

THE IMPACT OF LOAN PORTIFOLIO QUALITY ON THE PERFORMANCE OF COMMERCIAL BANK IN ETHIOPIA

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Statement of Declaration

I EMRAN MOHAMMED, have carried out independently a research work entitled "*the impact of loan portfolio quality on the performance of commercial banks in Ethiopia*" in partial fulfillment of the requirement of BA Degree in Accounting and Finance with the guidance and support of the research advisor. I do hereby declare that this research paper is my original work and that it has not been submitted by any other person for an award of degree in this or any other university/institution.

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Approval Sheet

This is to certify that the paper prepared by Emran Mohammed Entitled-Impact of loan portfolio Quality on the performance of *commercial banks of Ethiopia* and submitted in partial fulfillment of the requirements for the Bachelor degree in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality. Approved by:

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Examiner: Signature _____ Date _____

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LIST OF ACRONYMS

CI: condition index

VIF: variance inflation factor

DW: Durbin Watson

FEM: fixed effect model

CAR; capital adequacy ratio

IR: interest rate

LOTA: Logarithm of total asset

NPL: Non-performing loan

OLEM: Other loans especially mentioned

ROA: Return on asset

LOSRNI: Loan Loss Reserves to Net Interest Revenue

REM; Random effect model

CIR: Cost income ratio

GDP: Gross domestic product

LLP: Loan Loss Provisioning

CC: correlation coefficients

Abstract

The study attempted to investigate the impact of loan portfolio quality on the performance of commercial banks in Ethiopia using secondary data. The data were obtained from the annual reports of ten commercial banks for the period of 2009 to 2018. The study used return on assets as dependent variable. Moreover, the study used assets size as measure by logarithm of total Assets, capital adequacy, leverage, asset quality measure by non performing loan ratio, and liquidity ratio as bank specific variables. Besides, the study used gross domestic product and inflation rate as external variables. panel data regression model will use to analyze the relationships of a dependent variable with explanatory variables.

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CHAPTER ONE

INTRODUCTION

1.1background of the Study

Lending is the principal business activity for most commercial banks. The loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a bank's safety and soundness. Whether due to negligent credit standards, poor portfolio risk management, or weakness in the economy, loan portfolio problems have historically been the major cause of bank losses and failures. Loan portfolio constitutes loans that have been made or bought and are being held for repayment. Loan portfolios are the major assets of the lending institutions. The value of the loan portfolio depends not only on the interest rates earned on loans but also on the likelihood that interest and principal will be paid. Effective management of the loan portfolio is fundamental to a microfinance institution safety and soundness (Janson, 2002).

An efficient financial intermediation requires a stable banking system to channel surplus funds into savings for investments to promote rapid economic growth (King and Levine, 1993). This is done through the creation of loan assets by banks and other financial intermediaries. However, the creation of the loan assets exposes banks to the risk of defaults by borrowers as well as liquidity constraints. This does not only affect the bank performance but also the stability of the banking system.

The above findings give ample evidence that healthy loan portfolios are vital assets for banks in view of their positive impact on the performance of banks. Unfortunately, some of these loans usually do not perform and eventually result in bad debts which affect banks earnings on such loans. These bad loans become cost to banks in terms of their implications on the quality of their assets portfolio and profitability.

This is because in accordance with banking regulations, banks make provisions for non-performing loans and charge for bad loans which reduce their loan portfolio and income. For example in February, 2009, a Bank of Ghana report revealed that nonperforming loans ratio

increased from 6.4% in 2007, to 7.7% in 2008.

The problem of bad loans is not only common in Ethiopia but also it is other countries ,where the problem has led to the liquidation of some banks.

The findings of Caprio and Klingebiel (2002) cited in Fofack (2005), showed that in Indonesia, non-performing loans represented about 75% of total loan assets which led to the collapse of over sixty banks in 1997.

1.2 Statement of the Problem

Studies of banking crises all over the world have shown that poor loans (asset quality) are the key factor of bank failures. Stuart (2010) stressed that the spate of bad loans (non-performing loans) was as high as 35% in Nigerian Commercial Banks between 1999 and 2009. Umoh (1994) also pointed out that increasing level of non-performing loan rates in banks" books, poor loan processing, undue interference in the loan granting process, inadequate or absences of loan collaterals among other things, are linked with poor and ineffective credit risk management that negatively impact on bank's loan portfolio quality.

Since the loan portfolio management determines performance of banks, it also might determine their sustainability or operation efficiency. Therefore staffs concerned with the management of loans in banks are required to monitor the loan portfolio regularly and examine the factors influencing the infectiveness of loans' portfolio and act immediately to find solutions to the identified weakness. Inactive reaction of the loans staff to find solutions to the factors threatening the effectiveness of loan portfolio might lead to huge loss to the bank since loan portfolio act as the life blood of many financial institutions. The literatures show that banks should have adequate loan portfolio management.

Numbers of studies related to performance of commercial banks in Ethiopia have been conducted. The study made by Abezu (2018) focuses on determinant of loan portfolio quality used only primary sources of data. This study conducted by using secondary source of data and used an economic model. The study made by Yisak (2018) focuses on impact of non-performing loan on the profitability of commercial bank of Ethiopia. No more research's made by the impact of loan portfolio quality on the profitability of commercial banks in Ethiopia. This study would be try to see the impact of loan portfolio quality on the profitability of commercial banks in Ethiopia.

1.3 Objectives of the Study

1.3.1 General objective

The main objective of this study is to examine the impact of loan portfolio quality on the performance of commercial banks in Ethiopia.

1.3.2 Specific Objective the

Specific objectives of this study are:

- To examine the impact of non-performing loan ratio on the profitability of commercial banks in Ethiopia
- To examine the leverage ratio on the profitability of commercial banks in Ethiopia
- To examine the impact of capital adequacy on the profitability of commercial banks in Ethiopia.
- To examine the impact of bank size on the profitability of commercial banks in Ethiopia.
- To examine the impact of GDP growth rate on the profitability of commercial banks in Ethiopia.
- To examine the impact of inflation rate on the profitability of commercial banks in Ethiopia.

1.4 Hypothesis:

- ❖ HO1: Nonperforming loan Ratio has no significant impact on profitability of commercial Banks in Ethiopia.
- ❖ HO2: Capital adequacy has a significant impact on profitability of commercial Banks in Ethiopia.
- ❖ HO3: Bank size has a significant impact on profitability commercial Banks in Ethiopia.
- ❖ HO4: leverage has no significant impact on profitability commercial Banks in Ethiopia.
- ❖ HO5: GDP growth rate has a significantly influence on profitability commercial Banks in Ethiopia.
- ❖ HO6: Inflation has no significant impact on profitability of private commercial banks of Ethiopia.

1.5 Significance of the Study

The importance of this study is to identify the impact of loan portfolio quality on the performance of commercial banks. It was help Ethiopian commercial banks to identify their problems and opportunities with regards to loan portfolio quality and furthermore, it was serve as a source document to future researchers who may wish to research into a similar topic. The boards of directors as well as top level management can use this study to draw strategic policies for their banks.

1.6 Scope of the Study

The research is limited to investigating the impact of loan portfolio quality on profitability of commercial Banks in Ethiopia based on secondary data for period covering from 2009 to 2018. Even though there are about (17) commercial banks in Ethiopia, only ten (10) of them were involved in this research.

1.7 Organization of the Study

The research was organized in five chapters. Chapter one was the introduction part that addresses; statement of the problem, significant of the study, objective of the study. Chapter two was deal with related literature including theoretical as well as empirical aspect of loan portfolio. Methodology was presented under chapter three. Chapter Four presented the empirical study including empirical results with analysis and discussion. The last chapter of the research was about conclusions, recommendation and future research suggestions.

CHAPTER TWO

REVIEW OF LITERATURE REVIEW

This chapter contains a theoretical aspect of research topics for clear understanding. We review and presented the theoretical view with regarded to loan portfolios from related reference material.

2.1 What Is Lending

Lending is the process granting and allowing a borrower the use of loan on condition that they pay it back with interest at an agreed date. A loan is an asset for the lender and a liability for the borrower. To the lender, the loan is an asset that is expected to be repaid along with compensation for the costs and risk of lending. To the borrower, the loan is a liability that is required to be repaid along with charges for receiving the benefits of borrowing.

2.2. Loan Portfolio Quality

Portfolio theory is the most frequently applied to analyses of financial assets. Markowitz approach of 1959 applies on a commercial banks' credit portfolio. Black and Scholes(1973), provided banks with a strategy on how to diversify their loans and investments. Before this, banks had no real investment strategy and their only option was to obtain as much collateral as possible and make default unattractive option. The principle behind the Black-Scholes model is to diversify your equity so that your lowest risk bond produces the same risk as your highest risk investment. When your investment has reached this equilibrium, then risk minimization is achieved. Banks portfolio is managed in such a way that banks get the capital to purchase debt from other institutions within the bank, such as what it takes in from deposits, fees on the various services it renders, and even from outside sources. The firm must manage this portfolio in such a way that return is high, while risk is kept to a minimum. The debt the bank has acquired has value. The value contributed by the rest of the bank should be equal to the excess of the market value of its borrowing.

2.3 Attributes of Good Lending

2.3.1 Safety

The lender needs to ensure that funds lent are safe and that the lenders own financial position is sound. Safety when applied to an advance, is an understanding that the borrower has the legal capacity to borrow, and to provide security should this be required.

2.3.2 Liquidity

Liquidity is the ability of the borrower to meet repayments as they fall due. In the case of a personal loan this would be from monthly salary, and for a business from cash generated from business operations.

2.3.3 Profitability

Profitability is measured in terms of the income generated by the advance in terms of interest and fees and its proper reflection of the risk involved.

2.4. Performing Loans

Legally, a loan facility is defined to mean a contractual promise between two parties where one party, the creditor agrees to provide a sum of money to a debtor, who in turn promises to return the said amount to the creditor either in one lump or in installments over a specified period of time. The agreement may include provision of additional payment of rental charges on the funds advanced to the borrower for the time the funds are in the hands of the debtor. The additional payments that are in the form of interest charges, processing fees, commissions, monitoring fees, among others are usually paid in addition to the principal sum lent. Indeed, these additional payments is made in accordance with the covenants of the loan facility constitute the interest income to the lender. A loan facility may therefore be considered as performing if payments of both the principal and interest charges are up to date as agreed between the lender and the borrower.

2.5. Non-Performing Loans

The term „bad loans“ as described by Basu (1998), is used interchangeably with non-performing and impaired loans as identified in Fofack (2005). Berger and De Young,(1997) also considers these types of loans as “problem loans”. Thus these descriptions are used interchangeably throughout the study.

The definition of NPL varies across countries; there is no global standard to define nonperforming loans at practical level. Saba I, et al. (2012:127) argues that non-performing loan (NPL) is a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 90 days. Nonperforming loan is either in default or close to being in default. Once a loan is nonperforming, the loans that it will be repaid in full are considered to be substantially lower. If the debtor starts making payments again on a nonperforming loan, it becomes a re-performing loan, even if the debtor has not caught up on all the missed payments. This is why most countries provide their own rules regarding NPLs. performing loans are further defined as loans whose cash flows stream is so uncertain that the bank does not recognize income until cash is received, and loans those whose interest rate has been lowered on the maturity increase because of problem with the borrower.

Generally, loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract are considered as non-performing loans. This is because going by the description of performing loans above, it follows that any loan facility that is

not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is nonperforming.

Alton and Hazen (2001) described non-performing loans as loans that are ninety days or more past due or no longer accruing interest. Caprio and Klingebiel (1996), cited in Fofack (2005), consider non-performing loans as loans which for a relatively long period of time do not generate income, that is the principal and or interest on these loans have been left unpaid for at least ninety days. A non-performing loan may also refer to one that is not earning income and full payment of principal and interest is no longer anticipated, principal or interest is ninety days or more delinquent or the maturity date has passed and payment in full has not been made.

Under the Ethiopian banking business directive, non-performing loans are defined as “loans or advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment terms of the loan or advances in question” (NBE, 2007). It further provides that: ..., loans or advances with pre-established repayment programs are nonperforming when principal and/ or interest is due and uncollected for 90 (ninety) consecutive days or more beyond the scheduled payment date or maturity.

Therefore, loans become nonperforming when it cannot be recovered within certain stipulated period of time that is governed by some respective laws.

Generally, from the above definition NPL is:

- A loan that is not earning income;
- Full payment of principal and interest is no longer anticipated;
- Principal or interest is 90 days or more delinquent or;
- The maturity date has passed and payment in full has not been made.

In Ethiopia the criteria of NPL is in accordance with the Basel rules. If a loan is past due 90 consecutive days, it will be regarded as non- performing. The criteria used in Ethiopian banking

business to identify non-performing loan is a quantitative criteria based on the number of days passed from loan being due.

2.6 Loan Classification and Provision

2.6.1 Loan Classification

Loan portfolios of banks are classified into various classifications to determine the level of provisions to be made in line with banking regulations. Loans are classified into five categories including Current, other loans especially mentioned (OLEM), substandard, doubtful and loss (Bank of Ghana, 2008).

The classifications indicate the level of provisions banks are required to make to reflect the quality of their loan portfolio. Indeed the various classifications clearly group loans into performing and nonperforming, in line with banking regulations. These categories further help banks to know the structure of their loan portfolio and for that matter their assets quality.

2.6.2 Loan Provisioning

In Ghana, a major factor considered in making loans is the ability of the borrower to repay the loan. However, to mitigate the risk of default, banks ensure that loans are well secured. Though advances shall be granted on the basis of the borrower's ability to pay back the advance and not on the basis to pledge sufficient assets to cover the advance in case of default, it is highly desirable for all advances made to customers and staff to be well secured. This means that in the event of default the bank shall fall on the collateral used in securing the facility to mitigate the effect of loss of principal and interest (Banking Act, 2004, Act 673).

2.7. Factors Accounting For Bad Loans

Research findings and publications show that bad loans occur as a result of some factors. Berger and De Young (1997) identified poor management as one of the major causes of problem loans. They argue that managers in most banks with problem loans do not practice adequate loan underwriting, monitoring and control.

A World Bank policy research working paper on Non-performing Loans in Sub-Saharan Africa revealed that bad loans are caused by adverse economic shocks coupled with high cost of capital and low interest margins (Fofack, 2005). Fofack (2005) stated that „the accumulation of non-

performing loans is generally attributable to a number of factors, including economic downturns and macroeconomic volatility, terms of trade deterioration, high interest rate, excessive reliance on overly high-priced inter-bank borrowings, insider lending and moral hazard. Some writers also hold the view that bad loans can be caused by problem accounts.

Rouse (1989) indicated in his work that problem loans can emanate from overdrawn account where there is no overdraft limit, overdraft taken on an account which has not been actively operated for some time and overdraft taken in excess of reasonable operational limits. He also identified lack of good skills and judgment on the part of the lender is a possible cause of bad loans.

Bloem and Gorter (2001) indicated that non-performing loans may rise considerably due to less predictable incidents such as the cost of petroleum products, prices of key export products, foreign exchange rates or interest rates change abruptly. They also stated that deficient bank management, poor supervision, overoptimistic assessments of creditworthiness during economic booms, and moral hazard that result from generous government guarantees are some of the factors that lead to bad loans.

2.8 Loan Processing In Banks

There is risk in the provision of credit to borrowers. This risk exists because an expected payment may not occur. Credit risk is defined as potential losses arising from the inability of credit customers to pay what is owed in full and on time. Bank lending involves a bank,

providing a loan in return for the promise of interest and principal repayment in the future (Kay Associates Limited, 2005). Available literature on lending indicates the lender's role in ensuring good decisions relating to provision of loans in order to minimize credit risk. Rouse (1989) explained that a lender „lends“ money and does not give it away. There is therefore a judgment that on a particular future date repayment will take place.

The lender needs to look into the future and ask whether the customer will repay by the agreed date. He indicated that there will always be some risk that the customer will be unable to repay, and it is in assessing this risk that the lender needs to demonstrate both skill and judgment. The lender should aim at assessing the extent of the risk and try to reduce the amount of uncertainty that will exist over the prospect of repayment. The lender must therefore gather all the relevant information and then apply his or her skills in making judgment. Though there might be pressures from customers and

elsewhere which may sway away the lenders judgment, the lender must seek to arrive at an objective decision.

In view of these credit risks that might lead to bad loans, banks have some loan request procedures and requirements contained in their credit policy documents to guide loan officers in the processing of loans for customers.

The following are some of the factors considered in granting loans:

- Applicant's background.
- Background of the Business
- The purpose of the request.
- The amount of credit required.
- The source of repayment.
- Repayment terms of the borrower
- Security proposed by the borrower.
- Technical and financial soundness of the credit proposal.

2.9 MONITORING AND CONTROL

According to Rouse (1989) this is an area which many lenders pay little attention but, if it is properly carried out, the occurrence of bad debts can be reduced considerably. He identified internal records, visits and interviews, audited accounts and management accounts as some of the things that help in the monitoring and control process.

Monitoring can minimize the occurrence of bad loans through the following major purposes that it serves:

- Ensure the utilization of the loan for the agreed purpose.
- Identify early warning signals of any problem relating the
- operations of the customer's business that are likely to affect the performance of the facility.
- Ensure compliance with the credit terms and conditions.
- It enables the lender discusses the prospects and problems of the borrower's business.

2.10 REDUCING BAD LOANS

Bad loans can be restricted by ensuring that loans are made to only borrowers who are likely to be able to repay, and who are unlikely to become insolvent. Credit analysis of potential borrowers should be carried out in order to judge the credit risk with the borrower and to reach a lending decision. Loan repayments should be monitored and whenever a customer defaults action should be taken. Thus banks should avoid loans to risky customers, monitor loan repayments and renegotiate loans when customers get into difficulties (Kay Associates Limited, 2005).

2.11 LOAN PORTFOLIO QUALITY AND BANK PERFORM

Loans generate huge interest for banks which contribute immensely to the financial performance of banks. However, when loans go bad they have some adverse effects on the financial health of banks. This is because in line with banking regulations, banks make adequate provisions and charges for bad debts which impact negatively on their performance. Bank of Ghana regulations on loan provisioning indicate that loans in the non-performing categories that is loans that are at least ninety days overdue in default of repayment will attract minimum provisions of 25%, 50% and 100% for substandard, doubtful and loss, respectively(Bank of Ghana Act, 2004, Act 673). According to Bloem and Gorter, (2001), though issues relating to non-performing loans may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions which tend to have large loan portfolios.

Besides, the large bad loans portfolios will affect the ability of banks to provide credit. Huge non-performing loans could result in loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems. The provisions for bad loans reduce total loan portfolio of banks and as such affects interest earnings on such assets.

Study of the financial statement of banks indicates that bad loans have a direct effect on profitability of banks. This is because charge for bad debts is treated as expenses on the profit and loss account and as such impact negatively on the profit position of banks. For example Barclays Bank Ghana Limited declared a loss in its 2008 financial statement partly due to the huge charge for bad debts which increased from GH¢5,540,000.00 in 2007 to GH¢46,890,000.00 in 2008 (Price Water-House Coopers, 2009). The annual report of ADB for 2007 showed that the bank had embarked on a five-year bad loan provisioning which affected its profitability during the period. The report indicated that the net profit for 2007 decreased by 13.81% which was attributed mainly to the non-performing

loan provisions Some foreign literature indicates that bad loans can fuel banking crisis and subsequently result in the collapse of banks with huge non-performing loans.

Demirguc-Kunt and Huizinga (1999), cited in Berger and De Young (1997), indicate that failing banks have huge proportions of bad loans prior to failure and that asset quality is a statistically significant predictor of insolvency. As was indicated earlier in this research, Caprio and Klingebiel (1996), cited in Fofack (2005), also reported that during the banking crisis in Indonesia, non-performing loans represented about 75% of total loan assets which led to the collapse of over sixty banks in 1997. This means that banks holding huge bad loans in their books can run into bankruptcy if such institutions are unable to recover their bad debts.

A possible effect of bad loans is on shareholders earnings. Dividends payments are based on banks performance in terms of net profit. Thus since bad loans have an adverse effect on profitability of banks, it can affect the amount of dividend to be paid to shareholders. The Banking Act of Ghana spells out that a bank shall not declare or pay dividend on its shares unless it has, among other things, made the required provisions for nonperforming loans and other erosions in assets value [Section 30 (1) of Banking Act, 2004, Act 673].

The foregoing discussions show the effects of bad loans on banks performance in Ghana and other parts of the world. This study intends to delve into the effect of loan portfolio quality on the performance of banks in Ghana.

2.12 Theories on Bank Loan

2.12.1. Loan Pricing Theory

Banks cannot always set high interest rates, e.g. trying to earn maximum interest income. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behavior or so called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodecai, 2004). According to loan pricing theory setting too high interest rate increase the chance of loan default, consequently it boosts the rate of nonperforming

loan. According to loan pricing theory interest rate have a positive and significant impact on the rate of NPL.

2.12.2. Hold-up and Soft-Budget-Constraint

Theories Banks choice of multiple-bank lending is in terms of two inefficiencies affecting exclusive bank firm relationships, namely the hold-up and the soft-budget-constraint problems.

According to the hold-up literature, sharing lending avoids the expropriation of informational rents. This improves firms' incentives to make proper investment choices and in turn it increases banks' profits (Von Thadden, 2004; Padilla and Pagano, 1997). As for the soft-budget-constraint problem, multiple bank lending enables banks not to extend further inefficient credit, thus reducing firms' strategic defaults. Both of these theories consider multiple-bank lending as a way for banks to commit towards entrepreneurs and improve their incentives. 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).

2.12.3. Credit Market Theory

The theory postulates that if collateral and other pertinent restrictions remain given, then it is only the lending rate that determines the amount of credit that is dispensed by the banking sector. Therefore, with an increasing demand for credit and a fixed supply of the same, interest rates will have to rise. Any additional risk to a project being funded by the bank should be reflected through a risk premium that is added to lending rate to match the increasing risk of default. Subsequently, there exist a positive relationship between the default probability of a borrower and the interest rate charged on the advance. It is thus believed that the higher the failure risks of the borrower, the higher the interest premium (Ewert et al, 2000). Credit market theory is directly support the idea of loan pricing theory.

2.12.4. Risks in Portfolio

Maintaining quality portfolio is not that simple as it is exposed to different risk. A MFI must balance many different types of risk within its portfolio. Common risks include (Nara Hari.D, 2007):
Credit risk: This risk originates due to client's unwillingness or inability to repay their loans. Credit risk results in a deterioration of the MFI's portfolio, reduced revenues, and increased operating expenses.
Interest rate risk: Any changes in the level of market interest rates during the term of a loan relates to interest rate risk. This risk originates from the mismatch of the maturities of the MFI's

assets and liabilities. Liquidity risk: A MFI's difficulty in obtaining needed cash at a reasonable cost. The largest source of risk for any financial institution resides in its loan portfolio. The loan portfolio is by far the largest asset of the microfinance institution (MFI).

2.12.5. Markowitz's portfolio theory

The cornerstone of Markowitz's seminal 1952 theory, for which he was awarded the Nobel Prize in Economics in 1990, is the ability of investors to diversify away unsystematic risk by holding portfolios consisting of a number of different shares. Markowitz's starting point is to construct what is known as the envelope curve. This represents the set of portfolio choices available to investors when investing in different combinations of risky assets (Brealey, 2003):

2.13. Concept of Performance

According to Harward and Upton (1986) profitability is the ability of a given investment to earn a return from its use. Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiently the bank's management can make profit by using all the resources available in the market. However, the term 'Profitability' is not substitutable for the term 'Efficiency'. Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Though, profitability is an important yardstick for measuring the efficiency, the extent of profitability cannot be taken as a final proof of efficiency. Sometimes satisfactory profits can mark inefficiency and conversely, a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals a satisfactory balance between the values received and value given. The change in operational efficiency is merely one of the factors on which profitability of an enterprise largely depends. Moreover, there are many other factors besides efficiency, which affect the profitability.

With regards to the financial management profit is the test of efficiency and a measure of control, to the owners a measure of the worth of their investment, to the creditors the margin of safety, to the government a measure of taxable capacity and a basis of legislative action and to the country profit is an index of economic progress, national income generated and the rise in the standard of living", while profitability is an outcome of profit. In other words, no profit drives towards profitability (Weston and Brigham

1986). Firms having same amount of profit may vary in terms of profitability.

According Kulshrestha (2000) “Profit in two separate business concern may be identical, yet, many a times, it usually happens that their profitability varies when measured in terms of size of investment. Technical and financial soundness of the credit proposal.

2.14. Determinant of Profitability

2.14.1 Asset Quality

The loans of a bank are the major asset that generates the major share of the banks income. Loan is the major asset of commercial banks from which they generate income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans (Dang, 2011). The ratio of Loan Loss Reserves to Net Interest Revenue (LOSRNI) is a measure of banks asset quality that indicates how much of the total portfolio has been provided for but not charged off.

2.14.2 Capital Adequacy

Capital adequacy is a measure of a bank’s financial strength, in terms of its ability to withstand operational and abnormal losses. Further considering the regulatory requirement on the minimum capital required to be maintained by banks, capital adequacy also indicates the ability of bank to undertake additional business. The size of capital provides financial flexibility for bank and financial institution. Banks with high capital ratio tend to earn more profit through translating the safety advantage into profit (Ayele, 2012). Capital adequacy ratio determines risk behavior of banks. It is a measure of banks solvency and ability to absorb risk. The ratio is used to protect depositors and promote stability and efficiency of financial systems Maki and Athanasios (2014).

2.14.3 Liquidity Management

Liquidity refers to the ability of the bank to fulfil its obligations, mainly of depositors. Dang (2011) noted that liquidity level is positively related with bank profitability. Thus, banks that maintain adequate levels of liquidity tend to be more profitable. The most common financial ratios that reflect the liquidity position of a bank are customer deposit to total asset and total loan to customer deposits (Ongore&Kusa, 2013). Makaa (2013) found positive and significant relationship between liquidity and financial performance. Hassan and Bashir (2003) noted that net loans to total assets ratio is a liquidity ratio measuring the portion of the bank’s assets tied up in loans. Higher net loans to assets ratio may be indicative of better bank performance because of increases in interest income.

2.14.4. GDP Growth Rate:

It is a measure of the total economic activity. It is expected to have an impact on numerous factors related to the demand and supply for banks deposits and loans. According to the literature on the association between economic growth and financial sector profitability, GDP growth is expected to have apposite relation on bank profitability (Belayneh, 2011; Bikker & Hu, 2002; Demirguc- Kunt & Huizinga, 1999; Francis, 2006).

2.14.5 Bank Asset (Size)

Profitability Bank size is important bank determinant of bank profitability. In this investigation bank size is measured by the logarithm of total asset. Bank size is generally found to relate to positively bank profitability (Kosmidou, 2008). In the literature, one of the important question is whether bank size maximizes bank profitability. In the literature most of the relationship investigated to bank size and bank profitability. Most of the previous studies have many

Evidences of which bank size is one the main determinants of bank.

2.14.6 INFLUTION

Inflation rate is directly related to credit risk and its does not matter whether the banking regime is conventional. Where an economy is characterized by reduced purchasing power due to increased inflation, banks performance on profitability reduces due to increased portfolio at risk. Inflation affects borrowers' debt servicing capacity through different channels and its impact on credit risk can be positive or negative

2.14.7 Leverage ratio

Leverage refers to the extent to which a MFI borrows money relative to its amount of equity. In other words, it answers the question of how many additional dollars can be mobilized from commercial sources for every dollar worth of funds owned by the MFI. The most widely used measure of leverage is the debt equity ratio.

2.15. Empirical Review

A number of researches have examined the effect of loan portfolio quality on the performance of banks in a number of countries. The results varied from one research to another as follows.

Jd asset ratio is negatively

associated with banking operating performance, after controlling for the effects of operating scale, traditional banking business concentration and the idle fund ratio. The results further supported the hypothesis that the higher the quality of the loan processing activities before loan approval, the lower the non-value-added activities that is required to process problematic loans, and thus the higher the banking operating performance will be.

Swamy (2015) investigated the determinants of bank asset quality and profitability using panel data techniques and robust data sets for the period between 1997 and 2009. The study established that while capital adequacy and investment activity significantly affect the profitability of commercial banks, apart from other accepted determinants of profitability, asset size has no significant impact on profitability.

Mathuva (2009) examined the relationship between capital adequacy, cost income ratio and the performance of commercial banks in Kenya, using return on assets and equity as proxies for bank profitability. The study revealed that bank profitability is positively related to the core capital ratio and tier 1 risk based capital ratio. This implies that an increase in capital may raise expected earnings by reducing the expected costs of financial distress, bankruptcy. The study also established that there exists negative relationship between the equity ratio and profitability. It further revealed that cost income ratio is inversely related to both bank profitability measures.

Hess and Francis (2004) observed that there is an inverse relationship between the cost income ratio and the bank's profitability. Ghosh, Narain and Sahoo (2003) also found that the expected negative relation between efficiency and the cost-income ratio seems to exist. However, the cost income ratio (CIR), with its limitations (Welch, 2006), is another emerging measure of bank's efficiency and a benchmarking metric (Hess and Francis, 2004).

There have been varying reports on the relationship between bank liquidity and profitability. Some argue, per their research findings, that banks holding more liquid assets benefit from a superior perception in funding markets, reducing their financing costs and increasing profitability. For example, Bourke (1989) finds some evidence of a positive relationship between liquid assets and bank profitability for 90 banks in Europe, North America and Australia from 1972-1981. On the other hand, other researchers argue that, holding liquid assets imposes an opportunity cost on the bank given their low return relative to other assets, thereby having a negative effect on profitability.

For example, Molyneux and Thornton (1992) and Goddard (2004) find evidence of a negative relationship between the two variables for European banks in the late 1980s and mid-1990s, respectively. According to Eichengreen and Gibson (2001), the fewer the funds tied up in liquid investments, the higher we might expect profitability to be. In effect, various authors have found varying relationships between the liquidity and profitability of banks in various countries.

Lartey, Antwi, and Boadi (2013) sought to find out the relationship between the liquidity and the profitability of banks listed on the Ghana Stock Exchange. It was found that for the period 2005-2010, both the liquidity and the profitability of the listed banks were declining. Again, it was also found that there was a very weak positive relationship between the liquidity and the profitability of the listed banks in Ghana.

Almazari (2014) investigated the internal factors that have an effect on profitability in Saudi and Jordanian banks. He found that there is a positive correlation between profitability measured by ROA of Saudi and Jordanian banks with some liquidity indicators, as well as there is a negative correlation with other liquidity indicators between profitability measured by ROA of Saudi and Jordanian banks .

Ma (1988) examined if Loan Loss Provisioning (LLPs) were used as a tool to reduce volatility of earnings by banks. He concluded that LLPs, together with loan charge-offs, were used by banks for income smoothing. Collins et al. (1995) examined whether, in addition to LLPs, other tools such as loan charge-offs and securities issuances were used for earnings management. They found a positive association only between LLPs and earnings management, and concluded that the other tools were used primarily for capital management. Some studies sought to examine the characteristics of banks that indulged in earnings management. Greenawalt and Sinkey (1988) found that regional banks engaged in more aggressive income smoothing than money-centred banks. Bhat (1996) found that banks that engaged in aggressive income smoothing were in poorer financial health relative to others. All these studies had one common feature: they all found a positive association between LLPs and earnings management.

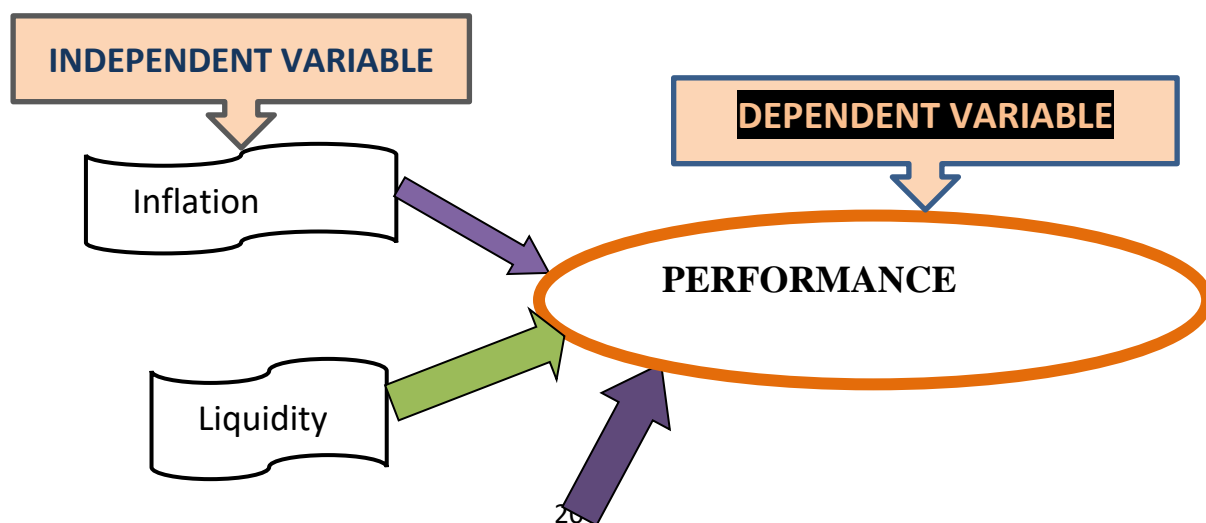
Not all studies on LLPs and earnings management came to the same conclusion. Wetmore and Brick (1994) studied what factors might be associated with income smoothing by banks and found no

evidence that LLPs are used as a tool for earnings management. Beatty, Chamberlain and Magliolo (1995) considered whether banks alter timing and magnitude of transactions and accruals to achieve earnings management, but found no association between LLPs and earnings management by the banks in their sample. Ahmed, Takeda and Thomas (1999), in their study used data that included the period after the change in capital adequacy regulations, also found no evidence that banks used LLPs to manage earnings. Their finding of no association was surprising, since the capital adequacy regulation removed the costs of earnings management.

The size of bank as one of the independent variable could create economies of scale which lower the average cost and has a positive impact on bank profits. At the same time, if the size of a bank becomes larger, phenomenon of the diseconomies of scale appears, the more difficult for management to conduct surveillance and the higher the level of bureaucracy that have a negative impact on bank profitability (Athanasoglau, Brissimis and Delis, 2005). Gul, Irshad and Zaman (2011) found a direct relationship between the size of banks and profitability.

2.16. Conceptual Framework

In this study the conceptual framework comprise of six independent variables and one dependent variable. The selection of variables was based on previous relevant studies. The conceptualization of the dependent and independent variables of the related study. The independent variables of this study include loan bank size, asset quality, liquidity management and capital adequacy. The dependent variable is profitability which was measured by return on assets (ROA).



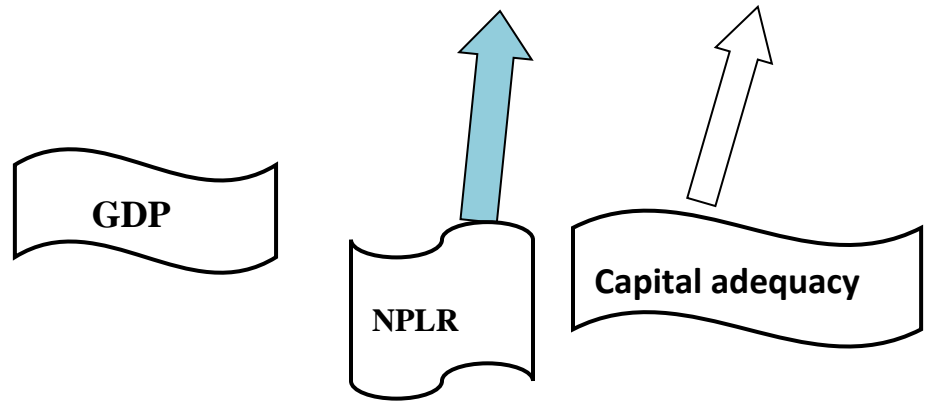


Figure 1 Conceptual Frame

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Research Design

The primary aim of this study is to examine the impact of loan portfolio quality on the profitability of commercial banks. To achieve the objective explanatory type of research design with a quantitative approach method used. The explanatory type of research design helps to identify and evaluate the causal relationships between the different variables under consideration (Creswell, 2008). So that, in this study the explanatory research design was used to examined the relationship of the dependent and independent variables.

3.2 Data Collection

The data used for the study are from secondary sources especially from financial statements of the banks. Data was obtained from TEN (10) commercial banks in Ethiopia. Purposive sampling technique was used in selecting these ten banks. The basic data was obtained from the Annual Report of the banks from 2009 to 2018. The financial data was collected include Return on Asset

(ROA), Total asset, non-performing loans to Loan and advance, customer deposit to total asset and Equity to total assets ratio.

3.3 Population and sample

The population of the study consisted of all 17 commercial banks licensed by national bank of Ethiopia. A sample of ten (10) banks was taken from the whole population from year 2009 to 2018. The sample decision was arrived at based on the availability of data and time constraint. Because the below selected bank are the only commercial banks that have preparing financial statement on the study period from 2009 to 2018. The below are the banks included in this study: Commercial bank of Ethiopia, Awash international bank, Bank of Abyssinia,, Nib international bank,zemen, United bank, Dashen Bank, Wegagen bank, cooperative bank of oromia, and Lion bank

3.4 Data Analysis

Secondary source of data was used in the collection of the financial statement from National bank of Ethiopia and published audited annual reports of the banks. The study was used both descriptive statistics tools, and Econometrics tools to analyze the collected data. Basically, descriptive statistical tools were used to analyze the mean, standard deviation, minimum and maximum values of the study. Panel regression model used to examine the relationship between dependent and independent variables in order to conclude based on the collected data about the impact of loan portfolio quality on the profitability of commercial banks in Ethiopia.

3.5 Specification of Econometric Models

The panel regression model was used to analyze the impact of loan portfolio quality on the profitability of commercial banks in Ethiopia. Profitability measured by return on Assets was taken as dependent variable, non-performing loans measured by non-performing loans over total loans and advances was taken as independent variable and Capital adequacy, bank size, and Liquidity were taken as controlling variables in the panel regression as follows;

$$Y = \alpha + \beta_1X_1+ \beta_2X_2+ \beta_3X_3+ \beta_4X_4+\beta_5X_5+\beta_6X_6+ e \text{ Where:}$$

$Y = \text{Profitability measured using Return on Assets}$
 $\alpha = \text{Constant}$
 $\beta_i = \text{Beta Coefficient of variable } i$
which measures the responsiveness X to unit change of i

X1- Nonperforming Loans, measured using Non performing loans ratio. Computed as total nonperforming Loans over Total Loans and advances (Total non-performing Loans / Total loans and advances).

X2- Capital Adequacy. Measured as a ratio Equity to total assets

X3-Bank Size is measured by the logarithm of total asset.

X4- Liquidity – Measured as Ratio of deposit to total asset.

X5-Gross domestic products

X6- inflation rate

e= error term

3.5.1 Description of variables

Dependent Variables

Prior works on bank profitability indicated that Return on assets (ROA) was an important measurement used in comparing the operating performance of banks, (Anwar et al., 2011; Belayed, 2011; Chan & Vong, 2010; Kosmidou, 2008; Rivard & Thomas, 1997). It is calculated by dividing net income to total assets of a bank. ROA show the profit earned per birr of assets which reflects banks' management ability to utilize the banks' financial and real investment resources to generate profits

Independent variables

Capital: capital ratio is measured by total equity over total asset, reveals capital adequacy and should capture the general safety and soundness of the financial institution. Earlier research works

exhibited that capital and bank profitability was positively correlated (Abreu & Mendes, 2000; Anwar et al., 2011; Berger, 1995; Bashir, 2003; Chan & Vong, 2010; Olweny & Shipho, 2011)

Assets size: the effect of a growing size on profitability has been proved to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. Bank size is represented by logarithm of total assets (LOTA) because of the dependent variable in the model can be deflated. Their square root also included in order to capture the possible non-linear relationship. Assets size is expected to have positive relationship with profitability (Akhtar et al., 2011; Belayneh, 2011; Flamini et al., 2009; Francis, 2006; Molyneux & Thornton, 1992; Teshale, 2011).

Liquidity: liquidity ratio is measured by liquid asset to total asset. It measures the liquidity positions of the bank to meet the amount of total assets. The higher this percentage the more liquid the bank is. Insufficient liquidity is one of the major reasons of bank failures. However, holding liquid assets has an opportunity cost of higher returns. A positive and significant link between bank liquidity and profitability were examined in the studies of (Bourke, 1989; Olweny & Shipho, 2011).

GDP growth rate: This is measured by annual GDP, is expected to impact banking profitability positively. Economic growth can enhance banks' profitability by increasing the demand for financial transactions, i.e., the household and business demand for loans. During periods of strong economic growth, loan demand tends to be higher, allowing banks to provide more loans. Strong economic conditions are also characterized by high demand for financial services, thereby increasing the banks' cash flows, profits and non-interest earnings. Accordingly, fewer loans would be defaulted during strong economic conditions. Thus, it is expected to have positive impact on performance (Belayneh, 2011; Bikker & Hu, 2002; Demircuc-kunt & Huizinga, 1999).

CHAPTER FOUR

4 DATA ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics

In this section the results from descriptive statistics are discussed. Generally, the data that were collected for this study were secondary in nature. The descriptive statistics was used in order to get insight about the variables of the determinants of banks profitability among the sampled banks and it was used as a base to forward recommendations after determining the relationship between the variables from correlation and regression analyses.

Table 4.1 Descriptive Statistics for the study variables

Variables	ROA	NPLS	BS	CAR	LR	INF	GDP
Mean	0.252631	0.044333	4.099657	0.182831	0.590859	0.325060	0.160560
Median	0.254300	0.033142	4.045653	0.126282	0.585894	0.057500	0.147000
Maximum	0.697600	0.360700	8.204571	0.821196	0.890000	3.085600	0.341000

Minimum	0.000000	-	2.506505	-	0.411530	-	-
Std. Dev.	0.137060	0.049598	0.722238	0.214411	0.090105	1.055917	0.120129
Observations	100	100	100	100	100	100	100

Source: Financial statement of sampled commercial banks and own computation through Eviews8.

The above table indicates the mean, standard deviation, minimum and maximum values of variables. A balanced dataset of 100 observations provides the basis for descriptive analysis. This study has used seven variables for the analysis and interpretation, including six explanatory variables and one dependent variable, profitability measurement. As shown in the table 4.1 above, the mean value of return on assets (ROA) was around 25% for sampled private banks in Ethiopia. This means, a one birr investment in total assets of private banks' generates birr 25 average profits for the period of 2009-2018. The standard deviation among banks in terms of profitability was 13%; this confirms that there were higher variations among banks' during the study period.

Total assets of each bank were proxy to their natural logarithm values (BS). The average value of this variable was 4.099 Birr during the study period with standard deviations of 0.72225 birr. This shows that there was moderate discrepancy between banks in terms of total assets when their logarithms values have taken. Since logarithms values minimize the variations in terms of total assets. The minimum and maximum values were 2.5 and 8.2 birr, respectively.

Capital adequacy ratio was a proxy measure of bank capital with mean value of 0.18. this describes that sampled private banks in this particular study utilized 18.2% of their fund needs through equity capital while 85.6% was financed by deposit liabilities. The standard deviation of the ratio was 21.4 % with -1.7 % and 82 % as minimum and maximum values, respectively.

Leverage ratio (LR) was measured by liquid asset to total asset. The mean value of liquidity ratio was 59.08 %. The standard deviation was 9.01%, while 41% and 89% observed as minimum and maximum values, respectively. Banks' should have adequate liquidity to minimize both asset side liquidity risk and liability side liquidity risk of a commercial bank.

The change on external factors also specified on the above table. The first one is Growth Domestic Product growth rate (GDPG). On average, the Ethiopian economy was increased by 16% during the

study period. This helps banks in providing necessary loan for financing different investments. The minimum and maximum values of GDPG were approximate to -0.093000 and 34%, respectively. Other external variable inflation. The average value of this variable was 32.5% during the study period with standard deviations of 1.055917. The minimum and maximum values of this variable were -0.809000 and 3.085600, respectively.

4.2. Correlation Matrix

The table 4.2 shows the correlation matrix for the entire variables employed in the Model. The coefficient of the correlation shows an index of the direction and the extent of the connection between two set of scores without implying causality. The sign of the coefficient is a signal of the direction of the relationship while the absolute value of the coefficient indicates the magnitude. Correlation matrix is important because it shows the existence of multicollinearity among the variables. Multicollinearity is the condition where some or all of the explanatory variables are extremely connected so that it is problematic when determining which of them is affecting the dependent variable. Schindler and Cooper (2009) state that any correlation above 0.8 between the independent variables is assign of multicollinearity. Thus the variables are highly correlated. From the table 4.2, there is no trace of multicollinearity.

Table1.2. Correlation Analysis

	ROA	NPLS	BS	CAR	LR	INF	GDP
ROA	1						
NPLs	-0.079079	1					
BS	0.25790	0.086720	1				
CAR	-0.083456	-0.089521	-0.337194	1			
LR	-0.000495	0.104305	-0.165272	0.284791	1		
INF	-0.155092	-0.149337	-0.100448	-0.001513	-0.114260	1	
GDP	0.012351	-0.195217	-0.163870	-0.016281	-0.029463	-0.087313	1

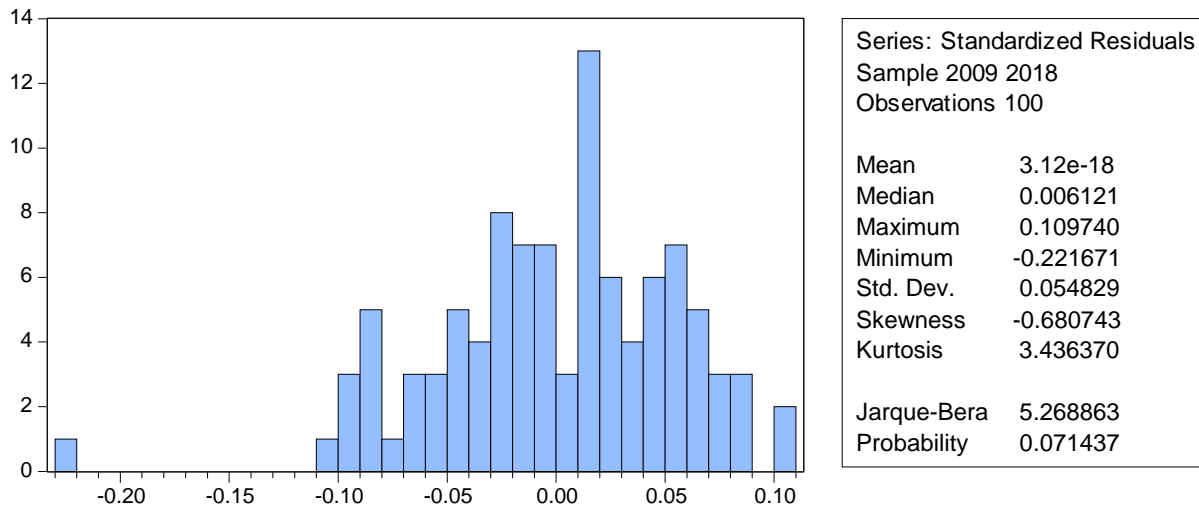
Source: Financial statement of sampled commercial banks and own computation through Eviews8.

The correlation result in Table 4.2 shows Capital adequacy, inflation, leverage and non-performing loan has negative correlation with impact on commercial Banks in Ethiopia. However, Bank size and GDP have positive relationship with return on asset. If BS and GDP increases similarly return on

4.3. Normality test

In this study, the normality of the data was checked with the popular Bera-Jarque test statistic (Brooks 2008). According to Bera-Jarque test statistics normally distributed data is not skewed and has a coefficient kurtosis of 3. As shown in figure 2, the coefficient kurtosis (3.43) of the data in this particular study was much closer to 3, and the BeraJarque statistic had a P-value of 0.071 implying that there was no evidence for the presence of abnormality in the data. Thus, the null hypothesis that the data is normally distributed should not be rejected since the p-value was considerably in excess of 0.05.

Figure 2 Normality test



Source: Financial statement of sampled commercial banks and own computation through Eviews8.

4.4 Multicollinearity Test:

The term Multicollinearity indicates the existence of exact linear association among some or all explanatory variables in the regression model. When independent variables are multi collinear, there is overlapping or sharing of predictive power. Hair et al (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Malhotra (2007) stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. Kennedy (2008) suggests that any correlation coefficient above 66 and 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. This indicates that there is no consistent argument on the level of correlation that causes multicollinearity. According to Gujarati (2004), the standard statistical method for testing data for multicollinearity is analyzing the explanatory variables correlation coefficients (CC); condition index (CI) and variance inflation factor (VIF). Therefore, in this study correlation matrix for six of the independent variables shown below in the table had been estimated. The results in the following correlation matrix show that the highest correlation of 0.671 which is between logarithm of total asset and capital adequacy ratio on lending. Since there is no correlation above 0.7, 0.75 and 0.9 according to Kennedy (2008), Malhotra (2007) and Hair et al (2006) respectively, we can conclude in this study that there is no problem of multicollinearity.

Table4. 3Multicollinearity test

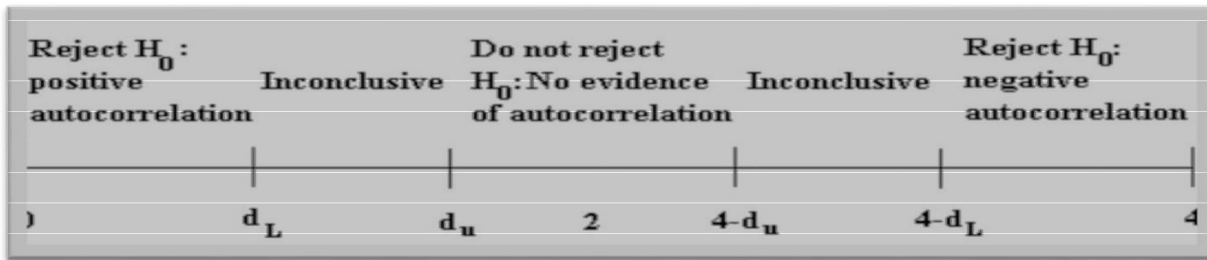
Variables	ROA	NPLS	BS	CAR	LR	INF
ROA	1					
NPLs	- 0.079079	1				
BS	0.25790	0.086720	1			
CAR	- 0.083456	- 0.089521	- 0.337194	1		
LR	- 0.000495	0.104305	- 0.165272	0.284791	1	
INF	- 0.155092	- 0.149337	- 0.100448	- 0.001513	- 0.114260	1

Source: Financial statement of sampled commercial banks and own computation through Eviews8.

4.5. Autocorrelation Test:

Furthermore, the study tested the autocorrelation assumptions that imply zero covariance of error terms over time. That means errors associated with one observation are uncorrelated with the errors of any other observation. As noted by Gujarati (2004), the best renowned test for detecting serial correlation is Durbin Watson test. In accordance to Brooks (2008), DW has 2 critical values: an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 3 below.

Figure 3 Rejection and Non-Rejection Regions for DW Test



The study used the dL and dU values for 100 observations. As per the DW table for 100 observations with 6 explanatory variables at 1% level of significance, the dL and dU values are

1.41 and 1.68 respectively. The DW values for ROA was 1.6652. The DW value of ROA lies in the inconclusive region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected.

4.6. Choosing Random effect (RE) versus fixed effect (FE) models:

Model specification error occurs when omitting a relevant independent variable, including unnecessary variable or choosing the wrong functional form. When the omitted variable is correlated with the variable which included, the estimators will be biased and inconsistent and model specification error will tend to occur. If the omitted variable is not correlated with the included variable, the estimators are unbiased and consistent and model specification error will not occur. Therefore, in order to select a correct estimated model, the researcher had carry out the Ramsey-RESET Test to check on the model specification. The hypothesis for the model specification test was formulated as follow;

H0: The model specification is correct

H1: The model specification is incorrect $\alpha = 0.05$

4.7. Hausman test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.938138	6	0.0440

Source: Eviews 8 output 2020

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational convenience. On this score, FEM may be preferable. Since the number of time series (i.e. 10 year) is greater than the number of cross-sectional units (i.e. 10 commercial banks) and also FEM is preferable in case where the number of explanatory variables exceeds the cross-sectional data.

4.8. Multiple Regression Analysis

Dependent Variable: ROA

Method: Panel Least Squares

Date: 01/04/21 Time: 15:47

Sample: 2009 2018

Periods included: 10

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPLS	-0.403058	0.149636	-2.693591	0.0085
LR	0.143098	0.084516	1.693161	0.0941
BS	0.172401	0.015348	11.23254	0.0000
INF	-0.006682	0.006054	-1.103625	0.2729

GDP	0.146098	0.053275	2.742332	0.0075
CAR	-1.285061	0.392422	-3.274689	0.0015
C	-0.307172	0.107907	-2.846628	0.0056
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.839969	Mean dependent var	0.252631	
Adjusted R-squared	0.811392	S.D. dependent var	0.137060	
S.E. of regression	0.059524	Akaike info criterion	-2.659231	
Sum squared resid	0.297620	Schwarz criterion	-2.242404	
Log likelihood	148.9615	Hannan-Quinn criter.	-2.490533	
F-statistic	29.39320	Durbin-Watson stat	1.665248	
Prob(F-statistic)	0.000000			

TABLE 4.4 REGRESSION RESULTS

This table presents the regression result of panel data using fixed effect model. A balanced data set of 100 observations provides the basis for econometric analysis. Basically, 83.99% of the variations in the dependent variable have explained by explanatory variables. The rest 16.012% of the variations are not explained by the above explanatory variables.

The coefficient of explanatory variables affect profitability negatively, which means the one unit of NPLs, CAR, and IN variables increased in the bank have -0.403058, -0.128506, and, -0.006682 unit change on banks profitability to the opposite direction respectively. However, GDP, LR and BS had a positive impact on ROA which implies that one-birr change in GDP will have 0.146098 changes on profitability with the same direction.

From the above regression table terms of significance level (corresponding p-value) the bank specific factor non-performing loan ratio, liquidity ratio and Macroeconomic factor of gross domestic product have more than the selected significance levels 0.0085, 0.0941 and 0.0075 respectively. Opposing to the researcher's expectation LR and GDP did not show any significant impact on the level of ROA of private commercial banks in Ethiopia from year 2009-2018.

4.9. Discussion of the Regression Results

Non-Performing Loan Ratio

The quality of a loan portfolio can be estimated by the level of credit default risk and this is measured by the rate of nonperforming loans to total loan and advances. A study conducted by Kithinji (2010) on the topic "The effects of CRM on banks' profitability in Kenya" revealed that ROA which is a measure of profitability is not influenced by the credit quality and nonperforming loans. This is consistent with the findings of this research. The finding of this research is the coefficient of NPLs was negative and no significant impact on ROA, the probability -0.403058 help the researcher to accept the null hypothesis. The study hypothesized that NPLR has no significant impact on ROA.

Liquidity Ratio

The above regression table 4.4 also shows the result of probability 0.143098 which is higher than the significant value of 10%. The probability of 0.143098 enables the researcher to reject the null hypothesis of significant impact on profitability and accept the alternate hypothesis. The coefficient of the variable representing liquidity ratio is negative and insignificant. This is consistent with theory that liquidity ratio has a positive influence on bank profitability such that high excess liquidity decreases bank profitability and high liquidity improves bank profitability.

The result agrees with study conducted by Francis M.E. on Sub Saharan Country (2009).

Bank Size

The impact of bank size was proxy to natural logarithm of total assets (BS) revealed that, it has a positive magnitude and significant relationship with profitability measurement. Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector. It has a coefficient result of 0.172401 and a p-value of 0.000. The positive coefficient of size was significant at the 10 % confidence level, indicates that banks' in this study utilized their assets in diseconomies of scale fashion. The result has shown a one-unit additional investment in total assets of banks expected to decreases profitability of banks by 10.35 birr holding other variables constant. As a result, the output is consistent with the hypothesis developed in this study. The study hypothesized that there is a positive or negative association between bank size and ROA of banks.

Capital Adequacy Ratio

Based on the findings in the regression table 4.4, capital adequacy has the negative and statistically significant impact on ROA, the probability -1.285061 helps the researcher to accept the null hypothesis. The study hypothesized that there is a positive or negative association between CAR and ROA of banks. This study identifies statistically significant and negative impact of capital adequacy ratio on ROA. This negative sign shows there is an inverse relationship between capital adequacy ratio and ROA. It implies that for one unit change in the banks' capital adequacy ratio, keeping other thing constant has resulted unit changes on the levels of ROA in opposite direction. This means that when banks keep Birr 1 as a CAR, they will loss -1.285061 Birr as a profit. This result also reveals what Berger (1995, Bourke (1989) Hassan and Bashir (2003) had found as they have agreed on equity to total assets ratio is expected to have positive relation with performance that well-capitalized banks face lower costs of going bankrupt which reduces their costs of funding and risks.

Macro-Economic Variables

A multiple regression result shows that infilation rate had statistically significant impact on ROA, the probability -0.006682 help the researcher to reject the null hypothesis. The negative coefficient implies that for one percent change in real interest rate, keeping other thing constant has resulted 0.2729 unit changes on the levels of ROA in opposite direction.

GDP growth rate result in the above regression table 4.4 shows that there is a positive and statistically insignificant impact on banks profitability. It has a coefficient result of 0.146098 and a p-value of 0.0075. As a result, the output is not consistent with the hypothesis developed in this study. The study hypothesized that GDP growth rate has a significant impact on ROA.

INDEPENDENT VARIABLE	EXPECTED EFFECT	ACTUAL EFFECT
Non-performing loan	Negative & Sig	Negative & Sig
Capital adequacy	Negative & Sig	Negative & Sig
Liquidity ratio	Negative & Sig	Positive & Sig
Bank size	Positive & Sig	Positive & Sig
Gdp	Positive & Sig	Positive & Sig
Inflation	Negative & Sig	Negative & Sig

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the conclusions, recommendations and suggestion of areas, which may require further consideration as far as future research, is concerned.

5.2 Conclusion

The study found that the coefficient of NPLs was negative. The negative coefficient indicates that a higher ratio of non-performing loans leads to the deterioration of loan portfolio quality which negatively affects commercial bank's profitability. Based on this observation, the study concludes that an increase in nonperforming loans increase credit risk which adversely affects profitability.

The coefficient of the variable asset size (BS) has shown a positive magnitude and significant at 10% confidence level. Thus a positive effect of bank size indicates a one-unit additional investment in total assets of banks expected to increase profitability. This might be due to possible bureaucratic bottlenecks and managerial inefficiencies suffered by banks as they become "too large".

The study found that capital adequacy negatively and significantly affects the commercial banks' profitability. This means that high capital adequacy shows willingness and ability to tolerate with abnormal and operational losses. Based on this finding, the study concludes that capital plays a key role in determining commercial banks profitability and higher levels of capital adequacy increase profitability of commercial banks.

The findings of the study established that interest rate negatively and significantly influences profitability of commercial bank. The other explanatory variables were not significant to explain bank profitability in this study. GDP and LR have shown significant relationship with bank profitability measurement.

5.3 Recommendation

The study concluded that an increase in nonperforming loans increase credit risk which adversely affects the profitability of commercial banks in Ethiopia. Based on the conclusion this study recommends that managers of banks to develop effected policies to ensure they to reduce the level of nonperforming loans. Such policies would help to control and mitigate credit risks hence increase the bank's profitability.

The study also concluded that capital adequacy and bank size significantly affects the profitability of commercial banks in Ethiopia. Therefore, the study recommends that Management bodies of commercial banks in Ethiopia should develop effective policies on capital adequacy and bank size to

ensure that banks are in a position where they can enhance their profitability as well as to handle negative shocks.

5.4 Suggestions for Further Research

As per study findings, the explanatory variables only explain 69% of the variation in profitability of commercial banks in Ethiopia. This means there are variables, which influence profitability of commercial banks hence a study, may be required on those other factors apart from the one considered under this research. Like competition, market size.

Secondly, this study used Return on Assets (ROA) to measure profitability however; there are measures like net interest margin, net profit margin and Return on Equity, which can be applied, in the banking industry to establish the effect of bank specific factors on profitability.

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Appendix

Appendix; 1Raw Data

BANKS	YEAR	ROA	NPLs	BS	CAR	LTD	GDP	INF
AIB	2009	0.2901	0.0314	3.8077	0.1168	0.5467	0.256	0.2719
AIB	2010	0.1789	0.0442	3.9001	0.1184	0.5152	0.341	1.573
AIB	2011	0.1510	0.0499	4.0050	0.1293	0.5148	0.191	0.003
AIB	2012	0.1934	0.0445	4.0769	0.1349	0.5980	-0.093	0.106
AIB	2013	0.2983	0.0439	4.1720	0.1354	0.6146	0.05	3.0856

AIB	2014	0.3159	0.0414	4.3017	0.1261	0.6101	0.329	0.109
AIB	2015	0.3546	0.0361	4.3778	0.1295	0.6740	0.087	0.073
AIB	2016	0.4121	0.0333	4.4714	0.1289	0.6767	0.147	0.106
AIB	2017	0.4213	0.0280	4.6230	0.1111	0.7380	0.147	0.3662
AIB	2018	0.4132	0.0477	4.7425	0.0881	0.7146	0.113	0.158
BOA	2009	0.2295	0.0266	3.7385	0.0948	0.6028	0.256	0.2719
BOA	2010	0.2112	0.0312	3.7979	0.0932	0.6136	0.341	1.573
BOA	2011	0.1900	0.0354	3.8620	0.0908	0.5458	0.191	0.003
BOA	2012	0.2363	0.0351	3.9159	0.1100	0.5756	-0.093	0.106
BOA	2013	0.2363	0.0284	4.0056	0.1093	0.5534	0.051	3.0856
BOA	2014	0.2243	0.0465	4.0522	0.1356	0.5564	0.329	0.109
BOA	2015	0.1945	0.0275	4.1357	0.1325	0.5311	0.087	0.073
BOA	2016	0.1943	0.0278	4.2260	0.1262	0.5876	0.147	0.061
BOA	2017	0.2321	0.0260	4.4035	0.1147	0.6728	0.147	0.3662
BOA	2018	0.2763	0.0345	4.5049	0.1327	0.6975	0.113	0.028
CBE	2009	0.4321	0.0323	4.7739	0.0848	0.4807	0.256	0.2719
CBE	2010	0.3876	0.0265	4.8703	0.0749	0.4395	0.341	1.573
CBE	2011	0.3954	0.0251	5.0579	0.0548	0.4243	0.191	0.181
CBE	2012	0.3765	0.0342	5.2009	0.0486	0.5345	-0.093	0.054
CBE	2013	0.4215	0.0310	5.2947	0.0459	0.4695	0.051	3.0856
CBE	2014	0.5623	0.0278	5.3809	0.0446	0.4538	0.329	-0.274
CBE	2015	0.6976	0.0835	8.2046	0.0806	0.5972	0.087	-0.666
CBE	2016	0.5764	0.0216	5.5842	0.0386	0.4778	0.147	-0.083
CBE	2017	0.5823	0.0178	5.6903	0.0909	0.4115	0.147	0.3662
CBE	2018	0.5721	0.0123	6.0000	0.0647	0.4461	0.113	-0.282
CBO	2009	0.0452	0.0028	2.6274	0.8143	0.8630	0.256	0.2719
CBO	2010	0.1021	0.0180	2.8312	0.8212	0.6580	0.341	1.573
CBO	2011	0.1012	0.0221	3.0099	0.8077	0.7560	0.191	-0.809
CBO	2012	0.0391	0.0331	3.2475	0.8028	0.5260	-0.093	-0.041
CBO	2013	0.1637	0.0401	3.3981	0.8027	0.4120	0.051	3.0856
CBO	2014	0.3615	0.0494	3.5648	0.8051	0.4900	0.329	-0.274
CBO	2015	0.3345	0.0332	3.8155	0.8001	0.4700	0.087	-0.666
CBO	2016	0.3467	0.0032	3.8664	0.7964	0.6700	0.147	-0.083
CBO	2017	0.4363	0.0181	4.0593	0.8024	0.8900	0.147	0.3662
CBO	2018	0.4210	0.0184	4.0264	0.7922	0.7100	0.113	-0.282
DB	2009	0.1365	0.0362	3.9882	0.0934	0.5617	0.256	0.2719
DB	2010	0.1425	0.0371	4.0918	0.0909	0.4977	0.341	1.573
DB	2011	0.1706	0.0430	4.1661	0.0953	0.5251	0.191	-0.809

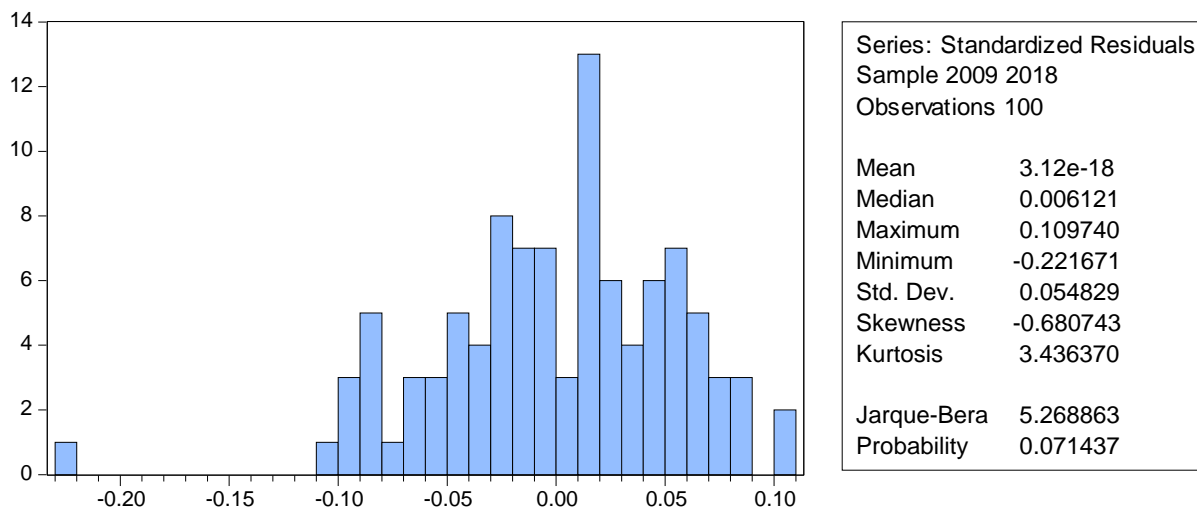
DB	2012	0.1945	0.0510	4.2435	0.1043	0.5776	-0.093	-0.041
DB	2013	0.1777	0.0412	4.2955	0.1036	0.5591	0.051	3.0856
DB	2014	0.2453	0.0436	4.3417	0.1183	0.5333	0.329	-0.274
DB	2015	0.2574	0.0389	4.3938	0.1181	0.5818	0.087	-0.666
DB	2016	0.2910	0.0333	4.4560	0.1175	0.5578	0.147	-0.083
DB	2017	0.2643	0.0239	4.5394	0.1153	0.6509	0.147	0.3662
DB	2018	0.2981	0.0299	4.6573	0.1291	0.6471	0.113	-0.282
LIB	2009	0.0279	0.0398	2.9788	0.2013	0.6682	0.256	0.2719
LIB	2010	0.0457	0.0345	3.1347	0.1773	0.5739	0.341	0.573
LIB	2011	0.0032	0.0276	3.2572	0.1952	0.5213	0.051	3.0856
LIB	2012	0.0653	0.0351	3.3915	0.1793	0.5589	0.329	-0.274
LIB	2013	0.0742	0.0412	3.4687	0.1842	0.6259	0.087	-0.666
LIB	2014	0.0823	0.0295	3.5579	0.1738	0.5736	0.147	-0.083
LIB	2015	0.2873	0.0318	3.7678	0.1403	0.6350	0.147	0.3662
LIB	2016	0.2762	0.0206	3.9095	0.1318	0.6795	0.113	-0.282
LIB	2017	0.2628	0.0281	4.0404	0.1320	0.6252	0.113	-0.282
LIB	2018	0.3621	0.0387	4.1559	0.1263	0.6335	0.191	-0.809
NIB	2009	0.2339	0.0459	3.6818	0.1516	0.6736	0.256	0.2719
NIB	2010	0.2213	0.0389	3.7760	0.1535	0.6169	0.341	0.573
NIB	2011	0.1534	0.0412	3.8520	0.1646	0.5364	0.191	-0.809
NIB	2012	0.1784	0.0272	3.9178	0.1846	0.6353	-0.093	-0.041
NIB	2013	0.1976	0.0251	3.9612	0.1822	0.6826	0.051	3.0856
NIB	2014	0.2754	0.0795	4.0313	0.1828	0.6825	0.329	-0.274
NIB	2015	0.2643	0.0795	4.1224	0.1642	0.7053	0.087	-0.666
NIB	2016	0.2853	0.0775	4.1995	0.1591	0.6047	0.147	-0.083
NIB	2017	0.3134	0.0370	4.3226	0.1405	0.6525	0.147	0.3662
OIB	2018	0.3213	0.0467	4.4263	0.1267	0.6244	0.113	-0.282
OIB	2009	0.0019	-0.0193	2.5065	-0.0179	0.6141	0.256	0.2719
OIB	2010	0.0000	0.0267	3.0487	0.0107	0.4495	0.341	0.573
OIB	2011	0.1112	0.0289	3.2927	0.0089	0.4336	0.051	-0.809
OIB	2012	0.1101	0.0209	3.4452	0.0048	0.4816	0.329	-0.041
OIB	2013	0.1052	0.0200	3.5923	0.0035	0.5315	0.087	3.0856
OIB	2014	0.0996	0.0306	3.7890	0.0039	0.5059	0.147	-0.274
OIB	2015	0.2695	0.0275	3.9793	0.0026	0.6456	0.147	-0.666
OIB	2016	0.3175	0.0213	4.0524	0.0017	0.5526	0.113	-0.083
OIB	2017	0.3421	0.0209	4.2120	0.0012	0.5349	0.147	0.3662
NIB	2018	0.2972	0.0191	4.3012	0.0014	0.5438	0.113	-0.282
UB	2009	0.1670	0.0446	3.6676	0.1118	0.5952	0.256	0.2719

UB	2010	0.2887	0.0331	3.7706	0.1081	0.5532	0.341	0.573
UB	2011	0.2545	0.0340	3.8879	0.1167	0.5402	0.191	-0.809
UB	2012	0.0567	0.3607	3.9438	0.1254	0.6046	-0.093	-0.041
UB	2013	0.1256	0.0228	3.9990	0.1204	0.5842	0.05	3.0856
UB	2014	0.2535	0.0181	4.0747	0.1326	0.5693	0.329	-0.274
UB	2015	0.1083	0.2144	4.1572	0.1174	0.5811	0.087	-0.666
UB	2016	0.2711	0.2143	4.2373	0.1200	0.6546	0.147	-0.083
UB	2017	0.3421	0.1948	4.3405	0.1149	0.7268	0.147	0.3662
UB	2018	0.3657	0.0276	4.4476	0.1054	0.6443	0.113	-0.282
WB	2009	0.1231	0.0611	3.7091	0.1634	0.5666	0.191	0.2719
WB	2010	0.0853	0.0396	3.7591	0.1832	0.6306	-0.093	0.573
WB	2011	0.2521	0.0454	3.9064	0.1659	0.4885	0.051	-0.809
WB	2012	0.3213	0.0243	3.9215	0.1922	0.6192	0.329	-0.041
WB	2013	0.2894	0.0224	4.0168	0.1761	0.6212	0.087	3.0856
WB	2014	0.2431	0.0167	4.0509	0.1907	0.5492	0.147	-0.274
WB	2015	0.2755	0.1910	4.1371	0.1761	0.6151	0.147	-0.666
WB	2016	0.2541	0.1366	4.2092	0.1733	0.6775	0.113	-0.083
WB	2017	0.4264	0.0264	4.3212	0.1602	0.7301	0.256	0.3662
WB	2018	0.3876	0.0357	4.4376	0.1397	0.7210	0.341	-0.282

Source: NBE and CSA via simple excel

Appendix 2

Figure 2 Normality test



Source: Financial statement of sampled commercial banks and own computation through Eviews8.

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.938138	6	0.0440

Source: Eviews 8 output 2020

Dependent Variable: ROA

Method: Panel Least Squares

Date: 01/04/21 Time: 15:47

Sample: 2009 2018

Periods included: 10

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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NPLS	-0.403058	0.149636	-2.693591	0.0085
LR	0.143098	0.084516	1.693161	0.0941
BS	0.172401	0.015348	11.23254	0.0000
INF	-0.006682	0.006054	-1.103625	0.2729
GDP	0.146098	0.053275	2.742332	0.0075
CAR	-1.285061	0.392422	-3.274689	0.0015
C	-0.307172	0.107907	-2.846628	0.0056

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.839969	Mean dependent var	0.252631
Adjusted R-squared	0.811392	S.D. dependent var	0.137060
S.E. of regression	0.059524	Akaike info criterion	-2.659231
Sum squared resid	0.297620	Schwarz criterion	-2.242404
Log likelihood	148.9615	Hannan-Quinn criter.	-2.490533
F-statistic	29.39320	Durbin-Watson stat	1.665248
Prob(F-statistic)	0.000000		
