
**SCHOOL OF GRAGUATE STUDIES**

# DETERMINANTS OF PRIVATE COMMERCIAL BANKS PROFITABILITY IN ETHIOPIA

**MBA THESIS**

**MOHAMMED SEFA**

**A THESIS SUBMITTED TO DEPARTMENT OF ACCOUNTING AND FINANCE IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE (MSC.) IN ACCOUNTING AND FINANCE**

**MAY, 2024**

**WOLKITE, ETHIOPIA**

**Wolkite University**

**School of Graduate Studies**

# Determinants of Private Commercial Banks Profitability in Ethiopia

**A thesis submitted to School of Graduate Studies, in partial fulfillment of the requirements for the Degree of Master of Arts in Business Administration (MBA)**

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**May, 2024**

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May, 2024

Wolkite, Ethiopia

# DECLARATION

I hereby declare that this MBA thesis is my original work and has not been presented for degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

Name: Mohammed Sefa

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# ACKNOWLEDGEMENTS

I am profoundly grateful to the Almighty Alah for the invaluable guidance and support bestowed upon me throughout my life's journey. Additionally, I wish to extend my heartfelt appreciation to my cherished family, whose unwavering encouragement has been instrumental in enabling me to embark on and complete this thesis.

My deepest gratitude is owed to my primary advisor, Abdu M. (Assistant Professor), whose sage guidance, insightful feedback, and unwavering support have been indispensable in shaping both the proposal and the thesis. I am also indebted to my circle of friends, whose steadfast presence and willingness to assist have been a constant source of encouragement and inspiration throughout this academic pursuit.

Last but certainly not least, I extend my sincere appreciation to the management bodies of private commercial banks for their cooperation and provision of essential financial data, without which this research would not have been possible.

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AB | Abay Bank |
| ADIB | Addis international bank |
| AB | Awash bank |
| BUIB | Buna International Bank |
| BOA | Bank of Abyssinia |
| CAP | Capital Adequacy Ratio |
| CBE | Commercial Bank of Ethiopia |
| CBO | Corporative Bank of Oromia |
| CPI | Consumer Price Index |
| DB | Dashen Bank |
| DBE | Development Bank of Ethiopia |
| DGB | Debub Global Bank |
| EB | Enat Bank |
| GDP | Growth Domestic Product |
| INF | Inflation rate |
| LA | Loan and Advance |
| LIB | Lion International Bank |
| MLRM | Multiple Linear Regression Model |
| NBE | National Bank of Ethiopia |
| NIB | Nib International Bank |
| NIM | Net Interest Margin |
| OIB | Oromia International bank |
| OLS | Ordinary Least Square |
| ROA | Return on Asset |
| ROE | Return on Equity |
| UB | United Bank |
| WB | Wegagen Bank |
| ZB | Zemen Bank |

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# ABSTRACT

*This study investigates the determinants of bank profitability using a panel dataset comprising 150 observations across 15 banks. The primary objective is to identify significant factors influencing bank profitability and provide recommendations to enhance financial performance and sustainability. The methodology employed in this research involves fixed-effects panel regression analysis to examine the relationship between various independent variables and bank profitability, measured by Return on Assets (ROA) and Return on Equity (ROE). The independent variables considered include Liquidity Position (LIQ), Deposit (DT), Capital Adequacy Ratio (CAP), Bank Size (BS), Reserve Requirement (RR), GDP Growth (GDP), and Inflation (INF). The results of the analysis reveal several significant determinants of bank profitability. Liquidity position, capital adequacy ratio, GDP growth, and inflation exhibit statistically significant associations with both ROA and ROE. Specifically, an increase in liquidity position, capital adequacy ratio, and GDP growth positively impacts bank profitability, while inflation exerts a negative influence. Furthermore, the analysis reveals that deposit levels and bank size do not exhibit statistically significant relationships with bank profitability, as indicated by both ROA and ROE. Additionally, reserve requirements show no significant association with bank profitability, suggesting that regulatory constraints may not be significant drivers of bank profitability in the context of this study. These results underscore the complex interplay of various factors affecting bank profitability and highlight the need for a comprehensive approach to financial management and risk mitigation in the banking sector. Based on the findings, several recommendations are proposed to enhance bank profitability and ensure financial stability. These include optimizing liquidity management, diversifying funding sources for* enhancing efficiency and cost management, adapting regulatory changes*, maintaining adequate capital buffers, monitoring economic conditions, implementing robust risk management practices, enhancing efficiency and cost management, adapting to regulatory changes, and investing in innovation and digitalization.*



**Keywords**: Profitability, Determinants, Private commercial banks

# CHAPTER ONE

# INTRODUCTION

Chapter 1 introduces the study titled "Determinants of Private Commercial Banks' Profitability in Ethiopia." The Background of the Study highlights the significance of private banks in Ethiopia's economy and the gaps in existing research. The Problem Statement focuses on understanding the key factors influencing these banks' profitability. The Objectives of the Study aim to identify and analyze these determinants. The Scope of the Study is limited to private commercial banks in Ethiopia. The Significance of the Study underscores its potential impact on policy, bank management, and future research, contributing to the banking sector and economic growth.

## 1.1. Background of the Study

If there's one thing without which exchange and commerce cannot survive, it would be finance (Tariq et al., 2014). In a given country's economic system, finance plays a vital part within the circulation of reserves (Ongore, 2013). Financial institution contributes to financial development of the nation by making funds accessible for financial specialists(investor) to borrow as well as money related developing within the nation (Otuori, 2013). Banks are the necessarily portion of the financial market. Therefore, in order to remain at that level; it is fundamental to decide how banks work and what components influence their profit.

According to Aburime (2008), both the micro and macro levels of the economy assess the significance of bank profitability. At micro level, profit is the lowest source of capital and a necessary condition for a competitive banking organization. On the other hand, at the macro level, a healthy and prosperous banking industry can better resist adverse shocks and support the financial system's stability. Therefore, as a fundamental prerequisite for conducting business, the primary goal of any bank management is to maximize profit. However, attempts to maximize profitability of both public and private CBs are affected by various factors. In any case, bank's profitability can be affected by various factors. The components, as pointed

out in the literature, are commonly divided into two major categories. The primary category looks at the bank specific or internal factors that are controllable by the administration of a given bank. The second category, on the other hand, looks at factors that are beyond the control of the administration and ordinarily referred to as macroeconomic factors (Saona, 2011). Besides, studies revealed there is also another determinant factor – industry specific factors such as asset share, deposit share, and loan share that can significantly affect profitability of banks (Million, 2023).

Besides to the driver factors, measurements of profitability of CBs also play an important role for the financial performance of banks. Prior studies endeavored to recognize measures of profitability in public and private banks. For instance, Saona (2011); Hossain and Ahamed (2015); Teshome et al.(2018); Gazi et al.(2021) argued that bank's profitability should be measured by both ROA and ROE. However, most studies used only ROA as measurement of profitability (Mahmud et al., 2016; Serwadda, 2018). Furthermore, some researchers also used ROA, ROE and NIM as measurement of profitability (Abdu, 2018; Million, 2023. Therefore, such measurements are crucial and describes critical measurement is required. On the other hand, (Flamini et al. (2009) noted that bank profits give a critical source of equity if re-invested into commerce. This may lead to secure banks, high benefits and financial stability. Hence, profitability of banking sector is critical in both micro and macroeconomic level. In addition, Gottard el al. (2004) expressed that profitability is crucial in keeping up the stability of the banking system and contributes to the state of the financial system. But on the other hand, a high profitability isn't very good. In this regard, GarciaHerrero et al. (2009) concluded that a high profitability can be investigative of market power and is particularly critical for large banks. Typically, due to the reason that banks working out strong market control may offer lower return on deposits but charge high interest on loans. Whereas too low profitability might dampen private agents (depositors and shareholders) from accomplishing banking activities thus resulting in banks failing to attract sufficient capital to function.

In Ethiopian context, for nations struggling to emerge, like Ethiopia, to experience sustained growth, financial development is essential. However, before the financial sector develops, the banking sector needs proper regulation and supervision (Syed et al., 2022). Strong bank performance rewards the shareholders with an acceptable return on their investment in

addition to resource allocation. Investments happen when there is a return, leading to economic expansion. On the other side, poor banking performance has a detrimental impact on the expansion and advancement of the economy; failures and crises can result from poor performance.

Nonetheless, financial performance of banks are affected by the dynamic nature of the determinant factors, bank specific, industry, and macroeconomic, depending on the style of operation of the banks in different areas that makes determinant factors of profitability argument intriguing (Flamini et al., 2009). As a result, measuring bank's profitability has received much attention in the corporate finance literature. Prior studies, on factors affecting profitability of public and private commercial banks in Ethiopia have found out different findings on different determinant factors, for instance, Million (2023) on private banks found out, industry-specific factors (asset share, deposit share, and loan share) and macroeconomic factors (average exchange rate and inflation rate) have statistically significant negative effect on the performance of private banks. On the other hand, bank-specific factors such as bank size, operational efficiency, asset quality and capital adequacy have statistically significant positive effect on bank performance. Another study by Deyganto and Kumari (2018) found out management efficiency and capital adequacy have significant and positive influence, whereas liquidity management has statistically significant and negative influence on profitability of the CBE branches.

Thus, based on the above viewpoints, this study attempted to examine determinant factors: banks specific factors such as liquidity, capital adequacy, loans and advances, size of the bank; industry factor, reserve requirement and macroeconomic factors: level of GDP and annual inflation rate on fifteen private commercial banks' profitability in Ethiopia by taking thirteen years from 2011 – 2022 balanced panel data.

## 1.2. Statement of the Problem

Private banking sector in Ethiopia is highly competitive. Recently this sector is going through critical situations. The major trend has been lower growth in credit, increasing NPL's and lower interest rate due to high cost of capital which altogether increase the risk and hence reduce the profitability of this sector (Zhen et al., 2020). Since commercial banks are aimed

at maximizing profit, such risks and inefficiencies can lead to a lowering of profit which is a major concern for both managers and investors. Due to limited investment opportunity and bearish stock market in Ethiopia, investors are more concerned about the performance of banks especially private ones.

This scenario is not peculiar to Ethiopia; recently banking sector is going through critical situations worldwide also. Prior studies attempted to point out what factors lead to the performance of banks and how performance of commercial banks can be improved. In this regard, Mahmud et al.(2016) on Bangladesh CBs found out bank size, operating expense, gearing ratio (risk) and capital adequacy ratio have significant effect, but liquidity and non-performing loan have no significant effect on the profitability of CBs. Another study by Gazi et al.(2021) revealed both firms' specific variables (i.e. equity to asset ratio, deposit to asset ratio, debt to equity ratio, loan to deposit ratio) and macroeconomic variable (GDP growth rate) have statistically significant impact on the profitability, represented by ROA and ROE. Empirical findings by Serwadda (2018) also revealed that non-performing loans, overhead costs and liquidity had a significant negative impact on bank profitability as bank size had a significant positive impact on profitability with bank size and asset quality have the biggest impact on commercial banks' profitability in Hungary for the period under investigation. However, net interest margin and capital adequacy ratio had no impact on bank profitability.

There are a lot of studies been conducted in the area of commercial banking profitability and its determinants by considering the significance of the area at universal level. They confirmed that there is a direct association between profitability of commercial banking industry and its determinant factors (Farooq et al., 2021; Farkasdi et al., 2021; Ben Moussa et al., 2022). Even though, all these and other researchers conducted study on this area, the determinants of profitability have been debated for many years and still unsolved issues in the corporate finance literature. In fact, what makes the profit determinants debate exciting is that the determinant factors of profit are dynamic through time to time and differ with the nature of operating of the firm from place to place (Flamini et al., 2009).

In Ethiopian context, many local studies have been carried out on issues related to the determinants of profitability of public and private CBs by selecting only public, only private

and both public and private banks using different methods of analyses or models on balanced panel data. For instance on private banks, Melaku (2016), utilizing ROA **with** fixed effects estimation from 2004 – 2011 found out bank specific determinants were very important in explaining profitability than external variables. Another study by Ashenafi and Gujral(2022) on internal factors using panel data of thirteen commercial banks from year 2010 to 2018 and by taking ROA as a proxy variable analyzed by the fixed effect regression model found out statistically significant and positive relationship between operation efficiency, capital adequacy and bank size and banks' profitability. Segni (2022) also conducted his study on six CBs from year 2010 to 2020 implementing MLRM and pointed out capital adequacy credit risk, operating expense, tax payment, service charge and commission, other income, employment salary and benefit, interest income, non-interest income and real growth domestic product significantly influenced banks profitability in different direction.

Moreover, though prior local studies have made great contributions to show the significant effect of internal, external and industry specific factors on the profitability of CBs in different direction, most of the prior studies considered only ROA as the outcome variable. In the case of private CBs, as to the best knowledge of the researcher, few empirical studies evidence are available that described profitability of CBs in terms of ROA, ROE and NIM. Therefore, in light of the indicated gap the researcher felt that there was a need to fill the gap by examining comprehensively the relationship between bank specific, industry specific and macro – economic factors and profitability on fifteen selected private CBs in Ethiopia.

Bank profitability has been a topic of much scrutiny all around the globe for decades. This is even more relevant in the aftermath of the global financial meltdown in 2008. Even though, Ethiopia, a predominantly agriculture-based economy, cannot be out of this global trend of scrutinizing what factors drive banks' profitability, in particular private banks at a firm level. With increased competition from a number of new private banks entrant in the country certainly need continuous academic studies that **can** point out the key drivers of banking profitability. Although a number of studies looked into the determinants of profitability for the Ethiopian private banking sector in the past and currently, lion's share of them have been carried out on limited banks and on banks established in earlier times and used balanced panel data up to the year 2021. Therefore, based on this scenario and cognizant to the above

viewpoints, this study intended to examine determinant factors affecting profitability of private commercial banks by taking fifteen private CBs balanced panel data from 2011 to 2022.

## 1.3. Objectives of the Study

### 1.3.1. General objective

The main objective of the study was to examine determinants of private commercial banks profitability in Ethiopia.

### 1.3.2. Specific Objectives

Specifically, the study attempted to achieve the following objectives:

- To identify the effects of banks specific factors such as liquidity, capital adequacy, loans and advances and size of the bank on the private commercial banks' profitability in Ethiopia.
- To examine the effect of industry factors such as reserve requirement on the private commercial banks' profitability in Ethiopia.
- To analyze the effects of macro-economic factors such as level of GDP and annual inflation rate on the private commercial banks' profitability in Ethiopia.

## 1.4. Hypotheses of the Study

The hypotheses of the study were derived from literature review. Accordingly, the study addressed the following directional hypotheses tested using 5% level of precision:

$H_1$: Capital adequacy has a positive and significant effect on profitability of private commercial banks in Ethiopia.

$H_2$: Liquidity has a negative and significant effect on profitability of private commercial banks in Ethiopia.

$H_3$: Loans and advances have a positive and significant effect on profitability of private commercial banks in Ethiopia.

$H_4$: Size of bank has a positive and significant effect on profitability of private commercial banks in Ethiopia.

$H_6$: Reserve requirement has a positive and significant effect on profitability of private commercial banks in Ethiopia.

## 1.5. Significance of the Study

It is believed that the study will benefit the bank's managers as they will use study findings to identify various factors that influence profitability of banking industry in Ethiopia. In addition, the managers may also adopt the study recommendations to improve performance and profitability where possible. The findings will also be of value to other firms in the banking industry in Ethiopia like microfinance organizations, saving and cooperative societies, insurance firms and pension fund firms who operate similarly to commercial banks to identify factors, which may influence their profitability. The findings will also be of importance to literature, as it will add on to the existing literature on profitability and financial performance of banking industry. Finally, future scholars and researchers may also use these findings as a basis for additional research.

## 1.6. Scope of the Study

The study has geographical, time, variables and methodology scopes. Geographically, the study was delimited to private commercial banks in Ethiopia which are functional at the different regions of the country. Nonetheless, it was much better and exhaustive for the study if there was a chance of accommodating some more commercial banks. However, even though, there are one government owned bank and twenty nine private commercial banks in Ethiopia, the study covered only fifteen private commercial banks, namely, Awash International Bank(AIB), Dashen Bank(DB), Abyssinia Bank(BOA), Wegagen Bank(WB), United Bank(UB), Nib international bank(NIB), Cooperative bank of Oromiya(CBO), Lion International Bank(LIB), Oromia International Bank(OIB), Zemen Bank(ZB), Bunna International Bank(BIB), Berhan International Bank(BRIB), Abay Bank(AB), Addis International Bank(ADIB), Debub Global Bank(DGB) in the country in terms of their years of establishment and market share. The reason behind choosing these fifteen banks was due to their availability and enough data, number of branches and geographical coverage,

working experience, time and finance constraints and in order to make the data more manageable for the specific duration of 2011 to 2022.

Regards to variables scope, this study was restricted to examine the impacts of bank specific factors such as capital adequacy, liquidity, loans and advances, size of bank, and loan growth; industry specific factors: reserve requirement and asset share; and macro-economic factors: rate of annual inflation and GDP growth rate affecting profitability of all private commercial banks registered by the NBE.

Finally, the study also delimited to the inferential statistics/classical linear regression model (CLRM), the most important part of the panel data analysis, that helped to identify the determining variables of profitability of private commercial banks and to draw relationship between dependent and independent variables within that period.

## 1.7. Limitations of the Study

This study encountered with some limitations which are presented as follows. First of all the study was mainly focused on examining determinants of profitability on fifteen private commercial banks in Ethiopia for the period of 2011-2022. In doing so, due to the confidentiality of banking industry information the researcher found it fairly, tough to access certain type of materials, like off balance sheet items and unavailability of loan loss provision was limitation which would limit the research work. The other limitation was generalizability issue (failing to include the other banks), since the study conducted on limited and selected private commercial banks; as the result of this it might make it difficult to make conclusions about other banks, i.e., the results of the findings of the study do not necessarily apply to other banks including government commercial bank of Ethiopia. Furthermore, this study did not examine the impact of other determinant factors on the profitability. In general, even though, the researcher has faced the above limitations, these limitations did not have significant impediment on the outcomes of the study.

## 1.8. Organization of the study

This study is organized in five chapters. The main content of each chapter is briefly outlined as follows: Chapter one describes on what perspective the research was set along with the

statement of the problem followed by the objectives of the study, hypotheses, significance, scope of the study, limitations of the study, and organization of the study. Chapter two presents review of related literatures. Chapter three outlines the research methodology. It presents research design, research approach, sampling procedure and sample size determination, data type and source, methods of data collection, methods of data analysis, and ethical considerations. Chapter four presents the results, interpretation and discussions of the findings of the study collected through data collection instrument-panel data. Chapter five describes summary of major findings, conclusions and recommendations.

# CHAPTER TWO

# 2. LITRATURE REVIEW

## 2.1. Theoretical Review

### 2.1.1. Concept of Profitability and Bank's Profitability

#### 2.1.1.1 Concept of Profitability

Profitability is usually defined as the ability of a given investment to earn a return from its use. The term "profitability" is composed of two words "profit" and "ability". The word "profit" has been defined in a number of ways, is the sum arrived by deducting total costs from sales revenue. The term "ability" reflects the power of an enterprise to earn profit. The ability is also referred to as earning power, earning capacity or operating performance of the concerned investment (Toshniwal, 2016).

In the words of Professor Robbins cited in (Toshniwal, 2016), "Profits are the motivating force for economic activity". It is this generic nature of profit that is universally acceptable, because in every country the need for creating economic surpluses, that is, for generating earnings by utilizing available resources effectively and efficiently, is of paramount importance for accelerating the pace of economic growth.

The overall objective of a business is to earn at least a satisfactory return on funds invested in it consistent with maintaining a sound financial position. Satisfactory return depends upon several factors including the nature of business risk involved in business etc. If an enterprise fails to earn profits, invested capital is eroded and if this situation is prolonged the enterprise may ultimately cease to exist (Klein & Weill, 2018).

Profitability of a business indicates the financial ability and tends to enhance the income earning capacity. Today, profitability analysis has stolen a march over other aspects which are highlighted in interpretation of financial statements, in developed and developing countries. Financial analysis is more external than internal; profitability analysis is internal as well as external.

### 2.1.1.2 Bank's Profitability

Bank's profitability has been expressed in a number of ways. Bank profitability refers to the difference between the profit amount obtained from the assets and expense of the liabilities (Yüksel et al., 2018). Garcia-Herrero et al.(2009) expressed as, bank profitability, an indicator of bank performance, is a reflection of how banks are run given the environment in which they operate. Healthy and sustainable profitability plays a vital role in maintaining stability in the banking sector.

Literature reveals, bank profitability is stated as a function of both micro and macro determinants. Micro variables consist of the accounts in the balance sheet and income statement. Therefore, they are also named as bank specific variables. On the other hand, macro variables are not related to the internal process of the banks, but they affect profitability in a significant way. Size, capital, risk management, expense management, marketable securities and non-performing loans are generally considered micro variables (Yüksel et al., 2018). In some literature, bank profitability has been expressed as a function of internal and external determinants. The internal determinants are the micro or bank-specific determinants of profitability while the external determinants are not related to bank management but reflect the industry and economic environment that affects the operation and performance of banking industry. Both endogenous and exogenous determinants affected the profitability and earnings of the banks (Brahmaiah & Ranajee, 2018).

### 2.1.2. Bank's Profitability Indicators

Studies revealed different financial performance indicators such as Return on Assets (ROA), Net Interest Margin (NIM) and Return on Equity (ROE). Arimbawa & Badera (2018) found out that, these indicators are widely regarded as providing valuable insights into the financial health, efficiency, and risk management practices of banks. The present study highlights the extensive exploration of measures in the literature, which provide essential tools for comprehending and evaluating bank performance.

Hakim and Apriliani (2020) pointed out that, ROA is a fundamental metric of profitability. Specifically, the ROA is calculated as the ratio of net income to total assets over a defined period. The present statement concerns the evaluation of a company's capacity to efficiently

employ its assets in order to produce profits. The significance of the effectiveness of management in resource allocation is recognized by De Bock and Demyanets (2018) through their acknowledgement of the Return on Assets (ROA) as a crucial metric. The Return on Assets (ROA) metric is also a widely recognized indicator of operational efficiency within the banking industry. Hughes and Moon (2018) found that, the statement highlights the significance of assessing a bank's balance sheet management in generating profits. Return on Assets (ROA) metric holds significant relevance in the banking sector due to its consideration of the asset-intensive characteristics of the industry.

The ROE is also the other crucial metric utilized to evaluate the performance of a bank. It determines the return on the equity invested by the owners in the bank. The significance of the ratio in assessing the earnings of a bank relative to other firms operating throughout the same industry is emphasized by (Islam, 2021). The metric of return on equity (ROE) serves as an indicator of a bank's capacity to generate greater profits with the capital that its shareholders have invested. The concept of Return on Equity (ROE) has been regarded by Kasavica and Jovic (2015) as a significant metric that mirrors the economic leverage and risk-taking capacity of a bank. The attainment of a high return on equity (ROE) by a bank is indicative of its efficient utilization of equity capital to stimulate revenue generation. This outcome can engender augmented investor assurance and potentially elevate the market appraisal of the bank.

As stated by Puteri (2021), NIM is a crucial indicator of a firm's performance, evaluating the efficacy of its investment choices in relation to its debt circumstances. The Net Interest Margin is a crucial metric for banks, as it measures the differential between the interest income accrued by banks and the interest disbursed to their creditors, in proportion to the quantum of their interest bearing assets. The assessment of the bank's asset-liability management approach and the risk profile of its assets is a crucial metric, as posited by Kurniawati (2021). The control of the spread among interest obtained on assets, such as loans, and interest given on liabilities, such as customer deposits, is a crucial aspect of financial management. A higher net interest margin (NIM) is indicative of superior management of this spread. This statement provides useful information into the bank's

capacity to effectively manage the risk of interest rates and generate profits through its fundamental lending activities.

### 2.1.3. Theories Related to Determinants of Profitability

#### 2.1.3.1 Market Power Theory

This idea says that when a company has a lot of control over a market, they can make a lot of profit because there isn't much competition. This means that when a few companies dominate a market, they have a lot of power over it. This is why measuring the concentration of the market is a good way to determine how much power these companies have. When markets are more focused the market power theory says that if there are only a few companies selling a product, they can charge more money and make bigger profits. This means that there is a system in place that lets banks work together to make a lot of extra profit which arise due to the firms portfolio of differentiated products that also increases the market share and market power in determining prices for products (Mirzaei, 2012) . The market-power theory says that a company with a lot of influence has control over what happens in the market. Market power means having control over the market. It is a big factor that affects how much money a business can make. When a business has a lot of market power, it can make lots of profit. When the market is controlled by only a few big companies, profit can also change. Markets can have problems when people work together to control prices, which is called collusion. This creates market imperfections, the amount of power that a few big companies have in a certain market, and the laws that make it hard for smaller companies to entry or exit (Punt and Rooij, 2001). Market power theory is applied in a banking industry, to explain bank‘s profitability and how it is affected by its market share. The theory explains the positive relation between bank‘s size and financial performance. Market power theory suggests that banks profitability is as a result of the industries market structure Onuonga, (2014). In addition, this theory posits that market structure of banking industry influences banks’ profitability (Ntow &Laryea, 2012). According to Obumuyi (2013), this theory assumes that banks’ profitability is a function of external market factors and the theory also assumes that the industry structure which is measured using market concentration in term of the market share ratio affects the profitability of commercial banks (Fisseha, 2015).

### 2.1.3.2 Efficiency Theory

The efficiency theory was created by Demsetz in (1973) as another idea instead of market power. The efficiency theory presupposes that is based on better management and scale efficiency results to higher concentration thus greater and higher profits. The efficiency theory thinks that if management is good and things are done on a bigger scale, then things will work better. When there is a lot of something, you can make more money. So, the idea suggests that when managers are efficient, they can make more money and get more customers. The market became better and stronger (Athanasoglou, Brissimis, and Delis, 2005). Theory also says that if a company makes more money when they focus on something specific, it could be a good thing, the connection between how well something works and how big it is. The theory postulates that positive association between the concentration and profit arise from a lower cost which is mainly achieved through production efficient practices and increased managerial process (Birhanu, 2012). The efficiency theory says that we can make things in the best way possible through Economies of scale mean that as a company gets bigger and produces more products, the cost of making each product goes down. This happens because the company can use resources more efficiently and spread out certain costs over a larger number of products. The best way to do things quickly right now is to reach a certain level. This means that a business is using all its resources in the best way to make as much product as possible (Odunga et al., 2013). Additionally, the efficiency theory explains that attaining higher profit margins arises from efficiency which allows banks to obtain both good financial performance and market shares (Mirzaei, 2012). According to Fisseha (2015), the efficiency theory presupposes that profitability and high concentration results from efficient cost reduction practices and better management strategies across the organization. Thus, efficient firms in the market lead to an increase in their market share and the size of their firm because of aggressive production and management techniques (Birhanu, 2012). In the banking industry, the efficient theory advocates that large commercial banks which have better and experienced management and up to date production technologies are able to reduce their operational costs, therefore earned higher returns on investment in comparison to smaller banks (Soana, 2011). Basically, the theory is based on the premise that banks attain profits if they operate efficient than their competitors which lowers operating costs leading to good profits (Onuonga, 2014). The efficiency theory also assumes that internal efficiencies

influence profitability of commercial banks (Obumuyi, 2013). Further, the theory explains that banks which operates efficiently in comparison to their competitors increase their profits due from low operating costs. The efficiency hypothesis prevails when a positive significant correlation between profitability and the market share is signaled (Mensi & Zouari, 2010).

#### 2.1.3.3 Agency Cost Theory

The agency cost theory arose from the seminal contributions of Jensen & Meckling (1976). Agency cost theory assumes that firm‘s financing structure can be used as a mechanism or vehicle by managers and investors solve the free cash flow problem. Agency theory explains that corporate form of organizations is illustrated by professional managers who have little ownership but are running business on behalf of shareholders (owners) who are extensively dispersed characterizes an archetypal principal-agent problem (Gedajlovic & Shapiro, 2002). Agency costs arises from separation of ownership and control, whereby managers maximize their own benefits or employ the firm‘s resources for personal gains instead of maximizing value of firm or the shareholders wealth (Mian, Haris & Muhammad, (2012). Jensen and Meckling (1976) classified agency cost into costs arising from monitoring of managers by shareholders, cost of bonding and residual loss. Agency cost includes agency cost arising from conflict of interest between firm‘s managers and shareholders and agency cost arising out form conflict debt holders and of interest of shareholders (Mian, Haris & Muhammad, 2012). According to the theory, agency costs appear because of the differences of interests and actions from managers and Principals, which is likely to affect in due course the principals’ benefits and the firm value and profitability (Alfadhl & Alabdullah, 2013).

#### 2.1.3.4 Signaling Theory

The signaling theory emanated from Arrow (1972) and Spence (1973). Signaling theory presupposes that best performing or profitable firms supply the market with positive and better information (Bini, Dainelli & Giunta, 2011). In addition, the signaling theory is one of the theories, which have a clarification for the association between profitability and capital structure (Alkhazaleh & Almsafir, 2014). This theory presupposes that a superior capital structure is a 15 optimistic signal to market worth of the organization (Adeusi, Kolapo & Aluko, 2014). The signaling theory further postulates that majority of the profitable firms

signal their competitive power through communicating new and important information to market. Thus, information is disclosed by means of specific indicators or ratios which, very often, measure specific conditions on which to enter into or renew the agency contract (Bini, Dainelli & Giunta, 2011). According to the signaling theory, the management of bank signals good future expectation by increasing of capital. This indicates that less debt ratio necessarily mean those banks perform better than their identical (Alkhazaleh & Almsafir, 2014). In addition, the theory argues that managers who strongly believe that their bank can outperform other banks in the industry will want to relay such information to various stakeholders in order to attract additional investments. Thus, the signaling theory affirms that when a bank‘s performance is excellent, directors will signal the banks performance to its stakeholders and market by making various disclosures which poor performing firms cannot make. By enhancing more disclosure most managers will wish to receive high benefits and a good reputation which may increase the value of the firm and profitability (Muzahem, 2011).

#### 2.1.3.5 Expense theory

**Expense theory** refers to a framework in economics and finance that examines how a firm's expenses impact its overall profitability and operational efficiency. This theory analyzes different types of costs—fixed, variable, and semi-variable—and how they influence the company's financial performance. By understanding expense patterns and behaviors, businesses can implement strategies to optimize spending, improve cost management, and enhance profit margins. In the context of banking, expense theory can be used to analyze how operating costs, such as salaries, rent, and administrative expenses, affect a bank's profitability. Expense theory is measured by the ratio of working expense to total assets (e.g. Aburime, 2008) and it may be a intermediary to management quality. Clearly, effective cost management is a prerequisite for improved profitability of banks. There is proving that prevalent management raises benefits and market shares (Berger, 1995 and Athanasoglou, Brissimis and Delis, 2005).

According to Athanasoglou, Brissimis and Delis (2005) examination on Greek banks during the period 1985 – 2001 observed that Operating expenses appear to be an critical determinant of profitability. They find that, there is direct positive relation between efficient expense management (i.e. management quality) and profitability. There is direct negative connection

between Operating expenses and profitability of banks; implies that there is immediate negative connection between lack of effectiveness in costs administration and profitability of banks. The literature proposes that, the environment in which banks work impacts them, like every firm; from this, the external environment is the common and the uncontrolled one. The external determinants are factors that not related to bank management but reflect the industry-related 16 and macroeconomic environment that influences the operation and performance of commercial banks. External determinants of bank productivity are concerned with those variables, which are not impact by specific bank‘s decisions and policies, but by events outside the impact of the bank. A few external determinants are included in the performance examination of commercial banks profitability: the financial market structure; the financial condition of the country, the legitimate and political environment all may impact the execution of the banks (Athanasoglou, Delis & Staikouras, 2006; kasmidou, 2008; Sufian, 2011). For the purpose of this study, regulation and market concentration as industry-specific determinants and financial development, exchange rate and interest rates policy as macroeconomic determinants were used.

### 2.1.4. Factors determining Commercial banks Profitability

A number of studies have examined the determinants of banks' profitability in many countries around the world. Most of the studies consider internal factors (i.e., banks' specific) and external factors (i.e., industry-specific and economic environment) and examine either a particular country or a number of countries. The studies usually expressed bank profitability, as function of internal and external determinants. A number of explanatory variables have been proposed for both categories, according to the nature and purpose of each study. Internal determinants of bank profitability can be defined as those factors that are influence by the banks' management decisions and policy objectives. Essentially, company level determinants of bank profitability comprise characteristics of individual bank companies that affect their profitability. Shareholder and managerial decisions and activities can directly influence these characteristics; hence, they also differ from company to company (Athanasoglou, 2006; kasmidou, 2008; Sufian, 2011). The most frequently used bank profitability determinants which are driven from financial statement include the following.

### 2.1.4.1 Capital Adequacy

Bank equity capital can be seen in two dimensions as stated by Aburime (2008). Those are the amount contributed by the owners of a bank (paid-up share capital) that gives them the right to enjoy all the future earnings and the amount of owners‘ funds available to support a bank‘s business which includes reserves, and is also termed as total share holders‘ funds. It is measured by the ratio of equity capital to total assets. Bank‘s capital is widely used as one of the determinants of bank profitability since it indicates the financial strength of the bank 17 (Athanasoglou, Brissimis & Delis, 2005). Aburime (2008) suggested that the bank level of safety achieved through the high capital requirements which generated positive net benefits. The degree of security exceeded the level maximizing net benefits. Capital adequacy requirements generally aim to increase the stability of a national banking system by decreasing the likelihood of a bank failure and a number of negative externalities exist in banking that cause risk to systematically under price. Research conducted by Valentina, Flamini, McDonald and Schumache (2009) on the determinants of commercial banks profitability in Sub – Saharan Africa by taking 389 sample banks in 41 SSA countries, they measuring profitability by return on asset indicators. They founded that capital adequacy has positive and significant effect on profitability.

### 2.1.4.2 Liquidity Risk

Liquidity risk is another type of risk for banks; when banks hold a lower amount of liquid assets they are more vulnerable to large deposit withdrawals. In other word, liquidity risk arising from the possible inability of a bank to decreases accommodate liabilities or to fund increases on the assets side of the balance sheet. Therefore, liquidity risk is estimated by the ratio of liquid assets to total asset. Insufficient liquidity is one of the major reasons of bank failures (Ommeren, 2011). Liquidity is the quality of an asset that makes it easily convertible into cash with little or no risk of loss. A bank considered liquid when it has sufficient cash and other liquid assets, together with the ability to raise funds quickly from other sources, to enable it to meet its payment obligation and financial commitments in a timely manner. Following prior research of Ommeren (2011); Rasiah (2010) a negative relationship between profitability and large liquid assets to customer deposits and short term funding ratio is hypothesized. On the other hand, researchers expected a positive relationship between

liquidity risk and profitability and concluded that the fewer the funds tied up in liquid assets the higher expected profitability to be (Eichengreen & Gibson, 2001).

#### 2.1.4.3 Loans and Advances

One of the principal activities of commercial banks is to grant loans to borrowers. Because loans are among the highest yielding assets a bank can add to its balance sheet, and they provide the largest portion of operating revenue. The higher the volume of loans extended the higher the interest income and hence the profit potentials for the commercial banks. Furthermore, it must also be noted that higher interest income are not merely a function of higher volume of loans but are in fact also dependent on the lending rates and the interest rate elasticity of loans as well. The interest rate elasticity of loans will depend on the national affluence or national income (Moin, 2008).The interest raised from the loans is the most important source of the banks' income. However, inherent with bank's loan is liquidity risk as well as credit risk. In this respect, in extending loans, banks should properly manage such risks. In general, it is expected that the more loans, the more interest income, and the more profitable the bank (Sastrosuwito & Suzuki, 2011). Loan and advance is the ratio of loans to total assets. It measures what percent of total assets is comprised by loans and it gauges the percentage of total assets the bank has invested in loans (or financings). It is also another important ratio that measures the liquidity condition of the bank in terms of its total assets (Moin, 2008).

#### 2.1.4.4 Size of the Bank

The bank's total asset is another bank specific variable that affects the profitability and liquidity of a bank. Bank size measures its general capacity to undertake its intermediary function. There are two opposing arguments regarding to the relationship between bank liquidity and bank size. The first view is the too big to fail‖ hypothesis which considers negative relationship between bank size and liquidity whereas; the second view considers there is a positive relationship between bank size and liquidity. In this study, bank size is measured by the natural logarithm of total asset of the bank and it is expected positive relationship between bank size profitability.

#### 2.1.4.5 Loan Growth

Studies revealed the existence of significant relationship between loan growth and profitability both in public and private banks. A study done by Dang (2019) on 31 Vietnam commercial banks from 2006 to 2017 found out loan growth indicators could have the great impacts on bank performance. In particular, growth in lending increases loan loss provisions from 2 to 3 subsequent years lowers bank capital ratio the next year; while bank profitability gains positive effects from loan growth both in the short term and long term. Another study by Wijayanti and Mardiana (2020) on commercial banks in Indonesia during the period from 2014 to 2018 also found out loan growth had a significant positive effect on bank profitability, indirect loan growth had a significant positive effect on bank profitability with credit quality as an intervening variable and indirect loan growth had a negative and not significant effect on bank profitability with bank capital as an intervening variable.

In Ethiopian context, studies also revealed the existence of the statistical significant relationship between loan growth and profitability of both in public and private banks. For instance, a study done by Shibiru (2020) on private CBs from 2010 – 2019 found out credit risk management in terms of bank specific and macroeconomic factors has significant impact on profitability of commercial banks in Ethiopia. However, another study by Birhanu(2012) found out credit risk had affected the commercial banks profitability significantly and negatively.

#### 2.1.4.6 Reserve Requirement

The cash reserve requirement is one of the monetary policy instruments which allow the Central Bank to manage the liquidity and credit creation in the banking system. As Getahun (2014) stated that reserve requirements are considered to be a powerful tool for the government to control the activities of commercial banks. The reserve requirement (or cash reserve ratio) refers to the central bank regulation that sets the minimum reserves each commercial bank must hold (rather than lend out) of customer deposits and notes. It is Cash stored in the form of a physical object in a bank vault or deposits set with a central bank. The required ratio reserve is sometimes used as a tool in monetary policy for influencing the borrowing and interest rates of the country by changing the number of funds available for

banks to make loans. Cash reserve requirements had a positive and significant impact on loans.

Moreover, according to Hein and Stewart (2002) reserve requirement is the minimum level of non-interest earning reserves (vault cash or deposit at the Fed) held in proportion to depository institutions' depository liabilities. According to Simon Gray (2011), there are three main reasons for the imposition of reserve requirement. These are:

- **Prudential**. In some cases stemming back to the gold standard, when commercial banks' ability to take deposits and issue their own banknotes was constrained by a requirement to hold proportionate reserve balances either directly, or at another bank (eventually the central bank), which in turn held gold reserves. These reserves provided some protection against both liquidity and solvency risks.
- **Monetary control**. This takes two forms: First, if reserve money cannot easily be increased, reserve requirement may restrict commercial banks‟ balance sheet growth. Second, the central bank could vary the level of (unremunerated) reserve requirement in a way intended to influence the spread between deposit and lending rates, in order to impact the growth of monetary aggregates and thus inflation.
- **Liquidity management**. This may be active or passive. Using reserve requirement actively, a central bank can immobilize surplus reserves by administrative fiat, so that the impact of a surplus on bank behavior (low interest rates, demand for foreign exchange) does not in turn lead to inflation or depreciation (both of which involve a loss of value for the currency). Similarly, if demand for reserves exceeds supply, the central bank could lower reserve requirement in response. A passive approach can be adopted, if reserve requirement can be met on average over a period: short–term liquidity management by the commercial banks is facilitated, with a consequent reduction in short–term interest rate volatility.

In this regard, Hein and Stewart (2002), argue that central banks impose reserve requirements for a couple of reasons. For one, reserve requirements are a tool of monetary policy. Reductions in reserve requirements would allow the Fed to expand the money supply and lower interest rates. A second reason for the reserve requirements is to improve the safety

and soundness of depository institutions. The higher the reserve requirement, the safer depository institutions are held to be.

Similar to the other determinant factors of profitability, studies revealed the significant relationship between reserve requirement and profitability. For instance, a study by Tewodros (2017) on time series data of thirteen commercial banks from year 2004 to 2016 which were established before 2010 G.C. found out that reserve requirement has a negative effect on commercial banks' profitability.

#### 2.1.4.7 Asset Quality

Evaluation of assets to measure their credit risk is asset quality. The asset quality of commercial banks affects their financial and operational as well as the national financial soundness. According to Yin (2009), reduction in the value of asset quality as a result of commercial banks not knowing loan quality is a serious cause of crisis. Michael (2010), on the other hand states that the most primary determinant of the quality of asset is the loan portfolio value and the banks credit management control. Loans and securities are forms of commercial banks assets but they carry the highest amount of risks. Furthermore, other assets such as real estate's, off balance sheet items and cash also affect asset quality of a commercial bank.

Ratios are indicators; sometimes they serve as pointers but not in themselves powerful tools of management. The ratios help to summarize the large quantities of financial data and to make qualitative judgment about the firm's financial performance (Thukaram, 2006). Hamdu et al (2015) used the ratio of loan loss provision to total loan and loan loss provision to total asset to evaluate asset quality of commercial banks.

#### 2.1.4.8 Economic Growth (GDP)

Economic growth (GDP) is among the most commonly used macroeconomic indicators, as it is measure of total economic activity within an economy. The GDP per capita growth is expect to have a positive impact on banks' profitability, according to the well-documented literature on the association between economic growth and financial sector performance. An important finding of the study is that, the economic growth had positively and significantly

affects bank profits (Athanasoglou, 2005). This is because the default risk is lower in upturn than in downturn economy. In addition, higher economic growth may lead to a greater demand for both interest bearing and non-interest bearing financial services. Moreover, higher economic growth encourages banks to lend more and permits them to charge higher margins, as well as improving the quality of their assets. Neely and Wheelock (1997) uses per capita income and suggests that this variable exerts a strong positive effect on bank earnings. Demirguc-Kunt and Huizinga (2000); Athanasoglou, Brissimis and Delis (2005); Bikker and Hu (2002) by supporting this idea attempted to identify the effect of economic growth (GDP) on bank profitability. All researchers agreed and concluded that positive and strong correlation existed between economic growth (GDP) and bank profitability.

#### 2.1.4.9 Inflation on (INF)

Inflation reflects a situation where the demand for goods and services exceeds their supply in the economy (Karl et al., 2002). Inflation causes many distortions in the economy. It hurts people who are retired and living on a fixed income. When overall prices rise these consumers cannot buy as much as they could previously. It also affects the repayment of loans and discourages savings due to the fact that the money is worth more presently than in the future and inflation therefore affects the liquidity of the of the Commercial Banks. 21 In any economy inflation is undesirable. This is because of the specific economic costs associated with inflation. First, when inflation is high, currency and non-interest-bearing checking accounts are undesirable because they are constantly declining in purchasing power. Secondly, there are tax distortions, for example, when inflation rages, the actual value of these deductions are much less than it should actually be (Ludi & Ground, 2006). A growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation interfere with the ability of the financial sector to allocate resources effectively. More specifically, recent theories emphasize the importance of informational asymmetries in credit markets and demonstrate how increases in the rate of inflation adversely affect credit market frictions with negative repercussions for financial sector (both banks and equity market) performance and therefore long-run real activity (Huybens and Smith 1998, 1999). The common feature of these theories is that there is an informational friction whose severity is endogenous. Given this feature, an increase in the rate of inflation

drives down the real rate of return not just on money, but on assets in general. The implied reduction in real returns exacerbates credit market frictions. Since these market frictions lead to the rationing of credit, credit rationing becomes more severe as inflation rises. As a result, the financial sector makes fewer loans, resource allocation is less efficient, and intermediary activity diminishes with adverse implications for capital/long term investment. In turn, the amount of liquid or short term assets held by economic agents including banks will rise with the rise in inflation. Hence, there is positive relationship between increase in inflation rate and banks profitability.

## 2.2. Empirical Studies Review

Many foreign and local researchers have been carried out on issues related to determinants of private and government commercial banks profitability. However, the researcher has found it worthy to mention some from more recently conducted studies considering their methodology, findings and recommendations are presented below.

### 2.2.1. Review of Foreign Empirical Studies

Ben Moussa (2022) examined the impact of selected internal and external factors on a bank's profitability. The research investigated the impact of size; liquidity ; operating costs ; deposits ; credits ; GDP growth and inflation change of the profitability of sample of 11 banks in Tunisia for the period from 2000 - 2018. The determinants were used to construct two models with ROA and ROE as a proxies and regression analysis using panel approach. It was found that size ; bank deposit ; operating costs ; liquidity ; economic growth have a significant impact on bank profitability measured by ROA and ROE.

Farooq et al.(2021) investigated the impact of bank-specific and macro-economic factors on 25 commercial banks profitability over a period ranging from 2009 to 2018 in Pakistan and analyzed through descriptive statistics and fixed effects regression model. The empirical findings revealed that among internal factors, capital adequacy ratio, deposit ratio, leverage ratio, liquidity ratio, and bank size significantly affect the return on asset, while in the case of macro-economic factors; inflation rate, exchange rate, and GDP have a significant impact on return on asset. On the other hand, return on equity is significantly affected by deposit ratio,

leverage ratio, and operational efficiency, whereas among macro-economic factors, only the inflation rate had a significant effect on return on equity. Furthermore, in the case of net interest margin, among internal factors, capital adequacy ratio, deposit ratio, bank size, and the number of branches have a significant impact on net interest margin, whereas, among macro-economic factors, interest rate, inflation rate, and exchange rate significantly affected net interest margin.

Serwadda (2018) aimed at to found out whether bank specific (internal) factors impact on the profitability of commercial banks in Hungary for 16 a year period ranging from 2000–2015. The study employed a sample of twenty six commercial banks with four hundred sixteen observations. The study employs return on average assets (ROAA) as a proxy for bank profitability, and it also considered bank specific factors as independent variables: asset quality (non-performing loans), overhead costs, bank size, net interest margin, and liquidity risk plus capital adequacy ratio. The study used panel regressions, descriptive statistics and correlation analysis for the investigations. The panel regression models were utilized to estimate the impact of bank specific factors on bank profitability. The Hausman specification test was conducted on the panel regression models in order to identify the best and appropriate model for the study. The empirical findings reveal that non-performing loans, overhead costs and liquidity had a significant negative impact on bank profitability as bank size had a significant positive impact on profitability. However, net interest margin and capital adequacy ratio had no impact on bank profitability.

Mahmud et al.(2016) carried out their study aimed at identify the bank specific variables that affect the profitability of commercial banks of Bangladesh. A total of 15 commercial banks were taken & their financial reports were analyze from 2003-2013. The study used return on asset as the dependent variable and bank specific variables like capital adequacy ratio, gearing ratio (risk), liquidity, non-performing loan ratio, operating expense ratio & bank size as independent variables. Prais-Winsten correlated panels corrected standard errors (PCSEs) model was employed which removes any autocorrelation and heteroscedasticity problem automatically for the panel data. The results indicated that size, operating expense, gearing ratio and capital were found to be important variables that affect the bank profitability of Bangladesh. Other two variables were not important determinants for Bangladesh

commercial banks. Capital shows positive relation to bank profitability but other three statistically significant variables showed negative relation to performance. Empirical results suggested that adequate capital, low risk, efficient expense management & rightsizing lead to greater performance and profitability for Bangladeshi bank industry.

### 2.2.2. Review of Local Empirical Studies

Million (2023) examined factors affecting Ethiopia's private bank performance. The study followed a causational research design employing data from 2010 to 2021. The study unit of analysis is eleven private banks in Ethiopia. The study also uses PLS-SEM with Gaussian copula (GC) estimation because of its advantage in resolving econometric concerns of endogeneity. According to the study's findings, industry-specific factors and macroeconomic variables have a negative statistical significant effect on bank performance. On the other hand, bank-specific factors have statistically positively affected both bank performance and the banking industry. Besides, industry-specific positively mediates the relationship between bank-specific factors and bank performance. The macroeconomic variables do not affect bank and industry-specific variables.

Habib (2023) modeled determinants of private banks profitability in Ethiopia during 2012–2021 considering its dynamic nature. Return on assets, return on equity, and net interest margin were used as profitability indicators and analyzed using dynamic panel model estimation methods based on system generalized moment estimation techniques. The exploratory data analysis result showed the profitability; return on asset was seems stable while return on equity was decreased and net interest margin was increased with decreasing rate. The model specification result showed capital adequacy, asset quality and branch of banks have positive significant effect on profitability. Similarly inflation rate and economic growth rate have positively determined profitability on macroeconomic side. Despite to these results, liquidity was significant negative effect on bank specific determinant of profitability. The study result recommended consideration on capital adequacy, asset quality, liquidity, branch of banks for the private banks profitability. In addition, this study also call upcoming research to include other financial determinants such as credit risk and non-performing loan with improving the estimation method of panel autoregressive distributed lag models for modeling private banks profitability in Ethiopia.

Ashenafi and Gujral (2022) investigated determinants of commercial banks profitability in Ethiopia a study on internal factor by using panel data of thirteen commercial banks from year 2010 to2018. The study employed explanatory research design and secondary financial data. On this study Return on Asset (ROA) has been used as a proxy variable for the dependent variable. Based on the result of Haussmann specification test, the study used fixed effect regression model was applied to investigate the effect of bank size, capital adequacy, liquidity risk, operation efficiency, debt management, funding cost, and loan to asset ratio on profitability. The major findings of the study showed that, operation efficiency, capital adequacy and bank size have statistically significant and positive relationship with banks' profitability. However, the relationship for liquidity risk, debt management, funding cost, and loan to asset ratio were found statistically insignificant. The study suggested focusing and redesigns the firms together with significant key internal drivers of profitability of commercials banks in Ethiopia are inevitable.

A study by Segni (2022) was conducted to investigate determinants of commercial banks profitability in Ethiopia. The study used panel data of six (6) commercial banks from year 2010 to 2020. Accordingly capital adequacy, credit risk, operating expense, tax payment, service charge and commission, other income, employment salary and benefit, interest income, non-interest income and real growth domestic product significantly influenced banks profitability in different direction. The study recommended that commercial bank in Ethiopia shall diverse their portfolio in order to maximize their level of profitability capital adequacy. Furthermore, the study suggested that banking industry in Ethiopia must optimize the level of service charge and commissions, credit risks. The study explored capital adequacy, interest income, non-interest income, bank service charge and commission had strongly and positive correlation with banking profitability. However credit risk, tax payment and operating expenses have strong and negative correlation with profitability.

Alem and Liaqat (2019) also conducted their study on factors affecting profitability of Commercial Banks in Ethiopia. They studied the impact of internal and macro economic factors on the profitability of the banks over the study period of 2006 to 2017 based on balanced panel data of 96 observations obtained from eight commercial banks. The findings unraveled that diversification, market share, capital adequacy, asset quality and economic

growth affected the banks' profitability (ROA) positively and significantly while the influence of liquidity and bank size on the banks' profitability was negative and significant. The banks should balance the proportion of their liquid assets to the total assets so as to improve their profitability.

Muktar et al. (2019) also conducted aimed at to analyze the determinants of the profitability of commercial banks in Ethiopia by using pooled OLS technique balanced panel data of ten years from nine commercial banks. The study results indicated that internal determinants were more importantly and strongly determine the banks' profitability than external variables. Thus, business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size has a significant effect on the return on asset, whereas except ownership other external determinants, i.e. market concentration and GDP has no significant relationship to determine return on asset of Ethiopian commercial banks.

Shifa et al.(2019) analyzed determinants of the profitability of commercial banks in Ethiopia. To achieve this objective a secondary source balanced panel data of ten years from nine commercial banks were used, and internal determinants; business mix indicators, risk aversion index, management efficiency, liquidity risk, bank size, and external determinants; ownership, market concentration, and GDP, were regressed against return on asset by using the pooled OLS technique. Results indicated that internal determinants were more important than external factors. Thus business mix indicators, risk aversion index, management efficiency, liquidity risk and bank size had a significant effect on the return on asset, whereas except ownership other external determinants, i.e. market concentration and GDP were insignificant to determine return on assets of Ethiopian commercial banks. Finally bank managers were recommended to rely on the debt financing sources paying a due attention to the optimal levels, mobilize more deposits, extend loan provision and expand business mixes services.

Deyganto and Kumari (2019) analyzed determinants of banks' profitability of commercial bank of Ethiopia in south Addis Ababa district over the period of 2014-2018. The researcher employed mixed research approach and adopted explanatory research design to examine the cause and effect relationship of profitability and its determinants. Twelve branches having 5

year audited financial reports (60 financial statements) were selected as sample using purposive sampling method. Out of five factors incorporated in the model, variables such as management efficiency has (positive), capital adequacy has (positive) and liquidity management of the bank has (negative) and statistically significant influence on profitability. Whereas, other two factors including debt to equity ratio and bank size has no impact profitability position of the bank.

Abdu (2018) investigated the bank specific factors which can affect the financial performance of private commercial banks in Ethiopia. A total of 6 private commercial banks (those having well organized financial data till 2017) were purposefully taken & their audited annual financial reports were analyzed for the period of 2011-2017. In this study, return on equity, return on asset and net interest margin as the dependent variables and bank specific factors like banks size, liquidity management, asset quality, management efficiency and capital adequacy as independent variables were used. The results indicated that capital adequacy, management efficiency and size of banks have positive and statistically significant effect on financial performance of private commercial banks of Ethiopia measured by ROA, ROE and NIM. But, liquidity management has negative significant impact on financial performance of the banks (ROE). Finally, the study also depicted that asset quality was not statistically significant determinant of sound financial performance of private commercial banks in Ethiopia. Therefore, due attention should be given in ensuring adequate capital, optimum liquidity, efficient expense management system and adequate size of assets by commercial banks for better performance and profitability in their own area of business.

Teshome et al.(2018) also carried out their study aimed at examining determinants of the financial performance of private commercial banks in Ethiopia. The study used secondary data for eight private banks chosen from sixteen private commercial banks. Correlation and multiple linear regressions of panel data for the eight banks for the years 2007 to 2016 was analyzed using random effect model. Return on Asset and Return on Equity were the selected dependent variables while non-performing loan, capital adequacy ratio, bank size, leverage ratio, credit interest income ratio, loan loss provision ratio and operation cost efficiency were the independent variables. Results showed that Capital Adequacy Ratio (CAR), Credit Interest Income (CIR) and Size of the bank (SIZE) have positive and statistically significant

effect on financial performance. Non-performing Loans (NPLs), Loan Loss Provision (LLP), Leverage Ratio (LR) and Operational Cost Efficiency (OCE) have negative and statistically significant effect on banks' financial performance. The study suggested that Ethiopian commercial banks are advised to manage their loan loss, be cost efficient, and fix their leverage ratio at maximum level to enhance their profitability.

## 2.3. Summary of Empirical Studies and Gap

This study addresses significant gaps in understanding the determinants of private commercial banks' profitability in Ethiopia by incorporating a comprehensive analysis of both internal and external factors, which previous studies, such as Habib's (2023), may have overlooked. While Habib's research primarily focused on macroeconomic determinants, this study differentiates itself by also examining microeconomic factors, including bank-specific variables like operational efficiency, cost management, and service diversification. Furthermore, it employs a more extensive data set and advanced analytical techniques to provide a nuanced understanding of how these determinants interact. This holistic approach offers a more detailed and actionable insight into improving profitability, making it a valuable contribution to the existing literature and a practical guide for policymakers and bank managers.

Empirical studies in the field of banking and finance have extensively explored the determinants of bank profitability, focusing on various factors such as liquidity, capital adequacy, asset quality, management efficiency, and macroeconomic indicators. These studies have employed diverse methodologies, including regression analysis, panel data techniques, and time series analysis, to investigate the relationships between these variables and bank profitability measures like Return on Assets (ROA) and Return on Equity (ROE). The findings of these studies have contributed significantly to understanding the dynamics of bank profitability and informing policymakers, regulators, and banking practitioners about the key drivers and implications of bank performance.

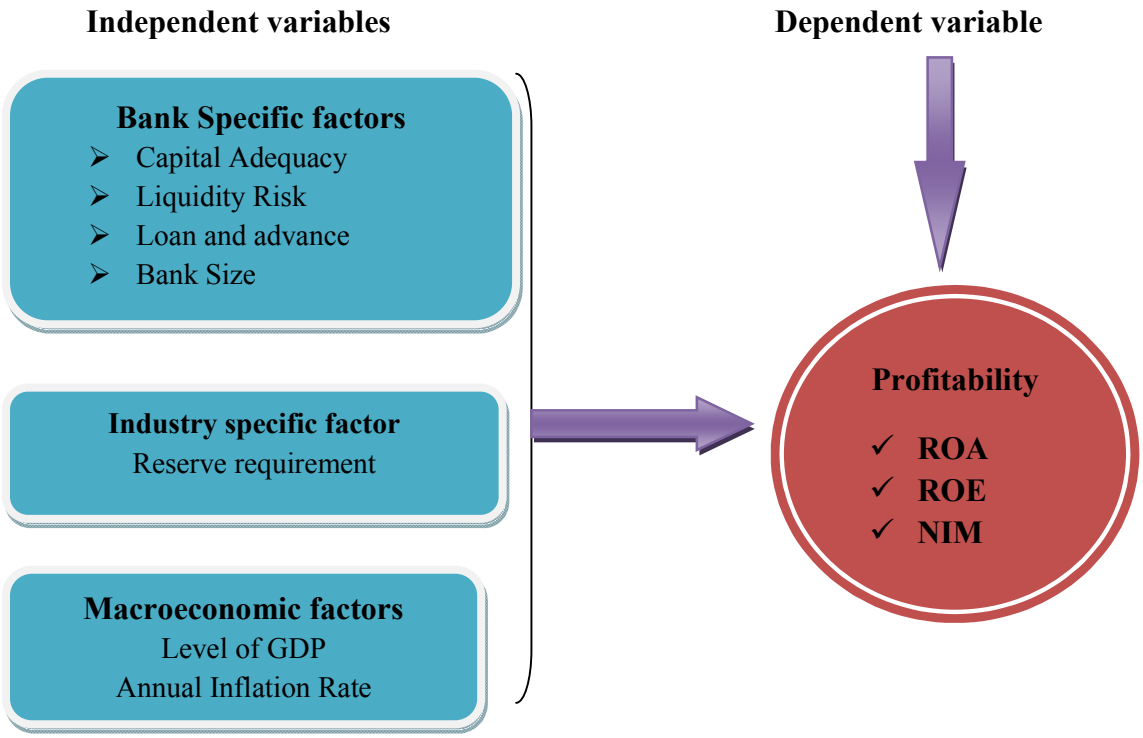
However, despite the wealth of research in this area, there remains a notable gap in the literature regarding the simultaneous examination of multiple determinants of bank profitability within the context of a specific country or region. While individual studies have

analyzed the impact of certain factors on bank profitability, few have comprehensively assessed the combined influence of liquidity, deposits, capital adequacy, bank size, regulatory requirements, GDP growth, and inflation on both ROA and ROE. Moreover, existing studies often focus on developed economies, leaving a dearth of research on emerging markets where banking systems may exhibit unique characteristics and face distinct challenges. Therefore, there is a need for empirical research that integrates multiple determinants of bank profitability and explores their interactions in the context of specific countries or regions, particularly in emerging market economies, to provide a more holistic understanding of the factors shaping bank performance.

## 2.4. Conceptual Framework

The research conceptual framework was a diagrammatic representation of study variables and their perceived relationships. As discussed above the determinants of bank profitability of private commercial banks, the following conceptual framework was showen the most explanatory variables on the determinant of banks. This conceptual framework is designed by the researcher by using the conceptual framework done by Wondwossen (2018) research paper served as source to adapt this conceptual framework. This study used return on asset, return on equity and net interest margin as dependent variable and regarding to the bank specific variable were Liquidity risk, Capital adequacy, Bank size, loan and advance, loan growth; the industry specific variables is reserve requirement and finally macro specific variables are inflation and GDP were the independent variable. The independent variables like Bank size, reserve requirement, GDP, capital adequacy, loan and advance have positively affected the dependent variable return on asset, return equity and net interest margin.

**Figure 1:- Conceptual framework**




Source: Adapted from Wondwossen (2018)

# CHAPTER THREE

# 3. METHOD AND MATERIALS

## 3.1. Research Design

The research design for this study is explanatory, aimed at uncovering the causal relationships between various determinants and the profitability of private commercial banks in Ethiopia. This approach involves a systematic investigation to explain how and why specific factors such as operational efficiency, cost management, asset quality, and market conditions impact bank profitability. Utilizing both quantitative and qualitative data, the study employs econometric modeling and statistical analysis to test hypotheses and draw conclusions about these relationships. By explaining the underlying mechanisms and interactions, this research design provides a deeper understanding of the determinants influencing bank profitability and offers evidence-based recommendations for enhancing financial performance in Ethiopia's banking sector. Therefore, based on this and since profitability can be affected by several determinate factors, the description of effect relationship between the explanatory variables and the outcome variable-profitability of the private banks was carried out employing explanatory research design.

## 3.2. Research Approach

In this study quantitative research approach was employed. This is because of the objectives of the study which are quantitative in nature. Besides, since quantitative research approach relies on the measurement and analysis of statistical data to produce quantifiable conclusions. Quantitative research is a means for testing objective theories by examining the relationship among variables. Moreover, explaining or predicting relations among variables is an important characteristic of quantitative research (Creswell, 2012). This study also adopted an explanatory approach by using balanced panel data to meet the research objective. In this regard, according to Brooks (2008) a panel of data has embodied information across both time and space and it measures some quantity about them over time. Therefore, based on the above viewpoints the study employed a quantitative approach.

## 3.3. Study Population

The target population of this study included all private commercial banks registered by NBE and operating in Ethiopia. According to NBE 2022/23 reports, currently, the number of banks increased to 27. Of the 27 banks 25 were private and 2 publics. However, because of lack of 10 years' data that is required for the analysis purpose, banks which started their operation after 2013 are excluded from the study. As results, the numbers of sample banks is reduced to seventeen. The researcher selected 10 years data to use 15 banks in the panel that is to use majority private banks in the research.

## 3.4. Sampling Techniques and Sample Size Determination

In this study, non-probabilistic - purposive sampling technique was employed. As stated by Saunders et al (2009), purposive sampling is often used when working with small samples and when one wishes to select cases that are particularly informative. Thus the researcher used purposive sampling by considering the availability of full data for the selected time period. In Ethiopia, there are twenty-five privately owned commercial banks. In order to have panel data for those private commercial banks which have less than ten years in operation were not selected for this study. Therefore, 15 private commercial banks having at least ten years' experience includes Awash International Bank, Dashen Bank, Abyssinia Bank, Wegagen Bank, United Bank, Nib international bank, Cooperative bank of oromiya, Lion International Bank, Oromia International Bank, Zemen Bank, Bunna International Bank, Berhan International Bank, Abay Bank, Addis International Bank, Debub Global Bank.

## 3.5. Data Type and Sources

This research was used a secondary data approach to examine the factors that influence the profitability of private commercial banks operating in Ethiopia. Panel data covering the years 2011 to 2022 was taken. The data sources are the audited annual financial statements of each private commercial bank, in addition to relevant reports and bulletins issued by the National Bank of Ethiopia. This study was employed balanced panel data and quantitative data as the sources of information. Balanced panel data refers to a dataset where every unit studied cross-sectional has the same number of time series observations.

## 3.6. Data Collection Instruments

The instrument that was employed to collect the data for the study was panel balanced relevant financial data from government and five selected private commercial banks from the period of 2011 – 2022.

## 3.7. Methods of Data Analysis

In this study two sort of measurable examinations was utilized to test the proposed theories. These are descriptive statistics and inferential statistics/multiple regression analysis to see the impact (relationship) of explanatory or independent factors on the dependent variable. The descriptive statistics of both dependent and independent variables calculated over the examined periods. This helps to convert the raw information in to a more meaningful form which enables the researcher to understand the ideas clearly. At that point, correlation analyses between dependent and independent variables was made and finally a multiple linear regression analysis and diagnosis test method was utilized by utilizing Stata Version 13.

### Model Specification

In establishment of the relationship between study variable comprising of independent variables including size of the bank, capital adequacy, liquidity, credit risk, operating efficiency and the dependent variable (Return on Assets) the study used the regression model. This study used an ordinary least squares (OLS) regression to estimate the linear equation and the OLS regression model was as follows:

$$ROAi=\beta_0+\beta_1 LIQ_i+\beta_2 DT_i+\beta_3 CAP_i+\beta_4 BS_i+\beta_5 RR_i+\beta_6 GDP_i+\beta_7 INF_i+u_i$$

$$ROE_i=\beta_0+\beta_1 LIQ_i+\beta_2 DT_i+\beta_3 CAP_i+\beta_4 BS_i+\beta_5 RR_i+\beta_6 GDP_i+\beta_7 INF_i+u_i$$

Where: ROA = Return on Asset of bank i at time t, ROE = Return on Equity of bank i at time t, NIM = Net interest margin of bank i at time t, $LIQ_{it}$ = Liquidity position of bank i at time t, $DT_{it}$= Deposit of bank i at time t, $CAP_{it}$ = Capital Adequacy Ratio of bank i at time t, $BS_{it}$ = Size of the Bank log total assets of bank i at time t, $RR_{it}$= Reserve requirement of bank i at time t, $AQ_{it}$= Asset quality of bank i at time t $GDP_{it}$= Economic Growth Effect of bank i at time t, $INF_{it}$= Inflation Effect of bank i at time t, $\beta_0$= constant term and $\beta_1$ to $\beta_9$= coefficients of regression equation, and $\mu_{it}$= error term

# CHAPTER FOUR

# RESULT AND DISCUSSION

## Introduction

Chapter 4 delves into the empirical analysis of the determinants of private commercial banks' profitability in Ethiopia, exploring the relationships between various factors and bank performance. The hypotheses formulated in Chapter 3 serve as the foundation for this analysis. Through the use of regression analysis, this chapter investigates the extent to which bank liquidity, capital adequacy, bank size, reserve requirements, the growth rate of the economy (GDP), and inflation rate (INF) impact bank profitability, measured by Return on Assets (ROA) and Return on Equity (ROE). By testing these hypotheses, the chapter aims to provide empirical evidence on the significant determinants of bank profitability in the Ethiopian context, contributing to the existing body of knowledge on banking sector dynamics in emerging economies.

## 4.1. Descriptive Statistics

Table 1: Results of descriptive statistics of all variables

| Variable | Observation | Mean | Median | Max | Min | Std. Dev. |
|---|---|---|---|---|---|---|
| ROA | 150 | 0.034364 | 0.038438 | 0.056817 | 0.005131 | 0.012213 |
| ROE | 150 | 4.824368 | 19.21738 | 39.79546 | 0.896578 | 0.021724 |
| *LIQ* | 150 | 39.126457 | 46.11671 | 89.29439 | 23.06425 | 0.008417 |
| *DT* | 150 | 0.46868 | 0.477573 | 0.645553 | 0.230891 | 0.107648 |
| *CAP* | 150 | 8.086392 | 13.07348 | 27.25815 | 5.107799 | 0.05338 |
| *BS* | 150 | 12.32542 | 17.03146 | 39.06203 | 6.013135 | 0.310165 |
| *RR* | 150 | 0.388414 | 0.381762 | 0.569631 | 0.198661 | 0.084811 |
| GDP | 150 | 0.088636 | 0.112 | 0.126 | -0.021 | 0.045929 |
| INF | 150 | 0.111273 | 0.106 | 0.364 | -0.106 | 0.122372 |

The return on assets (ROA) measures the profitability of banks relative to their total assets. In this study, the average ROA for the sample of banks is 3.44%, with a median of 3.84%. The variability in ROA is evident from the range of values, spanning from 0.51% to 5.68%. This indicates that banks in the sample exhibit different levels of efficiency in generating profits from their assets. A higher ROA suggests better efficiency in utilizing assets to generate

profits, reflecting positively on the bank's management and operational effectiveness. A lower ROA might indicate inefficiency or poor asset management strategies.

Return on equity (ROE) assesses a bank's profitability in relation to its shareholders' equity. The average ROE for the sample of banks is notably high at 482.44%, with a median of 1921.74%. The range of ROE values is substantial, from 0.90% to 39.80%, indicating varying levels of profitability among the banks. The remarkably high average return on equity (ROE) of 482.44% is notable and suggests that banks are generating substantial profits relative to the equity invested by shareholders. However, such a high average could be skewed by outliers in the data. ROE is a key measure of a bank's profitability and efficiency in generating returns for its shareholders.

In this study, bank liquidity is assessed as the ability of banks to fulfill short-term financial obligations, with an average liquidity position of 39.13 and a median of 46.12. The range of liquidity values, spanning from 23.06 to 89.29, underscores the varying liquidity levels among banks in the sample. This data suggests a moderate liquidity level overall, indicating that banks maintain a sufficient reserve of liquid assets to meet immediate financial demands while also pursuing investment opportunities. A higher liquidity position, as observed, signifies a safer and more stable financial standing for banks. However, to provide a more comprehensive analysis, it would be beneficial to compare these ratios with the minimum requirements suggested by the national bank of Ethiopia and discuss their implications. This comparison could shed light on whether banks are meeting regulatory standards and how their liquidity positions align with industry norms and expectations.

The deposit ratio represents the proportion of deposits to total assets held by banks. The average deposit ratio for the sample is 46.87%, with a median of 47.76%. The range of deposit ratios spans from 23.09% to 64.56%, reflecting variability in the funding structure of the banks. The average deposit ratio of 46.87% indicates the proportion of total assets funded by deposits. A higher deposit ratio suggests greater reliance on customer deposits as a source of funding for banks' lending and investment activities. This is crucial for banks as deposits typically represent a stable and low-cost source of funding.

Capital adequacy is crucial for banks to absorb losses and maintain stability. The average capital adequacy ratio for the sample is 8.09, with a median of 13.07. The range of capital adequacy ratios extends from 5.11 to 27.26, indicating diversity in the capital positions of the banks. The average capital adequacy ratio of 8.09% indicates the proportion of a bank's capital to its risk-weighted assets. A higher capital adequacy ratio suggests that banks have a stronger financial cushion to absorb potential losses and maintain stability. Adequate capitalization is essential for banks to withstand economic downturns and regulatory requirements.

Bank size, measured by total assets, influences economies of scale and operational efficiency. The average bank size in the sample is 12.33, with a median of 17.03. The range of bank sizes spans from 6.01 to 39.06, suggesting considerable variation in the size of banks included in the study. The average bank size, measured by total assets, is 12.33. Bank size influences economies of scale and operational efficiency within the banking sector. While larger banks may benefit from economies of scale and diversification, smaller banks may have a competitive advantage in niche markets. The average size indicates a moderate presence of banks in the market.

Reserve requirements reflect the proportion of reserves banks must hold against deposits. The average reserve requirement for the sample is 38.84%, with a median of 38.18%. The range of reserve requirement values varies from 19.87% to 56.96%, indicating differences in regulatory obligations across banks. With an average reserve requirement of 38.84%, banks are mandated to hold reserves equivalent to this percentage of their deposits. Reserve requirements affect banks' liquidity management and regulatory compliance. Higher reserve requirements may limit banks' lending capacity and profitability but are essential for maintaining financial stability.

GDP growth rate measures the expansion of economic activity within a country. In this study, the average GDP growth rate is 8.86%, with a median of 11.20%. The range of GDP growth rates extends from -2.10% to 12.60%, reflecting fluctuations in economic performance over the study period. The average GDP growth rate of 8.86% reflects the overall expansion of economic activity within the country. GDP growth rate is a key

indicator of economic health and impacts various sectors, including the banking industry. Higher GDP growth rates typically correlate with increased lending opportunities and higher demand for banking services.

Inflation rate measures the rate at which prices for goods and services rise over time. The average inflation rate within the studied period is 11.13%, with a median of 10.60%. The range of inflation rates varies from -10.60% to 36.40%, indicating periods of both inflation and deflation within the economy. The average inflation rate of 11.13% reflects the rate at which prices for goods and services have risen over the study period. Inflation rate impacts purchasing power, interest rates, and economic stability. Banks must consider inflation when setting interest rates and managing risks associated with changes in purchasing power.

## 4.2. Correlation Analysis

The Pearson correlation coefficient, also known as the linear or product-moment correlation, is the most commonly used measure of correlation. Its values range between -1 and +1. A correlation coefficient of +1 indicates a perfect positive linear relationship between two variables, meaning that as one variable increases, the other variable also increases proportionally. Conversely, a correlation coefficient of -1 indicates a perfect negative linear relationship, where as one variable increases, the other variable decreases proportionally. A correlation coefficient of 0 signifies no linear relationship between the two variables, suggesting that changes in one variable do not correspond to changes in the other variable (Gujarati, 2004).

Table 2 Correlation analysis of determinants and banks profitability

| | ROA | ROE | $LIQ$ | $DT$ | $CAP$ | $BS$ | $RR$ | GDP | INF |
|---|---|---|---|---|---|---|---|---|---|
| ROA | 1 | | | | | | | | |
| ROE | -0.7539 | 1 | | | | | | | |
| $LIQ$ | -0.9865 | -0.9806 | 1 | | | | | | |
| $DT$ | 0.7648 | 0.0045 | 0.0975 | 1 | | | | | |
| $CAP$ | 0.05465 | -0.4376 | -0.3545 | 0.7566 | 1 | | | | |
| $BS$ | 0.9848 | 0.0373 | 0.5732 | -0.3764 | 0.4877 | 1 | | | |
| $RR$ | -0.0676 | 0.2056 | 0.3745 | 0.1946 | - | 0.4763 | 1 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0.4653 | | | | |
| GDP | 0.3754 | 0.0372 | -0.5767 | 0.3486 | 0.3653 | 0.4086 | 0.4245 | 1 | |
| INF | 0.0988 | -0.0364 | 0.3654 | -0.4056 | 0.4735 | 0.7836 | 0.4636 | 0.7985 | 1 |

Source: STATA outputs

The correlation matrix provides valuable insights into the relationships between various variables in the banking sector. Starting with Return on Assets (ROA), it exhibits a strong negative correlation with liquidity (LIQ) and Return on Equity (ROE), implying that higher liquidity and ROE are associated with lower returns on assets. Conversely, ROA shows a moderate positive correlation with deposits (DT) and a weak positive correlation with bank size (BS) and the growth rate of the economy (GDP). Return on Equity (ROE) mirrors similar patterns with strong negative correlations with liquidity and ROA, indicating a trade-off between liquidity and profitability. Liquidity (LIQ) displays strong negative correlations with ROA and ROE, suggesting that higher liquidity tends to lead to lower returns on assets and equity. Deposits (DT) exhibit a moderate positive correlation with ROA, while other variables show negligible associations.

Capital Adequacy (CAP) demonstrates weak positive correlations with deposits and weak negative correlations with bank size and reserve requirements. Bank size (BS) shows strong positive correlations with ROA and weak positive correlations with GDP, indicating that larger banks tend to have higher returns on assets and are influenced by economic growth. Reserve requirements (RR) display weak positive correlations with bank size and weak negative correlations with capital adequacy, while GDP exhibits weak positive correlations with bank size and inflation rate and a moderate negative correlation with liquidity. Inflation rate (INF) demonstrates weak positive correlations with liquidity and GDP and a weak negative correlation with bank size. Overall, the correlation matrix reveals intricate relationships among variables, shedding light on potential areas of influence and interdependence within the banking sector.

## 4.3. Tests Associated to Linear Regression Model

Several diagnostic tests are essential to validate the fundamental assumptions of both the classical linear regression model and panel model estimation. To ensure the reliability of

hypothesis testing and the availability of data for accurate results, it is imperative to test the assumptions of the regression model. Consequently, the study has conducted critical regression diagnostic tests, including Normality, Multicollinearity, Heteroscedasticity, and the Housman Specification test, as detailed in the subsequent subsections below.

**Test for Heteroscedasticity**

According to this assumption of the classical linear regression model (CLRM) the variance of error term among all levels of the independent variables should constant, this is also known as the assumption of homoscedasticity. If the errors do not have a constant variance, this assumption was violated and we can say that there is heteroscedasticity problem in the model (Gujarati, 2004). Overall, the violation of this assumption can lead to the heteroscedasticity problem. In general, the heteroscedasticity test is used to identify either the error terms are Homoscedastic or Heteroskedastic (Brooks, 2008). If P value of the test statistic is insignificant (in excess of 5%) it's possible to conclude that there is no evidence for the existence of heteroscedasticity problem in the model. In this study, the problem of heteroscedasticity was checked by Breusch-Pagan / Cook-Weisberg test. It tests the null hypothesis that stated variance of error term is constant among all independent variables. According to this test if p-value shows insignificant ($p > 0.05$), the null hypothesis would be accepted and concluded that the variances of error terms are constant

The null hypothesis: Ho = there is no heteroscedasticity
Alternative hypothesis: Ha = there is heteroscedasticity

Table 3: Heteroscedasticity Test: white for ROA

| | | | |
|---|---|---|---|
| F-statistic | 7.587576 | Prob. F(13,148) | 0.1046 |
| Obs*R-squared | 19.64876 | Prob. Chi-Square(13) | 0.1357 |
| Scaled explained SS | 11.388845 | Prob. Chi-Square(13) | 0.3861 |

Source: STATA outputs

Table 4: Heteroscedasticity Test: white for ROE

| | | | |
|---|---|---|---|
| F-statistic | 6.675673 | Prob. F(13,148) | 0.2536 |
| Obs*R-squared | 13.78655 | Prob. Chi-Square(13) | 0.6432 |
| Scaled explained SS | 9.267541 | Prob. Chi-Square(13) | 0.4504 |

Source: STATA outputs

Heteroscedasticity tests, such as the White test, are conducted to assess whether the variance of the errors in a regression model is constant across all levels of the independent variables. In the context of the Return on Assets (ROA) variable, the White test results indicate an F-statistic of 7.587576 with a corresponding probability value of 0.1046. This suggests that there is no significant evidence of heteroscedasticity in the ROA regression model at the conventional significance level of 0.05. Additionally, the Obs*R-squared statistic of 19.64876 and the associated probability of 0.1357, as well as the scaled explained sum of squares (SS) of 11.388845 with a probability of 0.3861, further support the absence of heteroscedasticity.

In contrast, for the Return on Equity (ROE) variable, the White test yields an F-statistic of 6.675673 with a probability value of 0.2536. This indicates that there is no significant evidence of heteroscedasticity in the ROE regression model at the 0.05 significance level. Similarly, the Obs*R-squared statistic of 13.78655 with a probability of 0.6432, and the scaled explained sum of squares of 9.267541 with a probability of 0.4504, further reinforce the absence of heteroscedasticity in the ROE regression model. These findings suggest that the assumptions of constant variance of errors across all levels of independent variables are met in both the ROA and ROE regression models, enhancing the reliability of the regression results.

**Autocorrelation**

H0: The errors are uncorrelated with one another

H1: The errors are correlated with one another

Breusch-Godfrey Serial Correlation LM Test for ROA

| | | | |
|---|---|---|---|
| F-statistic | 14.0456 | Prob. F(2,103) | 0.7845 |
| Obs*R-squared | 25.3653 | Prob. Chi-Square(2) | 0.0309 |

Breusch-Godfrey Serial Correlation LM Test for ROE

| | | | |
|---|---|---|---|
| F-statistic | 11.6538 | Prob. F(2,103) | 0.3035 |
| Obs*R-squared | 19.5743 | Prob. Chi-Square(2) | 0.0676 |

Source: STATA outputs

The results of the Breusch-Godfrey Serial Correlation LM Test suggest that there is no evidence of serial correlation in the residuals of both the Return on Assets (ROA) and Return on Equity (ROE) regression models. For the ROA model, the F-statistic is 14.0456 with a p-value of 0.7845 for the Prob. F (2,103) test, indicating that there is no significant evidence against the null hypothesis of no serial correlation. Similarly, the Obs*R-squared statistic is 25.3653 with a p-value of 0.0309 for the Prob.

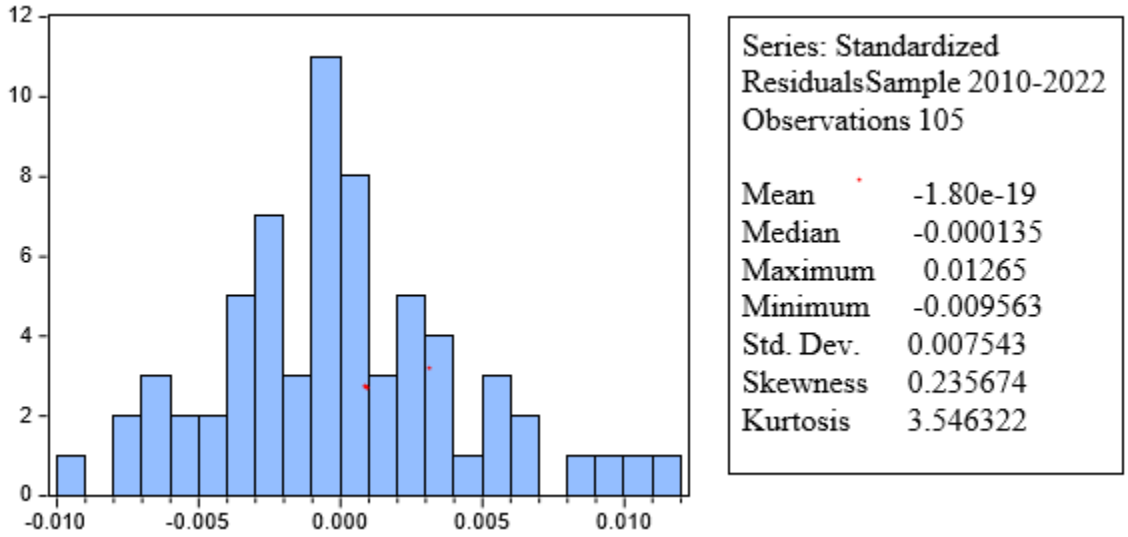
In the case of the ROE model, the F-statistic is 11.6538 with a p-value of 0.3035 for the Prob. F(2,103) test, indicating no significant evidence against the null hypothesis of no serial correlation. The Obs*R-squared statistic is 19.5743 with a p-value of 0.0676 for the Prob. Chi-Square(2) test, which also suggests some evidence of serial correlation, but the significance level is not very strong. Overall, these results suggest that the assumption of independent errors is reasonably met in both regression models. However, the slight evidence of serial correlation in the ROA model, as indicated by the Prob. Chi-Square(2) test, may warrant further investigation or consideration when interpreting the results. It is essential to remain cautious and aware of the potential impact of serial correlation on the validity of the regression analysis.

**Test for normality**

Another important diagnostic test conducted in this study was the normality assumption (i.e the normally distributed errors). Brooks (2008) as quoted by Brihanu (2012) stated that the normality assumption '($ut \sim N(0, \sigma 2)$)' is required in order to conduct single or joint hypothesis tests about the model parameters. One of the most commonly applied tests for normality is the Bera—Jarque (BJ) test (figure 2). Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skeweness and kurtosis are zero and three respectively.

Ho: there is no normality problem
Ha: there is normality problem

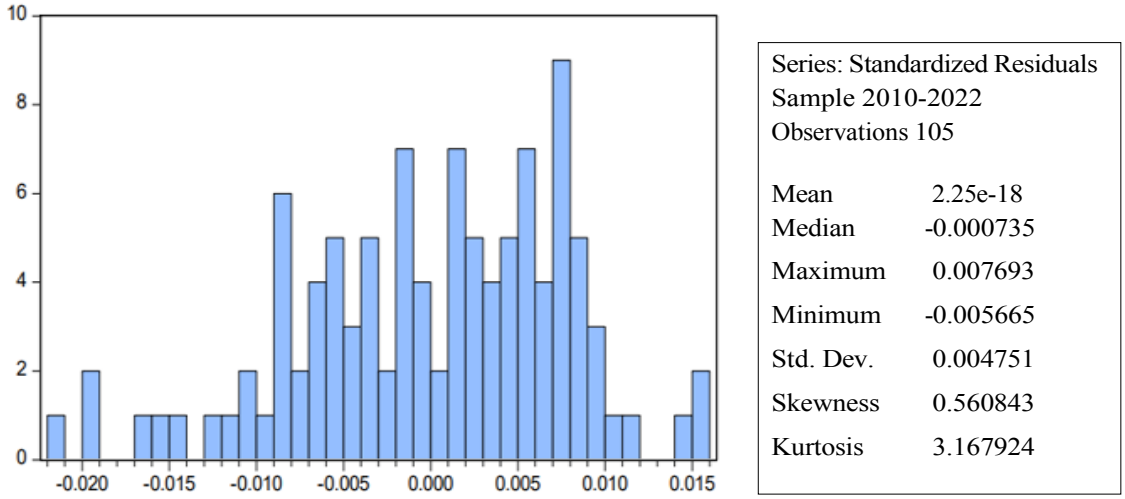
Figure 2 Histogram of normally test for ROA




Source: STATA output

The normality test assesses whether the residuals of a regression model follow a normal distribution, which is essential for the validity of statistical inferences. In this analysis, the mean and median of the residuals are close to zero, indicating that, on average, the residuals are centered around zero. The maximum and minimum values represent the range of the residuals, with the maximum being 0.01265 and the minimum -0.009563. The standard deviation, a measure of the spread of the residuals, is relatively small at 0.007543, suggesting that most of the residuals are close to the mean. Skewness measures the asymmetry of the distribution of residuals. A skewness value of 0.235674 indicates a slight positive skew, suggesting that the distribution is slightly skewed to the right, although the skewness is relatively small, indicating that the distribution is approximately symmetric Kurtosis measures the 'tailedness' of the distribution of residuals. A kurtosis value of 3.546322 suggests that the distribution has relatively heavy tails compared to a normal distribution, indicating that it is leptokurtic.

Figure 3: Histogram of normality test for ROE




Source: STATA output

The results of the normality test for the Return on Equity (ROE) variable indicate that the distribution of the residuals is approximately symmetric but slightly skewed to the right, as evidenced by a positive skewness value of 0.560843. Moreover, the kurtosis value of 3.167924 indicates that the distribution is leptokurtic, meaning it has heavier tails and a more peaked central distribution compared to a normal distribution. However, the mean and median values are close to zero, suggesting that the residuals are centered around zero, which is a desirable characteristic for normally distributed residuals. Additionally, the standard deviation is relatively small at 0.004751, indicating limited variability in the residuals. Overall, while there are slight deviations from normality indicated by the skewness and kurtosis values, the central tendency of the residuals appears to be satisfactory for regression analysis.

**Multicollinearity Test**

In this study, another critical assumption of the classical linear regression model examined was multicollinearity. Multicollinearity arises when the explanatory variables are highly correlated with each other (Brooks, 2008). In practical scenarios, it's expected that there was some degree of correlation between explanatory variables, but excessive collinearity can lead to serious issues. To assess the degree of multicollinearity among the independent variables, variance inflation factors (VIF) were calculated, which is a commonly used method. According to the rule-of-thumb, if the VIF values for each variable are less than 10 and the

values of 1/VIF are greater than 0.1 or 10%, multicollinearity is not considered a significant problem in the model. Table 5 VIF Matrixes

Table 6: Multicollinearity test

| | ROA | | ROE | |
|---|---|---|---|---|
| Variable | VIF | 1/VIF | VIF | 1/VIF |
| LIQ | 4.09 | 0.244567 | 4.41 | 0.227121 |
| DT | 3.87 | 0.258363 | 4.29 | 0.232878 |
| CAP | 3.23 | 0.395971 | 2.47 | 0.405095 |
| BS | 2.76 | 0.362318 | 2.15 | 0.464078 |
| RR | 2.55 | 0.392157 | 1.95 | 0.513721 |
| GDP | 1.91 | 0.523561 | 1.81 | 5553594 |
| INF | 1.74 | 0.574713 | 1.39 | 0.737619 |
| Mean VIF | **2.87** | | **2.48** | |

Source: STATA Outputs

So, the analysis reveals that the individual values of VIF for each explanatory variable are substantially lower than 10, indicating minimal Multicollinearity among the variables. Additionally, the values of 1/VIF are notably greater than 0.10 or 10%, further confirming the absence of Multicollinearity issues. Moreover, the cutoff or mean value of the variance inflation factor (VIF) is significantly below 10. Based on these findings, there is no evidence to suggest the presence of Multicollinearity problems in this dataset. Therefore, the researcher concludes that Multicollinearity is not a significant concern in this model.

### 4.3. Choosing Random Effect vs. Fixed Effect Model

In this study, the diagnostic tests aimed at validating the assumptions of the Classical Linear Regression Model (CLRM) showed no indications of violations, affirming the reliability of regression parameter estimation. However, given the utilization of panel data, it became imperative to consider the potential presence of unobserved group effects or time effects, which could be incorporated into the error term. These effects might take the form of fixed effects, random effects, or a combination thereof, as outlined by Brooks (2008). Panel data models, such as the fixed effects (FE) model and random effects (RE) model, offer the flexibility to accommodate heterogeneity across panel units while restricting this heterogeneity to intercept terms, ensuring robust estimation of parameters.

To determine the most suitable model for the specific panel dataset, the study employed both the fixed effects (FE) model and the random effects (RE) model, which serve different purposes in addressing the potential sources of heterogeneity. The fixed effects model was utilized to account for omitted variables that vary between banks but remain constant over time, while the random effects model aimed to control for omitted variables that are constant over time and vary between banks, as well as other variables that vary over time but remain constant across banks. Despite the potential similarities in the results obtained from these two models, Housman tests were conducted to identify which model – the fixed effects (FE) or random effects (RE) – provides the most consistent estimates. The Housman test results are pivotal in determining the appropriate modeling approach for robust estimation in this study.

**The Hausman Test Hypothesis Is:**

H0= Random effect model is appropriate

H1= Fixed effect model is

appropriate

The null hypothesis will not be rejected if the PV>chi$^2$ is insignificant (>0.05) (Brooks, 2008).

Table 7: Hausman Test for (ROA)

| | (b) fe | (B) | (b-B) | sqrt(diag(V_b-V_B)) |
|---|---|---|---|---|
| | | re | Difference | S.E. |
| LIQ | -.0457983 | .264279 | -.3100773 | .00576 |
| DT | -.032245 | .413126 | -.445371 | .04531 |
| CAP | .0012576 | -.05436 | .0556176 | .04208 |
| BS | .0654785 | .021575 | .0439035 | .00178 |
| RR | .1590457 | .315782 | -.1567363 | .00509 |
| GDP | .0352569 | .023457 | .0117999 | .01076 |
| INF | .0249755 | .023255 | .0017205 | .07087 |

```
  b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test:  Ho:  difference in coefficients not systematic
            chi2(8) = (b B)'[(V_b-V_B)^(-1)](b-B)
                    = 45.56
                Prob>chi2 =     0.0006
```

Source: STATA Outputs

The results of the Hausman test for the Return on Assets (ROA) variable indicate a statistically significant difference in coefficients between the fixed effects (FE) and random

effects (RE) models. The test statistic chi2(8) is calculated to be 45.56, with a corresponding p-value of 0.0006, suggesting strong evidence to reject the null hypothesis. This rejection implies that the difference in coefficients between the FE and RE models is systematic, indicating that one of the models is inconsistent under the alternative hypothesis (Ha). Specifically, the coefficients of LIQ, DT, CAP, BS, RR, GDP, and INF variables exhibit differences between the FE and RE models, as indicated by the values of (b-B) in the table.

Upon examination of the results, it appears that the FE model may be more suitable for estimating the relationship between the ROA variable and the explanatory variables LIQ, DT, CAP, BS, RR, GDP, and INF. Conversely, the random effects (RE) model may not be efficient under the alternative hypothesis for these variables. These findings underscore the importance of selecting the appropriate model for panel data analysis to ensure the reliability and accuracy of parameter estimates. Therefore, based on the Housman test results, the fixed effects model may be preferred for estimating the relationship between ROA and the independent variables in this study.

Table 8 Hausman Test for (ROE)

Coefficients

| | (b) fe | (B) re | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|---|---|---|---|---|
| LIQ | 4.32567 | 16.34265 | -12.0169 | 13.278676 |
| DT | .04345 | 8.021267 | -7.97781 | 7.0987537 |
| CAP | -.32567 | -.326579 | .000909 | 5.0315258 |
| BS | 6.267789 | .0765386 | 6.191250 | 2.7673451 |
| RR | -2.45885 | .4327659 | -2.89161 | 25.565379 |
| GDP | .2143678 | 4.4379806 | -4.22361 | 4.9546878 |
| INF | 6.265759 | -4.437658 | 10.703415 | 4.2573583 |

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

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)

31.76

Prob>chi2 = 0.0086

Source: STATA Outputs

The Housman test results for the Return on Equity (ROE) variable reveal a statistically significant difference in coefficients between the fixed effects (FE) and random effects (RE) models. The chi-square test statistic of 31.76, associated with a p-value of 0.0086, provides

evidence to reject the null hypothesis. This rejection suggests that the systematic difference in coefficients between the FE and RE models is statistically significant. Examination of the coefficients for each explanatory variable indicates notable differences between the FE and RE models. Notably, the coefficients for LIQ, DT, BS, RR, GDP, and INF variables exhibit substantial variations between the two models, as indicated by the differences in the (b-B) values.

Upon closer inspection, it appears that the fixed effects (FE) model may be more appropriate for estimating the relationship between the ROE variable and the explanatory variables LIQ, DT, BS, RR, GDP, and INF. Conversely, the random effects (RE) model may not be efficient under the alternative hypothesis for these variables. These findings underscore the importance of selecting the correct model for panel data analysis to ensure the validity and accuracy of parameter estimates. Therefore, based on the results of the Hausman test, the fixed effects model may be preferred for estimating the relationship between ROE and the independent variables in this study.

### 4.4. Regression Analysis

Table 9: Fixed effect model of ROA equation regression result

Fixed-effects (within) regression — Number of obs = 150
Number of groups = 7

R-sq:
within = 0.8536
between = 0.4545
overall = 0.3257

Obs. per group:
min = 15
avg = 7.0
max = 7

F(7,149) = 305.23
corr(u_i, Xb) = -0.7466 — Prob > F = 0.0000

| ROA | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| LIQ | -.08765 | .00546 | -16.2234 | .0000 | -.871657 | -.8745766 |
| DT | -.02578 | .00421 | -6.11934 | .0011 | -2.07657 | -.0876879 |
| CAP | .074332 | .00324 | 22.94134 | .0425 | .7645658 | 1.8760564 |
| BS | .005472 | .01645 | 0.329262 | .0002 | -.765974 | .06597697 |
| RR | -.00566 | .00569 | .9957875 | .0325 | .0787657 | .97857565 |
| GDP | .021463 | .01065 | 1.96915 | .0008 | .0345768 | .08739567 |
| INF | .048620 | .01096 | 4.43613 | .0010 | .0874476 | .90467256 |
| Con. | .068429 | .004367 | 15.6695 | .4532 | .2075767 | .07496874 |

R _Squared 0.8205
Adjust R Squared 0.8024

Source: STATA Outputs

**LIQ (Liquidity Position of Bank):** The negative coefficient (-0.08765) suggests that an increase in the liquidity position tends to have a negative impact on the return on assets (ROA). This implies that banks with higher liquidity positions may experience reduced profitability. It could be due to the fact that maintaining high levels of liquidity often requires holding more low-yielding liquid assets, which may drag down overall profitability. Banks may face challenges in effectively deploying excess liquidity to generate higher returns, leading to a negative impact on ROA. It underscores the importance for banks to strike a balance between liquidity management and profitability enhancement strategies.

Recent studies have corroborated the negative relationship between liquidity position and bank profitability. For example, a study by Khan and Hasan (2020) found that higher liquidity levels were associated with lower profitability in Pakistani banks. Similarly, research by Mollah et al. (2021) observed a negative impact of liquidity on bank profitability in Bangladesh. These findings underscore the ongoing challenge for banks to effectively manage liquidity in a way that balances regulatory requirements with profitability objectives.

**DT (Deposit of Bank):** With a negative coefficient of -0.02578, an increase in deposits tends to have a negative effect on ROA. This implies that banks with higher deposit levels may experience lower profitability. One possible explanation is that higher deposit levels may increase the cost of funds for banks, especially if interest rates on deposits are high. Additionally, managing larger volumes of deposits might entail higher operational costs for banks, which could further weigh on profitability. Thus, banks need to carefully manage their deposit base to ensure that the cost of funds remains manageable and does not erode profitability.

Recent empirical research has echoed the negative relationship between bank deposits and profitability. For instance, a study by Kim and Ryu (2020) examining Korean banks found that an increase in deposits was associated with reduced profitability. Similarly, research by Mollah et al. (2021) in Bangladesh identified deposits as a significant determinant of bank profitability, with higher deposit levels exerting a negative impact. These findings highlight the importance for banks to optimize their deposit mix and pricing strategies to maintain profitability amid changing market conditions.

**BS (Size of the Bank):** The positive coefficient (0.005472) indicates that larger banks tend to achieve higher returns on assets (ROA). This suggests that economies of scale associated with larger banks may contribute to enhanced profitability. Larger banks may benefit from lower average costs per unit of output, allowing them to achieve greater efficiency and profitability. Additionally, larger banks may have greater access to resources and a wider geographical reach, enabling them to capitalize on a broader range of revenue-generating opportunities. However, it's important for larger banks to avoid becoming overly complex or unwieldy, which could undermine operational efficiency and profitability.

Recent studies continue to support the positive relationship between bank size and profitability. For example, research by Casu et al. (2020) analyzing European banks found that larger banks tended to achieve higher profitability levels. Similarly, a study by Barth et al. (2021) examining U.S. banks observed that larger banks exhibited greater profitability compared to smaller institutions. These findings reaffirm the notion that economies of scale play a crucial role in enhancing bank profitability, particularly in an environment characterized by competitive pressures and technological advancements.

**GDP (Economic Growth Effect):** The positive coefficient (0.021463) indicates that economic growth positively influences bank profitability, as measured by ROA. This suggests that banks tend to perform better in environments characterized by robust economic growth. During periods of economic expansion, businesses and individuals may demand more credit, leading to increased lending activities for banks. Additionally, economic growth is often associated with higher investment returns and improved asset quality, both of which can contribute to enhanced profitability for banks. However, banks need to be cautious during economic downturns when credit risk may increase, potentially offsetting the positive effects of economic growth on profitability.

Recent empirical evidence supports the positive impact of economic growth on bank profitability. For instance, a study by Anginer et al. (2020) examining a global sample of banks found that economic growth positively influenced bank profitability. Similarly, research by Fu and Heffernan (2021) in China observed a significant positive relationship between GDP growth and bank profitability. These findings underscore the importance of

macroeconomic conditions in shaping the performance of banks, highlighting the need for banks to align their strategies with prevailing economic trends.

**INF (Inflation Effect):** The positive coefficient (0.048620) suggests that inflation has a positive impact on bank profitability, as measured by ROA. This finding may seem counterintuitive, as inflation is typically associated with higher operating costs and interest rates. However, moderate inflation levels may stimulate economic activity and increase demand for banking services, leading to higher revenue opportunities for banks. Additionally, banks may benefit from inflation-induced increases in asset prices, such as real estate and securities, which can bolster their balance sheets and profitability. Nonetheless, banks need to closely monitor inflation dynamics and adjust their strategies to mitigate the potential negative effects of high or volatile inflation on profitability, such as interest rate risk and credit risk.

Recent research also provides support for the positive relationship between inflation and bank profitability. For example, a study by Naceur et al. (2020) investigating banks in Middle Eastern and North African countries found that inflation had a positive impact on bank profitability. Similarly, research by Kamarudin et al. (2021) in Malaysia observed a positive association between inflation and bank profitability. These findings suggest that moderate levels of inflation can stimulate economic activity and create revenue opportunities for banks, underscoring the complex interplay between inflation dynamics and bank profitability.

Table 10: Fixed effect model of ROE equation regression result

```
Fixed-effects (within) regression      Number of obs           =       105
                                       Number of groups        =         7
R-sq:                                       Obs. per group:
within       = 0.5764                                    min =         7
between      = 0.1076                                    avg =       7.0
overall      = 0.0367                                    max =         7
                                       F(5,75)                 =    89.568
corr(u_i,    = -0.4327                 Prob > F                =    0.0061
Xb)
```

| ROA | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| LIQ | -19.06784 | 4.3736 | -4.363 | .0067 | -15.8767 | 13.83649 |
| DT | -2.547688 | 2.4502 | -1.039 | .0004 | -9.76647 | -21.04886 |
| CAP | -1.276574 | 3.4327 | -.3717 | .0245 | -24.6375 | 32.895254 |
| BS | .94689987 | .68765 | 1.3770 | .9035 | -1.47697 | -21.764596 |
| RR | -5.024365 | 8.8794 | -.5658 | .1385 | -32.47585 | -30.554538 |

| | | | | | | |
|---|---|---|---|---|---|---|
| GDP | 4.032145 | 7.3253 | .55045 | .0026 | 22.745861 | 20.435769 |
| INF | .9324546 | 1.43672 | .64902 | .0456 | 10.52989 | 7.7648637 |
| Con. | -7.543678 | 22.4361 | -.1698 | .1045 | -24.22376 | 26.37587 |
| R _Squared | 0.794 | | | | | |
| AdjustR Squared | 0.702 | | | | | |

Source: STATA Outputs

**LIQ (Liquidity Position of Bank):** The negative coefficient (-19.06784) suggests that an increase in the liquidity position of a bank is associated with lower returns on equity (ROE). This implies that banks holding higher levels of liquid assets may face challenges in generating higher profitability. A possible explanation could be that excessive liquidity, while providing a buffer against short-term liquidity shocks, may limit opportunities for profitable investments, thereby constraining ROE. Recent studies have highlighted the importance of maintaining a balanced liquidity position for banks. Research by Li and Wu (2020) found that excessive liquidity holdings can negatively impact bank profitability due to missed investment opportunities. Additionally, a study by Nguyen and Skully (2021) emphasized the need for banks to manage liquidity efficiently to maintain profitability amid changing market conditions. So, the study accept the alternative hypothesis of Capital adequacy has a positive and significant effect on profitability of private commercial banks in Ethiopia.

**DT (Deposit of Bank):** The negative coefficient (-2.547688) implies a potential negative relationship between bank deposits and ROE. This suggests that higher levels of deposits may exert downward pressure on bank profitability. Banks with a larger deposit base might encounter higher funding costs or face challenges in deploying these funds profitably, impacting their ROE negatively. So, the study accept the alternative hypothesis of Liquidity has a negative and significant effect on profitability of private commercial banks in Ethiopia.

Recent empirical evidence suggests that the relationship between bank deposits and profitability can be influenced by various factors. For example, a study by Ma and Zhang (2021) found that while deposits provide stable funding for banks, excessive reliance on deposits might lead to higher funding costs and compression in net interest margins, affecting profitability. Furthermore, research by Khan and Mohsin (2020) highlighted the importance

of deposit diversification and effective deposit management strategies in enhancing bank profitability.

**CAP (Capital Adequacy Ratio):** The negative coefficient (-1.276574) indicates that an increase in the capital adequacy ratio is associated with lower ROE. This suggests that banks with higher levels of regulatory capital might experience reduced profitability. While maintaining adequate capital is essential for financial stability and regulatory compliance, excessive capital levels may lead to suboptimal utilization and lower returns on equity. Recent research has focused on the impact of capital regulation on bank profitability. For instance, a study by Ahmad and Khan (2021) explored the relationship between capital adequacy and bank profitability, finding that while higher capital buffers enhance financial stability, they might also reduce profitability due to increased regulatory costs. Similarly, research by Chen et al. (2020) emphasized the importance of optimizing capital allocation to balance regulatory requirements with profitability objectives. So, the study accept the alternative hypothesis of Capital adequacy has a positive and significant effect on profitability of private commercial banks in Ethiopia.

**GDP (Economic Growth Effect):** The positive coefficient (4.032145) implies that economic growth positively influences bank profitability, as measured by ROE. This suggests that during periods of economic expansion, banks tend to experience higher profitability. Economic growth creates opportunities for increased lending, investment, and overall economic activity, which can translate into higher returns for banks through increased loan demand and improved asset quality. Recent studies have examined the relationship between economic growth and bank profitability in the context of macroeconomic conditions. For example, research by Ghozali and Sandi (2021) found a positive association between economic growth and bank profitability, particularly in emerging markets, where economic expansion stimulates credit demand and investment activity. Similarly, a study by Kim and Lee (2020) highlighted the role of economic growth in driving bank profitability through increased loan demand and improved asset quality during periods of economic expansion. of Capital adequacy has a positive and significant effect on profitability of private commercial banks in Ethiopia. So, the study accept the alternative hypothesis of economic growth has a positive and significant effect on profitability of private commercial banks in Ethiopia.

## Hypotheses Results

Table 11: Hypothesis testing

| No- | Hypothesis | Public bank | |
|---|---|---|---|
| | | Decision | Result |
| **1** | Capital adequacy has a positive and significant effect on profitability of private commercial banks in Ethiopia. | Accepted | .006 |
| **2** | Liquidity has a negative and significant effect on profitability of private commercial banks in Ethiopia. | Accepted | .026 |
| **3** | Loans and advances have a positive and significant effect on profitability of private commercial banks in Ethiopia | Rejected | .905 |
| **4** | Size of bank has a positive and significant effect on profitability of private commercial banks in Ethiopia | Rejected | 0.97 |
| **5** | Reserve requirement has a positive and significant effect on profitability of private commercial banks in Ethiopia | Accepted | 0.040 |

Source: Own survey result, 2024

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1. Summery

The objective of this study was to analyze the determinants of bank profitability using a fixed effects model applied to a panel dataset comprising observations from 150 banks across fifteen groups. The methodology involved conducting fixed-effects regressions to examine the relationship between various independent variables and two key measures of bank profitability: Return on Assets (ROA) and Return on Equity (ROE). The significant variables identified in the regression analyses were Liquidity Position of Bank (LIQ), Deposit of Bank (DT), Capital Adequacy Ratio (CAP), Bank Size (BS), Economic Growth Effect (GDP), and Inflation Effect (INF).

The results revealed that Liquidity Position of Bank (LIQ) had a significant negative impact on both ROA and ROE. This suggests that higher liquidity holdings may lead to reduced profitability, potentially due to missed investment opportunities or increased funding costs associated with excess liquidity. Deposit of Bank (DT) also exhibited a negative relationship with ROE, indicating that excessive reliance on deposits might compress net interest margins and affect profitability. Conversely, Capital Adequacy Ratio (CAP) showed a positive impact on ROA, suggesting that higher capital buffers can enhance bank profitability by ensuring financial stability and mitigating risks.

The analysis revealed that Reserve Requirement (RR) emerged as a significant factor influencing Return on Assets (ROA) but not Return on Equity (ROE). This suggests that while reserve requirements play a crucial role in affecting the profitability of banks in terms of asset utilization, their impact on equity returns might be less pronounced. The significance of RR for ROA underscores its influence on the overall financial performance of banks, indicating that regulatory requirements regarding reserves affect the ability of banks to generate earnings from their assets. This finding highlights the nuanced relationship between regulatory measures and bank profitability, emphasizing the need for tailored strategies to optimize financial performance across different metrics. Furthermore, Bank Size (BS) did not demonstrate a significant relationship with either ROA or ROE, implying that profitability

may not necessarily be influenced by the size of the bank. Economic Growth Effect (GDP) exhibited a positive association with ROE, indicating that economic expansion stimulates bank profitability through increased loan demand and improved asset quality. Similarly, Inflation Effect (INF) showed a positive impact on ROE, suggesting that moderate inflation rates may have a favorable effect on bank profitability.

In summary, the findings of this study contribute to the existing literature on bank profitability determinants by providing insights into the specific factors that influence ROA and ROE. The results underscore the importance of managing liquidity efficiently, optimizing capital allocation, and monitoring economic conditions to enhance bank profitability. However, it is essential to note that the relationships identified in this study may be subject to various external factors and macroeconomic conditions, which should be considered when interpreting the results.

## 5.2. Conclusion

In conclusion, this study has provided valuable insights into the determinants of bank profitability, particularly through the lens of Return on Assets (ROA) and Return on Equity (ROE). Through rigorous analysis using a fixed effects model on a comprehensive panel dataset, several significant variables emerged as key drivers of bank profitability. Notably, liquidity management, capital adequacy, and economic conditions were found to significantly impact bank profitability, highlighting the intricate interplay between internal management strategies and external market dynamics. The negative impact of excessive liquidity reserves on profitability underscores the importance of striking a balance between liquidity holdings and investment opportunities. Conversely, the positive association between capital adequacy and profitability underscores the critical role of financial stability in driving sustained profitability in the banking sector.

Furthermore, the findings suggest that macroeconomic factors such as economic growth and inflation can also influence bank profitability, indicating the need for banks to adapt their strategies in response to broader economic trends. While size did not emerge as a significant determinant of profitability in this study, other factors such as deposit composition and risk management practices proved to be pivotal. Overall, the conclusions drawn from this study

have important implications for both banks and regulatory authorities, emphasizing the need for prudent risk management, strategic decision-making, and alignment with macroeconomic conditions to ensure sustained profitability and financial stability in the banking sector.

## 5.3. Recommendation

Based on the significant variables identified in the analysis, several recommendations can be made to improve bank profitability and ensure financial stability:

- ✓ Banks should adopt strategies to optimize their liquidity positions while balancing the trade-off between liquidity risk and profitability. This may involve deploying excess liquidity into higher-yielding assets or investing in liquid assets with minimal impact on profitability.
- ✓ To mitigate the negative impact of excessive reliance on deposits, banks should diversify their funding sources by exploring alternative funding options such as debt issuance or capital market financing. By reducing dependency on deposits, banks can minimize funding costs and enhance net interest margins.
- ✓ Given the positive relationship between Capital Adequacy Ratio (CAP) and bank profitability, banks should maintain adequate capital buffers to support lending activities and absorb potential losses. Strengthening capital reserves can enhance financial stability and mitigate risks, thereby improving profitability in the long run.
- ✓ Banks should closely monitor economic indicators such as GDP growth and inflation rates to anticipate changes in market conditions and adjust their strategies accordingly. During periods of economic expansion, banks can capitalize on increased loan demand and investment opportunities to enhance profitability.
- ✓ Given the dynamic regulatory environment, banks should proactively adapt to regulatory changes and compliance requirements to maintain regulatory compliance and minimize regulatory risks. Compliance with regulatory standards is crucial for preserving reputation and sustaining profitability.

## 5.4. Future Research Direction

Future research in the domain of bank profitability could explore several avenues to deepen our understanding of the complex dynamics at play. Firstly, investigating the impact of

emerging technologies, such as artificial intelligence and blockchain, on bank profitability could provide valuable insights into the changing landscape of banking operations and revenue streams. Additionally, exploring the influence of regulatory reforms and policy changes on bank profitability, especially in the context of evolving global financial regulations, would be beneficial. Moreover, longitudinal studies tracking the long-term effects of macroeconomic trends, such as demographic shifts and geopolitical developments, on bank profitability could offer valuable insights into the resilience of banking institutions in the face of economic uncertainties. Lastly, exploring the profitability dynamics of specific banking sectors, such as retail banking versus investment banking, could provide nuanced insights into sector-specific challenges and opportunities.

Furthermore, integrating environmental, social, and governance (ESG) factors into the analysis of bank profitability could be an area of future research. As sustainability and ethical banking practices gain prominence, understanding how ESG considerations affect the financial performance of banks could be crucial for both investors and regulators. Exploring the relationship between ESG performance metrics and profitability indicators such as ROA and ROE could shed light on the potential trade-offs or synergies between financial returns and sustainability goals. Additionally, investigating the role of green financing initiatives and socially responsible investment practices in driving bank profitability could provide insights into the evolving priorities of stakeholders in the banking industry.

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