing to the non performing debt problem in Kenya.

This paper only searching for the reason and the action that bank managers have taken to alleviate the problem. But not on the impacts of none performing towards profitability of commercial banks in Kenya.

Ara H.,(2009) 'Credit Risk Management and Profitability in Commercial Banks in Sweden.' As per the author, Credit risk management in banks has become more important not only because of the financial crisis that the world is experiencing nowadays but also the introduction of Basel II. Since granting credit is one of the main sources of income in commercial banks, the management of the risk related to that credit affects the profitability of the banks. They try to find out how the credit risk management affects the profitability in banks. The main purpose of this study is to describe the impact level of credit risk management on profitability in four commercial banks in Sweden. The study is limited to identifying the relationship of credit risk management and profitability of four commercial banks in Sweden. The results of the study are limited to banks in the sample and are not generalized for the all the commercial banks in Sweden. Furthermore, as our study only uses the quantitative approach and focuses on the description of the outputs from SPSS, the reasons behind will not be discussed and explained. The quantitative method is used in order to fulfill the main purpose of the study. They have used regression model to do the empirical analysis. In the model they have defined ROE as profitability indicator while NPLR and CAR as credit risk management indicators. The

data is collected from the sample banks annual reports (2000-2008) and capital adequacy and risk management reports (2007-2008).

The findings and analysis reveal that credit risk management has effect on profitability in all 4 banks. Among the two credit risk management indicators, NPLR has a significant effect than CAR on profitability (ROE). The analysis on each bank level shows that the impact of credit risk management on profitability is not the same.

This is the paper which is similar with the current paper the only difference is that, its scope; one is conduct in four banks of Sweden the other one is conducted on seven commercial banks in Ethiopia.

Valentina F., (2009), those researcher conducted the paper in titled with 'The determinants of Commercial Bank Profitability in Sub-Saharan Africa.' As per the paper, Bank profits are high in Sub-Saharan Africa (SSA) compared to other regions. This paper uses a sample of 389 banks in 41 SSA countries to study the determinants of bank profitability. And it finds that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables, suggesting that macroeconomic policies that promote low inflation and stable output growth does boost credit expansion. The results also indicate moderate persistence in profitability. Causation in the Granger sense from returns on assets to capital occurs with a considerable lag, implying that high returns are not immediately retained in the form of equity increases. Thus, the paper gives some support to a policy of imposing higher capital requirements in the region in order to strengthen financial stability.

Abdelkader B.,et.al, (2009), the title of the paper is ' does bank supervision impact nonperforming loans: cross-country determinants using aggregate data.' The paper empirically analyses the cross-countries determinants of nonperforming loans and the potential impact of regulatory factors on credit risk exposure. We employ aggregate banking, financial, economic and legal environment data for a panel of 59 countries over the period 2002-2006. Empirical results indicate that higher capital adequacy ratio and prudent provision ning policy seem to reduce the level of problem loans. We also report a desirable impact of private ownership, foreign participation and bank concentration. Findings do not support the view that market discipline leads to better economic outcomes and to reduce the level of problem loans. In contrast, all regulatory devices either exert a counterproductive impact on bad loans or do not significantly enhance credit risk exposure for countries with weak institutions, corrupt business environment and little democracy. Our results are interesting for regulators, bankers and investors as well. To reduce credit risk exposure, the effective way to do it is through enhancing the legal system, strengthening institutions and increasing transparency and democracy, rather than focusing only on regulatory and supervisory issues.

Joan.S.,et.al (2010) they conduct a paper on "corporate governance and banking risk management in Ghana". The impact of stakeholders of Ghanaian banks on the management of bank capital risk, credit risk and liquidity risk is investigated. Bank stakeholders include the board of directors, shareholders, depositors and regulators. We emphasize the impact of the strength the board of directors and constructed an indicator of board strength in a manner similar to Greuning and Bratanovic (2004). Other explanatory variables of bank financial risks include management efficiency, total assets,

inflation and central bank lending rate. Three fixed effects (least squares dummy variables) regression coefficients were estimated for each of the three risks, using an unbalanced panel of 23 banks covering 2005-2008. Estimation of the variance-covariance matrix was controlled for Heteroscedasticity and autocorrelation of the residuals. Banks with board strength values higher than the industry median are labeled strong boards and those below are labeled weak boards. Statistical tests indicate that there is no difference between means and medians of bank capital, credit risk and liquidity risk indicators of banks with strong boards and banks with weak boards.

In respect of capital risk management, the following explanatory variables were significant and positive at the 5% level: management efficiency and the logarithm of total assets and inflation. The central bank lending rate was also significant but negative. For credit risk, only bank-specific dummies and management efficiency variables were significant at the 1% level. Bank reserves and inflation do so at the 10% significance level. For liquidity risk, reserves and loan-to deposit ratio significantly impact liquidity risk (1%). The impact of the board index was moderately significant (10%).

After this all they conclude that there is no statistical difference between the strengths of bank boards in Ghana, and that board strength does not have significant impact on capital risk, credit risk nor liquidity risk. Depositor behavior appears to impact only liquidity management, while, shareholders do not appear to act in a manner that reduces the credit risk taking by banks. We also conclude that, more efficient the management, the less capital the bank is likely to hold, while bank total assets are important only in capital risk management. Bank-specific approaches to credit risk management are significant.

They are doing everything good but impacts of credit risk management towards profitability were not there issue.

Nor H.A., (2004), the research conducted on 'Key Factors Influencing Credit Risk of Islamic Bank:' A Malaysian Case. As per the authors, the rapid and dynamic changes in the global financial landscape pose various risks to banking institutions. Operating side by side with conventional banks, Islamic banks are equally vulnerable to risks. The future of Islamic financial institutions will depend to a large extent on how well they manage risks. This ability could be enhanced if the factors affecting these risks are systematically identified. This paper examines the factors affecting credit risk, being the main risk faced by banking institutions and systematically identifies the key factors influencing credit risk formation in Islamic banking operations in Malaysia. A comparison of these factors between Islamic and conventional banking operations is highlighted. Several policy implications are addressed to promote risk management culture in Islamic banking industry.

They only concentrated on how they could identify those factors affecting credit risk only but not on credit risk management effect on profitability.

Hassan, et.el. (2010) the researcher conduct this research with the title of 'A comparative study of Handelsbanken and Swedbank; how risk has been managed during the last decade.' In this thesis the authors strive to investigate the risk management phenomena in the banking sector by conducting a longitudinal comparative study in two different banks i.e. Handelsbanken and Swedbank. In a broader perspective to understand the phenomena the authors depart from theoretical framework that recognizes the social and cultural elements of risk. However, to be more specific the thesis narrows down its analysis to

three main variables that come under the realm of this discussion which are; how banks organizing for risk, how they measure it and the role of IT and human judgment. This study contributes to the banking sector by providing a road map of how successful banks manage risk. It highlights that the risk question should be addressed strategically and deemed to be a continuous phenomenon.

Shuhai L.,et.el. (2010) 'Risk Management and Internal Control, A Case Study of China Aviation Oil Corporation Ltd. ' Risk management focuses on adopting a systematic and consistent approach to manage all of the risks confronting an organization. With the emergence of world as a globe village, companies are diversifying their activities; result in the increase of risks. Besides the business core activities, the increased use of derivative products by both financial and non-financial institutions and recent events or scandals continue to demonstrate the need for enhanced standards and processes of control over risk. This is of greatest interest for multinational companies, insurance organizations, banks, securities houses and non-financial institutions given the extent of their business activities in derivative products.

The objective of this thesis is to identify the role and importance of internal control system in good risk management practice with a particular emphasis on management structure and reporting system and in general with Principles of Corporate Governance and Risk Management. Our focus is on the China Aviation Oil Corporation Ltd., (CAO). We will draw attention to the regulatory environment and recent regulatory and supervisory developments with respect to risk management practice.

To be able to fulfill the purpose of study, qualitative research method was considered, using an inductive approach of a single case study of China Aviation Oil Corporation

Ltd., with company related research literature, Committee of Sponsoring Organization of the Treadway Commission and Fortis Bank as source of data.

Based on the analysis, a number of observations were put forward in the conclusion. To begin with the strategy in relation to management structure and reporting system of CAO are employed after the company crisis for better control and reporting system. In addition, the role of information technology is considered in risk management. Meanwhile, the good governance and risk management according to Accounting Standards application in risk management system and corporate governance are included in the discussion. In attempt of entrepreneur risk management in the firm, we also discuss the role of Enterprise Risk Management on the organizational performance with different perspectives.

Sudhir C.,et.el., (2010) 'Credit risk management '. The purpose of this document is to provide directional guidelines to the banking sector that will improve the risk management culture, establish minimum standards for segregation of duties and responsibilities, and assist in the ongoing improvement of the banking sector in Bangladesh. Credit risk management is of utmost importance to Banks, and as such, policies and procedures should be endorsed and strictly enforced by the CEO and the board of the Bank.

2.10 Conclusion

Both researches listed above focus on credit risk, credit risk management, internal control ,banks profitability ,the ways how risks are managed , impacts of supervision of banks to non-performing loan , corporate governance and banks profitability , and many others which has linkage in banks profitability and credit risk management separately .

But there is no paper conduct to measure the impacts of credit risk management to banks profitability. Except, thesis conducted on four commercial banks of Sweden. Almost all theories supports that there are positive co movement among credit risk management and banks profitability.

To assure that and to measure its impact level there must be research in each country. We cannot tell the impact level from the scratch or simple from the theory. Measuring the impact level of credit risk management is needed, to make countries credit risk management department well aware about the impacts level of credit risk management towards profitability of their business. It is also very much important for policy makers.

It is well known that , banks in our country are profitable for the time being, however to sustain their profit in the future and even to make them more profitability than before, the impact level of credit risk management must be identified and corrective action must be taken in advance. When the researcher says corrective action, it's referring appropriate credit risk management mechanisms to the country.

So in this study the researcher wants to measure the impact level of credit risk management towards profitability's of commercial banks in Ethiopia.

Chapter Three: Methodology

In this section the researcher wants to demonstrate the methodology which he has used in his work. It consists of research design, sample, population and participants in the study, data collection and analysis instruments used by the researcher, about the model and the components of the model meaning both the dependent and the independent variables are explained.

3.1 Research design

The research is quantitative research. Meant for, the researcher uses regression model, to analyze the data which is collected from the National Bank of Ethiopia (NBE here after) and from seven commercial banks of the country. Those are Commercial Bank of Ethiopia, Awash international bank, Dashen bank, Nib International Bank,Wegagen Bank ,United Bank and Bank of Abyssinia. There are also few questioners which will be distributed to credit risk management bodies of each bank in the study.

Depending on the result of regression output and feedback from research question, then analysis were conducted and research question will be answered. The researcher selects seven commercial banks of the country who submit their annual report to NBE starting from 2001 till 2010.

For that reason ,the researcher do have 70 observations in the regression analysis .Theoretically, the number of Observations should be 20:1 (20 observations per one independent variable) in the regression analysis and as low as 5:19.(as sited as, Princeton

University.) but in this study the researcher used more than double from what actually expected for regression . Which are more than satisfactory with respect to the standard?

3.2 Sample Population and Participants

The researcher selects seven 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 2001 to 2010, and used for regression purpose. The reason why the researcher purposively selects seven banks is, to have more observation. For that banks with ten year life span and more are selected. Therefore, there are 70 observations in the regression analysis. Theoretically the number of observation should be 20:1 (20 observation per 1 independent variable) in the regression analysis and as low as 5:19 .in our case, the researches added 70 observation and two independent variables.

3.3 Data collection and analysis instruments

3.3.1 Data Collection

The main sources of data for the study are found from the off balance sheet of seven purposively selected banks. From those banks, 10 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. There are also questionnaire which is distributed to banks, Risk and Compliance Management Officer of the head office, Risk Management Department Officers, loan

officers and selected staffs of the head office. Then the results of the regression output are compared and contrasted with the questioner results, which is received from the credit risk managers of each bank.

3.3.2 Data analyzing instruments

The researcher uses multiple regressions to analyze the data which are collected from banks. This means, there is a dependent variable and two independent variables are there in the model. The researcher does not develop a new model instead adopt a model which formerly used by other researchers in the same title in Sweden.

The regression outputs are obtained by using SPSS. In addition, the researcher uses MS Excel to confirm the accuracy of the results.

3.4 Applied regression model

As it was explained before the researcher does not develop his own model instead he adopt the model which has been used by Ara Hosna, Bakaeva Manzura and Sun Juanjuan in 2009 with the same title " credit risk management and profitability in commercial banks in Sweden ". From early studies they had revealed that the determinate for profitability is ROE (Net Income/Total Shareholders' Equity) and for credit risk management are NPLR (Non-performing Loans/Total Loans) and CAR [(Tier I + Tier II)/Risk Weighted Assets] respectively. Then after, the researcher used multiple regression models with one dependent and two independent variables for their own stud y. So the researcher of the current thesis uses the same model for his study. By considering the following in the regression model:

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3.4.1 Dependent variable

As per Richard loth ROE is the ratio which indicates how profitable a company is by comparing its net income to its average shareholders' equity. The return on equity ratio (ROE) measures how much the shareholders earned for their investment in the company. The higher the ratio percentage, the more efficient management is in utilizing its equity base and the better return is to investors.

$$Formula = \frac{Net\ Income}{Average\ Share\ Holders' equity}$$

The researcher has decided to use ROE as the indicator of the profitability in the regression analysis because ROE along with ROA has been widely used in earlier research. Initially, the researcher has considered the ratios ROE and RORAC (Profit after Tax/Risk Adjusted Capital) (return on risk adjusted capital, as sited as, Ara Hosna, Bakaeva Manzura and Sun Juanjuan, 2009). RORAC is a measure for relative performance of the banks and could have been used in the current regression analysis. However, the researcher is not used RORAC because it is usually used by the banks with internally available information, for example, risk-adjusted capital, and one do not have access to such required information. Therefore, the researcher decided to use ROE as the indicator of profitability. In this case, the required information is available in the annual reports of the banks. (Hosna, Bakaeva Manzura and Sun Juanjuan, 2009)

3.4.2 Independent variables

The researcher chooses two independent variables namely NPLR and CAR because these two are the indicators of risk management which affect the profitability of banks. NPLR, in particular, indicates how banks manage their credit risk because it defines the

proportion of NPL amount in relation to TL amount. ***NPLR***. NPLR is defined as NPLs divided by TLs. To calculate this ratio, the researcher used data provided in the annual reports of each bank. From 2001 until 2010, NPL amount has been presented using different names, such as, impaired loans, problem loans, doubtful claims and loan allowances. However, the definitions of those are similar to the definition of NPLs. Banks provide more precise categorization of NPLs after the adoption of IFRS in 2005. 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:

$$NPLR = \frac{NPL\ amount}{TL\ amount}$$

(CAR) is a ratio that regulators in the banking system use to watch bank's health, specifically bank's capital to its risk. Regulators in the banking system track a bank's CAR to ensure that it can absorb a reasonable amount of loss.

Regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system.

Shortly Capital adequacy ratio is the ratio which determines the capacity of a bank in terms of meeting the time liabilities and other risk such as credit risk, market risk, operational risk, and others. It is a measure of how much capital is used to support the banks' risk assets.

Bank's capital with respect to bank's risk is the simplest formulation; a bank's capital is the "cushion" for potential losses, which protect the bank's depositors or other lenders.

The ratio is calculated by dividing Tier1 + Tier2 capital by the risk weighted assets.

$$Capital\ Adequacy\ Ratio = \frac{Capital}{Risk}$$

$$Capital\ Adequacy\ Ratio = \frac{Tier\ 1 + Tier2\ capital}{Risk\ Weighted\ Assets \times 8\%}$$

Two types of capital are measured for this calculation. Tier one capital is the capital in the bank's balance sheet that can absorb losses without a bank being required to cease trading.

Tier two capital can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors.

The detail of capital adequacy ratio is explained in the review of related literature.

2.4.3 Regression analysis explained

The regression analysis is conducted to find out the following:

a. The relationship between credit risk management and profitability in seven banks: the researcher uses 10 years period (2001-2010) for 7 banks which in total gives 70 observations;

This is multivariate regression model which is presented below (directly imitated from former researchers, Ara Hosna, Bakaeva Manzura and Sun Juanjuan, 2009).

$Y = \acute{a} + \hat{a}1X1 + \hat{a}2X2 + \cdots + \grave{a}nxn + \varepsilon$

Y – the value of dependent variables;

α – the constant term;

β – the coefficient of the function;

x = the value of independent variables;

ε – the disturbance or error term

Application

Y: ROE- profitability indicator

X1: NPLR –credit risk management indicator

X2: CAR –credit risk management indicator

Thus the regression equation becomes:

$$ROE = \alpha + \beta 1NPLR + \beta 2CAR + \varepsilon$$

It is the regression function which determines the relation of X (NPLR and CAR) to Y (ROE). α is the constant term and β is the coefficient of the function, it is the value for the regression equation to predict the variances in dependent variable from the independent variables. This means that if β coefficient is negative, the predictor or independent variable affects dependent variable negatively: one unit increase in independent variable will decrease the dependent variable by the coefficient amount. In the same way, if the β coefficient is positive, the dependent variable increases by the coefficient amount. α is the

constant value which dependent variable predicted to have when independent variables equal to zero (if X1, X2=0 then α=Y).

Finally, ε is the disturbance or error term, which expresses the effect of all other variables except for the independent variables on the dependent variable that we use in the function.

Regression analysis output contains values which we discuss below:

R^2 is the proportion of variance in the dependent variable that can be predicted from independent variables. There is also adjusted R^2 which gives more accurate value by avoiding overestimation effect of adding more variables to the function. So, high R^2 value indicates that prediction power of dependent variable by independent variables is also high. Adjusted R^2 is calculated using the formula $1-((1-R^2)*((N-1)/(N-k-1))$. The formula shows that if the number of observations is small the difference between R^2 and adjusted R^2 is greater than 1 since the denominator is much smaller than numerator. Adjusted R^2 sometimes gives negative value. Since R^2 is adjusted to find out how much fit probably happen just by luck: the difference is amount of fit by chance. Also, negative values of adjusted R^2 occur if the model contains conditions that do not help to predict the response (ROE) or the predictors (NPLR and CAR) chosen are wrong to predict ROE. R^2 is generally considered to be secondary importance, unless the primary concern is of using regression equation to make accurate predictions. R^2 is an overall measurement of the strength of association, and does not reflect how any independent variable is associated with the dependent variable.

The Probability value (P-value) is used to measure how reliably the independent variables can predict the dependent variable. It is compared to the significance level which is typically 0.05. If the P-value is greater than 0.05, it can be said that the independent variable does not show a statistically significant relationship with the dependent variable. The F-value calculated as $(R^2/1)/ ((1-R^2/n-2))$ and associated P-value shall be looked at to measure the effect of the group of independent variables on dependent variable. The resulted F-value should be compared to the critical F-value (Fv1, v2) which is taken from the F distribution table. Both V1 and V2 are called as degrees of freedom. V1 is number of independent variables and V2 is number of observations minus number of independent variable minus 1. For instance, in our case, we have two independent variables and 70 observations, then V1=2, and V2=n-k-1=70-2-1=67. Thus the critical value of F (3, 66) can be found in the distribution table accordingly. If the resulted F-value exceeds the critical F-value, it can be said that the regression as a whole is significant. (Ara Hosna, Bakaeva Manzura and Sun Juanjuan, 2009)

Chapter Four: Data analysis and presentation

4.1 Introduction

The regression analysis is used to test if an independent variable influences a dependent variable and weather this effect is positive or negative. In this research the researcher use multiple regression analysis which is used to test whether one or more independent variables (predicates) influence a dependent variable (outcome variable) and if this effect is positive or negative. But before rushing towards data analysis and presentation the researcher made a diagnostic test for the data which collected from the respondents. In the diagnostic analysis the researcher faced only heteroscedasticity problem. To address this problem, the researcher tried to find out whether the problem arises from NPLR, CAR or from both independent variables sides. And finally the problem is found from NPLR side BUT not in CAR side. Even if the problem is found from the side of NPLR, still the researcher could not tell about the exact trend of the error term. As per different authors, when one fail to understand the trends of the error term they advise to use WLS as a replacement for OLS. So the researcher uses WLS than OLS to handle the problem or to hold the tail of the error term. So formerly the model were

$$y = \alpha + \beta 1x1 + \beta 2x2 + \varepsilon$$

Where y dependent variable (return on equity)

α Constant term (the value of y if x1 and x2 both are 0)

X1 stands for Nonperforming loan ratio

X2 stands for Capital Adequacy ratio, ε = error term

But now the formula is converted from OLS in to WLS and it become

$$y = \alpha + \beta 1 * \frac{1}{(x1)w} + \beta 2x2 + \varepsilon$$

W= log likely hood function

In this chapter the researcher made diagnostic tests through SPSS, Remedial action prepared to curve or bend the problem of hetrosedacity in the time of diagnostic tests, and at last data analysis and presentation are explain in detail.

4.2 Diagnostic tests

Below the researcher uses regression command for administration of regression. This is followed by the output of these SPSS commands.

Table 1

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	Capital adequacy ratio, Nonperforming loan ratio[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Return on Equity

Source: SPSS regression out put

Table one displays the variables entered or variables removed from the study at any point in time from the beginning till the end of the work. As it explained in variables entered column there are two independent variables entered on the study, those are capital adequacy ratio and non-performing loan ratio. Since there was no variable removed from the study, the 3rd /variable removed /column is free. The last column shows the method that was used by the researcher, so here the researcher uses "enter method" to remove or enter the variables. All variables are entered on the above table. The dependent variable which is return on equity explained in the bottom of the table.

Table 2: Does the model fits?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3042.482	2	1521.241	10.026	.000[a]
	Residual	10165.628	67	151.726		
	Total	13208.111	69			

a. Predictors: (Constant), Capital adequacy ratio, Nonperforming loan ratio

b. Dependent Variable: Return on Equity

Source: SPSS regression out put

ANOVA, table summarizes the output of the analysis of variance. In regression row, the output for regression displays information about the variation accounted for by the existing model. Residual displays information about the variation that is not accounted for by the model. And total in the table shows the sum of regression and residual. Mean square is the sum of squares divided by the degrees of freedom .And F statistics is the regression mean square divided by the residual mean square. If the significance value of the F statistics is small then the independent variable does a good job in explaining the variation in the dependent variables)

Hypothesis

Ho = the fit is NOT good

H1 = the fit is good

P value is 0.05 then it's better to compare with significance level which is 0.000 and the p value is greater than that of sig value. Then the researcher rejects Ho and fail to reject H1 meaning the model is fit.

Table 3: How much the model is good?

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.480[a]	.230	.207	12.31770	1.579

a. Predictors: (Constant), Capital adequacy ratio, Nonperforming loan ratio

b. Dependent Variable: Return on Equity

Source: SPSS regression out put

Table three; demonstrate about large R, which shows the multiple correlation coefficients and the correlation between the observed and predicted values of the dependent variables. And the value of R for models produced by the regression procedure range from 0 to 1. The larger the value of R display that there is strong relationship among observed and predicted value. In our case R is 0.480.

R^2 is the proportion of the variation in the dependent variable explained by the regression model. As of R the value of R^2 ranges between 0 and 1, beside to that small value indicates that the model does not fit the data well. As the table indicates the independent variable explained the dependent variable by 23%.

Adjusted R^2 attempts to correct R square to more closely reflect the goodness of fit of the model in the population.

In table 2 the researcher assures that the model does fit. But here one may ask question by saying "how much the model is fit" or "how much the good is good?" S/he gets answer from table three by observing adjusted R^2, which is 0.207. And conclude that the model is 20.7% fit/good.

4.2.1. Correlation test

Table 4

Coefficient Correlations[a]

Model			Capital adequacy ratio	Nonperforming loan ratio
1	Correlations	Capital adequacy ratio	1.000	.150
		Nonperforming loan ratio	.150	1.000
	Covariances	Capital adequacy ratio	.071	.006
		Nonperforming loan ratio	.006	.021

a. Dependent Variable: Return on Equity

Source: SPSS regression out put

Table 4 displays the correlation and covariance matrices of the independent variables included in the model at each step. In the correlation matrices, the values of the correlation coefficients range from -1 to 1.correlation coefficient describes about two variables , to check whether they are related each other or not .

When the correlation coefficient is -1, its displays that there is perfectly negatively correlation , when the correlation coefficient is +1 its indication is perfectly positively

correlated , When it became in between 0.3 and 1it shows that there is positive correlation among variables, and when it lies in between -0.3 and -1 it display that negative correlation among variables . But when the variable is in between -0.3 and +0.3, it shows that there is no correlation among variables.

As we can from the table 4 the correlation coefficient is 0.150 it shows that there is no correlation among independent variables.

4.2.2 Collinearity (Multicolinearity) test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	40.860	4.826		8.466	.000		
	Nonperforming loan ratio	-.543	.144	-.409	-3.777	.000	.978	1.023
	Capital adequacy ratio	-.783	.266	-.319	-2.943	.004	.978	1.023

a. Dependent Variable: Return on Equity

Table 5

Source: SPSS regression out put

Table five concentrated on unstandardized and standardizes coefficients. Unstandardized coefficients are the coefficients of the estimated regression model. Whereas standardize coefficients are or beta are an attempt to make the regression coefficients more comparable. The "t"statistics can help us to determine the relative importance of each variable in the model. As a guide regarding useful predictors, look for t values well below -2 or above +2.

Collinearity (or multicollinearity) is the undesirable situation where the correlations among the independent variables are strong. Tolerance is a statistics used to determine how much the independent variable are linearly related to one another. Tolerance is the proportion of variables variance not accounted for by other independent variables in the model. A variance with a very; low tolerance contributes little information in to a model, and can cause computational problems.

VIF or the variance inflation factor is the reciprocal of the tolerance. As the variance inflation factor increases, so does the variance of the regression coefficient, making it an unstable estimate. Large VIF values are an indicator of multicollinearity.

When there is a perfect linear relationship among the predictors, the estimates for a regression model cannot be uniquely computed. The term collinearity implies that two variables are near perfect linear combinations of one another. When more than two variables are involved it is often called multicollinarity, even though the two terms are often used interchangeably.

The primary concern is that as the degree of multicollinearity, the regression model estimates of the coefficient become unstable and the standard error for the coefficients can get wildly inflated. Let's see some SPSS commands that help to detect multicolinearity. One can use VIF and Tolerance value for each predictor as a check for multicolinearity. The tolerance is an indication of the percent of variance in the predictor that cannot be accounted for by the other predictors, hence very small values indicate that a predictor is redundant, and values that are less than 0.10 may merit further investigation. The VIF, which stands for variance inflation factor, is (1/tolerance) and as a rule of thumb, a variable whose VIF values are greater than 10 may merit further

investigation. If two explanatory variables are highly correlated with each other, they can cause problems during multivariable analysis because they are explaining almost the same variability in the outcome. Therefore, it is beneficial to examine associations/correlation between explanatory variables and exclude one of a pair of highly correlated variables before conducting multivariable analysis.

Let's first look at the regression we did from the last section, the regression model predicting ROE from NPLR and CAR using SPSS. As we can see form the table above the 'tolerance' and 'VIF' are all quite acceptable.

Table 6

Collinearity Diagnostics [a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Nonperforming loan ratio	Capital adequacy ratio
1	1	2.592	1.000	01	05	02
	2	354	2.707	02	79	08
	3	054	6.898	97	16	90

a Dependent Variable: Return on Equity

Source: SPSS regression out put

Table 6 is a table which display statistics that help for determine whether there are any problems with collinearity or not. Collinearity (multicollinearity) is the undesirable situation where the correlations among the independent variables are string.

Eigenvalues proved an indication of how many districts dimensions are there among the independent variables. When several eigenvalues are close to zero, the variables are

highly inter correlated and small changes in the data values may lead to large changes in the estimates of the coeffients.

Condition index are the square roots of the ratios of the largest eigenvalue to each successive eignevalue. A condition index greater than 15 indicates a possible problem and an index greater than 30 suggests a serious problem with collinearity.

Even if eigenvalus are used for checking the existence of collinearity, the best way is conditional index. So in this research case, since conditional index value scored around 1, 3 and 7, from this ground the researcher can say that there is no multicollinearity among independent variables.

Table 7

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.8996	30.8130	22.4780	6.64033	70
Residual	-18.23534	47.71675	.00000	12.13787	70
Std. Predicted Va	-3.250	1.255	.000	1.000	70
Std. Residual	-3.916	3.874	.000	.985	70

a. Dependent Variable: Return on Equity

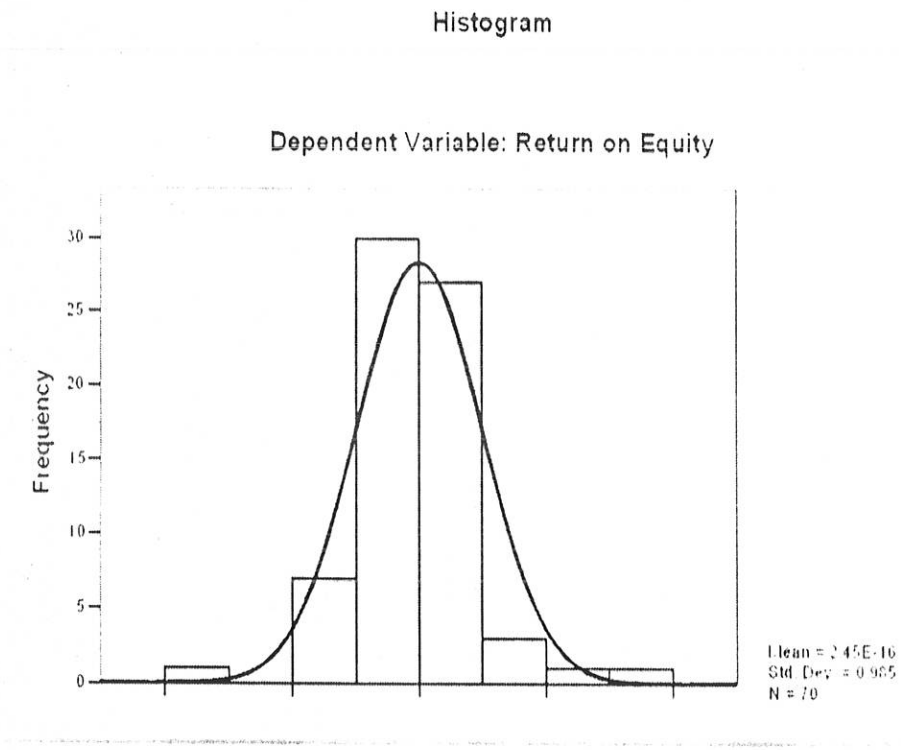
Source: SPSS regression out put

Table 7, tells about the residual and predicted value. For each case, the predicted value is the value predicted by the regression model and for each case; the residual is the difference between the observed value of the dependent variable and the value predicted by the model. Residuals are estimate of the true errors in the model, if the model is appropriate for the data, the residuals should follow a normal distribution. Standardized

predicated values are predicated values standardize to have mean 0 and standard deviation of 1. In short standardize residuals are ordinary residuals divided by the sample standard deviation of the residual and have mean of 0 and standard deviation of 1.

4.2.3 Test of normality of Residuals

Figure 1

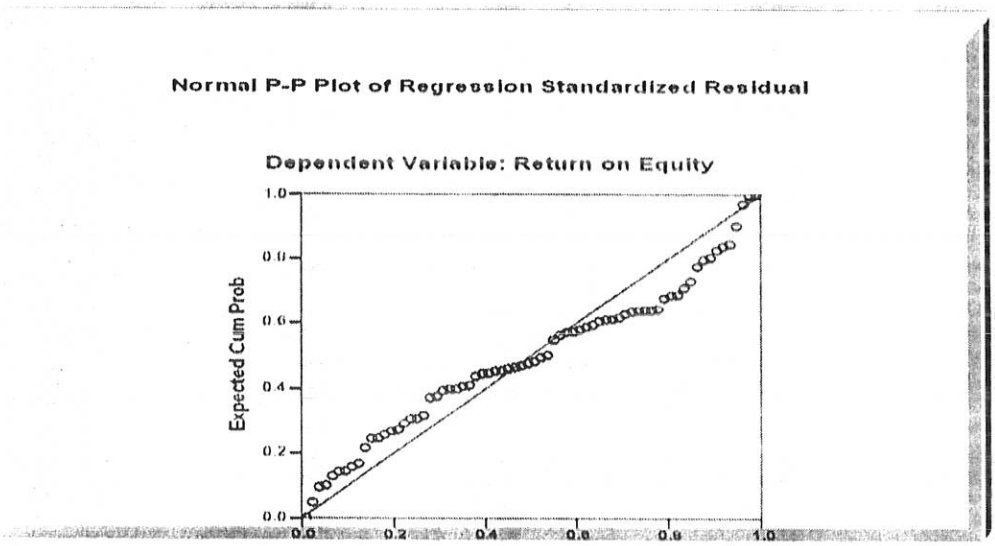


Source: SPSS regression out put

One of the assumptions of linear regression analysis is that the residual are normally distributed, at the mean of zero and standard deviation of one .All of the results from the examine command suggest that the residual or the error term are normally distributed

.The skewness and kurtosis are near to 0. As one can observe from the histogram and p-p plot it looks normal. Based on these results, the residuals from this regression appear to conform to the assumption of being normally distributed.

Figure2



Source: SPSS regression out put

Figure 1 shows whether the data are normally distributed or not. The error term should be normally distributed at the mean of 0 and standard devotion 1, here in this model the mean is approximately 0 and the standard devotion is 0.985 approximately 1, so the model is normally distributed. The researcher watched from the histogram and from the p- p plot too.

4.2.4 Test of nonlinearity

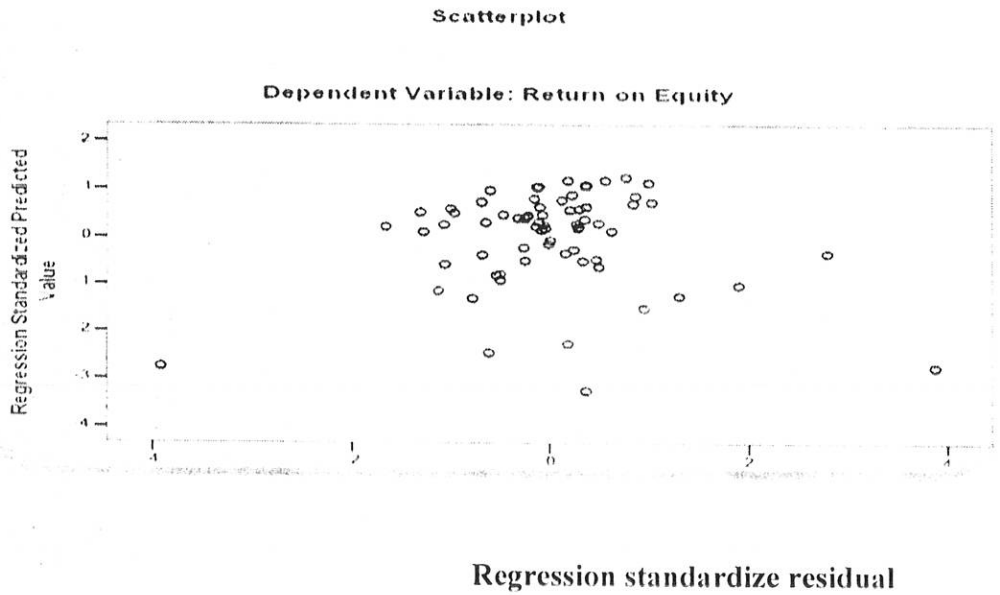
When we do linear regression , we assume that the relationship between the response variable and the predictors is linear . if this assuption is violated , the linear regression will try to fit a straight line to data that do not follows a straight line . checking the linearity assumption in the case of simple regression is straightforward, since we only have one predictr. All we have to do is a scatter plot between the response varible and the predictor to see if nonlinearity is present , such as a curved band or a big wave – shaped curve . we can see thet the relationship beetwen two variable by adding a regression line to the chart by duble clicking on schater plot and choosing "chart" then " option " and the " fit line total" and we can see how poorly or goodly the line fit the data .

4.2.5 Test of heteroscedasticity

Another assumption of ordinary least square regression is that the variance of the residuals is homogeneous across levels of the predicted values, also kown as homoscedasticity . if the model is well – fitted , there should be no pattern to the residuals plotted against the fitted values . if the variance of the residuals is non – constant then the residual variance is said to be heteroscedastic.

Bellow we see the / scater plot sub command to plot stndard residuals by the redicted values. One can see that the patern of the data points is getting together towards the write , this is an indication of the mild heteroscedasticity .

Figure 3

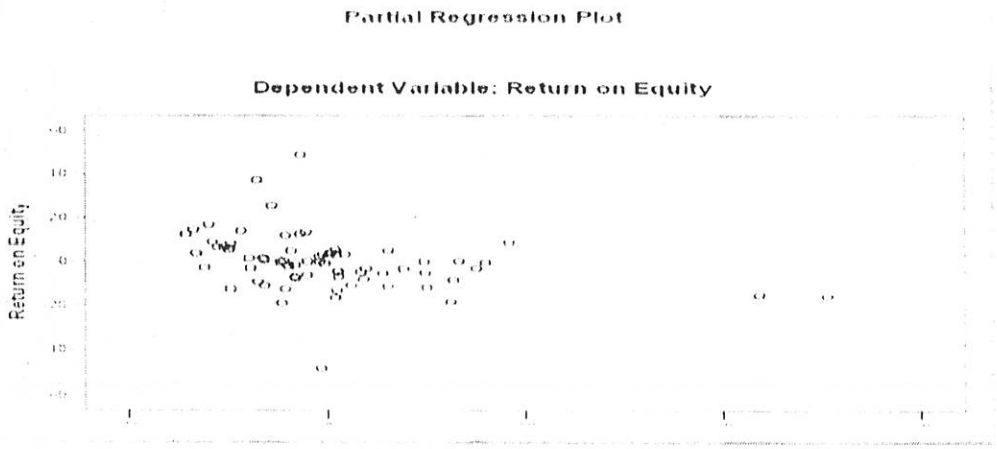


Source: SPSS regression out put

4.3 Remedial Actions

From the previous figure the researcher clearly identified that there is a problem of heteroscedasticity. So, remedial action is needed to address the problem. From figure three the researcher observed data points that are far away from the rest of the data points. To check where the problem is, individual graph of ROE with NPLR and CAR so that the researcher can get the better view of these scatter plots.

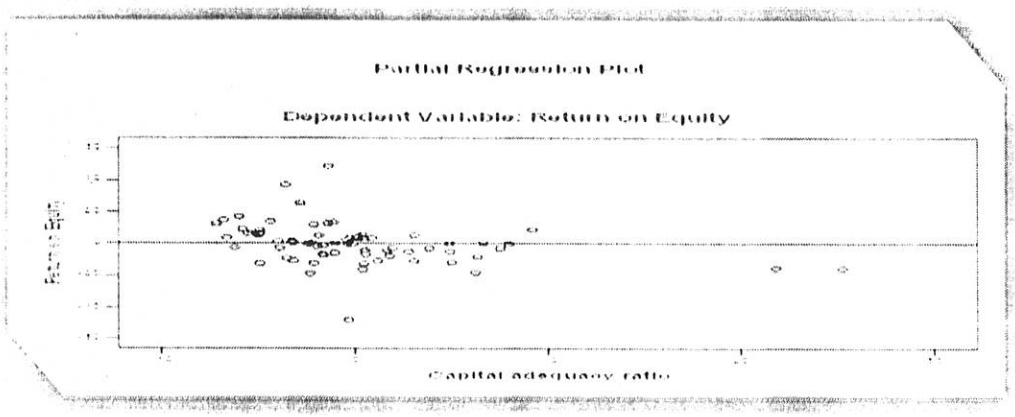
Figure4



Source: SPSS regression out put

As per the figure 4 of CAR one can easily tells the trends of its error term which can be handled this way.

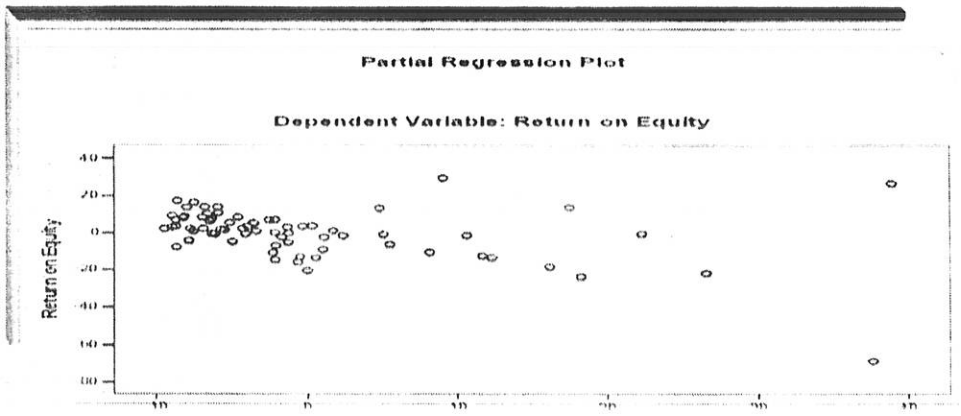
Figure 5



Source: SPSS regression out put

Figure6

There is a problem of hetroscedacity on NPLR as the researcher observed from figure bellow. And Still the researcher couldn't tell about the exact trend of the error term. As per different authors, when one fails to tell the trends of the error term, they advise to use WLS instead of OLS. So the researcher uses WLS than OLS to handle the problem or to hold the tail of the error term.



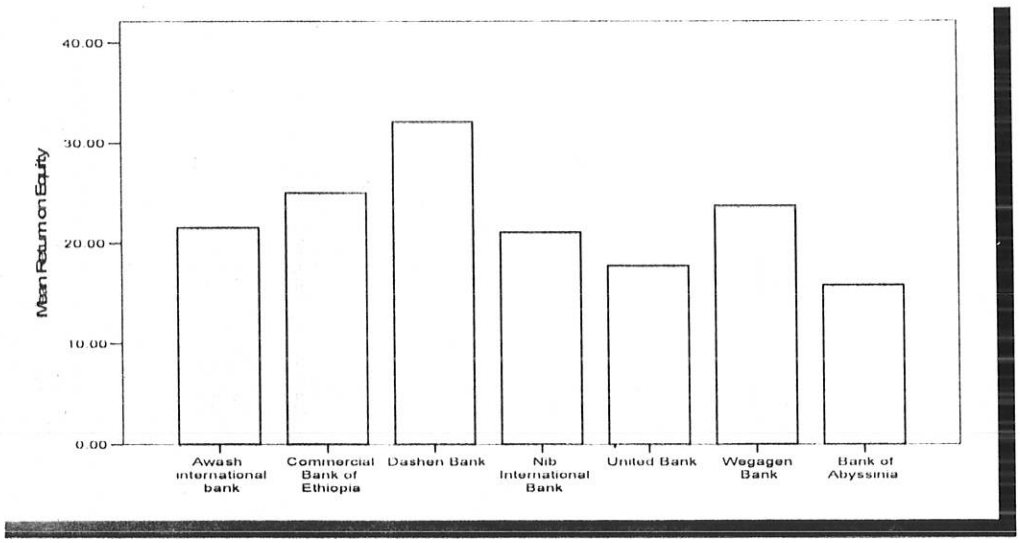
Nonperforming loan ratio

Source: SPSS regression out put

4.4 Data Analysis and Presentation

As the graph bellow shows the return on equity of each banks are positive in every of the observation except two situations (observation). ROE of CBE in the year 2002 were -44 and ROE OF Abyssinia bank in the same year were -1.4. Otherwise all banks has positive return on equity from year to year as we can observe from the graphs bellow.

Graph 1



Graph 2

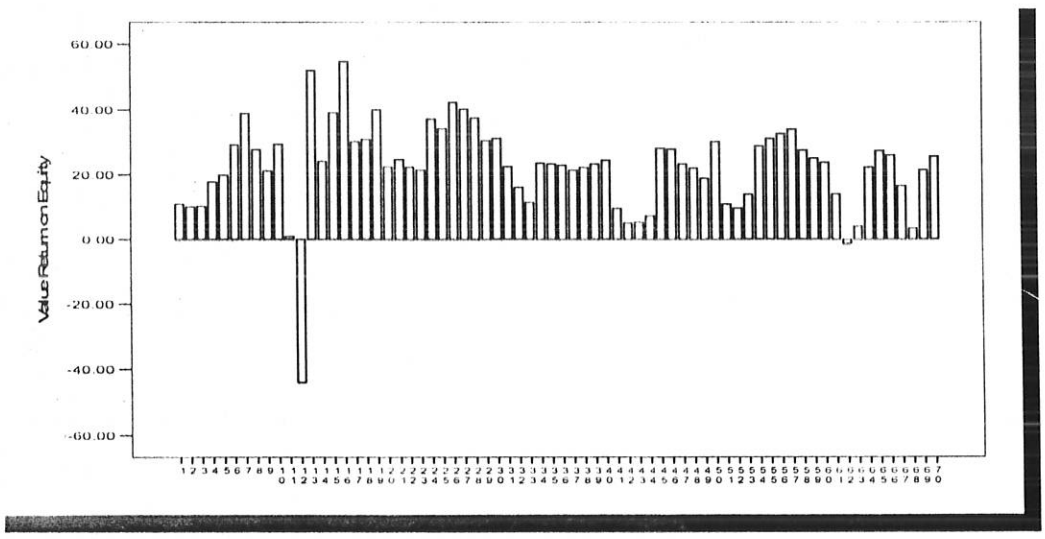


Table 8

MODEL: MOD_3.

Source variable.. NPLR

Log likelihood Function =	259.465917 POWER value = 0.500
Log likelihood Function =	252.526389 POWER value = 1.000
Log likelihood Function =	252.735645 POWER value = 1.500

Source: SPSS regression output after remedial action for hetroscedasity problem

The Value of POWER Maximizing Log-likelihood Function = 1.000

Log likely hood function is the likely hood probabilistic function which helps an individual where he/she can get the minimum error. The researcher gets the minimum error when s/he takes appropriate weight from the log likely hood function. In our case the log likely hood function or the likely hood probability function is 1.000 which means 1. So the model changed from OLS in to WLS. Which is

$$y = \alpha - \left(\beta 1 * \frac{1}{(NPLR)w}\right) - (\beta 2 * CAR) + \varepsilon$$

W= Weight

As one can see from the model NPLR has inverse relation with that of ROE, Whereas CAR has direct relationships with dependent variable.

Source variable.. NPLR POWER value = 1.000

Dependent variable.. ROE

Table 9

List wise Deletion of Missing Data

R Square	.29366
Adjusted R Square	.27257
Standard Error	2.98531

----------Analysis of Variance: ----------

ANOV A(b)					
Model	DF	Sum of Squares	Mean Square	F	Sig
Regression	2	248.24593	124.12297	13.92750	.0000
Residuals	67	597.10915	8.91208		
Total					

Source: SPSS regression output after remedial action for hetroscedasity problem

Let's examine the output from the regression analysis. First of all let's look the p value of the F test to see if the overall model is significant or not. With the p value of 0 to the four decimal places, the model is statistically significant. The R square is 0.29366, meaning that approximately 30% of the variability of ROE is accounted for by the variables in the model .The coefficient for each of the variables indicates the amount the amount of

change one could expect in ROE given a one unit change in the value of that variable, given that all other variables in the model are held constant. For example let's consider the variable CAR from the next table; the researcher would expect a decrease of 0.831316 in the ROE score for every one unit increase in CAR, by assuming that all other variables in the model are held constant.

Table 10

---------- **Variables in the Equation** ----------

	Unstandardized coefficient		Standardize coefficient		
Variable	B	SE B	Beta	T	Sig T
(Constant)	42.201476	3.527050		11.965	.0000
NPLR	-.594077	.163470	-.377922	-3.634	.0005
CAR	-.831316	.190887	-.452886	-4.355	.0000

Source: SPSS regression output after remedial action for hetroscedasity problem

Log-likelihood Function = -252.526389

The following new variables are being created:

$$Y = \alpha + \left(\beta 1 * \frac{1}{(NPLR)w}\right) + (\beta 2 * CAR) + \varepsilon$$

$$y = 42.20 + \left(-0.594077 * \frac{1}{(NPLR)1}\right) + (-0.831316 * CAR) + \varepsilon$$

Ho = unstandardize coefficient of beta coefficient is NOT significant.

H1 = unstandardize coefficient of beta is significant.

As we can see from table 10 both the constant, NPLR and CAR are significant.

First the researcher answer about the two predictors, whether they are statistically significant and if so the direction of the relationship. The effect of NPLR (non-performing loan ratio) which is

(Beta = -.594077, P 0.05) is significant and its coefficient is negative indicating that the greater the nonperforming loan ratio the lower the profitability of commercial banks in Ethiopia. The NPLR is highly lower profitability of banks. This result also makes sense, because both the theoretical and empirical evidences' support that too. The effect of capital adequacy ratio is also (CAR, Beta = - .831816) significant (p, 0.05) and as watched it is negative which indicates that the one unit increase in capital adequacy ratio leads in 0. 831816 decrease in profitability of the banks of the country.

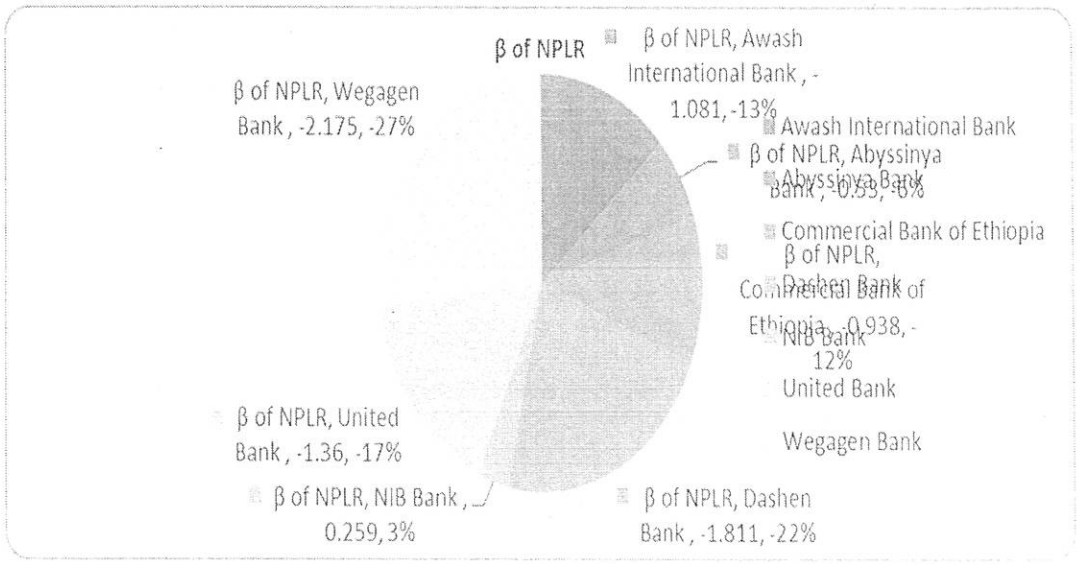
Table 11

If there is an individual who need to know the beta value of both nonperforming ratio and capital adequacy ratio of each bank, the table below answer this question. In addition to that one can get the adjusted R square and significance level of each bank separetly.

Each banks regression results

	AIB	AB	CBE	DB	NIB	UB	WB
β of NPLR	-1.081	-.530	-.938	-1.811	.259	-1.360	-2.175
β of CAR	-1.283	-1.488	-1.951	-.926	-.370	-.334	-.674
Adj.R2	0.778	.371	-.022	.474	-.150	.556	.469
Sig.	0.02	.082	0.447	.044	.677	0.25	.045

Source: SPSS regression output of each bank



Source: SPSS regression output of each bank

Chapter five: Conclusion and recommendation

The purpose of this chapter is to review the whole thesis and highlight future researcher directions. Accordingly section one presets the major findings and conclusion and the next secton presents recommendation made by the researcher for all concerned bodies.

5.1 Conclusion

There was no correlation among independent variables (NPLR and CAR) which means each of the independent variables explained the dependent variable separately.

The model in the study is 23% good before remedial action was made. But it increased in to 29% after remedial action were taken by the researcher. Or after the tail of the error term is captured by the researcher. Which means the independent vaiable explained dependent variable around 29%.

There was no collinearity (multicollinearity) among independent variables. And the error term are normally distributed at the mean of zero and standard deviation of 0.987 which is around 1.

There was a problem of hetroscedacity and to address the problem the researcher uses weighted list square (WLS) than Ordinary list square (OLS)

Both nonperforming loan ratio and capital adequacy ratio has a negative impact on profitability's of commercial banks in Ethiopia.

The impact level of nonperforming loan ratio is negative which means, a single unit increase in nonperforming loan ratio leads in (.594077) decrease of profitability of commercial banks of Ethiopia.

Nonperforming ratio have inversely related with profitability whereas capital adequacy ratio has a direct relation with profitability of banks.

The impact level of capital adequacy ratio had also been negative; it indicates that a unit increase of capital adequacy ratio leads 0.831816 decreases in profitability of commercial banks of Ethiopia.

Credit risk management of commercial banks of Ethiopia is poor, because both higher in the management position are maximum of BA and diploma qualification as the researcher gets from the questioner collected from each banks credit risk management office .

5.2 Recommendations

Banks needs to hire the one who has high experience and qualification on credit risk management and the one who aware about its significant impact to banks profitability.

It's better if university colleges of the country added "credit risk management course" on their curriculum, not only for Msc program students but also for BA and Diploma program student's too

Banks board of directors are responsible for each and every activities of the bank, so they need to conduct continues training for their employees particularly for credit risk management department managers and employees as well.

Policy maker of banks (in our country NBE) need to set policy , and guidelines which force banks to think over their credit policy ,risk management policy , and other related things .

Since there was no formal research conducted on such area other researcher of the country needs to conduct different and important so that contribute their responsibility and should have to made changes on the attitude of the community and the responsible bodies as well.

References

Abdelkader B., Neila B. TAKTAK, Sana J., 2009, 'Does bank supervision impact nonperforming loans:cross-country determinants using aggregate data '

A Financial Measurement of a Bank's Performance | eHow.com http://www.ehow.com/facts_7519820_financial-measurement-banks-performance.html#ixzz1Kog0cty2

Andrew Fight, 2004, 'Credit risk management: essential capital markets. Elsevier Butterworth heinemann press.

Anthony M. Santomero, 1997), 'Commercial bank risk management: an analysis of the processes', university of Pennsylvania. Warton.

Ara H., Bakaeva M., and Sun, 2009, 'Credit risk management and profitability in commercial banks in sweden, June.

Ara H., Bakaeva M. & Sun J., 2009. 'Credit risk management and profitability in commercial banks in Sweden' . University of Gothenburg.

Bridgeforce. 2008, 'Comprehensive management of profitability and credit risk.'

A. V. Vedpuriswar ,2009 , Credit risk management (pp1-2) ,2009

David H. Pyle. , 1997. , 'Bank risk management: theory.' University of California. *Berkeley*, July

Eduardus T., Hermeindito K., Putu A., Mahadwartha and Supriyatna. 2007. 'Corporate governance, risk management, and bank performance: does type of ownership matter?' University Yogyakarta *Indonesia*

Emilia B. and Giovanni D., 2004, 'Bank competition and firm creation', Journal *of Money, Credit and Banking*, April, Vol. 36, No. 2.

Focus Group, 2007 'Credit risk management industry best practices ', [Online] Available at: http://www.bangladesh-bank.org/mediaroom/corerisks/creditrisks.pdf. [Accessed 20 Jan 2010].

Frederic S. Mishkin., 2004, 'The economics of money, banking, and financial markets.' *7th ed. Colombia University*. Pearson Addison Wesley press.

Gerhard.S. 2002, 'Risk management and value creation in financial institution', *illustrated edition, published by jone Wiley and sons*

Guidance for Managing Settlement Risk in Foreign Exchange Transactions (September 2000), in which the annotated bibliography (annex 3) provides a list of publications related to various settlement risks

Guidelines for Commercial Banks & DFIs. Risk Management

*Hassan, Sidiqi & Tahiri.*A 'Comparative study of handelsbanken and swedbank: how risk has been managed during the last decade?'

http://www.businessdictionary.com/

(http://wiki.answers.com/Q/How_do_banks_generate_revenue#ixzz1Ja9n6n5t)

In particular Sound Practices for Loan Accounting and Disclosure (July 1999) and Best Practices for Credit Risk Disclosure (September 2000).

Jeoitta Colquitt. , 2007. , 'Credit Risk Management: How to Avoid Lending Disasters and Maximize Earning' *,3rd ed.* Mercy College. *McGraw-Hill*

Joan Selorm Tsorhe, Anthony Q. Q. Aboagye, and Anthony Kyereboah-Coleman, 2010. , 'Corporate governance and banking risk management in Ghana'

John B. Caouette, Edward I. Altman, Paul Narayanan, Robert Nimmo. 2008., 'Managing credit risk: the great challenge for the global financial market.' *2nd ed. Canada John Wiley & Sons, Inc*

Mohammad Mohiuddin Siddique, 2008. 'Non-performing loans in bangladesh banking sector: some issues and observations'

Nelson M. Waweru and Victor M Kalani, 2009. 'Commercial banking crises in kenya: cause and remedies '

Nor Hayati Ahmad and Shahrul Nizam Ahmad. 'Key factors influencing credit risk of Islamic bank: a malaysian case.'

R.S. Raghavan ,2003, 'Risk management in Banks '

Shuhai ALi , Muhammad Nadeem. 'Risk Management and Internal Control ' *A case study of china aviation oil corporation ltd*

Sofia Lulseged Abrha and Seid Hussein Yimam, 2005, 'Dashen bank as an information infrastructure', October

Sudhir Chandra Das, Ali Reza Iftekhar,Niaz Habib,A.G. Sarwar,Brian J. McGuire, AND Naser Ezaz Bijoy) 'Credit risk management'

Tags: banking performance, performance measurement, (September 2000)

Takang F. Achou and Ntni C. Tenguh, 2008, 'Bank performance and credit risk management', University of skovde.

Tobias Michalak and André Uhde, 2009, .Credit risk securitization and banking stability evidence from the micro-level for Europe'

Yoonhee Tina Chang, 2006, 'Role of nonperforming loans (NPLR) and capital adequacy in banking structure and competition '

Appendixes

Appendix 1

Questionnaire

Dear respondents

The purpose of this self-administered Questionnaire is to gather data relating to the **"The impacts of credit risk management on profitability of commercial banks in Ethiopia."** For fulfillment of the requirements of the thesis for the Masters in Accounting and finance program of Addis Ababa University (MSc). The research will be conducted to measure the impact level of credit risk management on profitability of commercial banks of our country.I feel that your contribution which means information obtained from you is essential for success of this research. Thus, I appreciate your cooperation to give me your time for the success of this research thesis. I assure you that the information to be shared by you will be used only for academic purpose and kept confidential.

For further information and need my assistance while you fill the questionnaire please contact me:

E-mail tibebutefera@yahoo.com

tibebutefera@gmail.com

Thank you for your cooperation

Yours sincerely

Tibebu Tefera

(PART ONE)

Respondent profile

Please use this mark in the box "√" Where it applies

1) Job Title: _____

2) Gender : Male ☐ Female ☐

3) Age:

20-29	☐	40-49	☐
30-39	☐	50-59	☐

4) Highest educational level obtained

High school complete	☐	Bachelor Degree	☐
Certificate	☐	Masters Degree	☐
Diploma	☐	PhD	☐

5) Area (field of specialization) or major field of study

Accounting	☐	Economists	☐
Management	☐	Others please specify	
CPA	☐		

6) Years of work experience

0-5 years	☐	11-20 years	☐
6-10 years	☐	More than 20 years	☐

7) Marital status

Single	☐	Widowed	☐
Married	☐	Divorced	☐

(Part two)

1) Which credit risk management mechanism do you think is the most important to reduce credit risk of commercial banks of our country?

A) Screening and monitoring

B) Credit Rationing

C) Collateral Requirements

D) Long-term Customer Relationship

E) I don't know

2) After you select among the alternatives for question number "1", would you explain why you prefer among the other alternatives please?

---

3) What do you think the impacts of credit risk management towards profitability of banks?

A negative

B positive

4) After you choice your own answers for question number "3", please explain how credit risk management negatively/positively/ affects profitability?

---

5) What do you think the problem will be, if there is poor credit risk management is there in the bank?

---

6) How do you think credit risk management helps to increase profitability of your bank?

---

7) Which risk do you think highly affects profitability of profit making banks In Ethiopia?

A) Credit risk

B) Liquidity risk

C) Market risk

D) Operational risk

8) Please explain why, after you select answer for question number "7"

---

9) What are actions that you are going you take after recognizing non-performing loan exist?

---

10) As expert of credit risk management, what do you recommend to make our banks more profitable than before?

---

11) Do you have anything to say, write it here under please?

Thank you for your help!

Appendix 2

Forms designed for data collection from the respondent banks which is important for the regression purpose. And the collected data are as follows:-

Table 12

Year	ROE	Nonperforming loan to total loan ratio NPL/TL	Capital adequacy ratio /CAR/
2001			
2002			
2003			
2004			
2005			
2006			
2007			
2008			
2009			
2010			

Appendix 3

Table 13
Regression analysis output in SPSS
Regression results with NPLR and CAR as independent variables in Awash International Bank

Variables Entered/Removed [b]

Model	Variables Entered	Variables Removed	Method
1	capital adequacy ratio , Nonperforming loan ratio[a]		Enter

a. All requested variables entered.

b. Dependent Variable: Return on Equity

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.909[a]	.827	.778	4.54212	2.103

a. Predictors: (Constant), capital adequacy ratio , Nonperforming loan ratio

b. Dependent Variable: Return on Equity

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	690.479	2	345.239	16.734	.002[a]
	Residual	144.416	7	20.631		
	Total	834.895	9			

a. Predictors: (Constant), capital adequacy ratio , Nonperforming loan ratio

b. Dependent Variable: Return on Equity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	53.786	9.312		5.776	.001		
	Nonperforming loan r	-1.081	.199	-.854	-5.435	.001	1.000	1.000
	capital adequacy rati	-1.283	.647	-.312	-1.983	.088	1.000	1.000

a. Dependent Variable: Return on Equity

Coefficient Correlations[a]

Model			capital adequacy ratio	Nonperforming loan ratio
1	Correlations	capital adequacy ratio	1.000	.000
		Nonperforming loan ratio	.000	1.000
	Covariances	capital adequacy ratio	.419	4.52E-005
		Nonperforming loan ratio	4.52E-005	.040

a. Dependent Variable: Return on Equity

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Nonperforming loan ratio	capital adequacy ratio
1	1	2.830	1.000	.00	.02	.00
	2	.157	4.250	.02	.95	.03
	3	.013	14.890	.98	.03	.97

a. Dependent Variable: Return on Equity

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	9.1121	31.7174	21.5610	8.75899	10
Residual	-6.75072	7.08256	.00000	4.00578	10
Std. Predicted Value	-1.421	1.160	.000	1.000	10
Std. Residual	-1.486	1.559	.000	.882	10

a. Dependent Variable: Return on Equity

Table 14

Regression analysis output in SPSS

Regression results with NPLR and CAR as independent variables in Commercial Bank of Ethiopia

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	capital adequacy ratio , Nonperforming loan ratio[a]		Enter

a. All requested variables entered.

b. Dependent Variable: Return on Equity

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.453[a]	.205	-.022	29.14874	2.012

a. Predictors: (Constant), capital adequacy ratio , Nonperforming loan ratio

b. Dependent Variable: Return on Equity

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1537.443	2	768.721	.905	.447[a]
	Residual	5947.544	7	849.649		
	Total	7484.987	9			

a. Predictors: (Constant), capital adequacy ratio , Nonperforming loan ratio

b. Dependent Variable: Return on Equity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	77.115	54.487		1.415	.200		
	Nonperforming loan ra	-.938	.712	-.604	-1.317	.229	.540	1.851
	capital adequacy ratio	-1.951	2.825	-.317	-.691	.512	.540	1.851

a. Dependent Variable: Return on Equity

Coefficient Correlations[a]

Model			capital adequacy ratio	Nonperforming loan ratio
1	Correlations	capital adequacy ratio	1.000	.678
		Nonperforming loan ratio	.678	1.000
	Covariances	capital adequacy ratio	7.981	1.364
		Nonperforming loan ratio	1.364	.507

a. Dependent Variable: Return on Equity

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Nonperforming loan ratio	capital adequacy ratio
1	1	2.628	1.000	.00	.02	.01
	2	.355	2.720	.00	.33	.04
	3	.017	12.351	.99	.65	.95

a. Dependent Variable: Return on Equity

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6.9657	45.2176	26.1040	13.07008	10
Residual	-50.96566	44.25180	.00000	25.70677	10
Std. Predicted Value	-1.464	1.462	.000	1.000	10
Std. Residual	-1.748	1.518	.000	.882	10

a. Dependent Variable: Return on Equity

Table 15

Regression analysis output in SPSS

Regression results with NPLR and CAR as independent variables in NIB International Bank

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CAR, NPLR[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.325[a]	.105	-.150	5.45729	1.028

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.547	2	12.274	.412	.677[a]
	Residual	208.474	7	29.782		
	Total	233.021	9			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	24.534	12.788		1.918	.097		
	NPLR	.259	.616	.157	.421	.686	.922	1.085
	CAR	-.370	.566	-.244	-.655	.534	.922	1.085

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			CAR	NPLR
1	Correlations	CAR	1.000	.279
		NPLR	.279	1.000
	Covariances	CAR	.320	.097
		NPLR	.097	.380

a. Dependent Variable: ROE

x

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	NPLR	CAR
1	1	2.893	1.000	.00	.01	.00
	2	.096	5.503	.01	.70	.08
	3	.011	16.174	.99	.29	.91

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	17.3435	22.2428	19.9300	1.65151	10
Residual	-9.46260	6.59725	.00000	4.81287	10
Std. Predicted Value	-1.566	1.400	.000	1.000	10
Std. Residual	-1.734	1.209	.000	.882	10

a. Dependent Variable: ROE

Table 16

Regression analysis output in SPSS

Regression results with NPLR and CAR as independent variables in United Bank

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CAR, NPLR[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.808[a]	.653	.554	6.61457	2.228

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	575.746	2	287.873	6.580	.025[a]
	Residual	306.268	7	43.753		
	Total	882.014	9			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	34.409	5.059		6.801	.000		
	NPLR	-1.360	.726	-.538	1.872	.103	.601	1.664
	CAR	-.334	.272	-.352	1.226	.260	.601	1.664

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			CAR	NPLR
1	Correlations	CAR	1.000	-.632
		NPLR	-.632	1.000
	Covariances	CAR	.074	-.125
		NPLR	-.125	.528

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	NPLR	CAR
1	1	2.808	1.000	.02	.01	.01
	2	.117	4.891	.98	.20	.14
	3	.074	6.150	.00	.78	.85

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.6277	24.8535	17.8210	7.99824	10
Residual	-8.24380	8.07279	.00000	5.83350	10
Std. Predicted Value	-2.307	.879	.000	1.000	10
Std. Residual	-1.246	1.220	.000	.882	10

a. Dependent Variable: ROE

Table 17

Regression analysis output in SPSS
Regression results with NPLR and CAR as independent variables in wegagen Bank

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CAR, NPLR[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.766[a]	.587	.469	6.55205	1.632

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	427.723	2	213.861	4.982	.045[a]
	Residual	300.505	7	42.929		
	Total	728.228	9			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	51.956	10.941		4.749	.002		
	NPLR	-2.175	.689	-.864	-3.156	.016	.786	1.272
	CAR	-.674	.482	-.383	-1.397	.205	.786	1.272

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			CAR	NPLR
1	Correlations	CAR	1.000	.463
		NPLR	.463	1.000
	Covariances	CAR	.233	.154
		NPLR	.154	.475

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	NPLR	CAR
1	1	2.798	1.000	.00	.01	.01
	2	.179	3.959	.00	.30	.24
	3	.023	10.952	1.00	.69	.75

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	14.3824	34.6563	23.7710	6.89382	10
Residual	-7.26006	10.23088	.00000	5.77836	10
Std. Predicted Value	-1.362	1.579	.000	1.000	10
Std. Residual	-1.108	1.561	.000	.882	10

a. Dependent Variable: ROE

Table 18

Regression analysis output in SPSS

Regression results with NPLR and CAR as independent variables in Dashen Bank

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CAR, NPLR[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.769[a]	.591	.474	5.37337	2.207

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	291.608	2	145.804	5.050	.044[a]
	Residual	202.112	7	28.873		
	Total	493.720	9			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	56.614	9.457		5.986	.001		
	NPLR	-1.811	.591	-.756	-3.063	.018	.960	1.042
	CAR	-.926	.641	-.357	-1.445	.192	.960	1.042

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			CAR	NPLR
1	Correlations	CAR	1.000	.201
		NPLR	.201	1.000
	Covariances	CAR	.410	.076
		NPLR	.076	.350

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	NPLR	CAR
1	1	2.866	1.000	.00	.01	.01
	2	.114	5.019	.01	.67	.15
	3	.020	11.890	.99	.31	.84

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	20.1067	37.7855	32.2340	5.69218	10
Residual	-10.65538	5.68816	.00000	4.73887	10
Std. Predicted Value	-2.131	.975	.000	1.000	10
Std. Residual	-1.983	1.059	.000	.882	10

a. Dependent Variable: ROE

Table 19

Regression analysis output in SPSS

Regression results with NPLR and CAR as independent variables in Abyssinia Bank

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	CAR, NPLR[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.715[a]	.511	.371	8.30863	1.807

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	504.953	2	252.477	3.657	.082[a]
	Residual	483.233	7	69.033		
	Total	988.186	9			

a. Predictors: (Constant), CAR, NPLR

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	45.123	27.947		1.615	.150		
	NPLR	-.530	.326	-.547	-1.628	.147	.620	1.614
	CAR	-1.488	2.138	-.234	-.696	.509	.620	1.614

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			CAR	NPLR
1	Correlations	CAR	1.000	-.617
		NPLR	-.617	1.000
	Covariances	CAR	4.569	-.429
		NPLR	-.429	.106

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	NPLR	CAR
1	1	2.787	1.000	.00	.02	.00
	2	.209	3.650	.01	.65	.00
	3	.004	26.394	.99	.33	1.00

a. Dependent Variable: ROE

Residuals Statistics[a]

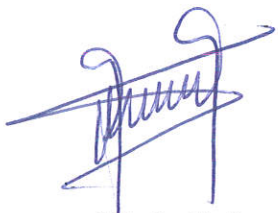
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.6692	22.8794	15.9170	7.49039	10
Residual	-16.02056	8.27397	.00000	7.32752	10
Std. Predicted Value	-2.348	.930	.000	1.000	10
Std. Residual	-1.928	.996	.000	.882	10

a. Dependent Variable: ROE

Statement of Declaration

I, Tibebu Tefera Zewude, have carried out independently a research work on "Credit Risk Management and Profitability of Commercial Banks in Ethiopia" in partial fulfillment of the requirement of the M.SC program in Accounting and Finance with the guidance and support of the research advisor.

This study is my own work that has not been submitted for any degree or diploma program in this or any other institution.



Tibebu Tefera Zewude

June, 2011