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St. Mary's University, Ethiopia

**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**THE EFFECT OF CREDIT RISK AND MACROECONOMIC FACTORS
ON PERFORMANCE OF COMMERCIAL BANK OF ETHIOPIA**

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By

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Abbreviation and Acronyms

CAR	Capital Adequacy Ratio
CLAR	Cost per Loan Asset Ratio
CBE	Commercial Bank of Ethiopia
FXR	Foreign Exchange Rate
GDP	Growth Domestic Product
INF	Inflation
IR	Interest Rate
LTDR	Loan to Deposit Ratio
NPLR	Non- performing Loan Ratio
NBE	National Bank of Ethiopia
ROE	Return on Equity
UNEMP	Unemployment

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ABSTRACT

This paper examines the effect of credit risk and macroeconomic factor on performance of Commercial Bank of Ethiopia. In general it argues that the performance of a bank is affected by internal and external factors. The objective of the study was to assess the effect of credit risk and macroeconomic factor on the performance of Commercial Bank of Ethiopia proxy by ROE, independent variables used to examine the cause and effect level of credit risk and macroeconomic factor were Cost per loan asset ratio (CLAR), Nonperforming Loan Ratio (NPLR), Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LTDR) as indicators of credit risk. Growth Domestic Product (GDP), Real interest rate (IR), Inflation (INF), Foreign Exchange rate (FXR) and Unemployment (UNEMP) as macroeconomic factors indicators. The study used a secondary data for the period 1990 to 2019 for thirteen (30) years. The data was collected from Ministry of Finance, World Bank data, CBE Annual Report and National Bank of Ethiopia (NBE). Time Series data regression model was used to analyze and interpret the data aided by EView8 software, the result showed that Capital adequacy and Interest rate have significant impact on ROE with a positive relationship with ROE; Cost per loan asset and Loan to deposit ratio have significant impact on ROE with a negative relationship and the other independent variable non-performing loan, GDP, Inflation, Interest rate, Foreign exchange rate and Unemployment has no significant relationship with ROE. The study recommended that the bank should strength their capital to improve its profitability in the industry: the bank should be nonaggressive lender to avoid the exposure of the bank to credit risk and they have to work hard on managing their expenses (costs) efficiently.

Key words: Banks Financial Performance, Credit Risk, Macroeconomic Factors

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Credit creation is the main income-generating activity in banking. Credits can be in a form of short term or long term, secured or unsecured. No matter the form of the loan granted to clients the source is always generated from the customer's deposit. Population's savings are the actual and primary cause of the ability to grant credit by the banks (Hahn, 2015). These means the availability of cash in banks can only exist if the individuals in an economy save at the bank. Banks take customer deposits in return for paying customers an annual interest payment. The bank then uses the bulk of these deposits to lend to other customers for a variety of loans. The difference between the two interest rates is effectively the profit margin for banks as well as for the depositors. The overall process will contribute to the mobilization of money in the country also contributes to the growth of the economy (Ugoani, 2013).

The risks that are most applicable to banks are credit risk, liquidity risk, and market risk (Basel Committee on Bank Supervision, 2000). Since banks are exposed to a variety of risks, they have to construct risk management methods and follow them properly. High performance is related to the ability of banks to control their risk and control their overhead expenses. Credit risk is the possibility of a loss resulting from a borrower's failure to repay a loan or meet contractual obligations. It is a risk that puts the banks in the loss of principal and interest they do not generate any income in the presence of this risk and they may even go bankrupt. Credit risk is the most substantial risk faced by banks and the success depends on accurate measurement and efficient management of credit risk larger than any other risk (Giesecke, 2004). Unmanaged credit risks create disruptions in Ethiopian because the banking sector plays a vital contribution to the development of a country (Abrha, 2019).

There has been a long-standing interest in academic researches and bank managers in knowing what determines bank performance. The performance of commercial banks can be affected by internal and external factors (Boru, 2014). The influence of internal factors such as credit risk, liquidity risk, and operational risk is under the control of bank management, whereas external

factors are those that are beyond the control of bank managers such as inflation, unemployment, exchange rate and economic growth (GDP). In the case of Sub-Sahara African (SSA) countries, the profitability of the commercial banks is affected by internal and external factors. For instance, research conducted by (Ezra,2013) used 216 commercial banks from 42 Countries to investigate the determinants of commercial bank profitability in Sub-Saharan Africa for the period 1999 to 2006.The findings demonstrate the importance of both bank level as well as macroeconomic factors in explaining commercial bank profitability in Sub-Saharan Africa. And finally they conclude that if banks are to reach profitability improvements they should to be responsive in continuously monitoring bank level factor and macroeconomic factors.

In Ethiopia the commercial banks dominate the financial sector like of all developing countries the economy is highly dependent on the well-functioning of the banks (Elshaday, Kenenisa & Mohammed, 2018). Commercial banks perform a crucial role in the development of enterprise and commerce. Ethiopian banking sector is currently comprised of a central bank (The National Bank of Ethiopia or NBE), one state owned development bank, and a government owned commercial bank of Ethiopia (CBE) and sixteen private banks. Commercial Bank of Ethiopia (CBE) holds 70 percent of total banking assets the health of the Ethiopian economy is closely correlated with the performance of this bank (IMF, 2013).

Different studies in Ethiopia (Anteneh and Tewelde, 2017; Shiferaw, 2018; Million, 2018; Aregawi, 2019) examined the determinants of commercial banks profitability with an objective to enhance profitability as well us to point out a direction to manage the performance of the institutions and the extent to which the performance of commercial banks operating in Ethiopia is affected by credit risk and macroeconomic factors. A study done by (Tona, 2017) investigated some of bank specific and macroeconomic factors affecting private commercial banks credit risk in relation to their impact on financial performance. Nonetheless, these studies focused on private commercial banks.

Two main factors that are the motivation behind this research is first the gap in Ethiopian literatures about the factors that determine the profitability of government owned banks. Only one study had given an attention in investigating the factors that affect the profitability of CBE by (Mohanty, 2017) using a time serious data from year 1983 to 2012. The finding of the study

shows bank specific variables in the study have negative effect on the profitability measure except GDP and inflation rate. Commercial Bank of Ethiopia (CBE) dominates the bank industry in terms of assets it holds, but a substantial amount of study had not been conducted in this bank that investigates the external and internal determinant of the bank performance.

Second, a current report of (IMF, 2020) on CBE that states the exposure of the bank to foreign exchange risks and credit risk. More research is needed in this area to help the bank identify this risks as peril and to control the risks effectively. Lack of substantial knowledge on determinant of government-owned bank performance could result in more than direct accounting loss. It encompasses opportunity costs, transaction costs and expenses associated with non-performing loans. Over and above the accounting loss it can affect banks' liability to asset proportion and in the worst case it can have negative effects on the economy of the country. The study tried to fill the gap of the knowledge by examining the effect of credit risk and macroeconomic factors on the performance of CBE and provide recent information for bank managers and policymakers.

1.2 Statement of the problem

Banks play an important role in the economy and are considered as the backbone of an economy (Ogege and Shiro, 2013). They are the keeper to the monetary asset of the general masses. Banks play a role of mobilizing money in the economy through accepting deposits and disbursed to the needy persons for productive purposes. Government owned and private banks in Ethiopia affect the development of the national economy (Keatinge, 2014). They facilitate resources mobilization, poverty elimination, production and distribution of public finance. Doing research on this sector will help the economy and facilitates the development goal of the country.

Bank's liability can be withdrawn quickly they are obligated to repay the amount of deposits up on the request while their assets are refunded in elongated period. If credit given is not collected on the due date it creates severe problem and risk. These risk of a borrower not fulfilling his or her obligation as per the contract on due date is called a credit risk. This might happen when the customer is not fully paying the debt amount or fails to pay debt when principal and interest amounts are due, it causes financial losses and difficulties in the business activities of commercial banks. Credit risk is the biggest risk that affects the performance of banks (Femi and Obamuyi, 2015). Many researchers agree that credit risk is a serious problem for banks performance. These are because credit creation is the main income generating activity for the Banks. Thorough review of the literature researches done by Fekadu, 2018; Abera, 2018: Amsalu, 2019: documented that credit risk and non-performing loan have been major challenge of bank performance in Ethiopia

Profitability of a bank is influenced by internal and external factors (Vong and Chan, 2006). Internal factors of bank performance can be defined as factors that are influenced by a bank's management decisions. Difabachew 2017 suggested that management bodies of commercial bank should strive to identified and control internal factors of commercial banks in Ethiopia as this will enhance the performance of the banks. On the other hand, external determinants of bank profitability are factors that are beyond the control of a bank's management. External determinants are mainly expectable and the internal factors are controllable by minimum requirements, regulatory and supervisory (Naser, 2019).

Thorough review of the literatures of (Shmendi,2019) and (Abdela, Lemmi and Gutu,2019) it is evident that several research works in Ethiopia Commercial banks had been done on the effect of credit risk and macroeconomic factors in financial performance. However, the short coming of these studies is that most studies have relied on panel data set which gives a generalized overview of government-owned bank and private bank performance as opposed to bank specific knowledge. Further from the studies done by Merin 2016 and Tona 2017 the effect of macroeconomic factors on bank profitability is questionable with some researcher finding insignificant effect while others establishing significant influence. Beside substantial amount of studies had not been conducted to investigate the status of Government owed bank's financial performance as well as the determinants of financial performance. Significant amount of study is needed since Commercial bank of Ethiopia is the largest bank in Ethiopia that holds 712 billion Birr in assets and 412.5 billion of loan and about approximately 61% of deposit in the country (Ethiopian Reporter, 2019). This study fill this gap by focusing on Commercial Bank of Ethiopia by examining the effect of credit risk and macroeconomic factors on performance of the bank by talking 30 year's data from 1990 to 2020.

There are no in-depth or substantial studies that have been conducted to investigate the impact of credit risk and macroeconomic factors on government owned bank of Ethiopia performance. Among much previous empirical research performed in Ethiopia there is one research exceptions that give better attention to government owned bank. The research made by (Mohanty, 2017) had paved the way by investigating the determinants of banks profitability by using time series data of CBE from year 1983 to 2012. However, this study did not consider some variables like unemployment rate and foreign exchange rate in relation to performance of banks. These variables were among the factors considered in studies made in different countries (Zampara, Giannopoulos and Koufopoulos, 2017) and (Mohsin et al., 2019), (Ghurtskaia, 2018) and (Yuksel and Zengin, 2017). This study therefore fills the gap in respect of the variables considered in the study and it further contribute that such a study with complete recognition of all factors that would contribute to policy making and create risk mitigating mechanisms.

1.3 Objective of the study

1.3.1 General Objective of the Study

The objective of the study was to examine the effect of credit risk and macroeconomic factors on the performance of Commercial Bank of Ethiopia.

1.3.2 Specific Objective of the study

The specific objectives of the study were:

- To examine the effect of credit risk indicators NPLR, LTDR, CAR, CLAR on the performance of Commercial Bank of Ethiopia.
- To examine the effect of macroeconomic indicators GDP, IR, INF, FXR and UNEMP on the performance of Commercial Bank of Ethiopia.
- To examine the whether credit risk or macroeconomic factors are the key drivers of Commercial Bank of Ethiopia performance based on the empirical findings.

1.4 Research Hypothesis

Therefore, the following hypothesis are derived based on the conceptual framework

Hypothesis of the study

H1: There is a negative and significant relationship between Nonperforming Loan Ratio and profitability of commercial bank of Ethiopia.

A study by Bizuayehu 2015; Mekasha 2011; Bekalu, Anteneh & Tewolde 2017 on credit risk management and profitability on Ethiopian commercial banks outcome displayed that profitability of commercial banks is affected by the amount of non- performing loans. Supporting these literatures, the study also predicts to have a negative relationship between NPLR and performance of the CBE.

H2: There is a negative and significant relationship between Loan and advance to deposit ratio and profitability of commercial bank of Ethiopia.

A study by Anjom and Karim (2016) and Bizuayehu (2015) paper found that LTDR have negative and significant impact on commercial banks in Ethiopia profitability. Supporting the literature this paper also predicts to have negative relationship between LTDR and performance of the CBE.

H3: There is a negative and significant relationship between Cost per loan asset ratio and profitability of commercial bank of Ethiopia.

Kharabsheh (2019) studied the determinants of Bank Credit risk of Jordanian Commercial Banks the finding of the study was a negative relationship of Cost per loan asset ratio and profitability of Jordanian Commercial banks. A study on Commercial Bank in Ethiopia Zemedkun (2019) and Mesfin (2019) found that cost per loan asset has a negative relationship on the performance of the banks. Supporting these literatures, the study also predicts to have a negative relationship between CLAR on performance of CBE.

H4: There is a positive and significant relationship between Capital adequacy ratio and profitability of commercial bank of Ethiopia.

A study on the determinants of commercial banks profitability in Sub-Saharan Africa by Flamini, McDonald and Schumacher (2009) found that capital adequacy has positive and significant effect on profitability. A study by Ebenezer, Omar and Kamil (2017) on Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability in Nigeria also found a same result. Amene and Alemu (2019) recommended that policy makers and managers should give high emphasis on CAR since it has a significant effect on commercial banks in Ethiopia financial performance. Supporting the literatures this paper also predicts to have positive relationship between CAR and performance of the CBE.

H5: There is a positive and significant relationship between Real Gross domestic product and profitability of commercial bank of Ethiopia.

A study done on by Bekalu, Anteneh & Abel Tewelde 2017 analyzed the determinants of profitability in case of selected private commercial banks of Ethiopia. A study found that Gross domestic product has positive and statically significant impact on banks' profitability. A finding of Ebenezer, Omar and Kamil2017; Tona2017; Million 2018 and Maureen 2017 found out the same result and claimed that gross domestic product have a significant effect on the performance of the banks. Supporting the literatures this paper also predicts to have positive relationship between GDP and performance of the CBE

H6: There is a negative and significant relationship between Real Interest Rate and profitability of commercial bank of Ethiopia.

Maureen (2017) studied on the effect of macroeconomic factors on the profitability of commercial banks listed at the Nairobi Securities Exchange in Kenya. Having an objective to determine the effect of real Gross Domestic Product on the profitability, examine the effect of interest rate on the profitability, evaluate the effect of inflation rates on the profitability and establish the effect of exchange rate on the profitability. The finding was a negative effect of interest rate on the performance of bank.

H7: There is a positive and significant relationship between Inflation and profitability of commercial bank of Ethiopia.

A study by Mohammed 2019; Tona 2017; Maureen 2017 and Adeel, Muhammad, Zeeshan and Muhammad 2017 evaluate the effect of inflation rates on the profitability and found out that inflation have positive and significant effect on bank profitability.

H8: There is a negative and significant relationship between Foreign Exchange Rate and profitability of commercial bank of Ethiopia (FXR).

A study on impact of exchange rate fluctuations on financial performance of state owned commercial banks in Bangladesh by Hossin and Mondol (2018) found that foreign exchange rate fluctuations and financial performance had a negative association and significant effect on performance of bank.

H9: There is a negative and significant relationship between Unemployment Rate and profitability of commercial bank of Ethiopia (UNEMP).

A study by Marozva and Mutezo (2019) on the effect of bank liquidity and unemployment on bank credit risk result showed that a positively and significant effect of unemployment to credit risk. A study by Khan, Ahmad, Tahir and Ilyas on the impact of unemployment on the performing of Pakistani Commercial Banks (2018) found a negative relationship and significant effect of on banks. Similarly a study in Greece by Louzisab, Vouldisac and Metaxasa (2012) found a negative effect of unemployment on the performance of a bank.

1.5 Scope of the study

The Scope of the study was limited to Commercial Bank of Ethiopia (CBE), a government bank which is working in all direction of the county and neighboring countries as well. The researcher believe that it can represent the country banking industry since Commercial Bank of Ethiopia holds 712 billion Birr in assets and 412.5 billion of loan and about approximately 61% of deposit in the country (Ethiopian Reporter ,2019). This paper was specifically focused on the effect of credit risk and macroeconomic factors on the performance of only Commercial Bank of Ethiopia by using data year from 1990 to 2019. The variables included in the study were Profitability (represented by ROE).Credit risk represented by Non-Performing Loan Ratio (NPLR), Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR) and Cost per Loan Asset Ratio (CLAR).Macroeconomic factors represented by Growth domestic product (GDP), Interest Rate (IR), Inflation (INF), Foreign exchange rate (FXR) and Unemployment (UNEMP).These variables were not exhaustive enough to represent credit risk and macroeconomic factor. It is recommended that other researchers to include other variables.

1.6 Limitation of the study

There are about 18 commercial banks operating in Ethiopia. This study examines the effect of credit risk and macroeconomic factors on performance of only Commercial Bank of Ethiopia for the years 1990-2019. Due to the scope of the paper this study has a limitation of ignoring others private banks and Development bank of Ethiopia (DBE). The other limitation of the study is that even though there are many macroeconomic variables that affect commercial bank of Ethiopia

performance the study was focused only on three variables (GDP, inflation, unemployment rate and foreign exchange rate).

1.7 Significance of the study

The aim of this paper is to assess the effect of credit risk and macroeconomic factors on the performance of Commercial Bank of Ethiopia over a period of thirty years (1990-2019). The study will address on what causes an effect on performance of CBE credit risk or macroeconomic factors and at what level. The findings of the study would serve as the basis for possible recommendations on which the management should give an emphasis and it provides policy measures to the various stakeholders to tackle the effect of credit risk and macroeconomic factor in order to enhance the quality of Banks' return. Plus, this paper would support the policy makers in their decision to improve the performance of the bank. Moreover, the study will also help further researchers who are interested in this area as a reference.

1.8 Organization of the study

This study consists of five chapters. Chapter one presents introduction, statement of the problem, objective of the study, research hypothesis, scope of the study, limitations of the study and significance of the study. Chapter Two reviews the most significant theoretical and empirical studies, summary and literature gap, conceptual frame work. Chapter three presents methodology of the study, research design, source and type of data, study variables and model specification. Then chapter four provides data analysis and presentation of econometric model outcomes and finally, chapter five gives summary, conclusions and recommendations of the study.

CHAPTER TWO

2. LITRATURE REVIEW

2.1 Theoretical Review

2.2 Meaning of Risk

Risk is defined as the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. It may also apply to situations with property or equipment loss, or harmful effects on the environment. The definition adopted by (PRINCE2, 2002) stated that risk is an uncertain event or a set of events that will affect the goal of the corporation. Risk is measured by a comparison of the probability of distinguished threats or opportunities occurring and the magnitude of its impact on the outcome. The rationale affirmed by the UK Cabinet Office (2002) risk is an event or action that brings positive opportunity or negative threat. A risk may prevent or delay the achievement of an organization's or units objectives or goals. Furthermore, numerous definitions of risk had been proposed by various authors, but the international standard definition of risk is common. According to Hansson and Sven Ove (2018) risk involves uncertainty about what is to come and often results in negative or undesirable consequences. Businesses are facing many risks; hence risk management should be a central part of any business' strategy. Risk management helps to identify and address the risks faced by businesses and in doing so increases the likelihood of successfully achieving the business's objectives.

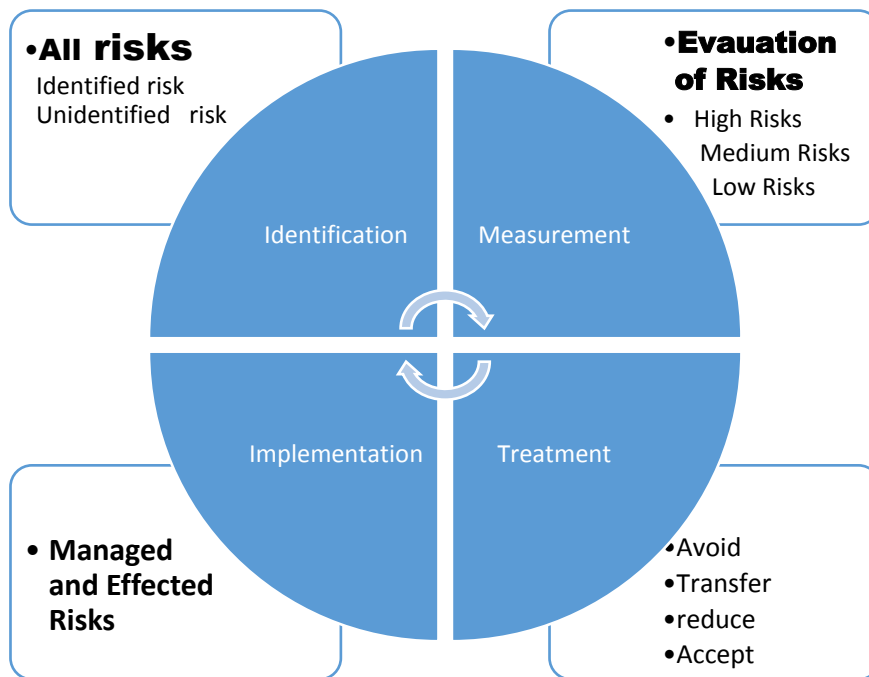
2.3 Risk Management

Risk management is a crucial process used to make investment decisions. For the risks to be managed first they have to be measured. Risk is measured by the amount of volatility, that is, the difference between actual returns and expected returns. Returns with a large standard deviation have higher volatility and are the riskier. The measurement of risk is helpful in advising plus it is incredibly powerful in influencing the decisions making process. Risk management is the process of identification, analysis, and acceptance or mitigation of uncertainty in investment decisions. Essentially, risk management happens when the investors or fund managers want to

investigate the potential for losses in an investment. Risks must be measured and quantified to undertake a suitable response.

Risk management process is mainly focused on decreasing the volatility of businesses. If proper risk management remedies were used risks could be avoided and reduced. According to (Van Gestel and Baesens,2008) proper risk management starts with identifying, measuring, treating and implementing an appropriate measure that will keep in line with the firm strategy.

Figure 1 Risk management process



Source: Van Gestel and Baesens, 2008

Risk identification is the first and crucial step in the risk management process. That uses a thoughtful and organized effort to identify and document the business key risks. The objective of risk identification is to understand what is risky within the context of the business specific and particular aims and generate a complete record of risks based on the threats and events that might

prevent, degrade, delay or enhance the objective (Van Gestel and Baesens, 2008). These forced the development of risk identification guidelines ensure that organizations control risk effectively. A strict and continuous risk identification process is a key risk management process that also covers recognition of current and rising risks. It is crucial to know the business before starting with the risk identification process. Risk identification starts with understanding the business objectives, both general and specific. The risk identification process must identify outcast events, unwanted outcomes, current threats, also existing and emerging opportunities. Under the risk management process, risks will continually preponderate.

The second step is measurement of risk that evaluates or rank risk to determine the magnitude and outcome of the risk (Van Gestel and Baesens, 2008). It helps in deciding whether the risk is tolerable or whether it is severe enough to deserve treatment. These risks are rank from high to low magnitude effect on the return and objective of the business. A risk map is a visual tool that reveals which risk is frequent and which are severe. It classifies them as doubtful or would have low influence and reasonable and would have a significant impact. Understanding the frequency and severity of the risks helps determine where to spend your time and funds.

All risk needs to be eliminated or contained as much as possible (Apostolik and Donohue, 2015). During the risk treatment step, the highest-ranked risks will be evaluated and a plan is set out to manage or mitigate these risks to achieve acceptable risk levels. Risk mitigation strategies, preventive plans, and contingency plans are created at this stage. Some of the risk mitigation ways are accepting, avoiding, controlling, and transferring (Hagemann, 2015).

Accepting the risk means deciding that some risks are inherent in doing business and that the benefits of an activity outweigh the potential risks.

Avoid risk means that the organization would not participate in doing the business to avoid this risk.

Risk control includes prevention or mitigating that will reduce the impact it will have if it does occur.

Risk transfer suggests distributing responsibility for any negative outcomes to another party, in the case when an organization purchases insurance.

After the treatment of the risk management process risks and its subsequent mitigation ways have been defined, and potential management options have been evaluated. Implementation requires detailed planning, funding, and evaluation throughout its entire process (Apostolik and Donohue, 2015). Furthermore; the implementation plan must be flexible to respond to unforeseen situations or problems. This is because estimated risks might change during the implementation process because of unanticipated environmental factors.

2.4 Risk in Banks

Banks risk are identified as six types credit risk, liquidity risk, market risk, operational risk, reputation risk and legal risk (Koch and MacDonald, 2009).

Liquidity risk

Liquidity risk means a bank's incapability to perform its timely and full debt and financial obligations, including future ones. Liquidated banks are impotence to pay money to their clients immediately if they are in need (Shapkin). Nowadays, global experience shows that analysis and timely evaluation of liquidity risk are fundamental issues in banking risk management. Kadzhayeva and Dubrovskaya stated that liquidity risk is caused by the imbalance between financial assets and financial liabilities of a financial institution. They also reflected that liquidity risk as a threat to financial institutions due to the incapability to fulfill their liabilities in full (Kadzhayeva and Dubrovskaya, 2008).

Market risk

Market risk is a risk of losses in on and off-balance-sheet positions arising from movements in market prices (Bank for International Settlements, 2001). This risk emanates from movements in stock prices, interest rates, exchange rates, and commodity prices. According to (Anthony, 1997) study market risk can only be hedged, but they can't be diversified.

Operational risk

It is a risk that deficiencies in information systems or internal controls could result in unexpected losses. According to (Basel Committee on Banking Supervision, 2004) Operational risk is a loss resulting from inadequate or failed internal processes, people and systems, or from external

events. According to Strzelczak operational risk can arise not only from operations that the firm performs but also from circumstances or things that others do, or fail to do, and on which the firm is dependent. Most of the operational risks cannot be insured or hedged, and so they must be retained and financed internally (Strzelczak, 2007).

Reputation risk

Reputational risk is a threat or danger to the good name or standing of a business or entity. It is important to note that adverse publicity regarding a bank's business practices and associations, even if they are accurate or not, may cause a loss of confidence in the integrity of the firm (The Basel Committee on Banking Supervision, 2001). Research shows that positive corporate reputation practices contribute to trust in organizations (Esen, 2012).

Legal risk

It is a risk that a party will suffer a loss because laws or regulations do not support the rules of the securities settlement system, the performance of related settlement arrangements, or the property rights and other interests held through the settlement system. Legal risk also arises if the application of laws and regulations is unclear (Bank for International Settlements, 2001). Legal risk is the risk of loss because of the unexpected application of a law or regulation or because a contract cannot be enforced.

Credit risk

It is a risk that a counterparty will not settle an obligation for the complete value, either when due or at any time. In exchange-for value systems, the risk is generally defined to include replacement cost risk and principal risk (Bank for International Settlements, 2001). According (Baesens and Van Gestel, 2009) credit risk is a principal and perhaps the most important risk type that has been present in finance, commerce and trade transactions from ancient time till today. This research focuses on the credit risk of bank. Considering a bank exists not only to accept deposits but also to grant credit facilities, therefore they are exposed to unavoidably credit risk. Credit risk is the most influential risk endured by banks than any other risk and the prosperity of their business depends on accurate measurement and efficient credit management strategy (Giesecke, 2004). Credit risk mainly appears when borrowers are unable or unwilling to

pay. It results in the loss of principal and interest, disruption to cash flows, and increased collection costs for the banks. The loss may be complete or partial. In an adequate market, higher levels of credit risk will be associated with higher borrowing costs. Because of this certain measures of borrowing costs are important to infer credit risk levels based on assessments of the borrower (Abrahams and Zhang, 2009). The purpose of the credit risk measurement in banks is to quantification the potential losses from credit operation.

2.5 Credit Risk Management

Banks are relevant to the economic development of a nation they perform the role of mobilizing money from a depositor and disbursing it to a borrower for production and enterprise development purposes. Their intermediation role between the depositor and borrower plays a greater role in catalyzing economic growth of a nation. The effective performance of the banking industry over time is an indication of financial stability in any nation. The extent to which a bank extends credit to the public for productive activities accelerates the movement of a nation's economic growth. But it exposes the banks to credit risk even though credit creation is the main income-generating activity for banks (Kargi, 2011). Exposure to credit risk remains to be the leading root problem in banks so credit risk management should guard and protect the bank from liquidation and solvency problem or in a severe case from bankruptcy. Banks should have a strong awareness of the need to identify, measure, monitor, and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred. Credit risk management is aimed to maintain proficiency of the business activities and the continuity of the business. Credit risk management maximizes a bank's rate of return by maintaining credit risk exposure within an acceptable limit to provide a framework for banks to generate profit (Kargi, 2011). To do these credit managers should pull useful lessons from past creditworthiness experiences of a borrower before engaging in lending process (Konovalova, Kristovska and Kudinska, 2016).

Even though specific credit risk management practices may differ among banks depending upon the nature and complexity of their credit activities, a comprehensive credit risk management program will address these four areas (Basel Committee on Banking Supervision, 2000) establishing an appropriate credit risk environment; operating under a sound credit-granting

process; maintaining an appropriate credit administration, measurement, and monitoring process; and ensuring adequate controls over credit risk.

According to study of (Konovalova, Kristovska and Kudinska, 2016) the most significant factor that contributes to credit default of retail clients is the average income of the borrower, the loan amount, and the loan term. The main source of information in determining the level of credit risk for the creditor banks is the credit history of the client. To form a predictive assessment of credit risk in commercial banks, credit risk manager must identify common patterns of bank customers' economic behavior, formulate a set of differentiated requirements for borrowers in particular groups in accordance with their specificity and determine the risk appetite of the person making decisions about the amount and the term of a loan to be granted and about the interest on this particular loan (Konovalova, Kristovska and Kudinska, 2016)

2.6 Profitability in Banking

The function of bank is to act as intermediary between the depositor and borrower they help in reducing the information cost and transaction cost among them. In doing this activity money is mobilized in the economy from surplus group to a needy individual for trading or production purpose. They play a chief role in rapid economic development through the financing different sectors of the economy such as agriculture, industry, and trade, and help the promotion of entrepreneurship that leads the private sector to participate effectively to economic growth. They can only play this role if they are profitable and well capitalized. Profitability is one of the key concepts in this research. These is due to this study is focused on the relationship of profitability and credit risk. Different literature in this study area most commonly uses three profitability indicators Net Interest Margin Return on Asset and Return on Equity. Intended for this research ROE will be used as a measurement of profitability

The ROE indicator or return on equity shows the return on equity invested by the owners in the business, i.e. the profits made by the business using the capital invested by the owner. The ROE indicator put the net operating result (profit or loss) and the average value of the equity capital to the ratio. The higher value of this indicator is more favorable for the business, as it indicates the banks are powerful in generating income for per unit of the invested capital. Determinate of Commercial banks profitability can be internal and external causes. Internal profit determinant

cover bank's management decisions and policy objectives. Management effects are the results of differences in bank management objectives, policies, decisions, and actions reflected in differences in bank operating results, including profitability (Jamil and Abdullah, 2014). External determinants do not influence the specific bank's decisions and policies and they are events outside the control of the bank. The state of the economy exerts a big influence on performance of banks. As the economy goes through expansion and contraction, banks performance changes over time. Positive economy condition can be favorable for banks capital development and adverse ones may generate negative consequence such as capital shortage or even bankruptcy (Syed and Ejaz, 2014).

In conclusion, there are bunches of contributing factors that affect the profitability that comes from both external and internal factors of a business. Either outside or inside factors are of utmost importance for the development of the bank. There are different numbers of external factors that have a direct impact on the ability of the banks performance as well as in achievement of strategic objectives. Among them GDP and Level of Inflation and interest rate spread will be the focus of this study.

2.6 Factors that affect the profitability of banks

For bank or any business hopes to perform smoothly and successfully, they need examine this factors before making any decision. Elements that affect the performance of banks come from internal and external sources. The external factors are the state of the economy, wide swings in commodity/equity prices, foreign exchange rates and interest rates, trade restrictions, economic sanctions, Government policies, etc. The internal factors are deficiencies in loan policies/administration, absence of prudential credit concentration limits, inadequately defined lending limits for Loan Officers/Credit Committees and deficiencies.

2.6.1 Macroeconomic Indictors

A macroeconomic factor is a characteristic, trend or condition that comes from outside and it is uncontrollable for the business. Common macroeconomic factors embrace gross domestic product, the rate of employment, the phases of the business cycle, the rate of inflation, the money supply, the level of government debt, and the short-term and long-term effects of trends and

changes in these measures. According to (Growe, 2014) a higher GDP growth rate result in higher demand for bank service which results in higher profitability and lower loan default. This study incorporated four macroeconomic variables because their effect was usually statically significant and widely mentioned in the empirical literature. These are annual GDP, Interest Rate, Inflation rate, Foreign Exchange Rate, Unemployment Rate

Growth Domestic Product (GDP)

With respect to macroeconomic factors, annual growth rate of GDP, real interest rate, inflation rate, foreign exchange rate and unemployment rate were used for this study. GDP measures the monetary value of final goods and services that are bought by the final user produced in a country in a given period of time. It counts all the output generated within the borders of a country. GDP is composed of goods and services produced for sale in the market and also include some nonmarket production, such as defense or education services provided by the government. GDP is important because it gives information about the size of the economy and how an economy is performing. The growth rate of real GDP is often used as an indicator of the general health of the economy. In broad terms, an increase in real GDP is interpreted as a sign that the economy is doing well. When real GDP is growing strongly, employment is likely to be increasing as companies hire more workers for their factories and people have more money in their pockets. Profit in the banking industry fluctuates overtime with a change in economic growth there is a direct relationship between banks profitability and the growth of the economy (Adekola, 2016). As the income of the society increases deposit of money at the bank increase and borrowers with the rising trend of income indicate that they would be able to pay off the loan. Annual growth of GDP would bring smile on the banks as they can implicitly be assured that lending function of banks would work effectively. The only source of profit for banks is the Net Interest Margin, which is the difference between the interest charged to creditors and the interest paid to depositors. If the GDP grows, the transaction grows, so profits grow too. In theory, real GDP growth affects positively banking performance through three mains channels: net interest income, loan losses improving, and operating costs (Bolt et al., 2012). Firm's profitability increases during economic expansion, and declines in recession's period. Thus, a higher GDP growth causes firms loans and deposits to increase and make bank's net interest income and loans losses to improve. Also, a higher GDP growth implies a higher disposable

income and lower unemployment and reduces defaults on consumer loans number. Net interest income and loan losses are therefore pro-cyclical with GDP growth. However, the relation between banks operating costs and GDP growth is ambiguous (Bolt,De Haan, Hoerberichts, Van Oordt and Swank,2012) show that unfavorable economic conditions, such as lower GDP growth rates may decrease deposits and loans and its managing costs as well. These conditions may also it possible raise the costs of collecting payments on loans.

Real Interest Rate(IR)

A real interest rate is an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower and the real yield to the lender or to an investor. The real interest rate reflects the rate of time-preference for current goods over future goods. The real interest rate of an investment is calculated as the difference between the nominal interest rate and the inflation rate. The relationship between interest rates and profitability, interest rates instability generally has an effect with financial performance of commercial Banks. High interest rates will lead to increased commercial banks interest income but also lead to low demand for the loans and hence crowding out the increased interest income. Without interest rates stability, domestic and foreign investors will stay away and resources will be diverted elsewhere. Investment profitability is significantly and negatively influenced by uncertainty and macroeconomic instability (Sayedi, 2013). In addition to low (and sometimes even negative) growth rates, other aspects of macroeconomic instability can place a heavy burden on the commercial banks leading to reduced profitability (Gilchris, 2013). Herrero (2003) points out that deteriorating local economic condition for instance low GDP, inflation, interest and exchange rate cause bank failure. Therefore, interest rate volatility is expected to affect financial performance of commercial banks whose role in an economy is the economic resource allocation where they channel funds from depositors to investors. Banks can only perform this vital role, if they generate necessary income to cover their operational cost they incur in the due course. Although it is difficult to prove the direction of the relationship between interest rates and profitability, studies confirm that interest rates instability has generally been associated with poor commercial banks financial performance in elastic loan markets since high interest rates reduces the demand for loans (Gilchris, 2013).

Inflation(INF)

Inflation is the rate of increase in prices over a given period of time. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the cost of living in a country. The cause of inflation could arise when aggregate demand in an economy outpaces aggregate supply or imperfect competition, increased taxes, rising wages and political incidents (like oil crises). When the price level rises, each unit of currency buys fewer goods and services; consequently, inflation is also erosion in the purchasing power of money. Inflation results in a loss of real value in the internal medium of exchange and unit of account in the economy. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth (Dwivedi, 2005). The growth of the economy improves bank credit portfolio quality and an inflationary trend tends to increase market rate which in turn leads to a decrease in credit extended by banks. It is expected that an increase in inflation would have a negative impact on the net worth of banks. According to Umar, Majjama'a and Adamu (2014) research on the relationship between inflation and banking performance it shows that inflation affects bank's profitability through its effect on overhead costs, in particular salaries and operating costs. If inflation rate increases, it may raise salaries and operating costs, and therefore decrease bank's profitability. But if the inflation rate is fully anticipated by the bank's management, the bank can adjust interest rates appropriately to increase revenues faster than costs, which should have a positive impact on profitability (Trujillo-Ponce, 2013). Khan, Bari, Anam, Shehzad, Siddique (2014) studied on the impacts of inflationary trends on banks' performance in Pakistan. The study concluded that as inflation increases ROA, ROE and net interest margin of Muslim Commercial Bank Limited, Allied Bank Limited, United Bank Limited and Bank Al-Falah Limited also increases. That is there is a Positive association among inflation and bank performance of this large banking segment of the Pakistan banking industry. Otuori (2013) studied the Influence of exchange rate determinants on the performance of commercial banks in Kenya. As per the study inflation rate had a negative and significant effect on bank profitability. Abderrassoul (2014), Malik (2013) and Vodová (2011) found out that the inflation rate has a negative impact bank performance since during

inflation, the cost of living will rise and deposits are expected to be reduced and as result, performance will be affected negatively.

Foreign exchange Rate (FXR)

Foreign exchange generally refers to foreign currency. Foreign exchange may also entail assets denominated in foreign currencies. Foreign assets that can be used to serve the functions of foreign money, i.e. a medium of international payments or exchange, medium of deferred payments for international transactions and a liquid store of internationally usable wealth, constitute foreign exchange. Foreign exchange exists because countries have to trade goods, services and savings (Pugel, 2007). For example, when Ethiopia manufacturer exports goods to a buyer in the USA, the Ethiopian exporter receives payment for his/her export in US dollars (US\$). Therefore, for the Ethiopian exporter is to use the US\$ income in Ethiopia, he/she has to sell the US\$ proceeds in exchange for the Ethiopian currency. Foreign exchanges are, therefore, the methods and instruments used to adjust the payment of debts between two nations that employ different currency systems. In a typical foreign exchange transaction, a party purchases some quantity of one currency by paying with some quantity of another currency (Mbithi, 2013). The rate of exchange is the price in local currency of one unit of foreign currency and is determined by the relative supply and demand of the currencies in the foreign exchange market. Buying or selling of foreign currency in order to profit from sudden changes in the rate of exchange is known as arbitrage. There are fixed and floating exchange rate systems. Fixed exchange rates are meant to be fixed for a specified period of time. On the other hand, floating exchange rates move up and down from year to year, week to week, and minute by minute (Clark, Tamirisa and Shang-Jin, 2004). Under a fixed exchange rate regime, the rise and fall of the exchange rate are referred to as exchange rate devaluation and exchange rate revaluation (Kenen, 2000). Nevertheless, fixed exchange rates are frequently devalued or revalued, implying that they can change over time and may also be volatile. Banks are hugely affected by activities in the foreign exchange rate because they have central role in financial sector (Ani , Ugwunta and Okanya2013). According to (Lagat and Nyandema, 2016) research on the relationship and effects of foreign exchange liberalization on financial performance of commercial banks listed in Kenya's Nairobi Securities Exchange. The study used a time series correlation research design with the target population being all commercial banks that are listed in the Nairobi Securities

Exchange between 2006 and 2013. The finding of the study shows that there existed a strong positive relationship between foreign exchange rates and financial performance. Ngerebo (2012) studied the impact of foreign exchange fluctuation on the intermediation of banks in Nigeria with a view to enabling the banking system work efficiently and effectively towards the proper valuation of the Naira. The study found that there is a positive relationship between foreign exchange fluctuation and commercial banks performance. The result led to the conclusion that exchange rate fluctuation has significant impact on banks. It was therefore, recommended that government should ensure a stable naira exchange rate through a right mix of policies and de-emphasis on cash-economy.

Unemployment (UNEMP)

Unemployment according to ILO is the best known labor Market measure and it is a useful measure of underutilization of labor supply. It is an indicator of the efficiency of the economy to absorb its labor and the performance of the labor market that can be calculated by dividing number of unemployed person by total number of persons in the labor force. According to (Baba and Nasieku, 2016) research unemployment rate has a negative significant relationship with financial performance of commercial banks in Nigeria. This implied that an increase in unemployment rate is associated with poor performance of Commercial Banks. Banks performance is measured by the status of the banking system in which credit institutions, specific markets and infrastructure are adequately performing their role within the economy, even in the case of extreme, but plausible events. An increase in the unemployment rate will cause a contraction of the reimbursing capacity of households, triggering an increase in the default rate. Also it might produce a material reduction of demand for new loans, which could lead to a significant deterioration of the ratio between the bearing interest assets and bearing interest liabilities. Ordine and Rose (2008) tested the relationship between bank loans efficiency and employment for Italia and reported that a 10% increase in banking sector credit volume increased employment by 5%. Pagano and Pica (2012) analyzed the relationship between employment and wages for 63 countries using the data of 1970-2003 period and found that the increase in credit volume positively affected employment, however didn't have a significant impact on wages. Feldman (2012) analyzed the effects of bank loans in 53 countries for 1977-2005 period using two-stage generalized least squares method and found that a

1% increase in banking sector credit volume reduced unemployment in these countries by 2.94%. The recent situation in countries reveals that unemployment had been an important economic and social problem especially in the USA and the EU because of 2008 global economic crisis. An increase in the unemployment rate can be translated into an increasing of non-performing loans or increase in public deficit and this will lower the performance of the bank.

2.6.2 Credit Risk Indicators

Bank specific factors to be considered in this study to examine the effect of credit risk are factors related to banking business and commonly sourced from banks balance sheet or income statement. These include: Profitability (represented by ROE), Non-Performing Loan Ratio (NPLR) Ratio, Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR), Cost per Loan Asset Ratio (CLAR)

Return on Equity (ROE)

The Return on Equity (ROE) ratio is used to measure the performance of bank management in managing available capital to generate profit after tax. The greater the ROE, the greater the level of profit achieved by the bank so that the possibility of a bank in troubled conditions is getting smaller. Return on Equity (ROE) compares net income after tax with equity invested by company shareholders (Horne and Wachowicz, 2005). This ratio shows the power to generate the return on investment based on the shareholder value of books and is often used in comparing two or more companies for good investment opportunities and cost-effective management. According to (Tandelilin, 2002), Return on Equity (ROE) reflects how much the company has earned on funds that have been invested by shareholders. According to (Gibson, 2001) return on Equity (ROE) measures the return to the common stockholders of the residual owner. ROE calculation results close to the value of 1 show the more effective and efficient use of the company's equity to generate income, vice versa if the ROE approaching the value 0 means the company is not able to manage capital efficiently available to generate income. The Return on Equity ratio is perhaps the most important ratio for testing the financial performance of banks (Moussu and Romec, 2017). The reliance on ROE in banking sector emerged with the aim of risk management approach that helps for the regulate of the bank capital. In this paper ROE is used to

assess the market value and growth of banks, focusing on the 1990-2019. This is because banks are incentivized to focus on managing capital to maximize shareholder value than growing earnings.

Non-performing loan(NPLR)

According to (Kasim, 2010), non-performing loans (NPL) is the risk of possible bank losses as a result of not repaying loans given by banks to debtors. The higher the NPL ratio, the worse the quality of credit that causes the number of non-performing loans to be greater. So a higher NPL can cause the possibility of a bank in the troubled condition to be bigger. On-performing loan can be defined as a form of financial assets from which the banks is failed to receive interest and or installment payments according to the structured schedule. In another words, when a loan no longer generates income for the bank as well as cease to perform in accordance with the loan agreement between the bank and borrower, it can be stated as non-performing loan. Existence of the non-performing loan can be felt with the deterioration of the quality of the loan portfolio. The proportion of non-performing loans has increased in the banking sector, signaling the poor health and lack of good governance in one of the economy's most vital sectors. A non-performing loan is in a default or close to being in default. The existence of nonperforming loan leads to a higher credit risk and has a negative effect on profitability of a bank (Wayan and Capriani, 2016). Many loans become problem loan after being in default for 90 days, but this can depend on the contract terms. NPLs are viewed as a typical byproduct of financial crisis: they are not a main product of the lending function but rather an accidental occurrence of the lending process, one that has enormous potential to deepen the severity and duration of financial crisis and to complicate macroeconomic management (Woo, 2000).The profitability and sustainability of banks cannot be ensured without having proper flow of appropriate interest income coming from the lending function of banks. NPLs dishearten the lending policy of banks as banks no longer are able to generate appropriate interest income from their classified loan. NPLs also hurt the reserve provision of the banks in a sense that banks have to keep away a portion of income with a view to forming a loan loss reserve to cover the bad debt. Erosion of capital also occurs with the existence of NPLs. Financial health of the banks has become fragile along with questionable and alarming too due to the rising trend of non-performing loan in banking sector. This default

culture phenomenon of the borrowers urges the banking system of a particular economy to take proactive actions to deal with such a crisis.

Loan to Deposit(LTDR)

This Loan to Deposit Ratio (LDR) according to Edison, Saudi and Sinaga (2019) describes the ability of banks to repay the withdrawals by depositors' customers by relying on the credits given as their liquidity. A high ratio indicates that a bank lends all its funds (loan-up) or is relatively illiquid (illiquid). Loan to Deposit Ratio (LDR) is a measure of how far the ability of banks to refinance the withdrawal of funds made by depositors by relying on credit given as a source of liquidity (De Vuyst and Rotsaert, 2019) On the contrary, a low ratio indicates a liquid bank with excess funding capacity that is ready to be lent. Banks may not be earning an optimal return if the ratio is too low. If the ratio is too high, the banks might not have enough liquidity to cover any unforeseen funding requirements or economic crises. A bank that borrows money to lend to its customers will typically have lower profit margins and more debt. The problem that arises with higher loan to deposit ratio is that the bank cannot know exactly when and how much funds will be needed or withdrawn by the debtor customer or the depositor (De Vuyst and Rotsaert, 2019).A bank should rather use deposits to lend since the interest rates paid to depositors are far lower than the rates it would be charged for borrowing money. To measure banks credit risk this research paper employed Loan to Deposit Ratio. Increasing loans to deposits ratio reveals a risk preference and is expected to lead to higher NPLs. There is a positive relationship between NPL and LTD ratio (Anjom and Karim, 2016). When the banks are more liquid, they can reduce risk of insolvency. Too much disbursement of loan with respect to a deposit is also regarded as one of the most important causes of non-performing loans. This behavior of banks demonstrates that the aggressive lending behavior of the banks. More exposure of banks to loans without proper screening the borrowers lead to enhance the level of non-performing loans which leads to a higher credit risk.

Capital Adequacy Ratio (CAR)

The capital adequacy ratio (CAR) is a measure of how much capital a bank has available, reported as a percentage of a bank's risk-weighted credit exposures. This ratio shows how big the total assets of bank are to manage credit risk, investment risk and security risk, loans (debt) and

others. In other words, Capital Adequacy Ratio (CAR) is the ratio of the minimum capital fulfillment obligation that must be owned by the bank. This ratio helps to assess that banks have enough capital on reserve to handle a certain amount of losses, before being at risk for becoming insolvent. A bank with a high capital adequacy ratio is considered to be above the minimum requirements needed to suggest solvency. Therefore, the higher a bank's CAR, the more likely it is to be able to withstand a financial downturn or other unforeseen losses. Capital is broken down as Tier-1, core capital, such as equity and disclosed reserves, and Tier-2, supplemental capital held as part of a bank's required reserves.

This ratio is used as an indicator of credit exposure of the bank in this paper. When a bank makes large loan losses that wipe out its total equity if enough capital reserve is there, the bank can avoid bankruptcy if not it will lead to an immediate bankruptcy hence making depositors lose their money. NBE has set specific measure of the capital adequacy position of Banks, which is the ratio the Capital Adequacy Ratio (CAR) (Directive No. SBB/9/95). The directive clearly set out the computation mechanism and the conversion factors for both on and off-balance sheet items and strictly set for all banks not to maintain their capital level below 8% of their risk weighted assets. High capital adequacy ratios have a positive effect on the performance of the bank and a lower credit exposure. To achieve a high capital adequacy ratio, the bank must have a certain amount of capital that some smaller banks could never reach without greater risk-taking or borrowing. Capital adequacy requirements that are too high could lead to decreasing competition in banking.

According to Kuncoro and Suhardjono (2011), capital adequacy Ratio (CAR) shows the bank's ability to maintain sufficient capital and the bank's management capability in identifying, measuring, controlling and controlling risks that may affect the amount of capital bank. Olalekan and Adeyinka (2013) have observed a positive relationship in their research between capital adequacy ratio and profitability of Nigeria banks. As noted by Bateni, Vaklifard and Asghari (2014), CAR determines risk behavior of banks. It is a measure of banks creditworthiness and ability to absorb risk. Thus, this ratio is used to protect depositors and promote stability and efficiency of financial systems. This is also an independent variable used for testing the credit exposure of a bank. It is chosen because it is the core measure of a bank's financial strength in resisting risks. According to the research of Boudriga, Taktak and Jellouli (2009) demonstrated

that CAR seems to reduce the level of problem loans which means higher CAR leads to less credit exposures.

Cost per loan asset ratio (CLAR)

Cost per loan assets is the average cost per loan advanced to a customer in monetary term. Cost per loan assets is calculated dividing total operating costs by the total amount of loans. The function of this is to point out efficiency in distributing loans to customers. Thus, cost per loan assets is considered as a determinant of the bank's performance and is viewed as an indicator of credit risk. Cost per loan asset ratio indicates the cost incurred by the bank in providing one unit of loan to the customer. An increase in cost per loan asset points out the exposure of the bank to doubtful loan which results in a credit risk. There is a strong relation between cost inefficiency and credit risk of a bank. Inefficient banks are not efficiency in distributing loans to customers which result in higher NPL that leads to an increase in credit risk for the bank. An efficient bank will be prudent in managing the cost structure of the bank that may lead to obtain the cost efficiency. Inefficient banks fail to screen and monitor the borrowers properly. That's why banks with high operating expense face higher levels of credit risk. NPL will enhance with high operating cost or low cost efficiency. Banks that are efficient in managing their expenses (costs), holding other factors constant, earn high profits. Therefore, it is expected that cost per loan assets and bank performance to be negatively associated. This may not always be true because in cases where there are high expenditures still the bank can increase the returns. Empirical studies show the mixed results on this the negative or positive effect of cost per loan asset on the performance of the bank. In Ethiopia context, (Tegegne Abera ,2018) has found negative but statistically significant association between cost per loan assets (CLA) and bank performance but in the Nigerian perspective, (Kurawa and Garba ,2014) have found significant positive association between cost per loan assets (CLA) ratio and bank's profitability. In view of theoretical perspective and empirical evidences, a negative relationship is expected on this paper between cost per loan assets and bank's performance.

2.7 Empirical Review

This section gives a brief review of the previous studies made on the effect of credit risk and macroeconomic factors on the performance of banks. Empirical works done on the determinants

of bank performance have focused on foreign studies and local studies. Moreover, most of the studies undertaken on bank performance consider both internal and external factors to examine performance of banks. The studies are reviewed as follows.

Foreign Studies

Ramadan, Kilani and Kaddumi (2011) study on the determinants of bank profitability of Jordan banks. A balanced panel data set of Jordanian banks was used to investigating the nature of the relationship between the profitability of banks and the characteristics of internal and external factors. The result showed that the Jordanian bank's characteristics explain a significant part of the variation in bank profitability. High Jordanian bank profitability tends to be associated with well-capitalized banks, high lending activities, low credit risk, and the efficiency of cost management.

Ebenezer, Omar and Kamil (2017) studied on bank specific and macroeconomic determinants of commercial bank profitability of Nigeria banks. Balanced panel data was used to examine the bank-specific and macroeconomic determinants of banks profitability. The finding of the study showed that capital adequacy ratio and liquidity have a positive and significant effect on bank profitability. However, efficiency ratio has a negative and significant effect on bank profitability. With regards to macroeconomic variable, GDP growth also has a positive and significant impact on banks profitability.

A study made by Anbar and Deger (2011) on bank specific and macroeconomic determinants of commercial bank profitability of Turkey banks used Return on Asset (ROA) and return on equity (ROE) as indicators of profitability. The study recommended that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. In addition, higher real interest rate can lead to higher bank profitability.

Tam (2019) studied on the impact of credit risk on Vietnam bank profitability. Indicators of credit risk that was used for this study were non-performing loan ratio, loan to deposit ratio and loan loss provision ratio. The finding of the study revealed that indicators of credit risk have significant positive influence on banks' profitability, signifying that commercial banks in Vietnam obtain high profitability despite exposure to high credit risk. A positive relationship between the bank size and bank performance was seen in the study as a result of economies of scale.

Myra (2020) undertook study on the impact of credit risk and macroeconomic factors on profitability of the Asian bank. The unbalanced panel data were tested for heteroskedasticity and normality. A fixed effects model and a random effects model were utilized followed by simple ordinary least squares (OLS) regression. The obtained results show that credit risk and GDP growth negatively affect Return on Equity (ROE) at 5% level of significance. The inflation rate increases ROE by 0.323%. In terms of influence, inflation has the highest impact on ROE followed by GDP growth and credit risk. Credit risk and GDP growth negatively affect Return on Assets (ROA) at 5% level of significance.

The objective of the study made by Kharabsheh (2019) was to investigate the credit risk determinants in Jordanian banking sector by using a balanced panel dataset of all Jordanian commercial banks over the period 2000-2017. The findings revealed that, credit risk increased as bank capital ratio, operating inefficiency and the growth rate in credit increased. No effect was found for bank liquidity and the study observed that larger banks faced lower credit risk. The macroeconomic variables indicated that as unemployment rate increased, credit risk significantly increased and similar positive effect was also documented for the crisis effect. Moreover, the results showed no significant impact for GDP growth or inflation. The outcome of this study provided that credit risk was influenced by both internal and external factors.

Maureen (2017) studied the effect of macroeconomic factors on the profitability of Commercial Banks of Nairobi securities exchange in Kenya. The objective was to determine the effect of real Gross Domestic Product on the profitability, examine the effect of interest rate on the profitability, evaluate the effect of inflation rates on the profitability and establish the effect of exchange rate on the profitability. A Panel data for the 11 listed banks in the NSE was utilized. The study findings indicated that real GDP growth rate, real interest rate, inflation had positive significant effect on profitability of commercial banks. While the exchange rate had a negative significant effect on the profitability of listed commercial banks on Nairobi Securities Exchange. The study recommended that macroeconomic variables should be continuously monitored as they have a significant effect on profitability of commercial banks.

Adeel, Muhammad, Zeeshan and Muhammad (2017) studied on the impact of Bank Specific and Macroeconomic Factors on Financial Performance of Banking Sector in Pakistan. Bank-specific factors used in the study were capital adequacy, asset quality, management quality, earning ability, and liquidity management. Macroeconomic factors used in the study were Gross

Domestic Product (GDP) and Inflation (CPI). Multiple linear regression was used to observe the determinants of profitability. In ROA model, capital adequacy, asset quality, earning ability and inflation are significant to bank profitability. In the model of ROE capital adequacy and earning ability have significant impact on financial performance. Moreover, capital adequacy and earning ability were significant to NIM. The study recommended that Bank capitalization must be enhanced because it helps the banks to reduce the cost of financing.

A study made by (Munangi, 2020) was on the Impact of credit risk on financial performance of South African Banks. The study uses panel data techniques, namely the pooled ordinary least squares (pooled OLS), fixed effects and random effects estimators were employed to test the relationship between credit risk and financial performance. The proxies used were non-performing loans (NPLs), return on assets (ROA) and return on equity (ROE). The finding of the study indicated that growth and size has a positive effect on financial performance; Non-performing loans and bank leverage has a negative relationship on financial performance. The study recommended that at a micro level, banks should observe prudent and stringent credit policies in order to limit the incidence of non-performing loans. At a macro level, regulators must enforce supervision in order to ensure that banks manage their credit risk according to the regulations to minimize the risk of bank failure.

Okoro and Onuoha (2020) study on the effect of credit risk on profitability of banks in Nigeria. They evaluate the effects of credit risk on performance of banks in Nigeria from 2005- 2016 covering banks' post-merger period. The study adopts Generalized Method of Moments Estimation approach Nonperforming loan ratio and Capital adequacy ratio were statistically significant in influencing Bank performance, while loan to deposit ratio was found not to be statistically significant in influencing Bank performance both at short run and long run. The study recommend that should maintain credit risk appetite to ensure that loan deposit ratio is in line with the prudential guideline by lending sufficiently to the real sector as banks were found to be lending far below the approved LDR and the regulatory authorities should monitor banks' capital adequacy ratios to ensure that banks capital base is adequate for its size to withstand any loss arising from bad credit without impairing banks' capital base.

Serwadda (2018) study on the impact of credit risk management systems on the financial performance of commercial banks in Uganda. The paper is set to analyze the impact of credit risk management on the financial performance of commercial banks in Uganda for a period of

2006–2015 using panel data for a sample of 20 commercial banks. The study employed return on assets as a dependent variable and non-performing loans, growth in interest earnings and loan loss provisions to total loans as credit risk measures. The study revealed that credit risk management impacts on the performance of Ugandan commercial banks. The results portrayed that banks' performance was inversely influenced by non-performing loans which may expose them to large magnitudes of illiquidity and financial crisis. The researcher recommends that banks need to enhance their credit risk management techniques not only to earn more profits but also to maintain a qualitative asset portfolio and attention be given to non-performing loans, loan loss provision to total loans and growth in interest earnings that were found to be significant.

Ebenezer, Omar and Kamil (2017) undertook study on bank specific and macroeconomic determinants of Nigeria commercial bank profitability. The study examines the bank-specific and macroeconomic determinants of banks profitability in Nigeria analyzing audited financial reports of selected sixteen (16) commercial banks over the period of 2010 to 2015 making up to 96 observations. The study identified that existing studies are sketchy in developing economies even though many studies have emerged in developed economies. The bank profitability is measured by return on assets and return on equity as function of bank-specific and macroeconomic determinants. The empirical results of the study suggested that banks can improve their profitability through increasing capital and liquidity, decreasing operating cost with conscious effort to maintain transparency in their operations. In addition, a good economic environment for financial institutions foster increase in bank profitability. Hence, the study recommends that further studies can expand the scope while extending to other industries as well.

A study made by Ramadan, Kilani, Kaddumi (2011) on determinants of bank profitability evidence from Jordan. In this study, a balanced panel data set of Jordanian banks was used for the purpose of investigating the nature of the relationship between the profitability of banks and the characteristics of internal and external factors. For this purpose, 100 observations of 10 banks over the period 2001-2010 were comprised. Two measures of bank's profitability had been utilized: the rate of return on assets (ROA) and the rate of return on equity (ROE). Results showed that the Jordanian bank's characteristics explain a significant part of the variation in bank profitability. High Jordanian bank profitability tends to be associated with well-capitalized banks, high lending activities, low credit risk, and the efficiency of cost management. Results

also presented that the estimated effect of size did not support the significant scale economies for Jordanian banks.

Tam (2018) studied on the impact of credit risk on bank profitability of Vietnam banks. A panel data of all 31 joint-stock commercial banks from 2008 to 2019 was investigated under the fixed effects model. The results represented that three indicators of credit risk (i.e. non-performing loan ratio, loan to deposit ratio and loan loss provision ratio) have significant positive influence on banks' profitability, signifying that commercial banks in Vietnam obtain high profitability despite exposure to high credit risk. Also, there is a positive relationship between the bank size and bank performance, suggesting that banks might obtain cost advantage and become more profitable due to the economies of scale.

Leon (2020) studied on the impact of credit risk and macroeconomic factors on profitability of Asian banks. This study investigates the effect of credit risk and macroeconomic factors on profitability of 20 Asian banks, particularly from Indonesia, Malaysia, Thailand and Philippines, covering the period of 2012 to 2017. The obtained results show that credit risk and GDP growth negatively affect Return on Equity (ROE) at 5% level of significance. The inflation rate increases ROE by 0.323%. In terms of influence, inflation has the highest impact on ROE followed by GDP growth and credit risk. Credit risk and GDP growth negatively affect Return on Assets (ROA) at 5% level of significance. ROA was also influenced by an increase in inflation rate.

The objective of the study made by Berdo (2018) was to determine whether there is a relationship between credit risk management and profitability in commercial banks in Albania. Four variables were used in the study ROA and ROE are the dependent variables, whereas non-performing loans (NPLs) and capital adequacy (CAR) are the independent variables. The main sources of data were the annual reports for a 7-year period (2008-2015) by the Albanian Association of Banks.

Gadzo, Kportorgbi and Gatsi (2019) studied on credit risk and operational risk on financial performance of universal banks in Ghana. This study assessed the effect of credit and operational risk on the financial performance of universal banks in the context of the structural equation model (SEM). Data were collected from all the 24 universal banks in Ghana without missing variables and using the PLS-SEM, the results showed that credit risk influences financial performance negatively contrary to the empirical study but in line with the information

asymmetry tenant of the lemon theory. The study indicated that bank specific variables measured by (asset quality, bank leverage, cost to income ratio and liquidity) significantly influence credit risk, operational risk as well as the financial performance of the universal banks positively.

A study by Isanzu (2017) on the impact of credit risk on financial performance of Chinese banks the studies examine secondary data was collected from five largest commercial banks in the country for the period of 7 years from 2008 to 2014. The study used nonperforming loans, capital adequacy ratio, impaired loan reserve, and loan impairment charges as measures of credit risk and for a measure of financial performance return on asset was used. The study findings reveal nonperforming loan and Capital adequacy have a significant impact of on financial performance of Chinese commercial banks; therefore, the need to control credit risk is crucial for bank financial performance.

Mendoza and Rivera (2017) studied on the effect of credit risk and capital adequacy on the profitability of rural banks in the Philippines. This paper examines the credit risk and capital adequacy of the 567 rural banks in the Philippines to investigate how both variables affect bank profitability. Using the Arellano-Bond estimator, we found out that credit risk has a negative and statistically significant relationship with profitability. However, empirical analysis showed that capital adequacy has no significant impact on the profitability of rural banks in the Philippines. It is therefore necessary for the rural banks to examine more deeply if capital infusion would result in higher profitability than increasing debts. The study also implies that it is imperative for the banks to understand which risk factors have greater impact on their financial performance and use better risk-adjusted performance measurement to support their strategies. Rural banks should establish credit risk management that defines the process from initiation to approval of loans, taking into consideration the sound credit risk management practices issued by regulatory bodies. Moreover, rural banks need to enhance internal control measures to ensure the strict implementation of internal processes on lending operations.

Abbas, Iqbal and Aziz (2019) on the impact of bank capital, bank liquidity and credit risk on profitability in post crisis period: A comparative study of US and Asia The purpose of this study is to explore the influence of bank capital, bank liquidity level and credit risk on the profitability of commercial banks in the post crisis period between 2011 and 2017 in Asian developed economies in comparison with the USA banking industry. The finding showed that bank capital and credit risk influence profitability in Asian developed economies similar to in the

USA commercial banks, whereas the impact of liquidity on the profitability of the USA large commercial banks is negative and positive on Asian developed economies commercial banks in the post crisis era. The findings indicate that a 6% increase in capital leads to a 1% increase in profit, a 3.5% increase in liquidity leads to a 1% increase in profit. Specifically, larger banks generate 1% profit against a 1% increase in liquid assets. Medium size banks make 1% profit against a 3% increase in liquid assets, and small size banks produce 1% profit against a 7% increase in liquid assets. The findings show that liquidity influences profitability more intensively than capital, whereas the sign of coefficients is similar for large, small and medium-size banks. The results of this paper indicated that liquidity and bank capital have a positive impact on profitability, while credit risk has a negative influence on the profitability of banks.

Local Studies

Mekasha (2011) did a research study on the credit risk management and its impact on the performance on Ethiopia Commercial Banks. This research study adopted quantitative research design method. Regression analysis model was used with the ROA as the dependent variable. Credit risk was the independent variable measured by variability in the ratio of non-performing loan to total loan, loan provision to non-performing loan, loan provision to total asset and loan provision to total loan. The research was done on six selected commercial banks in Ethiopia over a 10 years' panel data was used. The result from the study shows a lower default rate is related with return on asset.

Bizuayehu (2015) examined the impact of credit risk management on profitability of banks in Ethiopia. The study used a secondary data for eight banks which stayed in the industry for more than eleven years based on panel data analysis for the period 2003 to 2013. The data was analyzed by using EView 6 software. The study concluded that NPLR, Capital Adequacy, Loan to Deposit and Bank Size, had a statistically significant effect on the level of ROE. However, the results of this random effect regression model revealed the insignificant effect of Interest spread rate, GDP and inflation rate on the level of ROE of commercial banks in Ethiopia for the period under consideration.

Mitku (2015) studied on the risk management and its impact on financial performance of commercial bank in Ethiopia. The study used a data of eight commercial banks from the period of 2002 to 2013. The data was analyzed by a regression using EView software. The study

concluded that credit risk, liquidity risk and operational risk had a statistically significant impact on banks performance of commercial banks in Ethiopia.

Regassa (2015) studied on the credit risk management and profitability in Ethiopia Micro Financial Institution. The research used ROE and ROA as an indicator of performance in the institution. The data was collected from a selected 12 microfinance institution from 2003 to 2012. The finding of the study revealed that credit risk management has a statistically significant effect on the performance of Bank.

Mekuria (2017) studied on the determinants of credit risk of commercial Banks in Ethiopia. The study used panel model in examining the regression model and collected the secondary data from purposively selected 7 commercial banks out of 17 commercial banks currently operating in Ethiopia covering the 15-year period 2000 to 2014 and a national bank annual report. The result of the study showed that inflation has a positive and significant relationship with credit risk of commercial banks in Ethiopia.

Tona (2017) studied on the determinants of financial risks of private commercial banks in Ethiopia. A selected of six sample private commercial bank was used covering a period of fifteen years 2001-2015. Bank specific and macroeconomic variables were tested for the two dependent variables credit and liquidity risk models by using the balanced panel fixed effect regression model. The finding of the study for credit risk model revealed that Loan to deposit ratio, income diversification, non-performing loan, real GDP growth rate and inflation have significant positive impact on credit risk whereas return on asset found significant negative impact on credit risk of Ethiopian private banks.

Anteneh and Tewolde (2017) studied on the determinants of profitability of in private commercial banks of Ethiopia. The variables used in the study were equity capital, saving deposit, fixed deposit, noninterest income, liquidity risk, nonperforming loan, bank size, market concentration, GDP growth and inflation on banks profitability measured by ROA. The finding of the study suggested that, equity capital, bank size and gross domestic product have positive coefficient and statically significant impact on banks' profitability. Fixed deposit, liquidity risk and nonperforming loan have a negative and significant relationship between and private commercial banks profitability. Saving deposit, noninterest income and market concentration has a positive relationship, but statically insignificant and inflation has shown a negative relationship and statically insignificant.

A study by Difabachew 2017 on determinants of profitability of commercial banks in Ethiopia examines the determinants of profitability of commercial banks in Ethiopia by using panel data of seven sample commercial banks out of seventeen commercial banks currently operated in Ethiopia 2000-2014 since the data is secondary in nature the quantitative research approach was used besides , the fixed effect model was used finding of the study shows that bank size, capital adequacy, interest income and non-interest income have statistically significant and positive relationship with profitability. On the other hand, Interest expense and non-interest expense has negative and statistically significant relationship with banks' profitability.

A study by Shiferaw 2018 on factors affecting the profitability of Private Commercial Banks in Ethiopia it examines factors affecting the profitability of private commercial banks in Ethiopia by using panel data of banks. Explanatory research design and quantitative research approach was applied in the study. The result of the study states loan amount has a positive relation, and deposit amount, cost efficiency and liquidity has statistically significant effect on banks' profitability in a negative relationship. Capital adequacy, bank size, credit risk management, inflation and GDP were found to have statistically insignificant. The study recommended that private commercial banks should focus on and reengineering the banks alongside the key internal and external drivers and this will enhance their performance and to improve their profitability.

Fekadu (2018) undertook study on the determinants of nonperforming loan from commercial Banks in Ethiopia. The study adopted a quantitative research approach and used nine commercial banks from 2006-2017. Descriptive and random effect multiple regression analysis are employed to analyze the unbalanced panel data. The finding of the study show that return on equity and capital adequacy have negative and significant impact on Non-performing loan whereas loan loss provision and loan to deposit have positive significant relationship with non-performing loan. GDP and Net Interest Margin are statistically insignificant factor of Non-Performing Loan.

Ayale (2018) studied on the impact of credit risk management on financial performance of private commercial bank in Ethiopia. The study used secondary data a selected eight private commercial banks which stayed in the industry more than ten years among sixteen private commercial banks. A sample covering from 2007 to 2016 was used for the study E-view 9 software used for the regression of the panel data. The result shows that loan loss provision, capital adequacy ratio, credit interest income and size of the bank had positive and statistically significant effect on financial performance of private commercial bank in Ethiopia.

Mulugeta (2018) studied on the effect of credit risk and financial performance of commercial banks in Ethiopia. Quantitative research approach was used covering (2007-2016) and it was analyzed using E-view 8 software. The study used dependent variable return on asset and four independent variables that are non-performing loan to total loan and advance ratio, loan provision to total loan and advance ratio, total loan and advance to total deposit ratio and non-performing loan to loan provision as measurement of credit risk was used. The result shows that all the ratios have significant effect on the performance of the bank.

A study made by Abera 2018 on the impact of credit risk on profitability of private commercial banks in Ethiopia. The researcher used 14 years of (2003-2016) secondary data from six selected commercial banks in Ethiopia. The study used ROE as an indicator of performance and tests bank specific, industry specific and macro-economic factors effect on the performance of commercial bank. Variables used to determine bank specific factor were non- performing loan to total loan, capital adequacy ratio, bank size, loan and advance to deposit ratio and cost per loan asset ratio, Interest Spread as industry specific

Million (2018) study on the determinants of private commercial banks profitability in Ethiopia examined the determinants of private commercial banks profitability. To analysis the data both descriptive and explanatory (cause – effect) data analysis method were applied. The finding implied that, Capital adequacy, bank size, loan and advance, NIM, and GDP have positive significant relationship with profitability of Ethiopian private commercial banks. While, liquidity NPL, inflation and cost income ratio shows negative significant relationship with profitability of Ethiopian private commercial banks advisable to lower the liquidity ratio to increase the income from loan. The study recommended that banks could raise fee based services through incentives mechanisms such as, preparing lottery schemes for money transfer services and international banking operations.

The objective of the study made by Mengistu 2018 was to examine the relationship or effect level credit risk management and profitability by using panel data regression models through taking ROA (dependent variable) and NPLR (independent variable) and others as control variables Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR) and Bank size. Awash international bank, Bank of Abyssinia, Commercial bank of Ethiopia, Dashen bank, Nib international bank, and Wegagen Bank and United Bank credit risk management has negative and significant effect on commercial banks profitability. Based on the finding it is recommended

that all commercial banks in Ethiopia manage their loans effectively and efficiently through risk identification and mitigation before granting loans to their profit.

Aregawi 2019 undertook study on determinants of bank profitability of Ethiopian Private Commercial Banks. The study has an objective of identifying internal and external determinant factors of private commercial banks profitability in Ethiopia. Explanatory research approach was used and the data's were analyzed by using multiple linear regression model of the bank's profitability. The empirical results shows that bank specific factors; bank asset Size and managerial efficiency and macro-economic factors; level of GDP, and inflation have positive significant influence on the profitability of private commercial banks in Ethiopia, Whereas, bank specific factors; capital adequacy and liquidity have negative insignificant influence on the profitability of private commercial banks in Ethiopia as it measured by ROA during the study period of 2007 to 2016.

A study by Elias 2015 was on the impact of credit risk management on the performance of selected commercial banks in Ethiopia. The regression results revealed that loan loss provision, operating inefficiency & loan growth have positive and statistically significant impact on banks profitability (Return on Equity). Finally, the results indicate that liquidity & capital adequacy have a negative but statistically significant relationship with banks Return on Equity.

The objective of the study made by Amene and Alemu (2019) was to empirically assess the effect of bank-specific and macroeconomic determinants of Ethiopian private commercial banks financial performance. The study used three measures namely, return on assets (ROA), return on equity (ROE) and economic value added (EVA) for the period 2006 to 2015 by using multiple regression on a sample of seven private commercial banks. The results indicated that the existence of relatively fair competitive market in private commercial banking environment. Regarding the explanatory variables from bank-specific determinants, Capital adequacy (CAP) has a significant and positive relation with ROA and significant and negative relation with ROE and EVA.

A study by Getahun, Anwen and Bari 2015 was on credit risk management and its impact on performance of commercial banks of Ethiopia. Return on Assets (ROA) and Return on equity were used as performance variables and Capital Adequacy Ratio (CAR). Non-Performing Loans to Total Loans (NPLR), Loan provision to Total Loan Ratio (LPTLR), Loan Provision to Non-Performing Loans Ratio (LPNPLR), and Loan Provision to Total Assets Ratio (LPTAR) and

Non-Performing Loans to Total Loans (NPLTLR) were used as variables of credit risk management. The findings reveal that there is strong relationship between credit risk management and commercial bank performance in Ethiopia.

Shmendi (2019) undertook a study on the impact of credit risk management on financial performance commercial banks of Ethiopia. Return on equity was dependent variable while nonperforming loan, capital adequacy, bank size, loan and advance to deposit ratio, inflation and GDP have taken as independent variables. As a result, the study concluded that the credit risk which is measured by nonperforming loan ratio had a significant inverse impact on banks financial performance and capital adequacy also same impact on profitability. In addition, loan to deposit ratio and bank size have a positive significant impact on banks financial performance. In general, Bank Specific factors have a significant impact on banks profitability and also external factors both macroeconomic (GDP and INF) have a significant impact on profitability while industry specific factors (Interest Spread) have no significant impact in Ethiopia banks profitability.

Abdela, Lemmi and Gutu (2019) undertook a study on determinants of profitability of Commercial Banks in Ethiopia. Results indicated that internal determinants were more important than external factors. Thus business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size had a significant effect on the return on asset, whereas except ownership other external determinants, i.e. market concentration and GDP were insignificant to determine return on assets of Ethiopian commercial banks.

A study by Assfaw 2018 was on determinants of the Financial Performance of Private Commercial Banks in Ethiopia. In this study, return on equity, return on asset and net interest margin as the dependent variables and bank specific factors like banks size, liquidity management, asset quality, management efficiency and capital adequacy as independent variables were used. The results indicated that capital adequacy, management efficiency and size of banks have positive and statistically significant effect on financial performance of private commercial banks of Ethiopia measured by ROA, ROE and NIM. But, liquidity management has negatively significant impact on financial performance of the banks (ROE).

Mohanty (2017) studied on factors affecting bank profitability of commercial bank of Ethiopia. OLS method was applied to investigate the impact of bank size, managerial efficiency, liquidity, credit risk, real GDP growth rate, and annual inflation rate on major bank profitability measured

by (ROA). The empirical results show that bank specific factors; bank size, managerial efficiency, credit risk and macroeconomic factors GDP and annual inflation rate have a strong influence on the profitability of banks. The empirical study shows that, all explanatory variables in this study have negative effect on the profitability measure except GDP and inflation rate. In addition to this, without liquidity all explanatory variables are statistically significant.

The objective of the study made by Tadesse (2014) was to examine the quantitative effect of credit risk on the performance of commercial banks in Ethiopia, considering variables related to lending activities, over the period of 5 years (2008-2012). The study finding was that all the selected variables: the provision to total loans, loan to total asset, credit administration (cost to total loans) and Size (Economies of scale) have significant effect on the performance of Banks. However, a certain variation in the magnitude and direction of their effect on the selected profitability measure, Return on Asset. Based on the study it was recommended that Ethiopian banks need to develop their credit risk management capacity, there should also be control over overhead costs related to lending, and increasing the loan book size without compromising the sound credit planning should be a priority task.

A study made by Lake 2013 examines the impact of financial risks on the profitability of commercial banks for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011. The findings of the study show that Credit risk and liquidity risk have a negative and statistically significant relationship with banks' profitability. However, the relationship for interest rate risk and foreign exchange rate risk is found to be statistically insignificant. The study suggestion was focusing in credit risk management and keeping optimal level of liquidity which enables banks to meet their contractual commitments could maximize return on assets of Ethiopian commercial banks.

Teshome, Debela and Sultan (2018) undertook a study on the determinant of financial performance of commercial banks in Ethiopia. Return on Asset and Return on Equity are the selected dependent variables while non-performing loan, capital adequacy ratio, bank size, leverage ratio, credit interest income ratio, loan loss provision ratio and operation cost efficiency were the independent variables. Results show that Capital Adequacy Ratio (CAR), Credit Interest Income (CIR) and Size of the bank (SIZE) have positive and statistically significant effect on financial performance. Non-performing Loans (NPLs), Loan Loss Provision (LLP), Leverage Ratio (LR) and Operational Cost Efficiency (OCE) have negative and statistically

significant effect on banks' financial performance. The study suggested that Ethiopian commercial banks are advised to manage their loan loss, be cost efficient, and fix their leverage ratio at maximum level to enhance their profitability.

Eneyew (2013) study examines the impact of financial risks on the profitability of commercial banks for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011. The findings of the study show that Credit risk and liquidity risk have a negative and statistically significant relationship with banks' profitability. However, the relationship for interest rate risk and foreign exchange rate risk is found to be statistically insignificant. The study suggests that focusing in credit risk management and keeping optimal level of liquidity which enables banks to meet their contractual commitments could maximize return on assets of Ethiopian commercial banks.

Tole, Jabir and Wolde (2019) studied on determinates of credit risk in Ethiopian commercial banks. The findings of the study show that Credit risk and liquidity risk have a negative and statistically significant relationship with banks' profitability. However, the relationship for interest rate risk and foreign exchange rate risk is found to be statistically insignificant. The study suggests that focusing in credit risk management and keeping optimal level of liquidity which enables banks to meet their contractual commitments could maximize return on assets of Ethiopian commercial banks.

Abate and Mesfin (2019) studied on factors affecting profitability of commercial banks in Ethiopia. The study examines the bank-specific, industry-specific and macro-economic factors that affect bank profitability of nine commercial banks in Ethiopia, during the period of 2007-2016. Random effect regression model was run to analyze the raw data collected through audited financial statements. The findings of the study show that capital adequacy, leverage, liquidity, and ownership have statistically significant and positive relationship with banks' profitability. On the other hand, operational efficiency, GDP, inflation and interest rate have a negative and statistically significant relationship with banks' profitability. However, the relationship between bank size and number of branch is found to be statistically insignificant. The study recommended that Ethiopian commercial banks should not only be worried about internal structures and rules, but they have to give attention for both the internal and the macroeconomic variables together in fashioning out plans to pick up their performance.

Lelissa (2014) paper investigated the determinants of Ethiopian banks performance considering bank specific and external variables on selected banks' profitability for the 1990-2012 periods. The study finding was that bank specific variables by large explain the variation in profitability. High performance is related to the ability of banks to control their credit risk, diversify their income sources by incorporating non-traditional banking services and control their overhead expenses. Bank's capital and liquidity status are not significant to affect the performance of banks. On the other hand, the paper finds that bank size and macro-economic variables such real GDP growth rates have no significant impact on banks' profitability. However, the inflation rate is determined to be significant driver to the performance of the Ethiopian commercial banks.

The objective of the study made by Shuremo2016 was to examine the effect of bank-specific, industry-specific and macroeconomic determinants on banks' profitability in Ethiopia. The findings of the study show that all bank specific determinants except credit risk and expense management have statistically significant and positive relationship with banks' profitability. On the other hand, variables like credit risk, expense management and regulation have a negative and statistically significant relationship with banks' profitability. All macroeconomic determinants in this study like economic growth, interest rate spread and exchange rate have statistically significant and positive relationship with banks' profitability. The study suggested that bank managers, directors, and all stakeholders should not only be concerned about internal structures and policies, but also must consider the external environment together to improve their bank performance in general and profit in particular.

Gizaw, Kebede, Selvaraj (2015) studied on the impact of credit risk on profitability performance of commercial banks in Ethiopia. The data were analyzed using a descriptive statics and panel data regression model the result showed that credit risk measures: non profitability loan, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia. The study suggested a need for enhancing credit risk management to maintain the prevailing profitability of commercial banks in Ethiopia

Kidane(2020) studied on credit risk management and profitability on Ethiopian commercial banks. Return on Asset was used to measure profitability of commercial banks, bank specific factors (Capital adequacy, Loan and Advances to total deposit, Non- Performing Loans, Bank size and Liquidity and macroeconomic factors (Inflation and Gross Domestic Product) as indicators of credit risk management. The findings showed that Credit Risk Management in

terms of bank specific and macroeconomic factors has significant impact on profitability of commercial banks in Ethiopia. Also the result displayed that profitability of commercial banks is not affected by the amount of non- performing loans during the study. The study recommended that banks' credit risk management should not give due devotion only to the internal factors but also to external factors exclusively (Gross Domestic Product and Inflation) in order to minimize their negative impact on profitability of commercial banks in Ethiopia.

Zelege (2019) studied on the effect of credit risk on profitability of private commercial banks in Ethiopia. Data used for this analysis is obtained from banks' annual reports, NBE annual reports and Ministry of Finance and Economic Development. To this end correlation and multiple regression analysis is done with fixed effect model and EView 9 software used to regress the data. NPL, LTDR, GDP, EXRA and DEPG had a significant impact on banks' profitability at 10% significant level. LTDR, DEPG has a negative relationship with profitability and the rest has a positive relationship.

Zemedkun (2019) studied on the effect of credit risk management on the profitability of commercial bank of Ethiopia. ROA and ROE was used as performance determinant the study used a secondary data for the period of 200-2018 for nineteen years. The collected data were analyzed using time series regression model and EView 7 software. The result shows that credit risk management which is measured by non-performing loan to total loan ratio and operating Expense to Total Income have significant effect on the performance of banks.

Summary of Literatures

According to the literature banks performance is expected to have a negative effect on bank profitability. Some of the studies conducted in Commercial banks in Ethiopia by Mekasha 2011; Bizuayehu 2015; Regassa 2015; Mekuria 2017 and Tona 2017 result show that credit risk had a negative effect on performance of bank. The relationship between the macroeconomic factor and profitability has been demonstrated to be positive or negative based on past literature like Mohammed (2019); Difabachew (2017); Mesele, Shiferaw, Kotiso (2018) and Shiferaw (2018). Researches done by World Bank Publications conclude that profitability is expected to be affected by credit risk and macroeconomic factor. Mohammed (2019), Maureen (2017) and Myra (2020) studied the determinants of bank profit they found out that relatively a strong effect of macroeconomic factors on the performance banks as compared with credit risk, whereas the

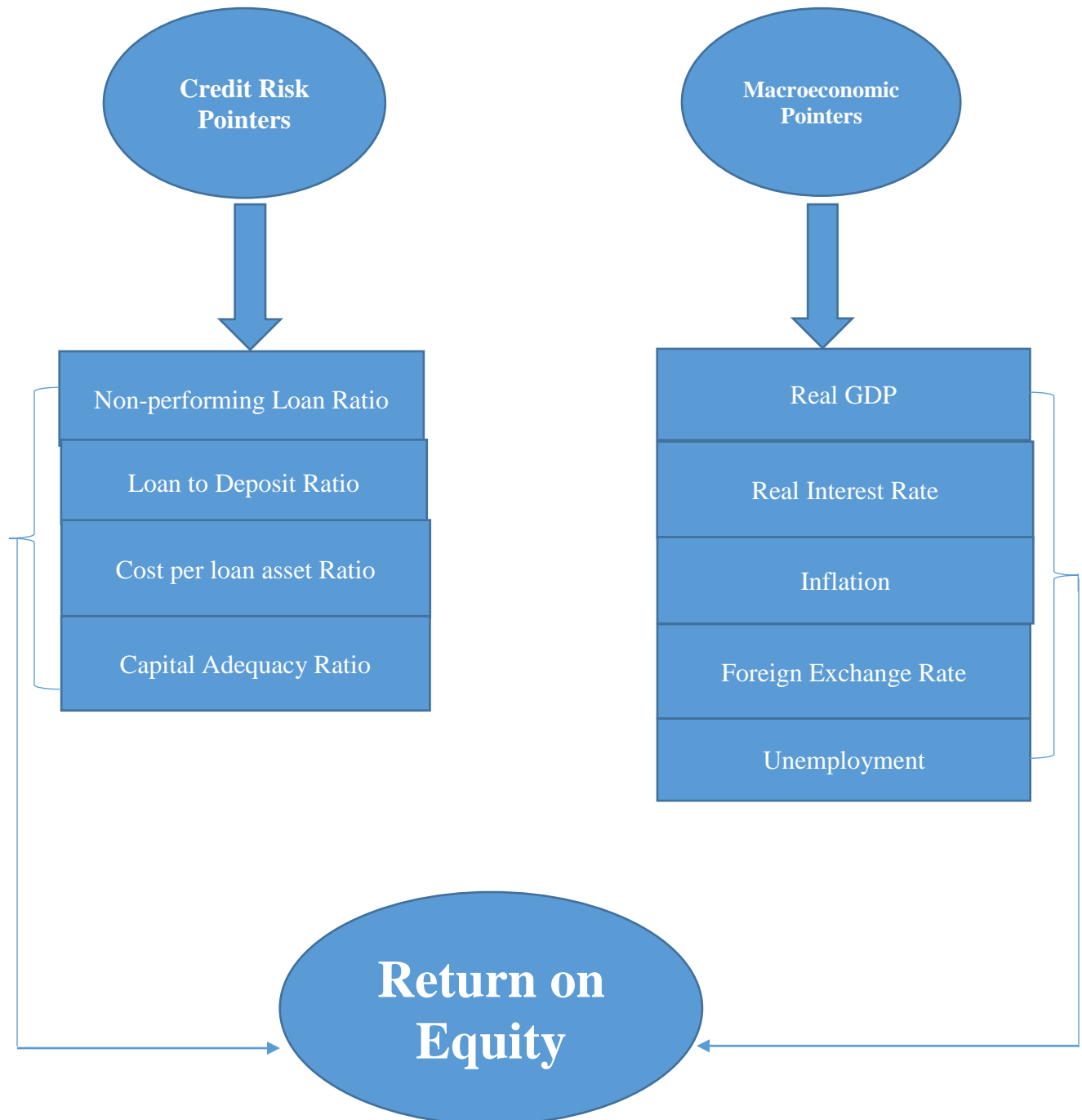
study made by Kharabsheh (2019); Ebenezer, Omar & Kamil (2017) and Mesele Shiferaw Kotiso (2018) stated that credit risk has a strong effect on performance of bank. The determinants of profitability are arguable among different studies around word wide banks. This has been demonstrated by various studies such as Obillo (2015), Kanwal and Nadeem (2013), Zang and Dong (2011).

Research Gap

Although studies have been conducted in Ethiopia on the effect of credit risk and macroeconomic factors by Aregawi 2019; Mohammed 2019 and Assfaw 2019 all the researches focused on private banks in Ethiopia. Except the study done by Mohanty 2017 that uses bank specific factors; bank size, managerial efficiency, credit risk and macroeconomic factors; level of GDP and annual inflation rate. Although this study contributes to the area of the field it is still scarce more recent collective studies of commercial banks of Ethiopia is needed whether macroeconomic variable or credit risk have an effect on the performance of bank. This study therefore seeks to contribute to the literature by narrowing the indecisive rift on the implication of credit risk and macroeconomic variables on bank performance and advice on what policies to adopt to further boost returns.

2.8 Conceptual Frame Work of the Study

Figure 2: Conceptual Frame Work of the Study



CHAPTER THREE

3. METHODOLOGY

This chapter contains the research methodology to be employed in order to address the research objective. It gives a detailed procedure the researcher will pursue to conduct this research. It presents the research design, source and type of data, sample selection, data collection method and analysis, study variable and model specification.

3.1 Research Design

Research design can be exploratory, descriptive and explanatory depending on the research question of the study. For this study an explanatory research design was used since the research question on what is the effect of credit risk and macroeconomic factors on performance of bank not on why there is effect of credit and macroeconomic factors on performance of bank. As stated above the objective of the study was to investigate the effect of credit risk and macroeconomic factors on performance of commercial bank of Ethiopia. In order to achieve this objective this study employs explanatory research design. Quantitative research approach was used to generate knowledge and create understanding about the social world (Black, 1999). Quantitative research approach was used in the study since it involves counting and measuring of events and performing the statistical analysis of a body of numerical data. The results of quantitative research specify an explanation into what is and is not important, or influencing, a particular population. Quantitative research also provides answers to questions about the frequency of a phenomenon, or the magnitude to which the phenomenon affects the population under the study.

3.2 Type and Source of Data

This research was done only using secondary data. The required secondary data was obtained from annual financial statements of commercial banks of Ethiopia, NBE report, and NBE web resources. In order to enhance the accuracy of data to be used in the analysis, data pertinent to annual profit, loan portfolio, deposit, equity, asset and non- performing loan are collected from the audited financial statements of commercial bank of Ethiopia.

3.4 Data Collection Method And Analysis

Financial figure of the commercial bank of Ethiopia for the study period (1990-2019) was collected from CBE from audited financial report. The data collected from secondary sources was analyzed by using regression. By clearly identifying the dependent and the independent variables, the researcher's used multiple regression models to show the cause and effect between the dependent and independent variables by using EViews 8 and interpret the outputs through charts, tabular and figures.

3.5 Model Specification

The key aim of this study is to observe the effect of credit risk and macroeconomic factors on profitability of CBE. Corresponding to previous research works conducted on the impact of credit risk on banks profitability, this study will use Return on Equity (ROE) as dependent variables whereas Non-Performing Loan Ratio (NPLR) Ratio, Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR), Cost per Loan Asset Ratio (CLAR), Gross Domestic Product (GDP), Interest Rate (IR), Inflation rate (INF), Foreign exchange rate (FXR) and Unemployment (UNEMP) as an explanatory variable. These variables are chosen since they are widely existent and they are adopted in a model that exists in most literatures.

$$EQ1 \quad Y_t = \beta_0 + \beta_i X_{it} + \epsilon_t$$

Where Y_t - is the dependent variable observed at time t ;

X_{it} - is the i th independent variable observed at time t

β_0 - is the constant term

β_i - is the coefficient for explanatory variables

ϵ_t - is the error term.

The Models are expressed as follows:

$$EQ2 \quad ROE_t = \beta_0 + \beta_1(NPLR_{it}) + \beta_2(CAR_{it}) + \beta_4(LTDR_{it}) + \beta_5(CLAR_{it}) + \beta_6(IR_{it}) + \beta_7(GDP_{it}) + \beta_8(INF_{it}) + \beta_3(FXR_{it}) + \beta_3(UNEMP_{it}) + \epsilon_{it}$$

Where,

ROE= Return on equity,

NPLTL= Non- performing loan to total loan,

CAR= Capital adequacy ratio,

LTDR= Loan to deposit ratio,

CLAR= Cost per loan asset ratio,

IR= Interest Rate,

GDP= Growth Domestic Product,

INF =Inflation Rate,

FXR=Foreign Exchange Rate,

UNEMP=Unemployment Rate,

β_0 = Intercept

β_1 to β_8 are Coefficients of explanatory variables

3.6 Study Variables

Profitability is the dependent variable used in this study. It is measure in terms of ROE. Additionally, supplementary variables that was accommodated in this study are Nonperforming loan, Capital Adequacy, Loan and advance to deposit ratio, Cost per loan asset ratio are those from the credit risk indictors. Real GDP, Real interest rate, Inflation, Foreign Exchange rate and Unemployment from the macroeconomic factors

Dependent Variable

In many of the literature, studies demonstrated that bank performance is expressed mainly by quantifiable financial indicators. ROE is used for this study

Return on Equity (ROE)

Return on Equity (ROE) is commonly used to measure the profitability of banks. ROE is expressed as a percentage and can be calculated for any company if net income and equity are both positive numbers. The efficiency of the banks can be evaluated by applying ROE, since it measures how well the company utilizes its equity to generate profits. It is measured by the ratio of net profit to total equity.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Equity Capital}}$$

Independent Variable

Nonperforming Loan Ratio (NPLR)

Usually, banks classify loans as non-performing loans when the repayments of principal and interest are due for more than 90 days or depending on the terms of the loan agreement (Wayan and Capriani, 2016). Non-performing loan is a probability of loss which requires provision. It is measured or indicated by the ratio of NPLs to Total Loan (Wayan and Capriani, 2016).

$$\text{NPLR} = \frac{\text{Non-Performing Loan}}{\text{Total Loan}}$$

Capital Adequacy Ratio (CAR)

Capital adequacy ratio measures how much capital does a bank has with it as a percentage of its total credit exposure. Bank regulators enforce this ratio to ensure credit discipline in order to protect depositors and promote stability and efficiency in the financial system. It is decided by bank regulators to prevent commercial banks from taking excess leverage and become insolvent in the process. This is because when a bank makes large loan losses that wipe out its total equity, it may lead to an immediate bankruptcy hence making depositors lose their money. According to the national bank of Ethiopia directive No. SBB/9/95 capital adequacy ratio should be more than 8 percent.

$$\text{Capital Adequacy Ratio} = \frac{\text{Total Equity}}{\text{Total Asset}}$$

Loan to Deposit Ratio (LTDR)

Loan is the major component in the total working fund (total assets), which indicates the ability of bank to utilize its deposits in the form of loan to earn high return. The ratio of 100% or less shows that the bank is funding all its loans from deposits rather than relying on wholesale funding (Anjom and Karim, 2016). On the contrary, if the ratio is greater than 100% the bank borrowed money from other sources at higher rates. This means that the bank may not have enough liquidity to cover any unforeseen fund requirements. It is commonly used statistic for assessing a bank's liquidity.

$$\text{Loan to Deposit Ratio} = \frac{\text{Total Loan}}{\text{Total Deposit}}$$

Cost per Loan Asset Ratio (CLAR)

Cost per loan asset (CLA) is the average cost per loan advanced to customer in monetary term. Purpose of this is to indicate efficiency in distributing loans to customers. It is calculated by dividing total operating costs by total amount of loans (Bhattarai, 2017)

$$\text{CLA} = \frac{\text{Operating cost}}{\text{Total Amount of Loan}}$$

Gross Domestic Product (GDP)

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given country's economic health. The components of GDP include personal consumption expenditures, business investments, government spending, exports, and imports.

$\text{GDP} = \text{Personal consumption expenditure} + \text{Investment} + \text{Government spending} + (\text{Export} - \text{import})$.

Real Interest Rate (IR)

A real interest rate is an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower and the real yield to the lender or to an investor. Interest rates instability generally has an effect with financial performance of commercial Banks. High interest rates will lead to increased commercial banks interest income but also lead to low demand for the loans and hence crowding out the increased interest income. Without interest rates stability, domestic and foreign investors will stay away and resources will be diverted elsewhere.

Inflation (INF)

Since GDP is based on the monetary value of goods and services, it is subject to inflation. Rising prices will tend to increase a country's GDP, but this does not necessarily reflect any change in the quantity or quality of goods and services produced. Thus, by looking just at an economy's nominal GDP, it can be difficult to tell whether the figure has risen as a result of a real expansion in production, or simply because prices rose. Economists use a process that adjusts for inflation to arrive at an economy's real GDP. The inflation rate is widely calculated by calculating the movement or change in a price index, usually the consumer price index. Furthermore,

macroeconomic indicators influence credit risks higher inflation can have a negative impact on earnings of existing borrowers thereby weakening the quality of previously extended loans.

Foreign Exchange Rate (FXR)

An exchange rate is the value of one nation's currency versus the currency of another nation or economic zone. There are fixed and floating exchange rate systems. A bank serves as a FXR market, due to its role to serve as an intermediary to bring together supply and demand. A bank may be associated as a FXR market since it tends to be neutral, although a bank may also carry out transactions for its own interests and take long or short FXR position. Bank risk management must lead the bank to the neutral position to avoid foreign exchange rate risk (Mbithi, 2013).

Unemployment (UNEMP)

According to International Labor Organization unemployment means a situation where someone of working age is not able to get a job but is available for work, and has taken specific steps to find work. The uniform application of this definition results in estimates of unemployment rates that are more internationally comparable than estimates based on national definitions of unemployment. This indicator is measured in numbers of unemployed people as a percentage of the labor force and it is seasonally adjusted. The labor force is defined as the total number of unemployed people plus those in employment. An increase in the unemployment rate will cause a contraction of the reimbursing capacity of households, triggering an increase in the default rate (Baba and Nasieku, 2016). It also produces a material reduction of demand for new loans, which could lead to a significant deterioration of the ratio between the bearing interest assets and bearing interest liabilities.

4. CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

This chapter deals with the results of study which include the descriptive statistics, regression analysis, and the diagnosis test for the model for the profitability measures of return on equity.

The description of the data and other description methods are presented. Four diagnostics tests are also run to see if there is any problem related to the statistical techniques to be used as indicated in the methodology section. The pair wise correlation coefficient matrix between the independent variables indicates that no multicollinearity problem in the model. The maximum correlation (0.69) is between capital adequacy ratio and loan to deposit ratio (LTDR) whereas all the rest variables are less than this. Regarding the other diagnostic tests the model is homoscedastic, no autocorrelation between residuals and the residuals are normally distributed.

4.1 Descriptive statistics

This section presents the descriptive statistics of dependent and independent variables used in the study for the sample bank. The dependent variables used in the study were ROE while the independent variables were Non-Performing Loan Ratio (NPLR) Ratio, Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR), Cost per Loan Asset ratio (CLAR), Inflation rate (INF), Interest rate (IR), Gross Domestic Product (GDP) and Foreign Exchange Rate (FXR).

Table 1

Date: 05/30/21 Time: 18:49

Sample: 1990 2019

	ROE	NPLR	CAR	CLAR	LTDR	GDP	IR	Inflation	FX	Unemployment
Mean	0.35198	-0.21912	5.3928	0.0284	0.50477	28.295	11.8068	10.7279	11.7333	2.715333
Median	0.35641	-0.32412	2.99934	0.0267	0.45727	14.315	11.88	7.93292	8.65	2.605
Maximum	0.72084	10.70217	37.0875	0.0772	1.18906	96.61	15.5	55.2413	29.1	3.71
Minimum	-0.5678	-10.5447	-2.1775	0.0067	0.2633	7.52	6.8	-10.773	2.1	2.04
Std. Dev.	0.2699	5.905204	7.84011	0.0203	0.22545	27.3759	2.1901	14.2063	7.43813	0.520197
Skewness	-1.1988	-0.0564	2.74254	0.8122	1.75933	1.30937	-0.7595	1.52524	0.83881	0.345809
Kurtosis	5.55471	2.080004	10.762	2.8374	5.99848	3.43185	3.70772	5.54498	2.66027	1.694453
Jarque-Bera	15.3432	1.073898	112.918	3.3316	26.7148	8.80536	3.51053	19.728	3.66228	2.728485
Probability	0.00047	0.584529	0	0.189	2E-06	0.01224	0.17286	5.2E-05	0.16023	0.255574

Sum	10.5595	-6.57361	161.784	0.8533	15.1431	848.85	354.205	321.836	352	81.46
Sum Sq.	2.11251	1011.272	1782.55	0.0119	1.47397	21733.8	139.099	5852.79	1604.45	7.847547
Dev.										
Observations	30	30	30	30	30	30	30	30	30	30

The total observations of the study were 30 financial report of commercial bank of Ethiopia from the year 1990 to 2019 periods. The table 1 demonstrates the mean, standard deviation, minimum and maximum values for the dependent and independent variables of Commercial Bank of Ethiopia.

The ROE measured by the net income before tax divided by total equity capital has a mean value of 35 percent. This indicates that the sample bank on average earned a NIBT of 35 percent of each birr invested in. This implies that, CBE on average earned 35 percent of each birr invested in from the year 1990 to 2019. ROE reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet. Since ROE reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet, the higher ROE shows that the companies capability in of generating cash internally. The maximum value of ROE was 72 and minimum value of -56. That means the most profitable and least profitable of CBE is 72 birr and loss of 56 birr of net income for a single birr invested by the shareholders in the firm respectively. Regarding the standard deviation, it means that the value of return on equity can vary from its mean to both sides by 26%.

Regarding the independent variables, The non-performing which is measured by nonperforming loan divided by total loan has a mean value of -0.219 with a maximum and minimum value of 10.7 and -10.54 present respectively. Capital adequacy which is measured by total equity divided by total assets has a mean ratio of nearly 5.39 of the asset of commercial bank of Ethiopia. This means on average CBE equity financing amount was represented 5.39. The highest capital adequacy ratio for the bank in a particular year was 37.08 from the annual report of CBE during 1990-2019. The minimum capital adequacy ratio was -2.17. The standard deviation value of capital adequacy ratio was 7.84 which means the mean value can deviate to both side by this amount. Besides, cost per loan asset ratio which is measured by operating asset divided by total amount of loans was used as an explained variable for loan risk the bank is enduring has a mean value of 2.84% with a Maximum and minimum value of 7.72% and 0 present respectively. Loan

to deposit ratio was used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period. The mean of loan to deposit ratio of CBE was 50.4%. It reveals that loan represents on average nearly 50.4% of deposit of Commercial Bank of Ethiopia. The highest loan to deposit ratio for the bank was 7.72%. In the same way the minimum ratio for a bank in a year was 0.67%. The value of loan to deposit ratio can vary from its mean to both sides by 22.54%.

The external variables used in the study were GDP, inflation, interest rate, foreign exchange and unemployment. With regard to macroeconomic variables also shows that the mean real GDP growth in Ethiopia for the last thirty years was 28.29, with a maximum of 96.61 and a minimum of 7.52 with standard deviation of 27.37 both said; this implies that economic growth in Ethiopia during the period of 1990 to 2019 remains unstable changing frequently and the result of this unstable economic growth led positive effect to the Commercial Bank of Ethiopia profitability. The other macro-economic variable employed in this study interest rate has a mean value of 11.80 with a maximum and minimum value of 15.5 and 6.8 respectively, had a lowest of 2.19 compared to GDP; this implies that interest rate in Ethiopia during the study period remains somewhat stably changing frequently. The third external variable used in the study was inflation has a mean value of 10.72 with a maximum and minimum value of 55.2 and -10.77 respectively with a standard deviation of 14.20. The fourth external variable used in the study was foreign exchange rate has a mean value of 11.7 with a maximum and minimum value of 29 and 2.1 respectively with a standard deviation of 7.43. And finally the external variable used in the study was unemployment has a mean value of 2.71 with a maximum and minimum value of 3.71 and 2.04 respectively, had a lowest of 0.52 compared to all macroeconomic factors; this implies that unemployment rate in Ethiopia during the study period remains somewhat stable.

4.2 Diagnostic Test

Regression analysis uses ordinary least square (OLS) method to determine the coefficient estimators of both α (constant term) and β (independent variables). After performing a regression analysis, diagnostic test should be done to check if the model works well for the data at hand (Brooks, 2008). A first step of this regression diagnostic is to inspect the significance of the regression beta coefficients, as well as, the R² that tells us how well the linear regression model fits to the data. The regression model might not be the best way to understand the data on hand

there could be non-linear relationships between the outcome and the predictor variables, existence of important variables that you left out from your model and presence of outliers due to an error in data collection and entry (Brooks, 2008). The diagnostic tests were undertaken to ensure that the assumptions of classical linear regression model assumptions are met. Using regression analysis, not only we could check if linear regression assumptions are met, but we could improve your model in an exploratory way that is Best Linear Unbiased Estimators (BLUE).

Heteroskedasticity test

Heteroskedasticity is a systematic change in the spread of the residuals over the range of measured values. Heteroskedasticity is a problem because ordinary least squares (OLS) regression assumes that all residuals are drawn from a population that has a constant variance (homoscedasticity). To achieve the regression assumptions and be able to trust the results, the residuals should have a constant variance. Anytime violate of heteroskedasticity assumption occur two problems occur heteroscedasticity makes the coefficient estimates less précises that are further from the correct population value and heteroskedasticity tends to produce p-values that are smaller than they should be (Brooks, 2008). This effect occurs because heteroskedasticity increases the variance of the coefficient estimates but the OLS procedure does not detect this increase. Consequently, OLS calculates the t-values and F-values using an underestimated amount of variance. This problem can lead you to conclude that a model term is statistically significant when it is actually not significant. Breusch Pagan Godfrey test was used in this research to test the presence of the heteroskedasticity.

The hypothesis for the model specification test was formulated as follow;

H₀: There is no heteroskedasticity problem.

H₁: There is heteroskedasticity problem.

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

Table 2

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.770869	Prob. F(9,20)	0.6443
Obs*R-squared	7.726481	Prob. Chi-Square(9)	0.5619
Scaled explained SS	2.262063	Prob. Chi-Square(9)	0.9866

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/16/21 Time: 11:23

Sample: 1990 2019

Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005687	0.051238	0.110989	0.9127
NPLR	0.001441	0.001050	1.371821	0.1853
LTDR	0.024891	0.043289	0.574990	0.5717
CAR	-0.000408	0.001546	-0.264095	0.7944
CLAR	0.612507	0.458481	1.335950	0.1966
GDP	-7.96E-05	0.000361	-0.220158	0.8280
INFLATION	-0.000716	0.000693	-1.034123	0.3134
INTEREST_RATE	-0.002847	0.002824	-1.008232	0.3254
FX	-3.07E-06	2.75E-05	-0.111684	0.9122
UNEMPLOY	0.009395	0.016495	0.569528	0.5753
R-squared	0.257549	Mean dependent var	0.023053	
Adjusted R-squared	-0.076553	S.D. dependent var	0.026912	
S.E. of regression	0.027923	Akaike info criterion	-4.057504	
Sum squared resid	0.015594	Schwarz criterion	-3.590438	
Log likelihood	70.86256	Hannan-Quinn criter.	-3.908085	
F-statistic	0.770869	Durbin-Watson stat	2.440063	
Prob(F-statistic)	0.644251			

According to table 2 both the F-statistic and chi-square (χ^2) test give the same conclusion that there is no significant evidence for the presence of heteroskedasticity in the model. Since the p-values in all of the cases were above 0.05, that shows that there is no evidence for the presence of the heteroskedasticity.

Multicollinearity test

A key goal of regression analysis is to isolate the relationship between each independent variable and the dependent variable. If the independent variables tend to change in unison the coefficient estimates can swing wildly based on which other independent variables are in the model. The coefficients become very sensitive to small changes in the model. Multicollinearity is a problem because independent variables should be independent. If the degree of correlation between

independent variables is high enough, it can cause problems and makes it hard for interpretation of model. Multicollinearity weakens the statistical power of the regression model it is hard to trust the p-values to identify independent variables that are statistically significant.

There are different views towards the multicollinearity problem. According to Cooper and Schendlar (2003) a correlation above 0.8 between explanatory variables should be a problem for the model. On the other hand, Gujarati (2004) stated that multicollinearity exist when the correlation coefficient among variables greater than 0.75. Hair (2006) argued that also correlation coefficient below 0.9 may not cause serious multicollinearity problem. Lastly, Kennedy (2008) stated that multicollinearity problem exists when the correlation coefficient among the variables are greater than 0.70.

This study adopts the view of Kennedy (2008) table 3 showed that there is no strong pair-wise correlation between the explanatory variables (NPLR,LDP,CAR,CLA, GDP, Inflation, Interest rate, FXR and unemployment)the highest correlation coefficient is 0.69 between Loan to deposit and Capital adequacy ratio. Thus, it can be concluded using the rule of Kennedy (2008) that all variables have low correlation power that implies no multicollinearity problem which enhanced the reliability for regression analysis in this study.

Table 3

	ROE	NPLR	LTDR	CAR	CLAR	GDP	INF	IR	FX	Unemp
ROE	1	0.011723	0.13035	0.512367	-0.31026	0.124277	-0.084102	0.157182	-0.04389	-0.254143
NPLR	0.011723	1	0.157628	0.345171	0.21811	0.293315	0.138621	0.285429	-0.04183	-0.213305
LTDR	0.13035	0.157628	1	0.694705	-0.37717	0.107711	-0.290802	0.339837	-0.19827	0.113119
CAR	0.512367	0.345171	0.694705	1	-0.13792	0.459045	-0.245305	0.152766	-0.03366	-0.404283
CLAR	-0.31026	0.21811	-0.37717	-0.13792	1	0.628069	0.216167	0.050909	0.027644	-0.477592
GDP	0.124277	0.293315	0.107711	0.459045	0.628069	1	0.049954	0.194135	-0.02437	-0.629993
INFLATION	-0.0841	0.138621	-0.2908	-0.24531	0.216167	0.049954	1	0.073768	0.104615	-0.153559
IR	0.157182	0.285429	0.339837	0.152766	0.050909	0.194135	0.073768	1	-0.10216	0.126889
FX	-0.04389	-0.04183	-0.19827	-0.03366	0.027644	-0.02437	0.104615	-0.10216	1	-0.089683
UNEMPLOY	-0.25414	-0.21331	0.113119	-0.40428	-0.47759	-0.62999	-0.153559	0.126889	-0.08968	1

Autocorrelation test

A time series data's points out changes in index of times. The fact that time series data is ordered makes it unique in the data space because it often displays serial dependence. These attribute to violation of the fundamental assumptions of many statistical analyses that data is statistically independent (no autocorrelated). Autocorrelation represents the degree of similarity between a given time series and a lagged version of itself over successive time intervals it occurs when error terms are not independent and identically distributed residuals (Brooks, 2008). Autocorrelation analysis measures the relationship of the observations between the different points in time, and thus seeks for a pattern or trend over the time series.

The value of autocorrelation ranges from -1 to 1 it can be either positive or negative. It ranges from -1 (perfectly negative autocorrelation) to 1 (perfectly positive autocorrelation). Positive autocorrelation means that the increase observed in a time interval leads to a proportionate increase in the lagged time interval. Conversely, negative autocorrelation represents that the increase observed in a time interval leads to a proportionate decrease in the lagged time interval.

One of the assumptions of regression analysis is that the data has no autocorrelation. Autocorrelation results a miss-specification or genuine autocorrelation of the model error term. In the presence of such a phenomenon, ordinary least squares are no-longer BLUE (Best Linear Unbiased estimators). In such cases the result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated (Brooks, 2008). This may lead to misleading results on the significance of parameters in the model. Breusch-Godfrey Serial Correlation LM Test was used to detect autocorrelation problem.

Ho: There is no autocorrelation

H1: There is autocorrelation

Table 4

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.407011	Prob. F(2,18)	0.6716
Obs*R-squared	1.298003	Prob. Chi-Square(2)	0.5226

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/16/21 Time: 11:26

Sample: 1990 2019

Included observations: 30

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPLR	-0.000961	0.007718	-0.124460	0.9023
LTDR	-0.047665	0.306925	-0.155300	0.8783
CAR	0.001267	0.010716	0.118242	0.9072
CLAR	-0.434101	3.209486	-0.135256	0.8939
GDP	-0.000235	0.002498	-0.094063	0.9261
INFLATION	0.000217	0.004770	0.045519	0.9642
INTEREST_RATE	0.004208	0.021046	0.199932	0.8438
FX	4.03E-05	0.000194	0.207887	0.8377
UNEMPLOY	-0.016401	0.114757	-0.142923	0.8879
C	0.030553	0.359900	0.084893	0.9333
RESID(-1)	-0.237697	0.267025	-0.890166	0.3851
RESID(-2)	0.012839	0.299898	0.042813	0.9663
R-squared	0.043267	Mean dependent var	9.99E-17	
Adjusted R-squared	-0.541404	S.D. dependent var	0.154427	
S.E. of regression	0.191726	Akaike info criterion	-0.176328	
Sum squared resid	0.661657	Schwarz criterion	0.384150	
Log likelihood	14.64493	Hannan-Quinn criter.	0.002974	
F-statistic	0.074002	Durbin-Watson stat	1.933781	
Prob(F-statistic)	0.999953			

As can be seen from the above tables 4 Chi-Square and P-value of the model is 0.5226 and 0.6716 respectively which is above the significance level of 5% hence, the null hypothesis of no autocorrelation is failed to be rejected this implies that there is no significant evidence for the presence of autocorrelation in the model.

Normality test

When dealing with very small samples, it is important to check for a possible violation of the normality assumption. A normality test is a statistical process used to determine if a sample or any group of data has been drawn from a normally distributed population (within some tolerance). According to (Brooks, 2008) calculation of confidence intervals and various significance tests for coefficients are all based on the assumptions of normally distributed errors.

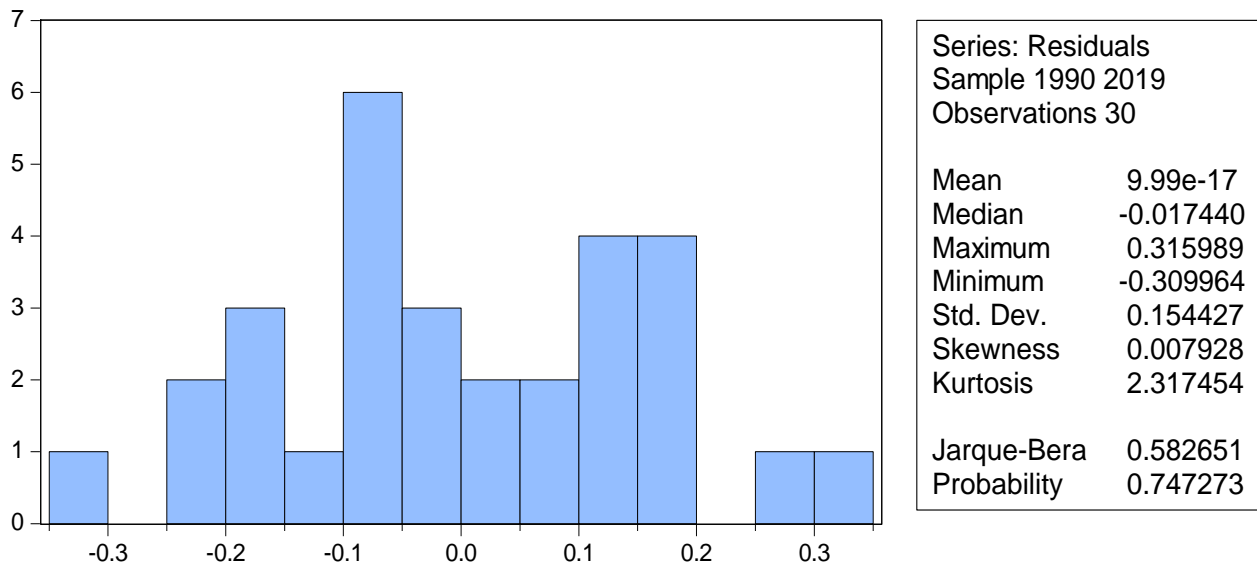
F -test and related procedures are pretty robust to the normality assumption, both in terms of significance level and power. Violations of normality create problems for determining whether model coefficients are significantly different from zero and for calculating confidence intervals for forecasts (Brooks, 2008). If the error distribution is significantly non-normal, confidence intervals may be too wide or too narrow. Sometimes the error distribution is "skewed" by the presence of a few large outliers. Since parameter estimation is based on the minimization of squared error, a few extreme observations can exert a disproportionate influence on parameter estimates. In this study, the normality of the data was checked with the popular Bera- Jarque test statistic

The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

Figure 3 Normal distribution



As shown in figure 3, the histogram is bell-shaped and the Bera-Jarque statistic is not significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05 to not reject the null of normality at the 5% level so, the residuals are normally distributed in this study, concluded that there is no the problem of normality on the model.

4.3 Regression Analysis

This section presents the overall results of the regression analysis on the effect of credit risk and macroeconomic factors on the performance of commercial bank of Ethiopia. In this study ROE was used as proxy for performance measure, Non-Performing Loan Ratio (NPLR) Ratio, Capital Adequacy ratio (CAR), Loan to Deposit ratio (LTDR), Cost per Loan Asset ratio (CLAR) were used for measurement of credit risk and Inflation rate (INF), Interest rate (IR), Gross Domestic Product (GDP) and Foreign Exchange Rate (FXR) were used as a measurement of macroeconomic factor.

Table 2 shows the regression analysis for ROE. In this regression analysis the dependent variable is ROE while the independent variables are NPLR, CAR, LTDR, CLAR, INF, IR, GDP and FXR.

Regression result of model specification

The estimation results reported in Table 5 depicted that, The R-squared and Adjusted R-squared values of 0.67 and 0.52 respectively is an indication that the model is a good fit. This means more than 52% of variations in return on equity on commercial bank of Ethiopia were explained by independent variables included in the model. However, the remaining 48% changes in return on equity on commercial bank of Ethiopian are caused by other factors that are not included in the model. Furthermore, the F-statistic that tells us the combined effect of explanatory variables on the dependent variable was 4.56 and the probability of not rejecting the null hypothesis that there is no statistically significant relationship existing between the dependent variable (ROE) and the independent variables, is 0.002262 indicates that the overall model is highly significant at 1% and that all the independent variables are jointly significant in causing variation in return on equity. In other words, the null hypothesis that states there is no relationship between ROE and the eight independent variables in Commercial Bank of Ethiopia is going to be rejected.

Table 5

Dependent Variable: ROE
 Method: Least Squares
 Date: 05/16/21 Time: 11:37
 Sample: 1990 2019
 Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPLR	-0.011156	0.006995	-1.594744	0.1265
LTDR	-1.106569	0.288283	-3.838482	0.0010
CAR	0.037669	0.010298	3.657776	0.0016
CLAR	-6.649818	3.053228	-2.177963	0.0415
GDP	-0.000172	0.002407	-0.071397	0.9438
INFLATION	0.001131	0.004612	0.245278	0.8087
INTEREST_RATE	0.048370	0.018804	2.572328	0.0182
FX	-0.000215	0.000183	-1.175422	0.2536
UNEMPLOY	-0.034797	0.109850	-0.316769	0.7547
C	0.417432	0.341215	1.223368	0.2354
R-squared	0.672626	Mean dependent var	0.351982	
Adjusted R-squared	0.525308	S.D. dependent var	0.269898	
S.E. of regression	0.185954	Akaike info criterion	-0.265431	
Sum squared resid	0.691579	Schwarz criterion	0.201635	
Log likelihood	13.98147	Hannan-Quinn criter.	-0.116013	
F-statistic	4.565808	Durbin-Watson stat	2.311824	
Prob(F-statistic)	0.002262			

Capital Adequacy (CA) and return on asset (ROA)

The Capital adequacy ratio is a common measure used to assess a bank's capital strength, or in other words the extent to which banks relies on its equity as a source of accumulating asset. As the above regression output table 5 presented that, the coefficient of capital adequacy (CA) measured by Total Equity to Total Asset is 0.037669 and its P-value is 0.0016. This implies that for the study period (1990-2019) there was significant correlation between capital adequacy ratio and profitability measurement by ROE of commercial banks of Ethiopia. Holding other independent variables constant at their average value, when capital adequacy (CA) increase by one percent, return on equity (ROE) of commercial bank of Ethiopia was increase by 4% and statistically significant at 1% of significant level. The null hypothesis is rejected based on the result that states capital adequacy has no significant effect on ROE. This is because there is sufficient evidence to support the existence of relationship between ROE and CA. Therefore, the studies alternative hypothesis which was termed as significant relationship between capital adequacy and profitability as it measures in terms of return on equity (ROE) had failed to be reject.

The relationship between CA and ROE is positive this could be attributed to the fact that a bank with high capital adequacy ratio has high financial performance (ROE). The possible reason for the significant positive relationship could be that, increase in capital level brings higher financial performance for commercial bank of Ethiopian since by having more capital; a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans.

This finding is consistent with previous studies with (Flamini, Valentina, McDonald, & Liliana, 2009; Ebenezer, Omar and Kamil, 2017; Difabachew, 2017; and Kharabsheh, 2019). According to those researchers a bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability, this finding reflecting the sound financial condition of commercial bank of Ethiopian.

Loan to Deposit ratio (LTDR) and return on equity (ROE)

Table 1 presented the coefficient of Loan to deposit ratio (LTDR) measured by total loan to total deposit is -1.106569 and its P-value are 0.0010. Holding other independent variables constant at their average value, when loan to deposit increased by one percent, return on equity (ROE) of commercial bank of Ethiopia would decrease by 1 percent and statistically significant at 1% level of significant.

As a result, the null hypothesis namely which states there is insignificant relationship between bank specific variable, loan to deposit ratio and profitability as it measures in terms of return on equity (ROE) was rejected because there is no sufficient evidence to support the absence of relationship between ROE and Loan to Deposit ratio, while the alternative hypothesis that states that there is significant relationship between bank specific variable, loan to deposit and profitability as it measures in terms of return on equity (ROE) is failed to be rejected.

The relationship between ROE and LTDR is negative this could be attributed to the fact that a bank which has high loan to deposit ratio has low financial performance (ROE). The possible reason for the significant negative relationship could be that if the bank isn't increasing its deposits or its deposits are shrinking, the bank will have less money to lend. In this case, banks will borrow money to satisfy its loan demand of customers in an attempt to boost interest income. However, if a bank is using debt to finance its lending operations instead of deposits, the

bank will have debt servicing costs since it will need to pay interest on the debt. The negative effect of LTDR to the performance of Commercial bank of Ethiopia could be attributed to the fact that the bank borrows money to lend to its customers that will typically have lower profit margins and more debt.

This finding is consistent with previous studies with (Shiri, Chirume and Fields, 2015) and (Akber and Dey, 2020). According to those researcher's loan to deposit ratio has a negative relationship with ROE this is as a results from the bank's inability to meet its obligations towards cash to fund its contractual needs as repayment of loan decreases. The obligations of the banks take account of lending to the customers, investment commitments and meeting credit drawings in the normal progression of business. This therefore implies that the liquidity position of a commercial bank is largely driven by the nature of its business and is further characterized by the ability to meet all its customers cash needs. Higher loan to deposit ratio is associated with low financial performance (ROE).

Cost per loan asset ratio (CLAR) and return on equity (ROE)

Table 1 presented that the coefficient of cost per loan asset ratio (CLAR) measured by operating cost to Total Amount of loan is -6.649818 and its P-value is 0.0415. Holding other independent variables constant at their average value, when cost per loan asset ratio (CLAR) increased by one percent, return on equity (ROE) of commercial bank of Ethiopia would be decreased by 7 percent and statistically significant at 5% level of significant. This implies that for the study period (1990-2019) there was significant correlation between cost per loan asset ratio and profitability measurement by ROE of commercial banks of Ethiopia.

The relationship between CLAR and ROE is negative this could be attributed to the fact that a bank which has high cost per loan asset ratio has low financial performance (ROE). The cost to loan ratio appears the most important determinant variable on the profit of banks. The possible reason for the significant negative relationship could be that cost per loan assets is viewed as an indicator of loan risk. Banks that are efficient in managing their expenses (costs), holding other factors constant, earn high profits. Therefore, it is expected that cost per loan assets and bank performance to be negatively associated. This may not always be true because in cases where there is efficient credit administration the bank would be able to get a profit. The negative effect

of CLAR to the performance of Commercial bank of Ethiopia could be attributed to the fact that the bank is not efficient in distributing loans to customers.

This finding is consistent with previous studies with Athanasoglou, Brissimis and Delis (2008); Goddard, Liu, Molyneux and Wilson (2009), Poudel (2012) and Awoke (2014). According to those researchers 'banks with higher cost per loan asset ratio has a negative relationship with ROE this is as results from the bank's inability to manage the cost of giving loan to the customers. They suggested that banks need to undertake lending at lowest possible cost and started further research work on the efficiency of Banks in conducting credit administrating activities.

Interest Rate

The interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. The money to be repaid is usually more than the borrowed amount since lenders require compensation for the loss of use of the money during the loan period. The lender could have invested the funds during that period instead of providing a loan, which would have generated income from the asset. The difference between the total repayment sum and the original loan is the interest charged. The interest charged is applied to the principal amount.

As the above regression output table 1 presented that, the coefficient of interest rate (IR) is 0.048370 and its P-value is 0.0182. This implies that for the study period (1990-2019) there was significant correlation between interest rate and profitability measurement by ROE of commercial banks of Ethiopia. Holding other independent variables constant at their average value, when interest rate (IR) increase by one percent, return on equity (ROE) of commercial bank of Ethiopia was increase by 5% and statistically significant at 2% of significant level. The null hypothesis is rejected based on the result that states interest rate has no significant effect on ROE. This is because there is sufficient evidence to support the existence of relationship between ROE and IR. Therefore, the studies alternative hypothesis which was termed as significant relationship between interest rate and profitability as it measures in terms of return on equity (ROE) had failed to be rejected.

The relationship between IR and ROE is positive this could be attributed to the fact that a bank which has high interest rate has higher financial performance (ROE). The possible reason for the significant positive relationship could be that when the real interest rate by the central bank

increases, the lending rate by commercial banks to customers also increases which contribute to profitability of the commercial bank of Ethiopia. The positive but significant relationship of the real interest rate on bank profitability conforms to the findings of Alper and Anbar (2011); Topak and Talu(2017).

5. CHAPTER FIVE

SUMMARY, CONCLUSIONS and RECOMMENDATIONS

Based on the finding of the study summary and conclusions are drawn and possible recommendations are forwarded. Accordingly, the first section presents the summary and conclusion part and the second section present the possible recommendation.

5.1 Summary

The main objective of this study was to examine the effect of credit risk and macroeconomic factors on the performance of Commercial Bank of Ethiopia. According to previous studies made on the effect of credit risk and macroeconomic factors on financial performance of bank, performance is affected by both credit risk and external factors.

Credit risk is under the control bank's management the management should have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred. Indicators of credit risk used in this study are nonperforming loan ratio, capital adequacy ratio, cost per loan asset ratio, and loan to deposit ratio. Furthermore, external factors represent events outside the influence of the banks and also called macroeconomic factor which are GDP, Inflation, Interest rate, Foreign exchange rate and Unemployment among others. The financial performance measure used in the research is Return on Asset. By using credit risk indicators and macroeconomic factors this study examined the effect of credit risk and macroeconomic factors over the period of 1990-2019, which were analyzed using descriptive statistics, and multiple linear regression analysis. The analyses were made in line with the specific research objectives and stated hypotheses formulated in the study.

Thus, annual financial report of commercial bank of Ethiopia for thirty years was used for the analysis purpose. Data used for the credit risk indication were obtained from the bank audited financial reports, whereas data of external factors were obtained from NBE, MOFED and World Bank data. Before making regression analysis, the study goes through all diagnostic tests, including multicollinearity, hetroskeadacity; normality and autocorrelation were made for the classical linear regression model by using E-views8 software. Regression Analysis was identified

as the most appropriate tool for econometric analysis of the data. The descriptive statistics revealed the data to be normal. Also the assumptions needed to be fulfilled for OLS were tested; the data was found to be homoscedastic, free of autocorrelation, free of Multicollinearity and normally distributed.

In relation to financial performance measured by ROE; loan to deposit ratio, capital adequacy ratio, cost per loan asset ratio and interest have significant impact on the financial performance of Commercial Bank of Ethiopian, but non-performing loan, GDP, Inflation, Foreign exchange rate and Unemployment have no significant impact. CAR and IR have positive coefficient, but LTDR and CLAR have negative coefficient. Except CAR and IR all independent variables have negative relationship with return on equity as in agreement with the hypothesis. The explanatory variables included in this study jointly explain about 67 percent of the variation in return on equity. The Capital adequacy ratio measured by Total Equity to Total Asset used to assess a bank's capital strength. Capital adequacy (CAR) has a positive coefficient 0.037669 with P-value of 0.0016. This implies that for the study period (1990-2019) there was significant correlation between capital adequacy ratio and profitability measurement by ROE of commercial banks of Ethiopia. The possible reason for the significant positive relationship could be that, increase in capital level brings higher financial performance for commercial bank of Ethiopian since by having more capital; a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans. The interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. As the above regression output table 1 presented that, the coefficient of interest rate (IR) is 0.048370 and its P-value is 0.0182. This implies that for the study period (1990-2019) there was significant correlation between interest rate and profitability measurement by ROE of commercial banks of Ethiopia. Loan to deposit ratio (LTDR) measured by total loan to total deposit is -1.106569 and its P-value are 0.0010. Holding other independent variables constant at their average value, when loan to deposit increased by one percent, return on equity (ROE) of commercial bank of Ethiopia would decrease by 1 percent and statistically significant at 1% level of significant. The negative effect of LTDR to the performance of Commercial bank of Ethiopia could be attributed to the fact that the bank borrows money to lend to its customers that will typically have lower profit margins and more debt. CLAR measured by operating cost to Total Amount of loan is -6.649818 and its P-value is 0.0415. The possible reason for the significant negative relationship could be that cost

per loan assets is viewed as an indicator of loan risk. Banks that are efficient in managing their expenses (costs), holding other factors constant, earn high profits.

5.2 Conclusion

Based on the findings, it can be concluded that Capital adequacy and Interest rate, have significant impact on ROE with a positive relationship; which means any increase/decrease on the value of these variables leads to an increase/decrease on financial performance of Commercial bank of Ethiopia (ROE). And also Cost per loan asset and Loan to deposit ratio have significant impact on ROE with a negative relationship; which means any increase/decrease on the value of these variables leads to a decrease/increase on financial performance of Commercial banks (ROE) respectively. In contrast, non-performing loan, GDP, Inflation, Interest rate, Foreign exchange rate and Unemployment has no significant relationship with ROE.

5.3 Recommendation

Based on the study finding, the financial performance of commercial bank of Ethiopian measured by ROE were mainly affected by credits risk indicators; i.e. Loan to deposit ratio, Cost per loan asset ratio and Capital adequacy ratio. Since the management of the bank has control over this internal factors, it is possible to improve the performance of the bank by giving more attention on the identified internal factors such as, Capital adequacy ratio, Loan to deposit ratio, Cost per loan asset ratio. Management bodies of Commercial Bank of Ethiopia should strive to strengthen the credit risk management system of the bank like Loan to deposit ratio and Cost per loan asset ratio, Capital adequacy. Since, they are found to be the most significant variables that affect financial performances of Commercial Bank of Ethiopia. Macroeconomic factors that influence the performance of the bank was Interest rate. These variable has a positive and significant effect on the performance of the bank. Based on these are the recommendation of the study

- They have to Strengthening their capital to make them the best financial performer by selling their share to existing shareholders and new entrants to the banking industry investment.
- Mobilization of money through deposit and loan are the main income source of the banking sector because the banks with more deposit and less loan will have more interest income than interest expense. These will increase the performance of the bank, so they have to work hard on Commercial Bank of Ethiopia lending behavior. The bank should be nonaggressive lender to avoid the exposure of the bank to credit risk. Proper screening of the borrower will lead to enhance the level of the risk exposure.
- It is better for Commercial Bank of Ethiopia to be efficient in distributing loans to customers to manage their expenses (costs) efficiently this will produce a higher profit for the bank. Proper credit administration of Commercial bank of Ethiopia is more crucial to reduce cost associated with loan and to earn profit in the banking industry.
- With regard to macroeconomic factor Interest rate shows a positive relationship with performance of Commercial Bank of Ethiopia. The existence of higher interest rate allows depositors to save money at the bank, instead of spending. The higher the interest rate, the more willing people are to save money at the bank, as it encourages them to be profitable.

Finally, this study investigates the determinants of financial performance of commercial bank of Ethiopia. But, the variables included in the study were not exhaustive enough. Other researchers may include the rest unseen credit risk indicators and macroeconomic factors.

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