ST MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF FINANCE AND ACCOUNTING

EFFECT OF CREDIT DEFAULT MANAGEMENT ON THE FINANCIAL PERFORMANCE OF SELECTED COMMERCIAL BANKS IN ETHIOPIA

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EFFECT OF CREDIT DEFAULT RISK MANAGEMENT ON FINANCIAL PERFORMANCE OF ETHIOPIAN BANKS: A CASE STUDY OF SELECTED PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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Declaration

I, hereby declare that this thesis paper is my original work and that all sources of materials used have been duly acknowledged.

Name of the researcher	Signature and Date

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Abstract

This study was conducted to examine the impact of credit default risk management and other bank specific and macroeconomic variables on the financial performance of seven sample selected private commercial banks using a balanced panel data from 2007-2017. These data were collected from NBE and World Bank World Development Indicators. To achieve the intended objective this study employed descriptive and econometrics techniques. The empirical investigation uses the accounting measure of Return on Assets (ROA) and Return on Equity (ROE), which are the dependent variables used to represent Banks' performance. Furthermore, based on the diagnostic test conducted random effect model was appropriate to examine the determinants of financial performance of commercial banks. Based on the research findings, Managerial Efficiency was found to have negative and significant impact on both ROA and ROE. While capital adequacy ratio was positive and statistically significant in explaining the variation in ROA but the relation between CAR and ROE was found to be negative. The other measure of credit risk, non-performing loan ratio is found to be insignificant in explaining the variation in both ROA and ROE. Bank size was positively and significantly correlated with ROA with a positive relationship while Cost per loan and Loan to asset ratio were negative and statistically significant in explaining the ROE of Ethiopian Commercial Banks. The impact of macroeconomic factors; i.e. real GDP growth and Inflation Rate, was found to be insignificant in affecting both financial performance measures.

Key Terms: - *Commercial Banks, Credit Risk, Financial Performance and Determinant*.

List of Abbreviation and Acronyms

BIS	Bank for International Settlement
BS	Bank Size
CAR	Capital Adequacy Ratio
CEO	Chief Executive Officer
CPL	Cost per Loan
CRM	Credit Risk Management
GDP	Gross Domestic Product
IMF	International Monetary Fund
IR	Inflation Rate
KYC	Know Your Customer
LTA	Loan to Total Asset
LGD	Loss Given Default
ME	Management Efficiency
MIS	Management Information System
NBE	National Bank of Ethiopia
NPL	Nonperforming Loan
OLS	Ordinary Least Square
RM	Relationship Manager
ROA	Return on Asset
ROE	Return on Equity

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CHAPTER ONE

1. Introduction

1.1 Background of the Study

In modern days, banks role in the economy of any country is very significant and the banking industry is the backbone of financing economic activities. Banks are one of the deposit taking financial institutions that play pivotal role for financial stability and are also engines for economic development of a given nation (Al-Karim and Alam, 2013). One of the principal objectives of the financial institutions, particularity the banking sector is mobilizing resources from those who have excess supply especially in the form of saving deposits and channeling these funds to those who are with financial constraints, at the same time with productive investment opportunities. The extent to which a bank extends credit to the public for productive activities accelerates the pace of a nation's economic growth and its long-term sustainability.

According to Heffernan (2009), any profit-maximizing business, including banks, needs to deal with risks, and in fact, bankers are in the business of managing risks. Risk is the possibility that an actual return of an investment will differ from the expected return. Risk can also be defined as the realistic possibility of losing the principal invested and the amount of interests accrued on it either partially or completely. Commercial banks are in a risky business. In process of providing financial services, they assume various kinds of financial risks (Alloyo, 2010). Out of these financial risks, credit risk is the major one that banks are experiencing more often.

Credit risk occurs when a debtor/borrower fails to fulfill his obligations to pay back the loans to the principal/lender. In banking business, it happens when payments can either be delayed or not made at all, which can cause cash flow problems and affect a bank's liquidity (Greuning and Bratanovic, 2009). 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 (Tibebu, 2011). Hence, credit risk management in a bank is a very important process which basically involves the practices of managing, or in other words, minimizing the risk exposure and occurrence.

Credit default management is defined as identification, measuring, monitoring and controlling defaults arising from possibility of default in loan repayment (Grace, 2010). Credit default management in a financial institution starts with the establishment of sound lending principles and an efficient framework for managing the risk. It plays the vital role in the performance of a financial institution as it analyzes credit-worth-ability of borrowers. If there is any loophole in credit risk assessment, then recovery of the provided loans and advances is challenged greatly.

Sound credit management is perquisite for a financial institution stability and continuing profitability. Credit quality is the most frequent cause for poor financial performance and condition. According to Rosemary (2011), financial performance involves measuring result of firm's policies and operation in monetary term. The overall financial report presented on clear and logical way by form of financial analysis. It used to measure firms over all financial health over a given period of time.

Various studies were conducted on the impact of credit risk management on the financial performance of participants in the banking sectors. For instance; Girma (2001) has investigate credit risk management and its impact on performance on Ethiopia commercial banks. He examined the relationship between return on asset and loan provision, non-performing loan and total asset for selected commercial banks in the country. The study revealed that there is a significant relationship between bank performance and credit risk management.

According to Ahmed, Takeda and Shawn (1998) study of multi-country assessment of bank credit risk determinants, loan loss provision has a significant positive influence on non-performing loans. Therefore, an increase in loan loss provision indicates an increase in credit risk and deterioration in the quality of loans consequently affecting Bank performance adversely.

Contrary to this finding, Kithinji (2010) has assessed the effect of credit risk management on

profitability of commercial bank in Kenya. Data on amount of credit level of non-performing loans and profit were collected for the period 2004-2008. The finding revealed that the bulk of the profit of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other factors are more important than the credit level and non-performing loans on profit of commercial banks.

The main concern of default management is to decrease the impact of different kinds of defaults related to credit on financial performance of a financial institution. Commercial banks as financial institutions, those credit defaults are the main concern of risk which affect their performance. Therefore; the purpose of this study is to investigate the effect of default management on financial performance of commercial banks in Ethiopia.

1.2 Overview of Banking System in Ethiopia

The first bank in Ethiopia; called Bank of Abyssinia, was inaugurated in February 16, 1906 following the agreement that was reached in 1905 between Emperor Minilik II and Mr. Ma Gillivray, representative of the British owned National Bank of Egypt marked the introduction of modern banking in Ethiopia. The Bank was totally managed by the Egyptian National Bank (Dawit, 2016). However, Bank of Abyssinia was closed at in 1932 by Ethiopian government under Emperor Haile Selassie and replaced by Bank of Ethiopia.

Following the Italian occupation between 1936-1941, the operation of Bank of Ethiopia ceased whereas the departure of Italian and restoration of Emperor Haile Selassie's government established the state bank of Ethiopia in 1943. Then, on December 16, 1963 as per proclamation No.207/1955 of October 1963 Commercial Bank of Ethiopia control all commercial banking activities (Habtamu, 2012).

After the declaration of socialism in 1974, the government extends the extent of its control over the whole economy and nationalized all large corporations. Accordingly, Addis bank and commercial bank of Ethiopia Share Company were merged by proclamation No.84 0f August 2, 1980 to form single commercial bank in the country until the establishment of private commercial banks in 1994.To this end, financial sector were left with three major banks namely;

NBE, CBE and Agricultural and development bank during the socialist government (Habtamu, 2012).

Following the fall of the Dergue regime in 1991 that ruled the country for 17 years under the rule of command economy, the EPRDF declared a liberal economy system. In line with this, Monetary and Banking proclamation of 1994 established the National Bank of Ethiopia as a judicial entity, separated from the government and outlined its main function. Monetary and Banking Proclamation No. 83/1994 and the Licensing and Supervision of Banking Business No. 84/1994 laid down the legal basis for investment in the banking sector (Dawit, 2016). Consequently, after the proclamation issued private equity holders began to join the Ethiopian banking industry and as of April, 2018; seventeen commercial banks are currently in operation and out of these sixteen are privately owned banks. Currently, banking sectors in Ethiopia are showing progressive developments in terms of number of branches, total assets as well as human resource utilization.

1.3 Statement of the Problem

Even though banks cannot avoid this credit risk default totally, they can minimize the risk by having a sound credit risk management. Credit management is the total process of lending starting from inquiring potential borrower up to recovering the amount of granted (Hagos, 2010). A proper credit management will lower the capital that is locked with the debtor and also reduce the possibility of affecting the financial performance.

The very nature of the banking business is so sensitive because, for instance more than 85% of Indian commercial banks liability is deposits from depositors (Saunders and Cornett, 2006). Banks use these deposits to generate credit for their borrowers, which in fact is a revenue generating activity for most banks. The problem of credit default which resulted from poor credit management reduces the lending capacity and also affects the overall financial performances of the bank.

The study conducted by Mwangi (2012) regarding the effect of credit risk management on the financial performance of commercial banks in Kenya over the period of five years, utilizes

Return on Equity (ROE) as dependent variable and Non-Performing Loan Ratio (NPLR) and Credit to Asset Ratio (CAR) as independent variable. Based on his research finding, NPL ratio and CA ratio have a negative and significant effect on ROE.

According to the study conducted by Afriyied and Akotey (2013) on credit risk management and profitability of rural banks in Brong Ahafo region of Ghana over the period of 2006-2010, unveiled that NPL ratio and CA ratio have a positive association with profitability and significantly influence the profitability of rural banks.

Recently there are various attempts being made to investigate the impact of credit risk on profitability of commercial banks in Ethiopia. However, there are no in-depth studies that have been conducted to investigate the impact of credit risk in the Ethiopian commercial banks financial performance, using both Return on Asset (ROA) and Return on Equity (ROE) as financial performance measures. Engdawork (2014) investigated the impact of credit risk on financial performance of banks by only using ROA as financial performance indicators. The research also ignored to investigate non-bank specific factors as the determinant of financial performance. The research made by Girma (2011) focuses on the risk management part and the models considered are Loan Provision to Total Asset, Loan Provision to Total Loan, NPL to Total Loan, and Loan Provisions to Non-Performing Loan.

Various researches have been done on the impact of credit risk management on financial performance of commercial banks in the country. Most of the local studies conducted do not show a clear relationship between credit default management and financial performance; especially by considering the two financial performance indicating ratios, i.e. ROA and ROE as dependent variable, and by taking in to account both bank specific variables as well as macroeconomic determinants. Thus, this knowledge gap in the literature calls for a research to examine the important area concerning the effect of credit default management and macroeconomic factors on ROA and ROE in selected Ethiopian commercial banks.

1.4 Research Question

Given the various issues related to the impact of credit default risk on the financial performance of commercial banks in Ethiopia, the researcher tries to address the following questions;

- Does credit default management have an effect on the ROA and ROE as financial measures?
- Does the other Bank Specific Factors, including Non-Performing Loan, Loan to Total Asset Ratio, Cost per Loan, managerial efficiency and Bank Size have an effect on the ROA and ROE as the financial performance measures?
- Do Non-Bank Specific Macroeconomic Factors like Real GDP and IR affect the financial performance of banks in the country?

1.5 Objective of the Study

1.5.1 General Objective

The general objective of this study is to assess the impact of credit default risk management on the financial performance of selected commercial banks in Ethiopia.

1.5.2 Specific Objectives

- To evaluate the effect of credit default management on financial performance;
- To assesses if the impact of Non-Performing Loan ratio, Loan to Total Asset Ratio, Cost per Loan and Bank Size have an effect on the financial performance of selected commercial banks in Ethiopia;
- To assess the impact of macroeconomic factors; i.e. real GDP growth and inflation rate, on financial performance.

1.6 Significance of the Study

The aim of this study is going to be assessing the effect of credit default management on financial performance of some privately owned commercial banks in Ethiopia. It showed the challenges faced by the financial institutions with regard to credit risk management by assessing

the potential effect of credit risk measures on profitability of the commercial banks by setting a clear relationship between the credit default management and the financial performance by considering the dependent and independent variables mentioned earlier.

The study would be important input for various stakeholders including bank shareholder and policy makers. For instant the study would help policy makers to regulate policy framework, to mitigate the financial system from financial instability, as well as to enhance good management system in credit risk exposure. Also, for investors, it will help them to understand factor that influence return on their investment and thereby it can be used as an input for decision making process. It will also be used as an input for further studies.

1.7 Scope of the Study

Currently, there are seventeen commercial banks operating in Ethiopia. Out of them Commercial Bank of Ethiopia is government owned whereas the other sixteen banks are private owned ones. The study used only the seven privately owned commercial banks which have the experience of more than eleven years as a case study. These banks include Awash international bank SC, Dashen bank, Bank of Abyssinia, Wegagen bank, United bank, Nib international bank and Cooperative bank of Oromia. The study covers the period of 2007 to 2017.

1.8 Organization of the Study

The paper has five chapters, chapter one provided the introduction for the study, which includes statement of the problem, objective of study, significant of the study and scope of the study. While, chapter two was about the review of theoretical and empirical literatures; the methodology was stated on chapter three and on chapter four, data analysis and interpretation from the collected data were presented. Lastly the paper presented conclusion of the result and recommendation as chapter five.

CHAPTER TWO

2. Literature Review

This part of the study addressed relevant conceptual issues, theoretical and empirical reviews related to the topic of the study. It includes the definition and concept by focusing on previous researches in this area and present reviewed Literature relevant to this study.

2.1 Theoretical Review

A more organized study of bank performance started in the late 1980's (Olweny & Shipho, 2011) with the application of Market Power (MP) and Efficiency Structure (ES) theories (Athanasoglou, *et al* 2005). The MP theory states that increased external market forces results into profit. Moreover, the hypothesis suggest that only firms with large market share and well differentiated portfolio (product) can win their competitors and earn monopolistic profit. On the other hand, the ES theory suggests that enhanced managerial and scale efficiency leads to higher concentration and then to higher profitability. According to Nzongang and Atemnkeng in (Olweny & Shipho, 2011) balanced portfolio theory also added additional dimension into the study of bank performance. It states that the portfolio composition of the bank, its profit and the return to the shareholders is the result of the decisions made by the management and the overall policy decisions. From the above theories, it is possible to conclude that bank performance is influenced by both internal and external factors. According to (Athanasoglou, *et al* 2005) the internal factors include bank size, capital, management efficiency and risk management capacity. The same scholars contend that the major external factors that influence bank performance are macroeconomic variables such as interest rate, inflation, economic growth and other factors like ownership.

2.2 Bank Financial Performance Indicators and Its Determinant

2.2.1 Banks Financial Performance Indicators

Financial performance may be defined as the reflection of the way in which resources of a company (Bank) are used in the form which enables it to achieve its objectives. Financial performance is the employment of financial indicators to measure the extent of objective achievement, contribution to making available financial resources and support of the Bank with investment opportunities. Financial performance of a firm is the measure of the level of the organization's profit or loses within a specified period of time (Joyce, 2015). Several measures have been used to measure the financial performance of Banks. From these measurements ROA and ROE are the major once.

2.2.1.1 Return on Asset (ROA)

ROA is the first dependent variable used to measure profitability performance and it is measured as the ratio of net income and total asset of a bank. It reflects the ability of a bank to generate profits from the banks scares assets. According to Khrawish, (2011), ROA shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. The higher the amount of return on assets the better the efficiency of the bank management, which can be considered as good financial performance and it indicates that the company is more efficient in using its resources.

2.2.1.2 Return on Equity (ROE)

ROE is the ratio of net income to total equity of a bank. It is the second variable used to measure profitability performance of the banks. It measures how well bank management has used the capital invested by shareholders and tells us the percent returned for each money invested by shareholders. The better the ROE is, the more effective the management in utilizing the shareholders capital.

2.2.2 Banks Determinants

The role of bank remains central in financing economic activity and its effectiveness could exert positive impact on overall economy as a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system. Therefore, the determinants of bank performance have attracted the interest of academic research as well as of bank management, financial markets and bank supervisors since the knowledge of the internal and external determinants of banks' profits and margins is essential for various parties. During the last two decades the banking sector has experienced worldwide major transformations in its operating environment (Athanasoglou, *et al*, 2005).

Both external and domestic factors have affected its structure and performance. Correspondingly, in the literature, bank profitability is usually expressed as a function of internal and external determinants. The internal determinants refer to the factors originate from bank accounts (balance sheets, profit and loss accounts) and therefore could be termed micro or bank specific determinants of profitability.

The external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions. A number of explanatory variables have been proposed for both categories, according to the nature and purpose of each study (Yuqi, 2007).

2.2.3 Internal Determinants

Studies dealing with internal determinants employ variables such as non performing loan ratio, bank size, capital, risk management and expenses management. Size is introduced to account for existing economies or diseconomies of scale in the market.

2.2.3.1 Non-Performing Loan

This is the major indicator of commercial banks credit risk. It's the ratio of nonperforming loan to total loan. It represents how much of the banks loans and advances are becoming nonperforming which measures the extent of credit default risk that the bank sustained. As the

amount of this ratio increase, it will send bad message for the management of the banks because it shows high probability of none recovering the banks major asset (Million and *et al*, 2015).

This nonperforming loan shows the ability of the commercial banks to manage credit risk. A lower NPL is an evidence of a good credit risk management strategy. NPL is an evidence of a good credit risk management strategy. NPL is a probability of loss that requires provision. Provision amount is accounting amount which can be further, if the necessity rises, deducted from the profit. Therefore, high NPL amount increases the provision amount which in turn reduces the profit.

As it is explained by Gebru (2015), NPL is when a borrower cannot repay interest or installment on a loan after it has become due. Accordingly the IMF's Compilation Guide on Financial Soundness Indicators, NPLs is defined as loan is nonperforming when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons such as a debtor filing for bankruptcy to doubt that payments will be made in full. NPLR indicates how banks manage their credit risk because it defines the proportion of NPL amount in relation to TL amount. NPLR is defined as NPLs divided by TLs.

Under the Ethiopian banking business directives, NPL (non-performing loan) are define as loan or advance whose credit quality has deteriorated such that full collection of principle or interest in accordance with the contractual repayment term of the loan or advance is fail (NBE directives 2008).

According to this directives of NBE, in addition to the aforementioned category of non-performing loan that do not have per-establishing loans shall be non-performing when

- The debt exceeds the borrower approved limit for 90 consecutive days or
- Deposit are insufficient to cover the interest capitalized during 90 consecutive day
- The account fails to show 20 percent of approval limit or less debit balance at least once over 360 days preceding the date of loan review.

2.2.3.2 Capital Adequacy Ratio (CAR)

Capital adequacy ratio is one of the important concepts in banking industry, which measures the amount of banks capital in relation to the amount of its risk weighted credit exposures. The ratio can be determined by dividing banks total capital to its risk weighted assets. The result will tell the bank about how able they are in absorbing their losses. Applying minimum CAR serves to promote testability and efficiency of the financial system by reducing the likelihood of banks becoming insolvent; this may lead to loss of confidence in the financial system, causing financial problems for banks and perhaps threatening the smooth functioning of financial markets (Keynes and Achmad, 2015).

Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas (Sangmi and Nazir, 2010).

2.2.3.3 Managerial Efficiency

Management Efficiency is one of the key internal factors that determine the bank profitability. It is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. Cost efficiency is approximated by a simple ratio of Operating Expenses to Total Revenues, denoted as Efficiency Ratio, which measures management flexibility to adjust costs to changes in the business development signaled by revenues. The higher is the Efficiency Ratio, the higher is the default risk.

2.2.3.4 Cost per Loan

Cost per loan is calculated as the ratio of total operating cost and total amount of loans. It is a measure of banks efficiency in distributing loans to its customers. Or in other word it is the average cost per loan advanced to customer in monetary term. According to Engdawork (2014) study he revealed the intermediation efficiency in terms of cost to be the most important determinant variable on the profit of Ethiopian commercial banks.

2.2.3.5 Loan to Total Asset

It is the ratio of total loan of a bank to the total asset. LTA measures the exposure level of the Bank to credit risk. Banks with higher loan to total asset ratio have high exposure to credit risk.

2.2.3.6 Bank Size

Bank size is one of the important variable that affect the performance of commercial banks. Total assets are the proxy for the size of the bank. It is generally used to capture potential economies or diseconomies of scale in the banking sector.

2.2.4 External Determinants

Turning to the external determinants, several factors have been suggested as impacting on profitability and these factors can further distinguish between control variables that describe the macroeconomic environment, such as inflation, interest rates and cyclical output, and variables that represent market characteristics. The latter refer to market concentration, industry size and ownership status (Athan asoglou, *et al* 2005).

2.2.4.1 GDP

The real GDP is the sum of the value added in the economy during a given period or the sum of incomes in the economy during a given period adjusted for the effect of increasing prices. The presupposes that in the determination of GDP growth from one year to another, real GDP give a more accurate view of the economy. Hence, this study focuses on real GDP growth rather than the nominal GDP growth.

2.2.4.2 Inflation Rate

Inflation is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling. IR is a situation in which the economies overall price level is rising. It represents sustained and pervasive increment in aggregate price of goods and services resulting decline in purchasing power of money.

2.3 Definition of Credit Risk

Credit risk, as defined by the Basel Committee on Banking Supervision (2001), is the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). It can also be defined as the potential that a contractual party will fail to meet its obligations in accordance with the agreed terms. Credit risk is also variously referred to as default risk, performance risk or counterparty risk (Brown and Moles, 2012).

According to the definition provided by Beasens and Gestel (2009), credit risk as the risk that a borrower fails to pay and does not act according to their obligation to service debt. They state that the causes for the failure to pay could be incapability of the other party to pay or failure to pay on the due date. Besides they mentioned that by its character credit risk is the most apparent risk of a bank. In addition to this the writer characterize credit risk by ways of three aspect the first one is default risk is the possibility that payment is not issued at least within three month this delay will happen due to Counterparts with a weak financial situation, high debt burden, low and unstable income have a higher default probability, sector information and management quality. The second aspect is loss risk or loss given default (LGD) which is a fraction of exposure in the case of failure to pay and exposure risk is ambiguity on the accurate amount at risk at the very instant of a future default *(et al).*

Credit risks appear in banking institution because of the uncertainties plagued the financial system. These uncertainties are the major challenges in a country. Still, the major approaches applied by the banks are the continuing efforts on research and close monitoring. Banks believe that the research and monitoring are the key sources of uncertainties like data generating institutions and the treasury. Credit risk is the major risk that banks are facing. Risk in the first

place is the position where the actual return of an investment is different than expected return. Risk means the possibility of losing the original investment and the amount of interests accrued on it (Ali, 2015).

As a theory, credit risk was introduced in 1974 by Merton. It refers to the risk that a borrower will default on any type of debt by failing to make required payments. The risk is primarily to the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs. The loss may be complete or partial and can arise in a number of circumstances (Daniel Mulinge, 2014).

Credit risk is perhaps the most significant of all risks in terms of size of potential losses. Credit risk can be divided into three risks: default risk, exposure risk and recovery risk. 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.

According to Ara, bakaeva and Sun (2009), usually bank can project the average level of credit losses it can reasonably expect to experience. These losses are referred to:

a. **Expected Losses (EL):** perceived as cost of business undertaking by financial institutions;

b. **Unexpected Losses (UL**): losses above expected level when banks anticipate their occurrence though the timing and severity cannot be known beforehand. A few portions of unexpected losses might be absorbed by the interest rate charged on credit exposure although market will not support adequate prices to cover all unexpected losses.

c. **Loss Given Default (LGD**): the amount of fund that bank can lose when the borrower defaults on a loan.

2.3.1 Credit Risk Areas

Mahlet, (2016) listed and explained the following credit risk areas;

Borrower Analysis: The majority shareholders, management team and group or affiliate companies should be assessed. Any issues regarding lack of management depth, complicated ownership structures or inter group transactions should be addressed, and risks mitigated.

Industry Analysis: The key risk factors of the borrowers' industry should be assessed. Any issues regarding the borrowers' position in the industry, overall industry concerns or competitive forces should be addressed and the strengths and weaknesses of the borrower relative to its competition should be identified.

Supplier/Buyer Analysis: Any customer or supplier concentration should be addressed, as these could have a significant impact on the future viability of the borrower.

Historical Financial Analysis: An analysis of a minimum of 3 years historical financial statements of the borrower should be presented. Where reliance is placed on a corporate guarantor, guarantor financial statements should also be analyzed. The analysis should address the quality and sustainability of earnings, cash flow and the strength of the borrower's balance sheet. Specifically, cash flow, leverage and profitability must be analyzed.

Projected Financial Performance: Where term facilities less than year are being proposed, a projection of the borrowers' future financial performance should be provided, indicating an analysis of the sufficiency of cash flow to service debt repayments. Loans should not be granted if projected cash flow is insufficient to repay debts.

Account Conduct: For existing borrowers, the historic performance in meeting repayment obligations (trade payments, cheques, interest and principal payments, etc) should be assessed.

Adherence to Lending Guidelines: Credit Applications should clearly state whether or not the proposed application is in compliance with the bank's Lending Guidelines. The Banks Head of Credit or Managing Director/CEO should approve Credit Applications that do not adhere to the bank's Lending Guidelines.

Mitigating Factors: Mitigating factors for risks identified in the credit assessment should be identified. Possible risks include, but are not limited to: margin sustainability and/or volatility, high debt load (leverage/gearing), overstocking or debtor issues; rapid growth, acquisition or expansion; new business line/product expansion; management changes or succession issues; customer or supplier concentrations; and lack of transparency or industry issue

Loan Structure: The amounts and tenors of financing proposed should be justified based on the projected repayment ability and loan purpose. Excessive tenor or amount relative to business needs increases the risk of fund diversion and may adversely impact the borrower's repayment ability.

Security: A current valuation of collateral should be obtained and the quality and priority of security being proposed should be assessed. Loans should not be granted based solely on security. Adequacy and the extent of the insurance coverage should be assessed.

Name Lending: Credit proposals should not be unduly influenced by an over reliance on the sponsoring principal's reputation, reported independent means, or their perceived willingness to inject funds into various business enterprises in case of need. These situations should be discouraged and treated with great caution. Rather, credit proposals and the granting of loans should be based on sound fundamentals, supported by a thorough financial and risk analysis.

2.3.2 Measurement of Credit Risk

Credit risk measurement relies on the lenders analytics and risk measurement tools rather than the borrowers. It also has three goals the first one is to limit the credit risk exposure that the lender accepts when extending the debt. The second goal is to ensure that adequate compensation is earned for risk undertaking. It is concerned with the revenue and profit margin earned on the products and services that lenders provide. The third goal is to mitigate the credit risk exposure by structuring transaction to protect against loss as well as in to asset classes that can be marketed to third party investor (Colquitt, 2007).

The risk measurement concerns the actual measurement of the risk in a risk grade or on a total portfolio. The measurement quantifies the actual default risk (probability of default), the loss risk (loss given default) and the exposure risk (exposure at default). A simple way of risk measurement is to learn from past data when available (Beasens and Gestel, 2009).

According to Fabozzi (2006), there are three main categories of methods for bank credit risk measurement; i.e. credit rating, credit scoring and credit modeling will be explained.

A credit rating is for assessing the creditworthiness of an individual or corporation to predict the probability of default, which is based on the financial history and current assets and liabilities of the subject. Credit risk ratings may reflect not only the likelihood or severity of loss but also the variability of loss over time. For banks, both the internal credit rating and the external one are involved in their credit risk assessment. A credit risk-rating framework deploys a number/alphabet/symbol as a primary summary indicator of risks associated with a credit exposure.

The second approach for measuring credit risk is **credit-scoring**. A credit scoring system determines points for each pre-identified factor, which are combined to predict the loss probability and the recovery rate. According to Altman and Saunders (1998), there are two types of accounting-based credit-scoring system in banks-uni-variate and multivariate. The first one can be used to compare various key accounting ratios of potential borrowers with industry or group norms while in the latter one, key accounting variables are combined and weighted for producing a credit risk score or a probability of default measure, which if higher that a benchmark, indicates a rejection to the loan applicant or a further scrutiny.

Thirdly, **credit risk modeling** attempt to aid banks in quantifying, aggregating and managing credit risk across geographical and product lines, and the outputs can be very important to banks' risk management as well as economic capital assignment. Those models, despite of the possible differences in assumptions, share the common purpose to forecast the probability distribution function of losses that may arise from a bank's credit portfolio.

2.4 Risk Management Practices and Process in Banking Industry

Credit risk management process is a set of outlined activities aimed at managing credit risk. These activities will cover the range from credit granting to credit collection. They are risk identification, measurement, assessment, control and monitor. The first step is to identify the risk involved in the credit process, and then risk is measured by evaluating the consequence if it is not well managed. After the evaluation phase, the risk is the then assessed to know the impact, the likelihood of occurrence, and possibility for it to be controlled. The control and monitoring

phase then comes in. these phases are not distinct like the other three. In the control phase, measures which can be used to avoid, reduce, prevent or eliminate the risk. The monitoring phase is used to make a constant check so that all processes or activities which have been put in place for the risk management process are well implemented for desired results to be gotten and in case of any distortions; corrections are then made (Greuning and Bratanovic, 2009).

Girma (2011) explained that credit and risk assessment should be conducted prior to the granting of loans, and at least annually thereafter for all facilities. The results of this assessment should be presented in a Credit Application that originates from the relationship manager/account officer (RM) and is approved by Credit Risk Management (CRM).

The CRM should be the owner of the customer relationship and must be held responsible to ensure the accuracy of the entire credit application submitted for approval. RMs must be familiar with the bank's Lending Guidelines and should conduct due diligence on new borrowers, principals, and guarantors (Girma, 2015).

It is essential that RMs know their customers and conduct due diligence on new borrowers, principals, and guarantors to ensure such parties are in fact who they represent themselves to be. All banks should have established Know Your Customer (KYC) and Money Laundering guidelines which should be adhered to at all times (Mahlet, 2016). The KYC analyst will identify the customers' ability and capability to repay the loan that the customer is going to take. If the customers' ability and the collaterals that he provides are in no match with the amount of the loan, the KYC analyst will take the appropriate measures (like may be advising the customer to reduce the amount of the loan that one is requesting).

Credit Applications should summaries the results of the RMs risk assessment and include, as a minimum, the following details:

- Amount and type of loan(s) proposed.
- Purpose of loans.
- Loan Structure (Tenor, Covenants, Repayment Schedule, Interest)
- Security Arrangement

The credit risk management function in banks 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 (Kimeu, 2006). The importance of credit risk management is recognized by banks for it can establish the standards of process, segregation of duties and responsibilities.

Credit risk management includes both preventive and curative measure. Preventive measure comprises risk assessment, risk measurement, and risk pricing, early warning system to pick signal of future default in advance and undertake better credit portfolio diversification. The curative measure aims at minimizing post sanction loan losses through steps such as securitization, derivative trade, risk sharing and legal enforcement (Jain and Jaiswal, 2014).

The credit risk management function in banks 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 (Kimeu, 2006) The importance of credit risk management is recognized by banks for it can establish the standards of process, segregation of duties and responsibilities (Joyce, 2015).

According to Engdawork (2014), the banking industry is no doubt a regulated sector as a result of the riskiness of its operation. Consequently, risk management in banks is fast becoming a discipline that every participants and players in the industry need to align with. As earlier noted, it is a process which involves risk identification, risk measurement, risk monitoring and risk control.

- ***Risk identification***: In order to properly manage risks, an institution must recognize and understand risks that may arise from both existing and new business initiatives; for example, risks inherent in lending activity include credit, liquidity, interest rate and operational risks. Risk identification should be a continuing process and should be understood at both the transaction and portfolio levels.
- ***Risk Measurement***: Once risks have been identified, they should be measured in order to determine their impact on the banking institution's profitability and capital. This can be

done using various techniques ranging from simple to sophisticated models. Accurate and timely measurement of risk is essential to effective risk management systems. An institution that does not have a risk measurement system has limited ability to control or monitor risk levels. Banking institutions should periodically test their risk measurement tools to make sure they are accurate. Good risk measurement systems assess the risks of both individual transactions and portfolios.

- ***Risk Monitoring***: Institutions should put in place an effective management information system (MIS) to monitor risk levels and facilitate timely review of risk positions and exceptions. Monitoring reports should be frequent, timely, accurate, and informative and should be distributed to appropriate individuals to ensure action, when needed.
- ***Risk Control***: After measuring risk, an institution should establish and communicate risk limits through policies, standards, and procedures that define responsibility and authority. These limits should serve as a means to control exposure to various risks associated with the banking institution's activities. Institutions may also apply various mitigating tools in minimizing exposure to various risks. Institutions should have a process to authorize and document exceptions or changes to risk limits when warranted.

2.5 Default Problems

Non –payment of loans has several undesirable consequences. It gradually destabilizes the credit system cost of loan administration of overdue loan are high, and default reduce the resource base for further lending, weak staff morale, affect the borrower confidence. According to Basel committee of banking supervision (2001), explain the default risk is possibility of losing loan partially or totally. Generally, defaults are event of bankruptcy failure to pay a due obligation, repudiation or credit rating change and structure.

Credit default is a deterioration of credit standing leads to the increase possibility of default. In the market universe, a deterioration of credit standing of a borrower does materialize in to loss because it generates an upward move of the required market yield to compensate the higher risk and triggers a value decline (Bessis,2010). Normally the financial conditions of the borrowers as well as the current value of any underlying collateral are considerable interest to banks when

evaluating the credit risk of obligor or counter parties (Allen, 1997).

Based on the observation of the study some factors were able to be identified as the main reasons for credit default. One reason is defects and inadequacies in the organization disbursing credit, misallocation of borrowers fund and other reasons like death and illness are the most commonly observed reasons.

2.6 Relationship between CRM and Financial Performance

Bessis (2010) define financial performance as management initiative to upgrade the accuracy and timeliness of financial information to meet required standard while supporting day to day operation. Lymon and Cavless, (1978) also define it as the operation strength of firm in relation to its revenue & expenditure as revealed by its financial statement in any organization commercial banks in particular, financial performance is affected by credit risk. The role of bank remain central in financial economic activity and its effectiveness could exert positive impact on overall economy as sound and profitable banking sector is better able to withstand negative shocks and contribution to the stability of financial statement (Athanasoglou, *et al* 2005).Better credit risk management result is better bank performance; thus, it is crucial important that the bank practice prudent credit risk management and safeguarding the asset of the bank and protect the investor interest. Banking institution are some of the predominant financial institution whose change in performance and structure have for reaching implication on the whole economy.

Achou and Tenguh (2008) show that there is significant relationship between bank performance in term of asset and credit risk management in term of loan performance, better credit risk management result in better bank performance thus, it a crucial importance that bank practice prudent credit risk management and safe guarding the asset of the bank and protect investor interest.

2.7 The Relation between ROA and ROE with CRM

ROA(Return on Asset) and ROE (Return on Equity) are known as financial ratios which is the oldest and simplest practice financial and planning analysis tool, financial ratios used by internal and external financial ratio users for making decision including investing and performance evaluation decision based on those financial ratios. Also, these ratios often used all high esteem as indictor of credit analysis in banks, based on those financial ratio indictors we can also measure the profitability of banks result of credit management performance. We can get their ratio from financial statement ROA ratio indicate mostly related with the banks total asset and it illustrate how well management is employing the banks total asset to make profit and DER is ratio indicate how much debt a bank is using to finance its asset relative to the amount of the value represented in shareholders equity (Mahlet, 2016).

Therefore; related to credit, this ratio shows the level of the banks in their financial position and efficiency of handling risks including defaults. So as financial indictor they are essential.

2.8 Empirical Literature Review

Grace, (2012) studied on The effect of credit risk management on the financial performance of commercial banks in Kenya using a regression model and found significant relationship between financial performance in term of profitability and credit risk management (in term of loan performance CAR. the result of analysis is both NPLR and CAR have negative relation with dependent variable but NPLR is high significant effect on ROE comparison to CAR. study conclude that commercial banks with lower non performing loan and capital adequacy ratio have high return on equity.

Credit default is a serious threat to the performance of banks, therefore various researches have examined the impact of credit default on the bank in various dimension. Kithinji (2010) has assessed the effect of credit risk management on profitability of commercial bank in Kenya. Data on amount of credit level of non-performing loans and profit were collected for the period 2004-2008. The finding revealed that the bulk of the profit of commercial banks is not influenced by

the amount of credit and non-performing loans, therefore suggesting that other than credit and non-performing loans on profit.

Ayadi and Boujelbne (2012), from their study on banking performance of twelve Tunisian deposit banks over the period of 1995-2005, noticed a significant positive relation between size and return on average asset proving the existence of economic of scale in the Tunisian banking sector.

In another study conducted by Yuqi Li (2007), a number of explanatory variables have been proposed for both internal and external categories, according to the nature and purpose of each assessment. Studies dealing with internal determinants employ variables such as size, capital, credit risk, costs etc.; while for external determinants, several factors have been suggested as impacting on profitability and these factors can further distinguish between control variables that describe the macroeconomic environment, such as inflation, interest rates and cyclical output, and variables that represent market characteristics. The latter refer to market concentration, industry size and ownership status.

Based on the study made by Ravi (2012) using econometric model, ROA was used to compare the profitability of banks and as independent default rate, Cost per loan asset and capital adequacy. From this they have negative relation with ROA and they have significant effect on ROA but insignificant effect of cost per loan asset shows no relation with ROA. Finally the study conclude Risk management in general has very significant contribution to bank performance so advice to put more emphasis on risk management.

The study under taken by Peterson (2014), using regression model on the effect of credit risk management practices on loan performance in microfinance institution in Nairobi found credit risk and GDP growth have positive relationship with loan performance and interest spread and interest rate charged have negative relationship with loan performance and all independent variables have significant effect on loan performance. the study found the key indicator of financial performance and efficiency of microfinance institution is the spread between lending and deposit rate .

By using linear multiple regression model and Generalized Least Square on panel data, (Okoth,V & Gemechu,B, 2013) studied the determinants of financial performance of commercial banks in Kenya for ten years from 2001 to 2010. They used independent variables like capital adequacy, asset quality, Management Efficiency, Liquidity Management, GDP Growth Rate, and Inflation Rate and ROA, ROE, and NIM, as a dependent variable. They found that bank specific factors significantly affect the performance of commercial banks in Kenya, except for liquidity variable. But the overall effect of macroeconomic variables was inconclusive at 5% significance level. The moderating role of ownership identity on the financial performance of commercial banks was insignificant.

Girma (2001) has investigated credit risk management and its impact on performance on Ethiopia commercial banks. The research used 11 years panel data from the selected commercial banks for study to examine the relationship between return on asset and loan provision, non-performing loan and total asset. The study revealed that there is a significant relationship between bank performance and credit risk management.

According to Samuel (2013), Investigation on the determinant factor for credit default performance on selected microfinance institution in Ethiopia from year 2006-2010; the study finding reveals that availability of other credit source, credit supervision and suitability of credit repayment period and income are the main determinant factor for defaults rate and performance of microfinance institution in the country.

Tseganesh (2012), conduct a study on determinant of banks liquidity and their impact on financial performance, with the aim of identify determinant of commercial banks liquidity in Ethiopia and then to see the impact of banks liquidity up on financial performance through significant variable explaining liquidity. According to the result of the study, capital adequacy and bank size had positive impact of financial performance, whereas non-performing loan and short-term interest rate had negative impact on financial performance. Interest rate margin and inflation rate has a negative but insignificant impact on financial performance. Finally, the study concluded that the impact of bank liquidity on financial performance was non-linear positive /negative.

Using regression model Tibebu (2011) has found out that NPLR and CAR has a negative impact on profitability of banks and also no correlation among independent variable NPLR and CAR which independent variable explained the dependent variable separately .the study concluded credit risk management of commercial banks of Ethiopia is poor .and this lead to decrease in the profitability of the banks.

Engdawork (2014) studied the impact of credit risk on the performance of commercial banks in Ethiopia using econometric model and found out that provision to total asset and cost per loan asset have negative relation with ROA but loan to total asset and bank size have positive relation with ROA.

From the above theoretical as well as empirical review, credit default is affect over all financial performance of banking industry. This research tries to examine the impact of credit default management on financial performance of commercial banks in Ethiopia and identify relationship between loan and advance to total asset, non-performing loan, capital adequacy ratio, bank size and cost per loan asset with relate to the banks financial performance.

2.9 Knowledge Gap

The chapter began by providing a brief discussion on key aspect of theoretical approaches and empirical approaches and try to show the relationship between credit management and financial performance and banks performance determinant internally or externally also general problems of default in banking industry.

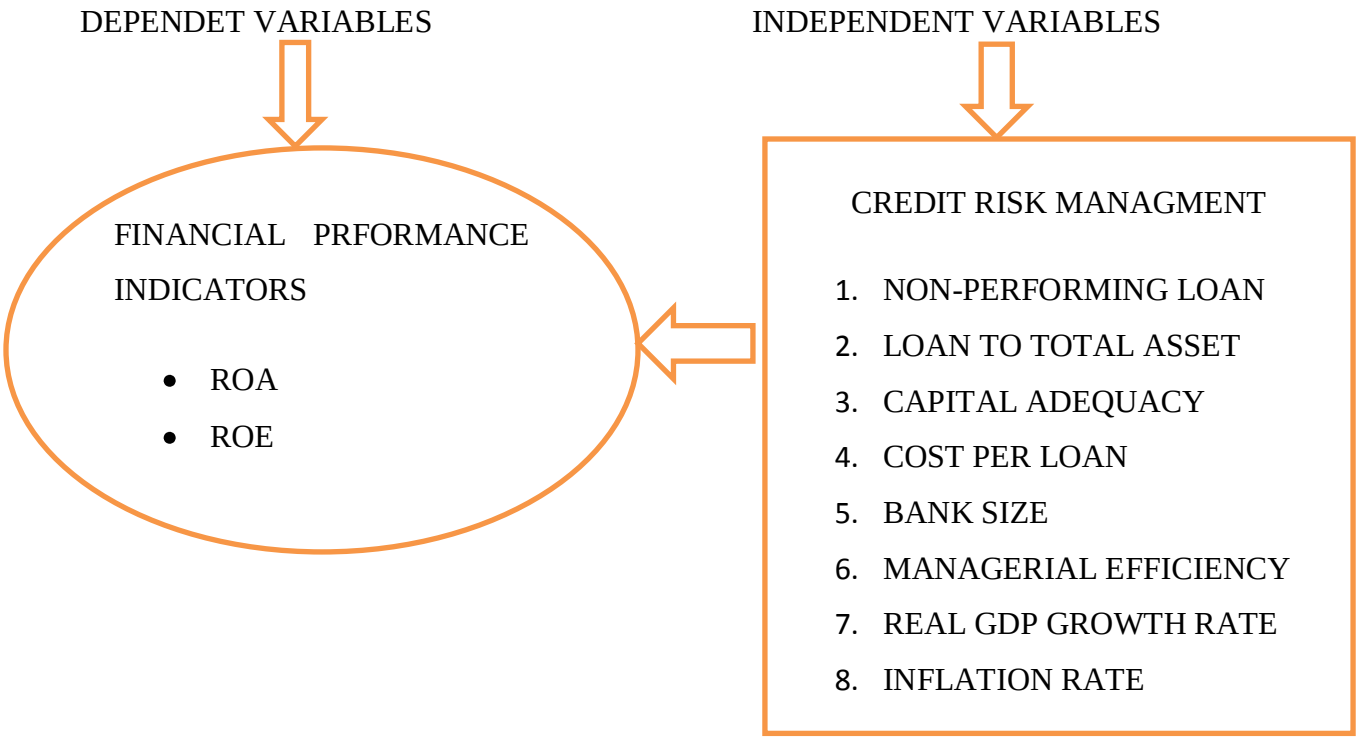
Most empirical literatures on the relationship between credit risk management and financial performance of banks in Ethiopia are commonly conceptual in nature and often illustrating the theoretical link between good risk management practices and improved financial performance of banks. There are relatively few studies that try to provide empirical evidence to the relationship between credit risk management and financial performance of banks in the country. In addition, the studies which try to investigate the impact of credit risk management on financial performance of commercial banks did not show a clear relationship between credit default

management and financial performance, especially by considering the two (2) financial ratios like ROA and ROE as dependent variable which is basic indictors of financial performance and including macroeconomic determinants in their assessment. Therefore, there is gap in the empirical evidence available and this assessment tries to fill this gap in literature by focusing on impact of both bank specific and macroeconomic factors on ROA and ROE as a financial performance measures.

2.10 Conceptual framework

Based on the theoretical and empirical Literature review the researcher developed the following frame work.

Figure 1: Conceptual Framework



Source: Designed by the researcher

CHAPTER THREE

3. Methodology of the Study

This chapter of the research report consists research design, data source and collection method, study population, sample size and technique, data processing and analysis technique, model specification.

3.1 Research Design

This research paper employs a quantitative research design. Quantitative research involves counting and measuring of events and performing the statistical analysis of a body of numerical data. The assumption behind the positivist paradigm is that there is an objective truth existing in the world that can be measured and explained scientifically (Misker, 2015). Quantitative research approach refers to the systematic empirical investigation of social phenomena via, mathematical or computational techniques. The main objective of quantitative research approach is to develop and employ mathematical models, theories and hypothesis pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships.

3.2 Data Source and Collection Techniques

The study uses data from selected banks for analysis. A panel data of 11 years financial performance data of banks is collected. The reason behind selecting 11 years of performance data is in order to get more concrete information in credit default management on banks profiles. Besides, under the study time series data observation is used to get informative data, to examine the relationship between financial performance indictor with bank specific factors including non-performing loans, cost per loan, loan to total asset, capital adequacy, managerial efficiency and bank size and the non bank specific factors i.e. real GDP and IR.

The main source of data for the study was obtained from secondary data from the balance sheet

and income statement of seven selected commercial banks based on years of operation in the banking sector. From those banks 11 consecutive years, i.e. from 2007-2017 balance sheet and income statement report were used for the study. In Ethiopia it is must for banks to report and submit their annual report to the controlling body that is NBE, this was easy for the researcher to get annual report of all selected bank from NBE central data base and the financial statement from the annual audited report of NBE. Data from balance sheet and income statement was used for this research and to run the model. The main reason to take only those seven banks was to exclude those banks which have less year of experience than the span of years used for the analysis, i.e. 11 years. And as a source banks credit procedure was also used.

3.3 Population of the Study

The target population of the study is all commercial private banks in Ethiopia which currently operate over 17 banks which is 16 private commercial banks and 1 government commercial bank. So, based on their year of establishment, sampling was implemented from the 16 private commercial banks which were established before 11 years ago and based on that the researcher took and examinee on the seven banks out of the total 16 banks.

3.4 Sample Size and Sampling Techniques

The objective of the study is to empirically examine the quantitative impact of credit default management on financial performance of private banks in Ethiopia. Out of 16 private banks 7 banks were taken as sample based on their year of establishment, i.e. before 2007 G.C, and those are Awash international bank SC, Dashen bank, Bank of Abyssinia, Wegagen bank, United bank, Nib international bank and Cooperative bank of Oromia and probability sampling technique was employed.

3.5 Data Processing and Analysis Techniques

The data collected from secondary source was processed through, first descriptive statistics analyzed in both dependent and independent are calculated over sample period. Then correlation analysis between dependent and independent variables was made. Then the model is tested to see

the applicability of regression model and regarding relationship between dependent and independent variables which is done by using multiple regression model. Data is analyzed through STATA 13.

3.6 Model Specification

The primary purpose of the study is to examine the impact of credit default management on financial performance on private commercial banks in Ethiopia. This study uses two dependent variables as a measure of financial performance indictors; those are Return on Asset (ROA) and Return on Equity (ROE). These ratios tries to show relationship determined from the banks financial information and used for comparison purpose.

These ratios are the result of dividing on account balance or financial measurement with another. Usually these measurements found on the banks financial statement in addition tracking various ratio over time is a powerful means of identifying financial status. Whereas, based on review made on previous researches on the subject matter, the independent variables are Non-Performing Loan Ratio (NPLR), Capital Adequacy Ratio (CAR), Cost Per Loan Asset (CPL), Loan to Total Asset (LTA), Managerial Efficiency (ME), Bank Size (BS), Real GDP Growth (GDP) and Inflation Rate (IR) were used as explanatory variables.

Financial performance is measured by using the two indictor ratios, which are ROA and ROE;

$$ROA = a+\beta_1 NPLR+\beta_2 CAR+\beta_3 LTA+\beta_4 CPL+\beta_4 ME+\beta_5 BS+\beta_6 GDP+\beta_7 IR+e \quad \text{Equation 1}$$

$$ROE = a+\beta_1 NPLR+\beta_2 CAR+\beta_3 LTA+\beta_4 CPL+\beta_4 ME+\beta_5 BS+\beta_6 GDP+\beta_7 IR+e \quad \text{Equation 2}$$

Where; ROA**=** Return on Asset

ROE**=** Return on Equity

NPLR**=** Non Performing Loan ratio

CAR**=** Capital Adequacy ratio

LTA**=** Loan to total Asset

CPL**=** Cost per Loan Asset

ME**=** Management efficiency

BS**=** Bank size

GDP**=** Gross Domestic Product

***IR*=** Inflation Rate

***a*=** Constant term

***β*=** Coefficient of explanatory variable

***e*=** Error Term

3.7 Variables definition and Developed Hypothesis

3.7.1 Depended Variables

- **Return on Asset (ROA)**: ROA is the first dependent variable used to measure profitability performance and it is measured as the ratio of net income and total asset of a bank. It reflects the ability of a bank to generate profits from the bank's assets. The higher the amount of return on assets the better the efficiency of the bank management, which can be considered as good financial performance.
- **Return on Equity (ROE)**: ROE is the ratio of net income to total equity of a bank. It is the second variable used to measure profitability performance of the banks. It is a measure of how well bank management has used the capital invested by shareholders and tells us the percent returned for each money invested by shareholders.

3.7.2 Independent variables

- **Non-Performing Loan Ratio (NPLR)**: It is the ratio of non-performing loan to total loan of a bank. NPLR is a proxy measure for default rate and it is used to assess the practice of financial services industry for a particular lender to change the terms of payment schedule of a loan. It measures the possibility of losing the outstanding loan partially or totally due to credit events. Based on the reviewed literature on the relationship between NPLR and profitability the following hypothesis was forwarded.
    - HO1: there is positive and significant effect between non-performing loan ratio on the financial performance.
- **Capital Adequacy Ratio (CAR)**: CAR is measured by total Equity to total asset ratio. Capital adequacy refers to the amount of equity and other reserves which the bank hold against its risky assets. CAR reflects the bank`s financial strength and shows the ability to withstand and tolerate with operational and abnormal losses. It measures how much of

banks assets are funded with owners' fund. Regarding the relation between CAR and bank profitability, there is a mixed finding regarding the impact of CAR on profitability. However, majority of the reviewed literature like (Sangmi and Nazir, 2010) and Tseganesh (2012) identified a positive correlation between the two variables, thus the following hypothesis was used for the study.

  - HO2: there is a positive and significant effect between capital adequacy ratio on the financial performance

- **Loan to Total Asset (LTA)**: It is the ratio of total loan of a bank to the total asset. LTA measures the exposure level of the Bank to credit risk. Banks with higher loan to total asset ratio have high exposure to credit risk. Based on the literature review, the following hypothesis was provided.
  - HO3: there is a negative and significant effect between loan to total asset ratio on the financial performance
- **Cost per Loan Asset (CPL)**: CPL is calculated as the ratio of total operating cost and total amount of loans. It is a measure of banks efficiency in distributing loans to its customers and the study hypothesis for the expected relation between CPL and bank financial performance has been provided below. Literature for instance, (Athanasoglou et al, 2008 and Ravi, 2012) has found out the negative relationship between cost of lending and profitability for banks in other country.

    HO4: there is negative and significant effect between cost per loan asset and the financial performance.

- **Managerial Efficiency (ME)**: ME is measured as the ratio of bank's operating expense to its operating income. It reflects the efficiency of bank management in creating the required income. The banks are assumed to become more efficient when ME become lower or when the ratio of operational expense to operational income is reduced. Thus, the negative correlation between ME and profitability can be expected and this was supported by the study of Athanasoglou et al., 2008.
  - HO5: there is negative and significant effect between managerial efficiency and financial performance.

- **Bank Size (BS)**: it is measured by natural logarithm of total asset and it reflects the size of the Bank in terms of its asset position. BS is included as an explanatory variable to give an explanation for size related economies of scale or diseconomies of scale. Large banks are expected to have low credit risk that emanate from their capacity to establish sound credit risk management framework. Engidawork (2014) and Ayadi and Boujelbne (2012), found a positive relation of financial performance and bank size. Based on this the study employs the following hypothesis.
    - HO6: there is a positive and significant effect between bank size and financial performance.
- **Real GDP Growth (GDP)**: The real GDP is the sum of the value added in the economy during a given period or the sum of incomes in the economy during a given period adjusted for the effect of increasing prices. The presupposes that in the determination of GDP growth from one year to another, real GDP give a more accurate view of the economy. Hence, this study focuses on real GDP growth rather than the nominal GDP growth. Based on the literature review, like Joyce (2015), the following hypothesis was provided.
    - HO7: there is a positive and significant effect between Real GDP growth rate financial performance.
- **Inflation Rate (IR)**: Inflation is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling. IR is a situation in which the economies overall price level is rising. It represents sustained and pervasive increment in aggregate price of goods and services resulting decline in purchasing power of money.
    - HO8: there is negative and significant effect between inflation rate and financial performance.

CHAPTER FOUR

4. Results and Discussion

In this chapter, the researcher presents the results of the research regression model. The researcher has analyzed the results and describes the impact of banks specific factor; including credit default risk management, and macroeconomic factors on financial profitability of selected private commercial bank in Ethiopia. The first section of this chapter presents the descriptive statistics of dependent and independent variable included in the model. Then correlation analysis of variables and diagnostic tests conducted for selecting the regression model is presented. Finally, the result of the regression analysis and discussion on the result is provided.

4.1 Descriptive Statistics

Before going into the estimation of an econometric model it is crucial to explore the statistical characteristics of the data set. Data exploration is considered to be prerequisite for good model formulation and econometric estimation. It is important to know the pattern of the data in order to model it in a mathematical form.

The descriptive statistics was examined bank specific and macro determinants of Return on Asset (ROA) and Return on Equity (ROE), which were used as a measure of financial performance of banks. Bank specific variables were drawn from balance sheet statement and income statement of banks that are taken from the National Bank of Ethiopia (NBE). While data on macroeconomic factors were collected from World Bank World Development Indicators and NBE.

The descriptive statistics of the dependent and independent variables in the model is presented in Table 1.

Table 1: Descriptive Statistics

Variables	No. Obs.	Minimum	Maximum	Mean	Std. Deviation
ROA	77	0.0035	0.0646	0.0362	0.0120
ROE	77	0.0185	0.4887	0.2927	0.1048
NPLR	77	0.0000	0.0983	0.0243	0.0203
CAR	77	0.0697	0.3066	0.1307	0.0378
LTA	77	0.3207	0.6970	0.4884	0.0793
CPL	77	0.0307	0.1381	0.0671	0.0184
ME	77	.3775	21.7475	1.5200	2.9341
BS	77	6.0497	10.6448	9.0353	0.8590
GDP	77	8.0000	11.8000	10.2910	1.0870
IR	77	7.3000	44.4000	16.2130	12.0344

Source: Author's computation through STATA

The table shows the number of observations, minimum, maximum, mean and standard deviation for the dependent variables; Return on Asset (ROA) and Return on Equity (ROE) and explanatory variables; Non-Performing Loan Ratio (NPLR), Capital Adequacy Ratio (CAR), Cost Per Loan Asset (CPL), Loan to Total Asset (LTA), Managerial Efficiency (ME), Bank Size (BS), Real GDP Growth (GDP) and Inflation Rate (IR).

As explained in previous sections, this study uses Return on Asset (ROA) and Return on Equity (ROE) as a measurement of financial performance of banks. The above table shows that, the mean of ROA was 3.6% with a minimum of 0.3% and a maximum of 6.4%. While, the mean of ROE was 29.2%, having a minimum of 1.8% and a maximum of 48.8%. This indicates that, the average bank earnings before tax is 3.6% and 29.2% of the total asset and total equinity of banks respectively.

One of the specific factors that affect profitability is NPLR. From the table above, it can be seen that the mean of NPLR was 2.4% with a minimum of 0.0% and a maximum of 9.8%. This indicates that, from the total loans that sampled banks disbursed, an average of 2.4% were being default or uncollected over the sample period. The other variable Capital Adequacy Ratio (CAR) is measured by the ratio of Total Equity to Total Asset and it reflects the bank`s financial strength and shows the ability to withstand and tolerate with operational and abnormal losses. The mean of CAR was 13% minimum and maximum value of 6.9% % and 30.6% respectively.

Total Asset ratio (LTA) is the other explanatory variable, which measures the level of exposure of the banks to credit risk. Bank loans are expected to be the main source of income and are expected to have a positive impact on bank performance. Other things constant, the more deposits are transformed into loans, the higher the income from the interest margin and profits. The mean value of LTA is 48% with the minimum and maximum value of 32% and 69.7% respectively. The fairly low LTA ratio indicates the presence of excessive liquidity status in the sampled banks. This can be attributed to the government regulation which forces banks to purchase bond, which can limit the bank's capacity to extend loan without any limitation.

Cost Per Loan Asset (CPL) is calculated as the total cost of operation of banks over total amount of loans and operating cost and it shows the banks efficiency in distributing loans to its customers. The mean percentage for CLA is 6.7% with a minimum of 3.7% and a maximum of 13.8%.

The remaining bank specific dependent variables are Bank Size (BS) and Managerial Efficiency (ME), which have means of 9 and 1.52 respectively. BS reflects the size of the bank and it is measured as the natural logarithm of the total asset of the bank, whereas ME shows the efficiency of bank management and is given by the ratio of banks operational expense and its operational income. As it can be seen from the table, the ME variable shows a high variation and have a standard deviation of 2.9 with a minimum of 0.37 and a maximum of 21.7 values. The significant variation of the ME variable is as a result of high fluctuation of the operational income of the banks under investigation. Particularly, the operational income of Cooperative Bank of Oromia was very low in 2016; which was 37.1 million, that made the maximum ME value to be 21.7, which is significantly high.

The remaining independent variables are non-bank specific macroeconomic factors that can affect financial profitability of banks; which are Real GDP Growth (GDP) and Inflation Rate (IR). The mean value of real GDP growth rate was 10.8% indicating the average real growth rate of the country's economy over the past 11 years. This growth rate implies that the Ethiopian economy is continuing to grow rapidly and the overall economic performance reflected the rapid expansion of economic strength of the country during the period under investigation. Finally, the

IR reflecting the rate at which the general level of prices for goods and services is rising, had a mean of 16.2 with a minimum of 7.3 and a maximum of 44.4.

4.2 Correlation Analysis

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. If variables; y and x are correlated, it means that y and x are being treated in a completely symmetrical way. Thus, it is not implied that changes in x cause changes in y, or indeed that changes in y cause changes in x rather, it is simply stated that there is evidence for a linear relationship between the two variables, and movements in the two are on average related to an extent given by the correlation coefficient (Brooks, 2008).

The most widely used bi-variant correlation statistics is the Pearson product-movement coefficient, commonly called the Pearson correlation which was used in this study. The table below presents the correlation between the variables used for this research.

Table 2: Correlation Matrix

		ROA	ROE	NPLR	CAR	LTA	CPL	ME	BS	GDP	IR
ROA	Pea Cor	1									
	Sig. (1-tailed)										
ROE	Pea Cor	.719**	1								
	Sig. (1-tailed)	.000									
NPLR	Pea Cor	.150	.108	1							
	Sig. (1-tailed)	.096	.176								
CAR	Pea Cor	.076	-.519**	-.075	1						
	Sig. (1-tailed)	.257	.000	.259							
LTA	Pea Cor	-.240*	-.200*	.122	.022	1					
	Sig. (1-tailed)	.018	.040	.146	.426						
CPL	Pea Cor	-.394**	-.370**	-.425**	-.022	-.330**	1				
	Sig. (1-tailed)	.000	.000	.000	.424	.002					
ME	Pea Cor	-.656**	-.586**	-.073	.043	.260*	.484**	1			
	Sig. (1-tailed)	.000	.000	.265	.355	.011	.000				
BS	Pea Cor	.146	.324**	-.371**	-.458**	-.205*	.230*	-.180	1		
	Sig. (1-tailed)	.103	.002	.000	.000	.037	.022	.059			
GDP	Pea Cor	.074	.045	.284**	.101	.321**	-.344**	-.150	-.386**	1	
	Sig. (1-tailed)	.262	.350	.006	.191	.002	.001	.096	.000		
IR	Pea Cor	.149	.074	.331**	.095	.138	-.280**	-.036	-.394**	.367**	1
	Sig. (1-tailed)	.097	.260	.002	.206	.116	.007	.377	.000	.001	

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Source: Author's computation through STATA

As it can be seen from the above table, Return on Asset have a negative relation with Cost per Loan and Managerial Efficiency, with a correlation coefficient of -0.39 and -0.65 respectively. The 1-tailed significance value of 0.000 for both CPL and ME implies that there is a statistically significant correlation between ROA and the two variables. The negative correlation between ROA with CPL and ME may indicate that as the bank efficiency improves through the reduction of expense for loan distribution and regular operations the financial performance, as measured by ROA, will also improves. There is also negative correlation between Loan to Total Asset (LTA) ratio and ROA with correlation coefficient of -0.24 and Sig. (1-tailed) value of 0.03. This indicates that as LTA ratio increases in one unit, the return on asset decreases in 0.24 units.

The correlation result show that Capital Adequacy Ratio (CAR) of a bank is negatively and significantly correlated with Return on Equity (ROE) with a correlation coefficient of -0.51 and Sig. (1-tailed) value of 0.00. Likewise, CPL is negatively associated with ROE with the coefficient of -0.654 and Sig. (1-tailed) value is 0.001.

Bank Size (BS) and ROE have positive and significant association with coefficient of 0.14 and Sig. (1-tailed) value of 0.00. This positive and significant relation between ROE and BS suggest that relatively bigger banks which have higher total asset amount are more profitable; as measured by ROE, than smaller banks indicating that bigger banks could have high economies of scale in their operations. ROE and Managerial efficiency are also negatively and significantly correlated with correlation coefficient and Sig. (1-tailed) value of 0.58 and 0.000 respectively. It must be noted that Managerial Efficiency (ME) is measured by the ratio of banks operational expense and its operational income. Therefore, the banks are assumed to become more efficient when ME become lower; i.e. when the ratio of operational expense to operational income is reduced. Thus, the negative correlation between ME and profitability can be expected.

With regard to the macroeconomic factors included in the model, even though Interest Rate (IR) is positively correlated with both ROA and ROE; the correlation between these variables is statistically insignificant. Similarly, the correlation between GDP with ROA and ROE is statistically insignificant.

4.3 Statistic Tests

Before proceeding to the model estimation process, it is required to perform diagnostic test for the model estimation procedures so that it would be possible to identify which estimation technique fits the model and data well. Relevant diagnostic testing was conducted to identify for any violation of the underlining assumption of the classical linear regression model (CLRM). The diagnostic tests include model specification, normality, multicollinearity, heteroscedasticity and autocorrelation tests. The following are summaries of the diagnostic tests and of which the test results have been attached in the annex.

4.3.1 Presence of Fixed Effects

If the time and bank specific effects are not important, one can estimate a restrictive model using pooled OLS instead of the unrestricted fixed effect model. The null hypothesis is that a restrictive model (OLS) is appropriate, that all of the units share the same intercept (Wooldridge, 2004). Accordingly, an F-test was conducted in order to determine the presence of fixed effects for both ROA and ROE models.

The null and alternative hypotheses are:

Ho: There are no time specific effects.

Against

H1: Not Ho

Using this test statistics, the calculated value does not allow us to reject the null hypothesis since the calculated p-value 0.0001 for ROA model and 0.0344 for ROE model which are not significant at 5% we can reject the null hypothesis that says the year coefficients are jointly zero (see Annex 1). Therefore, we can conclude that there is time specific effect and we should proceed weather to use a fixed effect or random effect model.

4.3.2 Fixed Effect Vs. Random Effect Test

The Hausman specification test is the classical test of whether the fixed or random effects model should be used. The fundamental distinction between fixed and random effect model is the assumption whether the unobserved individual heterogeneity is correlated with the rest of the regressors or not. If the specific effects are correlated with the regressors, fixed effect estimates are consistent but the random effect estimates are not consistent. If the regressors are uncorrelated with the *ui*, both fixed and random effect estimators are consistent, withal the random effect estimators are efficient (Wooldridge, 2004).

The Hausman test is a way of comparing two estimators; one which is consistent under both the null and alternative hypothesis and one which is consistent (and typically efficient) under the null hypothesis only. A significant difference between the two estimators indicates that the null hypothesis is unlikely to hold (Verbeek, 2004).

Under this test the hypotheses are:

Ho: Difference in coefficients is not systematic

Against

H1: There is a systematic difference in coefficients

Using this statistic, since the calculated p-value 0.7829 for ROA model and 0.6004 for ROE model are both greater than 0.05 we fail to reject the null hypothesis that claims the difference in coefficients is not systematic (see Annex 2). This implying that, random effect model is more appropriate than fixed effect model and gives more comfort for both models.

4.3.3 Test for Normality

A normal distribution is not skewed and is defined to have a coefficient of kurtosis 3. Normality test was applied to determine whether a data is well-modeled by a normal distribution or not, and to compute how likely an underlying random variable is to be normally distributed. Skewness and Kurtosis Normality Test formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how fat the tails of the distribution are (Brooks 2008).

Under Skewness and Kurtosis Normality Test the hypotheses are:

Ho: Residuals follows a normal distribution

Against

H1: Residuals do not follow a normal distribution

As shown in the Annex 3, p-value for the normality test was 0.0621 for ROA model and 0.1336 for ROE models which are not significant at 5% level of significant to reject the null hypothesis. Hence, the null hypothesis that is the error term is normally distributed should not be rejected and it seems that the error term in all of the cases follows the normal distribution for both ROA and ROE models.

4.3.4 Multicollinearity Test

Multicollinearity happens when one or more explanatory variables are highly linearly related to each other. Perfect multicollinearity means one explanatory variable is a perfect linear function of any other explanatory variables, which is fairly easy to avoid. Multicollinearity will cause the variances and standard errors of the estimates to increase and the t-scores to decrease. However, it will not bias the estimate and the overall fit of the equation (Studenmund, 2011). Presence of Multicollinearity can be detected by examining the correlation matrix of dependent and independent variable. If the researchers found that there is any correlation between two variables to be more than 80%, automatically the suspicions for the existence of Multicollinearity problem is derived.

By referring back to the correlation matrix provided in Table 2, we can observe that the highest correlation among the dependent and independent variable is -0.65 which is the correlation between ROA and ME. Considering that |-0.65| is less than 0.8, we conclude that there is no problem of multicollinearity among the variables in the model.

4.3.5 Heteroskedasticity Test

The condition of classic linear regression model implies that there should be homoskedasticity between variables. This means that the variance should be constant and same. Variance of residuals should be constant otherwise, the condition for existence of regression, homoskedasticity, would be violated and the data would be heteroskedastic (Brooks, 2008). To test for Heteroskedasticity a likelihood-ratio test of the null hypothesis that the parameter vector of a statistical model satisfies some smooth constraint. To conduct the test, both the unrestricted and the restricted models must be fit using the maximum likelihood method.

Under this test the hypotheses are:

Ho: Equality of variances among heteroskedasticity and homoscedastic models

Against

H1: There is difference in variance

Based on this test, the p-value 0.98 for ROA model and 0.99 for ROM are both greater than 0.01

we fail to reject the null hypothesis that claims homogeneous variance of residuals (see Annex 4). This implies that there is no significant evidence for the presence of heteroskedasticity in these research models.

4.3.6 Autocorrelation Test

Autocorrelation, also known as serial correlation or cross-autocorrelation, is the cross-correlation of a signal with itself at different points in time (that is what the cross stands for). If there exists covariance between the residuals and it is non-zero, this phenomenon is called autocorrelation (Brooks, 2008). To test for presence of Autocorrelation Breusch–Godfrey serial correlation LM test was implemented.

Ho: No first order autocorrelation

Against

H1: Not Ho

Based on this test, the p-value is 0.83 for ROA model and 0.22 for ROE model, which are beyond the significance level of 5% (see Annex 5). Hence, the null hypothesis of no serial correlation is failed to reject at 5 percent of significant level. This implying that there is no significant evidence for the presence of serial correlation in these models.

4.4 Regression Analysis and Interpretation

In the previous section, the required tests of Classical Liner Regression Model (CLRM) assumptions have been made. These tests consist of Normality, Multicollinearity, Heteroskedasticity, Autocorrelation and model specification tests. Accordingly, the data set consistent with the classical liner regression assumptions. To choose fixed or random effect of panel model, Hausman test has been estimated. As a result of the Hausman test result, random effect model was selected for both profitability estimation.

The operational panel regression model used to find the significant factors of profitability of selected Commercial Banks measured by Return on Asset (ROA) and Return on Equity (ROE) were

$$ROA = a+\beta_1 NPLR+\beta_2 CAR+\beta_3 LTA+\beta_4 CPL+\beta_4 ME+\beta_5 BS+\beta_6 GDP+\beta_7 IR+e$$

and

$$ROE = a+\beta_1 NPLR+\beta_2 CAR+\beta_3 LTA+\beta_4 CPL+\beta_4 ME+\beta_5 BS+\beta_6 GDP+\beta_7 IR+e$$

4.4.1 Return on Asset Model

Table 3: Random Effect Model Regression on ROA

Variables	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NPLR	0.072	0.061	1.200	0.230	-0.046	0.192
CAR	0.066**	0.031	2.130	0.033	0.005	0.129
LTA	-0.020	0.016	-1.290	0.195	-0.052	0.011
CPL	-0.105	0.085	-1.240	0.215	-0.273	0.062
ME	-0.002***	0.000	-4.130	0.000	-0.003	-0.001
BS	0.004**	0.002	2.440	0.015	0.001	0.007
GDP	-0.007	0.007	-1.140	0.256	-0.020	0.005
IR	0.001	0.000	1.470	0.141	0.000	0.000
C	0.008	0.021	0.380	0.703	-0.034	0.050
R-Sq Within		0.446		Wald Chi2		75.530
R-Sq Between		0.726		Prob>Chi2		0.000
R-Sq Overall		0.526		sigma_u		0
Number of obs		77		sigma_e		0.008
Number of groups		7		rho		0

Notes: The t-values are reported in parentheses. ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.

Source: Author's computation through Stata

The above table presents the random effects model regression results and relationship between explanatory variables and Return on Asset. The overall R-squared of the model is 0.526, which means that 52.6% of variations in ROA of the selected commercial Banks were explained by independent variables (NPLR, CAR, CPL, LTA, ME, BS, GDP and IR), included in the model. Furthermore, the p-value of the model was 0.000, which indicates that the overall model is highly significant at 1% and that all the independent variables are jointly significant in causing variation in the dependent variable.

As shown in the table, the coefficient estimate of Managerial Efficiency (ME) was negative and statistically significant at 1% significance level. The coefficient estimate of ME was -0.002. The negative sign of the coefficient estimates with 1% significant level indicate the existence of strong inverse relationship between ROA and managerial efficiency. As explained in the previous chapter, Managerial Efficiency is measured as the ratio of bank's operating expense to its operating income and it reflects the efficiency of bank management in creating the required income. The banks are assumed to become more efficient when ME become lower; i.e. when the ratio of operational expense to operational income is decreased. Therefore, the negative relation between ME and profitability is as expected. Holding, other independent variables constant, when Managerial efficiency increased by one unit (bank become less efficient), ROA of sampled banks would be decreased by 0.2%. Therefore, the researcher accepts the null hypothesis that managerial efficiency has a negative and significant effect on ROA. So, it can be concluded that, efficient banks have sound and effective policies, procedures and credit strategy with a strong credit culture that enable to undertake effective management function properly resulting in reduced operating expense while improving operating income.

The above table also indicate that the coefficient of capital adequacy measured by the ratio of total equity to total asset of the bank, is 0.066 and its p-value is 0.03. This indicates that holding other independent variables constant at their average value, when Capital Adequacy Ratio increased by one percent, Return on Asset (ROA) of sampled private commercial banks would be increased by 6.6% and statistically significant at 5% level of significance. Therefore, the researcher accept the null hypothesis that capital adequacy ratio has a positive impact on ROA. The possible reason for the significant positive relationship could be that, increase in capital level brings higher financial performance for Ethiopian commercial banks since by having more capital; a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans. In addition, with a sound capital position banks are able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability.

The regression result table also show that there is a positive and statistically significant impact of

Bank Size on Return on Asset. The result shows a positive coefficient of 0.004. This indicates that the bank size is significant factor for bank performance at 5% significance level. This implies that for one-unit change in bank size, keeping the other things held results 0.4% change on the level of ROA in the same direction. Thus, this study accepted the hypothesis which stated there is a positive relationship between bank size and bank performance in Ethiopia. The relationship is positive as expected and this positive relationship between BS and ROA could be attributed to the fact that in Ethiopian banking industry the large bank size performs better than the smaller banks due to the existence of economies of scale and lower perceived probability of default of larger banks. In addition, bigger banks extend more loans and advances to their customer and earns more income, which in turn boosts their financial performance.

The other bank specific factors Non-Performing Loan (NPL), Loan to Asset (LTA) and Cost Per Loan (CPL) ratios were found to have no significant effect on the ROA of selected commercial banks in the country. As it can be seen from Table 3, NPL which measures a proxy measure for default rate and which is used to assess the practice of financial services industry for a particular lender to change the terms of payment schedule of a loan have unexpected positive sign but it is not significant even at 10% significance level. While both LTA and CPL have a negative coefficient as expected, but their influence in explaining the variation in the ROA was found to be insignificant according to the result of the regression. In addition, the impact of macroeconomic factors; i.e. real GDP growth and Inflation Rate, was found to be insignificant in affecting the ROA of banks. This means that the macroeconomic factors are less influential than the bank specific factors in affecting the financial performance of commercial banks in Ethiopia.

4.4.2 Return on Equity Model

Table 4: Random Effect Model Regression on ROE

Variables	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
NPLR	-0.278	0.465	-0.600	0.550	-1.190	0.633
CAR	-1.338***	0.240	-5.570	0.000	-1.810	-0.867
LTA	-0.204*	0.123	-1.660	0.096	-0.445	0.036
CPL	-1.442**	0.654	-2.210	0.027	-2.724	-0.161
ME	-0.014***	0.004	-3.740	0.000	-0.022	-0.007
BS	0.011	0.012	0.890	0.374	-0.013	0.035
GDP	-0.042	0.050	-0.840	0.401	-0.141	0.057
IR	0.001	0.001	1.200	0.229	-0.001	0.002
C	0.5789***	0.163	3.550	0.000	0.260	0.898

R-Sq Within	0.601	Wald Chi2	119.140
R-Sq Between	0.696	Prob>Chi2	0.000
R-Sq Overall	0.637	sigma_u	0
Number of obs	77	sigma_e	0.0571736
Number of groups	7	rho	0

Notes: The t-values are reported in parentheses. ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.

Source: Author's computation through Stata

The estimation result in Table 4 presents random effects model regression results on the second financial performance indicator, i.e. Return on Equity. The overall R-squared of the regression model is 0.637, which is higher than the regression result on ROA. The p-value of the model was 0.000, which indicates that the independent variables are jointly significant in causing variation in ROE. As it can be seen from the table, Capital Adequacy Ratio and Managerial Efficiency are statistically significant at 1% significance level, while Capital per loan ration is significant at 5% significance level and Loan to Asset ratio is statistically significant at 10% significance level.

Consistent with the hypothesis given on the relation between CAR and financial performance, the regression result show that CAR has negative and significant effect on ROE. The coefficient estimate of CAR was -1.33 and its P-value is 0.000, which makes it significant at 1% significant

level indicate the existence of strong inverse relationship between ROE and Capital Adequacy Ratio. This means that, holding other independent variables constant, a one unit increase in CAR will result in 1.3 unit decrease in ROE, which is an inverse relationship. As a result, the researcher accepts the null hypothesis that CAR has a negative and significant effect on ROE. The negative effect of CAR on ROE can be explained by banks effort to keep a higher CAR, banks will restrict their activities which could be negatively associated with bank development, adversely affecting banks' expansion and growth. In addition, this kind of regulation on banks' activities may increase banks net interest margins or overhead costs. The blocked development, the increased overhead cost or net interest margin could lead to the adverse effect of profitability of commercial banks. In this way, the CAR could negatively affect the profitability of commercial banks in the country (Samy and Magda, 2009).

From the previous regression on ROA, CAR was found to have a positive and significant correlation with ROA but with the second financial performance measure CAR have a negative and significant relation with ROE, i.e. the correlation coefficient of CAR fluctuates from positive to negative with regard to the two financial performance indicators. These could be explained by the contradictory prediction of the relationship of CAR with ROA and ROE. Higher CAR could internalize the risk for stakeholders and hence banks face lower cost of funding and further support for higher financial performance. However, in order to keep higher CAR banks would restrict their activities which could be negatively associated with bank development and this could increase banks' net interest margins or overhead costs. The mixed effects can lead to the fluctuating correlation coefficients among positive and negative numbers for CAR (Fan Li and Yijun Zou, 2014).

As it is presented in the table above, the coefficient estimate of Managerial Efficiency is -0.014 and it is statistically significant at 1% significance level. Holding other independent variables constant when Managerial efficiency increased by one unit, ROA of sampled commercial banks is expected to decrease by 1.4%. Therefore, the researcher accepts the null hypothesis that managerial efficiency has a negative and significant effect on ROE. Thus, operational efficiency exists as one of the major determinant factor that can influence Ethiopian banks performance in an unfavorable way.

The coefficient of Cost Per Loan (CPL) measured by ratio of total operating cost and total amount of loans is -1.442 and its P-value is 0.027, which makes it significant at 5% significance level. Thus, a unit change in total cos per loan have an inverse effect in return on equity to the extent of 1.4 unit. Therefore, the null hypothesis which states CPL has negative and significant effect on ROE cannot be rejected. From the regression result on Return on Asset, it can be recalled that CPL has negative but insignificant effect on ROA. The negative and significant effect of CPL on Return on Equity can be expected since CPL indicate inefficiency in distributing loans to the customers by the banks. As the bank becomes more efficient is disbursing loans to customer and reduce the operational expenses with respect to total loan given to customers, the financial performance of the bank is expected to improve.

The other variable having significant effect (at 10% significance level) on ROE is the Loan to Total Asset (LTA) ratio which measures the level of exposure of the banks to credit risk. As shown in Table 4, the coefficient of LTA, measured by the ratio of total operating cost and total amount of loans, is -0.204 and its P-value is 0.096. As a result, the null hypothesis stating LTA ratio have negative effect on ROE is accepted. Banks with higher loan to total asset ratio have high exposure to credit risk.

The other bank specific factors Non-Performing Loan (NPL) ratio and Bank Size (BS) were found to have no significant effect on the ROE of selected banks in the country. Similar to the regression result on ROA, impact of macroeconomic factors; i.e. real GDP growth and Inflation Rate, was found to be insignificant in affecting the ROE of banks.

CHAPTER FIVE

5 Conclusion and Recommendation

5.1 Summary

The main objective of this study was to assessing the impact of credit default risk management and other bank specific and macroeconomic variables on the financial performance of commercial banks. As a measure of financial performance of banks ROA and ROE were used. The study covered the data of seven private commercial banks in Ethiopia from the period 2007-2017. Regarding the data source of this study; audited balance sheet and income statement report were collected from National Bank of Ethiopia and data on macroeconomic factors were collected from World Bank World Development Indicators and NBE.

To achieve the intended objective, the study used random effect panel regression model for eight variables of the study which were both bank specific and macroeconomic variables. The study variables included are Non-Performing Loan Ratio (NPLR), Capital Adequacy Ratio (CAR), Cost Per Loan Asset (CPL), Loan to Total Asset (LTA), Managerial Efficiency (ME), Bank Size (BS), Real GDP Growth (GDP) and Inflation Rate (IR)as dependent variable and Return on Asset (ROA) and Return on Equity (ROE) as dependent variable.

The analysis was conducted using panel data estimation technique of random effect panel model using STATA 12 statistical software. To address the aim of the study, inferential statistics were conducted where correlation analysis was used to study the association between the variables and regression analysis undertaken to study the relationship between the variables. Before the regression analysis, diagnostic test was performed and all the data fitted the CLRM assumptions; the data was found to be free of Multicollinearity and autocorrelation as well as Heteroskedasticity. Finally, the random effect regression results were presented and analyzed.

The regression analysis made on ROA reviled that bank specific factor like; capital adequacy ratio, managerial efficiency and bank size have statistically significant effect on the level of ROA of banks, and non-performing loan, loan to total asset, GDP and inflation were found to be

insignificant in explaining the variation in ROA of selected private commercial banks. While ROE regression model indicated that capital adequacy ratio, loan to asset ratio, cost per loan and managerial efficiency have statistically significant effect on the ROE of banks, whereas, non-performing loan, bank size, GDP and inflation were found to be insignificant in explaining the variation in ROE of selected private commercial banks for the tested period.

5.2 Conclusion

Based on the research findings, it can be concluded that Managerial Efficiency, have significant impact both ROA and ROE with a negative relationship; which means any increase/decrease on the value of these variables leads to a decrease/increase on both financial performance measurement of Commercial banks. Therefore, managerial efficiency is one of the major determinant factor that can influence Ethiopian banks performance in a negative way and as there is an improvement in the efficiency of operation, the financial performance of banks is expected to get better.

The finding indicates that capital adequacy ratio was positive and statistically significant in explaining the variation in ROA of Ethiopian Commercial Banks. But the relation between CAR and ROE was found to be negative. These could be explained by the contradictory effect of CAR on ROA and ROE. Higher CAR could internalize the risk for stakeholders and hence banks face lower cost of funding and further support for higher financial performance. However, banks would restrict their activities which could be negatively associated with bank development in order to keep higher CAR and this could increase banks' net interest margins or overhead costs. The other measure of credit risk, non-performing loan ratio is found to be insignificant in explaining the variation in both financial performance indicators.

In addition, Bank Size has significant impact on ROA with a positive relationship; it implies that any increase/decrease on the value of these variables leads to an increase/decrease on financial performance of Commercial banks (ROA). The positive relationship could be attributed to the existence of economies of scale and bigger banks extend more loans and advances to their customer and earns more income, which in turn boosts their financial performance.

Cost per loan and Loan to asset ratio were negative and statistically significant in explaining the ROE of Ethiopian Commercial Banks. But the two variables were found to be insignificant in contributing on the variation of ROA of the banks.

5.3 Recommendation

Based on the findings and conclusions of the study, the following recommendations were forwarded;

- The study recommends that commercial banks should try to keep their operational cost as low as possible since this negates their profits margin thus leading to low financial performance. This is depicted by the strong effect of managerial efficiency on the financial performance of banks. Improvements in managerial efficiency should therefore be facilitated through application of modern technology and innovative operational strategies to effectively bring about better financial performance.
- Ethiopian commercial banks should strive to improve the bank specific factors like capital adequacy, cost per loan and bank size, since they are found to be among the significant variables that affect financial performances of the selected commercial banks. They have to strengthen their capital by selling their share to existing and new shareholders as well as increase effort on deposit mobilization, since banks with more deposit have the capacity to disburse more loans in order to get more interest income and increasing the capital level by retained the income rather than distributing it as a dividend for stockholders.
- Since income from loan and fee-based activities are the main source of bank's revenue, commercial banks in Ethiopia should improve the quality of loans and effectively utilize funds from fixed deposit. In order to improve the credit quality, it is recommended that commercial banks should give a great care of quality in approval of loan and advances as well as diversify the bank's assets and capital which provides a barrier to losses related with default risk on the granted loans.
- Finally, the study sought to investigate risk management and its impact on financial performance of commercial banks in Ethiopia. However, the variables used in the

statistical analysis did not include all risk management variable that can affect banks performance. Thus, future research could incorporate all bank risk factors including interest rate risk, exchange rate risk and inflation risk. In addition, the study only utilized secondary data as an input for the research. Thus, future research is recommended to expand this scope by incorporating primary data from commercial banks.

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Annex

- **Annex 1: F-test for the Presence of Fixed Effects**
    - **For ROA model**

```
. testparm i.Year

 ( 1)  2009.Year = 0
 ( 2)  2010.Year = 0
 ( 3)  2011.Year = 0
 ( 4)  2012.Year = 0
 ( 5)  2013.Year = 0
 ( 6)  2014.Year = 0
 ( 7)  2015.Year = 0
 ( 8)  2017.Year = 0

       F(  8,    54) =    5.36
            Prob > F =    0.0001
```

- **For ROE Model**

```
. testparm i.Year

 ( 1)  2009.Year = 0
 ( 2)  2010.Year = 0
 ( 3)  2011.Year = 0
 ( 4)  2012.Year = 0
 ( 5)  2013.Year = 0
 ( 6)  2014.Year = 0
 ( 7)  2015.Year = 0
 ( 8)  2017.Year = 0

       F(  8,    54) =    2.29
            Prob > F =    0.0344
```

- **Annex 2: Hausman Specification: Fixed Effect Vs Random Effect Test**
  - **For ROA Model**

```
. hausman FE RE

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       FE           RE         Difference          S.E.
-------------+------------------------------------------------------------
        NPLR |    .0906141     .0759441       .0146701        .0360223
         CAR |    .0327568      .068346      -.0355892        .0200183
         LTA |   -.0236505    -.0235359      -.0001145               .
         CPL |   -.2891458    -.1187734      -.1703724        .0799361
          ME |   -.0015843    -.0019455       .0003612        .0000641
          BS |    .0057611     .0037485       .0020126        .0020289
         GDP |   -.0003985    -.0002385        -.00016               .
          IR |    .0001475     .0001526      -5.14e-06               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        4.76
                Prob>chi2 =      0.7829
                (V_b-V_B is not positive definite)
```

- **For ROE Model**

```
. hausman RE2 FE2
```

	Coefficients (b) RE2	(B) FE2	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
NPLR	-.2702283	-.0384188	-.2318095	.
CAR	-1.327448	-1.333161	.0057127	.
LTA	-.2311819	-.1550252	-.0761566	.0568376
CPL	-1.525373	-1.866516	.3411431	.
ME	-.0133057	-.013292	-.0000136	.0013736
BS	.010863	.0113031	-.0004401	.
GDP	.0011898	-.0028494	.0040392	.0043447
IR	.0009021	.0007059	.0001961	.0003704

```
                b = consistent under Ho and Ha; obtained from xtreg
     B = inconsistent under Ha, efficient under Ho; obtained from xtreg

  Test:  Ho:  difference in coefficients not systematic

               chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                       =        6.42
             Prob>chi2 =      0.6004
             (V_b-V_B is not positive definite)
```

- **Annex 4: Skewness/Kurtosis Test for Normality**

```
. sktest ROA ROE
```

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	joint adj chi2(2)	joint Prob>chi2
ROA	77	0.0159	0.2997	7.63	0.0621
ROE	77	0.0787	0.3889	3.98	0.1366

- **Heteroskedasticity Test**
  - **For ROA Model**

```
. lrtest hetero homosk, df (68)

Likelihood-ratio test                                 LR chi2(68) =     43.88
(Assumption: homosk nested in hetero)                 Prob > chi2 =    0.9899
```

- **For ROE Model**

```
. lrtest hetero homosk, df (62)

Likelihood-ratio test                                 LR chi2(62) =     28.67
(Assumption: homosk nested in hetero)                 Prob > chi2 =    0.9999
```

- **Annex 5: Autocorrelation Test**

- **For ROA Model**

```
. varlmar

  Lagrange-multiplier test

+-------------------------------------------+
| lag |      chi2     df    Prob > chi2     |
|-----+-------------------------------------|
|   1 |    0.0454     1      0.83133        |
|   2 |    1.4764     1      0.22434        |
+-------------------------------------------+

  H0: no autocorrelation at lag order
```

- **For ROE Model**

. varlmar

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	5.7264	4	0.22053
2	4.1635	4	0.38433

H0: no autocorrelation at lag order

Bank	ID	Year	ROA	ROE	NPLR	CAR	LTA	CPL	ME	BS	GDP	IR
Awash International Bank	3002	2007	0.05	0.47	0.04	0.11	0.66	0.03	0.38	8.25	11.8	17.2
Awash International Bank	3002	2008	0.04	0.34	0.05	0.12	0.57	0.04	0.55	8.48	11.2	44.4
Awash International Bank	3002	2009	0.03	0.27	0.05	0.12	0.42	0.06	0.77	8.77	10	8.5
Awash International Bank	3002	2010	0.04	0.37	0.05	0.12	0.40	0.06	0.52	8.98	10.6	8.1
Awash International Bank	3002	2011	0.05	0.39	0.04	0.13	0.39	0.05	0.42	9.22	11.4	33.2
Awash International Bank	3002	2012	0.04	0.33	0.03	0.13	0.46	0.05	0.56	9.39	8.7	24.1
Awash International Bank	3002	2013	0.04	0.32	0.02	0.14	0.52	0.06	0.73	9.61	9.9	8.1
Awash International Bank	3002	2014	0.04	0.33	0.02	0.13	0.46	0.07	0.74	9.90	10.3	7.4
Awash International Bank	3002	2015	0.04	0.28	0.02	0.13	0.52	0.06	0.93	10.08	10.4	10.1
Awash International Bank	3002	2016	0.03	0.26	0.02	0.13	0.52	0.07	1.07	10.30	8	7.3
Awash International Bank	3002	2017	0.03	0.29	0.01	0.11	0.54	0.07	1.11	10.64	10.9	9.9
Bank of Abyssinia	3003	2007	0.03	0.24	0.05	0.12	0.68	0.05	1.18	8.13	11.8	17.2
Bank of Abyssinia	3003	2008	0.01	0.05	0.09	0.10	0.66	0.08	10.60	8.36	11.2	44.4
Bank of Abyssinia	3003	2009	0.03	0.28	0.10	0.09	0.49	0.05	1.01	8.61	10	8.5
Bank of Abyssinia	3003	2010	0.03	0.34	0.07	0.09	0.50	0.05	0.74	8.75	10.6	8.1
Bank of Abyssinia	3003	2011	0.04	0.39	0.03	0.09	0.46	0.06	0.76	8.89	11.4	33.2
Bank of Abyssinia	3003	2012	0.04	0.32	0.03	0.11	0.47	0.06	0.78	9.02	8.7	24.1
Bank of Abyssinia	3003	2013	0.03	0.26	0.02	0.11	0.46	0.05	0.78	9.22	9.9	8.1
Bank of Abyssinia	3003	2014	0.05	0.34	0.00	0.14	0.45	0.07	0.66	9.33	10.3	7.4
Bank of Abyssinia	3003	2015	0.03	0.21	0.00	0.13	0.43	0.08	1.24	9.52	10.4	10.1
Bank of Abyssinia	3003	2016	0.03	0.22	0.00	0.13	0.48	0.09	1.52	9.73	8	7.3
Bank of Abyssinia	3003	2017	0.03	0.24	0.00	0.11	0.55	0.08	1.53	10.14	10.9	9.9
Coperative Bank of Oromia	3005	2007	0.01	0.02	0.01	0.31	0.56	0.07	6.67	6.05	11.8	17.2
Coperative Bank of Oromia	3005	2008	0.02	0.10	0.01	0.22	0.48	0.07	1.54	6.52	11.2	44.4
Coperative Bank of Oromia	3005	2009	0.00	0.02	0.01	0.15	0.58	0.07	11.20	6.93	10	8.5
Coperative Bank of Oromia	3005	2010	0.02	0.19	0.03	0.11	0.41	0.09	1.80	7.48	10.6	8.1
Coperative Bank of Oromia	3005	2011	0.03	0.28	0.02	0.10	0.32	0.10	1.19	7.82	11.4	33.2
Coperative Bank of Oromia	3005	2012	0.04	0.34	0.01	0.11	0.38	0.08	0.75	8.21	8.7	24.1
Coperative Bank of Oromia	3005	2013	0.04	0.41	0.02	0.11	0.32	0.09	0.67	8.79	9.9	8.1
Coperative Bank of Oromia	3005	2014	0.06	0.44	0.00	0.15	0.50	0.08	0.64	8.90	10.3	7.4
Coperative Bank of Oromia	3005	2015	0.04	0.34	0.00	0.12	0.57	0.09	1.26	9.35	10.4	10.1
Coperative Bank of Oromia	3005	2016	0.00	0.03	0.00	0.11	0.55	0.14	21.75	9.27	8	7.3
Coperative Bank of Oromia	3005	2017	0.01	0.17	0.00	0.09	0.55	0.09	3.33	9.78	10.9	9.9
Dashen Bank	3001	2007	0.04	0.47	0.02	0.09	0.66	0.03	0.52	8.71	11.8	17.2
Dashen Bank	3001	2008	0.04	0.46	0.02	0.09	0.56	0.04	0.53	8.97	11.2	44.4
Dashen Bank	3001	2009	0.04	0.39	0.02	0.09	0.46	0.05	0.58	9.18	10	8.5
Dashen Bank	3001	2010	0.04	0.41	0.02	0.09	0.41	0.05	0.56	9.42	10.6	8.1
Dashen Bank	3001	2011	0.04	0.45	0.02	0.10	0.42	0.05	0.52	9.59	11.4	33.2

Dashen Bank	3001	2012	0.05	0.49	0.02	0.10	0.46	0.05	0.47	9.77	8.7	24.1
Dashen Bank	3001	2013	0.04	0.40	0.02	0.10	0.45	0.06	0.63	9.89	9.9	8.1
Dashen Bank	3001	2014	0.04	0.37	0.00	0.12	0.43	0.07	0.64	10.00	10.3	7.4
Dashen Bank	3001	2015	0.04	0.33	0.02	0.12	0.47	0.08	0.92	10.12	10.4	10.1
Dashen Bank	3001	2016	0.03	0.48	0.02	0.07	0.44	0.08	1.10	10.26	8	7.3
Dashen Bank	3001	2017	0.03	0.39	0.02	0.07	0.52	0.08	1.55	10.45	10.9	9.9
Nib International Bank	3006	2007	0.04	0.25	0.03	0.16	0.70	0.03	0.57	7.87	11.8	17.2
Nib International Bank	3006	2008	0.04	0.27	0.04	0.16	0.58	0.05	0.60	8.20	11.2	44.4
Nib International Bank	3006	2009	0.05	0.30	0.05	0.15	0.46	0.06	0.60	8.48	10	8.5
Nib International Bank	3006	2010	0.05	0.31	0.04	0.15	0.43	0.07	0.64	8.69	10.6	8.1
Nib International Bank	3006	2011	0.05	0.29	0.04	0.16	0.39	0.07	0.56	8.87	11.4	33.2
Nib International Bank	3006	2012	0.05	0.25	0.03	0.18	0.45	0.06	0.56	9.02	8.7	24.1
Nib International Bank	3006	2013	0.04	0.24	0.03	0.18	0.50	0.06	0.70	9.12	9.9	8.1
Nib International Bank	3006	2014	0.04	0.20	0.00	0.18	0.50	0.05	0.71	9.28	10.3	7.4
Nib International Bank	3006	2015	0.03	0.20	0.00	0.16	0.52	0.07	1.06	9.49	10.4	10.1
Nib International Bank	3006	2016	0.03	0.20	0.00	0.16	0.47	0.07	1.11	9.67	8	7.3
Nib International Bank	3006	2017	0.03	0.23	0.00	0.14	0.51	0.07	1.08	9.95	10.9	9.9
UnitedBank	3004	2007	0.04	0.24	0.03	0.16	0.65	0.05	0.75	7.69	11.8	17.2
UnitedBank	3004	2008	0.04	0.27	0.03	0.14	0.57	0.05	0.72	8.09	11.2	44.4
UnitedBank	3004	2009	0.03	0.26	0.03	0.11	0.46	0.06	0.93	8.44	10	8.5
UnitedBank	3004	2010	0.04	0.39	0.04	0.11	0.44	0.06	0.64	8.68	10.6	8.1
UnitedBank	3004	2011	0.04	0.36	0.03	0.12	0.42	0.05	0.51	8.95	11.4	33.2
UnitedBank	3004	2012	0.05	0.37	0.02	0.13	0.46	0.06	0.56	9.08	8.7	24.1
UnitedBank	3004	2013	0.03	0.25	0.02	0.12	0.47	0.07	1.15	9.21	9.9	8.1
UnitedBank	3004	2014	0.02	0.18	0.01	0.13	0.43	0.08	1.43	9.38	10.3	7.4
UnitedBank	3004	2015	0.02	0.21	0.01	0.12	0.48	0.09	1.65	9.57	10.4	10.1
UnitedBank	3004	2016	0.02	0.21	0.01	0.12	0.49	0.08	1.68	9.76	8	7.3
UnitedBank	3004	2017	0.02	0.19	0.01	0.11	0.55	0.07	1.82	9.99	10.9	9.9
Wegagen Bank	3007	2007	0.04	0.38	0.04	0.12	0.62	0.05	0.73	8.15	11.8	17.2
Wegagen Bank	3007	2008	0.05	0.31	0.06	0.15	0.57	0.06	0.79	8.32	11.2	44.4
Wegagen Bank	3007	2009	0.05	0.31	0.06	0.16	0.41	0.06	0.52	8.54	10	8.5
Wegagen Bank	3007	2010	0.06	0.30	0.04	0.18	0.43	0.07	0.54	8.66	10.6	8.1
Wegagen Bank	3007	2011	0.06	0.34	0.05	0.17	0.36	0.09	0.56	8.99	11.4	33.2
Wegagen Bank	3007	2012	0.05	0.29	0.02	0.19	0.43	0.07	0.55	9.03	8.7	24.1
Wegagen Bank	3007	2013	0.04	0.25	0.02	0.18	0.45	0.07	0.72	9.25	9.9	8.1
Wegagen Bank	3007	2014	0.04	0.19	0.02	0.19	0.41	0.10	1.09	9.33	10.3	7.4
Wegagen Bank	3007	2015	0.03	0.19	0.00	0.18	0.44	0.10	1.29	9.53	10.4	10.1
Wegagen Bank	3007	2016	0.03	0.40	0.00	0.07	0.46	0.09	1.49	9.69	8	7.3
Wegagen Bank	3007	2017	0.03	0.42	0.00	0.08	0.49	0.09	1.37	9.95	10.9	9.9