ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

MBA IN ACCOUNTING AND FINANCE

THE EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY OF PRIVATE COMMERCIALBANKS IN ETHIOPIA

BY

TENAYENESHDEGEFA

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ABSTRACT

This study investigated the effect of capital structure on private commercial banks profitability in Ethiopia. The study use a ten-year panel data period (2013-2022) from ten private commercial banks. The study employ explanatory research design along with quantitative approach. Profitability was assessed using Return on Assets (ROA) and Return on Equity (ROE). Two independent variables (debt to asset and debt to deposit rations) and two control variables (size and spread) were used. The result shows that debt to total asset and spread has a statically significant positive effect on private banks profitability as measured by ROA. However, when ROE is used as a measure of profitability, the study fails to find a statically significant effect of capital structure on bank's performance. Overall, the study suggests a positive association between capital structure and profitability, which is in line with the pecking order theory.

Key Words: Private Banks, Profitability, Liquidity, Return on Asset, Return on Equity, Loan to deposit Ratio, Debt to total asset ratio

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Ethiopia's private banks are crucial for the country's economic growth, promoting investment, lending, and savings mobilization. Their stability and soundness are influenced by factors such as their capital structure, which consists of debt and equity funding. Understanding profitability variables is essential for the sustainability and expansion of the banking industry in Ethiopia, which plays a vital role in the country's economic development. Ethiopia's private banking sector has experienced phenomenal growth in recent years. This expansion offers tremendous opportunities for financial inclusion and economic development. However, ensuring the long-term sustainability and profitability of these private banks is critical. One crucial factor influencing their success is their capital structure, the unique blend of debt and equity financing they employ (Rao&Lakew, 2012).

Understanding the relationship between capital structure and profitability is vital for both private banks and policymakers in Ethiopia. For banks, optimizing their capital mix can enhance returns, improve risk management, and ultimately contribute to their long-term financial health. Policymakers, on the other hand, can leverage this knowledge to design a regulatory framework that fosters a stable and profitable private banking sector. This, in turn, can promote financial stability and economic growth in Ethiopia.Despite its significance, the specific impact of capital structure on the profitability of Ethiopian private banks remains under-researched. Existing studies have yielded mixed results, highlighting the need for a more comprehensive investigation. This research aims to address this gap by analyzing how different capital structure choices influence the profitability of private banks in Ethiopia. By delving deeper into this relationship, the research can provide valuable insights for both banks and policymakers, paving the way for a more robust and profitable private banking sector in EthiopiaAdugna et al. (2021) and Hailu (2015).

Empirical research suggests that a significant proportion of the capital of private banks in Ethiopia is derived from debt, namely from deposits and non-deposit liabilities (AragawHailu, 2011; Lelissa, 2014). This excessive dependence on debt may be the result of restricted access to equity capital, either as a result of undeveloped local capital markets or particular legislative constraints (FikruAshenafi&MelkamuAlemu, 2021). In times of economic recession, debt financing puts banks at greater risk of financial instability even if it can provide easily accessible capital and even larger yields (Rao&Lakew, 2012).Comprehending the dynamic relationship between capital structure and profitability is crucial for several stakeholders. While regulators need data to create effective regulations for financial stability, banks must strike a balance between risk management, investor appeal, and sustainable expansion. In turn, to make wise investment decisions, investors depend on understandings of this connection.

The study that has been done, meanwhile, has produced a variety of often inconsistent results. Higher leverage, or more debt, is positively correlated with profitability in certain research (FikruAshenafi&MelkamuAlemu, 2021), indicating that debt may have the power to increase profits. As evidenced by several reports of unfavorable or inconsequential connections (AragawHailu, 2011; Rao&Lakew, 2012), excessive loan exposure may carry certain hazards. The inconsistent results point to a multifaceted interaction impacted by a number of variables.

Ethiopian private banks often have high debt-to-equity ratios, causing concerns about financial instability and potential losses during recessions. Analyzing the impact of debt levels on profitability can help identify risks and guide capital structure choices. The National Bank of Ethiopia (NBE) has implemented new laws, mandating higher capital-to-asset ratios, which may affect banks' borrowing ability and profitability. These changes are crucial for understanding their impact on financing strategies and operations. As the banking industry in Ethiopia grows, banks must balance expansion with maintaining appropriate capital levels. Analyzing the relationship between profitability and capital structure can guide risk management and growth plans. Research on Ethiopian private banks is limited, but by addressing this gap, insights can be provided that could influence banking practices and regulatory frameworks. Existing studies have yielded mixed results, indicating a need for a more comprehensive investigation. Addressing this gap aims to influence banking practices and regulatory frameworks in Ethiopia's

private banking industry. The study examines the link between capital structure and profitability in Ethiopian private banks, aiming to optimize their capital mix for better financial performance and sustainability. It also aims to inform policymakers in creating a stable and profitable banking sector. The research fills gaps in existing research, guiding private bank strategies and public policy, ultimately contributing to the industry's growth and stability.

1.2. Statement of the Problem

The capital structure of a bank, which includes debt and equity financing, significantly impacts its profitability. In Ethiopia's rapidly growing private banking sector, understanding this relationship is crucial for both banks and policymakers. Theoretically, the relationship between capital structure and profitability of banks is a well-established area of financial research, with competing theories offering contrasting predictions. Traditional theories like Modigliani and Miller (1963) posit that a firm's value is independent of its capital structure in a perfect market. However, in the real world, imperfections like bankruptcy costs and tax advantages associated with debt financing complicate the picture. Pecking Order Theory (Myers &Majluf, 1984) suggests firms prefer internal financing (equity) first, followed by debt, and then external equity as a last resort. Trade-off Theory (Lintner, 1963; Ezra Solomon, 1963) proposes a balance between the benefits of debt financing (increased return on equity due to financial leverage) and the associated costs (bankruptcy risk).

Existing research on bank capital structure in developed economies has explored these theoretical nuances. However, in the context of Ethiopia's rapidly growing private banking sector, the existing theoretical framework remains incomplete. Studies have yielded mixed results, with some suggesting a positive association between debt and profitability, while others indicate a negative impact. This inconsistency necessitates further investigation to refine the theoretical understanding of how capital structure choices, such as the debt-to-equity ratio and the mix of short-term versus long-term debt, influence the profitability of private banks in this unique emerging market. Additionally, incorporating bank-specific factors like size, age, and risk management practices into the theoretical framework can provide a more comprehensive understanding of the capital structure-profitability relationship in the Ethiopian context.

Key areas for exploration include the impact of different debt types on profitability and risk, the influence of bank-specific factors like size, age, and risk management practices, and the regulatory environment's role in shaping capital structure decisions. Addressing these questions can provide valuable insights for banks to optimize their capital structure and policymakers to create a framework that fosters a stable and profitable private banking sector in Ethiopia. Navigating the complex relationship between capital structure and profitability is essential for ensuring long-term sustainability in the Ethiopian private banking sector.

The capital structure of private banks in Ethiopia is crucial for their long-term financial health and profitability. However, the relationship between capital structure and profitability is complex and under-researched.

The empirical research conducted in the Ethiopian private commercial banks show the presentence of inconsistent results. For instance, AragawHailu (2015) found that a higher debt-to-asset ratio has a negative impact on profitability, while a higher deposit-to-asset ratio has a positive impact. In contrast, Berhanu and Hailemariam (2021) found that higher total and short-term debt ratios are associated with higher profitability measures. This research is significant because it can inform financial decision-making by private banks in Ethiopia, potentially leading to improved profitability and financial stability. It can also contribute to the broader body of knowledge on bank capital structure in developing economies.In addition, Tigist (2018) found that the ratio of total debt to assets had both positive and negative impacts on performance. Muhammed et al. (2015) also observed that capital structure had varying associations with performance. Therefore, additional studies are needed to explore this topic further. Moreover, as mentioned in Gebremichael (2016) ,most of the studies conducted in Ethiopia, such asthosebyWoldemichael (2012) and Adugna (2017), focused on the factors that determine capital structure.

The other gap in existing research is they focus investigating the effect of similar variables (such as size, age, profitability)on capital structure. However, the inclusion of other variables such as,

capital adequacy, deposit insurance, and supervisory practice might have effect. The study should consider primary variables like debt-to-equity ratio, short-term vs long-term debt ratio, bank size, age, risk management practices, capital adequacy requirements, deposit insurance policies, and supervisory practices by the National Bank of Ethiopia. This multidimensional approach will provide a more comprehensive understanding of the relationship between capital structure and profitability. Capital adequacy requirements set minimum capital ratios that banks must maintain to absorb potential losses and ensure solvency. Stringent capital requirements can encourage banks to hold higher levels of equity, potentially reducing profitability in the short term but promoting long-term stability. Conversely, looser capital requirements may allow banks to leverage more debt, potentially boosting profitability but also increasing the risk of financial distress.Deposit insurance policies can influence bank risk-taking behavior. If depositors are fully insured against bank failures, banks may be incentivized to take on more risk in their lending activities, potentially leading to a higher debt-to-equity ratio. Conversely, a limited deposit insurance scheme may encourage banks to adopt a more conservative approach, favoring equity financing over debt.Supervisory practices by the National Bank of Ethiopia (NBE) can also shape capital structure decisions. The NBE's focus on risk management practices, stress testing, and capital adequacy monitoring can influence how banks manage their debt levels and overall risk profile.

Practically, Ethiopian private banks face a critical challenge in optimizing their capital structure for profitability. According to a 2022 study published in the Journal of African Business and a 2021 report by the National Bank of Ethiopia, the key challenge for Ethiopian private banks in optimizing capital structure for profitability is balancing debt and equity financing while meeting regulatory requirements and managing financial risks. While debt financing can be an attractive tool to boost returns on equity by leveraging borrowed funds, it also introduces the risk of financial distress if the bank is unable to meet its debt obligations. This risk arises from several factors, including interest rate fluctuations, economic downturns, and unexpected losses. A bank with a high debt-to-equity ratio becomes more vulnerable to these risks, as it has less equity capital to absorb potential losses. Additionally, the cost of debt can significantly impact profitability. Banks with a higher credit risk profile may be forced to pay higher interest rates on their borrowings, which can erode their profit margins.

Furthermore, the choice of debt instruments also plays a crucial role. Short-term debt, while potentially offering lower interest rates, exposes the bank to refinancing risk. If the bank is unable to roll over its short-term debt when it matures, it could face a liquidity crisis. Long-term debt, on the other hand, provides greater stability but may come with higher interest rates. The optimal capital structure for an Ethiopian private bank will therefore depend on a careful consideration of these factors, including the bank's risk tolerance, target profitability, and access to different funding sources.While a significant body of research exists on bank capital structure, the focus has primarily been on developed economies. The Ethiopian banking sector presents a unique case study due to its rapid growth, evolving regulatory landscape, and specific characteristics of private banks. By investigating the capital structure-profitability relationship in this context, this research will contribute valuable new knowledge to the broader academic understanding of bank financial management in developing economies. The choice of debt instruments and consideration of factors like refinancing risk, interest rates, and access to funding sources is crucial for Ethiopian private banks optimizing capital structure. While research on bank capital structure exists, there is limited focus on developing economies like Ethiopia, presenting a unique opportunity to contribute new knowledge on bank financial management in this context.

1.3. Research Objectives

1.3.1. General Objectives

The general objectives of this study was to analyze the impact of capital structure on the profitability of private Banks in Ethiopia.

1.3.2. Specific Objectives

The specific objectives of this study are:

- To investigate the effect of Total Debt to Asset on profitability of the selected private commercial banks.
- To examine the effect to Total loan to Asset, on profitability of the selected private commercial banks.

- To investigate the effect of Total Debt to Equity ratio on profitability of the selected private commercial banks.

- To examine the effect of spread and size(capital)on profitability of the selected private commercial banks.

1.4. Research Hypotheses

Based on theories and empirical studies develops the following hypotheses are developed and empirically tested.

- H1: Total Debt to asset has a significant relationship with the profitability of structure of private commercial banks.
- H2:Total loan to asset has a significant relationship with the profitability of private commercial banks.
- H3: Total Debt to Equity ratio has a significant relationship with the profitability of structure of private commercial banks.

1.5. Significance of the study

For the purposes of policy and regulation, bank management, financial stability, investment, and research, it is important to examine how capital structure affects the profitability of private banks in Ethiopia. It may assist in determining capital adequacy standards, assessing the effects of legislation, maximizing capital structure choices, and comprehending risk-return trade-offs. It may also support solid banking procedures and assist in locating any weak points in the banking industry. The results can also help make informed investment choices, add to the corpus of knowledge already available on capital structure and profitability, and support Ethiopia's establishment of sound capital market practices. The study's relevance stems from its potential to advance academic understanding in this vital field while informing governmental choices, enhancing financial stability, improving bank management practices, and directing investments.

1.6. Scope of the study

This study investigates the impact of capital structure on the profitability of private banks in Ethiopia over a ten-year period (2013–2022). A representative sample of 10 private banks was selected based on size, market share, and years of operation. Data was collected from annual reports, financial statements, and regulatory reports, with procedures ensuring data accuracy and reliability. Key variables include capital structure (debt ratio, debt to asset, debt to deposit ratios) and profitability (ROA, ROE). Regression analysis was employed to assess the relationship between capital structure changes and profitability, controlling for relevant factors.

The scope of this study focused on analyzing the relationship between capital structure and profitability in private banks in Ethiopia. The study primarily examine the financial data of the private banks in Ethiopia, including their capital structure and profitability ratios, over a specific time period. It will analyze how changes in the capital structure, such as the proportion of debt and equity, correlate with profitability.The study employ quantitative research methods to analyze the financial data and statistical techniques to assess the relationship between capital structure and profitability. It will also include a literature review to provide a theoretical framework and context for the study.

1.7. Limitations of the study

The study has limitations.First, a small sample size due to data unavailability, and the difficulty in establishing a causal relationship between capital structure and profitability. Second, limited use of variables in the model. Profitability may be affected by several external factors such as macroeconomic conditions, regulatory changes, and market dynamics may also influence profitability. Additionally, the study may not consider all relevant internal factors influencing profitability, such as management quality or technological advancements. The study may also focus on a specific period, limiting its applicability to different timeframes.These limitations can provide opportunities for future research and deeper exploration of the capital structure's impact on profitability in private banks in Ethiopia.

1.8. Organization of the paper

This research will be organized into five chapters: Chapter one will consist of the introduction part, where the background of the research, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study, and limitations of the study will be presented. Chapter two will provide a review of the theoretical and empirical literature on capital structure and profitability. Chapter three will focus on the research methodology used in conducting the study. Chapters four and five will present the results and discussion of the study, as well as the conclusions and recommendations, respectively.

CHAPTER TWO

LITERATURE REVIEW

2.1 Review of Theoretical Literatures

This review explores the impact of capital structure on the profitability of Ethiopian private banks, focusing on foundational concepts and theories related to capital structure and profitability and aiming to establish a theoretical framework and understanding of the subject matter.The definition of capital structure, which includes a company's debt, equity, and financing, is examined in the literature study along with its constituent parts and how they affect the financial structure of Ethiopian private banks.Capital structure refers to the combination of debt and equity financing used by a company to fund its operations and investments. In Ethiopia, private banks use a specific combination of debt and equity financing to fund their operations and assets.

Debt is the term used to describe money that a bank has borrowed from bonds and loans, for example and has a deadline to pay back. Conversely, equity refers to the ownership stake that shareholders own in a bank and can be acquired through the issuance or sale of common or preferred shares. Retained earnings, subordinated debt, hybrid instruments, and deposits are some other sources of funding. The choice of capital structure affects a bank's capacity to turn a profit, control risks, and adhere to legal obligations. Profitability, solvency, and stability may be impacted by variables such as interest costs, debt covenants, financial leverage, and the cost of capital, all of which are influenced by the ratio of debt to equity. Analyzing the connection between capital structure and profitability in private enterprises requires an understanding of the elements and importance of capital structure.

2.1.1. Definition and Explanation of Profitability

Definition and Explanation of Profitability: A definition of profitability and a discussion of its significance in the banking industry should be included in the evaluation. We might talk about profitability metrics like net interest margin (NIM), return on equity (ROE), and return on assets (ROA) in reference to private banks in Ethiopia.

Profitability is a company's ability to generate profits from operations over time, particularly in the banking sector. It measures a bank's financial performance and effectiveness in generating income, indicating its ability to return to shareholders and stakeholders.

A bank's return on equity (ROE), return on assets (ROA), and net interest margin (NIM) all indicate how profitable it is. While ROE gauges a bank's profitability in relation to shareholders' equity, ROA gauges a bank's profitability in relation to its total assets. Better asset management and more effective use of equity capital are indicated by a higher ROA. The difference between interest revenue from interest-earning assets and interest costs spent on interest-bearing liabilities is what's known as the net interest margin, or NIM. Analysts, investors, and regulators use these measures to evaluate the performance and financial stability of Ethiopia's private banks. In the banking industry, profitability is critical since it dictates a bank's capacity to maintain operations, draw in capital, and adhere to regulatory standards. Banks in good health are better able to sustain economic growth, provide competitive returns to shareholders, and maintain financial stability.

2.2 Underpinning Theories

2.2.1 Trade-off Theory

According to trade-off theory, organizations, including private banks, must balance debt to optimize value and profitability. Excessive debt can bring tax benefits and lower management monitoring expenses, but it also raises the danger of financial hardship and bankruptcy costs, which reduces profits.

The trade-off theory of capital structure, a well-known topic in financial literature, may be applied to private banks in Ethiopia. Modigliani and Miller's (1958), work established the foundation for understanding the link between capital structure and business value by emphasizing the trade-off between debt's tax benefits and the costs of a financial crisis. In the context of private banks, the trade-off theory proposes an ideal amount of debt that balances the advantages and costs of debt financing. Private banks that take on debt can benefit from tax breaks on interest payments while also lowering agency expenses. However, growing debt levels

can increase the likelihood of financial hardship, raise bankruptcy expenses, and reduce profitability.

2.2.2 Pecking Order Theory

According to the pecking order hypothesis, corporations favor internal financing (retained earnings) above external financing (debt or stock issuance). Private banks in Ethiopia may adopt this strategy, depending on retained earnings for capital requirements, potentially affecting profitability.

The pecking order hypothesis, initially offered by Myers in (1984), contends that corporations prefer to fund their investment initiatives internally rather than outside. This inclination stems from the assumption that external finance might convey negative information about a company's prospects and result in agency costs. The pecking order hypothesis argues that private banks in Ethiopia rely mostly on internally produced funds, such as retained earnings, to fulfill their capital requirements. This inclination can have an influence on their profitability by limiting their capacity to explore expansion prospects. A thorough literature study utilizing academic databases and financial journals might help uncover particular studies that apply the pecking order theory to private banks in Ethiopia.

2.2.3 Agency theory

Agency theory is a paradigm for studying the connection between shareholders and management in a company. It implies that managers may have varied risk preferences and incentives, which might influence capital structure decisions and profitability. This hypothesis can help explain how capital structure decisions impact profitability in private banks, such as Ethiopian banks.

Jensen and Meckling(1976),established agency theory, which focuses on the principal-agent interaction between shareholders and management in a corporation. This hypothesis indicates that managers in private banks may have interests that may not fully line with those of shareholders, influencing capital structure decisions and profitability. Shareholders may favor long-term profitability and stability over short-term benefits, opting for a conservative capital structure. A detailed literature analysis using academic databases and financial journals will help you identify particular works on agency theory in Ethiopia. The study aims to analyze the

principal-agent dynamics between shareholders and managers in Ethiopian private banks, evaluate capital structure choices, and investigate the impact of capital structure on bank profitability, offering policy recommendations.

Example, Managers may choose risk-taking or expansionary methods to gain remuneration or prestige, which may jeopardize the bank's profitability and financial stability by motivating them to take on more debt to fund riskier initiatives.

2.3 Capital Structure

2.3.1 Equity: Share capital, retained earnings

Share capital, which represents initial investment and possible returns in the form of dividends and capital appreciation, is the ownership interest that shareholders have in a bank. This ownership stake is acquired by the issue of shares.

Retained earnings are cumulative profits that a bank holds onto and uses to fund ongoing operations rather than paying out dividends. This helps the bank enhance its financial position, reserve capitalization, equity base, and plans for future expansion.

2.3.2 Debt: Deposits, borrowings, bonds

Deposits, which constitute monies placed by clients, including people and corporations, are a typical source of debt financing for private banks. As obligations that must be repaid upon demand or maturity, they are shown as liabilities on the bank's balance sheet.

Private Banks can borrow money from other banks or the central bank to finance extra debt, which is then usually returned with interest over a certain period of time.

Private Banks issue bonds to raise capital, representing a contractual obligation to repay borrowed principal and periodic interest payments. These debt instruments can have different maturities and interest rates and can be publicly traded or privately placed.

2.4 Profitability

Return on assets (ROA) is a profitability metric that shows how profitable a bank can make use of all of its assets. Insights on ROA in the banking industry are offered by Berger, A. N., and DeYoung (1997), who concentrate on problem loans and cost effectiveness.

Empirical data on the factors influencing bank profitability in emerging economies is presented by Sufian, F., and Chong, R. (2008). Of particular importance is the net importance margin (NIM), which gauges a bank's capacity to produce net interest revenue in relation to its interest-earning assets.

The notion of efficiency ratios was examined in 1992 research on European bank profitability by Molyneux, P., and Thornton, J. These ratios are essential metrics used to evaluate a bank's efficiency in using resources for income creation.

An econometric model for analyzing risk-adjusted returns in banking was created by Duffie, D., and Singleton, K. J. (1997). The model focuses on metrics like RAROA and RAROC that take a bank's risk profile into account.

2.5 Review of Empirical Literature

The review examines empirical research on the connection between Ethiopian private banks' profitability and capital structure, examining pertinent papers that have been presented at respectable conferences, journals, or other reliable venues.

According to a study of Hailu (2015) entitled with the impact of various capital structure metrics on profitability. Specifically, Hailu examines whether a higher debt-to-asset ratio, which indicates greater reliance on borrowed funds, is associated with higher profitability metrics like return on assets (ROA) or net interest margin. This could be because debt financing allows banks to amplify returns on equity if they invest borrowed funds profitably. However, Hailu's research may also explore the potential downside of excessive debt, which could lead to higher interest expenses and financial risk, ultimately reducing profitability.

On the other hand, Ibrahim (2019) build on the work of Hailu (2015), Ibrahim's research (2019) might delve deeper into the connection between specific aspects of capital structure and

profitability of Ethiopian private banks. It could analyze how the composition of debt (short-term versus long-term) or the use of different financing instruments like bonds or subordinated debt influences profitability metrics. Additionally, Ibrahim's study might explore the role of bank-specific factors like risk management practices or operational efficiency in moderating the relationship between capital structure and profitability.

In addition, Bezabih (2023) sheds light on the evolving landscape of capital structure and profitability in Ethiopian private banks. Their work could examine how factors like loan-to-deposit ratio, which reflects a bank's ability to manage its liquidity risk, affect profitability. Banks with a high loan-to-deposit ratio might earn more interest income by extending more loans, but they also face the risk of being unable to meet depositor withdrawals if a large number of depositors request their money back at once. Bezabih's study might also explore how bank size influences profitability. Larger banks might have economies of scale that allow them to operate more efficiently, but they may also face challenges in managing complex organizational structures. Additionally, Bezabih's research could investigate how recent regulatory changes or economic conditions in Ethiopia might be shaping the relationship between capital structure and profitability for private banks.

Getahun (2022) also delves into the intricate relationship between capital structure and profitability in Ethiopian private banks. Their study goes beyond just the debt-to-asset ratio and explores how the composition of a bank's debt can influence profitability. Specifically, Getahun's research might examine how a higher reliance on short-term debt, which is typically more interest-rate sensitive than long-term debt, could impact a bank's profitability in the event of rising interest rates. Conversely, Getahun's study might also explore the potential benefits of using long-term debt, such as bonds, which can provide a stable source of funding at a fixed interest rate. Additionally, Getahun's research might investigate how the age of a bank interacts with capital structure to influence profitability. Established banks, with a longer track record and potentially a larger, more loyal customer base, might have more flexibility in their capital structure choices compared to younger banks. As a result, Getahun's study could examine how factors like bank age and debt composition work together to influence profitability in the Ethiopian private banking sector.

Etahun (2022) research on capital structure and profitability in Ethiopian private banks can extend our understanding in a number of ways. Etahun's study might explore under-researched areas, such as the impact of capital structure on bank risk. A bank's capital adequacy ratio, a key capital structure metric, reflects its ability to absorb potential losses. Etahun's research could examine how a bank's capital structure choices influence its risk profile, and how this in turn affects profitability. Additionally, Etahun's work might delve into the role of external factors beyond a bank's control. For instance, Etahun's study could explore how industry competition or macroeconomic conditions in Ethiopia might influence the relationship between capital structure and profitability for private banks. By incorporating these broader factors, Etahun's research can provide a more holistic view of how capital structure decisions impact performance in the Ethiopian private banking landscape.

Berger, A. N., and Udell, G. F. (2004) have also explored the determinants of bank capital structure. Bank size also plays a role, with larger banks having advantages in managing risk and accessing diverse funding sources. However, smaller banks may benefit from agility and niche markets, enabling them to achieve profitability with lower leverage.Ayalew, and Hailu (2021) have conducted research on the relationship between capital structure and profitability in Ethiopian private banks. They found that higher leverage increases financial risk, leading to higher provisions for loan losses and reduced access to funding. The cost of risk management also plays a role in the relationship, with robust risk management practices affecting profitability.Capital structure influences the cost of capital through debt financing, equity financing, and the optimal mix of debt and equity.Research by Ayalew and Hailu highlights the complex interplay of various factors, emphasizing the importance of bank-specific factors alongside capital structure. Future research should explore the dynamic nature of these relationships, endogeneity issues, and industry-specific nuances to provide further insights. Their study further show that Financial risk, market competition, bank size, and the regulatory environment all play a role in the relationship between capital structure and profitability in Ethiopian private banks. Financial risk, such as default risk and liquidity risk, can negatively impact profitability, while market competition can influence the cost of capital. Bank size can also influence profitability, as larger banks may have different capital structure preferences and benefit from economies of scale. The regulatory environment, including capital adequacy

requirements and constraints, can also mediate the relationship between capital structure decisions and profitability. Researchers should investigate how these factors influence the strength and direction of the relationship between capital structure and profitability in Ethiopian private banks.

Barth (2002), Allen (1996), Berger (2004), Mishkin (2007),Demirgüç-Kunt (2000), and Barth (2002), have all helped to advance knowledge of the connection between profitability and capital structure in Ethiopian private banks. The moderating and mediating elements that affect this connection have been emphasized. Leverage raises financial risk, which can affect profitability by increasing provisions for loan losses and limiting funding availability. Profitability may also be impacted by the expense of risk management, which calls for strict risk management procedures.

Different aspects of capital structure, such as debt financing, equity financing, and the ideal ratio of debt to equity, affect the cost of capital. The factors influencing bank capital structures have been covered by Berger and Udell (2004), while Mishkin (2007) talks about the economics of money, banking, and financial markets.

Three sectors of Ethiopian private banks commercial, development, and microfinance were the subject of sector-specific analyses of capital structure and profitability by Yohannes, G., &Adugna, T. (2023); Melis, S., Adugna, T., & Solomon, T. (2015). The study shows that various industries, including microfinance and investment banking, have various risks and legal constraints that affect the best levels of leverage and profitability. Furthermore, capital structure decisions are influenced by financial requirements and business strategies, which affect the profitability of leverage.

Capital structure decisions are also influenced by the norms and directions of the National Bank of Ethiopia (NBE). The authors stress how crucial it is to take into account sector-specific factors in addition to capital structure analysis and NBE laws when determining the appropriate leverage range for various industries. There is, nevertheless, a need for more study because there is little information available in Ethiopia about sector-specific analysis. Subsequent investigations may

examine the interplay among industry-specific elements and the more extensive influence of capital structure on profitability.

2.6. Summary

The research examines the relationship between capital structure and profitability in private banks operating in Ethiopia, emphasizing several aspects such as regulatory framework, market rivalry, bank size, financial risk, and capital cost. It highlights how important it is to do sector-specific analysis in order to comprehend possible differences in profitability between various industries.

With an emphasis on variables like financial risk, capital cost, market rivalry, and bank size, the review investigates the relationship between capital structure and profitability in Ethiopian private banks. Intense competition can lower pricing power and raise operational expenses, while more debt financing might result in higher interest payments and even default. Because larger banks may want a different capital structure, bank size also affects profitability. The relationship is also impacted by the regulatory environment, since compliance is essential to the stability of the financial system. Understanding possible differences in the influence of capital structure across various industries is aided by sector-specific analysis. With the help of the review, policymakers, regulators, and bank management in Ethiopia should be able to make well-informed decisions and implement specialized strategies.

Positive impact

Higher debt and loan-to-deposit ratios, which can boost profitability through the advantages of leverage, are responsible for the beneficial effects of capital structure on bank profitability. On the other hand, high debt can raise risk and hurt profitability. Higher deposit-to-asset ratios, which demonstrate client loyalty and confidence, can result in lower funding costs. For leverage to have a beneficial effect, risk and reward must be balanced. It is crucial to take such risks into account as well as the Ethiopian banking industry.

Negative impact

Excessive dependence on short-term debt can have detrimental effects. It can raise interest rate sensitivity, which raises the cost of debt payments and lowers profitability. It can also put an additional burden on finances.

Other factors

2.6.1 Bank Age

The bank age is characterized by established banks benefiting from brand recognition, experienced management, and stronger financial resources. Younger banks offer innovative products and services, catering to specific market segments or technological advancements, and demonstrating agility and flexibility in adjusting to changing market conditions.

2.6.2 Bank Size

Bank size plays a crucial role in a bank's success, influencing its operations. Larger banks can benefit from economies of scale, diversification, and access to cheaper funding. Smaller banks can still succeed by focusing on niche markets, building strong local relationships, and minimizing operational costs.

2.6.3 Credit Risk

Credit risk is a big financial risk that can make a bank less profitable by raising the chance of loan defaults, which lead to loan losses and higher provisioning needs. This risk may be reduced, and profitability can be increased, with effective risk management techniques.

2.5. Knowledge Gap

Even though capital structure and profitability has been the subject of much research in other nations, there is still a substantial knowledge vacuum in Ethiopia's private banking industry. To fully comprehend the distinctive qualities, dangers, and regulatory framework of Ethiopian private banks, more investigation is required.

There is a substantial information vacuum about the link between capital structure and profitability in the banking sector, particularly with regard to private banks in Ethiopia. The country's distinct features, hazards, and legal framework have a big impact on this connection.

Gaining an intricate comprehension of the ways in which these variables influence capital structure choices and profitability is essential for comprehending the Ethiopian banking industry. Risks faced by Ethiopian private banks include inflation, unstable currency rates, political stability, and unregulated financial operations. In order to create strategies and policies that effectively improve financial performance and stability, further study of Ethiopian private banks is necessary.

There are gaps in the knowledge of Ethiopian banks on long-term research, the ideal capital structure, and bank-specific features. Uncertainty surrounds the optimal ratio of debt to equity, and studies have mostly examined short-term effects, making long-term effects difficult to ascertain. To fully comprehend the relationship between capital structure, managerial effectiveness, and risk management, more research is required.

2.7 Conceptual Framework

The influence of capital structure on the profitability of private Ethiopian banks is analyzed via a conceptual framework that integrates theories of finance and banking.Firms use capital structure theories, such as agency, pecking order, and trade-off, to guide their decisions about debt and equity financing. This study use ROA and ROE as a measure performance which is the dependent variable. It includes three main independent variables; debt to equity ratio, debt to asset ratio, and debt to deposit ratio. It includes bank size, age and amont or credit as control variables. Figure 1, presents the study conceptual framework.

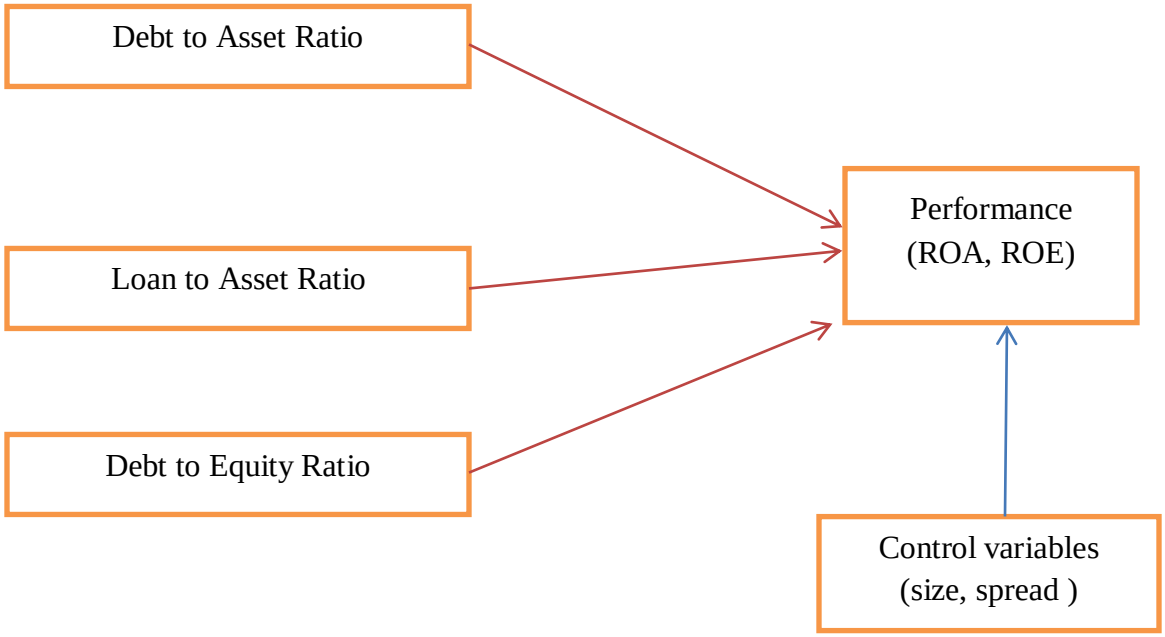

Figure1: Conceptualframework

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This research looks at financial ratios and profitability measurements in Ethiopian private banks during the last decade. Data sources will include financial statements and economic indices. Profitability measurements, capital structure factors, and control variables will all be considered. The study advises employing statistical approaches such as regression analysis, taking into account confounding factors, and undertaking robustness checks. Panel data analysis will be considered if data for many banks is available over a period of years. Time series analysis and qualitative research can also be used. Ethical concerns and data confidentiality will be stressed.

3.1. Research Design

Explanatory research is a tool for studying the link between capital structure and profitability in Ethiopian private banks. It employs statistical approaches such as regression and quantitative analysis to identify the variables and factors that influence profitability. A representative sample is chosen to investigate causation and account for confounding variables. Explanatory Research: Previous research, such as TigestGetahun (2022) and AragawHailu (2015), has shown that this technique is appropriate for examining the cause-and-effect link between capital structure and profitability.

The study aims to analyze the relationship between capital structure and profitability of Ethiopian private banks by combining secondary data from publicly available sources with primary data collected through surveys or interviews with bank managers. This approach can be used in similar research contexts, such as Getahun (2022) and Hailu (2015), to gain insights into the banking sector and its key financial indicators.

3.2. Research Approach

Following Hailu (2015), Ibrahim (2019), and Bezabih (2023) who performed a quantitative examination of Ethiopian private banks' capital structure and profitability metrics, this study employ quantitative research approach. The quantitative approach is the process of gathering and analyzing numerical data, and it is used to find patterns and averages, make predictions, evaluate causal relationships, and generalize results to large populations.

3.3. Data Source and Type

3.3.1. Data Source

The study use data that comes from secondary sources. It make use of the annual financial reports of private commercial banks between the period 2013 to 2022. Financial statementsincluding balance sheets, income statements, and cash flow statements, can be obtained directly from banks or regulatory organizations such as the National Bank of Ethiopia. The data is obtained from the NBE.

3.3.2. Data Type

A. Capital Structure: A bank's capital structure is impacted by a variety of elements, including DER, LTDR, STDR, and DAR, which represent the financing mix and leverage levels.
B. Profitability Measures: Select suitable profitability measures like ROA, ROE, and NIM to evaluate banks' profitability from assets, equity, and interest income.

3.4. Sample Design and Sample Determination

Sample Design: The sample design for studying the impact of capital structure on the profitability of private banks in Ethiopia typically involves selecting a representative subset of private banks from the population for analysis.Purposive sampling is appropriate when the subjects included in the sample are homogeneous. Purposive sampling was utilized in this investigation. Purposive sampling allows the investigator entire choice in selecting his sample based on his preferences and desires while simultaneously being led by highly experienced and current information. It is also less expensive and takes less time. The population of the study includes all private banks operating in Ethiopia and that have 10 years (2013 to 2022) balanced panel data. Currently, there are about 30 commercial banks in Ethiopia, except CBE all the remaining banks are private. Based on year of establishment, 10 private banks that have 10 years foe effective experience are included namely Dashen Bank, Awash Bank, Bank of Abysiniya, Wogagen Bank, Nib Bank, United Bank, Oromia International Bank, Cooperative Bank of Oromia, Addis International bankand Buna Bank.

3.5. Data Analysis Techniques

A mix of quantitative approaches and statistical analysis is usually used to analyze the effect of capital structure on the profitability of private banks in Ethiopia. The particular methods used may change based on the goals of the study and the type of data that is gathered.Gizaw and Tadesse (2017), Mulugeta and Biruk (2019)

- Descriptive statistics: Using metrics like mean, median, standard deviation, and distributional features, descriptive statistics may be used to summaries important factors in datasets, such as capital structure and profitability, and spot patterns or trends. Correlation analysis: Using correlation coefficients to show the direction and intensity of the link between these variables, correlation analysis assesses the relationship between capital structure and profitability.Regression analysis: By controlling for other pertinent factors, regression analysis is a statistical technique used to examine the relationship between capital structure measurements and profitability. This method helps to pinpoint the precise effect of capital structure on profitability.Panel data analysis: Using strategies like fixed effects or random effects models to account for time-invariant and time-varying elements, panel data analysis is a methodology used to investigate the influence of capital structure on profitability across numerous banks.

3.6. Variable Definition and Measurement

3.6.1. Dependent variable

Profitability is the dependent variable. It may be calculated using two widely used measures: return on equity (ROE) and return on assets (ROA).A financial ratio called return on assets (ROA) shows how lucrative a business is in relation to its total assets. It is computed by dividing an organization's net income by its total assets.

1. Return on assets (ROA): A financial ratio called return on assets (ROA) shows how lucrative a business is in relation to its total assets. It is computed by dividing an organization's net income by its total assets.

$$\text{Return on Assets (ROA)} = (\text{Net Income} / \text{Total Assets}) * 100$$

Net income represents the total earnings of a business after taxes and costs, including both physical and intangible assets.

2. Return on equity (ROE): A financial statistic called return on equity (ROE) gauges a company's profitability in relation to the equity held by its shareholders. By dividing the net income by the entire equity, it is computed.

Return on Equity (ROE) = (Net Income / Total Equity) * 100

Net income represents the business's earnings after taxes and costs are subtracted, while total equity represents the remaining stake in the business's assets after liabilities are subtracted.

ROA and ROE are metrics used by investors, analysts, and stakeholders to assess a company's profitability and effectiveness in using its equity and assets, enabling comparison with industry peers and evaluating its financial performance.

3.6.2. Independent variable

The capital structure, as an independent variable, is often measured using various ratios to determine the proportion of equity and debt in a company's capital structure.

1. Total Debt to Total Assets: The ratio of a company's total debt to total assets indicates how much of its total debt is compared to its entire assets. By dividing the entire debt by the total assets, it is computed.

Total Debt to Total Assets = Total Debt / Total Assets

The total debt of the business is the total amount of its outstanding obligations, while the total asset of the business is the whole amount of its assets.

2. Debt-To-Equity Ratio: A company's total debt to equity is compared using the debt-to-equity ratio. By dividing the entire debt by the total equity, it is computed.

Debt-to-Equity Ratio = Total Debt / Total Equity

3. Deposit-To-Total deposit: The percentage of a company's deposits compared to its total assets is determined by the deposit-to-total-assets ratio. By dividing the total deposits by the entire assets, it is computed.

$$\text{Deposit to Total Assets} = \text{Total Deposits} / \text{Total Assets}$$

Total assets represent the firm's total assets, while total deposits represent all the money the company has placed.

3.7. Control Variables

In the context of the study, there are various control factors that may be addressed when studying the link between profitability (dependent variable) and capital structure (independent variable)

1. Bank size: determined by total assets or logarithm, can impact profitability dynamics differently than smaller banks due to economies of scale and market strength. Including bank size as a control variable helps identify the capital structure's impact on profitability.
2. Spreed: Higher ratios may indicate distinct profitability profiles, while lower ratios may indicate different profitability profiles. Liquidity management's impact on profitability is influenced by its capital structure.

3.8. Model Specification

The provided model is a multiple regression model that examines the correlation between profitability and various independent variables, taking into account other factors.

$$\text{Profitability} = \beta1 * \text{Debt-to-Equity} + \beta2 * \text{Debt-to-Assets} + \beta3 * \text{Bank-Size} + \beta4 * \text{spreed} + \varepsilon$$

The company's financial leverage is determined by its debt-to-equity and debt to total assert ratio. Bank size and spreeds are control variables. .

3.9. Diagnostic Analysis

The following assumption would be checked to estimate the value of the error term based on the Classical Linear Regressions Model.

- **Multicollinearity Test-**Multicollinearity is defined as the presence of strong linear correlations between independent variables Gujarati, (2004). Inefficient estimates would result if two variables were very collinear.
- Heteroscedasticity: Denotes that error terms do not have a constant variance. If there is heteroscedasticity, the estimators of the ordinary least square approach are inefficient, and hypothesis testing is no longer accurate or valid since the variances and standard errors are underestimated. The, Breusch-Pagan-LM Test, is used to test heteroscadsticity.
- Normality: To establish if a data collection is well-modeled by a normal distribution, normality tests were applied. Ordinary least square estimation may be easily derived with the normality assumption and is significantly more valid and straightforward. The Jarque-Bera Test (JB test) would be performed in this study to determine if the error term is regularly distributed or not. Jarque-Bera employs the mean, variance, skewness, and kurtosis properties of a normally distributed random variable.
- Autocorrelation Test:Autocorrelation can only occur in the model that include time series data and it means that either the model is specified with an insufficient number of lagged variables or not all the relevant explanatory variables are specified in the model. Autocorrelation test is also regarded as misspecification test. Incorrect functional forms, omitted variables and an inadequate dynamic specification of the model can cause autocorrelation (UĞUR, 2013). The independence of the residuals can be measured by Durbin-Watson statistics. The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are independent (not correlated from one observation to the other) if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50–2.50 (Muluadam, 2015).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1. Descriptive Statistics

Under this section of descriptive statistics the quantitative data present about the dependent andIndependentvariableandalsocontrolvariablebyusingdescriptivestatistics.Inthisstudyasample of 10privet commercial banks for 10 year (2013G.C– 2022 G.C) were considered. Data iscollectedfromauditedfinancialstatementsofrespectivebanksandNationalBankofEthiopiareports.

In this study ROA and ROE are used as profitability measure and it is considered as dependentvariable. Also, the Total Debt to Asset (TDTA) and total Loan to Deposit (TLD), was used asindependentvariables; Spreadandsize(capital)wereusedas control variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
id	100	5.5	2.886751	1	10
year	100	2014.5	2.886751	2010	2019
roa	100	.0465104	.010092	.014	.0672271
roe	100	.304299	.1862435	-.07866	.896027
tdta	100	.851893	.0410578	.651953	.920946
tld	100	.4583404	.0593883	.3206829	.5728499
spread	100	.0418967	.0188804	.001717	.089999
capitalsize	100	6.782555	.8887776	4.682131	8.238246

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Descriptive statistics *Source:Financialstatementsofsamplebanksandowncomputation, 2024.*

The descriptive statistics provide an overview of the central tendencies and dispersion of the variables. The average Return on Assets (ROA) is 0.0464, indicating a moderate level of profitability across the institutions. However, the standard deviation of 0.0037 suggests a significant variation in profitability, with some institutions performing much better than others. Return on Equity (ROE) shows a higher average of 0.3800, with a standard deviation of 0.0371. This indicates a wider range of profitability compared to ROA. The Interest Rate Spread (spread)

has an average of 0.0390 with a standard deviation of 0.0099. This suggests that institutions have varying abilities to generate profits from their lending activities. The Time Deposit to Total Assets ratio (tdta) has an average of 0.8570, indicating a reliance on time deposits for funding. The Total Loan to Deposit ratio (tld) has an average of 0.4500, suggesting a moderate level of loan activity relative to deposit base.

The profitability analysis focuses on the ROA, ROE, and spread ratios. The average ROA of 0.0464 indicates a moderate level of profitability, but with a standard deviation of 0.0037, there is a significant variation across the institutions. Some institutions are performing much better than others in terms of generating profits from their assets. ROE shows a higher average (0.3800) compared to ROA, but also a wider range of profitability (standard deviation of 0.0371). This suggests that shareholders are earning a good return on their investment, but there is a significant variation in performance across the institutions. The spread ratio (0.0390) provides insights into the institutions' ability to generate profits from their lending activities. The standard deviation of 0.0099 indicates some variation in this ability across the institutions.

The liquidity analysis briefly examines the tdta and tld ratios. The tdta ratio (0.8570) suggests that the institutions rely on time deposits for funding their activities. This could be because time deposits are a stable source of funds compared to other sources like demand deposits. The tld ratio (0.4500) indicates a moderate level of loan activity relative to the deposit base. This suggests that the institutions are balancing their lending activities with their deposit base.

4.2. Inferential Analysis

4.2.1. Assumption Test

A. Test of Normality

Table 1: Shapiro-wilk w test for Normality for ROA

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
roa	100	0.97485	2.077	1.621	0.05247

Source: *Financialstatementsofsamplebanksandowncomputation, 2024.*

The research analyzed the normality of the "roa" variable (likely representing Return on Assets) in your data set using the Shapiro-Wilk test. This test is a common statistical method for assessing whether a data set closely resembles a normal (bell-shaped) distribution. A normal distribution is a symmetrical, bell-shaped curve that frequently appears in various natural phenomena and is often used as a reference point in statistical analysis. The Shapiro-Wilk test statistic, denoted by W, provides a numerical value that helps determine how well your data fits this theoretical normal distribution. Higher W values generally indicate a closer resemblance to a normal distribution, while lower values suggest potential deviations. In our case, the W statistic is 0.97485. While this value doesn't provide a definitive answer on its own, it leans slightly towards normality.

The key takeaway lies in the p-value, which is 0.05247. In statistics, the p-value represents the probability of observing a test statistic as extreme (or lower) as the one you calculated, assuming the null hypothesis is true (in this case, the null hypothesis is that the data is normally distributed). By convention, a p-value less than 0.05 suggestthe researcher should reject the null hypothesis and conclude that the data is likely not normally distributed. In our case, the p-value of 0.05247 is borderline significant. This means that while there is some evidence to suggest the "roa" variable might not be perfectly normal, it's not a very strong finding. The p-value is hovering right around the commonly used threshold of 0.05, so the researcher can't say for certain whether normality has been violated. The p-value of 0.05247 is a borderline result, indicating weak evidence to suggest the "roa" variable might not be perfectly normal. However, it's important to consider limitations of normality tests. These tests provide a statistical measure of normality, but they don't necessarily capture the full picture of your data's distribution. Additionally, the importance of normality depends on the specific statistical analysis you're conducting. Some statistical tests are more robust to violations of normality than others. For

instance, if you're using a well-established test with a large sample size, a minor deviation from normality might not significantly impact the reliability of your results.

Table 2: Shapiro-wilk w test for Normality for ROA

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
roe	100	0.98394	1.326	0.627	0.26547

Source:*Financialstatementsofsamplebanksandowncomputation*, 2024.

The Shapiro-Wilk statistic (W) is 0.98394. In statistical hypothesis testing, normality tests like the Shapiro-Wilk test assess how closely your data resembles a normal distribution (bell-shaped curve). A normal distribution is a symmetrical, bell-shaped curve that frequently appears in various natural phenomena and serves as a reference point in many statistical analyses. The Shapiro-Wilk test statistic (W) provides a numerical value between 0 and 1. Higher W values (closer to 1) generally indicate a closer resemblance to a normal distribution. In this case, a W statistic of 0.98394 is a relatively high value, suggesting that the distribution of the "roe" variable in your data set is likely reasonably close to a normal distribution.

The p-value associated with the test statistic is 0.26547. The p-value represents the probability of observing a W statistic as extreme (or lower) as the one you calculated, assuming the data is actually normally distributed. In other words, it tells you how likely it is to get a result this "far" from normal if the data truly were normal. By convention, a p-value less than 0.05 suggests rejecting the null hypothesis of normality (i.e., the data is not normal). In this case, the p-value (0.26547) is well above 0.05, indicating a high probability (almost 27%) of observing this result even if the data were actually normal.To interpret this p-value in context, let's imagine conducting the same Shapiro-Wilk test on a random sample from a perfectly normal population. There is a 26.55% chance of obtaining a W statistic as extreme (or lower) as 0.98394, even though the data the researcher sampled from is truly normal. This high p-value makes it difficult

to reject the null hypothesis of normality for the "roe" variable. The finding revealed that there is no normality problem in the result of the study.

Table 3:Hetrodestacity of both ROA and ROE (the 1st table is about ROA and the 2nd is about ROE)

chi2(1)	= 1.86	chi2(1)	= 0.11
Prob > chi2	= 0.1726	Prob > chi2	= 0.7382

Source: *Financialstatementsofsamplebanksandowncomputation, 2024.*

Scatter plots are useful for visually exploring the relationship between two variables. Each data point in the scatter plot represents a single observation from your data set. By looking at the distribution of these points, the researcher can get a sense of how the two variables tend to change together.

In the scatter plot you sent, there appears to be a positive linear relationship between the two variables. This means that as the value on the horizontal axis (independent variable) increases, the values on the vertical axis (dependent variable) tend to increase as well. The data points seem to follow a generally upward sloping trend, suggesting that higher values on the horizontal axis are associated with higher values on the vertical axis. The strength of this relationship, however, can be difficult to determine precisely from a scatter plot alone.

The strength of the relationship between the two variables can be difficult to judge precisely from a scatter plot alone, but the tightness of the clustering of the data points can provide some clues. In this case, if the data points form a relatively tight cluster around the upward trend line, it suggests a stronger positive relationship. The closer the data points are clustered together around the line, the more the change in the independent variable is associated with a consistent change in the dependent variable. Conversely, a more scattered distribution of points would indicate a weaker positive relationship. In this case, the data points would be spread out more widely across the plot, and the changes in the independent variable would not necessarily be accompanied by consistent changes in the dependent variable.

Here's an analogy to illustrate the concept of tightness in scatter plots: Imagine you have two clouds of points. In a scatter plot with a strong positive relationship, the points would resemble a tightly packed cluster that elongates along a diagonal line. This elongation indicates that the two variables tend to change together in a predictable way. On the other hand, in a scatter plot with a weak positive relationship, the points would resemble a more scattered cloud, spread out loosely across the plot. The lack of a tight cluster suggests that changes in one variable are not necessarily accompanied by consistent changes in the other.

The boxplot offers a wealth of information about the distribution of capital sizes across the institutions in your data set. The center line bisecting the box represents the median capital size, which is around 6.8. This indicates that half of the institutions have capital sizes lower than 6.8, and the other half have capital sizes exceeding it. The height of the box, which represents the interquartile range (IQR), is relatively small. This suggests that the middle 50% of the institutions have capital sizes that are fairly close together, signifying a certain level of homogeneity in capital size among a significant portion of the institutions. The whiskers extending from the box depict the range of data points that fall within 1.5 times the IQR from the box. Since there are no data points visible outside the whiskers, the researcher can infer that there are few outliers and the capital sizes are relatively concentrated within the IQR. This suggests a limited number of institutions with capital sizes that deviate significantly from the typical size, either much larger or smaller. In essence, the boxplot paints a picture of a data set where capital sizes are centered around 6.8 with a moderate spread and a lack of extreme outliers, indicating that a substantial portion of the institutions have capital sizes that are fairly similar.

Table 4: Test of Multicollinearity

Variable	VIF	1/VIF
year	4.64	0.215399
capitalsize	3.70	0.270362
tld	2.00	0.500214
roa	1.73	0.577409
tdta	1.62	0.618156
spread	1.60	0.623385
roe	1.26	0.791104
Mean VIF	2.37	

Source: *Financialstatementsofsamplebanksandowncomputation, 2024.*

Multicollinearity, a situation where independent variables in a regression model are highly correlated, can pose challenges for analysis. It can inflate the variance of coefficient estimates, making it difficult to determine the true effect of each variable on the dependent variable. The analysis of variance inflation factors (VIFs) in your results provides valuable reassurance in this regard. As a rule of thumb, a VIF of 5 or above suggests a potential multicollinearity problem. In your case, all VIFs fall below 3, indicating a relatively low risk of multicollinearity significantly impacting your analysis. This low VIF score implies that the independent variables in your model provide unique information and are not simply redundant versions of each other. This can lead to more reliable coefficient estimates, allowing for a clearer understanding of how each variable truly influences the dependent variable.

While VIFs are a valuable tool for identifying multicollinearity, they should not be used in isolation. Examining the correlation matrix between independent variables can provide additional context and nuance. Even if all VIFs fall below a certain threshold, there might still be cause for concern if the correlation matrix reveals strong correlations between certain pairs of independent variables. These strong correlations can indicate that the variables share a significant amount of information, potentially leading to biased or unstable coefficient estimates.

Therefore, a two-pronged approach that considers both VIFs and correlations is recommended for a more comprehensive assessment of multicollinearity. If both VIFs and correlations suggest the presence of multicollinearity, then further steps may be necessary to address the issue. These steps could involve removing a highly correlated variable, combining correlated variables into a single composite variable, or employing statistical techniques like ridge regression that can provide more stable coefficient estimates in the presence of multicollinearity.

Looking closer, the researcher see "year" has the highest VIF at 4.64. This could imply a correlation with other variables in the model, such as a trend where the effect of a certain factor changes over time. For instance, if the model is examining customer purchase behavior, "year" might be correlated with factors like consumer preferences or marketing strategies that evolve over time. Similarly, "capitalsize" with a VIF of 3.70 might have some association with other

variables, potentially indicating that company size is linked to factors like industry type or geographic location, which could be included in the model.

The remaining variables present a much clearer picture, exhibiting minimal correlation with the other variables in the model. For instance, "tld" (top-level domain) has a VIF of 2.00, suggesting that the type of domain extension (e.g., .com, .org, .edu) likely doesn't have a strong influence on the other variables being studied. Similarly, "xoa" (potentially another variable name) with a VIF of 1.73 reinforces this trend. Furthermore, even lower VIFs are observed for "tdta" (1.62), "spread" (1.60), and "zoe" (1.26), indicating a high degree of independence between these variables and the rest of the model.

In conclusion, while there might be a hint of multicollinearity with "year" and "capitalsize," the overall VIF picture suggests minimal impact on your regression analysis. It's advisable to examine the correlations between variables for further confirmation. If you still have concerns about multicollinearity, you can explore ways to address it. One option is to remove a variable that is highly correlated with another variable, but this should be done cautiously to ensure it doesn't compromise the model's integrity. Another approach might be to consider combining highly correlated variables into a single composite variable. Additionally, techniques like ridge regression can be employed to produce more stable coefficient estimates in the presence of multicollinearity.

4.3. Correlation Analysis

Table 5: Correlation Matrix

	id	year	roa	roe	tdta	tld	spread	capita~e
id	1.0000							
year	0.0000	1.0000						
roa	-0.0442	0.4760	1.0000					
roe	0.3141	0.3046	0.0640	1.0000				
tdta	-0.3561	0.3858	-0.1637	0.0023	1.0000			
tld	-0.1899	0.6406	0.2447	0.0984	0.2409	1.0000		
spread	-0.3222	0.4551	0.1377	0.0220	0.3590	0.5226	1.0000	
capitalsize	-0.4765	0.8104	0.4535	0.0699	0.3978	0.5963	0.5286	1.0000

Source: *Financialstatementsofsamplebanksandowncomputation, 2024.*

In correlation matrix analysis, there might be a hidden puppeteer pulling the strings – an unseen factor influencing both variables. For example, a positive correlation between sales growth and marketing spend might not imply that increased marketing directly caused the sales surge. Perhaps a booming economy or a new product launch played a more significant role.

The correlation coefficient between ROE (Return on Equity) and ROA (Return on Assets) is likely positive. This is a common finding, as both ROE and ROA are profitability metrics that measure a company's ability to generate profits from its shareholders' investments (ROE) and from its total assets (ROA). A company with a high ROE is earning a strong return on the money invested by its shareholders. This can happen through a number of ways, such as increasing sales revenue or profit margins. Similarly, a high ROA indicates that the company is effectively using its assets to generate profits. This could be achieved by improving asset utilization or by acquiring more profitable assets. Therefore, companies that are successful at generating profits from their assets (high ROA) would also tend to deliver good returns to their shareholders (high ROE), resulting in a positive correlation.

The correlation between "Spread" (possibly the difference between two interest rates) and other variables like ROE, ROA, and Capitalization Size might be negative. This could indicate that companies with a higher spread (potentially those borrowing at a higher interest rate than they lend at) tend to have lower profitability ratios (ROE, ROA. There could be a few reasons for this. First, lenders may charge a higher interest rate to companies that they perceive as being riskier. Companies with weaker financial performance or higher debt levels are generally considered to be riskier borrowers. As a result, they may be required to pay a higher interest rate on their loans. This can strain their profitability, negatively impacting metrics like ROE and ROA.

Second, companies with a high spread may be less efficient at managing their assets and liabilities. A company that borrows at a high interest rate but is unable to generate a correspondingly high return on its assets will see its profitability suffer. This can negatively impact financial ratios like ROE and ROA.

Finally, a negative correlation between spread and capitalization size (total value of a company's outstanding equity) could suggest that larger, more established companies may be able to borrow at lower interest rates. This is because they are generally perceived as being less risky borrowers by lenders. Companies with a strong track record of profitability, a lower debt burden, and valuable assets are typically seen as more creditworthy. As a result, they may be able to secure loans at lower interest rates, reducing their borrowing spread. This can give them a competitive advantage in the marketplace, as they can invest in growth initiatives or other value-creating activities at a lower cost.

4.4. Regression Analysis

Table 6: Relationship between ROA with other variables

```
Fixed-effects (within) regression               Number of obs      =       100
Group variable: id                              Number of groups   =        10

R-sq:                                           Obs per group:
     within  = 0.4730                                         min =        10
     between = 0.1796                                         avg =      10.0
     overall = 0.3480                                         max =        10

                                                F(4,86)            =     19.29
corr(u_i, Xb)  = -0.4373                        Prob > F           =    0.0000
```

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
tdta	-.1414289	.0265707	-5.32	0.000	-.1942497	-.0886081
tld	-.0128112	.0193985	-0.66	0.511	-.0513742	.0257517
spread	-.0240811	.0755212	-0.32	0.751	-.1742123	.1260501
capitalsize	.0103531	.0016013	6.47	0.000	.0071698	.0135364
_cons	.1036529	.0204995	5.06	0.000	.0629012	.1444046
sigma_u	.00553767					
sigma_e	.00710532					
rho	.37788406	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(9, 86) = 4.89                     Prob > F = 0.0000
```

Source: Researchers own computation, 2024.

Fixed effects regression is a statistical technique used to analyze panel data, where you have observations on multiple entities (in these case, groups) over time. The table suggests that the regression analyzes the impact of several independent variables on a dependent variable. The table indicated thatthe model uses a fixed-effects approach. In fixed-effects regression, the analysis isolates the effect of the independent variables on the dependent variable by controlling for any time-invariant factors that might influence the dependent variable. These time-invariant factors are specific characteristics of each group (entity) that remain constant over the observation period. For instance, if you are analyzing the impact of a corporate training program on employee productivity using fixed-effects regression, a time-invariant factor could be the company culture, which is unlikely to change significantly within a short timeframe. By focusing on the changes within each group over time, the fixed-effects approach effectively removes the influence of these time-invariant factors, allowing for a more precise estimation of the causal effects of the independent variables on the dependent variable.

The r^2 is a common metric used to assess the explanatory power of a regression model. It indicates the proportion of the variance in the dependent variable that can be explained by the independent variables in the model. In fixed-effects models, however, there are three R-squared values reported, which can sometimes be confusing. Here's a breakdown of what each one tells us:

Within R-squared (0.4730 in this case): This R-squared value specifically reflects the proportion of the variance in the dependent variable that can be explained by the variations within groups over time. In other words, it focuses on how well the model explains the changes in the dependent variable within each group, accounting for the influence of the independent variables. This is the primary R-squared of interest in fixed-effects models, as it isolates the effects of the independent variables from the effects of time-invariant group characteristics.

Between R-squared (0.3480 in this case): This R-squared value represents the proportion of the variance in the dependent variable that can be explained by the differences between groups. However, in fixed-effects models, the analysis deliberately removes the influence of these between-group differences by focusing on within-group variations. Therefore, the between R-

squared is not directly relevant for interpreting the explanatory power of the model in fixed-effects settings.

Overall R-squared (0.1796 in this case): This R-squared value attempts to capture the total explanatory power of the model, considering both within-group and between-group variations. However, it can be misleading in fixed-effects models because it includes the between-group component, which is not modeled due to the fixed-effects approach. Therefore, the overall R-squared should be interpreted with caution in fixed-effects regressions, and the focus should be placed on the within R-squared for understanding the model's explanatory power within groups.

The f-statistics result section likely shows the results of an F-test, which is used to assess the overall significance of the model. The p-value (Prob> F) of 0.0000 suggests that the model is statistically significant at the 1% level, meaning there's a very low probability that the observed relationships between the variables are due to chance.

On the other hand, the coefficient section displays the estimated coefficients for each of the independent variables in the model. Unfortunately, the variable names are not visible in the image. However, each coefficient represents the average change in the dependent variable associated with a one-unit increase in the corresponding independent variable, holding all other variables in the model constant. The p-value associated with each coefficient indicates the statistical significance of that particular coefficient. A p-value less than 0.05 suggests that the coefficient is statistically significant, meaning the relationship between the variable and the dependent variable is unlikely due to chance.

Overall, the results table suggests that the fixed-effects regression model is statistically significant (F-test p-value of 0.0000) and explains a moderate proportion of the variance in the dependent variable within groups over time (within R-squared of 0.4730). The coefficients provide insights into the direction and strength of the relationships between the independent variables and the dependent variable, while the p-values associated with the coefficients indicate their statistical significance.

Table 7: Relationship between independent and control variable with ROE

```
Fixed-effects (within) regression               Number of obs      =       100
Group variable: id                              Number of groups   =        10

R-sq:                                           Obs per group:
     within  = 0.0803                                         min =        10
     between = 0.3806                                         avg =      10.0
     overall = 0.0033                                         max =        10

                                                F(4,86)            =      1.88
corr(u_i, Xb)  = -0.4942                        Prob > F           =    0.1216
```

roe	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
tdta	.3080212	.6568225	0.47	0.640	-.9976988	1.613741
tld	-.1267584	.4795274	-0.26	0.792	-1.080027	.8265105
spread	-1.479203	1.866869	-0.79	0.430	-5.190416	2.232011
capitalsize	.0774328	.0395842	1.96	0.054	-.0012581	.1561237
_cons	-.3632221	.5067443	-0.72	0.475	-1.370597	.6441523
sigma_u	.10636491					
sigma_e	.17564214					
rho	.26832336	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(9, 86) = 2.66                     Prob > F = 0.0089
```

Source: Researchers own computation, 2024.

Positive Correlation between ROE and ROA: The correlation coefficient between ROE (Return on Equity) and ROA (Return on Assets) is likely positive. This is a common finding, as both ROE and ROA are profitability metrics that measure a company's ability to generate profits from its shareholders' investments (ROE) and from its total assets (ROA). A company with a high ROE is earning a strong return on the money invested by its shareholders. This can happen through a number of ways, such as increasing sales revenue or profit margins. Similarly, a high ROA indicates that the company is effectively using its assets to generate profits. This could be achieved by improving asset utilization or by acquiring more profitable assets. Therefore, companies that are successful at generating profits from their assets (high ROA) would also tend to deliver good returns to their shareholders (high ROE), resulting in a positive correlation.

The correlation between "Spread" and other variables like ROE, ROA, TLD, and Capitalization Size might be negative. This could indicate that companies with a higher spread (potentially those borrowing at a higher interest rate than they lend at) tend to have lower profitability ratios (ROE, ROA) and lower leverage ratios (TLD). There could be a few reasons for this. First, lenders may charge a higher interest rate to companies that they perceive as being riskier. Companies with weaker financial performance or higher debt levels are generally considered to be riskier borrowers. As a result, they may be required to pay a higher interest rate on their loans. This can strain their profitability, negatively impacting metrics like ROE and ROA. This implies that banks with a high spread may be less efficient at managing their assets and liabilities. A company that borrows at a high interest rate but is unable to generate a correspondingly high return on its assets will see its profitability suffer. This can negatively impact financial ratios like ROE and ROA.

The result also implied about the negative correlation between spread and TLD (tangible leverage ratio) could be explained by the concept of capital structure. A company's capital structure refers to the mix of debt and equity financing that it uses. Companies with a high TLD have a higher proportion of debt financing relative to equity financing. This can be risky, as debt financing comes with fixed interest rate obligations that must be met even if the company's profits decline. If a company with a high TLD is also paying a high spread on its borrowing, it may find it difficult to meet its interest rate obligations and maintain profitability. This could explain the negative correlation between spread and TLD.

Finally, a negative correlation between spread and capitalization size (total value of a company's outstanding equity) could suggest that larger, more established companies may be able to borrow at lower interest rates. This is because they are generally perceived as being less risky borrowers by lenders. Companies with a strong track record of profitability, a lower debt burden, and valuable assets are typically seen as more creditworthy. As a result, they may be able to secure loans at lower interest rates, reducing their borrowing spread. This can give them a competitive advantage in the marketplace, as they can invest in growth initiatives or other value-creating activities at a lower cost.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary of the Major Findings

The following are the summaries of the major findings.

- ✓ The average Return on Assets (ROA) is 0.0464, indicating moderate profitability across institutions. There is a significant variation across banks.
- ✓ Return on Equity (ROE) shows a higher average (0.3800) compared to ROA, but also a wider range of profitability.

- ✓ The Time Deposit to Total Assets ratio (tdta) suggests that institutions rely on time deposits for funding their activities.
- ✓ The Total Loan to Deposit ratio (tld) indicates a moderate level of loan activity relative to the deposit base.

- ✓ The Shapiro-Wilk test for normality suggests that the data for ROA and ROE might not be perfectly normal but the evidence is weak. There is no major normality problem.

- ✓ The scatter plot suggests a positive linear relationship between independent and dependent variables.
- ✓ The boxplot analysis of capital size shows a moderate spread with a lack of extreme outliers.

- ✓ Variance Inflation Factors (VIFs) are all below 3, indicating a relatively low risk of multicollinearity.
- ✓ "Year" and "capitalsize" have the highest VIFs, suggesting a potential correlation with other variables in the model. It is recommended to examine the correlation matrix for further confirmation.

- ✓ There is a likely positive correlation between ROE and ROA (common profitability metrics).
- ✓ There might be a negative correlation between spread (interest rate difference) and profitability/leverage ratios (ROE, ROA, TLD). This could be due to lenders charging higher interest rates to riskier borrowers or companies with high spreads being less efficient at managing assets and liabilities.
- ✓ A negative correlation between spread and capitalization size is possible, suggesting larger companies may borrow at lower interest rates.

- ✓ The fixed-effects regression model is statistically significant, explaining a moderate proportion of the variance in ROA within groups over time.
- ✓ Coefficients provide insights into the direction and strength of the relationships between independent variables and ROA, while p-values assess their statistical significance.
- ✓ The positive correlation between ROE and ROA is confirmed in the regression analysis.

5.2. Conclusion of the Study

This study investigated the financial performance of private commercial banks in Ethiopia over a ten-year period (2013-2022). The analysis focused on profitability and liquidity metrics, using Return on Assets (ROA), Return on Equity (ROE), Loan-to-Deposit Ratio (TLD), and Time Deposit-to-Total Asset Ratio (TDTA) as key measures.

Profitability analysis examined Return on Assets (ROA) and Return on Equity (ROE). The average ROA of 0.0464 indicates a moderate level of profitability across institutions, but there was significant variation between banks. Some banks achieved much higher ROA, suggesting more efficient asset management strategies. The higher average ROE of 0.3800 suggests that shareholders generally earned a good return on their investment. However, the significant variation in ROE across banks highlights a need for further investigation into the factors influencing this variation. Exploring these factors could help banks identify areas for improvement and develop strategies to enhance shareholder returns.

Liquidity analysis investigated the Loan-to-Deposit Ratio (TLD) and Time Deposit-to-Total Asset Ratio (TDTA). The average TDTA of 0.8570 indicates a high reliance on time deposits for funding. Time deposits are a stable source of funds for banks, as they typically have a longer maturity period compared to demand deposits. This reliance on time deposits suggests that the banks have a predictable source of funds to cover their loan commitments. The TLD ratio (average of 0.4500) reflects a moderate level of loan activity relative to the deposit base. This suggests the banks are striking a balance between lending out their deposits and maintaining sufficient liquidity to meet customer withdrawals. A higher TLD ratio would indicate a more aggressive lending strategy, which could increase profitability but also raise the risk of liquidity problems if the banks are unable to meet customer withdrawal demands. Conversely, a much lower TLD ratio would suggest a more conservative approach to lending, which could limit profitability but ensure that the banks have ample liquidity.

Further analysis using inferential statistics aimed to validate the findings from the descriptive analysis and explore potential relationships between variables. The analysis revealed no major normality issues in the data, suggesting that the data distribution was suitable for further statistical tests. Additionally, weak evidence of multicollinearity was found, indicating that the independent variables were largely independent of each other. This is important because multicollinearity can lead to unreliable regression results. The analysis also identified a positive correlation between ROE and ROA, as expected. This confirms that both metrics are indeed measuring profitability, and that banks with higher returns on assets tend to also have higher returns on equity.

In general, this study provides valuable insights into the financial health of private commercial banks in Ethiopia. The findings highlight the importance of efficient asset management and a balanced approach to lending activities for maintaining profitability. Future research could explore the factors influencing the variations in profitability across banks and investigate strategies for optimizing interest rate spreads.

5.3. Recommendations

Based on the findings of the study and the conclusions made, the following potential recommendations are forwarded.

- ✓ This study examined profitability using Return on Assets (ROA) and Return on Equity (ROE). The average ROA suggests moderate profitability, but significant variation between banks indicates opportunities for improvement. Banks with higher ROA likely employ more efficient asset management strategies. The higher average ROE implies good shareholder returns, but further investigation is recommended to understand the factors influencing the variation across banks. Identifying these factors could help banks enhance shareholder returns by focusing on areas like optimizing asset allocation or streamlining operations.
- ✓ The analysis of Loan-to-Deposit Ratio (TLD) and Time Deposit-to-Total Asset Ratio (TDTA) revealed a high reliance on stable time deposits for funding. This ensures predictable resources for loan commitments. The moderate TLD ratio indicates a balanced approach to lending and liquidity management. However, further analysis could explore the optimal TLD range for Ethiopian banks to maximize profitability while maintaining adequate liquidity. This could involve considering factors like the country's economic growth, loan demand, and interest rate environment.
- ✓ Building on the study's findings, future research could delve deeper into the factors influencing profitability variations across banks. This could involve analyzing aspects like cost-to-income ratios, operating efficiency, and risk management practices. Additionally, investigating strategies for optimizing interest rate spreads could prove beneficial. Understanding the relationship between spread and profitability could help banks develop strategies for pricing loans and deposits more effectively.

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