



THE EFFECT OF CREDIT RISK ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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THE EFFECT OF CREDIT RISK ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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DECLARATION

I, Gzat Tarekegn, hereby declare that this study entitled “The effect of credit risk on profitability of private commercial banks in Ethiopia” is my original work prepared under the guidance of my advisor Alem Hagos (PHD). This paper submitted for the award of the Degree of Masters of Business Administration (MBA) in Finance and it has not previously submitted to any college or university.

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CERTIFICATE OF THESIS APPROVAL

This is to certify that the thesis entitled “The effect of credit risk on profitability of private commercial banks in Ethiopia” prepared by Gzat Tarekegn. Moreover, submitted in partial fulfillment of the requirements for the Degree of Master of Business Administration in Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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LIST OF ACRONYMS AND ABBREVIATIONS

BS: Bank Size	MENA: Middle East and North Africa
CAR: Capital Adequacy Ratio	MoFED: Ministry of Finance and Economic Development
CBE: Commercial Bank of Ethiopia	NBE: National Bank of Ethiopia
CSA: Central Statistical Authority of Ethiopia	NPL: Non-performing Loans
EBIT: Earnings before Interest and Tax	NPLR: Non-performing Loan Ratio
GDP: Gross Domestic Product	NIM: Net Interest Margin
GCC: Gulf Cooperation Council	OLS: Ordinary Least Square
IS: Interest Spread Rate	PAT: Profit after Tax
INF: Inflation Rate	ROA: Return on Assets ROE: Return on Equity
LLPR: Loan Loss Provision Ratio	ROI: Return on Investment
LR: Liquidity Ratio	TL: Total Loan

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ABSTRACT

Since extending credit is one of the primary sources of revenue for commercial banks, the credit risk associated with that loan has an effect on the profitability of bank. The purpose of this study is to examine the effect of credit risk on profitability in six sample Ethiopian private commercial banks using panel data from 2010 to 2020. The study employs a quantitative approach and relies on the description of EViews 10 outputs, with empirical analysis conducted using a fixed effect regression model. In the model the researcher define Return on Asset (ROA) as profitability indicator while nonperforming loan ratio, capital adequacy ratio, loan loss provision ratio, liquidity ratio, bank size, interest spread rate, inflation and GDP as credit risk indicators. Secondary data used for six banks which stayed in the industry for twenty or more years among sixteen private commercial banks which are operational at the moment in Ethiopian banking industry. Data for this analysis obtained from banks' annual reports, National Bank annual reports, Ministry of Finance, and Economic Development. The regression result shows that non-performing loan ratio and loan loss provision ratio show negative and significant effect on profitability of private commercial banks in Ethiopia. However, capital adequacy ratio, bank size, liquidity ratio and GDP show positive and significant effect on profitability of private commercial banks in Ethiopia. The research concluded that credit risk has significant effect on profitability of private commercial banks in Ethiopia. Hence, the study recommend in support of each variable for private commercial banks in Ethiopia needs strong credit risk management policy by learning from other developed countries that have better experience in the industry, improving performance needs well established standards and overall objectives to reduce the level of credit risk exposures.

Keywords: Credit risk, Bank, Profitability.

CHAPTER ONE

INTRODUCTION

1.1 Introduction into the Chapter

This chapter contains the paper's overall introduction. The first section covers background of the study, and organizational background followed by statement of the problem, research question, objective of the study, hypothesis, significant of the study, scope of the study, limitation of the study, and lastly organization of the paper.

1.2 Background of the Study

Banks are one of the institutions that contribute to economic development by providing financial services to the public and businesses. They achieve this economic development by acting as intermediaries in deposit taking, credit providing, currency exchange, and money transfers (Moussu C, 2013). Commercial banks play a critical role in the economy of any country as financial intermediaries. Commercial banks play an essential role in Ethiopia's economic growth as financial intermediaries, moving cash from depositors to borrowers for investment. The financial system's primary function is to transfer funds from savers to borrowers. If this process carried out effectively, profitability will improve, as will the flow of funds, and customer service quality will improve.

As a result, commercial banks' efficient intermediation is critical for developing nations to attain significant economic growth, whereas their insolvency leads to economic crises. However, commercial banks' intermediation function comes with a variety of hazards, each with a different impact on bank performance, such as credit risk, liquidity risk, market risk, operational risk, and so on (Van Gestel & Baesens, 2008). Credit risk is by far the most critical risk that banks face, and more than any other risk, the success of their company is dependent on precise measurement and efficient management of this risk (Giesecke, 2004).

The likelihood that debtors may fail to meet contractually scheduled commitments according to agree upon terms is referred to as credit risk (Basel Committee, 1999). It is also defined by the

Basel Committee on Banking Supervision (2001) as the risk of losing the outstanding loan in part or entirely owing to credit events (default risk). It is true that, the credit function of banks improves investors' ability to exploit desired profitable initiatives. Credit creation is the primary source of revenue for banks. However, both the lender and the borrower face significant risks because of this transaction. The possibility of a trading partner failing to meet his or her contractual obligations on time or at all can undermine the smooth operation of the Bank's business. A bank with a high credit risk, on the other hand, has a significant danger of insolvency, putting depositors at risk. Banks have a tendency to take unnecessary risks in order to survive and sustain acceptable profit levels in this highly competitive climate. However, it exposes the banks to credit risk. The greater the exposure of a bank to credit risk, the greater the likelihood of a financial crisis, and vice versa. Loans, according to the Basel Committee on Banking Supervision (1999), are the greatest and most visible source of credit risk.

Credit risk management is vital to bank management, according to Bessis (2005), since banks are risk machines that take hazards, transform them, and embed them in banking products and services. Risks are unknowns that result in adverse variations in profitability, which reflects the bank's financial success, or losses, which reflects the bank's failure.

Profitability is a measure of a bank's ability to bear risk and/or raise capital, as well as an indicator of the bank's performance and managerial quality (Li & Zou, 2014). In recent years, the banking sector around the world has undergone considerable changes in its environment because of increased demand for financial services and high-tech facilities, which has a significant influence on profitability (Belayneh Hailegeorgis, 2011).

Bank profitability has influenced by both internal and external variables over time. Short (1979) and Bourke (1989) found that the factors of commercial bank profitability are as follows: The internal factors of profitability, which are controllable by management, and the external factors, which are outside the control of the institution's administration, can be separated into two categories. Although the definition of profitability differs between studies, the factors that influence profitability have thoroughly investigated empirically. Regardless of profitability measurements, most banking studies (Belayneh, 2011, Birhanu, 2012, Habtamu, 2012) have found that both the internal and external environments of the organization are essential

determinants in high profitability. As a result, the factors that examined in this study are dividing into two categories: internal and external profitability factors.

There are eighteen commercial banks functioning in Ethiopia as of 2020, all of which supervised by the National Bank of Ethiopia. Sixteen are private commercial banks, with the rest being government-owned. Looking at the financial statements of these commercial banks (2010-2020), most of them have high provisions for loans and advances, confirming the conclusion of the Basel Committee on Banking Supervision (1999) that loans are the greatest and most evident source of credit risk.

As a result, every bank in the world must be aware of the need to identify, assess, monitor, and control credit risk, as well as determine how credit risks might reduce. This means a bank should have enough capital to cover these risks and fairly compensated for the risks it takes. Sanhita SUCHARITA, Narayan SETHI, Kalpana SAHOO (2003).

The awareness of the high provision expense to loan and advances issued by banks inspired this research work to examine in depth the factors that contribute to the bank's profitability and offer methods to alleviate the negative impact on the profitability of Ethiopian private commercial banks (Engdawork Tadesse, 2005).

Therefore, the main objective of this study was to investigate the effect of credit risk on the profitability of Ethiopian private commercial banks measured by ROA.

1.3 Background of the Organization

In 1905, Ethiopians had their first taste of modern banking. Emperor Menelik II and a representative of the British-owned National Bank of Egypt agreed to open a new bank in Ethiopia at the time. Emperor Menelik II established the first Bank of Abyssinia on February 15, 1906, marking the beginning of banking in Ethiopian history. It was a private bank whose shares were sold in Addis Ababa, New York, Paris, London, and Vienna. Emperor Haile Selassie initiated banking reforms in 1931, and the Bank of Abyssinia was dissolved and renamed the Bank of Ethiopia, a totally government-owned bank that provided central and commercial banking services until the 1936 Italian invasion. During the Italian invasion of Ethiopia, the Bank of Italy was created a legal tender. The State Bank of Ethiopia was established in 1943, after Ethiopia regained independence from fascist Italy, with two departments performing the

functions of an issuing bank and a commercial bank. These roles were formally divided in 1963, with the establishment of the National Bank of Ethiopia (the central and issuing bank) and the Commercial Bank of Ethiopia.

Several other financial organizations, both state-owned and private, arose in the years leading up to 1974. Financial institutions that are owned by the government include: The Savings and Mortgage Corporation of Ethiopia, the Agricultural and Industrial Development Bank (Finance state owned enterprises), the Imperial Savings and Home Ownership Public Association (Provided savings and loan services). Moreover, private financial organizations at the time included: The Addis Ababa Bank, the Banco di Roma, and the Banco di Napoli.

After 1974, the banking industry was unable to expand due to the socialist regime's nationalization of private investments, leaving just three government banks: The National Bank of Ethiopia, the Commercial Bank of Ethiopia, and the Agricultural and Industrial Development Bank (Mortgage Bank). When the socialist dictatorship was ousted in 1991, this was reversed. Following that, in 1994, the licensing and supervision of Banking Business Proclamation No. 84/1994 was issued, signaling the start of a new era in Ethiopia's banking sector. Private banking companies sprung up almost immediately after the proclamation was signed, and Ethiopia now has 18 banks, 16 of which are private and two of which are state-owned. About 34.3 percent of the total bank branches were located in Addis Ababa. State-owned banks accounted for 28.1 percent of all bank branches, while private banks accounted for 71.9 percent.

The banking system's total capital reached Birr 120.8 billion, with state-owned banks accounting for 48.1 percent and private banks accounting for 51.9 percent. As of December 2020, Commercial Bank of Ethiopia (CBE) has 41.7 percent of the banking system's total capital.

1.4 Statement of the Problem

Banks' function in economic growth is to alleviate capital shortages by encouraging savings and investment. A strong banking system brings together the small and scattered savings of the community and makes them available for investment in productive firms (Tushar, 2016). The importance of banks in every economy, emerging or developed, cannot be overstated. Governments implement economic and regulatory strategies to control inflation and encourage consumers to spend or save through commercial banks. Commercial banks also act as

intermediaries between the government and the public when the government needs to borrow money from the public by issuing treasury bills. Banks are also in charge of determining the required capital for investments. This is the practice of lending money to businesses in order for them to expand or extend their economic activity. Taxes and levies enhance government revenue when business grows and expand their economic operations. When banks are in good condition, the economy as a whole performs better (Imad Kutum, 2017).

Banks take calculated risks in their function as financial intermediaries in the economy (Tenguh NC, 2008). Credit risk is the most significant risk faced by the bank, given that credit is one of the bank's primary sources of income. Banks promote the viability and profitability of their own businesses while also contributing to systemic stability and efficient capital allocation in the economy by effectively managing credit risk exposure (Psillaki, Tsolas, and Margaritis, 2010). Losses from a single loan or a significant failure in controls can eliminate the gain on many other transactions (National Bank of Ethiopia, 2010). Credit risk refers to the possibility of a borrower default, which occurs when a counterpart does not pay on time. Default can occur for a variety of reasons. One of the most common is that the obligor is experiencing financial difficulties (Gestel and Baesems, 2008).

The banking industry's strength is a necessary condition for the economy's stability and growth (Halling and Hayden, 2006). As a result, assessing the financial stability of banks is a key priority for regulators (Halling and Hayden, 2006). Furthermore, Tabari, Ahmadi, and Emami (2013) have said that the banking system's safety is dependent on bank profitability and capital adequacy. Profitability is a parameter that reveals a bank's management strategy and competitive position in market-based banking. This parameter allows banks to tolerate a certain degree of risk while still providing support in the event of a short-term crisis.

To the best of the researcher's understanding based on accessible literature (Tegegne, 2018; Zewude, 2011; Tibebe, 2011; Awoke, 2014), local studies on Ethiopian banking sector reveal that credit risk and non-performing loans have been important issues of bank performance in Ethiopian banks. Nonetheless, just a few studies (Mekasha, 2011; Tefera, 2011; Bizuayehu, 2015; Million, 2014) investigated on how credit risk affects bank profitability in Ethiopia.

Even though studies have been undertaken in Ethiopia, many of them focus on both private and public commercial banks, while some focus solely on public commercial banks, and other variables such as GDP and inflation are not well addressed in their analysis. However, the current analysis includes important macroeconomic variables such as GDP and inflation (Wondimagegn D, 2015). Furthermore, other criteria such as bank size and liquidity ratio are taken into consideration when assessing bank profitability. These factors were among the parameters taken into account in research conducted in various nations (Pasiouras and Kosmidou, 2007, Appa, 1996, Guru et al., 2002 and BenNaceur, 2003).

In this study, certain variables such as Nonperforming loan (NPLR), Capital adequacy ratio (CAR), Loan loss provision ratio (LLPR), Liquidity ratio (LR), Bank size (BS), Interest rate spread (IS), GDP and Annual inflation rate employed in order to explain its effect on profitability of banks, measured by ROA.

Due to the aforementioned reason and research gap, a study on the effect of credit risk on the profitability of selected private commercial banks in Ethiopia is essential. As a result, this study fills a gap in terms of the variables studied, and it is believed that such a study with comprehensive recognition of all factors would support policymakers and risk mitigation systems.

1.5 Research Questions

Given the various issues concerning the effect of credit risk on private commercial bank profitability in Ethiopia, a number of research questions are raised as follows:

- i. What is the effect of NPLR on profitability of private commercial banks in Ethiopia?
- ii. What is the effect of CAR on profitability of private commercial banks in Ethiopia?
- iii. What is the effect of LLPR on profitability of private commercial banks in Ethiopia?
- iv. What effect does LR has on profitability of private commercial banks in Ethiopia?
- v. What is the effect of bank size (economies of scale) on profitability of private commercial banks in Ethiopia?
- vi. What effect does interest spread rate has on profitability of private commercial banks in Ethiopia?
- vii. What effect does inflation has on profitability of private commercial banks in Ethiopia?

viii. What effect does GDP has on profitability of private commercial banks in Ethiopia?

1.6 Objectives of the Study

1.6.1 General Objective

The overall objective of the study is to examine the effect of credit risk on profitability of selected private commercial banks that operate in Ethiopia.

1.6.2. Specific Objectives

- i. To evaluate whether NPLR has an effect on the profitability of private commercial banks in Ethiopia.
- ii. To examine the effect of CAR on the profitability of private commercial banks in Ethiopia.
- iii. To assess the effect of LLPR on the profitability of private commercial banks in Ethiopia.
- iv. To evaluate whether LR has an effect on the profitability of private commercial banks in Ethiopia.
- v. To investigate the effect of bank size (economies of scale) on profitability of private commercial banks in Ethiopia.
- vi. To analyze the effect interest spread rate on profitability of private commercial banks in Ethiopia.
- vii. To evaluate the effect of macroeconomic factors (inflation & GDP) on profitability private commercial banks in Ethiopia.

1.7 Research Hypothesis

The following testable hypotheses are formulating in accordance with the study problem and objectives, and are thus investigated empirically. These hypotheses states in alternate context as follows:

Nonperforming loan (NPL): NPL are credits that banks consider to be at risk of losing money due to loan default. NPL is an independent variable that is chosen because it is a credit risk management indicator that, in particular, represents how banks manage their credit risk by specifying the proportion of loan losses to total loan amount (Hosna et al, 2009). Many banks failed, and global financial markets endured a systemic crisis. The experience of crisis increases

further concerns on financial system stability and the need for improved management and supervision of lending activities and institutions; the aggregate rate of non-performing loans (NPLs) is often used as a soundness indicator. According to the researcher, non-performing loans are expected to have a negative effect on bank profitability.

H1: NPLR has a statistically significant and negative effect on profitability of private commercial banks in Ethiopia.

Capital Adequacy Ratio (CAR): CAR is an index that regulators use to calculate the optimal amount of money (equity, retained earnings, and other reserves) that a bank should have in order to take various levels of risk without jeopardizing deposit funds or the bank's existence. This is also an independent variable that is chosen because it is the regulator's primary indicator of a bank's financial strength. It is made up of the most stable and liquid forms of financial capital, namely shareholders' equity. Banks that have a high capital adequacy ratio are profitable (Haslem, 1968).

H2: CAR has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

Loan loss provisions (LLP): A bank's LLP is a sum of money set aside from its annual earnings as a safeguard against the loss of a nonperforming loan or to compensate for the loss of a credit facility. Instead of waiting until the asset loses value, LLP indicates the expected loss of value in the loan portfolio over the periods when that asset generates revenue. In the income and expense statement, a provision for loan impairment charged to a period is expensed (Kargi, 2011)

H3: LLPR has a statistically significant and negative effect on profitability of private commercial banks in Ethiopia.

Liquidity ratio (LR): LR is the ability of a bank to meet its short-term obligation as and when due. Cash is the important current assets for the operation of any business. It is the input needed to keep the business running continuously. A bank as a business concern needs to have cash and liquid assets, which it can easily convert into cash at short notice. Thus, for banks to remain in the business of financial intermediation, they must formulate policies to ensure the availability of cash and liquid assets in the asset portfolio at any point in time. Liquidity risk reduces the ability

of the bank to meet its financial obligations as they fall due. When this risk remains unchecked, banks will lose customers thereby reducing the volume of deposits. When deposits reduce, the bank will have insufficient funds for other investments; this significantly reduces the level of profitability. Again, a high liquidity risk causes a run on the bank. Customers from the bank evidence this run in the panic withdrawal of deposits. This adversely affects the potentials of the bank by keeping away would be customers and potential investors from the bank. Consequent upon this, the bank's operations reduce drastically and results in a significant reduction in profit (Bourke, 1989).

H4: LR has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

Bank Size (BS) –According to Goddard et al. (2004b), the size of a bank can have a favorable impact on profit for a variety of reasons. First, banks with larger assets benefit from economies of scale and scope. Second, larger banks may be able to take use of their market strength. Finally, abnormal gains through market power in wholesales may result in a positive link between size and profit. However, they claim that a negative link might be expected in terms of diseconomies. To account for economics of scale and diseconomies, we use the bank's total assets as a proxy for its size. In general, the impact of increased size on profitability has been shown to be favorable to certain. However, the effect of size may be negative for institutions that grow to be exceedingly large due to bureaucracy and other reasons. "As a result, the relationship between scale and profitability is likely to be non-linear" (Athanasoglou et al., 2008).

H5: Bank size has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

Interest Rate Spread (IS) - The fundamental tasks of financial organizations, notably commercial banks, which include lending and deposit taking, are the source of interest rate spreads. When banks lend money, they charge interest, and they also pay interest on deposits to encourage consumers to save, and the spread is the difference between the two rates (Hamis, 2010).

According to Ho and Saunders' (1981) theoretical model, which has been expanded by Angbazo (1997) and Maudos and Guevara (2004), there is a positive association between credit risk or

loan quality and interest rate spreads. When banks confront deterioration in loan quality (credit risk), the model suggests that they hedge against the coming loss by transferring a portion or all of it to their customers (either borrowers or depositors). This is accomplished by raising the lending rate while simultaneously lowering the deposit rate.

H6: Interest spread rate has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

Annual Inflation Rate: Inflation is a significant factor on banking profitability. High loan interest rates and incomes are linked to high inflation rates. Inflation has a different impact on banking performance depending on whether it is predicted or unexpected. If inflation adequately anticipated and interest rates adjusted accordingly, a positive impact on profitability will result. Unexpected increases in inflation, on the other hand, pose cash flow problems for borrowers, which can lead to the premature termination of loan plans and loan losses. Nayeem and his colleagues (2014). The findings of the relationship between inflation and profitability are varied, most studies observe a positive impact between inflation and profitability, Molyneux and Thorton 1992, Hassan and Bashir 2003, Kosmidou 2006, Kyriaki 2012 and Nayeem et al.,2014) conclude that inflation have a positive and significant impact on performance.

H7: Inflation has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

Annual GDP Growth Rate: The annual real GDP growth rate is an inflation-adjusted measure of overall economic activity. It is expected to have an influence on a number of aspects of demand and supply for bank deposits and loans. According to research on the relationship between economic growth and financial sector profitability, GDP growth is expected to have a favorable impact on bank profitability (Demirguc-Kunt and Huizinga, 1999; Bikker and Hu, 2002). Tang and Jiang (2003) discovered that both bank specific and macroeconomic factors are major predictors of bank performance in a study on the profitability of the banking sector. Tang and Jiang found that macroeconomic factors such as real GDP growth, inflation, and interest rate have a positive impact on a sample of four Hong Kong banks.

H8: GDP has a statistically significant and positive effect on profitability of private commercial banks in Ethiopia.

1.8 Significance of the study

For regulators, industry participants, and investors, the issue of credit risk and common exposures is clearly crucial. The findings of this study have the following implications and importance for various stakeholders:

First, the study assist management of Ethiopia's various private commercial banks in effectively carrying out risk management and understanding the relationship between credit risk and bank profitability then allowing them to reduce losses and boost profitability.

Second, the study assist regulators and policymakers in better recognizing and quantifying credit risk exposure and mitigating the financial system from financial crises.

Third, the findings inform investors in better understanding the factors that affect the return on their investment. Finally, the study serves as a source of literature for other scholars who want to do further research in Ethiopia on the impact of credit risk on bank profitability.

1.9 Scope of the Study

By evaluating financial statements from the 2010 to 2020 fiscal years, the study examined the effect of credit risk on profitability of private commercial banks in Ethiopia. ROA used to determine the dependent variables. Explanatory (independent) variables are divided into two categories: internal (NPLR, CAR, LLPR, LR, Bank Size, Interest Spread Rate and external/macroeconomic (GDP and inflation rate) factors. Six private commercial banks which have twenty or more years of service in Ethiopian banking sector while undertaking the study. Dashen Bank, Awash International Bank, Bank of Abyssinia, Wegagen Bank, Nib International Bank, and United Bank are the names of the banks.

1.10 Limitation of the Study

The study is limited to examining the effect of credit risk on profitability of private commercial banks. Thus, other risks are not discussed. In addition to this, the researcher only used return on asset as a measure of profitability as a result of this it is considered as a limitation for this particular research. Data limitation and sample limitation which might compromise the quality of this study, but the researcher believes that using eleven years data, from giant private commercial banks, will give reasonable assurance of the result.

1.11 Organization of the Paper

The study organized into five chapters. The first chapter deals with introduction: background of the study, statement of the problem, objectives, and hypotheses, significance of the study, scope of the study, limitation of the study and organization of the papers. The second chapter is all about theoretical as well as of empirical literature pertinent to the study. Chapter three presents methodology of the study. Data analysis and discussion of results covered in chapter four. Finally, chapter five concluded the study by forwarding some policy recommendations.

CHAPTER TWO

LITERATURE AND RESEARCH REVIEW

2.1 Introduction into the Chapter

The review of related literatures presented in this chapter. There are four sections to this chapter. The theoretical review of literature on the study's issue presented in the first section. The second section addresses the empirical literatures related to the topic of study that have investigated by various scholars both internationally and in Ethiopia. The third section presents the knowledge gap and the final section present the conceptual frame work of the literatures.

2.2 Theoretical Reviews

2.2.1 Credit Risk

A bank's purpose is to take deposits as well as to provide credit; therefore, it is necessarily vulnerable to credit risk. Credit risk is by far the most critical risk that banks face, and more than any other risk, the success of their company is dependent on precise measurement and efficient management of this risk (Giesecke, 2004). Credit risk, according to Chen and Pan (2012), is the degree of value variations in loan instruments and derivatives due to changes in borrowers and counterparties' underlying credit quality. Credit risk, according to Coyle (2000), is defined as losses resulting from credit customers' reluctance or incapacity to pay their debts in full and on time. Banks are exposed to credit risk when a borrower (client) fails to meet financial obligations on time or at maturity. If not properly handled, this risk, also known as "counterparty risk," has the potential to put the Bank in jeopardy. Credit risk management aims to maximize a bank's risk-adjusted rate of return by keeping credit risk exposure within an acceptable range, while also providing a framework for analyzing the impact of credit risk management on profitability (Kargi, 2011).

Credit risk, as defined by the Basel Committee on Banking Supervision (2001), is the risk of losing part or all of an outstanding loan due to credit events (default risk). It can also be defined as the risk that a contractual party will fail to fulfill its obligations according to the terms agreed

upon. Default risk, performance risk, and counterparty risk are all terms used to describe credit risk (Brown and Moles, 2012).

Limited institutional capacity, ineffective credit policies, volatile interest rates, poor management, ineffective laws, low capital and liquidity levels, direct lending, massive bank licensing, poor loan underwriting, lax credit assessment, poor lending practices, government interference, and insufficient central bank supervision are the main sources of credit risk (Kithinji, 2010). Credit risk is vital since the failure of a few key clients can result in significant losses, which can lead to insolvency (Bessis, 2002).

An increase in bank credit risk leads to liquidity and solvency issues over time. Credit risk may increase if the Bank lends to borrowers who does not have adequate knowledge about. According to Robert and Gary (1994), the most visible characteristic of collapsed banks is an increased volume of nonperforming loans, rather than low operating efficiency.

Bank regulators are well aware of this problem; but, persuading bank managers to pursue more responsible credit practices during an economic upturn, particularly in a highly competitive environment, are extremely difficult. They suggest that even conservative managers may find it impossible to resist market demand for increased earnings. Thus, management of credit risk is very important and central to the health of a bank and indeed the entire financial system. As banks make loans, they need to make provisions for loan losses in their books (Robert and Gary, 1994).

The higher this provision becomes, relative to the size of total loans, the riskier a bank becomes. An increase in the value of the provision for loan losses relative to total loans is an indication that the bank's assets are becoming more difficult to collect (Tshore, Aboagy and Koyerhoah Coleman, 2005).

Credit risk limits are determined by the Credit Committee and approved by the Bank's Management Board (in case the Credit Committee does not have the required authority). A part of authorities for putting credit limits in place is delegated to Branch Credit Committees (for standard credit operations within the special limit for independent credit risk-taking by branches), as well as to the Small Credit Committee (United bank credit policy and procedure manual, revised 2015).

2.2.2 Loan Pricing Theory

Banks cannot always set high interest rates. Since it is very difficult to predict the borrower type at the start of the banking relationship, banks should consider the issues of adverse selection and moral hazard (Stiglitz and Weiss, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to pay these high rates. Once those borrowers obtain the loans, they are more likely to engage in moral hazard behavior, also known as borrower moral hazard, because they are more likely to undertake high-risk projects or investments (Chodecai, 2004). From the reasoning of Stiglitz and Weiss, specify that in some cases we may not find that the interest rate set by banks is appropriate with the risk of the borrowers.

2.2.3 Firm Characteristics Theories

These theories predict that the number of borrowing relationships will be decreasing for small, high quality, informational opaque and constraint firms, all other things been equal (Godlewski and Ziane, 2008). Robert and Gary (1994) cited in Hamisu (2011), indicate that the most visible characteristic of collapsed banks is an increased volume of non-performing loans, not poor operating efficiency. Non-performing loans in failed banks have typically been associated with regional macroeconomic problems. DeYoung and Whalen (1994) cited in Hamisu (2011) observed that the US Office of the Comptroller of the Currency found The difference between failed banks and those that stayed healthy or recovered from troubles was the caliber of management. Superior managers not only run their banks more efficiently than their competition, resulting in more profits, but they also impose stronger loan underwriting and monitoring requirements, resulting in higher credit quality.

2.2.4 Theory of Multiple-Lending

In the presence of well-developed equity markets, literature suggests that banks should be less motivated to share loans (credit syndication). Banks' lending capacities are increased by both outside equity and mergers and acquisitions, thus reducing the requirement for more diversification and oversight through share lending (Carletti, 2006; Karceski, 2004).

2.2.5 The Signaling Arguments

According to the signaling theory, good companies should give more collateral in order to signal to banks that they are less risky borrowers and then they are charged lower interest rates. Meanwhile, the reverse signaling argument states that banks only require collateral and or covenants for relatively risky firms that also pay higher interest rates (Chodechai, 2004; Ewert and Schenk, 1998).

2.2.6 Credit Market Theory

A model of the neoclassical credit market postulates that the terms of credits clear the market. The interest rate is the only price mechanism if collateral and other constraints (covenants) stay constant. The interest rate rises in response to rising loan demand and a fixed client supply, and vice versa. It is assumed that the higher the failure risks of the borrower, the higher the interest premium (Ewert, 2000).

2.2.7 Determinants of Banks Profitability

Internal and external drivers of conventional bank profitability are divided into two categories in the literature. Internal profitability drivers that are under the control of bank management can be divided into two groups: financial statement variables and non-financial statement variables. Non-financial statement variables are aspects that have no direct relationship to the financial statements, whereas financial statement variables are related to actions that directly influence items in the balance sheet and income statement. Number of branches, branch status (e.g. limited or full service branch, unit branch or many branches), location, and bank size are examples of non-financial characteristics in this category. The number of branches, their status, and their placement are all considered controllable variables because management makes such decisions. These variables are considered external to the bank when a decision is made to open new branches or make services available where the locality is restricted by regulations. Similarly, the bank's size is regarded as an internal determinant, based on the assumption that the bank's management is in charge of expanding the organization by acquiring new assets and liabilities. Some researchers (Short, 1979 and Bourke, 1989) considered size as an external variable.

External variables are those aspects that are deemed to be outside of a bank's control. Competition, regulation, concentration, market share, ownership, capital scarcity, money supply, inflation, and size are all highly discussed external variables.

Variables such as size, capital, risk management, and expense management are used in studies that look at internal drivers. The concept of size is used to account for market economies or diseconomies of scale. Size and bank profitability have a favorable and significant link, according to Akhaveinet al. (1997) and Smirlock (1985). The extent to which various financial, legal, and other factors (e.g. corruption) affect bank profitability, according to Demirguc-Kunt and Maksimovic (1998), is closely linked to firm size. Furthermore, as Short (1979) argues, a bank's size is linked to its capital adequacy because larger banks can raise less expensive capital and thus appear more profitable. Using similar arguments, Haslem (1968), Short (1979), Bourke (1989), Molyneux and Thornton (1992), Bikker and Hu (2002) and Goddard et al. (2004), all link bank size to capital ratios, which they claim to be positively related to size, meaning that as size increases – especially in the case of small to medium-sized banks – profitability rises. Many other researchers, however, suggests that increasing the size of a banking firm does not result in significant cost savings (Berger et al., 1987), implying that very large banks may eventually face scale inefficiencies.

The requirement for risk management in the banking industry is inextricably linked to the nature of the business. Bank failures are caused by two key factors: poor asset quality and a lack of liquidity. Financial institutions may decide to diversify their portfolios and/or increase their liquid holdings in order to reduce risk during periods of increased uncertainty. Credit and liquidity risk are two types of risk in this regard. Among others, Molyneux and Thornton (1992) discover a negative and significant link between liquidity and profitability. Bourke (1989), on the other hand, finds the opposite result; while the effect of credit risk on profitability appears to be obviously negative (Miller and Noulas, 1997). This finding can be explained by the fact that the more financial institutions exposed to high-risk loans, the bigger the accumulation of unpaid debts, meaning that many commercial banks' profits have suffered as a result of these loan losses.

When it comes to the external determinants of bank profitability, it is important to note that there is a distinction to be made between control variables that describe the macroeconomic

environment, such as inflation, interest rates, and cyclical output, and variables that describe market characteristics.

The relationship between bank profitability and inflation is introduced by Revell (1979). He points out that the impact of inflation on bank profitability depends on whether banks' wages and other operating expenses increase at a faster rate than inflation.

The question is how developed an economy is in order to effectively estimate future inflation and manage banks' operating costs accordingly. In this context, Perry (1992) claims that whether inflation expectations are adequately predicted determines the extent to which inflation affects bank profitability. An inflation rate that is fully predicted by bank management means that banks can modify interest rates correctly to raise revenues faster than costs, resulting in larger economic profitability. Most studies (including those by Bourke (1989), and Molyneux and Thornton (1992)) have found a positive correlation between inflation and profitability.

Demirguc-Kunt and Huizinga (2000), as well as Bikker and Hu (2002), have recently attempted to identify possible cyclical movements in bank profitability, or how closely bank profits are linked to the business cycle. Although the variables used were not direct measures of the business cycle, their findings suggest that such a correlation exists. To find such a relationship, Demirguc-Kunt and Huizinga (2000) used the yearly growth rate of GDP and GNP per capita, whereas Bikker and Hu (2002) examined a variety of macroeconomic indicators (such as GDP, unemployment rate and interest rate differential).

A. Bank-specific determinants

The effect on banks' performance has been measured by bank-specific factors such as capital adequacy, credit risk, liquidity risk, market power and regulatory costs. More recently, research seems to have focused on the effect of macroeconomic factors on banks' performance. In all these studies, however, the literature reveals that Sub-Saharan Africa is less studied and therefore would require more information on banking sector for better planning for the sector. This study therefore, was an attempt to address the gap of information on SSA commercial banking sector. In investigating bank profitability, Short (1979), Bourke (1989), Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (2000) and Goddard et al (2004), among others, applied linear models to explain performance. However, linear models have been criticized for employing

inconsistent variables and generating inefficient results. All this evidence points to the fact that more data would be required to understand banks' performance in the developing countries. Cornett and Tehania (1992), Mercia, et al. (2002), Toddard, et al. (2004), Guru et al.(2001) and Panayiotis et al.(2006) show that bank profitability is a function of internal and external factors. Internal factors include bank-specific; while external factors include both industry specific and macroeconomic factors.

According to this literature, there are six standard key bank-specific indicators that are widely used to study banks: profitability, capital risk, asset quality, operational efficiency, and growth in bank assets.

Industry-specific factors include: ownership, bank size, bank concentration index; while macroeconomic factors include interest rate, interest rate spread, inflation and per-capita income and growth in GDP. Most of these factors are included in this study to estimate bank profitability for SSA banks. Applying the General Method of Moments (GMM) technique to a panel of Greek banks for the period 1985 to 2001 period, Panayiotis et.al.(2006) discovered that bank profitability persist to a moderate extent. Persistence suggests that departures from perfectly competitive market structures may not be large. The study further shows that all bank-specific determinants, with the exception of size, influence bank performance in the anticipated way. The study on Malaysian banks by Guru et al. (2001) also show that efficient management is among the most important factors that explain high bank profitability.

Extending a similar study to SSA, therefore, generates comparative results. Al-Haschimi (2007) investigates the determinants of bank net interest margin in 10 SSA countries, and applies an accounting decomposition model as well as panel regressions. Further found out that credit risk and operational inefficiencies explain most of the variation in net interest margins across the region, with macroeconomic factors, having less influence on performance Smirlock (1985) found a positive and significant relationship between size and bank profitability. Short (1979) discovered that size is closely related to capital adequacy of a bank since relatively large banks tend to raise less expensive capital and, hence, appear more profitable.

Using similar arguments, Bikker and Hu (2002) and Goddard et al. (2004), among others; linked bank size for small to medium size banks to capital and profitability. Molyneux and Thornton

(1992), among others; found a negative and significant relationship between the level of liquidity and profitability. In contrast, Bourke (1989) reported an opposite result; while the effects of credit risk on profitability could be negative (Miller and Noulas, 1997). There is also an extensive literature based on the idea that an expense-related variable should be included in a profit function. For example, Bourke (1989) and Molyneux and Thornton (1992) found a positive relationship between better-quality management and profitability. Athanasoglou, et al. (2006) study on the South Eastern European banking industry over the period 1998 to 2002, suggested a new approach in understanding bank profitability. The performance of the banking sector is a subject that has received a lot of attention in recent years. There is now a large literature which has examined the role played by management of resources in determining bank performance. It is generally agreed that better quality management of resources is the main factor contributing to bank performance, as evidenced by numerous studies that have focused on the U.S. banking system (DeYoung and Rice 2004; Stiroh and Rumble 2006; Bhuyan and Williams 2006; Hirtle and Stiroh 2007) and the banking systems in the western and developed countries (Ho and Tripe 2002; Williams 2003; Pasiouras and Kosmidou 2007; Kosmidou et al. 2007; Kosmidou and Zopounidis 2008; Athanasoglou et al. 2007; Albertazzi and Gambacorta 2008).

By contrast, fewer studies have looked at bank performance in developing economies. Guru et al. (2002) investigate the determinants of bank profitability in Malaysia. They used a sample of 17 commercial banks during the 1986 to 1995 period. The profitability determinants were divided into two main categories, namely the internal determinants (liquidity, capital adequacy, and expenses management) and the external determinants (ownership, firm size, and economic conditions). The findings revealed that efficient expenses management was one of the most significant in explaining high in a comprehensive study, Dermiguc Kunt and Huizinga (1999) examine the determinants of bank interest margins and profitability using bank level data for 80 countries from 1988 to 1995. They find that a larger ratio of bank assets to GDP and a lower market concentration ratio lead to lower margins and profits. The findings also suggest that foreign banks have higher margins and profits than domestic banks in developing countries, while the opposite prevails in developed countries.

B. Industry-specific determinants

Another strand of literature emphasizes the importance of market structure and bank specific variables in explaining performance heterogeneities across banks. This literature is based on the structure-conduct-performance (SCP) paradigm and is also applicable to contestable markets, firm-level efficiency, and the roles of ownership and governance in explaining banks' performance (Berger, 1995; Berger and Humphrey, 1997; Bikker and Haaf, 2002; Goddard et al., 2001; Goddard et al., 2004; and Molyneux et al., 1996). It was explained that, the extensive empirical evidence does not provide conclusive proof that bank performance is influenced by either concentrated market structures and collusive price setting behavior or superior management and production techniques. Bank efficiency levels were found to vary widely across banking sectors (Altunbaş et al., 2001; Schure et al., 2004). Smirlock (1985) and Berger (1995) investigated the profit structure relationship in banking, providing tests of the aforementioned hypotheses.

To some extent, the relative market power hypothesis was verified; since there was evidence that superior management and increased market share (especially in the case of small to medium sized banks) raise profits. In contrast, weak evidence was found for the efficient structure hypothesis. Explained that efficiency not only raises profits, but may lead to market share gains and, hence, increased concentration, so that the finding of a positive relationship between concentration and profits could be a spurious result due to correlations with other variables. Bourke (1989), Molyneux and Thornton (1992) argued, instead that increased concentration is not the result of managerial efficiency, but rather reflects increasing deviations from competitive market structures, which leads to monopolistic profits. Consequently, concentration should be related to bank profitability.

These studies further questioned whether the ownership status of a bank is related to its profitability or not. However, little evidence is found to support the theory that privately owned institutions will return relatively higher economic profits (Short, 1979). In contrast, Bourke (1989) and Molyneux and Thornton (1992) revealed that ownership status could be irrelevant for explaining profitability. Eichengreen and Gibson (2001) analyzed bank-specific and market-specific profitability determinants of Greek banks for the period 1993 to 1998; using a panel not restricted to commercial banks. The results revealed that industry-specific variables such as concentration ratio and market share have positive and significant influence on bank

profitability. Recent literature also emphasizes the importance of changes in macroeconomic conditions on bank profitability. All this evidence provides sufficient information that bank concentration may not be a larger factor in explaining banks' profitability behavior.

C. Macroeconomic determinants

The last group of profitability determinants deals with macroeconomic control variables. The common variables include inflation rate, the long-term interest rate and rate of economic growth (Panayiotis et al., 2005). More recently, a number of studies emphasize the relationship between macroeconomic variables and bank risk. Allen and Saunders (2004) provided evidence of the importance of macroeconomic factors in determining the profitability of banks in the sampled. Rovell (1979) introduced the issue of the relationship between bank profitability and inflation. Noted that the effect of inflation on bank profitability depends on whether bank wages and other operating expenses increase at a faster rate than inflation. The question is how mature an economy is so that future inflation is accurately forecasted to enable banks manage their operating costs. Perry (1992) observed that the extent to which inflation affects bank profitability depends on whether inflation expectations are fully anticipated. An inflation rate fully anticipated by the bank management implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs and thus acquire higher economic profits. Bourke (1989) and Molyneux and Thornton (1992) found a positive relationship between inflation and bank profitability.

Saunders and Schumacher (2000) apply a model of Ho and Saunders (1981) to study the determinants of interest margin in six European Union and US banks during the period 1988 to 1995. They further established that macroeconomic volatility and regulations have a significant impact on bank interest margin. The result pointed out an important tradeoff between ensuring bank solvency, as defined by high capital to asset ratio, and lowering cost of financial services to consumers, as measured by lower interest rate margin. Bourke (1989), Molyneux and Thornton (1992), Demircug-Kunt and Huizinga (2000) and Bikker and Hu (2002) identified possible cyclical movements in bank profitability. Bikker and Hu. (2002) established that bank profits are positively correlated with movements in the business cycle. Afanasieff et al. (2002), Guru et al. (2002) and Naceur and Goaid (2001; 2003), and Barajas et al. (1999) study on emerging

countries (Brazil, Colombia, Malaysia and Tunisia) documented significant effects of financial liberalization on banks' performance.

Afanasieff et al. (2002) also made use of panel data techniques to uncover the main determinants of bank performance in Brazil and found out that macroeconomic variables such as GDP growth rate, inflation expectations are important in determining bank profitability over time. Neeley and Wheelock (1997) also explored the profitability of sampled US commercial banks and found a positive impact of per-capita income on profitability. Overall, empirical review for this research provides background information of bank profitability. There is ample evidence of comprehensive account of developed countries and a few of developing ones, but less of SSA, signifying the requirement for further research on the sub-region. Empirical findings provide support that bank profitability is influenced by both internal, sector specific as well as macroeconomic factors. This study utilized some of the identified key variable indicators that were identified in earlier studies to have an influence on commercial banks' profitability. Further, there is proof that in these studies, more of static models than dynamic have been applied to study banks' profitability.

Dynamic panel models therefore deem to be considered as important specifications for providing more rigorous and efficient results on banks' performance in the context of SSA, which is an extension of these studies. This study on SSA commercial banks; becomes an important step in providing more empirical information on the sub-region's commercial banking sector; using dynamic panel models. These methods are expected to generate more efficient results.

2.3 Review of Empirical Literature

Many researchers in different countries have made investigation on the area of credit risk management and bank profitability's by considering the importance of the issue of credit risk management policy and profitability of a commercial banking sector.

2.3.1 Review of Global Studies

Bourke's (1989) assessments on the impact of credit risk on profitability in Europe, North America, and Australia are all clearly negative. This result can be explained by the fact that the more financial institutions exposed to high-risk loans, the higher the accumulation of unpaid loans, implying that loan losses have resulted in lower returns for many commercial banks in the

USA (Miller and Noulas, 1997). According to Felix and Claudine (2008), return on equity ROE and return on asset ROA, both of which indicate profitability, are adversely connected to the ratio of non-performing loans to total loans (NPL/TL) of financial institutions, implying that profitability is reduced.

Fan Li and Yijun Zou (2014) conducted their research to investigate if there is a relationship between credit risk management and profitability of commercial banks in Europe. They also aim to investigate if the relationship is stable or fluctuating. In the research model, ROE and ROA are defined as proxies of profitability while NPLR and CAR are defined as proxies of credit risk management. The research collects data from the largest 47 commercial banks in Europe from 2007 to 2012 and formulates four hypotheses which are related to the research question. A series of statistical tests are performed in order to test if the relationship exists. Other statistical tests are performed to investigate if the relationship is stable or not. The findings reveal that credit risk management does have positive effects on profitability of commercial banks. Between the two proxies of credit risk management, NPLR has a significant effect on the both ROE and ROA while CAR has an insignificant effect on both ROE and ROA.

Kargi (2011) examined the impact of credit risk on Nigerian bank profitability. Financial ratios were extracted from annual reports and accounts of sampled banks between 2004 and 2008 and analyzed using descriptive, correlation, and regression techniques. Credit risk management has a significant impact on the profitability of Nigerian banks, according to the findings. According to the study, the levels of Loans and Advances, Non-Performing Loans, and Deposits have an inverse relationship with bank profitability, putting them at risk of illiquidity and distress.

Epure and Lafuente (2012) studied the performance of Costa Rican banks in the face of risk from 1998 to 2007. The findings revealed that regulatory changes lead to improved performance, and that risk explains differences in banks. Non-performing loans have a negative impact on efficiency and return on assets, while the capital adequacy ratio has a positive impact on the net interest margin.

Kithinji (2010) investigated the impact of credit risk management on commercial bank profitability in Kenya. For the years 2004 to 2008, data on credit volume, non-performing loans, and profitability were gathered. The data revealed that the majority of commercial bank earnings

are unaffected by credit and non-performing loans, implying that profits are impacted by factors other than credit and non-performing loans.

The relationship between bank performance and credit risk management was explored by Felix and Claudine (2008). Their findings suggested that return on equity (ROE) and return on assets (ROA), both of which measure profitability, were inversely related to the percentage of non-performing loans to total loans at financial institutions, resulting in a drop in profitability. Ahmad and Ariff (2007) evaluated the primary factors of credit risk in emerging economy banking systems to developed economy banking systems. Regulation is vital for banking systems that offer a variety of products and services, according to the report, and management quality is critical in the case of loan-dominant banks in emerging nations. A rise in loan loss provision is also thought to be a key indicator of possible credit risk. The study also found that credit risk in emerging-market banks is higher than in developed-market banks.

Over the period 1998-2008, Al-Khouri (2011) examined the impact of a bank's specific risk characteristics, as well as the overall banking environment, on the performance of 43 commercial banks operating in six Gulf Cooperation Council (GCC) countries. Using fixed effect regression analysis, results showed that Credit risk, liquidity risk, and capital risk are the key elements that affect Bank performance when profitability is defined by return on assets, but liquidity risk is the only risk that affects profitability when profitability is assessed by return on equity. From 1989 to 2005, Ben-Naceur and Omran (2008) investigated the impact of bank regulations, concentration, financial and institutional development on commercial banks' margins and profitability in the Middle East and North Africa (MENA) region. They discovered that bank capitalization and credit risk have a positive and significant impact on banks' net interest margin, cost efficiency, and profitability in MENA countries.

Abiola (2014) investigated the impact of credit risk management on the commercial banks performance in Nigeria. Financial reports of seven commercial banking firms were used to analyze for seven years (2005 – 2011). The panel regression model was employed for the estimation of the model. In the model, Return on Equity (ROE) and Return on Asset (ROA) were used as the performance indicators while Nonperforming Loans (NPL) and Capital Adequacy Ratio (CAR) as credit risk management indicators. The findings revealed that credit risk management measured by non-performing loans (NPLs) has positive and significant impact on

the profitability of commercial banks” in Nigeria on the other hand capital adequacy ratio (CAR) has positive but insignificant on the profitability of commercial banks” in Nigeria. This finding is unusual because, theoretically NLP is expected to have an inverse relationship with a bank’s profitability. The result however, shows a strong positive association between non– performing loans and commercial banks performance.

In their analysis of twelve Tunisian deposit banks from 1995 to 2005, Ayadi and Boujelbene (2012) found a substantial positive relationship between size and Return on Average Assets, demonstrating the existence of economies of scale in the Tunisian banking market. Ben Naceur and Goaied (2010), on the other hand, show that size has a negative impact on profitability, implying that Tunisian banks are operating above their optimal level. Similarly, Sinkey (1991) concludes that larger banks are more profitable than smaller banks. As a result, the impact of a bank's size on its profitability cannot be predicted theoretically.

2.3.2 Empirical Literature in the Ethiopian Context

In Ethiopia, few researchers conducted studies on the impacts of credit risk management on profitability. Among them:

Mekasha (2011) studied credit risk and its impact on the performance of a sample of six Ethiopian commercial banks using return on asset as a surrogate of performance and nonperforming loan to total loan ratio, loan provisions to nonperforming loan ratio, loan provision to total loan ratio and loan provision to total assets ratio used as a surrogate of credit risk measures. The result revealed that nonperforming loan to total loan ratio and loan provision to total loan ratio have inverse relationship with return on asset but only nonperforming loan to total loan was statistically significant. Whereas loan provision to nonperforming loan and loan provision to total asset have positive association with return on asset but both are insignificant to impact return on asset.

Tefera (2011) examines impact of credit risk management on profitability of commercial banks in Ethiopia. To examine its impact level the researcher took seven commercial banks purposively that have ten year and above life span in Ethiopia and uses multiple regression models to analyze audited financial report of the sample commercial banks. The researcher use return on equity (ROE) as proxy of profitability measure (dependent variable) and non-performing loan ratio

(NPLR) and capital adequacy ratio (CAR) as credit risk management indicator (independent variables) for each bank and in addition to that questionnaire was also distributed to the authorized bodies in the risk management position of each bank. It argues that credit risk management has significant impact on profitability of commercial banks of Ethiopia. The study recommends that board of directors of each bank and national bank of Ethiopia need to give specially consideration credit risk management policy, and other related things as credit risk management have significant impact on banks profitability.

Bizuayehu (2015) carried out a study on the impact of credit risk on the financial performance of banks in Ethiopia using bank specific and macroeconomic factors covering a period of years 2003 -2008. Return on equity used as a proxy for financial performance and nonperforming loan to total loan ratio, capital adequacy ratio and total loan to deposit ratio, bank size, interest rate spread, gross domestic product and inflation rate as a proxy for credit risk. The study revealed that both bank specific factors and macroeconomic factors have inverse association with return on equity but only the bank specific factors are significant factors influencing return on equity.

Awoke (2014) conducted a study on the impact of credit risk on the performance of samples of eight commercial banks in Ethiopia over the period of years 2008-2012 using return on asset as dependent variable and provision to total loans, loans to total assets, cost to total loans and natural logarithm of total asset as independent variables. The findings shown that provisions to total loans and cost to total loans have inverse association with return on asset but loans to total assets and the natural logarithm of total assets have positive association with return on asset and all variables have significant impact on return on asset.

Tibebu (2011) studies the impact of credit risk management towards the profitability of commercial banks in Ethiopia. The researcher used multiple regression models by taking 11 years data of seven commercial banks in Ethiopia. ROE was used as dependent variable while non performing loan ratio and capital adequacy ratio were used as explanatory variable measuring the level of credit risk in the banks. The results indicate that, both non performing loan ratio and capital adequacy ratio has a negative and significant impact on profitability of commercial banks in Ethiopia.

Zewude (2011) did a study on credit risk management and profitability of commercial banks in Ethiopia. To examine this, the researcher used multiple regression models by taking 10 years ROE (dependent variable), NPL Ratio and CAR (independent variables) from each bank and in addition to that, a questionnaire that was also distributed to the authorized bodies in the risk management position of each bank. The results of the study were that both NPL ratio and CAR were inversely related with profitability of commercial banks in Ethiopia.

Gizaw, Kebede and Selvaraj (2015) evaluated the impact of credit risk on the performance of commercial banks in Ethiopia over a period of years 2003-2004. Return on asset and return on equity used as proxy of performance and nonperforming loan to total loan ratio, capital adequacy ratio, and loan and advance to deposit ratio and loan loss provision to total loan ratio were used as a proxy for credit risk. The findings revealed that non-performing loan to total loan and loan and advances to deposit have inverse association with return on asset while the other two have positive association with return on asset. However; only nonperforming loan to total loan and loan loss provision to total loan are statistically significant to impact return on asset. Further, the study revealed that except loan loss provision to total loan ratio all the proxies of credit risk have inverse relationship with return on equity and all are significant factors impacting return on equity.

Tegegne (2018) evaluated the impact of credit risk on profitability of private commercial banks in Ethiopia over a period of 2003 to 2016. Return on equity used as a dependent variable and Non-performing Loan ratio, Loan to Deposit Ratio, Cost per loan asset ratio, Capital adequacy ratio, Bank Size, Interest Spread, Real GDP growth, Inflation as an independent variable. The study finds that bank specific factors have an impact on banks profitability and all variables of bank specific factor (Non-performing Loan ratio, Loan to Deposit Ratio, Cost per loan asset ratio, Capital Adequacy ratio, Bank Size) have a significant impact on profitability. While other external factor of macroeconomic (inflation) and industry specific factors (Interest Spread) have no significant impact in Ethiopia private bank's profitability. However, the other macroeconomic factor of real gross domestic product has positive and statistically significant impact on profitability of private banks of Ethiopia.

Finally, the researcher tried to find studies that conducted in Ethiopia and to the best knowledge of the researcher, studies on the relationship between credit risk and profitability performance of

Ethiopian commercial private banks are few. Of these studies, Tefera (2011), Tibebe (2011), Zewude (2011) and Mekasha (2011) each studied the effect of credit risk management on performance of commercial banks in Ethiopia and Tegegne (2017) by the title The Impact of Credit Risk on Profitability of Private Commercial Banks in Ethiopia by including bank size, GDP. Both used secondary data from annual reports of commercial banks and survey of primary data from bank managers and officers that similarly showed that there is a negative relationship between credit risk and performance of commercial banks in Ethiopia. On the contrary, the research conducted by Million (2014) shows the significant positive relationship between loan loss provision and commercial banks performance on this study might indicates the presence of potential earning management activities by bank managers.

2.3.3 Summery of Literature

To sum up, to the best of the researcher's understanding, Mekasha (2011), Awoke (2014), Bizuayehu (2015) and Gizaw, Kebede and Selvaraj (2015), Tegegne (2017) and other few studies are carried out in Ethiopia's commercial banking sector context entitled as the impact of credit risk management on the financial performance of Ethiopian commercial banks till this research is in effect. Even though the studies have attempted to contribute to the existing literature in some way, they are still a gap especially in private banks. Therefore, there is a need to study the effect of credit risk on the profitability of Ethiopian private commercial banks.

To examine the effect of credit risk, return of asset (ROA) will use as a proxy to profit and independent variable will be Nonperforming loan (NPLR), Capital adequacy ratio (CAR), Loan loss provision ratio (LLPR), Liquidity ratio (LR), Bank size (BS), Interest rate spread (IS), GDP and Annual inflation rate.

2.4 Research Gap and Justification of the Research

According to the preceding theoretical and empirical review, credit risk has an effect on the banking industry's performance. In the literature, bank profitability is frequently presented as a function of both internal and external factors. Various studies on these variables have been conducted in various nations. Bank size (age), Nonperforming loan ratio, Loan loss provision ratio, and Capital adequacy ratio are among the most important internal characteristics that determine performance. The researcher tried to examine the impact of credit risk on the

profitability of Ethiopian commercial Banks and identifies the relationships between the Loan Loss Provision, Nonperforming loan ratio, Capital adequacy ratio and Bank Size with Banks Profitability.

In the context of Ethiopia, the related study conducted by Mekasha (2011), Awoke (2014), Bizuayehu (2015), Tegegne (2017) and other few studies are attempted to identify the impact of some internal and external factors variables on commercial bank profitability in Ethiopia, their study clearly failed to identify the majority of the factors that affect bank profitability significantly, as well as variables that are not tested and new for Ethiopia banking industry.

Due to dominance of public bank in the finance industry of Ethiopia, much attention is given to public bank not to private bank of Ethiopia, therefore current study will aim at contributing to the literature gap on the subject matter by expanding the independent variables and also taking into consideration of the external determinants of profitability factors like Annual inflation rate, GDP. This study will conduct first by considering both internal and external factors and analyzes the effect of those variables on banks profitability. This enables the researcher to evaluate from different three directions and to examine the effect of credit risk on profitability of Ethiopian private commercial banks.

2.5 Conceptual Framework for the Study

The main objective of this study is to investigate the impact of credit risk on banks profitability. The following conceptual model is framed based on the objective of the study. As it described previously in the related literature review parts, bank profitability measured by ROA can be affected by internal and external factors. Internal factors are: NPLR, CAR, LLPR, LR, Bank Size, and Interest Spread Rate. In addition to this there are also external factors which can affect bank profitability such as GDP and inflation.

Thus, the following conceptual model is framed by the researcher to summarize the main focus and scope of this study in terms of variables included.

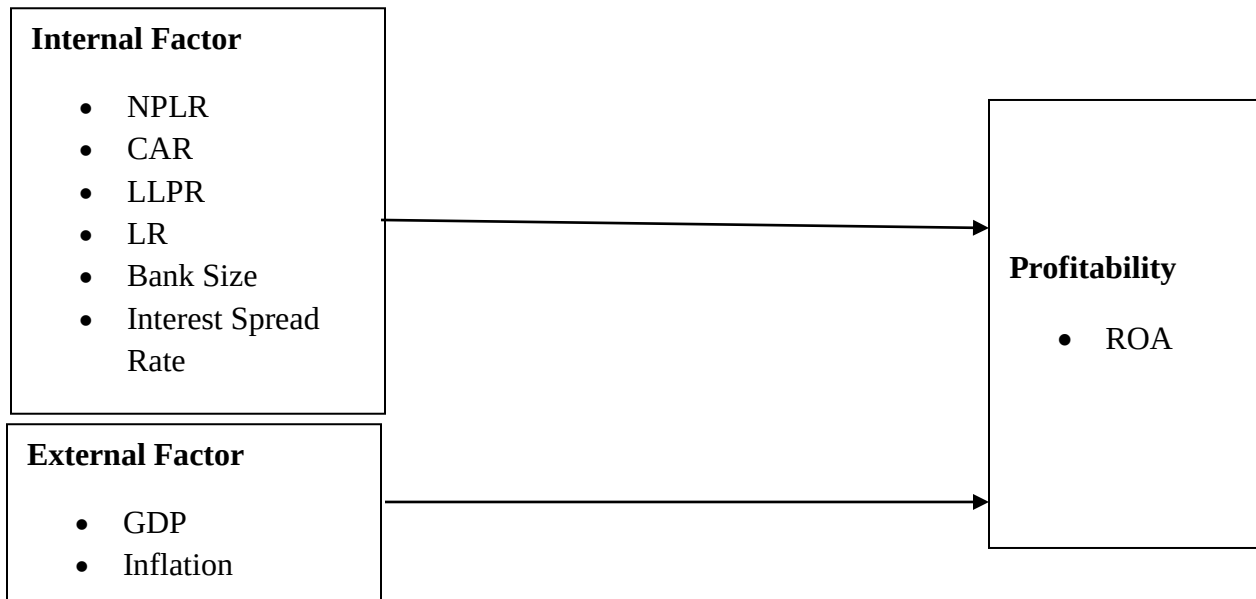


Fig 2.1 Theoretical/Conceptual framework (Researcher)

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1 Introduction

This chapter provides the research methods applied in order to address the research objective. It includes a full description on the procedures the researcher pursues to do this investigation. The research methodology, research design, data type and source, sample design and methodologies, data collection method, data analysis and presentation method, model specification and finally variable description are all discussed.

3.2 Research Approach

There are three approaches to business and social research in investigative studies: quantitative, qualitative, and mixed methodologies (Creswell, 2003, p.13). Quantitative research examines the relationship between variables in order to test objective theories (Creswell 2009). A qualitative research approach, on the other hand, is a way of studying and comprehending the meaning that individuals or groups attach to a social or human situation with the goal of inductively establishing a hypothesis or pattern (Creswell, 2009). Finally, a mixed methods approach is one in which the researchers focus on the study topic and employ all possible methodologies to solve it (Creswell, 2003). Because of the above discussions, as well as the research problem and objective, the quantitative method predominantly used in this study.

3.3 Research Design

To investigate business issues, a variety of research designs could be applied (Hair et al., 2011). The research design grouped into three groups based on how researchers ask their research questions and communicate their purpose: exploratory, descriptive, and explanatory studies (Saunders et al., 2009, p. 138& 139).

In order to assess the effect of credit risk on profitability of selected private commercial banks in Ethiopia, the researcher used an explanatory research design. Explanatory study identifies the causes and consequences of the phenomena being studied (AnolBhattacharjee, 2007). It uses a

testing hypothesis to find an explanation for the nature of the relationship between the dependent and independent variables. This gives insight into the relationship between variables.

3.4 Data Source and Collection Method

This research relied on secondary data sources that are quantitative in nature. To avoid the subjectivity of primary data, a secondary data source is used (Bourke P, 1989). Subjectivity and biased findings and conclusions are not present in this secondary data. Secondary data gathered from audited annual financial reports of sample private commercial banks in Ethiopia from 2010 to 2020. In addition, the NBE's annual and quarterly publications, as well as the Central Statistical Authority of Ethiopia's (CSA) publications (including the annual report) and the Ministry of Finance and Economic Development (MoFED) publications, consulted. In addition, references with regard to the current commercial code of the country, banking proclamations, numerous NBE directives used.

3.5 Sampling Design and Techniques

As of June 2020, there are 18 commercial banks in the country. Sixteen of these institutions are private commercial banks. A purposive sampling strategy used to pick a sample of six banks from the 16 private commercial banks for this study. Purposive sampling is the deliberate selection of a respondent/unit due to the qualities of the individual/entity possesses (Tongco, 2007 cited in Addaeetal. 2014). The technique applies to the study to select the sample in view of the fact that, the private commercial banks to be included in the sample should be those that have been in operation for the past 20 years. The list of all commercial banks (Population) with the year of their establishment indicated in table 3.1 below.

Table 3.1: Establishment Date of Private Banks

NO.	Name of Bank	Year of establishment	Number of years since establishment till 2020
1	Awash Bank	1994 GC	26
2	Dashen Bank	1995 GC	25
3	Bank of Abyssinia	1996 GC	24
4	Wegagen Bank	1997 GC	23
5	United Bank	1998 GC	22
6	NIB International Bank	1999 GC	21
7	Cooperative Bank of Oromia	2004 GC	16
8	Lion International Bank	2006 GC	14
9	Zemen Bank	2008 GC	12
10	Oromia International Bank	2008 GC	12
11	Bunna International Bank	2009 GC	11
12	Berhan International Bank	2009 GC	11
13	Abay Bank	2010 GC	10
14	Addis International Bank	2011 GC	9
15	Debub Global Bank	2012 GC	8
16	Enat Bank	2012 GC	8

Because of the stated purpose and selection criteria, six private commercial banks are included in the sample. The sample represents 38 percent of the total population of Ethiopian private commercial banks. As a result, the sample size chosen is representative of both the population and the research.

3.6 Data Analysis Techniques

The study uses panel data, which collected through structured document review, to achieve the wide research objective. As a result, descriptive statistics, correlations, and multiple linear regression analysis used to examine the acquired panel data. The general trends of the data from

2010 to 2020 analyzed using mean values and standard deviations based on a sector sample of six banks, and a correlation technique used to assess the association between the dependent variable and explanatory variables. To estimate the relative importance of each independent variable in effecting profitability, a multiple linear regression model and t-static used.

The multiple linear regressions model ran through EViews 10 to test the casual relationship between bank profitability and potential factors as well as to identify the most significant and influential explanatory variables affecting Ethiopian bank profitability.

3.7 Model Specification

The following general multiple linear regression models used to investigate the impact of credit risk on the profitability of private commercial banks in Ethiopia:

$$Y_i = \beta_0 + \beta X_i + \mu_i \dots \dots \dots (1)$$

Where:

Y_i - Dependent Variable

β_0 - Constant term,

X_i - Explanatory or independent Variables

μ_i - Error term (assumed to have zero mean and independent across time period).

Hence, the dependent variable in this study, profitability measured by rate of return on asset (ROA). The independent variable, credit risk, also measured by the ratio of nonperforming loan to total loan and advance ratio (NPLR), capital adequacy ratio (CAR), loan loss provision ratio (LLPR), liquidity ratio (LR), bank size, interest spread rate, inflation, and GDP. To account for unexplained change on profitability by credit risk measures used in the model error terms were included in the model.

The models are express as follows,

$$ROA_{i,t} = \beta_0 + \beta_1 NPLR_{i,t} + \beta_2 CAR_{i,t} + \beta_3 LLPR_{i,t} + \beta_4 LR_{i,t} + \beta_5 BS_{i,t} + \beta_6 IS_{i,t} + \beta_7 INF_{i,t} + \beta_8 GDP_{i,t} + \mu_i$$

Where;

- $ROA_{i,t}$ is dependent variable – Return of Asset.
- $NPLR_{i,t}$, $CAR_{i,t}$, $LLPR_{i,t}$, $LR_{i,t}$, $BS_{i,t}$, $IS_{i,t}$, $INF_{i,t}$, $GDP_{i,t}$ is time-varying explanatory variables – Non-performing Loan ratio, Capital Adequacy Ratio, loan and advance to deposit ratio, Loan Loss Provision ratio, Liquidity Ratio, Bank Size, Inflation rate(annual average) and Gross Domestic Product(real) respectively.
- β_0 is the intercept.
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$ are model parameters.
- μ_i is model error term.

3.8 Variables Description

The dependent variable used in this study is Profitability. It is measured by ROA. Besides, explanatory variables included in this study are NPLR, CAR, LLPR, LR, Bank Size, and Interest Spread Rate are those from the internal factors and GDP with inflation from the external (macroeconomic) factors.

3.8.1 Dependent Variable

Many of the studies related with bank performance primarily represented by quantitative financial measures. Bank performance has intimately linked to profitability indicators such as ROA in the research on the impact of banks profitability.

Return on Asset (ROA) is a key parameter for determining a bank's profitability. It is a proportion of income to total assets (Khrawish, 2011). It measures the capacity of the bank management to make profit by employing the company's assets. In other words, it indicates how efficiently the company's resources utilized to generate revenue.

It also reflects how efficient a management of the company is at generating net income from all of the institution's resources (Khrawish, 2011). According to Wen (2010), a greater ROA indicates that the company is more efficient in its resource utilization.

3.8.2 Independent Variables

This section explains the independent variables that used to estimate the dependent variables in the econometric model.

Non-Performing Loan Ratio (NPLR) - Non-performing loan ratio is an independent variable that chosen as a credit risk indicator. Because it defines the proportion of loan losses in relation to total loan amount, NPL in particular indicates how banks manage their credit risk. The less the ratio the most effective of the credit risk management of banks Afriyie and Akotey (2013).According to NBE (2012), a non-performing loan is one whose interest and principle payments are more than 90 days overdue, or one whose interest has been refinanced for more than 90 days.

Capital Adequacy Ratio (CAR) - A bank's capital adequacy ratio is the proportion of its own equity to its risk exposure. It helps in the protection of depositors from banks that lend aggressively and do not collect the majority of the money provided. This is because massive loan losses that wipe out a bank's total equity might result in an immediate bankruptcy, forcing depositors to lose their money. The Capital Adequacy Ratio (CAR) is a specific measure of a bank's capital adequacy condition set by the NBE (Directive No. SBB/9/95). The regulation set out the calculation method and conversion factors for both on and off-balance sheet items, and it required all banks to keep their capital levels above 8% of their risk-weighted assets. Regardless of the regulatory structure, the basic goal of keeping capital is to strengthen the bank's internal strength so that it can cover losses during a crisis (Dang, 2011).

Loan Loss Provision Ratio (LLPR) – first, Loan Loss Provision is a non-cash expense that banks incur to account for prospective loan default losses. Banks anticipate a certain percentage of loans defaulting or becoming late. When computing pre-tax income, banks include a percentage as an expense. When defaults occur, this ensures a bank's solvency and capitalization. The Loan Provision to Total Loan and Advance (LP/TLA) ratio is a credit risk indicator. It indicates a bank's potential to create income before a default is expected (Agegnehu, 2013).

Liquidity Ratio (LR) - Another factor that influences a bank's financial performance is liquidity. Liquidity refers to a bank's capacity to meet its commitments, primarily those of depositors. An adequate degree of liquidity, according to Dang (2011), is favorably associated to bank profitability. The ability to provide money on demand referred to as liquidity. Liquidity, according to Megeid (2013), defined as assets that can be converted into cash without incurring a loss. A consumer with a fever is equivalent to a customer with poor liquidity. In extreme instances, lack of liquidity, according to Kargi (2012), can lead to the bank's insolvency.

Bank Size (BS) – Bank size is a metric that indicates the size of a bank in terms of its assets. Large banks considered to have low credit risk due to its capacity to set up a strong credit risk management frameworks.

Interest Rate Spread (IS) - Interest rate spreads derived from the main functions of financial organizations, particularly commercial banks, which include lending and deposit taking. Banks charge interest when they lend money, and give interest on deposits to encourage deposits as a reward for their customers' thriftiness, and the spread is the difference between the two rates (Hamis, 2010).

Gross Domestic Product (GDP) - is one of the major macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country's borders over a particular time, usually a year. Since economic growth and financial sector performance are positively correlated (Levine, 2000), the trend of GDP affects the demand for banks asset. Gross Domestic Product (GDP) is a measure of the overall economic output within a country's borders over a specific time period, usually a year, and is one of the most important macroeconomic indicators used to assess a country's economic health. The trend of GDP influences the demand for banks' assets because economic growth and financial sector performance are strongly associated (Levine, 2000).

Inflation (INF) - is a significant factor in banking performance. High loan interest rates and incomes linked to high inflation rates. Inflation has a different impact on banking performance depending on whether it expected or unforeseen (Nayeem et al., 2014). A positive impact on profitability will result if inflation fully predicted and interest rates adjusted accordingly. Unexpected increases in inflation, on the other hand, cause cash flow problems for borrowers, which can lead to the premature termination of loan plans and loan losses. The research on the relationship between inflation and profitability has resulted in a variety of results.

CHAPTER FOUR

DATA ANALYSES AND DISCUSSION OF RESULTS

4.1 Introduction

In this section of the study, the results from the secondary data for profitability of private commercial banks in Ethiopia have presented. Different statistical and econometric models such as descriptive statistics, correlation analysis and panel data regression analysis used as the major tools for the analysis.

4.2 Descriptive Statistics

The descriptive statistics for the dependent and independent variables presented and analyzed in this section of the study. The descriptive statistics used in the study consists of mean value for each variable, as well as minimum and maximum values, standard deviation, and number of observations.

Table 4.1 provides the descriptive statistics of the dependent and independent variables for six private Commercial Banks from the year 2010 to 2020 with 66 observations. The dependent variable is bank profitability measured by return on asset (ROA) and others are the explanatory variables. They are nonperforming loan ratio, capital adequacy ratio, loan loss provision ratio, liquidity ratio, bank size, Interest spread rate, annual inflation rate, and real GDP growth rate.

Table 4.1 Descriptive Statistics of Dependent and Independent Variables

	ROA	NPLR	CAR	LLPR	LR	BSLN	IS	INF	GDP
Mean	0.02929	0.02929	0.13848	0.02014	0.32542	23.6255	0.04373	0.13500	0.09288
Median	0.02840	0.02800	0.14070	0.01770	0.26555	23.5593	0.04005	0.12600	0.09900
Maximum	0.04680	0.07400	0.20610	0.07410	0.77390	25.2151	0.09000	0.34100	0.11400
Minimum	0.01780	0.01000	0.01168	0.00220	0.13170	22.4711	0.02110	0.02800	0.06100
Std. Dev.	0.00647	0.01263	0.04541	0.01170	0.17365	0.70177	0.01714	0.08138	0.01494
Observations	66	66	66	66	66	66	66	66	66

Source: annual report of sample commercial banks computed using E-views 10

Table 4.1 above shows descriptive statistics results of dependent and independent variables. The total observation of this study is 66. The mean value of return on asset is 2.929%, which is more than the international standard of ROA of 1 to 2%, Basel Committee on Banking Supervision (2001) with a minimum of 1.78% and a maximum of 4.68%. This indicated that, during the period the most profitable bank among sampled banks earned 4.68 cents of profit after tax for a single birr invested in their asset. While, the least profitable bank of the banks earned 1.78 cents. The standard deviation statistics for ROA of 0.647% depicted that profitability variation between the banks is very small.

Descriptive statistics for the first independent variable indicate that the ratio of non-performing loan to total loans of selected private commercial banks. The mean of NPLR is 2.93% indicates that, from the total loans that private commercial banks disbursed, an average of 2.93% are being default or uncollected during the review period. The minimum and maximum value of NPLR is 1.0% and 7.4% respectively, which implies that on average selected banks incurred a maximum loan loss of 0.074 cents out of each 1 birr loans provided and a minimum of 0.010 cents out of each 1-birrloans provided during the review period. The value of NPLR deviate from its mean by 1.26% shows the existence of variation among private commercial banks in terms of their loan recovering capacity.

Capital Adequacy Ratio (CAR) measured by the ratio of total equity to risk weighted assets having a mean value of 13.85% and standard deviation of 4.54% with a minimum and maximum value of 11.68% and 20.61%, respectively. The National Bank of Ethiopia (NBE), the regulatory organ of the Ethiopian financial sector, has set 8% minimum requirement CAR similar with BASEL accord II requirements. The mean value of 13.85% indicated that the average CAR of private banks in Ethiopia during study period is well above the limit set by the NBE per NBE Directives No. SBB/50/2011 as well as the standard set by BASEL accord II and for it is generally accepted that, a bank with a high capital adequacy ratio is thought to be safe and likely to meet its financial obligations, promoting financial system stability and efficiency.

Loan loss Provision to total loans and advances ratio (LLPR) is an indicator for the quality of the credit portfolio. Accordingly, the mean value is 2.01% as compared to the total loan and advances. It indicate that selected private banks, on average, set an amount of 0.0201 cents from its annual earnings as a precaution against possible loss of a non performing loan, or to off-set a

lost credit facility for each birr of loans provided. The minimum and maximum values are 0.22% and 7.41% respectively. The standard deviation of 1.17% also indicates that there is no that much variation among banks credit risk exposures. According to the Basel agreement, banks with an average asset quality of less than 1.25 percent considered to have good asset quality (Basel, 2006). The selected banks in this study have an average of 2.01%, which is above the threshold set by the standard.

Liquidity ratio (LR) measured by cash and cash equivalents to total deposits ratio. The mean value of liquidity ratio is 32.54%; it shows that the selected private banks are in good liquidity position, within the minimum 15% regulatory limit set by NBE. The standard deviation is 17.65%, while 13.17% and 77.39% observed as minimum and maximum values respectively. According to the findings, there are more variations in liquidity management among banks.

The mean value of bank size (BSLN) which measured by natural log of total asset of selected banks in the year from 2010 to 2020 is 18.22 billion birr with the maximum and minimum values of 89.29 billion birr and 5.74 billion birr respectively. The standard deviation of 2.02 billion birr indicates the existence of less variation among selected commercial banks in terms of their size.

The average interest spread rate of selected private commercial banks is 4.37% with minimum and maximum of 2.11% and 9% respectively. This indicates that Ethiopian private commercial banks start computing each other by interest rate.

Regarding macro-economic variables, annual inflation rate has a mean value of 13.5% with standard deviation of 8.14% during the study period. The minimum and maximum values are 2.8% and 34.1% respectively. This obviously indicates that there is a bit more variations in terms of cost of living as it assessed by consumer price index.

Growth domestic product growth rate (GDP) is also another macro-economic variable. On average, the Ethiopian economy increased by 9.29% during the study period. This helps banks in providing necessary loan for financing different investments. The minimum and maximum values of GDP are 6.1% and 11.4% respectively.

4.3 Correlation Analysis

The degree of linear association between variables measured by correlation. Values of the correlation coefficient always ranged between -1 and +1. A correlation value of +1 implies that the two variables have a perfect positive link, whereas a correlation coefficient of -1 indicates that they have a perfect negative association. The absence of a relationship (association) between two variables indicated by a correlation coefficient of zero (Brooks, 2008). The table below shows the correlation matrix among dependent and independent variables.

Table 4.2 Correlation analysis of variables

	ROA	NPLR	CAR	LLPR	LR	BSLN	IS	INF	GDP
ROA	1								
NPLR	0.184490	1							
CAR	0.177220	-0.134542	1						
LLPR	0.473749	0.682688	-0.070505	1					
LR	0.652278	0.578406	-0.136735	0.796894	1				
BSLN	-0.509875	-0.574072	0.094273	-0.736648	-0.776752	1			
IS	-0.455931	-0.401703	-0.086665	-0.372287	-0.374978	0.266806	1		
INF	0.268405	-0.260192	0.035195	-0.065737	-0.002708	0.012811	0.053573	1	
GDP	0.412299	0.383117	-0.132117	0.528178	0.568153	-0.663096	-0.389184	-0.379528	1

Source: annual report of sample commercial banks computed using E-views 10

The result in table 4.2 shows how the independent variable related to the dependent variable. According to the result NPLR, CAR, LLPR, LR, INF, and GDP have positive correlation with ROA with a coefficient of 0.184490, 0.177220, 0.473749, 0.652278, 0.268405 and 0.412299 respectively while BSLN and IS are negatively correlated with ROA with a value of -0.509875 and -0.455931 respectively. It indicates that when NPLR, CAR, LLPR, LR, INF, and GDP increases, the profitability (ROA) of selected private commercial banks will move up and when BSLN and IS moves increases, the profitability (ROA) of selected private commercial banks will move down. In addition, LR and BSLN are significantly correlated with ROA; LLPR, IS, INF and GDP have medium correlation with ROA and NPLR and CAR have insignificant correlation with ROA.

4.4 Regression Model Tests

For valid hypothesis testing and to make data available for reliable results, the test of assumption of regression model is necessary. When these assumptions met, the model incorporates all available information. On the contrary, if these assumptions violated, data will be exclude from the model (Brooks, 2008). Accordingly, before applying the model for testing the significance of the slopes and analyzing the regressed result, model specification tests, normality, multicollinearity, autocorrelation, and heteroscedasticity tests checked to find any data misspecification.

4.4.1 Model Selection

Fixed effect and random effects models are perhaps the most widely estimated models for panel data. Because of the following reasons, the researcher chose a fixed effect model over a random effect model:

According to Brooks (2008), when the entities in the sample can be thought of as having been randomly selected from the population, the random effects model is more appropriate, but when the entities in the sample effectively represent the entire population, the fixed effect model is more reasonable. As a result, the sample for this study was not chosen at random, but rather logically to effectively reflect the entire population, making it suitable for fixed effect model test.

According to Gujarati (2004), if the number of time series data is big and the number of cross sectional units is small, the values of the parameters predicted by the fixed effect model and the random effect model are likely to be little. As a result, the decision is based on computational convenience. On this point may be preferable. The fixed effect model is preferred in this scenario because the number of time series (11 years) is more than the number of cross-sectional units (i.e. 6 private commercial banks).

4.4.2. Tests for the Classical Linear Regression Model Assumptions

I. Test for average value of the error term is zero ($E(UT) = 0$)

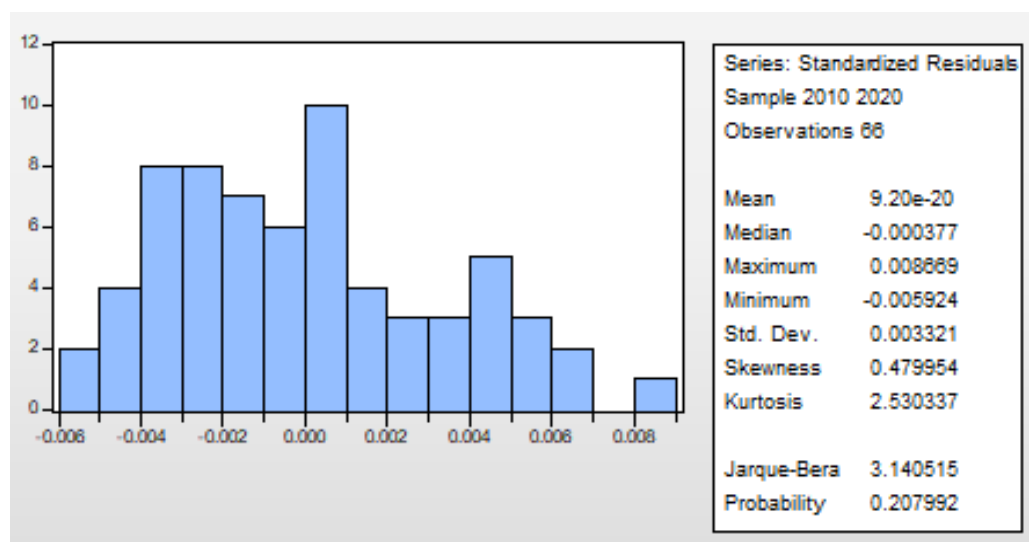
The first assumption required is that the average value of the errors be zero. According to Brooks (2008), the presence of a constant term in the regression equation prevents the assumption that

the average value of errors is zero from being violated. As a result, a constant term included in the study's regression model to ensure that this assumption not violated.

II. Normality Test

The normality assumption is the second key diagnostic test used in this study (i.e. the normally distributed errors). If the residuals are normally distributed, the histogram should be bell-shaped, and the Jarque-Bera statistic should be significant, according to Brooks (2008). Jarque-Bera formalizes this by examining the residuals for normality and determining whether the coefficient of skewness and kurtosis are ≈ 0 and ≈ 3 respectively. Normality assumption of the regression model can be tested with the Jarque-Bera measure. Skewness is a measure of how a distribution is asymmetric about its mean value, whereas kurtosis is a measure of how fat the tails of the distribution. The presence of normality is indicated by the Jarque-Bera probability statistics/P-value being larger than 0.05 (Brooks, 2008).

Figure 4.1 Normality test



Source: annual report of sample commercial banks computed using E-views 10

As shown in the histogram in figure 4.1 here above, the skewness and kurtosis approaches to 0 (i.e. 0.479954) and 3 (i.e. 2.530337) and the histogram statistics was not significant at 5% (i.e. 0.207992). As a result, the null hypothesis that the error term is normally distributed should not be rejected, since the error term follows the normal distribution in all cases in this study, it concluded that the model is normal.

III. Multicollinearity Test

The third test that conducted in this study is the multicollinearity test, this help to identify the correlation between independent variables and to eliminate double effect of independent variable from the model. Multicollinearity is a problem that occurs when the explanatory variables are significantly associated with each other. According to Brooks (2008), multicollinearity is not an issue if the correlation coefficient with the independent variables is up to 0.8. Therefore, a coefficient of correlation less than 0.8 is acceptable. Hair et al. (2006), on the other hand, stated that a correlation coefficient of less than 0.9 might not cause a major multicollinearity problem. Therefore, in this study the correlation matrix for eight of the independent variable is shows below in table 4.3. The result of correlation matrix shows that the maximum coefficient of correlation between two independent variables in this study is 0.796894 that is between LLPR and LR. This coefficient of correlation does not violate the acceptable level stated by Hair et al (2006) and Brooks (2008). Therefore, there is no multicollinerity among the independent variables in the study.

Table 4.3 MulticollinearityTest

	NPLR	CAR	LLPR	LR	BSLN	IS	GDP	INF
NPLR	1							
CAR	-0.134542	1						
LLPR	0.682688	-0.070505	1					
LR	0.578405	-0.136735	0.796894	1				
BSLN	-0.574072	0.094273	-0.736648	-0.776752	1			
IS	-0.401703	-0.086665	-0.372286	-0.374978	0.266805	1		
GDP	0.383117	-0.132116	0.528177	0.568152	-0.66309	-0.389183	1	
INF	-0.260192	0.035195	-0.065737	-0.002708	0.012811	0.053573	-0.379528	1

Source: annual report of sample commercial banks computed using E-views 10

IV. Autocorrelation Test

Another assumption of the classical linear regression model is that the covariance between the error terms over the time is zero. In other words, the errors assumed to be unrelated to one another. Durbin-Watson (DW) gives a test for first order autocorrelation in this aspect (Brooks, 2008). According to Brooks (2008), DW has two critical values: an upper critical value (du) & lower critical value (dL), & there is an inconclusive zone where the null hypothesis of no autocorrelation can neither be rejected nor accepted (see figure 4.2).

Figure 4.2: Durbin-Watson test of Autocorrelation

Positive Autocorrelation	Inconclusive	No Autocorrelation	Inconclusive	Negative Autocorrelation
0	dL	du	2	4-du
0	1.336	1.606	1.882	2
				2.118
				4-dL
				2.664

Source: researcher drawing

Therefore, based on the DW criteria, figure 4.2 above, for 66 observations with eight explanatory variables at 5% level of significance, the dL and du values are 1.336 and 1.882 respectively. The DW value for Z-value for 66 observations is 1.606(see, Table 4.5). This means that there is no autocorrelation in the regression model since the DW value (1.606) lies in the inconclusive region within the range of du (1.336) and dL (1.882).

V. Heteroscedasticity Test

The assumption of homoscedasticity was the final but not least assumption of classical linear regression investigated in this study. According to Brooks (2008), this assumption requires a constant variance in the errors. The assumption of homoscedasticity violated if the errors do not have a constant variance. Heteroscedasticity is the word for this type of violation. The White test employed in this study to test whether there is heteroscedasticity across the range of explanatory variables.

Table 4.4 Heteroscedasticity Test

Heteroscedasticity Test: White			
F-statistic	1.276534	Prob. F(6,57)	0.2714
Obs*R-squared	8.529126	Prob. Chi-Square(6)	0.2316
Scaled explained SS	12.32217	Prob. Chi-Square(6)	0.3412

Source: annual report of sample commercial banks computed using E-views 10

As shown in the above white test, both the F- statistic and R-squared versions of the test statistic gives the same conclusion that there is no evidence for the presence of heteroscedasticity. Since

the p-values are considerably in excess of 0.05 and also the third version of the test statistic, ‘Scaled explained SS’, which as the name suggests is based on a normalized version of the explained sum of squares, suggests also that there is no evidence of heteroscedasticity. Thus, the conclusion of the test has shown that no evidence of heteroscedasticity.

4.5 Analysis of Regression

This section presents the regression result that examines the effect of credit risk on profitability of private commercial banks in Ethiopia. Table 4.5 below shows regression results between the dependent variable (ROA) and independent variables estimated via E-views 10.0 software package. Under the following regression outputs, the beta coefficient may be negative or positive. The level of influence of each variable on the dependent variable indicated by beta.

Regression result

In order to examine the effect of credit risk on profitability of private commercial banks the linear regression model in this study looks like:

$$ROA_{i,t} = \beta_0 + \beta_1 NPLR_{i,t} + \beta_2 CAR_{i,t} + \beta_3 LLPR_{i,t} + \beta_4 LR_{i,t} + \beta_5 BSI_{i,t} + \beta_6 IS_{i,t} + \beta_7 INF_{i,t} + \beta_8 GDP_{i,t} + \mu_i$$

Table 4.5 Regression result

Dependent Variable: ROA

Method: Panel Least Squares

Date: 12/05/21 Time: 00:34

Sample: 2010 2020

Periods included: 11

Cross-sections included: 6

Total panel (balanced) observations: 66

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.059485	0.048485	1.026857	0.2254
NPLR	-0.081678	0.065952	-1.438456	0.0211
CAR	0.008079	0.015877	1.208871	0.0430
LLPR	-0.037943	0.085729	-2.682595	0.0099
LR	0.018841	0.005543	3.398841	0.0013
BSLN	0.001901	0.001984	1.658608	0.0122
IS	-0.010860	0.091920	-0.118151	0.9064
GDP	0.084922	0.055410	3.240136	0.0021
INF	0.023892	0.007374	0.832593	0.1314

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.736704	Mean dependent var	0.029294
Adjusted R-squared	0.670880	S.D. dependent var	0.006473
S.E. of regression	0.003713	Akaike info criterion	-8.167925
Sum squared resid	0.000717	Schwarz criterion	-7.703453
Log likelihood	283.5415	Hannan-Quinn criter.	-7.984390
F-statistic	11.19205	Durbin-Watson stat	1.605775
Prob(F-statistic)	0.000000		

Source: annual report of sample commercial banks computed using E-views 10

This section discusses in detail the analysis of the results for each independent variable and their effect on profitability of private commercial banks in Ethiopian. Furthermore, the discussion analyzed the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the interpretation on the fixed effects model regression results.

The P-value reveals the significance of each variable at a given percentage or precession level. The R-squared value indicates how well the regression model describes the actual variations in

the dependent variable (Brooks, 2008). R-squared statistics and the adjusted- R squared statistics of the model is 73.67% and 67.09% respectively. The result indicates that the changes in the independent variables explain 73.67% of the changes in the dependent variable. That is NPLR, CAR, LLPR, LR, BSLN, IS, GDP, AND INF collectively explain 73.67% of the changes in ROA. The remaining 26.33% of changes explained by other factors that are not included in the model. Thus, these variables collectively, are good explanatory variables of the profitability of private commercial banks in Ethiopia.

The F-statistics tests the fitness of the model, with a recommended F-statistics of greater than 5 indicating that it is fit. The regression F-statistic takes a value of 11.19205 that is greater than 5 hence the model is fit for estimation. F-statistics also examines the joint effect of all explanatory variables on the dependent variables. The test statistic has a corresponding p-value of zero, indicating that the test statistic has strong statistical significance, which enhanced the reliability and validity of the model. Thus, it indicates that the independent variables in the model are able to explain variations in the dependent variable.

Table 4.5 shown that NPLR, CAR, LLPR, LR, BSLN and INF are statistically significant variables that affecting the bank profitability (ROA) and the coefficient of explanatory variables that affect profitability negatively are NPLR, LLPR and IS. Which means the one unit of NPLR, LLPR and IS variables increased in the bank have a 0.0817, 0.0379 and 0.0109 unit change on banks profitability (ROA) to the opposite direction respectively. However, CAR, LR,BSLN, GDP and INF has a positive effect on profitability (ROA) which implies that one-birr change in CAR, LR,BSLN, GDP and INF will have 0.0081, 0.0188, 0.0019, 0.0849 and 0.0239 change on profitability with the same direction respectively.

4.6 Discussion of the Regression Results

The aim of this study is to examine the effect of credit risk on profitability of private commercial banks in Ethiopia. Based on studies made previously and the finding of this research, this section discussed the general result obtained via fixed effect regression model as shown in the above table 4.5 and the result of each explanatory variable including their effect on the level of ROA of private commercial banks in Ethiopia is discussed. The detailed estimation results that show the effect of explanatory variables on ROA discussed as follows:

Nonperforming loan ratio (NPLR)

The results of fixed effects regression model in table 4.5 indicates that nonperforming loan ratio has -0.081678 beta coefficients, which shows that if nonperforming loan is increased by 1%, return on asset will be decrease by 8.168% by controlling other factors constant. Since the beta coefficient of nonperforming loan has a negative sign, nonperforming loan has a negative effect on profitability of private commercial banks measured in terms of ROA and the p value of NPLR is 0.0211 shows that it is statistically significant at 5% level of significance.

Accordingly, it is consistent with the researcher expectation that nonperforming loan ratio has a negative and statistically significant effect on profitability of private commercial banks in Ethiopia for the period of 2010 to 2020. This result shows that, high NPLR increase the level of default rate and reduces the profitability of private commercial banks in Ethiopia. Hence, the possible reason is that the failure of the borrowers to pay the loan according to pre-agreed term and condition. This finding goes in line with the literatures Tefera (2011) and Mekasha (2011) both concluded that there is a negative relationship between nonperforming loan ratio and performance of commercial banks in Ethiopia.

Capital adequacy ratio

As evidenced from the output of regression analysis present in table 4.5, capital adequacy ratio has positive and statistically significant effect on profitability of banks with a coefficient of 0.0081 and p-value of 0.0430 shows that it is statistically significant at 5% level of significance. Based on beta coefficient, indicates that if the capital adequacy of private commercial banks increases by 1%, the private commercial banks profitability will increase by 0.81% by controlling other factors constant. Therefore, it is consistent with the hypothesis developed in this study. The study hypothesized that there is a positive and significant relationship between capital adequacy ratio (CAR) and profitability (ROA) of Ethiopian private commercial banks. This implies that a bank with a strong capital position is better able to pursue economic opportunities and has more time and flexibility to cope with problems arising from unexpected losses, thus achieving in increase in profitability. Further, the finding is also consistent with previous studies of Ali and Dhiman (2019), and Chali and Reddy (2016) findings that found that

there is a positive relationship between capital adequacy ratio and financial performance of banks.

Furthermore, the result is consistent with existing reality in the Ethiopian banking industry, which clearly shows the existence of a direct relationship between capital adequacy and bank profitability i.e., the most profitable private commercial bank, Awash bank is also the most capitalized private bank of the country. Hence, as a bank capital grows, it becomes more capable of absorbing losses; and continue operations even under troubled environment and reduce the likelihood of failure and/or insolvency.

Loan-loss provision ratio

The results of fixed effects regression model in table 4.5 indicates that the ratio of loan-loss provision to total loans and advance has a negative effect on the profitability of private commercial banks in Ethiopia with a beta coefficient -0.03794. The result indicates that 1% change in bank's LLPR has a result of 3.794% changes on the level of ROA in the opposite direction and the p value of LLPR is 0.0099 shows that it is statistically significant at 1% level of significance.

The result is consistent with the hypothesis developed in this study. The study hypothesized that there is a negative and significant effect of LLPR and profitability (ROA) of Ethiopian private commercial banks. Besides, this study finding supported by prior study of Awoke (2014) that point out the negative significant effect of LLPR on profitability of private commercial banks in Ethiopia. Hence, the deterioration in the quality of loans reduces ROA. This has an implication of whenever there is small credit risk, banks perform well and at the same time whenever high credit risk, bank performance suffers the most. This is due to that the provision amount held for loss loans reduces a banks profit with the same amount.

Liquidity Ratio

The results of the table 4.5 indicate that liquidity ratio has a coefficient of 0.0188 which shows that liquidity ratio and profitability of private commercial banks had a positive relation other thing remain constant. The direct relation between liquidity ratio and profitability indicate that 1% increase in liquidity ratio increase profitability of private commercial banks by 1.88%.

Liquidity ratio is statically significant at 1% level of significant because the p- value is 0.0013 which less than 1%.

The result is consistent with the hypothesis developed in this study. The study hypothesized that there is a positive and significant relationship between liquidity ratio and profitability (ROA) of selected private commercial banks.

This result is similar with the findings of Wondimagegn (2015), which revealed that higher liquidity position of the banks would tend to higher profitability. Therefore, liquidity ratio has a great contribution for the raise of profitability of selected private commercial banks.

Bank size (BSLN)

Bank size (BSLN) result in the above fixed effects regression model in table 4.5 shows that bank size is positive and statistically significant to bank profitability. It has a coefficient result of 0.001901 and a p-value of 0.0122. Therefore, the result shows that for 1% change in BSLN, keeping the other things constant has resulted 0.19% change on the level of profitability (ROA) in similar direction and the p value of bank size 0.0122 shows that it is statistically significant at 5% level of significance. The result is consistent with the hypothesis developed in this study. The study hypothesized that there is a positive and significant relationship between bank size and profitability (ROA) of selected private commercial banks.

This implies that larger banks benefit from economies of scale, making them more profitable. The cost of acquiring and processing data reduced because of economies of scale. The larger the bank size, the more profitable the bank. It could also imply that bank size linked to diversification, which could have a positive impact on risk and product portfolio. The data of this study shows the size of all Ethiopian private commercial banks that measured by log of total asset is increased for the last 11 years. Consequently, this improvement leads to the profitability of banks in Ethiopia. The result implies that larger banks enjoy the higher profit than smaller banks in Ethiopia banking sector because they are taking the advantage of economies of scale. The finding of this study is in consistent with the previous studies of Awoke (2014).

Interest rate spread (IS)

The negative and statistically insignificant effect of interest rate spread on profitability (ROA) of selected private commercial banks with coefficient value of 0.01086. The negative sign shows that there is an inverse relation between interest rate spread and ROA. Based on beta coefficient, 1% increase in interest rate spread will bring a 1.086% decrease in profitability (ROA) of selected private commercial banks. In addition, the variable is statistically insignificant in explaining the effect of interest rate spread on profitability (ROA) of selected private commercial banks with significance value of 0.9064.

The finding of this study is inconsistent with the researcher expectation. The possible reason for this may be there is no tough competition between banks by interest rate and the government close control on the minimum deposit rate or banks made income from non-interest income like commissions on money transfer, letter of credit, foreign exchange, letter of guarantee, and various service charges.

Annual inflation rate (INF)

Regarding the macroeconomic factors, as shown from table 4.5 the result for inflation showed a positive insignificant effect on the banks profitability having p-value of 0.1314 and beta coefficient 0.023892. This could imply that because banks are unable to predict inflation levels accurately, they miss the opportunity to profit from an inflationary environment. The finding in this study is consistent with Tegegne (2018).

Gross Domestic Product (GDP)

GDP is the other macroeconomic factor. The result of fixed effect regression model shows that GDP has statistical significant and positive effect on ROA at 1% significance level (P-value 0.0021). These results about GDP support the argument of the positive association between economic growth and the financial sector performance. This evidenced by the fact that the Ethiopian economy has been stimulated over the research period, resulting in new and potential demand for financial services.

This finding supports the findings of Tegegne (2018) concluded that positive and statistically significant relation existed between GDP and bank profitability.

Table 4.6 Summary of actual and expected effects of explanatory variables on the dependent variables

Explanatory Variables	Expected effect on profitability (ROA)	Actual effect on profitability (ROA)
NPLR	Negative and Sig	Negative and Sig
CAR	Positive and Sig	Positive and Sig
LLPR	Negative and Sig	Negative and Sig
LR	Positive and Sig	Positive and Sig
BSLN	Positive and Sig	Positive and Sig
IS	Positive and Sig	Negative and Ins
INF	Positive and Sig	Positive and Ins
GDP	Positive and Sig	Positive and Sig

Note: *Sig- statistically significant and *Ins- statistically insignificant

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The preceding chapter presented the results and discussion, while this chapter deals with summary, conclusion and recommendations based on the findings of the study. Accordingly this, chapter is organized into three subsections.

5.2 Summary of findings

The research general objective was to examine the effect of credit risk on profitability of private commercial banks in Ethiopia. The study used eleven years period of time from 2010-2020 data from six selected private commercial banks in Ethiopia. It carried out by constructing a balanced panel regression model using fixed effect model was adopted for secondary data obtained from audited annual report

The overall result obtained from the regression model indicates that credit risk has an effect on profitability of private commercial banks in Ethiopia. The dependent variable used to measure the profitability of private commercial banks was return on asset and independent variables these are nonperforming loan ratio, capital adequacy ratio, loan loss provision ratio, liquidity ratio, interest spread rate, bank size, inflation and GDP in order to attain the objective of the study.

From the regression result, nonperforming loan ratio, capital adequacy ratio, loan loss provision ratio, liquidity ratio, bank size and GDP has a statistically significant effect on profitability of private commercial banks in Ethiopia. However, the result of the regression analysis revealed that interest spread rate and inflation has insignificant effect on the profitability of private commercial banks in Ethiopia.

5.3 Conclusion

The main objective of this study is to examine the effect of credit risk on the profitability of private commercial banks in Ethiopia based on panel data analysis for the period of 2010 to 2020. To achieve the intended objectives the study has employed quantitative research approach.

The data were collected purposively from a sample of six banks over the time period from 2010-2020. The collected data were analyzed by employing fixed effect model using econometrics software E-view10.

In order to conduct the empirical analysis, one dependent variable and eight independent variables were selected namely nonperforming loan ratio, capital adequacy ratio, loan loss provision ratio, liquidity ratio, bank size and GDP. The results of the fixed effect estimation model showed the effect of credit risk on profitability of private commercial banks suggest the following conclusions.

First, as researcher expected, the findings indicated that banks credit risk measured in terms of nonperforming loan ratio has a negative and statistically significant effect on the profitability of selected private commercial banks in Ethiopia. This indicated that the borrowers failed to repay the loan according to the banks pre-agreed terms and conditions.

Second, as researcher expected, the result showed a positive relationship between capital adequacy ratio and bank profitability with strong statistical significance, showing that an increase in capital adequacy ratio will result in increased bank profitability. This suggests that a bank with a strong capital position is better able to pursue economic opportunities and has more time and flexibility to deal with issues that arise from unanticipated losses, resulting in higher bank profitability.

Third, as researcher expected, the result revealed that loan-loss provision ratio has a negative and statistically significant effect on the profitability of private commercial banks in Ethiopian. This indicates that banks which can keep lower loan loss provision, it is achieved by enhancing the quality of loan portfolio of the bank, can boost their profitability.

Fourth, as researcher expected, the result shows that liquidity ratio has a positive and statistically significant effect on profitability of private commercial banks in Ethiopian. Therefore, the result suggests that banks with stronger liquidity positions are more profitable. This indicates that optimal liquidity position is crucial in the financial healthy strategy of banks. Obtaining optimal liquidity would improve the profitability of the bank by lowering the cost of getting liquid funds to fulfill unanticipated cash demands.

Fifth, as researcher expected, bank size has a positive effect on profitability (ROA) of bank with strong significance. This indicates that larger banks enjoy the higher profit than smaller banks in Ethiopia banking sector through economies of scale.

Sixth, the result shows that interest spread rate has a negative and statistically insignificant effect on ROA. The finding of this study is inconsistent with the researcher expectation. The reason for this could be that there is not much interest rate competition between banks, and the government keeps a tight control on the minimum deposit rate.

In addition, according to the regression analysis of the study, inflation has a positive and statistically insignificant effect on the profitability (ROA) of selected private commercial banks in Ethiopia. This could imply that because banks are unable to predict inflation levels accurately, they miss the opportunity to profit from an inflationary environment.

Lastly, the real GDP growth rate has statistically significant and positive effect on profitability of selected private commercial banks in Ethiopia. It is consistent with researcher expectation.

Generally, the researcher concludes that there is a significant relationship between Ethiopian private commercial banks profitability (ROA) and credit risk similar result with that of other authors mentioned.

5.4 Recommendation

In order to manage credit risk and maintaining financial stability, it is very important to identify the factors that measure credit risk that mostly influence the profitability of private commercial banks. Therefore, based on the findings of the study and the above conclusions of the study the following possible recommendations provided:

- Ethiopian private commercial banks needs strong credit risk management policy by learning from other developed nations with more industry experience. Improving performance demands well-established standards and overall objectives to reduce credit risk exposures.
- Non-performing loans and loan loss provision have a detrimental impact on the profitability of private commercial banks in Ethiopia, according to the study. As a result, it is recommendable for banks use strong credit risk and loan service

process management to reduce the amount of non-performing loans and loan provision as low as possible, allowing private commercial banks in Ethiopia to maintain high profitability.

- Given the favorable impact of capital adequacy and liquidity ratios on profitability of private commercial banks, the researcher suggests that the NBE require banks to boost capital in order to promote banking sector soundness. The researcher also suggests that Ethiopian private commercial banks maintain only the required capital adequacy level. This enables banks to invest their money in productive businesses rather than simply holding it as capital.
- In order to improve bank profitability, the researcher also suggests that banks pay more attention to macroeconomic variables such as inflation and GDP.

5.4 Further Research Consideration

This study only considered the effect of credit risk on profitability of private commercial banks in Ethiopia. However, it is recommendable for potential researchers to examine other factors of credit risk that can affect banks profitability of private commercial banks in Ethiopia by incorporating other bank specific, macro-economic factors and qualitative data.

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