ADDIS ABABA UNIVERSITY FACULITY OF BUSINESS AND ECONOMICS

DETERMINANTS OF FINANCIAL STABILITY OF COMMERCIAL BANKS IN ETHIOPIA

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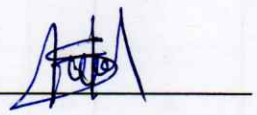
May, 2024

Addis Ababa, Ethiopia

DECLARATION

I hereby declare that this thesis entitled "Determinants of Financial Stability of Commercial Banks in Ethiopia" was composed by myself with the guidance of my advisor. The work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted, in whole or in part, for any other degree of professional qualification. All sources of material used for the thesis have been duly acknowledged.

Name: Horemela Messin Signature; 

CERTIFICATE

This is to certify that the thesis prepared by Hermella Mesfin entitled "Determinants of Financial Stability of Commercial Banks in Ethiopia" and submitted in fulfillment of the requirement for the degree on Masters of of Business Administration complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ACKNOWLEDGEMENT

Above all I am truly grateful to God for giving me the time and energy to sustain throughout my research project. After wards I would like to express my deepest gratitude to my thesis advisor for his guidance and support. His expertise, patience, constructive feedback has been very valuable for the completion of this thesis. Special thanks go to National Bank of Ethiopia for their assistance and resources that contributed to the successful completion of this project. Lastly, I extend my appreciation to my family, to all my friends and colleagues who provided encouragement, assistance, and moral support throughout this journey. This thesis would not have been possible without the collective support of these individuals, and for that, I am sincerely grateful.

ABSTRACT

This study examined the factors affecting commercial banks' financial stability in Ethiopia over a year (2015-2023). The study focuses on commercial banks in Ethiopia, established before the year 2015 including one state-owned bank and the remaining private banks. Purposive sampling was used to acquire data on nine commercial banks' audited financial accounts. Data were analyzed using balanced panel data and a quantitative research technique. Results are computed using fixed effect regression models. The study found a substantial positive correlation between bank capital adequacy ratio, asset quality, competition and financial stability. The study also found that bank financial stability was negatively correlated with earning capacity, however this association was not statistically significant. The management efficiency, and liquidity has a positive and statistically insignificant correlation with the financial stability of commercial banks in Ethiopia. This study suggests that banks, regulators, and policymakers prioritize capital adequacy ratio, asset quality, and competition to ensure financial stability of commercial banks in Ethiopia.

ACRONYMS AND ABBREVIATIONS

CAMELS: Capital, Asset, Management, Earning, Liquidity, Sensitivity to market

CAR: Capital Adequacy Ratio

CLRM: Classical Linear Regression Model

EBIT: Earnings before Interest and Tax

FD: Financial Distress

FE: Fixed Effect

NBE: National Bank of Ethiopia

NPL: Non-Performing Loans

OLS: Ordinary Least Square

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Due to the mismatch in the maturity structure of their assets and liabilities, depository institutions are by nature unstable. They use short-term deposits to fund long-term investments. This increases the danger of bank runs since banks will have to sell long-term investments at a loss if a large number of depositors demand their money quickly, which would ultimately force the banks to fail (Itay Goldstein, 2015).

Banks operate as mediators between savers and borrowers, facilitating the movement of cash and boosting economic growth. They provide a secure location for people and businesses to deposit their funds, which banks then use to make loans to others, promoting investment in a variety of industries such as real estate, manufacturing, and services. Banking sectors will undertake intermediation by gathering and mobilizing resources to help firms and development initiatives that are critical to economic growth (Khrawish, H.A. 2011).

Instability in the financial sector (insolvencies) can expand to macroeconomic weaknesses, resulting in a systemic crisis. As a result, the security and performance of commercial banks are critical to the financial system and economic progress of a country in general. To maintain stability in the banking institutions, it is crucial to recognize the factors that have an effect on behavior of banking activities and increase awareness of their potential effects, as commercial banks are exposed to many different types of factors that affect them.

Banks also provide payment and settlement systems that improve the efficiency of domestic and international transactions. Banks assist companies in expanding, innovating, and creating employment by managing risks and providing financing, stimulating consumer spending and total economic activity. Banks also help to maintain economic stability by enacting monetary policies, such as interest rates and reserve requirements, which central banks employ to regulate inflation

and stabilize the financial system. Overall, banks are critical to preserving economic stability, promoting growth, and ensuring the smooth operation of the financial system. Commercial banks must be financially sound in order to fulfil the aforementioned and other specified tasks on a continual basis (Alfi, A.F. 2014).

The following study focus on identifying the main bank specific determinants of financial stability of commercial banks. Commercial banks' stability depends on both internal and external variables. Internal variables refer to bank-specific characteristics, whereas external factors include macroeconomic, socio-cultural, and political elements outside commercial bank management's control (Almazari, A. A 2014).

Commercial bank's primary duty is to borrow money and lend it at a higher interest rate. Banks provide a wide range of services to its clients, charging commissions and other fees. A bank collects checks, rentals, dividends, etc., accepts bills of exchange, offers drafts and letters of credit, and collects pensions and wages for its customers. Banks also allocate a significant percentage of their resources to government and other first-class industrial securities. The interest and dividends paid on these assets provide income to the banks. The bank also gains money when the market values of these assets rise. Previous research has indicated that loan growth affects bank stability and worsens the financial crisis (Demirgüç-Kunt & Detragiache, 2002).

Financial globalization is a contributing factor to the crisis, causing financial instability and increasing the risk of a global recession due to increased interdependence (Dilip, 2003, p.12). Depository institutions are exposed to two primary sources of financial risks, namely credit risk and market risk (A & N, 2015) Banks serve as backbone to the financial sector, which facilitate the proper utilization of financial resources of a country (Dang, 2011).

Ethiopia's growth rate has been moderate in comparison to other industrialized countries due to the early formation of banks. Even if the capital basis for the banking sector has increased at this time, the Ethiopian banking industry remains relatively small by African standards, indicating the need for more steps to improve financial intermediation in the nation (NBE report, 2009/2010).

1.2 Problem statement

The financial stability of commercial banks is a critical aspect of the broader economic stability of any country. The stability of commercial banks in Ethiopia is faced by major challenges due to droughts, wars in the country, the war in Ukraine, and a worldwide commodity price shock. According to the National bank report the banking industry's profitability has declined with the figures being marginally lower than those of the previous year (*FSR - National Bank of Ethiopia*, 2024).

In June 2023, National Bank of Ethiopia conducted a credit risk stress test on the banking sector for the next 12 months by considering baseline, moderate, and severe scenarios. The findings show that twelve banks would fail the stress test under the severe scenario due to an increase in NPLs, and it showed that these banks required extra capital equal to 1.5 percent of their risk-weighted assets (*FSR - National Bank of Ethiopia*, 2024).

Most researches done on financial stability focus on developed nations. Ethiopia going through a reform program where on August 4, 2022 the Council of Ministers agreed to open the banking industry to foreign investment (Getachew, 2023), identifying the determinants of financial stability is of great importance for domestic commercial banks in order to withstand the competition with foreign banks. Boyd et al. (2006) and De Nicolo and Loukoianova (2006) both find that the risk of bank failure rises in more concentrated markets.

Karminsky and Kostrov (2014) compared the factors of financial stability of banks across several banking systems in Common wealth of Independent States (**CIS**) countries and found a significant difference between financial stability indicators across countries. This implies why it is important to focus on determinants of financial stability for the specific country. As a result, the main objective of this study is to fill the gap by investigating major determinants of financial stability on commercial banks in Ethiopia.

Previous studies by Yitayew et al.'s (2022); Yirgu, T. (2017); Simegnew, L. (2022) on the stability of commercial banks focused on both bank specific and macro prudential factors affecting bank stability and found that capital adequacy ratio, liquidity, operating cost, earning ability, GDP and interest rate are significant determinants of financial stability of commercial banks in Ethiopia. This study is different from previous studies in that it focuses on the bank specific factors and includes competition in the model which is not considered in previous studies. Therefore, this research can fill the gap by identifying the determinants of financial stability of commercial banks including the effect of competition on the stability of the banking industry in Ethiopia.

The findings of this research will not only contribute to the existing body of knowledge on financial stability but also offer practical implications for policymakers and banking institutions in enhancing risk management practices, regulatory policies, and resilience-building measures. Ultimately, the goal is to promote a safer and more stable banking system that can better withstand economic shocks and contribute to sustainable economic growth. Many factors help initiate financial instability of Banks. Some of them include increases in interest rates, inflations, deterioration in bank balance sheets, negative shocks to nonbank balance sheets such as a stock market decline, competition in the banking market, Political instability, the COVID-19 pandemic.

Although the stability of Commercial banks' is an important component of a country's overall economic stability, there remains a gap in understanding the determinants that significantly influence the financial stability of commercial banks in Ethiopia. A number of factors can affect their stability, this study tries to focus on identifying the main banks specific of commercial banks.

1.3 Research question

- What is the effect of capital adequacy on financial stability of commercial banks in Ethiopia?
- What is the effect of asset quality on financial stability of commercial banks in Ethiopia?
- What is the effect of management efficiency on financial stability of commercial banks in Ethiopia?
- What is the effect of earning capacity on financial stability of commercial banks in Ethiopia?
- What is the effect of liquidity on financial stability of commercial banks in Ethiopia?
- What is the effect of competition on financial stability of commercial banks in Ethiopia?

1.4 Objective of the study

1.4.1 General objective

- Identifying the determinants of financial stability of commercial banks in Ethiopia

1.4.2 Specific Objective

- Assess the effect of capital adequacy on financial stability of commercial banks in Ethiopia.
- Assess the effect of asset quality on financial stability of commercial banks in Ethiopia.
- Assess the effect of management efficiency on financial stability of commercial banks in Ethiopia.
- Assess the effect of earning capacity on financial stability of commercial banks in Ethiopia.
- Assess the effect of liquidity on financial stability of commercial banks in Ethiopia.
- Assess the effect of competition on financial stability of commercial banks in Ethiopia.

1.5 Scope of the study

The Scope of the study is limited to only the bank specific factors affecting the stability of commercial banks in Ethiopia. And the data for this investigation was collected from the year 2015 to 2023, so the researcher used banks established before the year 2015 to 2023 to get full data on the annual report of the banks.

1.6 Significance of the study

The study has several benefits for different stakeholders. The study's findings can assist policymakers make better decisions by addressing operational and planning challenges in the banking industry. This research can help bank managers to withstand severe cases by understanding the main determinants of financial stability of banks in Ethiopia. Besides the article, can assist bank managers in their decision-making.

Addressing this gap is crucial for policymakers, regulators, and stakeholders in the banking sector to devise effective strategies and policies aimed at safeguarding financial stability and mitigating systemic risks. To stand competition banks should be more financially stable. Banks play a significant role in boosting a country's economy by lending to investors and companies. Lending contributes significantly to the bank's asset and revenue portfolio. Understanding the factors influencing financial stability can help managers improve bank performance. Finally, the study's findings can inform future research and contribute to the body of knowledge.

1.7 Limitation of the study

The research focused on the bank specific determinants of banks stability but the stability of the banking industry can be affected by both bank specific and macro-economic factors. Furthermore, because the study focused on commercial banks, the findings may not be applicable to other financial institutions. However, this provides an opportunity for further studies on factors that can affect the stability of other financial institutions.

The investigation encountered several challenges. The strict confidentiality requirement for most banks resulted to in challenges to provide some information. However, this problem was mitigated by assuring the bank managers that the research was meant for scholarly work.

1.8 Organization of the study

The study is divided into five chapters, the first of which contains the study's background, statement of the problem, research question, and objective, as well as the study's importance and scope. Chapter two covers, a review of related literatures while chapter three covers methodology and the chapter four covers data analysis and chapter five covers the conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature Review

This chapter provides a comprehensive review of financial stability factors and their influence on the stability of banks. This chapter discusses the effect of capital adequacy ratio, asset quality, earning capacity, management efficiency and competition. It also covers the theories of financial stability, some recent financial crises and how to achieve financial stability in the banking sector. In light of this, a theoretical framework illustrating the link between the dependent and independent variables.

2.1.1 Stability of the Financial System

Financial stability is more than just the absence of crises. A stable financial system is one that efficiently allocates economic resources, manages financial risks, and maintains its ability to function efficiently, this includes saving, lending, borrowing, liquidity creation, asset pricing, and wealth accumulation, over time (Schinasi, 2004).

Andrew Crockett (Bank for International Settlements and Financial Stability Forum) "define financial stability as an absence of instability, a situation in which economic performance is potentially impaired by fluctuations in the price of financial assets or by an inability of financial institutions to meet their contractual obligations."

The financial system entails a number of distinct but related components including infrastructures, institutions and markets (stock, bond, money, and derivatives), a disruption in one of the components could undermine the stability of the entire system. Financial market stability requires both the stability of key financial institutions and the markets itself. Financial institutions are sound if they have enough capital to absorb all kinds of losses, as well as enough liquidity to manage operations and fluctuations (Schinasi, 2004).

The financial system is stable if it facilitates the efficiency of economic resources along with other financial operations such as savings, investment, lending, borrowing, liquidity creation, distribution, financial risk assessment, pricing, identification and management, and the ability to perform these basic functions even with external shocks or accumulated imbalances.

2.1.2 Financial Stability and Monetary Stability

Monetary stability is characterized as price stability in general, or, more specifically, the absence of inflation or deflation. Financial stability refers to how well the financial system's institutions and markets work. Obviously, the two are related. Stability in one domain aids in the achievement of stability in another. The forces generating pricing instability and financial system fragility may share significant similarities. Nevertheless, the two events are not identical. The primary focus of this essay will be financial stability, that is, the stable operation of the intermediaries, specifically banks that comprise the financial system (Schinasi, 2004).

2.1.3 Financial Institutions

Banks are the most traditional and well-known type of financial institution. They accept deposits from customers and make loans to borrowers. Banks also offer a wide range of financial services such as checking accounts, savings accounts, and credit cards. Non-Bank Financial Institutions are institutions that operate outside the traditional banking sector and include entities such as insurance companies, mutual funds, pension funds, and hedge funds. They provide financial services similar to banks but are subject to different regulations.

Central banks are responsible for regulating the money supply and interest rates in an economy. They also serve as lenders of last resort to commercial banks and play a crucial role in maintaining financial stability. Investment banks help companies raise capital by underwriting securities offerings and providing advisory services for mergers and acquisitions. They also engage in trading activities in financial markets. Finally there are credit unions, which are member-owned

financial cooperatives that provide banking services to their members, often with a focus on specific communities or groups.

2.1.4 Stability in Banks

Stability in banks refers to the ability to withstand shocks and maintain their core functions of providing financing to households and businesses, even during times of stress (Financial Stability, 2017) A stable banking system is characterized by Solvent financial institutions that can fulfill their roles efficiently, Resilience to adverse events, with the ability to absorb shocks primarily through self-corrective mechanisms, Adequate capital buffers and profitability to absorb losses, effective risk management practices at individual banks, Robust financial infrastructure and market liquidity, Appropriate regulation and supervision to mitigate systemic risks (What Is Financial Stability, n.d.).

The banking sector will play the function of financial intermediary by gathering and deploying funds to assist businesses and development initiatives that are vital to the growth of the economy. Financial stability of financial institutions on an individual level is reflected in the ability to expedite the economic processes, control risks, and absorb shocks (Schinasi, 2004).

Financial instability is categorized by the unwillingness of the financial institutions to channel funds to profitable investment opportunities, non-arrival of payments on time, and deviation of asset prices from their fair value (World Bank, 2016).

2.1.5 Some Recent Financial Crises

If a bank can't meet its financial obligations, it could risk bankruptcy and as most banks are interconnected with other banks - cause a potential financial crisis.

As in the case of the financial crisis of 2008, when U.S. banks did not maintain sufficient liquid assets to meet financial obligations. When many banks experienced unexpected mass withdrawals of depositor funds, and were left holding billions in unpaid loans by borrowers during a massive

downturn in the housing market, they faced a liquidity crisis, and became insolvent. To prevent a total economic collapse, the U.S. government had to intervene.

The 2008 financial crisis was the massive financial crisis in the world. The foundation of this global financial crisis was built on the back of the housing market bubble that began to form in 2007. Banks and lending institutions offered low interest rates on mortgages and encouraged many homeowners to take out loans that they couldn't afford. Many who took out subprime mortgages eventually defaulted. When they could not pay, financial institutions took major hits.

In response, the stock market began to plummet and major businesses began to fail, losing millions. This, of course, resulted in widespread layoffs and extended periods of unemployment worldwide. Declining credit availability and failing confidence in financial stability led to fewer and more cautious investments, and international trade slowed to a crawl.

The Russia-Ukraine War, which began in February 2022, has resulted in a succession of worldwide financial crises, mostly due to interruptions in energy supply and commodities markets. As major suppliers of oil, natural gas, wheat, and other important resources, Russia and Ukraine's conflict has resulted in substantial shortages and price increases. Europe, which relied significantly on Russian energy, suffered rising expenses, resulting in inflation and economic slowdowns. This jump in prices, notably for food and energy, spurred worldwide inflation, putting a pressure on household budgets and driving central banks to hike interest rates, which increased borrowing costs and slowed economic development. Financial market volatility compounded the situation, with stock markets seeing strong oscillations as a result of the war's uncertainties and risks.

Western sanctions on Russia have exacerbated the financial crisis by interrupting global trade flows and fostering economic instability within the country. These sanctions, which target banks, enterprises, and individuals, have weakened the Russian economy and curtailed its involvement in global trade. The sanctions, combined with the crisis itself, have caused enterprises to restructure their supply networks, resulting in higher prices and logistical issues. Furthermore, major economic and humanitarian help has been provided towards Ukraine to maintain its economy in

the face of disaster, illustrating the war's far-reaching economic consequences beyond the specific regions involved.

The COVID-19 epidemic, which lasted from 2020 to 2022, caused one of the most devastating worldwide economic crises since the Great Depression. To slow the spread of the virus, governments throughout the world-imposed lockdowns and restrictions, resulting in an abrupt halt in economic activity. This resulted in substantial stock market volatility, with key indexes such as the S&P 500 and Dow Jones Industrial Average seeing record declines in March 2020. The crisis also produced an increase in unemployment, as many firms, particularly in the travel, hotel, and retail sectors, experienced temporary or permanent closures, resulting in mass layoffs.

Furthermore, the epidemic badly affected global supply chains owing to lockdowns and restrictions, resulting in shortages and soaring costs. In reaction, governments expanded spending to help individuals and companies, resulting in huge rises in national debt. These economic measures, while required to offset the immediate damage, have long-term repercussions for fiscal stability and economic recovery, highlighting the pandemic's extensive and profound effects on the global economy.

Financial stability has become a major issue after this crisis, all countries tried to develop a new system capable of reforming the problems left by the crisis. Studies conducted by central banks around the world defined a new variable called “Financial stability (Shaker Al-Kharouf, 2021)

2.1.6 Importance of Financial Stability of Banks

Financial stability is important as it enable financial service providers (institutions) to provide service continuously and smoothly. Its absence produces negative uncertainty, which can result in the misallocation of resources and reluctance to engage in inter-temporal contracts. Extreme financial sector disruptions can have a serious negative impact on political structures as well as economic activities. Countries with better-developed financial systems tend to grow faster over long periods of time, Levine, R. (1997) and Rajan and Zingales (1998). One of the key components

that stimulates financial development and, in turn, the expansion of the economy is the creation of banking and insurance organizations (Levine and Zervos, 1998; Adams et al., 2009).

Banking system crises and the negative feedback loops they cause on the actual economy are avoided by a stable and secure banking system Puah, Ali, and Muhammad CH (2019). The stability of banks plays a crucial role in the economy by intermediating funds between depositors and borrowers mainly through their role in allocating resources to their maximum productive uses. The 2008 financial crisis had a major hit in financial institutions which resulted in global economy crises due to fewer investments and crawling of the international trade.

The role of bank is carried out when they effectively maintain its ability to perform these key functions even when faced with external shocks or a build-up of imbalances. This includes saving, lending, borrowing, liquidity creation, asset pricing, and wealth accumulation. Instability in the banking system can arise from factors like poor banking practices, or systematic components such as aggregate economic shocks. Monitoring indicators like banks' probability of default, stock prices, and credit spreads can provide early warning signals of emerging vulnerabilities (Financial Stability Review, 2024)

Maintaining a stable banking system is crucial for economic growth, as disruptions in credit provision can severely impact real economic activity. Financial authorities employ a range of tools, from stress testing to macroprudential policies, to promote the resilience of the banking system and the broader financial system. (What Is Financial Stability, n.d.)

The Distance-to-Default (DD) and Z-Score are regularly used indicators to measure financial strain due to default or bankruptcy risk. The DD is a market-based measure that assesses a firm's risk of default, based on models by Black and Scholes (1973) and Merton (1974). It uses a firm's equity and estimates the likelihood that the firm's asset value will drop below its debt obligations, signaling default. The model involves key components such as the firm's asset value, which is estimated using market equity and volatility, the volatility of the firm's assets, indicating risk levels, and the firm's total debt obligations. The DD can be calculated by the difference between

the expected asset value and the debt level, normalized by asset volatility. A higher DD indicates a lower risk of default, showing that the firm's asset value is safely above its debt even considering volatility, while a lower DD suggests a higher risk of default.

Recent reviews by Sundaresan, (2000); Jarrow (2009); Sundaresan (2013) have expanded on these basic models to address numerous bankruptcy-related issues. The Z-Score is an alternative statistic that assesses a bank's bankruptcy risk by comparing buffers (capitalization) and returns (volatility). A higher Z-Score indicates a more stable bank. Boyd and Runkle (1993), and others have studied bank stability using the Z-Score measure.

A higher Z-score suggests more stability and a reduced chance of insolvency, owing to excellent profitability, appropriate capital buffers, and minimal earnings volatility. A lower Z-score, on the other hand, indicates more risk, implying that the institution is on the verge of collapse owing to poorer profitability, higher leverage, or greater earnings volatility. The Z-score helps regulators, investors, and financial analysts evaluate banks' financial health and resilience, allowing them to detect possible risks and take stability-enhancing actions. The Z-score contributes to financial system trust by giving a quantitative indicator of financial stability.

2.1.7 Achieving Financial Stability in banks

A stable banking system refers to a banking sector that operates under prudent management practices, effective regulation, and has a robust financial health. Such a system ensures that banks are stable, solvent, and capable of withstanding economic shocks. A stable banking system eliminates panic-driven bank runs and lowers the possibility of widespread loan defaults. In contrast, an unstable banking system can cause a credit crunch, in which banks significantly reduce lending due to increasing risk aversion, restricting company investment and consumer spending. (Ali & Puah, 2019)

Detecting vulnerabilities early allows regulators to implement corrective actions, such as strengthening capital reserves, regulating lending procedures, or upgrading risk management

protocols, at a lower cost than interventions necessary during a full-fledged crisis. This approach reduces the impact of adverse shocks, making banks better prepared to endure economic downturns or financial stress. Furthermore, early action can avert the contagion effect, in which the failure of one bank causes a loss of confidence and consequent instability in the whole financial system. Early identification of riskier banks is critical since it allows for lower-cost problem solutions and the development of a stronger ability to resist negative shocks. (Baselga-Pascual et al., 2015).

2.1.8 History of Banks in Ethiopia and their Stability

According to NBE report on June 2023, the banking industry remains the dominant force in Ethiopia's financial sector, it accounts for 96.3 percent of total assets of the whole industry. This means that the health and stability of Ethiopia's banking industry have a significant impact on the country's financial system/sector.

The banking sector is extremely important to the Ethiopian economy. The NBE categorizes commercial banks into three classes based on asset size: large, medium, and small. CBE was categorized as Ethiopia's largest bank at the end of June 2023, with total assets and deposits accounting for nearly half (49.5 percent and 48.7 percent, respectively) of the country's banking system. At the end of June 2023, the combined assets of the five medium-sized banks made up 28.0% of the sector's total assets. Their total deposits amounted for 29.4% of the sector's total, somewhat lower than at the end of June 2022. Small banks' combined assets and deposits represented for 22.5% and 21.9%, respectively, of the total banking sector. Similarly, their combined total capital share rose from 40.2 percent of the sector's total capital in 2022 to 41.6 percent by the end of June 2023.

In June 2023, NBE conducted a credit risk stress test on the banking sector for the next 12 months, considering baseline, moderate, and severe scenarios. The findings show that twelve banks would fail the stress test due to an increase in NPLs under the severe scenario, necessitating extra capital equal to 1.5 percent of risk-weighted assets. The systemic bank and the vast majority of MFIs that

converted to banks (in the small bank category) have more capital and do not require capital injections. (*FSR - National Bank of Ethiopia*, 2024)

Ethiopian is going through a reform program where on August 4, 2022 the Council of Ministers agreed to open the banking industry to foreign investment, by supporting a policy paper. The policy document provides four types of foreign bank entry into Ethiopia: acquisition of holdings in existing banks, subsidiary formation, branch opening, and representative office establishment. This reform allows foreign banks compete with domestic banks in the same market segments. To stand competition banks should be more financially stable. Boyd et al. (2006) and De Nicolo and Loukoianova (2006) both find that the risk of bank failure rises in more concentrated markets.

Political instability is another issue that can lead to financial distress. Compaoré et al., (2021) provides strong evidence that there is high probability of systematic banking crises associated with conflicts and political instability. When a nation is in a conflict, the likelihood of a banking crisis increases by 2.5 times. Conflict and political unrest in nearby nations raise the risk of banking crises in a particular nation (Mlachila et al., 2020). The absence of political instability can be a cause of bank failure. Instability in Ethiopia will remain high in 2023 as a result of significant insecurity in the nation (Solutions, n.d.)**.**

During the COVID-19 pandemic the financial system faced the combined task of maintaining the flow of funding to the actual economy while also maintaining financial resiliency. The COVID-19 pandemic had a negative and considerable impact on Ethiopia's banking portfolio's core principles. The pandemic's negative impact was significant on bank performance in smaller, undercapitalized, and less diverse institutions. Ethiopian banks need to be financially stable to absorb shocks like the corona virus.

The first commercial bank of Ethiopia, Bank of Abyssinia, was established on February 16, 1906, under a 50-year franchise agreement between Emperor Menelik II and Mr. Ma Gillivary. It was managed by the British-owned National Bank of Egypt, and it had an initial capital of Pound Sterling 500,000. The bank was granted the right to issue banknotes and mint coins, which were

legal tender backed by gold and silver. It operated until it was replaced by the Bank of Ethiopia, which took over its commercial activities and continued successfully until the Italian invasion in 1935.

During the Italian occupation, Italian banks such as Banco di Roma and Banco di Napoli operated in Ethiopia's major cities but stopped operations following independence, with the exception of branches in Asmara. Barclays Bank operated banking services in Addis Abeba from 1941 to 1943. In April 1943, the State Bank of Ethiopia commenced operations as the country's central bank and currency issuer. By 1963, the Ethiopian Monetary and Banking Law had split commercial and central banking activities, establishing the National Bank of Ethiopia and the Commercial Bank of Ethiopia, which began operations in January 1964 with a capital of Birr 20 million.

The first privately owned bank, Addis Ababa Bank, was established in 1964 with a capital of Birr 2 million, in association with National and Grindlay Bank, London. In 1974, the socialist government nationalized large corporations, merging Addis Ababa Bank, Banco di Roma, and Banco di Napoli to form Addis Bank in 1976. By 1980, Addis Bank and the Commercial Bank of Ethiopia S.C merged to form the sole commercial bank in the country, which operated until private banks were established in 1994. The commercial bank started with a capital of Birr 65 million, 128 branches, and 3,633 employees.

Financial sector reforms in 1994 re-established the National Bank of Ethiopia as a judicial entity separate from the government, setting the legal foundation for private investment in the banking sector. The reforms aimed to modernize the financial system and encourage private sector participation, leading to a diversified banking environment. Key institutions included the National Bank of Ethiopia (NBE) for central banking functions, the Commercial Bank of Ethiopia (CBE) as the primary commercial bank, and the Agricultural and Industrial Development Bank (AIDB) specializing in development financing. This structured Ethiopia's banking sector, which has undergone significant changes to enhance financial stability and economic growth., which underwent considerable reforms to improve financial stability and economic growth.

Table 1: List of commercial banks

S. No.	Bank Name	Year Established
1	National Bank of Ethiopia	1931
2	Commercial Bank of Ethiopia	1963
3	Development Bank of Ethiopia	1970
4	Awash International Bank	1994
6	Bank of Abyssinia	1996
7	Wegagen Bank	1997
8	United Bank	1998
9	Nib International Bank	1999
10	Dashen Bank	2003
11	Cooperative Bank of Oromia (S.C)	2005
12	Lion International bank	2006
13	Oromia International Bank	2008
14	Zemen Bank	2009
15	Bunna International Bank	2009
16	Berhan International Bank	2010
17	Abay Bank S.C	2010
18	Addis International bank	2011
19	Debub Global bank	2012

Source: **NBE**

Banking crisis is a financial crisis marked by bank failures, sharp decrease in credit and trade and/ or collapse of an exchange rate regime disrupts normal financial and monetary processes, negatively impacting economic efficiency (Goldstein, 2015). Various theories have been proposed to explain financial crises and help policymakers in preventing and addressing those including banking crises and panics, credit frictions and market freezes, and currency crises.

2.1.9 Theories on Stability of Financial Institutions

2.1.9.1 The Bank Run Theory

Douglas W. Diamond and Philip H. Dybvig formalized the hypothesis in their 1983 paper, Bank Runs, Deposit Insurance, and Liquidity. This concept explains that banks are vulnerable to runs because they practice maturity transformation, which involves borrowing short-term (accepting deposits) and lending long-term (issuing loans). The model demonstrates that even fundamentally solvent banks can fail if a large number of depositors panic and withdraw their funds at the same time. This can deplete the reserves of the bank quickly, leaving it unable to fulfil all withdrawal requests. Contagion Effect is another cause for banks runs. This is when bank runs spread to other banks as fear and panic increase, leading to a wider financial crisis. This can happen even if other banks are fundamentally sound.

To prevent bank runs, regulatory measures such as deposit insurance and central bank support are important. The theory highly emphasizes the importance of maintaining public confidence in the banking system and the need for robust regulatory frameworks to safeguard financial stability.

2.1.9.2 Buffer Capital Theory

This hypothesis stated that banks are most satisfied with growing their capital ratio after attaining the minimum level stipulated by regulatory authorities, which acts as a risk reduction strategy (Kohler, 2015).

The buffer theory of capital adequacy holds that banks should keep capital reserves above the statutory minimum in order to absorb potential losses during economic downturns. This additional buffer helps to ensure that banks stay solvent and can continue lending even in poor conditions, so promoting financial stability. The theory emphasizes the significance of maintaining a safety margin above and beyond the baseline capital adequacy ratios imposed by regulatory agencies in order to manage risks and defend against unforeseen financial stress. By keeping larger capital levels, banks can absorb unexpected losses from loan defaults, market downturns, or other financial disruptions, lowering the risk of insolvency.

Adequate capital buffers allow banks to lend even during economic downturns. This sustained lending boosts economic activity and helps to avoid a credit crunch, in which a sudden fall in loan availability exacerbates economic distress. Regulatory Compliance and Confidence establish minimum capital requirements to ensure a certain level of financial stability, the buffer theory says that exceeding these criteria strengthens a bank's resilience. This method has the potential to increase investor, customer.

The hypothesis is consistent with the concept of a countercyclical capital buffer, which requires banks to accumulate more capital during periods of economic expansion. This cash can then be tapped down during downturns to absorb losses and keep lending going. Having greater capital promotes stronger risk management procedures within banks. It signals responsible financial management and can boost a bank's credit rating, thus cutting borrowing costs.

2.1.9.3 Credit risk theory

The theory of Credit risk theory was first introduced by Robert Merton and presents the foundation for efforts to measure and manage credit risk exposure. In 1974, Robert Merton introduced his theory, which uses option pricing models to quantify a firm's credit risk. According to Merton's model, the value of a firm's equity can be compared to a call option on its assets, whilst the firm's debt is equivalent to a risk-free bond minus a put option on its assets. The probability of default is

calculated by comparing the firm's asset worth to its debt commitments at maturity. Default occurs when the asset's value falls below the debt level. Merton's methodology offers a methodical approach to quantifying credit risk, taking into account the firm's capital structure and market conditions.

The chance of default is computed by comparing the value of the firm's assets to its debt obligations at the maturity date. If the asset value is lower than the debt, the company defaults. This chance is determined by the firm's asset value volatility as well as the time horizon before debt maturity. A firm's equity is equivalent to a call option on its assets. Shareholders have the ability to "buy" the firm's assets by repaying its debt. If the firm's assets exceed its debt at maturity, shareholders may exercise this option by keeping the residual value after debt payments. The firm's debt can be thought of as a risk-free bond minus a put option on the firm's assets. If the asset value falls below the debt level, creditors effectively "own" the firm, as they receive the firm's assets through the default process.

Determinants of Credit Risk include the current value of the firm's assets, the uncertainty or risk associated with the value of the firm's assets, the amount of debt the firm needs to repay and the time remaining until the debt must be repaid. Implications of Merton's model provides a structured way to quantify the risk of default, which is critical for investors, creditors, and financial analysts. Financial institutions use the model to manage their exposure to credit risk by adjusting their portfolios and capital reserves accordingly. The theory forms the basis for pricing various credit derivatives, such as credit default swaps (CDS), by providing insights into the likelihood of default.

2.1.9.4 Entropy theory

Entropy theory of financial instability and insolvency provides a framework for analyzing and measuring risk in financial markets. The principles of maximum entropy and lowest cross-entropy are widely used in finance, particularly in portfolio selection and asset pricing. Entropy is also employed in econophysics to simulate financial market dynamics, as well as income and wealth distribution. It aids in analyzing systemic risk in financial markets by examining the entropy

density function in return time series. Entropy-based risk neutral densities are used to assess the probabilities of default for financial institutions, which can aid in identifying high-risk banks before crises.

2.1.9.5 Financial Intermediation Theory

It was proposed by Diamond in 1984. This hypothesis asserted that financial intermediary function decreases the costs transactions and information asymmetric. Financial markets are inherently characterized by information asymmetry, with buyers or borrowers having a better understanding of projects they intend to implement than lenders of such funds. In some circumstances, borrowers have more knowledge about their honesty, collateral, and hard work than lending institutions have.

On the other side, business firms are more informed about the projects or businesses for which they seek financial support from lending institutions. Moral hazard impedes the financing of viable initiatives offered to lending institutions, limiting the free flow of information between participating parties. This influences the amount of credit given by banks during the intermediation process, which in turn affects the banks' profitability for sustainability and stability. Banks' intermediation role is most successful when they are financially secure. Bank stability is ensured by the introduction of various financial products that improve the operating capacity of banks' intermediation activities.

2.1.9.6 Cash Management Theory

Lawrence J. Gitman's (1984) cash management theory emphasizes optimizing a company's cash flow to ensure enough liquidity while minimizing idle cash levels. The idea focuses on the efficient management of cash inflows and outflows to ensure that a company can satisfy its short-term obligations and invest extra funds productively. Gitman's cash management theory emphasizes the following key points: Ensuring that cash inflows and outflows are appropriately timed in order to eliminate the requirement for external funding or huge cash reserves. It includes reducing the time between when payments are made and when they are cleared, which speeds up collections while delaying disbursements. Keeping a balance between having enough cash to cover obligations and

investing excess cash to gain returns. Forecasting to predict future cash demands and surpluses, which aids in planning and decision-making. Identifying short-term investment opportunities for extra funds that offer liquidity, security, and a return on investment. This method seeks to improve a company's liquidity position, lower the cost of retaining cash, and increase overall financial efficiency.

2.2 Empirical Literature Review

Dress (2022) studied the determinants of financial stability of 9 commercial banks in Ethiopia on 2022 for a period of ten years (2009-2018) using the Z-score to estimate the bank's probability of insolvency. His study showed that bank size, capital adequacy ratio, and liquidity had a positive and significant relationship with bank stability. However, it was shown that there was a statistically significant and inverse link between operational costs and banks' financial soundness. Additionally, the analysis found a statistically insignificant negative correlation between inflation and bank financial stability. At last, it was shown that there was a positive and statistically insignificant correlation between the deposit interest rate and Ethiopia's commercial banks' financial soundness.

Yirgu, T. (2017) also did research using Fixed Effect regression model to identify the determinants and to measure the level of financial distress on eight banks in Ethiopia, his research showed that the banks where under distress and capital adequacy, management efficiency, earning ability and bank size has negative effect on banking financial distress whereas liquidity appeared as having positive and significant effect. Regarding the macroeconomic factors, economic growth and saving interest rate have significantly negative and positive effect on banking financial distress respectively; whereas inflation was not significant.

Yensu et al., (2021) found that the firm specific characteristics like bank size, net profit margin, interest cover had significant effects on bank stability. Also, gender of CEO, board size and frequency of board meeting from board characteristics had significant positive effect on bank stability. With regards to macroeconomic variables effect, inflation and growth of gross domestic

product had significant positive impact on banks' stability. Bank rate had a significant negative impact on bank stability. This study used panel data, sourced from 8 banks over 2008-2017, constituting 80 observations.

Yitayew et al.'s (2022) study used the Generalized Method of Moments (GMM) estimation to evaluate the impact of external and bank-specific factors on bank stability between 2014 and 2020. Using the Two-Step System, he discovers that the effectiveness of the rule of law, bank lending rate, tangibility, GDP growth rate, and corruption control contribute to bank financial stability. The effect is particularly noticeable in banks with a substantial market share of mobilized capital. In contrast, bank concentration and efficiency reduce financial stability by around 2.51 and 0.97 units, respectively. Furthermore, the effect of previous bank stability has a favorable and considerable influence on current financial stability. This conclusion has crucial significance for policymakers because it explicitly reveals that keeping banks stabile today is critical to obtaining stronger bank stability in the future.

Madi (2021) used a sample from UK Plc banks and building societies, to investigate whether the causes of financial stability differ across institutions. His study also investigates if there was a difference in these drivers before and during the financial crisis. The two eras were pre-crisis, from 2005 to 2007, and during the crisis, from (2008 to 2010), using ordinary least squares regression (OLS) and a collection of micro- and macroeconomic variables. The results of the OLS regression analysis revealed that the sign/value of those factors differed between banks and building societies, as well as before and during the crisis. The findings further emphasized the significance both micro- and macroeconomic factors have effect on financial stability.

Xiaoxi Zhang and Kevin Daly conducted research on Chinese banking from 2004 to 2010. The study found a positive and significant relationship between all bank-specific and macroeconomic variables and bank performance in the country, with the exception of inflation. Another study by Kosmidou (2008) investigated the factors of success for 23 Greek banks from 1990 to 2002. In his analysis of bank performance, he looked at the yearly change in GDP, inflation rate, money supply growth, and stock market capitalization to total assets, total assets to GDP, and concentration as

external performance drivers. The findings suggest that both size and GDP growth were favorably associated to bank performance, however inflation had a negative influence on bank performance. Similarly, research by Delis and Papanikolaou (2009) discovered that bank size, industry concentration, and investment climate had a beneficial influence on bank efficiency.

2.2.1 Determinants of Financial Stability and Hypothesis development

Financial stability determinants are the factors that affect the financial stability of commercial banks. Banking industry soundness and robustness can be based on financial metrics such as capital adequacy ratio, liquidity situation, and non-performing loans (Malimi, 2017). These factors can have a positive or a negative impact on the bank's financial stability.

2.2.1.1 Capital Adequacy Ratio and Financial Stability

The capital adequacy ratio is crucial metric for assessing the "safety and soundness" of banks and depository institutions. It acts as a buffer against losses. According to the empirical research findings done by Sang (2021), the capital adequacy ratio has a positive relationship with the financial stability of Vietnamese commercial banks over the study period. Another study in Nigerian banks found that Changes in capital adequacy ratio account for bank risk fluctuation. This indicates that when risk levels increase, the capital adequacy ratio decreases. (Abba et al., 2013) But According to Ndinda (2022) capital adequacy has no significant effect on financial stability of commercial banks in Kenya. The capital adequacy ratio (CAR) is a financial indicator that measures a bank's capital in relation to its risk-weighted assets and current liabilities. CAR measures a bank's financial stability and ability to withstand losses. It increases the efficacy and stability of financial systems throughout the world. The capital adequacy ratio is also known as the capital-to-risk weighted assets ratio (CRAR).

H1: Capital Adequacy ratio has a significant and positive effect on financial stability of commercial banks.

2.2.1.2 Asset Quality and Financial Stability

According to Grier, A. (2007) poor asset quality is the major cause of most bank failures. Asset quality is a key indicator of a bank's financial health and soundness. Business factors such as operating efficiency, capital sufficiency, profitability, and asset quality are highly related to commercial banks' financial stability in Kenya. Asset Quality and Net Income Risk are found to be negative and significant in Ethiopian commercial banks, Abdu, E. (2022). It reflects the credit risk associated with a bank's loan and investment portfolios. Some key ways to measure asset quality are Non-Performing Loans (NPLs), Loan Loss Provisions and Credit Risk Management Practices.

H2: Asset quality has a negative and significant effect of stability of commercial banks.

2.2.1.3 Management Efficiency and Financial Stability

By using comprehensive risk assessment methods and procedures, banks may proactively address weaknesses, maintaining financial stability and preserving their assets against unfavorable economic situations. Corporate governance and bank funding had a positive and statistically significant effect on financial stability for commercial banks in Kenya (Mwangi, 2019). Yensu et al., (2021) also discovered that the gender of the CEO, board size, and frequency of board meetings all had a substantial favorable influence on bank stability. Credit risk and market risk management are crucial components of the banking business, ensuring bank financial stability and averting financial and reputational losses. It also helps to guarantee that banks and financial institutions may continue to provide mortgages and loans to consumers and companies. Effective credit risk management enables banks to maintain a stable financial position and regulatory compliance. (Merchant, 2023)

H3: Management Efficiency has a positive and significant effect on stability of commercial banks

2.2.1.4 Earning Ability and Financial Stability

The study by Yensu et al, (2021) found that bank stability is positively correlated with net profit margin. High earning capacity, obtained from a variety of revenue streams such as interest income, fees, and investment returns, improves a bank's ability to absorb losses and preserve liquidity during economic downturns. Earning ability of bank's measured as the ability to fund dividends, maintain adequate capital levels, invest for growth, and remain competitive while managing distress has a positive and significant relationship with stability (Yirgu, 2017) The bank's stability increases as the net interest margin improves.

H4: Earning Ability has a positive and significant effect on stability of commercial banks

2.2.1.5 Liquidity and Financial Stability

Liquidity is the ability of a bank to meet its short-term obligations. A bank with a high level of liquidity is better able to meet its obligations even in times of stress. Financial inclusion, liquidity risk, and credit risk all have an adverse effect on Jordanian commercial banks' stability (Kharabsheh, 2022). Adequate liquidity protects bank from having to liquidate long-term assets at a loss or seek costly short-term finance during times of financial hardship. Simegnew (2022); Erhijakpor (2022) found that liquidity had a major positive influence on financial stability.

H5: Liquidity has a positive and significant effect on stability of commercial banks

2.2.1.6 Competition and Financial Stability

The relationship between competition and the financial stability of a bank is multifaceted. Increased competition can encourage banks to innovate, enhance efficiency, and provide better services, resulting in a stronger financial industry. Competition improves stability, and it has a stronger impact on robust banks than on weak ones (Schaeck & Cihak, 2014). On the other hand, excessive competition may lead banks to take on higher risks to achieve higher returns, potentially compromising their financial stability. Banking concentration, Bank efficiency, and the amount of

nonperforming loans, obligatory capital ratios and increased financial depth are important predictors of Nigerian banking stability (Ozili, 2019). Boyd et al. (2006) and De Nicolo and Loukoianova (2006) both find that the risk of bank failure rises in more concentrated markets.

H6: Competition has a negative and significant effect on stability of commercial banks

Table 2 Summary of Empirical literature review

No	Author Research title Country Year	Dependent variable Measured by	Independent variables	Factors having Significant effect on the Dependent var
1	Tilahun Simegnew The Determinants of Financial Stability of Commercial Banks: Empirical Evidence from Ethiopia 2022	Z-Score	bank size	bank size
			capital adequacy ratio	capital adequacy ratio
			Liquidity	liquidity
			operating cost	operating cost
			Inflation	
			deposit interest rate	
2	Mohamed Elhadi Madi The Determinants of Financial Stability UK banks 2016	Z-Score	cost of income ratio	inflation rate
			income diversification ratio	debt ratio
			The ratio of net loans to total assets.	GDP
			bank size	non-performing loans

			GDP	
3	Wasfi Al Salamat Shaker Al-Kharouf The Determinants of Financial Stability: Evidence from Jordan 2021	capital adequacy ratio	return on equity	GDP
		non perf loans ratio	return on asset	inflation
		number of returned checks	earnings per share	debt to asset ratio
			GDP	
			Inflation	
			debt to asset ratio	
4	Samuel Kiemo Bank-Specific Determinants of Commercial Banks Financial Stability Kenya 2019	Altmans' Z- score + model for non-manufacturing firms	regulatory capital,	bank funding
			credit exposure,	corporate governance
			bank funding (liquidity & solvency)	credit exposure /-ve
			bank size	bank size
			corporate governance	regulatory capital
5	Buthiena Kharabsheh Omar Khlaif Gharaibeh Determinants of Banks' Stability in Jordan Jordan 2022	Z-Score	SME loans	SME loans
			capital adequacy	capital adequacy
			financial inclusion	financial inclusion-ve
			liquidity risk	liquidity risk
			credit risk(non perf loanx)	credit risk
			funding risk	

6	Raluca-Ioana Diaconua, Dumitru-Cristian Oaneab The Main Determinants of Bank's Stability. Evidence from Romanian Banking Sector 2014	Z-Score	interbank offering for 3 months	interbank offering rate
			BET rate	GDP
			GDP growth rate	
			Inflation rate	
7	Zhichao Zhang, Li Xie, Xiangyun Lu,Zhuang Zhang Determinants Of Financial Distress In Large Financial Institutions: Evidence From U.S. Bank Holding Companies 2015	Z score Distance to Default (DD)	Size	capital requirement
			return on asset	housing price index
			capital requirement	non-performing loan ratio
			housing price index	Short-term wholesale funding
			non-performing loan ratio	
			Short-term wholesale funding	
			Loan loss reserve ratio (LLRR)	
			Non interest income ratio (NIN)	
			Off-balance sheet activity ratio (OSBA)	
8	Joseph Yensu, Hadrat M. Yusif, Emmanuel Tetteh, George Asumadu, Daniel A. Atuilik	Z-Score	inflation rate	bank size
			GDP growth rat	net profit margin

	Main Determinants of Banks' Stability: Evidence from Commercial Banks in Ghana 2021		exchange rate	interest cover
			bank rate	gender of CEO
			government net debt	board size
			bank size	frequency of board meeting
			firm growth	inflation
			interest cover	growth gdp
			Tangibility	bank rate
			earnings per share	
			net profit margin	
			CEO duality	
			board size	
			gender of CEO	
			frequency of board meeting	
9	P.K. Ozili Determinants of Banking Stability in Nigeria 2019	Z-Score	GDP change	bank efficiency,
			regulatory capital ratio	size of non-performance loan
			inflation rate	regulatory capital ratios
			ROA	greater financial depth
			banking concentration	

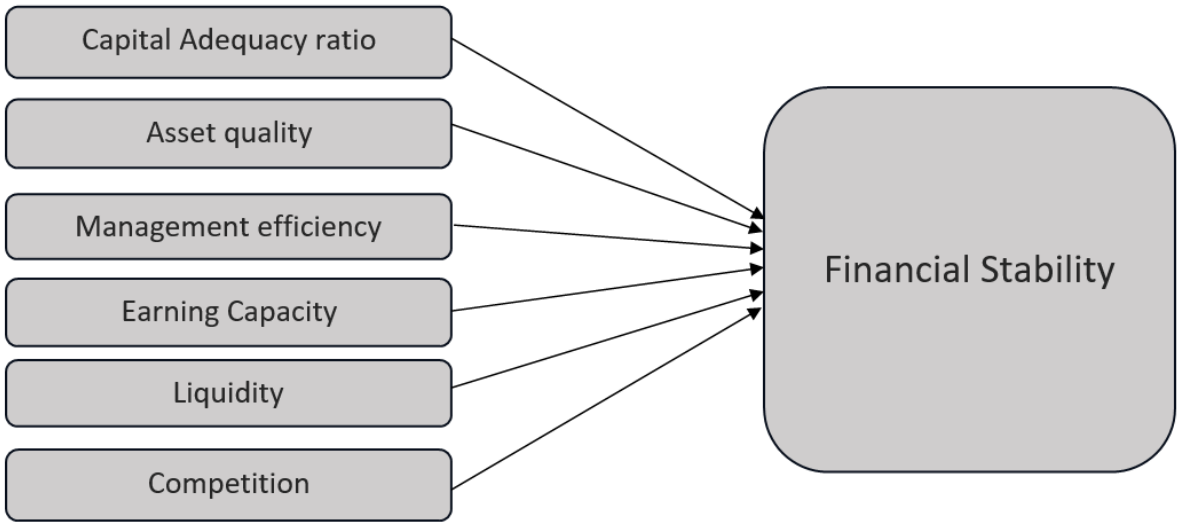
			bank efficiency= cost to income ratio	banking concentration
			depth of the financial system	
			ratio of non-performance loan to gross loan	
10	Andrew E.O. Erhijakpor1, Lucky Izobo Enakirerhi2 & Idowu Eferakeya Macro-Prudential Determinants of Financial Stability in Nigeria 2022	Z-Score	RGDP growth rate	RGDP
			inflation rate	
			balance of payment	
			capital adequacy ratio	
			liquidity ratio	
			sensitivity to market risk	
11	Peterson K. Ozili Banking stability determinants in Africa 2018	Z-Score	cost efficiency (CI),	banking efficiency,
		loan loss coverage ratio (LLC)	net interest margin (NIM),	foreign bank presence,
		non-performing loans to gross loans ratio (NPL)	non-interest income (NII)	banking concentration,
		standard deviation of financial development (SDFD)	Regulatory capital ratio (CAR).	size of banking sector,
			competition (LERNER),	government effectiveness,
			bank concentration (BCON)	political stability,

			foreign bank presence (FGN)	regulatory quality,
			size of the banking sector (SIZE)	investor protection,
			rule of law index (LEGAL)	corruption control
			regulatory quality index (RQ),	unemployment levels
			control of corruption index (COC)	
			political stability and absence of terrorism index (PS)	
			Government effectiveness index (GT).	
			inflation (INF)	
			unemployment (UNEMP)	
			Economic growth (ΔGDP).	
12	Tadesse Yirgu The Determinants of Financial Distress: Empirical Evidence from Banks in Ethiopia 2017	Altmans' Z-Score	capital ratio	capital adequacy
			asset quality	bank earning ability
			management efficiency	liquidity
			earning ability ratio	GDP
			Liquidity	saving rate

			bank size	
			economic growth	
			Inflation	
			saving interest rate	

2.9The Conceptual Framework

The graphical presentation of variables is known as a conceptual framework. This tries to study and describe how the six independent variables: capital adequacy ratio, asset quality, management efficiency, earning capacity, liquidity and competition connects with the dependent variable: financial stability



Source: Adopted from Mohamed et al., (2022); Abdu, E. (2022); Yirgu, T. (2017)

CHAPTER THREE

3.0 Research Methodology

This study aims to estimate the factors that contribute to improving the financial stability of commercial banks and this chapter focuses on research methodology utilized to find out the main determinants of financial stability of commercial banks. Validity of study tools and the reliability of study tools, data gathering and processing are also outlined.

3.1 Research design

The study uses a quantitative research approach to achieve the aforementioned objectives. The quantitative method is used to analyze the cause-and-effect relationship between known variables of interest (Sekaran, 2013). This research analyzes the determinants of financial stability of banks using quantitative research design. A quantitative approach is used by the investigator primarily for developing knowledge through cause-and-effect relationship. It employs strategies of inquiry such as experiments and surveys, and collect data on predetermined instruments that yield statistics data. Quantitative method involves collecting, analyzing, and interpreting numerical data. It uses statistical approaches to quantify data and find patterns, trends, and links.

3.2 Data collection

The type of data used for this research is secondary data which was collected at the National Bank of Ethiopia and from the official website of the banks. It uses annual data from year 2015 to 2023.Since the study uses secondary data, 9 banks established before 2015 with full annual report on their website were used for this research. These are Commercial Bank of Ethiopia, Awash International Bank, Cooperative Bank of Oromia, Wegagen Bank, United Bank, Nib International Bank, Oromia International Bank, Berhan Bank, Zemen Bank and Addis International Bank.

3.3 Study Sample

There were 30 banks registered in Ethiopia until the end of June 2023. According to the National Bank of Ethiopia there are three types of commercial banks: large, medium, and small banks (on their asset size). (FSR - National Bank of Ethiopia, 2024). In addition, since the researcher uses 9 years data, banks established before the year 2015 were included in the study to get full annual reports of the banks.

The researcher used a panel data of nine years (2015 to 2023) of nine banks which were selected purposively. The researcher used nine banks as a sample using purposive sampling technique by purposively selecting banks to make sure the study consists a sample from each category (large, medium, and small banks).

3.4 Definitions and Measurements of Variables

3.4.1 Dependent Variable

The z-score is a widely used metric to assess bank stability at the individual institution level. It measures solvency risk by comparing a bank's capitalization and returns to the volatility of those returns (Financial Stability, 2017). A higher Z-score indicates a lower probability of bankruptcy, while a lower score suggests a higher risk. Typically, Z-scores above 3 are considered safe, scores between 1.8 and 3 indicate moderate risk, and scores below 1.8 signal high risk. Diaconu & Oanea (2014) investigated factors influencing the bank stability using Z-score, The Z-score ratio was also employed by Bourkhis and Nabi (2013) and Beck et al. (2013) as a measure of a bank's soundness. It is estimated as

***Z-score*=** (ROA + (equity/assets))/sd(ROA);

Where: sd (ROA) is the standard deviation of ROA

: ROA, equity, and assets are country-level aggregate figures

: sd (ROA) is calculated for country-years with no less than 5 bank-level observations.

3.4.2 Independent Variables

The CAMEL framework indicators are used in this research as they are significant to assess the relative financial strength of a bank. In addition, bank size and competition are included since many empirical researches show that they have significant effect on bank stability and also are related to foreign bank entry.

3.4.2.1 Capital Adequacy

Capital adequacy indicates a bank's ability to withstand unexpected losses in the near future. It is a key statistic for measuring the financial strength of the banking sector. That is increased capital increases the amount of risk capital banks can take on to cover losses resulting from their high-risk activities, which in turn means bank is stable (Diamond & Rajan, 2012).

Ethiopia's commercial banking industry uses financial metrics such as capital adequacy ratio, liquidity position, and non-performing loans (NPLs) to measure strength and resilience of the banking industry (FSR - National Bank of Ethiopia, 2024). A higher ratio indicates stronger financial health for a bank. High capital adequacy provides stakeholders with confidence in the security of their capital. It is calculated as

CAR= Tier I capital + Tier II capital *100/ Risk Weighted Assets

Where: CAR- capital adequacy ratio

Tier-1 core capital, such as equity and disclosed reserves,

Tier-2 supplemental capital held as part of a bank's required reserves.

Risk Weighted Assets: assets of company determined by weighting each asset item by the risk weight

The National Bank of Ethiopia released Capital Adequacy Ratio Requirement Directives No. CGFB/04/2016 that enter into force as of the 1st day of April 2016. Accordingly, Capital Adequacy Ratio ccomputation is done in the following way.

Table 3 CAR computation from National Bank of Ethiopia Capital Adequacy Ratio Requirement Directives No. CGFB/04/2016

No	**Assets**	**Amount (in birr)**	**Risk weight (%)**	**Total risk weighted assets (C= A+B)**
1	Cash on Hand		0	
2	Cash at bank/ MFIs including time deposits		20	
3	Cash at NBE		0	
4	Prepayments		0	
5	Claims on Federal governments		0	
6	Claims on regional governments		20	
7	Net Investment in Hire- purchase portfolio after loss reserves		100	
8	Financial lease assets (net of accumulated depreciation)		100	
9	Other receivables		100	
10	Investments (all investments except in government securities		100	
11	Fixed assets		100	
12	Intangible assets		100	
13	Other assets		100	
	A. Total risk weighted assets			

	B. Total capital	
	C. Ratio of total capital to risk weighted assets (C=B/A)	

No	Computation of Total Capital	Amount
1	Paid up capital	
2	Retained earnings/accumulated losses: prior periods	
3	Denoted equity-unrestricted	
4	Legal reserves	
5	Permanent free reserves (such as general reserve)	
	Total Capital (1+2+3+4+5)	

Source: National Bank of Ethiopia

According to the Licensing & Supervision of Banking Business Directive No SBB/50/2011 of the National Bank of Ethiopia, All Bank has to maintain a minimum of capital to risk weighted assets ratio of 8% at all times.

3.4.2.2 Asset quality

Asset quality is an assessment of a specific asset that indicates the level of credit risk associated with it. A company's or individual's assets define their condition and ability to repay loans in the future while also ensuring the smooth operation of their business. The CAMEL rating technique compares the performance of banks and financial institutions using the total investment-to-total assets ratio to measure asset quality rank. The rank is established by averaging the ranks from two subcategories: the percentage of NPA and the percentage of total investment to total assets (Rawlin

et al., 2017) Grier, (2004). One of the main reasons for most bank failures is low asset quality. Lower ratio indicates a better asset quality. It is calculated as:

AQ= TIv *100/ Total Assets

Where: AS: Asset quality

TIv: Total Investment

TA: Total Assets

3.4.2.3 Management Efficiency

It is calculated as the ratio of total operating cost to total income. Researches on banks and financial institutions mostly measures managerial efficiency through operational expenditure efficiency. According to Sufian and Chong (2008) weak expenditures management is the key factor for low profitability. Olweny (2011) used operating cost to total income ratio to measure management efficiency. Every banking organization is concerned with cost control because it is an important factor in increasing the bank's profitability. It shows how efficient banks management is able to manage deposits mobilized, assets, capitals, shareholders' funds, employees, inventories, assets etc.

ME= OC*100/TI

Where: ME: Management efficiency

OC: Operating cost for firm

TI: Total income for firm

3.4.2.4 Earning Capacity

It is a measure of bank's ability to generate earnings in order to sustain its operations, expand, and remain competitive in its long-term survival. These variable measures the capacity of a bank to generate income from its assets, where a high value indicates that a bank has a high ability to generate earnings. Wijaksana & Mimba, (2022); Lestari et al., (2021) & Kumar, (2014) used Net interest margin to measures a bank's net return on earning assets. As stated by Hoggarth, Milne, & Wood (1998), NIM is an investigation on the income made through interest mark-up. A bank earns money both through interest-earning assets like loans and non-interest sources like fees.

NIMR=NII*100/TA

Where: NIM: Net interest margin ratio

NII: Net interest income

TA: Total assets

3.4.2.5 Liquidity

It is a measure of the money and other assets a bank has readily available to quickly pay bills and meet financial obligations in the short term. Regulators who manage liquidity requirements employ financial indicators known as ratios to examine if banks, financial institutions, and insurance firms can adequately cover their liabilities. Umami & Safitri, (2021) & Hussein et al., (2023) used the loan deposit ratio to measure liquidity in banks. The loan to deposit ratio, is calculated as

LDR=TL*100/TD

Where: LDR: Loan to deposit ratio

TL: Total loan

TD: Total deposit

3.4.2.6 Sensitivity to market risk

The sensitivity to market risk component reflects the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution's earnings, or economic capital. A rating of 1 indicates that market risk sensitivity is well controlled and that there is minimal potential that the earnings performance or capital position will be adversely affected. Sensitivity to market risk can be measured through various methods outlined in the provided research contexts. One approach involves utilizing the Capital Asset Pricing Model (CAPM)

$Er = Rf + \beta (MR - Rf)$

Where: ERi=expected return of investment

Rf=risk-free rate

βi=beta of the investment

(ERm−Rf)=market risk premium

Ethiopia does not have an active capital market, making it difficult to quantify capital market sensitivity. For this reason, the study did not use market risk sensitivity as a gauge of the banks' financial performance.

3.4.2.7 Competition

A bank's market share is a metric that represents its competitive standing in the banking sector. A bank's capacity to draw clients and make money is indicated by a larger market share. Market share is the portion of total sales a company makes in relation to the market or industry in which it operates. Market share indicates a company's present competitive position in the industry. (Genchev, 2012) Competition is the struggle between rivals to capture market share, not a condition or circumstance. (Smith, 1776)

MS= TSC/TSI

Where: MS: Market share

TSC: Total sales of a bank

TSI: total sales in the industry

3.3 Methods of Data Analysis

Data analysis involves two basic statistical methods: Descriptive statistics and Inferential statistics. Descriptive statistics apply indices such as mean, median, maximum and minimum values to summarize data, whereas inferential statistics extrapolate outcomes from data using statistical tests such as the student t-test.

In this study both descriptive and analytic regression statistics were used. The study employed an econometric multiple regression model as it assesses the relevance of a variable on the stability of Ethiopian Commercial Banks, and it used a descriptive financial analysis to characterize, measure, compare, and classify the variables of financial stability determinants in Ethiopian Commercial Banks.

The data is analyzed using the statistical software package Stata 14.2 version. Stata is a statistical package that enables users to manage, visualize, and analyze data, as well as generate automated reports. It is employed by academics in a variety of disciplines, including economics, business, biology, and sociology.

CHAPTER FOUR

4.0 Data Analysis, Presentation and Discussion

The researcher collected 81 observations from commercial banks' reports from the year 2015 to 2023. This chapter contains a detailed study of descriptive statistics and regression findings. It includes a descriptive analysis of variables on distribution of data in bank and over time, a correlation analysis that shows the degree of association between variables, diagnostic test results for the classical linear regression model, regression analysis that shows the effect of the independent variable on the dependent variable, and regression analysis discussions.

4.1 Descriptive statistics

In the descriptive statistics the dataset computed the average, standard deviation, maximum, and minimum values for the dependent and each independent variable. The following table presents the study's descriptive statistics. The dependent variable used in this study was financial stability of commercial banks measured by the Z-score while explanatory variables are capital adequacy ratio (car), asset quality (aq), management efficiency (me), earning capacity of banks (ec), liquidity (lq) and competition (compt).

Table 4 Descriptive statistics table

Variable	Obs	Mean	Std. Dev.	Min	Max
Zscore	81	2.332	.808	.34	4.33
Car	81	18.252	6.883	8.43	35
Aq	81	65.883	21.269	11.47	95.66
Me	81	41.427	15.227	11.04	77.84
Ec	81	4.359	1.27	.49	7.09
Lq	81	67.688	14.831	31.34	95.03

Compt	81	10.478	19.196	.66	68.08

Source: Stata 14.2 outputs of research data 2015 -2023.

The average Stability measured by Z score is 2.33. This means that the average stability of commercial banks in Ethiopia is 2.32. Car which was used to measure capital adequacy of the banks have a mean value of 18.2% and standard deviation 6.08%. Asset quality, that was measured using total investment by total asset ranges from a minimum of 11.04% to a maximum of 95.66%. It has a mean of 65.88% with standard deviation of 21.25% from its mean value. Management efficiency, which was measured as a ratio of operating cost to total income has been used in the analysis of the study ranges from 11.04% to 77.84%. It has a mean of 41.43 with standard deviation of 15.23% from its mean value. Earning capacity, measured as a percentage of net interest income to total assets. It ranges from minimum value of 4.36% to a maximum of 7.09% with a mean value of 0.49% and standard deviation of 1.27%. Liquidity of commercial banks measured as a rate of total loan to total deposit ranges from its minimum value of 31.34% to its maximum 95.03%. It has a mean of 67.68% and standard deviation of 31.34%. Competition of banks measured by market share shows a minimum value of 10.47% and maximum of 69.08% with a mean value of 0.66% and standard deviation of 19.20%.

4.2 Correlation Analysis

Correlation assesses the level of linear relationship between variables (Brooks, 2014). Correlation analysis, which is closely linked to but conceptually significantly distinct from regression analysis, is primarily concerned with measuring the strength and degree of linear connection between two variables. The correlation coefficient between two variables might vary from +1 (perfectly positive link) to -1 (perfectly negative relationship). If the correlation coefficient is zero, the movement of variables is said to be uncorrelated.

Table 5: Pairwise correlations table

Variables	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(3) zscore	1.000						
(4) car	0.318	1.000					
(5) aq	0.021	0.116	1.000				
(6) me	-0.164	-0.176	-0.114	1.000			
(7) ec	-0.112	-0.395	0.132	0.171	1.000		
(8) lq	0.198	-0.200	-0.084	0.357	0.544	1.000	
(9) compt	-0.224	-0.011	0.350	-0.449	-0.153	-0.649	1.000

Source: Stata 14.2 outputs of research data 2015 -2023

From the study result it can be seen that in the above correlation matrix, there is no correlation between the independent variables used in this model as the correlation between these variables is less than 0.8 in all cases. Many researchers believe that there is a major multi-collinearity problem if the correlation between the independent variables is in the range of [0.8, 1]. Kennedy (2008).

4.3 Model Diagnostic Test

This study computed Model Diagnostic tests to enhance the validity and reliability of the research findings and elevate the quality of the study. The subsequent sections detail the test results.

4.3.1 Normality Test

The normality assumption evaluates whether mistakes follow a normal distribution. Shapiro–Wilk test null hypothesis is that the population is regularly distributed. Thus, if the p-value is smaller than the set alpha level, the null hypothesis is rejected, indicating that the data examined are not regularly distributed. On the other hand, if the p value is greater than the chosen

alpha level, then the null hypothesis (that the data came from a normally distributed population) cannot be rejected.

Table 6: Normality test

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
car	81	0.93595	4.441	3.269	0.00054
aq	81	0.75363	17.084	6.223	0.00000
me	81	0.95808	2.907	2.340	0.00965
ec	81	0.97809	1.520	0.917	0.17945
lq	81	0.97086	2.020	1.542	0.06153
compt	81	0.48269	35.872	7.849	0.00000

Source Stata 14.2 outputs of research data 2015 -2023

Thus, the above table shows that all variables have a probability less than 0.5. Thus, in this analysis, the residuals are normally distributed, and it was found that the model had no normality issues.

4.3.2 Autocorrelation

The presence of residual autocorrelation leads to incorrect statistical inferences. The CLRM assumption demands the lack of autocorrelation, which means that the error terms' covariance should be zero. In other words, the mistakes are uncorrelated with one another, unless they are autocorrelated or serially correlated.

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 8) = 5.880
Prob > F = 0.0415

Stata 14.2 outputs of research data 2015 -2023

Wooldridge test is used to detect first-order autocorrelation in the errors of a panel data model. The test is based on the residuals from the first-differenced regression of the dependent variable on its lagged values. Wooldridge test for autocorrelation gives an F-statistic of 5.8167 with a p-value of 0.0415 concluded there is no auto correlation in the residuals.

4.3.3 Multicollinearity Test

According to Brooks (2008), the multicollinearity test identifies correlations between explanatory factors and prevents independent variables from having a twofold effect in models. The correlation extent is less than one. Multi-co Linearity occurs when independent variables are highly correlated or not, resulting in an inconsistent effect in which the regression model fits the data well but none of the independent variables has a significant impact on predicting the dependent variable (Gujarati, 2004).

Table 7: Variance inflation factor

	VIF	1/VIF
Lq	2.705	.37
Compt	2.518	.397
Ec	1.798	.556
Me	1.314	.761
Car	1.31	.763
Aq	1.278	.782
Mean VIF	1.821	.

Source Stata 14.2 result

The study's explanatory variables show weak correlations, which is VIF< 5 indicating no multicollinearity. Ethington (2005) described multicollinearity as an econometric difficulty caused

by a nearly precise linear relationship between two or more independent variables in the same equation.

4.3.4 Heteroscedasticity Test

Heteroskedastic mistakes refer to those with non-constant variance. This assumption anticipated that, the variance for the error terms is constant. If not, they are heteroscedastic. According to the table below, the model has problems of heteroskedasticity. This signifies that the researcher should use fixed effect or random effect regression model for analysis.

Likelihood-ratio test	LR chi2(8) = 17.59
(Assumption: nested in hetero)	Prob > chi2 = 0.0245

4.3.5 Hausman Test

The Hausman test determines whether fixed or random effects models are better suited for a given dataset. The test determines if there is a statistically significant difference in coefficients calculated by two models. The null hypothesis for Hausman test is Fixed effect model estimators and random effect model estimators do not differ substantially. If the null hypothesis is rejected, use fixed effect model. If p value of chi square is less than 0.05, select fixed effect model. If not use random effect model. Accordingly, the researcher selected fixed effect regression model.

Table 8: Hausman (1978) specification test

	Coef.
Chi-square test value	205.55
P-value	0

4.4Model Specification

The Model is used to test the relationship between independent variable and financial stability:

FS= $\beta o + \beta 1 CARit + \beta 2 AQit + \beta 3 MGTit + \beta 4 EEit + \beta 5 LQit + \beta 6 BSit + \beta 7 BCit + \varepsilon$

Subscript i refers to bank i, subscript t refers to year t and β refers to the dependent variable

Where:

FS= Financial Stability of commercial banks

CAR=Capital Adequacy ratio

AQ=Asset Quality Ratio

MGT=Management efficiency ratio

ERN=Earnings ratio

LIQ=Liquidity ratio

BS= Bank size

BC= Bank competition

4.5 Fixed Effect Regression Model Result

FS= $0.67 + 0.21 CARit + 0.17 AQit + 0.02 MGTit + 0.08 EEit + 0.09 LQit - 0.10 comp + \varepsilon$

```
. xtreg zscore car aq me ec lq compt, fe

Fixed-effects (within) regression               Number of obs      =        81
Group variable: bank                            Number of groups   =         9

R-sq:                                           Obs per group:
     within  = 0.1663                                         min =         9
     between = 0.0854                                         avg =       9.0
     overall = 0.0298                                         max =         9

                                                F(6,66)            =      2.19
corr(u_i, Xb)  = -0.9649                        Prob > F           =    0.0545

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         car |   .0216988   .0208807     1.04   0.003    -.0199909    .0633885
          aq |   .0171828   .0097559     1.76   0.083    -.0022955    .0366611
          me |   .0027099   .0062875     0.43   0.668    -.0098436    .0152633
          ec |  -.0879559   .0876221    -1.00   0.319    -.2628992    .0869874
          lq |   .0097672   .0085392     1.14   0.257    -.0072819    .0268164
       compt |   .1039971   .0419454     2.48   0.016     .0202504    .1877438
       _cons |  -.6760359   .9741546    -0.69   0.490    -2.620998    1.268926
-------------+----------------------------------------------------------------
     sigma_u |  2.4113644
     sigma_e |  .57472152
         rho |  .94624805   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(8, 66) = 6.45                     Prob > F = 0.0000
```

4.5.1 Capital Adequacy Ratio (CAR)

It is a quantitative metric that measures ability of banks to withstand unexpected losses in the near future. With a CAR coefficient of 0.22, it is projected that for commercial banks in Ethiopia over time, each unity rise in the Capital Adequacy Ratio will lead to an approximate 0.22 unit increase in the Z- score, assuming no changes occur in other variables. At the 0.003 level, this value is statistically significant ($p < 0.1$), suggesting that increasing the Capital Adequacy of the banks has a positive and significant influence on the financial stability within Ethiopia's commercial banking industry. Since the regression results demonstrate that the capital adequacy ratio has statistically significant impact on financial stability of Ethiopian commercial banks, it is critical that commercial banks maintaining sufficient capital for regulatory compliance and financial risk mitigation.

The results agree to the buffer capital theory that states regulatory capital increases capital buffers, making banks less likely to face financial instability. Commercial banks' capital often serves as the first line of defense in the event of a balance sheet shock (Berger, 1995). These findings are

consistent with Berger et al.'s research of 23 banks in industrialized nations, as well as Berger and Bouwman's (2009) examination of banks in the United States. Both studies discovered a favorable and statistically significant relationship between capital adequacy and commercial banks' financial soundness. This result is not in line with Ndinda (2022) that found that capital adequacy has no significant effect on financial stability of commercial banks in Kenya.

4.5.2 Asset Quality

It is an assessment technique that compares the stability of banks and financial institutions using the total investment-to-total assets ratio. The coefficient for the asset quality (AQ) is 0.171, indicating that every unit rise in the ratio is related to an expected increase in the financial stability of banks approximately 0.171 units, assuming all other factors remain constant. A p-value of less than 0.10 indicates statistical significance for this coefficient, suggesting that banking stability is strongly influenced by the asset quality of the banks. This finding implies that having a higher percentage of quality assets contributes favorably to a bank’s financial stability (FS).

The research's findings support Athanasoglou et al.'s (2006) examination of banks in the South Eastern European region and Lorenzoni's (2008) study of US banks. Both studies explain the positive relationship between credit exposure and bank financial stability to the fact that increasing credit risk exposure is often linked with higher loan loss provisioning and worse profitability.

4.5.3 Management Efficiency

The coefficient for Management efficiency, the operational cost to total income ratio (ME), is 0.02 in this model. Which means that for a unit increase in ratio of management efficiency the stability of banks in Ethiopia increases in 0.02 units. But it lacks statistical significance ($p > 0.10$) which means there is no significant association between Management efficiency (ME) and financial stability of banks in Ethiopia. Fluctuations in this ratio should not be considered a reliable predictor of changes in financial stability. However, these findings contrast empirical studies by Brownbridge (1998) on African banks, Bourke (1989), and Molyneux (1992) on European banks. All of these researches found a negative, statistically significant link between governance

efficiency and financial stability. These contradictories may be linked the unfavorable correlation to the moral hazard of bank owners. However, it still holds importance for financial performance within a broader context.

4.5.4 Earning capacity

Earning capacity measures the capacity of a bank to generate income from its assets. The coefficient for earning capacity is -0.87, that is it is projected that for commercial banks in Ethiopia over time, each unity rise in the Earning capacity Ratio will lead to an approximate 0.87 unit decrease in the financial stability, but it lacks statistical significance ($p > 0.10$). These findings indicate that changes in the Earning capacity (EC) should not be considered reliable indicators of variations in financial stability, as the coefficient does not have statistical significance.

This conclusion is similar with Betz et al. (2013) and Bousaid and Saucier (2003) showed that bank with better earning capacity are more likely to incur financial trouble. However, Poghosyan and Cihak (2009) and Sahut and Mili (2011) in contrast with this had reported that bank with better earning potential lowered the likelihood of encountering financial distress and failure. This contradiction can be explained by the gamblers ruins hypothesis. This hypothesis suggests that banks may take on too much risk, leading to better returns but also financial turmoil and collapse (Schütz, 2014).

4.5.5 Liquidity

It is a measure of the money and other assets a bank has readily available to quickly pay bills and meet financial obligations in the short term. The liquidity coefficient for this model is 0.97, implying that for a given bank over time an increase in a one-unit liquidity ratio will increase in the stability of the bank around 0. 97 units, provided all other factors remain unchanged. This relationship is insignificant at the 0.1 level of statistical significance ($p < 0.10$).

These findings are consistent with Dermerguc (1998), a cross-country bank analysis study, and Illing (2006), a study of Canadian banks. Previous studies discovered a positive and statistically

significant relationship between short-term bank financing (measured by the liquidity ratio) and bank financial stability. This explains the fact that high liquidity ratios may indicate strong institutions, since liquid assets are available to cover maturing debts. Borio (2008) found similar results in their analysis of US banks.

4.5.6 Competition

A bank's market share is a metric that represents its competitive standing in the banking sector. Market share is the portion of total sales a company makes in relation to the market or industry in which it operates. Competition has an estimated coefficient and p-value of 0.104 and 0.016 respectively in the regression which means that, holding other factors constant, on average a 1% increase in competition results in increase of stability rate by 0.104% and the relationship is statistically significant.

This study is in line with previous researches by P.K Ozili (2019) where he stated that banking concentration and efficiency were important predictors of banking stability in Nigeria over the study period and that the coefficient of competition is positive and statistically significant. Boyd et al. (2006) and De Nicolo and Loukoianova (2006) both find that the risk of bank failure rises in more concentrated markets. This contradicting findings can be explained by a study by Dutta and Saha (2021) where they show that the relationship between competition and financial stability has a curvature, implying that competition contributes to stability only at a lower level; however, as competition intensifies, the positive impact of competition tends to decline and becomes unfavorable thereafter.

CHAPTER FIVE

5.0 Conclusion and Recommendation

5.1 Conclusion

This study aims to examine the factors that contribute to financial stability in Ethiopian commercial banks during a 9-year period (2015-2023). The study studied the link between bank financial stability and selected explanatory factors, including capital adequacy ratio, asset quality, management efficiency, earning capacity, liquidity and competition. This study used an explanatory research design with random effect regression to examine the link between bank stability and its factors. This study focused on 9 Ethiopian commercial banks. Purposive sampling was used to choose nine commercial banks for this study. The study demonstrated capital adequacy ratio, asset quality, competition have a substantial positive effect on bank stability in Ethiopia. Although, earning capacity was found to have a negative effect on stability, the result was insignificant. The results of the study are judged to benefit different bodies such as commercial banks, investors, regulators, academicians, and policymakers in the country. Therefore, based on the major findings of the study, this research suggests the following recommendations to commercial banks, investors, regulators, policymakers, and academicians.

5.2 Recommendation

Based on the findings presented above, the following recommendations are proposed. The advice will assist commercial banks in focusing on specific areas of interest in order to determine the best determinant of stability in commercial banks. This study identified key factors influencing bank stability, including capital adequacy ratio, asset quality and competition. To ensure financial stability, commercial banks should priorities addressing these problems.

- The study recommends Commercial banks of Ethiopia to have a roadmap to increase the capital adequacy ratio and ensure the minimum capital adequacy ratio in line with national standards. It is also recommended that commercial banks maintain profitability at a reasonable level to help increase capital adequacy ratio, thereby increasing financial stability. Commercial banks need to control credit risk to minimize the NPL ratio and increase asset quality. try to increase their market share in order to be stable in the competitive market to be created in Ethiopia due to foreign bank entry.
- The study recommends regulators and policymakers, including the NBE, develop effective capital adequacy measures to help commercial banks preserve financial stability. Prudent procedures should be implemented to examine, and monitor the entry of new financial institutions, in order to avoid excessive competition. Furthermore, policymakers should promote financial innovation and the use of fintech to increase the efficiency of financial institutions' operations.

References

Abba, G., Peter, Z., & Inyang, E. (2013). *Capital Adequacy Ratio and Banking Risks in the Nigeria Money Deposit Banks.*

Abdu, E. (2022). *Financial distress situation of financial sectors in Ethiopia: A review paper. Cogent Economics & Finance, 10(1). https://doi.org/10.1080/23322039.2021.1996020*

Adams, R. B., & Ferreira, D. (2009, November 1). *Women in the boardroom and their impact on governance and performance ☆*. Journal of Financial Economics. https://doi.org/10.1016/j.jfineco.2008.10.007

Alfi, A. F. (2014). *Understanding Financial Stability & Macroprudential Policy. The Economic Journal, 122(565), 1346-1372.*

Ali Mohammed and Puah CH (2019) "*The Internal Determinants of Bank Profitability and Stability: An Insight from Banking Sector of Pakistan." Manag Res Rev 42 (2019): 49-67.*

Almazari, A. A., *Impact of internal factors on bank profitability: Comparative study between Saudi Arabia and Jordan. Journal of Applied finance and banking,* 2014. 4(1), 125.

Athanasoglou, P., Delis, M. & Staikouras, C., (2006) "Determinants of Banking Profitability in South Eastern European Region" Bank of Greece Working Paper, 06/07

Baselga-Pascual, L., Trujillo-Ponce, A., & Cardone- Riportella, C. (2015). *Factors influencing bank risk in Europe: Evidence from the financial crisis. The North American Journal of Economics and Finance, 34, 138–166. https://doi.org/10.1016/j.najef.2015.08.004*

Berger, A.N., (1995) "The Relationship between Capital and Earnings in Banking" Journal of Money, Credit and Banking, Vol. 27, 360-374

Berger, A. & C. Bouwman, (2009) "Bank Liquidity Creation" Review of Financial Studies 22

Black, F., Scholes, M., 1973. *The pricing of options and corporate liabilities. The journal of political economy, 637-654*

BIS authors. (n.d.). https://www.bis.org/author/andrew_crockett.htm

Boyd, J.H., Runkle, D.E., 1993. *Size and performance of banking firms: Testing the predictions of theory. Journal of Monetary Economics* 31, 47-67

Borio, C & M Drehmann (2008): “Towards an operational framework for financial stability: ‘fuzzy’ measurement and its consequences”, 12th Annual Conference of the Central Bank of Chile, Financial stability, monetary policy and central banking, Santiago, 6–7 November

Bourke, P. (1989) “Concentration and Other Determinants of Bank Profitability in Europe, North America and Australia,” Journal of Banking and Finance, Vol. 13: 17-21

Brooks, C. (2008, May 22). *Introductory Econometrics for Finance.* https://doi.org/10.1017/cbo9780511841644

Dang, 2011. *Regional capital mobility in China: 1978-2006. Journal of International Money and Finance, 30(7), 1506-1515*

Demirgüç-Kunt, A. and Detragiache, E. (2005) *'Cross-country empirical studies of systemic bank distress: a survey', National Institute Economic Review*, 192(1), pp. 68-83.

Diamond, Douglas W and Rajan RG. “*Illiquid Banks, Financial Stability, and Interest Rate Policy.” J Political Econ 120 (2012): 552-591*.

Dress, T. S. (2022, November 29). *The Determinants of Financial Stability of Commercial Banks: Empirical Evidence from Ethiopia*. Abstract. https://doi.org/10.37421/2168-9601.2022.11.389

Dutta, K. D., & Saha, M. (2021c). Do competition and efficiency lead to bank stability? Evidence from Bangladesh. *Future Business Journal*, *7*(1). https://doi.org/10.1186/s43093-020-00047-4

Ebenezer, O. O., Omar, W. A. W. B., & Kamil, S. (2017). *Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Nigeria. International Journal of Finance & Banking Studies, 6(1), 25.*

Ethington B. (2005). *Things to know about regression,edpr 7/8542, Spring, Retrieved on 07 June 2013* from https://umdrive.memphis.edu/yxu/public/Bunty's%20REGKNOW.pdf

Financial Stability. (2017, November 7). *World Bank.* https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial

Financial Stability Review. (2024, May 16). *European Central Bank*. https://www.ecb.europa.eu/pub/financial-stability/fsr/html/index.en.html

Frost, Stephen M., (2004). "*Chapter 20 - Corporate Failures and Problem Loans". The Bank Analyst's Handbook: Money, Risk and Conjuring Tricks. John Wiley and Sons.*

FSR - National Bank of Ethiopia. (2024, April 22). *National Bank of Ethiopia.* https://nbe.gov.et/fsr/

Getachew, S. (2023, December 7). *Ethiopia's call for foreign investment in its banking sector comes with strings | Semafor*. https://www.semafor.com/article/12/07/2023/ethiopia-foreign-investment-banking

Genchev, E. (2012, December 4). *Effects of market share on the bank's profitability. ResearchGate.*

Goldstein, I. R. A. (2015). *Three Branches of Theories of Financial Crises. ideas.repec.org.* https://ideas.repec.org/a/now/fntfin/0500000049.html

Grier, Waymond A. (2007). "*Credit Analysis of Financial Institutions". 2nd ed. Euromoney Institution Investor PLC.*

Hussein, M. Q. S., Saeed, N. A., & Ahmad, G. (2023, June 30). *Financial ratios analysis and companies' liquidity evaluation. Journal of Global Economics and Business*. https://doi.org/10.58934/jgeb.v4i14.173

Itay Goldstein, A. R. (2015). *Three Branches of Theories of Financial Crises. Now, 122.*

Illing, Mark & Ying Liu (2006). "Measuring financial stress in a developed country: An application to Canada." Journal of Financial stability, Vol. 2.26- 30

Köhler, M. (2015). *Which banks are riskier? The impact of business models on bank stability.* https://econpapers.repec.org/RePEc:eee:finsta:v:16:y:2015:i:c:p:195-212

Levin R (1997) and Rajan & Zingales (1998) *Financial Development and Economic Growth: Views and Agenda. Journal of Economic Literature, 35(2), 688–726.* http://www.jstor.org/stable/2729790

Levine, R., & Zervos, S. (1998). *Stock Markets, Banks, and Economic Growth*. https://econpapers.repec.org/RePEc:aea:aecrev:v:88:y:1998:i:3:p:537-58

Lorenzoni, G. (2008). "Inefficient Credit Booms." Review of Economic Studies, Vol. 75, issue 3

Kennedy, P., (2008), *A Guide to Econometrics, Blackwell Publishing: Malden, Massachusetts.*

Khrawish, H., *Determinants of Commercial Bank Performance: Evidence from Jordan. International Research Journal of Finance and Economics, 2011. 81, 19-45.*

Kumar, R. (2014). *Strategies of Banks and Other Financial Institutions. ideas.repec.org*. https://ideas.repec.org/b/eee/monogr/9780124169975.html

Madi, M. E. S. (n.d.). *Determinants of financial stability in UK banks and building societies-Are they different? - ProQuest.*

Malimi, K. (2017, January 1). *The Influence of Capital Adequacy, Profitability, and Loan Growth on Non-Performing Loans a Case of Tanzanian Banking Sector. International Journal of Economics Business and Management Studies*. https://doi.org/10.20448/802.41.38.49

Merchant, S. (2023, October 9). A *Guide to Credit Risk Management for Banks and Financial Institutions. https://www.anaptyss.c*om/blog/credit-risk-management-guide-for-banks-financial-institutions/

Merton, R.C., 1974. *On the pricing of corporate debt: The risk structure of interest rates. The Journal of Finance 29, 449-470*

Molyneux P. & Thornton, J., (1992) "The Determinants of European Bank Profitability" Journal of Banking and Finance, Vol.16, 257-264

Ndinda, M. (2022, December 31). *Capital Adequacy, Earnings and Financial Stability: Empirical Evidence from Commercial Banks in Kenya.* https://globalpresshub.com/index.php/ABAARJ/article/view/1743

Olweny, T & Shipo, MT 2011, "*Effects of Banking Sectoral Factors on the profitability of Commercial Banks in Kenya; Economics & Finance Review, Vol. 1 No. S, P.P. 1-30*

Rawlin, R., Mounika, M., & Shanmugam, R. (2017, July 17). *Comparative Analysis of Top Private Sector Banks in India based on CAMEL Parameters.*

Schaeck, K., & Cihák, M. (2014). *Competition, Efficiency, and Stability in Banking. Financial Management, 43(1), 215–241. http:*//www.jstor.org/stable/43280177

Schinasi, G. J. (2004b, October 1). *Defining Financial Stability*. https://papers.ssrn.com/Sol3/papers.cfm?abstract_id=879012

Sekaran, U. & Bougie, R. (2013). *Research Methods for Business: A Skill-Building Approach. 6th Edition, Wiley, New York.*

Smith, A. (1776). *The wealth of nations. New York : Modern Library, 740.* Sundaresan, S., 2013. A *Review of Merton's Model of the Firm's Capital Structure with Its Wide Applications. Annu. Rev. Financ. Econ. 5, 21-41*

Sundaresan, S.M., 2000. Continuous‐*Time Methods in Finance: A Review and an Assessment. The Journal of Finance 55, 1569-1622*

Tsomocos, C. G. D. (2007). *Financial stability: theory and applications. ideas.repec.org.* https://ideas.repec.org/a/kap/annfin/v3y2007i1p1-4.html

The World Bank Annual Report 2016. (2016). ideas.repec.org. https://ideas.repec.org/b/wbk/wbpubs/24985.html

Umami, N. A., & Safitri, A. (2021, October 1). *Analisis Rasio Likuiditas, Solvabilitas, dan Profitabilitas 2014-2018. Jurnal Riset Bisnis Dan Investasi/Jurnal Riset Bisnis Dan Investasi.* https://doi.org/10.35313/jrbi.v7i2.2301

What Is Financial Stability. (n.d.). https://www.federalreserve.gov/financial-stability/what-is-financial-stability.htm

Wijaksana, I. G. N. W., & Mimba, N. P. S. H. (2022, August 14). *Pengaruh Car, Ldr, Dan Bopo Terhadap Net Interest Margin Dengan Roe S. Ekonomi Dan Bisnis Universitas Udayana (E-Journal).* Https://Doi.Org/10.24843/Eeb.2022.V11.I08.P06

Xiaoxi Zhang and Kevin Daly (2012), "*The Impact of Bank Specific and Macroeconomic Factors on China's Bank Performance", Global Economy and Finance Journal, Vol. 6. No. 2. Pp. 1 – 25*.

Yensu, J. , Yusif, H. M. , Tetteh, E. , Asumadu, G. , & Atuilik, D. A. (2021). Main Determinants of Banks' Stability: Evidence from Commercial Banks in Ghana. Journal of Finance and Economics, 9(2), 42-52.

Yirgu, T. (2017). *The Determinants of Financial Distress: Empirical Evidence from Banks in Ethiopia*. https://www.semanticscholar.org/paper/The-Determinants-of-Financial-Distress%3A-Empirical-Yirgu