

**ASSESSING THE RELATIONSHIP BETWEEN EXCHANGE RATE AND FINANCIAL PERFORMANCE, IN THE CASE OF SOME SELECTED PRIVATE COMMERCIAL BANKS IN ETHIOPIA**



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**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**SCHOOL OF COMMERCE**

**A Thesis Submitted to Addis Ababa University, School of Commerce, Department of Accounting,  
For Partial Fulfillment of the Requirements for The Award of Master of Science in Corporate  
Finance with a Specialty in Investment Management**

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**June, 2025**

**Addis Ababa, Ethiopia**

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I, Fita Agidew Deresa, declare that the thesis entitled *Assessing the Relationship Between Exchange Rate and Financial Performance, In the Case of Some Selected Private Commercial Banks in Ethiopia* is my own original work. I have not used any other sources without proper citation I have not submitted this thesis for any other academic degree or professional qualification.

I affirm that this thesis is my own original work and that I have not violated the copyright of any other individual.

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Chair of Department or Graduate Program Coordinator

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## ***ACRONYM***

ARCH	Autoregressive Conditional Heteroscedasticity
LLC	Levin Lin Chu
IMF	International Monetary Fund
CBE	Commercial Bank of Ethiopia
ROA	Return on Asset
ROE	Return on Equity
GDP	Gross Domestic Product
NBE	National Bank of Ethiopia
USD	United States Dollar
ETB	Ethiopia Birr
EMP	Exchange Market Pressure
LDR)	Loan to Deposit Ratio
CPI	Consumer Price Index
PPI	Producer Produce Indexes
NIM	Net Interest Margin
BMS	Broad Money Supply
IRs	Interest rate spread
VAR	Value at Risk

## ***Abstract***

*The banking industry plays a vital role in Ethiopia's financial system by enabling the movement of essential funds for producing goods and services, which in turn improves living standards and contributes to the nation's overall welfare. However, fluctuations in exchange rates present significant challenges for banks operating in this dynamic environment. This research examined the relationship between exchange rate fluctuations and the financial performance of private commercial banks in Ethiopia, using panel data from 2011 to 2024 that includes eleven banking institutions. The findings reveal a strong negative impact of exchange rate fluctuations on bank profitability, highlighted by a significant inverse relationship between rising exchange rates and return on assets (ROA). Additionally, larger banks struggle to maintain higher profitability, likely due to operational inefficiencies, risk management challenges, or limited economies of scale, as indicated by the negative correlation between bank size and ROA. The study also shows that a higher money supply ratio negatively affects ROA, implying that excess liquidity can harm profitability. Similarly, the negative relationship between the loan-to-deposit ratio and ROA suggests that aggressive lending practices may lead to increased credit risk and a rise in non-performing loans. Based on these findings, the study recommends that banking professionals and policymakers focus on strategic decision-making, strong risk management practices, and effective regulatory policies to help private commercial banks remain competitive amid exchange rate fluctuations. For future research, it suggests exploring sector-specific dynamics, customer behavior, the impact of technological advancements, and conducting cross-country comparisons to gain deeper insights into the challenges and opportunities facing banks in Ethiopia's evolving financial landscape.*

***Key Words: Exchange rate, Financial Performance, Panel***

# CHAPTER ONE

## Introduction

### 1.1 Background of the Study

Exchange rate policy involves choosing an exchange rate system and determining the rate at which foreign exchange transactions take place. A country's exchange rate policy affects its relative price structure in domestic currency terms between goods which are traded internationally (tradable) and goods which are produced for the domestic market (Richard Barth, 2016).

Globally, governments are increasingly focusing their policies on improving the financial sectors in both developed and developing countries (IMF, 2023). Specifically, Fluctuations in exchange rates, the ever-shifting sands of the global financial system, hold immense power over the fortunes of businesses and economies. For banks, nestled at the heart of this dynamic ecosystem, navigating these currency fluctuations is a constant condition between risk and reward, profoundly affecting their financial performance in numerous ways.

The improvement and stability of the financial sector are crucial for meeting the current global sustainable development goals of reducing poverty and encouraging the growth of the private sector (Abdu, 2022). Likewise, in Ethiopia, the ambition for sustainable economic growth, improved sanitation facilities, and prosperity will be realized when governments efficiently allocate resources, which will encourage the quick accumulation of human and physical capital as well as speedier technological advancement (Adekunle, 2013, Desale, 2021).

In this era, the banking industry plays a pivotal role in the financial system that provides the necessary funds needed to produce products and provide services, thereby improving the living standards of the nations and enhancing the well-being of the country. However, from time to time at the country level, this financial sector is going through major policy changes and challenges as a result of the government's plan to reform the framework for monetary policy, exchange rate determination, and financing the deficit. Similarly, the sectors are challenged by exchange rate volatility and inflation dynamics (Abdu, 2022).

This can affect banks' financial performance if a bank holds assets or debts denominated in foreign currencies, fluctuations in their value can lead to losses, impacting overall profitability. Likewise, if a bank has loans in a foreign currency that weakens, the amount they receive when repaid will be worthless in their home currency (Michael et al, 2019). Therefore, healthy financial development is necessary for

rising economies to have continuous growth. Even so, the banking industry requires appropriate regulation and oversight before the development of the financial sector (Syed et al.,2022).

According to Ijara and Sharma (2020), private banks in Ethiopia have steadily grown their market shares in the country's banking industry. Effective resource allocation and a respectable return on investment are two benefits of strong bank performance for the shareholders. Foreign exchange rate volatility is a potentially interesting factor that drives the level of profitability of commercial banks by affecting their financial intermediation process. Without a doubt, commercial banks have a big impact on the financial system and the financial sector overall by arbitrating between the supply and demand sides of the foreign exchange market, according to Mwirigi (2014). To promote economic development, they must participate in the channelling of surplus funds into profitable ventures (Aderaw, 2016). Financial institutions transfer money from holders of excess to economically weaker entities. In such financial institutions' transactions, the exchange rate volatility has a significant influence on commercial banks' performance both directly and indirectly (Kairu, 2016).

Usually, Banks' financial performance is highly interlinked with exchange rate fluctuations while they conduct foreign exchange-related business. It is very important to assess the exchange rate variation's impact, related risks, and their implications on the Bank's profitability of its banking operations before taking part in any foreign exchange-related activity Keshtgar et al. (2020). Exchange rate fluctuations affect the performance of the banking industry overall and its operational effectiveness. Variations in exchange rates also have a detrimental effect on banks' return on assets (Gumbo et al, 2022). The instability of foreign exchange exposes banks to a range of risks that affect their bottom line. The hazards associated with transactions, conversions, credit, interest rates, and inflation are among them (Njagi, and Nzai, 2022). What impact does the exchange rate have on the performance of banks in the context of Ethiopian private commercial banks?

## **1.2 Statement of the Problem**

In the case of developing countries like Ethiopia, grasping the impact of exchange rate fluctuations on the financial performance of commercial banks is very significant, because these banks are highly vulnerable to foreign currency transactions-related risks. As different studies showed, they have addressed contradicting results regarding this relationship.

Berger and Humphrey (1997) conducted an international survey examining the efficiency of financial institutions. They found that while exchange rates affect profitability, other factors, particularly operational efficiency, are also significant factors. Similarly, Baillie and Kwon (1999) examined the

impact of exchange rate volatility on bank performance using econometric models and found that while volatility affects profitability, the extent varies with banks' risk management strategies.

In a study focusing on emerging markets, Naka and Sola (2008) highlighted the adverse effects of exchange rate volatility on bank profitability, stressing that increased volatility leads to greater financial instability. In contrast, Kuo (2016), analysing emerging economies, found that while exchange rate fluctuations do affect profitability, the impact is less pronounced and varies across different financial systems.

Ghosh and Ostry (2008) provided a reappraisal of the effects of exchange rate volatility on economic growth, noting that while volatility impacts growth, its direct effect on banks can be complex and context-dependent. Alper and Ozturk (2014) focused on the short-term effects of exchange rate fluctuations, finding significant impacts on bank profitability but suggesting that the long-term effects might differ.

Kemisola et al. (2016) found a negligible influence of exchange rate fluctuations on bank performance, suggesting other macroeconomic factors might be more significant. Lastly, Borensztein and Levy-Yeyati (2003) explored the role of macroeconomic policies and found that while exchange rate volatility interacts with other economic factors, its direct impact on financial stability and profitability is nuanced. As Ethiopia undergoes rapid financial sector development and digital transformation, it becomes increasingly important to understand how exchange rate movements influence the financial performance of private commercial banks, which are integral to the economy's financial intermediation process. Therefore, this study seeks to fill these gaps by assessing the relationship between exchange rate dynamics and the financial performance of selected private commercial banks in Ethiopia. The findings aim to inform policymakers, regulators, and bank management on strategies to enhance resilience against exchange rate volatility and ensure sustainable banking sector development.

### **1.3 Research Hypothesis**

This study investigates the impact of key macroeconomic variables—specifically, exchange rate, inflation rate, money supply, and interest rate—on the financial performance of selected private commercial banks in Ethiopia. To examine these relationships empirically, the following hypotheses are formulated:

**Alternative Hypothesis (H1):** There is a significant relationship between the exchange rate and the financial performance of private selected commercial banks in Ethiopia in this study.

**Null Hypothesis (H0):** There is no significant relationship between the exchange rate and the financial performance of private selected commercial banks in Ethiopia.

**Alternative Hypothesis (H1):** There is a significant relationship between the inflation rate and the financial performance of private selected commercial banks in Ethiopia.

**Null Hypothesis (H0):** There is no significant relationship between the inflation rate and the financial performance of private selected commercial banks in Ethiopia.

**Alternative Hypothesis (H1):** Money supply has a significant effect on the performance of commercial banks in Ethiopia.

**Null Hypothesis (H0):** Money supply does not have a significant effect on the performance of commercial banks in Ethiopia.

**Alternative Hypothesis (H1):** There is a significant relationship between the interest rate and the financial performance of commercial banks in Ethiopia.

**Null Hypothesis (H0):** There is no significant relationship between the interest rate and the financial performance of commercial banks in Ethiopia.

### **Research Questions**

In doing the work of the given study, the research questions should be well formulated and well aligned with its specific objectives. Accordingly, to create a grounding root for the study, the research questions have been formulated as follows. These questions are:

- What is the relationship between exchange rate dynamics and the financial performance of selected commercial banks in Ethiopia?
- How does the inflation rate affect the performance of private commercial banks in Ethiopia?
- What is the impact of money supply on the performance of private commercial banks in Ethiopia?
- How does the interest rate influence the performance of commercial banks in Ethiopia?

## **1.4 Objective of the Study**

### **1.4.1 General Objective**

The general objective of this study is to examine the relationship between exchange rates and financial performance of some selected private commercial banks in Ethiopia.

### **1.4.2 Specific Objectives**

- To examine the relationship between exchange rate dynamics and financial performance for commercial banks in Ethiopia.
- To identify the effect of the inflation rate on the performance of commercial banks in Ethiopia.
- To assess the effect of money supply on the performance of commercial banks in Ethiopia.

- To evaluate the effect of interest rate on the performance of commercial banks in Ethiopia.

### **1.5 Significance of the Study**

This study aims to examine the impact of exchange rate fluctuations on the financial performance of private commercial banks in Ethiopia. The findings are expected to contribute significantly to the existing body of knowledge by addressing the current gap concerning the relationship between exchange rate dynamics and the operational outcomes of private banking institutions in the country.

Moreover, the results of this study will provide valuable insights for policymakers, enabling them to design and implement more effective monetary and fiscal policies that foster a stable and competitive financial sector. In turn, this contributes to promoting long-term economic growth and financial resilience in Ethiopia. Additionally, the study will serve as a foundational reference for future researchers interested in exploring this phenomenon. It offers a comprehensive analysis that can support and guide further academic inquiry into the effects of exchange rate movements on the financial performance of private commercial banks in emerging economies, particularly within the Ethiopian context.

### **1.6 Scope of the Study**

This study focuses exclusively on the impact of exchange rates on the financial performance of private commercial banks in Ethiopia, both geographically and in terms of its scope. and 15 years of data i.e from the year 2011–2024 used for the study. Currently, more than thirty banks are operating in the country, but 11 private commercial banks were used as a sample size for the study, Our sampling size, the selected banks can represent the financial performance trends of the banks. For this study, the state-owned banks not included in this study because the government usually influences or intervenes its own bank rather than others to control negative impacts related to exchange rates issues.

### **1.7 Limitation of the Study**

The researcher analyses bank-specific, internal, and macroeconomic-specific factors that affect the financial performance of 11 private commercial banks in Ethiopia. The other challenge of the study is generalizing impartially the results of all selected private commercial banks in Ethiopia in this study by getting an evenly distributed sample of all the required data from these banks. Furthermore, the absence of consistent and well-organized information from each source of data may affect the outcome of this paper.

## **1.8. Organization of the Paper**

The rest of the research report is organized as follows: Chapter two, the literature review, encompasses both theoretical and empirical literature, along with a conceptual framework that examines the connection between exchange rates and the performance of commercial banks. Chapter three outlines the methodology employed in the study, providing a comprehensive overview of the data collection and analysis processes. Chapter four is dedicated to presenting the research findings and analysis. Finally, Chapter five includes the report with conclusions and recommendations based on the study

## **CHAPTER TWO**

### **REVIEW OF RELATED LITERATURE**

#### **2.1 Introduction**

This chapter provides an in-depth analysis of the most relevant literature concerning the research topic. By incorporating significant academic works, it situates the study within the current knowledge base and deepens the comprehension of the phenomenon being explored. The review details the theoretical foundation of the study, synthesizes important empirical research results, and points out gaps in the existing literature. Additionally, it identifies key limitations and examines their connections, ultimately leading to the creation of a conceptual framework that directs the overall methodology of the study.

#### **2.2 Theoretical Literature Review**

The term conceptual framework and theoretical framework are often and erroneously used interchangeably (Grant & Osanloo, 2014). A theoretical framework provides the theoretical assumptions for the larger context of a study, and is the foundation or 'lens' by which a study is developed. This framework helps to ground the research focus under study within theoretical underpinnings and to frame the inquiry for data analysis and interpretation (2013). This study will use two main theories to address the relationship between dependent and independent variables. This includes:

##### **2.2.1 Purchasing Power Parity Theory and the International Fisher Effect**

###### **2.2.1.1 Purchasing Power Parity Theory**

Purchasing Power Parity (PPP) theory is an economic concept that states that in the long run, exchange rates between two currencies should adjust so that the price of a similar basket of goods and services is the same in both countries. In other words, PPP theory suggests that exchange rates should reflect the relative purchasing power of different currencies. According to PPP theory, if the exchange rate is not in line with PPP, then there may be opportunities for arbitrage (buying goods in one country and selling them in another for a profit) which should eventually lead to the adjustment of exchange rates.

Purchasing Power Parity theory was proposed by Gustav Cassel in 1916. The theory states that homogeneous goods in different countries cost the same in the very same countries when measured in terms of the same currency (Majok, 2015). The theory assumes that importers' and exporters' actions are motivated by the differences in prices and induce the spot exchange rates. The theory assumes that there are no transactional costs or any barriers to the trade with the commodities traded being homogeneous. However, the main limitation of this belief is in measuring Purchasing Power Parity constructed from

price indexes given that different countries use different goods to determine their price level (Reid, 2005). The theory's proposition to the study is that the exchange rate values are affected largely by transactions undertaken in the foreign exchange market. This shows that equilibrium will only be attained when the purchasing powers are in equilibrium. The theory suggests the use of price indexes in determining the exact price of a similar product between countries.

### **2.2.1.2 Relative Exchange Rate Theory**

The concept of relative exchange rates is fundamental in understanding the dynamics of currency valuation and the interactions between different economies in the global marketplace. Relative exchange rates refer to the value of one currency in comparison to another currency, reflecting the relative strength or weakness of each currency about one another. This comparison is crucial for international trade and investment decisions, as it determines the cost of goods and services traded between countries. If a country's inflation rate is higher than that of its trading partners, its currency may depreciate relative to theirs, as higher inflation erodes the purchasing power of the currency. Similarly, if a country's interest rates are raised by its central bank, its currency may appreciate relative to others, as higher interest rates attract foreign investors seeking higher returns.

Relative exchange rates can have a significant impact on bank profitability, especially for financial institutions that engage in international trade and foreign exchange transactions. Banks often engage in foreign exchange trading to facilitate currency transactions for clients or to hedge against currency risks. Fluctuations in relative exchange rates can impact the profitability of these trades, as changes in currency values can lead to gains or losses on positions held by the bank. Likewise, Banks that provide cross-border lending services are exposed to currency risk, as loan repayments and interest payments may be affected by changes in relative exchange rates. A depreciation of the borrower's currency relative to the lender's currency can result in lower loan repayment amounts in terms of the lender's currency, potentially impacting the bank's profitability.

Moreover, Banks offer trade finance services to facilitate international trade transactions, such as letters of credit and trade finance loans. Fluctuations in relative exchange rates can impact the cost of these services for both the bank and its clients, affecting profitability through changes in fees and transaction volumes. Similarly, Changes in relative exchange rates can impact a bank's net interest income, especially if the bank has foreign currency-denominated assets and liabilities. Currency fluctuations can affect the value of interest income earned on assets and interest expenses paid on liabilities, potentially impacting the bank's overall profitability.

### **2.2.1.3 Absolute Exchange Rate Theory**

Absolute exchange rate theory refers to the concept that the value of a currency is determined by its purchasing power in the domestic economy. In other words, the absolute exchange rate theory suggests that the exchange rate between two currencies reflects the relative prices of goods and services in each country. This theory contrasts with the relative exchange rate theory, which focuses on the relationship between two currencies and their exchange rates. From a financial performance perspective, the absolute exchange rate theory can have implications for a bank's profitability and overall financial health. A strong currency, as indicated by a high absolute exchange rate, can impact a bank's financial performance in several ways: Accordingly, a strong domestic currency can make it more expensive for foreign borrowers to repay loans denominated in the bank's home currency. This can lead to higher default rates on cross-border loans and impact the bank's asset quality and profitability. On other hand a strong domestic currency can also affect a bank's interest income on foreign currency-denominated assets. If the bank holds assets in foreign currencies that depreciate against the domestic currency, the interest income earned on these assets may decrease when converted back into the domestic currency. Moreover, a strong domestic currency can impact the cost competitiveness of a bank's trade finance services for clients engaged in international trade. Higher exchange rates can make exports more expensive for foreign buyers and imports cheaper for domestic buyers, potentially affecting transaction volumes and fees earned by the bank. Therefore, a strong domestic currency can impact the profitability of a bank's foreign exchange trading activities. Fluctuations in exchange rates can lead to gains or losses on trading positions, depending on whether the bank correctly anticipates currency movements.

### **2.2.1.4 Interest rate Parity theory**

Interest Rate Parity (IRP) theory is a fundamental concept in international finance that has significant implications for bank profitability. Banks play a crucial role in the global financial system by borrowing and lending funds across different countries, which expose them to interest rate differentials and exchange rate fluctuations. In the context of bank profitability, IRP theory suggests that interest rate differentials between two countries should be equal to the difference in the spot exchange rate and the forward exchange rate. This implies that banks can potentially exploit arbitrage opportunities by borrowing in a low interest-rate currency, converting it into a high-interest-rate currency, and investing at a higher interest rate to benefit from the interest rate differentials. For example, if a bank can borrow funds at a lower interest rate in one country and invest them at a higher interest rate in another country, it can generate profits from the interest rate differential. However, this arbitrage opportunity is subject to the assumptions

of IRP theory, such as the availability of covered interest rate parity conditions and efficient foreign exchange markets.

Moreover, fluctuations in exchange rates can impact bank profitability, as changes in exchange rates can affect the value of banks' assets and liabilities denominated in foreign currencies. Banks need to carefully manage their currency exposure to mitigate exchange rate risk and ensure sustainable profitability. In addition, deviations from Interest Rate Parity can create opportunities for banks to engage in speculative activities or hedging strategies to capitalize on mis-pricings in the foreign exchange market. By understanding IRP theory and monitoring interest rate differentials and exchange rate movements, banks can make informed decisions to enhance their profitability and risk management practices.

### **2.2.1 5 The International Fisher Effect**

The International Fisher Effect of macro-economic variables was introduced and developed by Irving Fisher in the 1930s who was an economist. According to Fisher, countries have different inflation rates and this causes a similar variation in economic development as well as returns (Ross, 2008). The theory holds that relatively high-interest rates in foreign currencies tend to depreciate due to the expected inflation brought about by the high nominal interest rates (Madura, 2012). Despite the theory having limitations in predicting the short-run variations in exchange rates, it helps in understanding the exact interrelation between inflation, and both the real and nominal interest rates.

The theory helps in understanding why exactly inflation may not have a significant impact on the real interest in the long term (Nyandema and Lagat, 2016). The proposition is that the changes in exchange rates experienced in countries will also tend to rule out any differences that may be obtained as a result of having varying interest rates (Demirag and Goddard, 1994). This theory is relevant for this study as it explains the purchasing power of each currency which captures the inflation across countries to ensure that at equilibrium exchange rates, the basket of goods and services purchased by one unit of a country's currency equals those purchased in the second country.

## 2.3 Overview of the Exchange Rate Regime in Ethiopia

An exchange rate regime is a way a monetary authority of a country or currency union manages the currency about other currencies and the foreign exchange market. It is closely related to monetary policy and the two are generally dependent on many of the same factors, such as economic scale and openness, inflation rate, the elasticity of the labor market, financial market development, and capital mobility.

There are two major regime types:

*Floating (Flexible) Exchange Rate Regime:* In this system, exchange rates are determined by market forces, with countries having some influence through actions such as buying or selling currency reserves, adjusting interest rates, and negotiating foreign trade agreements.

*Fixed (Pegged) Exchange Rate Regime:* This system involves a country setting the value of its currency at a fixed rate relative to another currency or commodity, such as gold. Today, many countries peg their currency to a major currency like the US dollar, euro, or British pound, meaning the value of their currency will rise or fall in tandem with the value of the currency it is pegged to.

The first is Crawling bands: the rate is permitted to vary in a band around a central value that is changed on a regular basis. This is achieved at a set pace or in a regulated manner in response to economic indicators. The second is Fixed Exchange Rates: Fixed exchange rates are those that can be converted directly into another currency. The domestic currency is backed one to one by foreign reserves in the case of a different currency, also known as a currency board arrangement. This group includes pegged currencies with very limited bands (1%) (NBE policy frame work, 2009). The overall pressure in the foreign exchange market is expressed in observed adjustments in the exchange rate in a free floating exchange rate system. In a fixed exchange rate regime, foreign exchange market conditions are totally captured by changes in reserves. However, in mixed exchange rate systems, such as regulated floating, a change in the exchange rate absorbs some of the pressure while changes in reserves absorb the rest. In such cases, neither reserve shifts nor exchange rate movements accurately represent the magnitude or existence of the exchange market disequilibrium (Abebe, 2006).

The choice of exchange rate regime is determined by various factors, such as the objective pursued by the policy makers, the sources of shocks hitting the economy and the structural characteristics of the economy. The authorities are expected to modify their macroeconomic policies (especially fiscal and monetary policies) to suit the chosen exchange rate regime once the decision is made (Abebe, 2006). Many central

banks engage in "controlled floating," in which they participate in the foreign exchange market by "bending against the tide." To do so, a central bank sells foreign exchange when the rate is rising, dampening its rise, and buys when the rate is falling. The motive is to reduce the variability in the exchange rate (Jeffrey, 2008).

Different exchange rate strategies are pursued by countries to ensure that the exchange rate regimes they have adopted are working properly. The term "exchange rate strategy" refers to the monetary authorities' systematic attempt to manipulate the exchange rate's level or rate of change. Foreign exchange market interference, domestic monetary policy, different types of controls on international trade and capital flows, and official announcements of future policies are all possible policy tools for influencing the exchange rate (Glick and Hutchison, 1989). As different regimes governing Ethiopia in different times they had been set different exchange rate policies with the intention of monitoring exchange rates fluctuations effect on the economy of the country.

Accordingly, The Ethiopian Birr has been pegged to the US dollar since the 1940s. Under the Bretton Woods exchange rate system exchange rates were essentially fixed to gold parities and fluctuation was allowed only within narrow limits. After the breakdown of this system in 1971 the industrial world converted to a flexible exchange rate system. Since then the country has been pursuing a passive exchange rate policy leaving the Birr to depreciate and appreciate with the dollar. When we consider to back days about exchange rate regimes in Ethiopia preceding 1992, the country was practicing a fixed exchange rate system, in which the rate was set merely by the government. Since 1992, the country has followed a regulated floating exchange rate strategy, in which the government intervenes when required to keep the foreign exchange market stable (Nega, 2015). As noted by both Nega (2015) and Lencho (2013), the National Bank implemented several measures following the significant devaluation in 1992, which was part of an effort to liberalize the foreign exchange market. Consequently, on May 1, 1993, the fortnightly foreign exchange auction market was introduced, featuring two different rates: the official rate based on the Dutch auction system and the marginal rate derived from the marginal pricing auction system.

This shift was part of a broader macroeconomic adjustment program aimed at establishing a market-determined exchange rate, improving the allocation of foreign exchange, and transitioning transactions from informal to official channels (Aron, 1998). In 2001, the auction scheme was phased out in favor of the regular interbank foreign exchange market. As a result, demand and supply considerations in the calculation of the exchange rate were given more freedom.

The National Bank of Ethiopia, on the other hand, will primarily handle the exchange rate pressure through reserve requirements. Ethiopia follows a regulated floating exchange rate system as a result. Effective management of foreign exchange rates heavily relies on monitoring policies. The National Bank of Ethiopia (NBE) is responsible for the formulation and implementation of monetary policy in the country. Its primary objectives include maintaining price stability, ensuring a stable exchange rate, and supporting sustainable economic growth. To remain competitive in international trade, the NBE prioritizes exchange rate stability and uses interventions in the exchange rate as tools within its monetary policy framework. These actions can influence the bank's foreign reserve position and domestic money supply.

On July 23, 1945, the official exchange rate was established at 2.48 Birr per US dollar and remained unchanged until 1964, when it was adjusted to 2.50 Birr per USD (Nega, 2015). The Birr was then devalued to 2.30 per USD in 1971. Subsequently, it was pegged to the US Dollar at an exchange rate of 1 USD to 2.07 Birr until a significant devaluation by Ethiopia's transitional government in 1992, which resulted in a 58.6% devaluation (from 2.07 to 5 Birr per USD). As previously mentioned, this devaluation in 1992 was accompanied by a shift from a fixed exchange rate regime to a managed floating exchange rate system, leading to a trend of depreciation for the Ethiopian currency. Over the past decade, the Ethiopian Birr has significantly depreciated against major foreign currencies, including the USD, GBP, and Euro. For instance, the exchange rate of the ETB to USD fell from 16.99 in the 2010/2011 period to 35.16 in 2019/2020 (NBE, 2020). Abebe (2006) found that during his analysis of the exchange market pressure (EMP) index for Ethiopia from November 2001 to December 2005, the exchange market experienced depreciation pressure in 42 out of the 49 months studied. This ongoing depreciation of the national currency can affect the economic performance across various sectors, which may, in turn, indirectly affect the performance of commercial banks.

Regarding its exchange rate recently, Ethiopia had made significant floating exchange rate reform as part of an International Monetary Fund (IMF)-backed macroeconomic stabilization program. The IMF has consistently pushed for adopting a floating exchange rate in Ethiopia, arguing that the local currency (ETB) is overvalued compared to the USD and other major foreign currencies. The World Bank and IMF often advocate for a market-based exchange rate system that unifying the official rate with the much higher black-market rate (Brian, 1989). The Ethiopian government has been in talks with the IMF for a rescue loan or financial support to address the key macroeconomic imbalances facing the economy. Due to political instability the economy of the country has been grappling with a severe shortage of foreign exchange reserves, a growing external debt problem (about \$28 billion), and high debt servicing costs

(approximately \$2 billion annually). As of May 2024, foreign exchange reserves were sufficient for about 1 month of imports, and there were growing pressures on the fiscal and current account balances (UNDP, 2024).

In general, fluctuations in exchange rates may result from demand and supply dynamics as well as governmental policy decisions. Once fluctuations occur, they can affect a range of macroeconomic factors and industries, particularly the banking sector. As previously, highlighted, exchange rate fluctuations influence bank efficiency and can indirectly affect the profitability of commercial banks. Due to the direct and indirect effects of exchange rate variations on bank profitability, it is extremely challenging to clearly explain overall impact of exchange rate on the profitability of the selected banks in this study.

## **2.4 Determinants of Financial Performance**

The financial performance of commercial banks is an integral tool in evaluating their profitability, sustainability, and dominance in the market. Different banks have been established to have varying returns despite them providing similar products and services for the same market segment. This raises concern on the exact factors, both internally and externally that determine the returns in a particular bank. Exchange Rate The value of a local currency against a unit of the foreign currency is termed as the exchange rate. The exchange rate is not fixed as it tends to vary based on the particular currencies and also the particular time or period. Certain currencies will have a higher value than others, but when the value decreases it is termed as depreciating. Many factors result in changes in the exchange rates and this includes mainly the balance between demand and supply in the foreign market. These changes occur spontaneously and always seem almost difficult to predict.

The changes result in the organization's performance to be changed as well. This is however limited largely to those organizations undertaking mainly international transactions or currencies as the locally based ones will be impacted minimally (Nyandema and Lagat, 2016).

As such high exchange rates will make most foreign investors shun making any transactions at that particular time. The banks will be affected in a similar way as depreciation in the local currency will mean reduced transactions such as savings and borrowing resulting in reduced returns. Loan to Deposit Ratio (LDR) The LDR refers to the interaction between total loans and total deposits, expressed as a percentage. The LDR gives an insight into the proportion of assets a bank can create from its liabilities. It also indicates the amount of income a bank can generate (Rengasamy, 2014). It is expected that the larger the deposits

(liabilities), the larger the amount of assets (loans) it creates. This is, however, dependent on a few key financial variables and the economy.

### **Inflation Rates**

Inflation is the rate at which the overall price of goods and services within an economy increases over a certain period. It is a measure of the devaluation of the currency of a country. Two main price indexes measure inflation: CPI (Consumer Price Index): A measure of price changes in consumer goods and services such as gasoline, food, clothing, and automobiles. The CPI measures price change from the perspective of the purchaser. PPI (producer price indexes: families of indexes that measure the average change over time in selling prices by domestic producers of goods and services. PPIs measure price change from the perspective of the seller.

### **The size of the Bank**

The size of the bank also plays a role in how the banks will not only perform but also in attaining dominance in the banking industry (Ahmed, Ahmed and Ahmed, 2010). From the previous studies there are mixed results. Humphrey and Berger (1997), European commission (1997) Big banks are achieved more of economies scale. But, on other hand Vander (1998) found evidence for larger banks of diseconomies and economies of scale for small banks. Kosmidou (2006) Banks profit negatively related to Bank size in his investigation of the research on UK-owned commercial banks. That well-documented literature was used total asset banks as a proxy for their size to account for size-related economies or diseconomies of scale.

### **GDP (Gross Domestic Product)**

The performance of the country 's economy can affect the profitability of banks. The effect of exchange rate on the economy in general could therefore affect the bank performance. Different studies assessed the relation between exchange rate and economy. For example, Charles (2006) showed that exchange rate is one of the most important economic adjustment instruments and one of the most difficult and controversial economic policy tools. The study argues that a depreciation of the exchange rate only offer protection to domestic industry when the domestic cost of production increases much less than the rate of depreciation, while prices of imported equivalent increases by the full amount of the depreciation. Obadan (2006) put forward an argument that the exchange rate plays a role in connecting the price system in different countries thus enabling traders to compare price directly.

Changes in exchange rate have a powerful effect on imports and exports of the countries through effects on relative prices of goods. Agu (2002) as cited in Adesola and Taiwo (2013) shows that optimal exchange rate policies must be aimed at cooling real exchange rate (RER) that maintains internal and external balance in an economy. Internal balance here is defined in terms of the level of economic activities consistent with satisfactory control of inflation and full employment of resources. External balance on the other hand is defined in terms of payment equilibrium, sustainable current account deficit finance in a lasting basis of expected capital flow. Any distribution in the real exchange rate will mostly probably lead to instability in both external and internal balance. Generally, exchange rate has critical influence on the import and export business, maintaining internal and external balance in an economy and viewed as an instrument for economic adjustment.

### **Interest Rate**

Interest is payment for use of funds over a period of time, and the amount of interest paid per unit of time as a fraction of the balance is called the interest rate. In some contexts, economists have found it conceptually useful to refer to a single number, the interest rate. In fact, at any point in time there are many prevailing interest rates. The rate actually charged will depend on such factors as the maturity of the loan, the credit-worthiness of the borrower, the amount of collateral, tax treatment of interest payments for both parties and special features such as call provisions or sinking fund requirements. A complete treatment of interest rates would account for all of these factors, but in fact it is hard enough to handle any one of them adequately. This entry considers one factor, the term to maturity for default-free bonds. This analysis of the term structure of interest rates will be approached from the partial equilibrium perspective of finance: the determinants of interest rates and the impact of changing short and long interest rates on the macro economy.

### **Money Supply**

In macroeconomics, the term "money supply" or "money stock" refers to the total amount of money that the public possesses at a specific moment. While there are various definitions of "money," standard measures typically encompass both physical currency in circulation and demand deposits, which are readily accessible financial assets held at banking institutions. Money supply statistics are generally compiled and disseminated by national statistical agencies or central banks. Milton Friedman (2001) Friedman, a prominent monetarist, emphasized that the money supply is a crucial determinant of economic activity. He famously stated that "inflation is always and everywhere a monetary phenomenon." His views

in the early 21st century reiterated the importance of controlling the money supply to manage inflation and stabilize the economy. Stephen G. Cecchetti & Kermit L. Schoenholtz (2008): In their work, "Money, Banking, and Financial Markets," they defined the money supply as the total amount of monetary assets available in an economy at a specific time. They highlighted its role in influencing interest rates and overall economic activity.

### **Loan-To-Deposit Ratio (LDR)**

The LDR refers to the interaction between total loans and total deposits, expressed as a percentage. The LDR gives an insight into the proportion of assets a bank can create from its liabilities. It also indicates the amount of income a bank can generate (Rengasamy, 2014). It is expected that the larger the deposits (liabilities), the larger the amount of assets (loans) it creates. This is, however, dependent on a few key financial variables and the economy. The LDR is a useful tool for assessing the funding role of banks. It is used mainly to determine the level of liquidity of a bank and provides insight into banks' risk level, fund utilization, and intermediation activities, (Rengasamy, 2014). The LDR is the total value of loan facilities issued divided by the aggregate value of deposits mobilized, (Kurotamunobaraomi et. al. 2017). A guide to when a bank relies on its deposits as borrowing or otherwise is explained as follows;

- When the ratio of LDR is lower than one, this implies that the bank relied on its deposits to grant loans to its customers (without any outside borrowing);
- While a ratio greater than one, implies that the bank borrowed money, which it re-loaned at higher rates, rather than relying entirely on its deposits

### **2.5 Review of Empirical Studies**

Financial institutions in developing countries are considered more susceptible to financial crises. Experts in the financial and economic fields agree that changes in exchange rates directly impact banks' earnings, costs, and overall profitability (Sanders et al., 1990). In a study by Babazadeh and Farrokhnezhad (2012), titled "The Impact of Short and Long-term Changes in Exchange Rates on Banks' Profit," a short and long-term error correction model was utilized to analyze data from a commercial bank's financial reports and balance sheets from 2006 to 2010. The findings revealed that immediate fluctuations in exchange rates have an anticipated effect, while sustained profitability for banks is observed when the exchange rate surpasses the equilibrium level in the long run. The study demonstrated significant short-term and long-term impacts of exchange rate fluctuations on banks' profits.

Despite the non-stationary nature of exchange rates and profits from foreign exchange operations, a co-integration between the two variables was identified. The study also highlighted that short-term foreign

exchange earnings are more influenced by exchange rate volatility compared to long-term effects. With an error correction factor of 1.23, achieving a long-run equilibrium necessitates the alignment of short-term and long-term equilibrium levels. Taiwo and Adesola (2013) conducted a study titled "Exchange Rate Volatility and Bank Performance in Nigeria," utilizing loan loss to total advances ratio and capital deposit ratio as proxies for bank performance.

The results from two models indicated that the impact of exchange rate fluctuations on bank performance varies depending on the proxy used. The loan loss to total advances ratio suggested that exchange rate volatility could negatively affect lenders' loan management capabilities due to increased bad loans, while the capital deposit ratio showed no significant correlation with exchange rates. Kemisola and colleagues (2016) conducted a study on the impact of currency rate volatility on banking performance in Nigeria from 2005 to 2014. They measured exchange rate fluctuation using the average annual return of the US dollar to the Nigerian currency over a decade and assessed volatility through an ARCH LM test.

The findings revealed that exchange rate volatility negatively affected banks' profitability and led to decreased liquidity due to the depreciation of the Nigerian currency. In a separate study, Caballero and Krishnamurthy (2005) investigated the effects of currency and credit channel volatility in emerging markets, highlighting the financial constraints faced by firms in these markets. They suggested that monetary policy could mitigate external credit contraction during moderate crises but may be less effective during severe crises when exchange rate depreciation and expansionary monetary policy exacerbate the situation. Mbutor (2010) conducted a study on the relationship between exchange rate volatility, stock price fluctuations, and bank lending behavior in Nigeria using the VAR method.

The Granger causality test confirmed that fluctuations in the exchange rate have influenced the value of banks' stocks and their lending behavior in Nigeria. Kariuki and Washington (2014) investigated the impact of macroeconomic variables on credit risk in the banking system of Kenya as a determinant of nonperforming loans from 1990 to 2013. They used the OLS method and an error correction model, 18 finding that fluctuations in the Kenyan shilling against the U.S dollar significantly increased credit risk for Kenyan banks. Munib and Yasmin Javid (2013) studied the impact of macroeconomic variables, such as exchange rates, on non-performing loans in commercial banks in Pakistan from January 2002 to December 2011.

The results of the Granger causal relationship analysis revealed that inflation and exchange rates were factors contributing to non-performing loans. Similarly, Ozcelebi (2018) examined the effects of exchange

rate volatility on financial and macroeconomic variables using the PVar model for 10 OECD countries. The variance decomposition analysis showed that exchange rate volatility led to changes in interest rates, while it did not have a significant effect on inflation. Amenawo et al. (2016) conducted a study on the impact of currency fluctuation on the profitability of commercial banks, focusing on the 12 largest banks in Nigeria.

The researchers highlighted the importance of examining the effect of currency fluctuations on bank profitability, especially in the context of global financial integration. They emphasized that without proper hedging strategies, commercial banks can experience profit erosion due to exposure to international currency fluctuations. Using a balanced panel methodology, the study analyzed the relative effect of currency fluctuation on commercial banks' profitability. The researchers introduced four bank characteristic variables (bank size, bank divestment, non-performing loans, and capital adequacy ratio) into the model to isolate the independent effect of currency fluctuation on profitability.

The initial results without the bank characteristic variables showed that fluctuations in the dollar and pound had a negative impact of 6% and 11% on commercial banks' profitability, respectively. However, when the bank-specific variables were included in the model, the magnitude of the negative effect of currency fluctuation decreased to 1% for the dollar and 5% for the pound. Additionally, the study found that bank size and capital adequacy had a positive and significant effect on profitability, while non-performing loans and bank divestment had a negative impact. Kestgar et al. (2020) conducted a study focusing on the impact of exchange rate volatility on the performance of Iranian banks. The researchers examined data from 14 Iranian banks over the period of 2007-2017. They utilized the GARCH method to derive exchange rate fluctuations and employed panel data analysis to assess the effect of these fluctuations on bank performance.

The study found that the volatile exchange rate in the Iranian economy had a negative impact on the performance of banks. Specifically, the research revealed that exchange rate volatility had a 19 statistically significant negative effect on banks' capital return ratio. Additionally, the study highlighted that exchange rate fluctuations contributed to an increase in the ratio of lending to total bank deposits. This increase in lending relative to deposits was associated with a widening financial gap and heightened credit risk for the banks. The study by Berbano et al. (2021) investigated the impact of real exchange rate volatility on the profitability of non-financial publicly listed firms in the Philippines from 2008 to 2019. The researchers highlighted that exchange rate volatility poses a challenge for firms as it increases the exchange rate risk associated with trading goods and services, both internationally and domestically. They

noted that existing literature lacks consensus on the relationship between exchange rate volatility and firm profitability, with results varying across countries and industries. Using measures of exchange rate volatility such as the real effective exchange rate, nominal bilateral exchange rate, and real bilateral exchange rate, along with three measures of firm profitability, the study employed a two-step Arellano-Bond System Generalized Method of Moments (GMM) estimator on an unbalanced panel dataset to analyze the impact of exchange rate volatility on profitability.

The findings of the study indicated that firm profitability was not significantly affected by exchange rate volatility, regardless of the specific proxies used. Additionally, the researchers found that the impact of exchange rate volatility on firm profitability was not dependent on the firms' level of exposure to the international environment. Instead, it was determined that the use of hedging strategies to mitigate foreign currency risk played a crucial role in dampening the impact of exchange rate volatility on profitability. The study by Gumbo et al. (2022) focused on the impact of exchange rate fluctuations on the profitability of banks in Zimbabwe. The researchers highlighted the crucial role of banks in the financial system and how their profitability is influenced by their intermediation functions, which expose them to various risks, including exchange rate risk in the context of Zimbabwe's continually weakening currency. By analyzing panel data of 13 commercial banks and 1 savings bank in Zimbabwe from 2016 to 2021 using the E-views package, the study aimed to determine the effects of exchange rate fluctuations on banks' profitability.

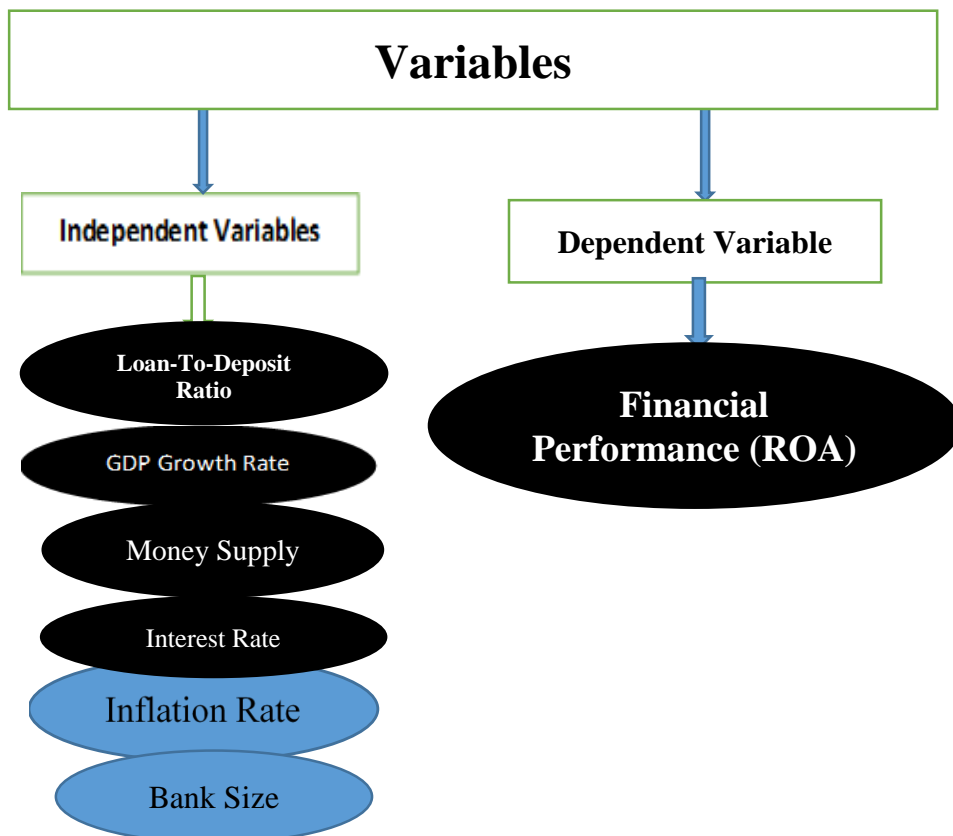
The findings revealed a significant negative relationship between exchange rates and bank profitability, indicating that the depreciation of the Zimbabwean currency had a detrimental impact on banks' profitability. The research also identified that the deposit to assets ratio had a negative significant relationship with bank profitability, suggesting that liquidity management plays a crucial role in maintaining profitability. Additionally, the study found that economic growth, as represented by GDP, had a positive significant relationship with bank profitability, while inflation had a negative significant relationship, aligning with existing literature. Moreover, the study conducted by Nur and Zulfa (2023) investigate the effects of interest rates, inflation, and the value of the Rupiah on the financial performance of state-owned banks in Indonesia from 2013 to 2022. The researchers highlighted the essential role of banking services in various sectors in Indonesia and how macroeconomic conditions influence the regulatory framework of Bank Indonesia, impacting the operations of all banks in the country. Using a quantitative approach and collecting secondary data from state-controlled Indonesian banks, the study employed multiple linear regression analysis to examine the relationship between interest rates, inflation, Rupiah exchange rates, and key financial indicators such as Return on Assets (ROA), Loan to Deposit

Ratio (LDR), and Capital Adequacy Ratio (CAR). They found that ROA was not significantly affected by interest rates, inflation, or Rupiah exchange rates.

However, the LDR indicator was influenced by inflation, interest rates, and Rupiah exchange rates, indicating a relationship between these macroeconomic factors and the bank's loan-to-deposit ratio.

## 2.6 Conceptual Framework

Conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate it. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings. It informs part of the agenda for negotiation to be scrutinized, tested, reviewed and reformed because of investigation and it explains the possible connections between the variables (Smith, 2004). So, to guide the study, interrelationship between variables discussed above presented in the conceptual framework model shown as following Variabl



*Figure 2.1 Conceptual Framework*

## **CHAPTER THREE**

### **METHODOLOGY OF THE STUDY**

#### **3.1 Research Approach**

This section presents the research methodology used in the study which details the research design, data types, and data sources and demonstrates how these elements support the study's main goals. The section reveals the foundational motivations that shaped the researcher's approach to the study. The chapter provides an extensive review of the research methodology by explaining the techniques used for both gathering data and processing it. The study details its sampling procedure while outlining participant selection criteria and sample size justification. The study outlines the analytical model used in its methodology. The chapter contains a detailed examination of data analysis methods and the statistical techniques that were employed. The research presents essential variables and their corresponding data elements which play a critical role in the study through detailed examination.

#### **3.2 Research Design**

The type of research design employed in this study was descriptive and explanatory research. The major purpose of descriptive research is to state the state of affairs as it exists at present. Descriptive analysis is used for the transformation of raw data into a form that makes them easy to understand and interpret. Second, the study employs an explanatory research design in that the relationship between variables is correlated with independent variables was indicated. According to Sekaran (2004), explanatory research design helps us to infer the relationship between variables from the existing data through analysis of the association between two or more variables and how several independent variables might explain the variance in a dependent variable

#### **3.3 Data Type and Source**

This study's analysis was solely based on secondary data. This type of data was used for evaluation and interpretation, providing a foundation for investigating the research questions in light of the available data. Both documented and undocumented sources were included in the secondary data, which included relevant materials from other financial institutions and regulatory bodies as well as annual reports from specific banks. These resources offered a useful source of information that supported the study's analytical framework and the findings.

#### **3.4 Target Population and Sampling of the Study**

The National Bank of Ethiopia (NBE) estimates that there are currently two state-owned banks and about thirty private banks in the nation's banking industry. Private commercial banks are the exclusive focus of this study. According to Jonker and Pennink (2010), a number of limitations frequently make it

impractical for researchers to examine a whole population. As a result, using a sample—which represents a subset of the population—is common in empirical research. In this case, the availability of operational year data derived from official bank documents served as a guide for sample selection. According to Leedy and Ormrod (2005), sampling techniques can be broadly divided into probability and non-probability approaches.

Purposive sampling, which falls under non-probability methods, was used for this investigation. Purposive sampling is especially suitable when looking at a relatively homogeneous group, as Singh (2006) points out. Therefore, two main criteria—both pertaining to the availability and applicability of operational data—were used to choose which banks would be included in the sample.

The National Bank of Ethiopia (NBE)-registered private commercial banks that are presently in operation are the sole subject of this study. In order to produce robust and dependable econometric estimations, homogeneity is ensured by restricting the sample to commercial banks. Furthermore, only banks for which reliable data is available from 2011 to 2024 are included in the analysis. Awash Bank, Dashen Bank, Cooperative Bank of Oromia (CoopBank), Bank of Abyssinia, United Bank, Wegagen Bank, Nib International Bank, Oromia International Bank, Lion International Bank, Berhan Bank, and Zemen Bank are among the eleven private commercial banks that are examined in this study based on these criteria. This choice makes it possible to conduct a thorough analysis of how exchange rate swings affect the financial results of Ethiopia's private commercial banking industry.

### **3.5 Techniques for Data Analysis and Presentation**

Using panel data analysis, this study investigates the connection between Ethiopian private commercial banks' financial performance and exchange rates. Comparing panel data to time-series or cross-sectional data alone reveals a number of methodological benefits. These benefits include the capacity to track dynamic changes over time, account for individual-specific heterogeneity, and alleviate problems like multicollinearity, which are more common in simpler data structures (Baltagi, 2009). A structured document review process was used to gather data, with a particular focus on a subset of private commercial banks. Consistent annual data, mostly from the National Bank of Ethiopia (NBE), makes up the 15-year panel dataset. After being gathered, the data was coded and arranged methodically for further examination.

The study analytical approach included descriptive statistics, correlation analysis, and multiple regression estimation techniques to address the research questions posed. First, we computed descriptive statistics for both dependent and independent variables across the sample period. This ensure that we represent our

findings transparently and accurately while adhering to rigorous research methodology standards. Next, the researcher will conduct correlation analyses to examine the relationships between independent and dependent variables. Finally, the researcher used appropriate econometric estimation methods to analyze the collected data, meticulously testing the underlying assumptions of the regression models developed. Statistical software called Eviews was used for the analysis of the data obtained from various sources.

By following this structured methodology, the study provides insightful findings that deepen our understanding of how exchange rates affect the financial performance of private commercial banks in Ethiopia. The degree and direction of the relationships between the variables were then evaluated using correlation analysis. The effect of exchange rate fluctuations on banks' financial performance was then assessed using multiple regression models. Based on the panel data's properties, econometric estimation techniques were chosen, and the validity and robustness of the underlying model assumptions were carefully tested. Specialized statistical software was used to analyze the data, enabling accurate estimation and thorough interpretation of the findings. The development of empirical insights into how exchange rate volatility affects the performance of Ethiopia's private commercial banking industry was made possible by this methodological approach.

### **3.6 Variable Description and Measurement**

This study aims to examine the relationship between exchange rate dynamics and the financial performance of commercial banks in Ethiopia. To achieve this objective, the study adopted financial performance as the dependent variable. Whereas, the exchange rate, money supply, inflation rate, GDP growth rate, bank size, interest rate spread, and loan-to-deposit ratio are used as independent variables.

#### **Dependent Variable**

Regarding the measurement of financial performance, various alternative measurements have been proposed in the literature. Return on equity (ROE), net interest margin (NIM), and return on assets (ROA) are the three financial performance ratios that are most frequently utilized in literature strands. For this particular study ROA is preferred over ROE as a measure of financial performance in private banks because it focuses on a bank's ability to generate profits from its assets, making it a more accurate reflection of operational efficiency. In the banking industry, which is asset-driven, ROA provides a clearer picture of how well a bank utilizes its assets to generate returns, independent of its financial structure or leverage, which can distort ROE (Dietrich and Wanzenried, 2011; Kosmidou, 2008).

ROE is sensitive to leverage, meaning that banks with higher debt levels may show inflated performance figures, giving a misleading impression of their actual efficiency (Goddard et al., 2004). Additionally, ROA ensures better comparability across banks, as it is not influenced by differences in capital structures (Levine, 1997). Since external factors like exchange rate fluctuations directly affect a bank's assets, ROA offers a more consistent and relevant measure for this analysis (Athanasoglou, Brissimis, and Delis, 2008). Therefore, this study used Return on assets (ROA) as a proxy for financial performance in line with prior studies on the banking industry (Tassew and Hailu, 2019; Sathyamoorthi et al., 2020; Mitku, 2015; Chukwunulu et al., 2019).

$$ROA = \text{Net Income} / \text{Total Asset}$$

### **Independent variables**

**Money Supply (BMS):** Traditionally, the money supply can be defined in its narrow and broader sense. Narrow money (M1) is a measure of money stock intended primarily for use in transactions. It consists of currency held by the public, traveler's checks, demand deposits, and other checkable deposits. Broad money (M2) is a measure of the domestic money supply that includes M1 plus Quasi-money (savings and time deposits), overnight repurchase agreements, and personal balances in money market accounts. Mostly, M2 includes money that can be quickly converted to M1 (see Mishkin, 2009). The NBE takes the broader definition of money or M2 as money supply and also in the study this definition was used in terms of birr.

**Real Gross Domestic Product (RGDP):** is the aggregate measure of the size of an economy adjusted for price changes. Gross domestic product (GDP) is the value of all final goods and services produced in the country for a given period. The market value of GDP depends on the actual quantity of goods and services produced and their price. The actual quantity of goods produced sometimes is called the volume. Therefore, real GDP was used to capture the overall economic performance (Segni, 2020).

**Exchange Rate:** For this study we employed the real effective exchange rate (REER) which is the weighted average of a country's currency in relation to an index or basket of other major currencies. The weights are determined by comparing the relative trade balance of a country's currency against each country within the index. The variable was expressed in terms of the ratio of national currency (ETB) to United States' dollar. Under flexible exchange rate regime of open economy, it is most likely that depreciation in exchange rates influence the price of imported goods, aggravating consumer and producer price indexes to be driven up (Sen, 2019). Another common debate in the literature of exchange rate is

whether to employ real exchange rate data or a nominal exchange one. A substantial number of papers employ real exchange measurements as it could capture the volatility arising from the nominal exchange rate and relative prices (Aftab et al., 2017; Baek, 2014; Chi and Cheng, 2016). Some studies successfully employed nominal exchange rates driving important considerations (Sharma and Pal, 2018). However, the effects of nominal and relative price changes are not easy to isolate when data on prices are not widely available. Accordingly, real exchange rates were used in this work.

**Interest rate (IR):** As to the definition provided by Samuel and Nurina (2015), the interest rate is a worth gained from the asset or wealth either invested or saved. They also suggest that both the demand and supply side of an economy can be affected by interest rates and inflation through their linkage with money. It is the cost of loans that influences the demand for credit and hence money supply. According to IMF (2018), however, the interest rate has three functions: the return on financial assets which act as an incentive to save or lend, as a cost of capital, and links the foreign financial asset rate of return (Ojima and Emerenini, 2015).

**Consumer Price Index (CPI):** is the Ethiopian consumer price index and it measures changes in the prices of a basket of goods and services that households consume. Such changes affect the real purchasing power of consumers' incomes and their welfare. When prices of different goods and services vary by different rates, a price index can only reflect their average movement. A price index is usually given a value of unity, or 100, in some reference period, and the values of the index for other periods are intended to show the average proportionate or percentage change in prices from this price reference period (Fitsum, 2016). In the study, the annual average of CPI for each year was used to show the relationship between the bank's financial performance. CPI in logarithm form is used as a proxy for the inflation growth rate in the study because it has an advantage over the GDP deflator by measuring the price level of all goods and services that bought by domestic consumers. Unlike the GDP deflator which does not include changes in the price of imported goods, CPI incorporates all imported goods and also represents a proportion of all domestically produced goods and services because it exclusively focuses on consumer goods. Using a GDP deflator to measure percentage changes in the price level can underestimate the cost of living by excluding the price of imported goods. Therefore, CPI is more suitable when consumers' cost of living is desired to be measured (Zeder, 2018).

**Bank Size:-** The other important determinant of bank performance that was considered by the study is bank size. Since it is difficult to exactly measure the size of a bank, the logarithm of the total assets of a bank is usually used as a proxy for bank size. Bank size is included as an explanatory variable to explain size-related economies of scale or diseconomies of scale in Ethiopia's banking sector. The study expects a positive effect of size on bank profitability as diversification reduces risk and economies of scale lead to increased operational efficiency. Therefore, if the bank becomes extremely large in size, a negative effect could be between size and bank profitability, because the bank is harder to manage due to bureaucratic and other reasons. Therefore, the size-profitability relationship is expected to be non-linear (Eichengreen and Gibson, 2001). To emphasize this possible non-linear relationship, as a proxy the study used the logarithm of the bank's total assets.

**Loan-to-Deposit Ratio (LDR):-**The LDR refers to the interaction between total loans and total deposits, expressed as a percentage. The LDR gives an insight into the proportion of assets a bank can create from its liabilities. It also indicates the amount of income a bank can generate (Rengasamy, 2014). It is expected that the larger the deposits (liabilities), the larger the amount of assets (loans) it creates. This is, however, dependent on a few key financial variables and the economy. The LDR is a useful tool for assessing the funding role of banks. It is used mainly to determine the level of liquidity of a bank and provides insight into banks' risk level, fund utilization, and intermediation activities, (Rengasamy, 2014). The LDR is the total value of loan facilities issued divided by the aggregate value of deposits mobilized, (Kurotamunobaraomi et. al. 2017). A guide to when a bank relies on its deposits as borrowing or otherwise is explained as follows; · When the ratio of LDR is lower than one, this implies that the bank relied on its deposits to grant loans to its customers (without any outside borrowing); · While a ratio greater than one, implies that the bank borrowed money, which it re-loaned at higher rates, rather than relying entirely on its deposits

**Table 3.1 Summary of the Variables and their expected effects**

<b>Variables</b>	<b>Measurement</b>	<b>Expected Effects</b>
ROA	Total income to its total Asset	NA
Money Supply	Broad Money Supply	Positive
Inflation Rate	Annual inflation rate	Negative
GDP Growth	Annual GDP growth rate	Positive
Interest Rate	In percentage	Positive
Exchange Rate	USD/ ETB(birr exchange in terms of other FCY)	Negative
Bank Size	Log of total Asset	Positive
Loan to Deposit Ratio	In percentage	Positive

*Sources: Developed based on available works of literature,2025*

### **3.7 Model specification**

Model specification entails defining relationships between two or more variables by extending to the creation of equations, according to William et al. (2010). Multiple linear regression analysis was done to test the hypothesis and ascertain the relative significance of each independent variable in influencing financial performance To study Ethiopian private commercial banks' financial performance using their Profitability measured through Return on assets (Ismael & Malela 2021), a comprehensive regression model which employs multiple independent variables was constructed to allow distinguishing between the determinants of the banks' financial health. This ensures maximum effort and resources are directed toward value-adding activities (Al-Tamimi, 2006).

The particular model attempts to explore the effects of exchange rate changes concerning Return on assets to private commercial banks in Ethiopia within the context of existing macroeconomic and bank-specific factors, through the lens of a panel study (Alamneh & Mancha, 2021). As one of the most important macroeconomic variables, the exchange rate is likely to have a substantial impact on banks' financial performance particularly in emerging economies like Ethiopia, where trade and financial relations are assuming greater importance (Yeshineh, 2016). It has been noted that exchange rate policy is a self-determined exchange rate policy that one way or another a nation shifts its economic performance around which greatly factors international economic interactions and impacts economic development (Shaik & Gona, 2020). For example, exchange rate volatility affects bank profitability in manifold ways such as the

estimation of foreign currency assets and liabilities valuation thresholds.

In this work the researcher taken to account different multiple independent variables in the regression model, and by using these variables the researcher can identify the key factors that have a significant impact on financial performance. This can help banks prioritize their efforts and resources on improving these key drivers to enhance their financial performance. Likewise, to examine the impact of all independent variables: exchange rate, GDP growth rate, money supply, loan, inflation rate, bank size, and interest rate spread on ROA a measure of the financial health of commercial banks the general regression equation was specified as follows:

*Financial performance (ROA) = F (Exchange rate, inflation rate, GDP, loan, interest rate spread and Money supply)*

Accordingly, our panel Model is specified to measure the effect of exchange rate dynamics on ROA for private commercial banks in Ethiopia.

$$ROA_{it} = \beta_0 + \beta_1 Ex + \beta_2 Xi + e_{it} \dots\dots\dots 3.1$$

*ROA<sub>it</sub>* = Return on Asset of bank *i* at time *t*,

*B<sub>0i</sub>* = the constant term,

*β<sub>1i</sub>*, = the coefficients of the explanatory variables,

*Ex<sub>it</sub>* = Exchange rate at time

*Xi<sub>t</sub>* = represents a list of control variables used in the model

Whereas, *e<sub>it</sub>* is the error term that is very important for assessing the assumption of homoscedasticity, which states that the variance of the error term should be constant across all levels of the independent variables. Violations of this assumption can lead to biased estimates and incorrect inferences. By examining the distribution of the error term, researchers can determine if this assumption holds in their regression model. On the other hand, the error term is also essential for conducting hypothesis tests and calculating confidence intervals for the coefficients of the independent variables.

The standard errors of the coefficients were derived from the variability of the error term, and these standard errors are used to assess the statistical significance of the relationships between exchange rates and banks' financial performance. The error term, also known as residuals, was analyzed to

identify patterns or trends that may indicate misspecification of the model or violations of underlying assumptions. Residual analysis helps us to diagnose potential issues with the regression model and make appropriate adjustments to improve its accuracy and reliability.

Moreover, other factors could influence the financial performance of banks; failure to include some of these critical factors to the model may result in exaggerated estimates of the changes in the bank return on asset (ROA) attributable to foreign exchange rate fluctuation. Therefore, model indicated by equation below (3.2) is specified to include key control variables that could affect bank's profitability (ROA). The control variables included in the model are interest rate spread and money supply, loan-to-deposit ratio, Inflation rate GDP growth, and bank size. Despite not only those independent variables determining the effect of bank profitability, other bank-specific and macroeconomic variables influence banks' profitability. But, regarding this study, the main objective of the study was to investigate the impact of exchange rates on banks' performances, and the other variables were used as control variables so that the only above independent variables are included in the study and also considering of timeframe to finish the research is limit to address other independent variables.

$$ROA_{it} = \beta_0 + \beta_1 Ex + \beta_2 Ms + \beta_3 CPI + \beta_4 GDP + \beta_5 Irs + \beta_6 Bs + \beta_7 loan + e_{it} \dots \dots \dots 3.2$$

*Note: the natural logarithm was used for some variables except for variables expressed in rate or percentage form.*

Where:

*ROA<sub>it</sub>* = Return on Asset of bank *i* at time *t*,

*β<sub>0i</sub>* = the constant term,

*β<sub>1i</sub>*, = the coefficients of the explanatory variables,

*Ex<sub>it</sub>* = Exchange rate *i* at time *t*

*CPI<sub>it</sub>* = Inflation rate at time *t*.

*Ms* = Money supply at time *t*

*GDP* = Growth domestic production at time *t*.

*Irs* = interest rate spread at time *t*

$B_{it}$  = bank size  $i$  at time  $t$

$L_{it}$  = Loan to deposit ratio  $i$  at time  $t$

$\epsilon_{it}$  = the error term.

### 3.7.1 Model Diagnostic Test

#### Panel Unit Root Test

Currently, the issue of stationarity in panel data has its origin from time series (Baltagi, 2005). Different panel unit root tests take a look at what has evolved mainly in reaction to the troubles of homogeneity, sample bias, and cross-sectional dependence; the presence may spoil the estimation process in dynamic panel analysis (Baltagi, 2005). The assumption of homogeneity in most panel analyses to permit pooled regression should bring about incorrect inferences.

#### Im-Pesaran-Shin (IPS) Unit Root Test

The IPS unit root test is a first-generation test developed by (Im et al., 2003) and operates under the assumption of individual unit root processes. Put differently, it gives room for heterogeneity by allowing the coefficient of the various cross-sections to differ, as this will adjust the power of the test in case a unit root is present. While developing this test the authors suggest that individual unit root tests can be combined to generate a panel-specific result. Moreover, the test employs regression that is lagged to address the issue of autocorrelation. These with individual cross-sectional ADF regression proceeds as follows:

$$\Delta y_{it} = \rho y_{it} + \sum_{p=1}^j \theta y_{i,t-1} + \beta X_{it} + \epsilon_{it} \dots \dots \dots (3.3)$$

The null hypotheses for this test can be framed as follows;

$$H_0: \rho_i = 0, \forall i$$

And the alternative hypotheses are given as

$$H_1: \rho_i \neq 0, \text{ For } i = 1, 2, \dots, N-1 \text{ or } \rho_i = 0 \text{ For } i = N + 1, N + 2, \dots, N$$

This displayed that a nonzero fraction of the individual process is stationary. From the individual ADF regressions, the average of the t-statistics for  $\rho_i$  is adjusted to obtain the needed t-statistics.

Consequently, for this IPS panel unit root test

$$H_0 : \text{ Series contains unit root } \rho = 0$$

$H_1$ : Series does not contain unit root  $\rho \neq 0$

### Levin Lin Chu (LLC) Unit Root Test

The LLC is one of the first generation unit root tests; which were introduced by (Levin et al., 2002) under the assumption of a common unit root process across units in a panel data set. The prerequisite of this test was the data must be a strongly balanced panel. On the other hand, LLC specification requires the inclusion of the number of lags used in each cross-sectional unit, the kernel choices used in the computation, and the exogenous variables employed. His unit root test equation can be as follows.

$$\Delta Y_{it} = \theta + \rho y_{it-1} + \sum_{j=1}^p \gamma_j y_{i,t-j} + \beta x_{it} + \varepsilon_{it} \dots \dots \dots (3.4)$$

In the equation above, t and i denote that the time and the cross-sections respectively. The LLC tests the null hypothesis of  $\rho_i = \rho = 0$  against the alternative hypothesis is  $\rho_i = \rho < 0$  in another way; the LLC tests the null hypothesis that the series contains a unit root, against the null hypothesis that the series is not containing a unit root.

$H_0$ : the series contain unit root ( $\rho = 0$ )

$H_1$ : the series does not contain unit root ( $\rho \neq 0$ )

### 3.8 Ethical consideration

Ethical considerations in research refer to the principles and guidelines that researchers must adhere to ensure that their studies are conducted ethically and responsibly. Ethical considerations are essential in research to protect the rights, dignity, and well-being of study participants (in this case banks), as well as to maintain the integrity and credibility of the research process. Some key ethical considerations for this particular research include:

**Confidentiality:** The researcher ensures that the information provided by banks is kept confidential and not disclosed to unauthorized individuals. Participants are assured that their identities and responses is protected, and data should be anonymized or de-identified whenever possible.

**Privacy:** Researchers respect the privacy of banks and ensure that their banks information was be

handled securely. This includes protecting sensitive information and ensuring that participants' identities is not be revealed without their consent.

**Minimization of Harm:** in the same vein, researchers take steps to minimize any potential harm or discomfort to banks during the research process. This may involve avoiding sensitive topics, providing support resources, and monitoring participants' well-being throughout the study.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSIONS**

#### **4.1 Introduction**

In this section, the empirical findings of the study starting with the complete presentation of descriptive statistics which outlines the most prominent features of the dataset. After this, covariance analysis is performed to determine the relationships among the variables to gain insights into their interdependencies. Then after, transitions to panel diagnostic tests, evaluating the residually associated relationships in the econometric model to guarantee that the assumptions have been made critically and thus checking the credibility of the outcomes.

The results of the econometric analysis are then given, detailing the computed econometric results with the corresponding estimated coefficients alongside their statistical significance, supporting discussions, and these results. Each of the explanatory variables is examined in detail together with their functions and contributions to the whole model. In the beginning of the chapter, there is a summarizing statement regarding the hypotheses formulated and stating how many of them reached a conclusion or were confirmed or contradicted in relation to the presented factual results.

#### **4.2 Descriptive statistics**

The characteristics and distribution of the data can be explained by the descriptive statistics table provided below for the variables included in the study. Beginning with the variable return on asset (ROA), it was found that the distribution was slightly positively skewed, with a mean of 0.045 and a median of 0.029. With the majority of observations grouped around the mean, the maximum value of 0.244 and the minimum value of 0.004 indicate a comparatively small range of values. The data's close dispersion around the mean is further supported by the standard deviation of 0.048. This implies that the Return on Assets (ROA) does not differ significantly amongst the banks. With a mean of 3.641 and a median of 3.649, the variable LogBMSR shows a reasonably symmetrical distribution. In contrast to ROA, the minimum value of 3.162 and the maximum value of 4.016 indicate a larger range of values. On the other hand, 0.253 implies a small standard deviation.

**Table 4. 1 Descriptive statistics**

Measures	Roa	LogBms	Rgdpr	Spread	Logbs	Loan	Forex	Cpi
Mean	0.045	3.641	8.700	4.269	4.075	63.950	25.804	16.690
Median	0.029	3.649	9.000	4.138	4.122	63.799	21.106	13.833
Maximum	0.244	4.016	11.400	9.288	4.997	91.455	53.570	33.890
Minimum	0.004	3.162	5.300	0.172	2.579	40.491	12.891	6.628
Std. Dev.	0.048	0.253	1.953	1.853	0.505	9.645	11.993	9.582
Observations	143.00	143.00	143.00	143.00	143.00	143.00	143.00	143.00

**Source:** *Own computation, 2025*

Likewise, the mean and median of the log of the bank size variable (LOGBS) are 4.075 and 4.122, respectively. This implies that most banks fall within a similar range, indicating a reasonably symmetrical distribution of bank sizes. A large range of bank sizes within the dataset is indicated by the minimum value of 2.579 and the maximum value of 4.997. With some banks being noticeably bigger or smaller than average, the standard deviation of 0.505 suggests that there is moderate variation in bank sizes. The mean and median values of the loan to deposits ratio variable (LOAN) are 63.950 and 63.799. This suggests that banks' loan-to-deposit ratio is approximately 64% on average. The lowest value of 40.491 and the highest value of 91.455 indicate that different banks have different loan-to-deposit ratios. A moderate degree of variability in the way banks divide their money between loans and deposits is indicated by the standard deviation of 9.645. The foreign exchange rate is similar. A broad range of values for the foreign exchange rate is indicated by the minimum value of 12.891 and the maximum value of 53.570. The substantial variability in the foreign exchange rates, which reflects changes in currency values, is indicated by the standard deviation of 11.993.

Additionally, the mean and median of the consumer price index variable (CPI) are 16 and 830, respectively. This shows that, on average, since the base period, consumer prices have gone up by about 17%. Consumer price levels vary over time, as indicated by the minimum value of 6.628 and the maximum value of 33.890. The 9.582 standard deviation suggests that consumer prices vary significantly, which is indicative of shifting inflation rates.

Instead, the median real GDP growth rate is 9%, while the mean is 8.7%. 11.4% is the highest growth rate ever recorded, and 5.3% is the lowest. The growth rate's standard deviation is 1.953, which suggests some fluctuation throughout the year.

The real GDP growth rate is a crucial indicator of economic performance and reflects the pace of overall economic expansion or contraction. In this case, the data suggests that the economy has experienced positive growth on average, with a mean growth rate of 8.700%. This indicates that the economy has been expanding over the observed period. The median growth rate of 9.000% suggests that the majority of observations fall around this value, indicating a relatively consistent growth pattern. The maximum growth rate of 11.400% signifies a period of robust economic expansion, while the minimum growth rate of 5.300% suggests a period of slower growth. The standard deviation of 1.953 indicates some variability in the growth rate, suggesting that there have been periods of both higher and lower growth rates within the observed period. This variability could be due to various factors such as changes in government policies, global economic conditions, or fluctuations in consumer and business confidence.

Lastly, the mean spread interest rate is 4.269%, with a median of 4.138%. The maximum spread interest rate recorded is 9.288%, while the minimum is 0.172%. The standard deviation of the spread interest rate is 1.853, indicating some variability in the data. The spread interest rate represents the difference between the interest rates charged on loans and paid on deposits by banks. Analyzing the spread interest rate provides insights into banks' profitability, risk exposure, and lending activities. In this case, the statistics suggest that banks have experienced positive spreads on average, with a mean spread interest rate of 4.269%.

This suggests that the banking industry has become more profitable as a result of banks being able to charge higher interest rates on loans than they pay on deposits. The majority of observations appear to fall within the range of the median spread interest rate, which is 4.138 %, suggesting a reasonably stable spread pattern. While the minimum spread interest rate of 0.172% indicates a period of lower profitability or possibly difficult market conditions for banks, the maximum spread interest rate of 9.288 % indicates a period of higher profitability for banks. However, there appears to have been periods of both wider and narrower spreads during the observed period, as indicated by the standard deviation of 1.853, which shows some variability in the spread interest rate. Changes in central banks' interest rate policies, shifts in borrower demand and creditworthiness, or modifications in market competition could all be contributing factors to this variability.

### 4.2.1 Covariance Analysis

The relationship among the various variables in the dataset is shown in the covariance analysis table. This table presents the correlation and covariance coefficients for several variable pairs, including the loan-to-deposit ratio, real GDP, spread rate, log of bank size, return on assets ratio, log of the broad money supply ratio, foreign exchange rate, and inflation rate (CPI). Covariance measures the joint change of two variables. In contrast to negative covariance, which suggests that the variables move in opposite directions, positive covariance indicates that the variables move in the same direction. A standardized metric called correlation illustrates the strength and direction of the linear relationship between two variables. Any value of  $r$  greater than zero signifies a direct (positive) relationship, meaning that the values of the independent and dependent variables move in the same direction. The value of  $r$  ranges from -1 to 1

*Table 4. 2 Correlations Analysis*

If value of $r$ is between:	$r^2$	Strength
.00-.19	0-4%	“Very Weak”
.20-.39	4-16%	“weak”
.40-.59	16-36%	“Moderate”
.60-.79	36-64%	“Strong”
.80-1.00	64-100%	“Very strong”

*Source: Evans (1996)*

The  $r$  value of zero imply the absence of relationship while  $r$  value of less than zero indicate an inverse relationship i.e. an increase in one variable is associated with a decrease in the other. The

strength of association between the variables was defined using correlation effect size determination scores established by Evans (1996) as described in the table above.

*Table 4.3 Covariance Analysis*

Covariance Analysis								
Covariance								
Correlation	ROA	LogBMSR	RGDPR	SPREAD	LOGBS	LOAN_	FOREX	CPI
ROA	0.002303							
	1.000000							
LOG_BMSR	-0.001227	0.063527						
	-0.101476	1.000000						
RGDPR	0.003733	-0.246229	3.789231					
	0.039967	-0.501863	1.000000					
SPREAD	-0.010718	0.187446	-1.628498	3.408858				
	-0.120983	0.402804	-0.453114	1.000000				
LOGBS	-0.006653	0.074310	-0.403616	0.343411	0.252835			
	-0.275732	0.586340	-0.412358	0.369906	1.000000			
LOAN_	-0.145725	1.411808	-11.68694	8.960812	2.893081	92.37390		
	-0.315978	0.582804	-0.624670	0.504973	0.598642	1.000000		
FOREX	-0.020653	1.671256	-20.20524	10.13086	2.198120	71.06711	142.8340	
	-0.036013	0.554816	-0.868505	0.459120	0.365777	0.618697	1.000000	
CPI	0.019129	-0.045112	-8.355223	2.960450	0.124263	13.50780	66.72791	91.17818
	0.041749	-0.018744	-0.449508	0.167922	0.025881	0.147185	0.584718	1.000000

*Source: Own computation, 2025*

Accordingly, the degree of association when analyzed by using Evans scales the correlation coefficient between ROA and LOG\_BMSR is -0.001227, indicating a weak negative relationship between Return on Assets (ROA) and Log of BMSR. The correlation coefficient between RGDPR and SPREAD is -1.628498, suggesting a weak negative relationship between Real GDP Growth Rate (RGDPR) and Spread Interest Rate (SPREAD). The correlation coefficient between LOGBS and LOAN is 0.598642, indicating a moderate positive relationship between Log of Bank Size (LOGBS) and Loan. The correlation coefficient between FOREX and CPI is 0.584718, showing a moderate positive relationship between the Foreign Exchange Rate (FOREX) and the Consumer

Price Index (CPI).

### 4.3 Panel Diagnostic Tests

#### 4.3.1 Panel Unit Root Test

The stationarity of variables—the quality whereby their statistical properties, like mean and variance, do not change over time—is evaluated using the unit root test. Im, Pesaran, Shin, and Levin, Lin, and Chu methods were used to conduct unit root tests, and the results are shown in the summary that is provided. The probability for the variable ROA is 0.0000, and the test statistic is -4.6538. We reject the null hypothesis of a unit root for the Return on Assets (ROA) variable at level I(0) since the probability is less than the significance level, which is usually 0.05. Similarly, the null hypothesis is rejected and it is determined that the second difference of Log of Bank Size (D(Logbs,2)) is stationary at level I(2) based on the test statistic for Logbs, which is -5.4694 with a probability of 0.0000.

**Table 4 4: Panel Unit Root Test**

Variables	Method	Statistic	Prob.**	Stationarity
ROA	Levin, Lin & Chu t*	-4.6538	0.0000	I(0)
D(Logbs,2)	Levin, Lin & Chu t*	-5.4694	0.0000	I(2)
D(Loan_)	Levin, Lin & Chu t*	-7.4057	0.0000	I(1)
D(Forex,2)	Levin, Lin & Chu t*	-10.030	0.0000	I(2)
D(Rgdpr)	Im, Pesaran and Shin	-3.7983	0.0001	I(1)
D(Spread)	Levin, Lin & Chu t*	-5.4583	0.0000	I(1)
D(CPI)	Levin, Lin & Chu t*	-2.8426	0.0022	I(1)

*Source: Own computation, 2025*

The test statistic for the Loan deposit ratio is -7.4057 with a probability of 0.0000, resulting in the rejection of the null hypothesis and the determination that the first difference of Loan (D(Loan\_)) is stationary at level I(1). Likewise, the test statistic for the exchange rate is -10.030 with a probability of 0.0000, leading to the rejection of the null hypothesis and the conclusion that the second difference of Foreign Exchange Rate (D(Forex,2)) is stationary at level I(2). The test statistic for real GDP growth rate is -3.7983 with a probability of 0.0001, leading to the rejection of the null hypothesis and the

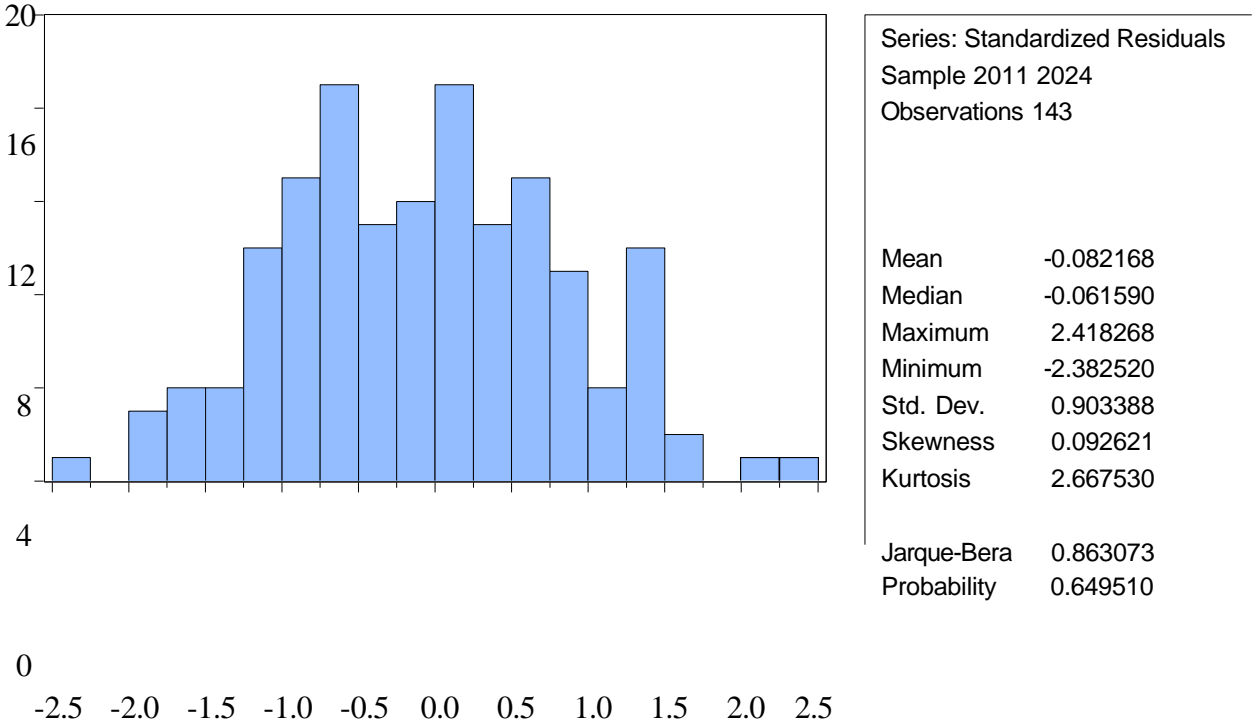
conclusion that the first difference of Real GDP Growth Rate (D(Rgdpr)) is stationary at level I(1). Additionally, the test statistic for Spread Interest Rate is - 5.4583 with a probability of 0.0000, resulting in the rejection of the null hypothesis and the determination that the first difference of Spread Interest Rate (D(Spread)) is stationary at level I(1).

Finally, the test statistic for the inflation rate is -2.8426 with a probability of 0.0022, leading to the rejection of the null hypothesis and the conclusion that the first difference of the Consumer Price Index (D(CPI)) is stationary at level I(1). In summary, most variables in the dataset demonstrate stationarity after appropriate differencing (either first or second difference), indicating that they lack a unit root and possess consistent statistical properties over time, rendering them suitable for analysis.

**4.3.2 Normality Test**

The normality test is a statistical procedure used to ascertain whether data has a normal distribution. In many statistical analyses, the assumption of normalcy is crucial because it permits the use of parametric tests that depend on it. One popular normalcy test is the Jarque-Bera test. It gives a test statistic and a p-value based on the data's skewness and kurtosis.

*Figure 4.1: Normality test*



**Source:** Own computation, 2025

The Jarque-Bera test statistic, as shown in the above figure, is 0.863, and the corresponding p-value is 0.64. The p-value is then compared to a predefined significance level, typically 0.01 or 0.05, as the decision rule. The null hypothesis of normalcy is rejected if the p-value is below the significance level.

Nonetheless, we are unable to reject the null hypothesis and come to the conclusion that the data has a normal distribution if the p-value exceeds the significance level. In this instance, we lack sufficient evidence to reject the null hypothesis of normalcy because the p-value (0.64) is higher than the usual significance level of 0.05. Thus, we can infer that the data has a normal distribution based on the Jarque-Bera test.

### 4.3.3 Panel Cross-Section Dependence Test

The Residual Cross-Section Dependence Test looks for cross-sectional dependence, or correlation, in a panel data model's residuals. There are 15 periods and 11 cross-sections in this specific test, for a total of 143 panel observations. Crucially, the test eliminates non-zero cross-section means found in the data when calculating correlations, thereby accounting for them. Cross-section dependence is evaluated using three distinct statistical tests: the Pesaran scaled LM test, the Pesaran CD test, and the Breusch-Pagan LM test. With 55 degrees of freedom, the Breusch-Pagan LM test produces a test statistic of 22.59266 and a probability value (p-value) of 1.000. This test indicates no significant cross-sectional dependence, and the comparatively high p-value implies that the null hypothesis of no cross-sectional dependence is accepted.

*Table 4. 5: Panel Cross-Section Dependence Test*

Residual Cross-Section Dependence Test Null hypothesis: No cross-section dependence (correlation)			
Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	22.59266	55	1.0000
Pesaran scaled LM	-3.089918		0.0020
Pesaran CD	-0.347804		0.7280

**Source:** Own computation, 2025

In Contrast, the Pesaran scaled LM test, reports a test statistic of -3.089 and a p-value of 0.0020. This low p-value indicates that the null hypothesis is rejected at common significance levels, suggesting significant cross-sectional dependence according to this test. Lastly, the Pesaran CD test provides a test statistic of -0.347 with a p-value of 0.728. This relatively high p-value suggests that the null hypothesis of no cross-sectional dependence was accepted, indicating no significant cross-sectional dependence according to this test. Therefore, we conclude that the majority of tests support the null hypothesis of no cross-sectional dependence in the model.

#### 4.3.4 Autocorrelation Test

The results of autocorrelation and partial autocorrelation analyses on 132 observations from a regression model's residuals are shown in the table below. In order to diagnose model fit and possible autocorrelation problems, it is essential to comprehend the dependencies and patterns in the residuals over various lags.

*Table 4. 6: Autocorrelation Test*

##### Autocorrelation Test

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
. *	. *	1	0.180	0.180	4.3839	0.036
* .	* .	2	-0.109	-0.146	5.9997	0.0512
. .	. .	3	0.011	0.063	6.0152	0.111
* .	* .	4	-0.070	-0.107	6.6830	0.154
. .	. *	5	0.023	0.074	6.7581	0.239
* .	* .	6	-0.117	-0.175	8.6714	0.193

**Source:** *Own computation, 2025*

The initial significant autocorrelations at lag 1 indicate that the residuals may have some autocorrelation, but the issue does not exist for more than one lag. For lag 3, in particular, the autocorrelation is 0.011, the partial autocorrelation is 0.063, and the p-value is 0.111. The Q-statistic is 6.0152. At this particular lag, there appears to be no significant autocorrelation, as the autocorrelations are very near to zero and not statistically significant respectively. At lag 4, the autocorrelation is -0.070, the partial autocorrelation is -0.107, and the p-value is 0.154. The Q-statistic

is 6.6830. Although these values once more show negative autocorrelation, the results at this lag are not statistically significant, indicating that the pattern observed at the first two lags does not hold true. Lag 5 has a Q-statistic of 6.7581, a p-value of 0.239, an autocorrelation of 0.023, and a partial autocorrelation of 0.074. These figures are quite low.

Finally, at lag 6, the autocorrelation is -0.117, and the partial autocorrelation is -0.175, with a Q-statistic of 8.6714 and a p-value of 0.193. The negative values indicate some degree of negative autocorrelation, but these results are not statistically significant either. Therefore, beyond the first lag, the autocorrelations are not statistically significant, indicating that the residuals do not exhibit strong autocorrelation at these higher lags.

#### 4.3.5 Heteroscedasticity Test

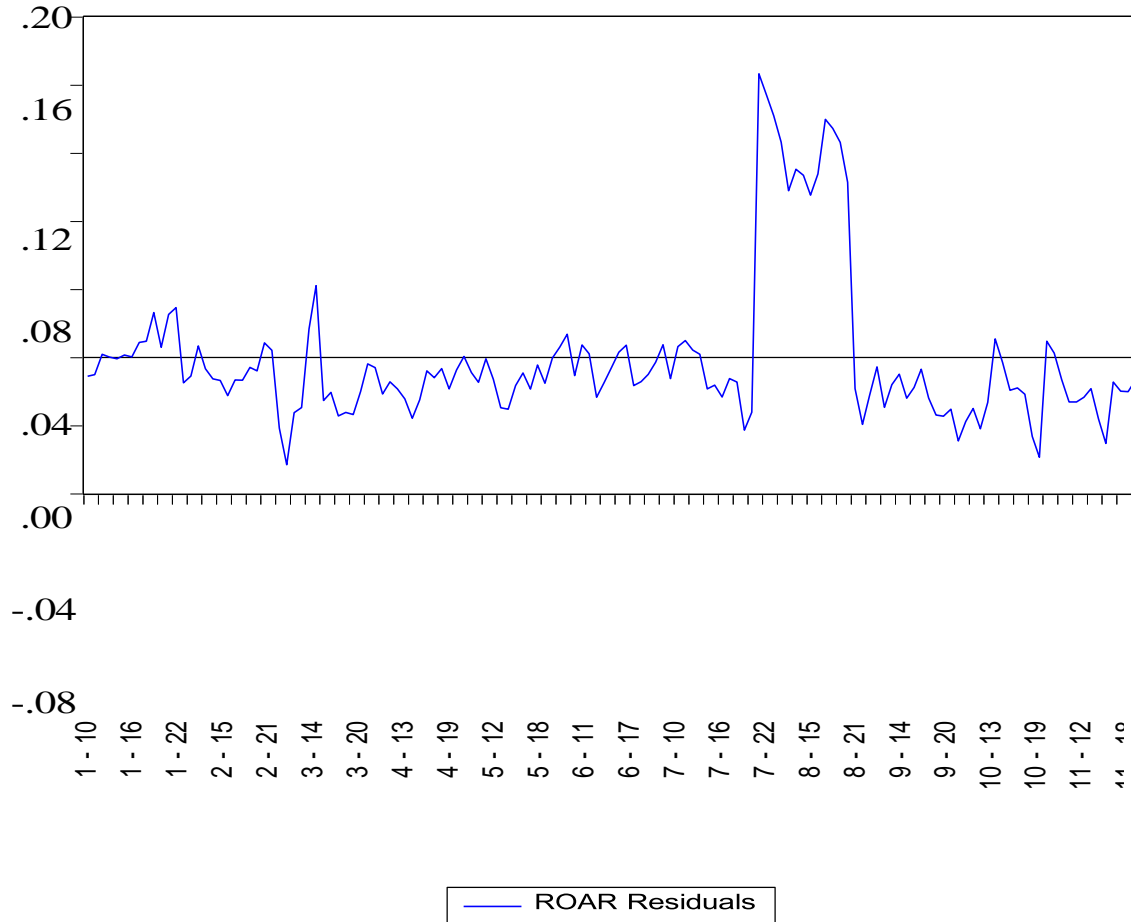
When the error term's variance is not constant, heteroscedasticity issues occur. Stated differently, the residual's distribution around the mean changes over time. Although the OLS estimators remain impartial and consistent in the face of such an issue, the minimum variance property of the OLS is not upheld (Wooldridge, 2013). Heteroscedasticity, or unequal variances, in a regression model is detected using this test. Furthermore, the p-value linked to the F-statistic is 0.68, which is higher than the usual significance level of 0.05, and the F-statistic itself is 0.804. Therefore, the null hypothesis of homoscedasticity (equal variances) cannot be rejected due to insufficient evidence.

Table 4.7 Heteroscedasticity Test

<b>Heteroskedasticity Test: Breusch-Pagan-Godfrey</b>			
<b>F-statistic</b>	0.804043	P: Value	P:0.6876

Source: Software estimates, 2025

Figure 4. 2 Residual plot



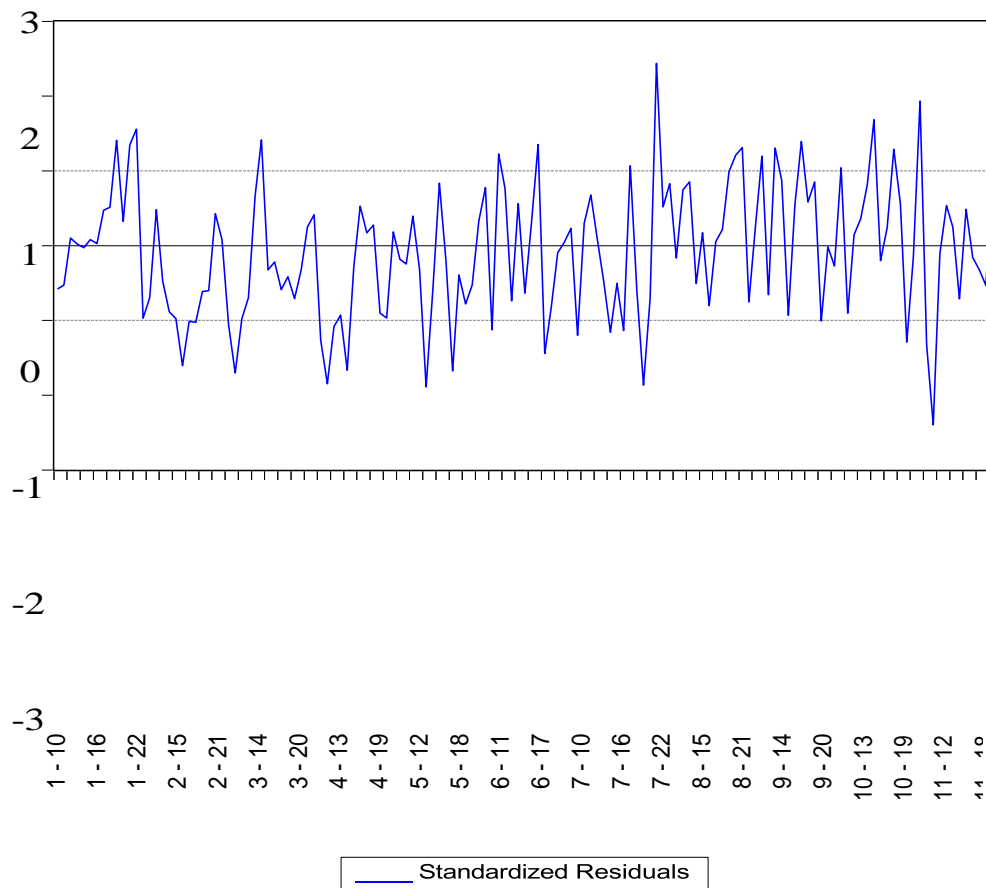
The residual plot depicting return on assets provides a visual illustration of the residuals derived from a regression model across a defined timeframe. Residuals represent the discrepancies between the actual observed values and those predicted by the model. They play a vital role in assessing the model's fit and in detecting any irregularities or trends that may indicate inadequacies in the model or the existence of unaccounted variables. Consequently, the residuals fluctuate around the zero line, suggesting that, on average, the model's predictions are quite precise, with no persistent overestimation or underestimation. Conversely, the plot reveals significant variability in the residuals.

The majority of the residuals remain within the range of -0.04 to 0.04, indicating a relatively good fit for most of the data points. Nevertheless, significant spikes are observed between the 7th and 9th periods, where the residuals exceed 0.08 and even approach 0.16. In contrast to these spikes, the residuals appear to be relatively stable, showing no evident trends or cyclical behaviors. This stability is a positive

indicator, suggesting that the model does not experience systematic errors over time. Should there be observable trends or patterns, it could imply that the model is lacking a crucial variable or has been incorrectly specified. Similarly, the distribution of the residuals does not seem to increase or decrease over time, indicating that the variance of the residuals (homoscedasticity) remains relatively constant. This is a critical assumption in regression models, as heteroscedasticity (fluctuating variance) can result in inefficient estimates and impact hypothesis testing.

Furthermore, the standardized residual plot offers a detailed examination of the residuals from a regression model after they have been standardized. Standardizing residuals involves scaling them by the estimated standard deviation of the residuals, which allows for easier identification of outliers and comparison across different datasets.

*Figure 4. 3: Standardized residual plot*



In a manner akin to the residual plot, the standardized residuals fluctuate around the zero line, indicating that the model does not consistently overestimate or underestimate the values. This characteristic is favorable, as it signifies that the errors of the model are distributed symmetrically. The dispersion of the residuals appears to be relatively uniform across the plot, implying homoscedasticity, which denotes that the variance of the residuals remains stable over time. This assumption is vital for numerous regression

models, as it guarantees the reliability of the standard errors of the estimates

## **4.4 Econometrics Result**

### **Discussion of the Variables**

#### **Exchange Rate and ROA**

The relationship between Return on Assets (ROA) and the Foreign Exchange Rate (FOREX) was examined in the study. The estimated coefficient for FOREX is -0.001128 meaning that a one-unit increase in the foreign exchange rate is expected to cause ROA to drop by 0.001128 units. Furthermore, with a p-value of 0.0000 and a t-statistic of -7.099 for the FOREX coefficient a high degree of statistical significance is indicated. This result suggests that random variation is unlikely to be the cause of the relationship between ROA and the foreign exchange rate. The foreign exchange rate has a significant impact on these companies' profitability. Businesses find that importing goods or services from overseas becomes more expensive as the foreign exchange rate rises. This can lead to higher production costs and as a result lower profitability. Furthermore, a rise in the foreign exchange rate may make it more difficult for the banking industry to compete in international markets.

Table 4. 8: Econometrics Estimates

Dependent Variable: ROA  
Method: Panel (Fixed Effect Model)

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>FOREX</i>	-0.001128	0.000159	-7.099305	0.0000
<i>LOAN_</i>	-0.001921	0.000132	-14.53491	0.0000
<i>LOG_BMSR</i>	-0.040567	0.006339	-6.399373	0.0000
<i>LOGBS</i>	-0.023684	0.002921	-8.108808	0.0000
<i>RGDPR</i>	0.000955	0.000676	1.412620	0.1601
<i>SPREAD</i>	0.000261	0.000193	1.352243	0.1786
<i>CPI</i>	-0.000163	8.39E-05	-1.945332	0.0538
<i>C</i>	0.367641	0.025019	14.69473	0.0000
<i>@TREND</i>	0.010302	0.000907	11.35717	0.0000
<i>R-squared</i>	0.902129	<i>Mean dependent var</i>		2.769305
<i>Adjusted R-squared</i>	0.896286	<i>S.D. dependent var</i>		3.002253
<i>S.E. of regression</i>	0.933830	<i>Sum squared resid</i>		116.8532
<i>F-statistic</i>	154.3938	<i>Durbin-Watson stat</i>		1.516693
<i>Prob(F-statistic)</i>	0.000000			

**Source:** Own computation, 2025

Banks must keep a careful eye on and control their exposure to foreign exchange risk. This can be accomplished by a number of tactics including diversifying their operations across several nations or hedging. By doing this banks can lessen the detrimental effect that changes in the foreign exchange rate have on their bottom line. All things considered this model offers empirical support for the strong inverse relationship between ROA and the foreign exchange rate. Therefore, banks should think about using this

data in their financial planning and decision-making procedures in order to control their exposure to foreign exchange risk and preserve profitability in a market that is highly competitive.

Banks participation in international lending borrowing and foreign investment activities frequently exposes them to significant foreign exchange risk. Exchange rate changes can have a direct effect on the value of banks' foreign assets and liabilities which in turn can affect overall profitability claimed Choi and Elyasiani (1997). Given the higher expenses and lower value of assets denominated in foreign currencies the study's negative coefficient for FOREX indicates that rising foreign exchange rates generally result in falling ROA. Similarly, the precise effect of exchange rates on bank profitability has been the subject of numerous studies. Exchange rate fluctuations for example, have a major impact on bank earnings and equity values according to Flannery and James (1984). These studies findings, which show that adverse exchange rate movements can reduce bank profits and lower ROA are consistent with the negative relationship found in the current study. Banks must implement efficient risk management techniques such as hedging against foreign exchange risk.

Companies (including banks) that engage in hedging activities typically have better financial performance and less volatility in their earnings as shown by Allayannis and Weston (2001). According to the study's highly significant t-statistic and p-value banks might not be sufficiently hedging their foreign exchange exposures which would explain the observed detriment to ROA. Due to their global operations banks are considerably exposed to foreign exchange risks according to recent studies. For example, Hakim and Neaimes (2022) study which was published in the Journal of Financial Stability shows that exchange rate volatility significantly affects banks profitability especially in emerging markets. According to the study exchange rate fluctuations cause banks with a larger exposure to foreign currency loans and investments to see more volatility in their return on assets (ROA). At the same time Zhang et al. The impact of fluctuations in foreign exchange rates on the profitability of banks in developed markets is examined in the Journal of Banking and Finance in 2023. The results imply that when the value of banks foreign-denominated assets declines due to a domestic currency appreciation banks return on assets (ROA) generally declines as well. This corroborates the study's negative coefficient which shows that rising FOREX causes ROA to fall.

### **Money supply and ROA of banks**

With a standard error of 0.006339 a t-statistic of -6.399373, and a p-value of 0.0000 the coefficient for LogBMSR is -0.040567. This suggests a statistically significant inverse relationship between bank profitability and the broad money supply ratio. In particular, when all other variables are held constant

a 1 % increase in the broad money supply ratio corresponds to a 0 point040 unit drop in ROA. This elasticity metric implies that expansions in the money supply have a detrimental effect on the banks' profitability. As indicated by the negative coefficient a rise in the broad money supply ratio is bad for bank profitability as determined by ROA. Numerous economic factors may be to blame for this. For instance, inflationary pressures brought on by higher money supply levels can reduce the real value of banks' assets and interest revenue. Moreover, a larger money supply might squeeze banks profit margins by lowering interest rates. This is consistent with recent research that indicates that lower interest margins and inflation are the main causes of banks decreased profitability in high money supply situations.

There are some works of literature which support these findings. Alper et al. (2021) published in the *Journal of Financial Stability* found that increased money supply can lead to lower bank profitability due to inflation and narrowed interest rate margins. This is consistent with the negative coefficient observed in the model, suggesting that higher money supply levels erode bank profits. Similarly, Bordo and Levin (2022) published online in the *Review of Financial Studies* found that inflation, often a result of increased money supply, can significantly impact banks' profitability by reducing the real value of their income.

The macro-prudential policy perspective can also be used to examine the connection between bank profitability and the broad money supply. Cerutti and colleagues. (2016) in the *Journal of Banking and Finance* make the case that rapid money supply expansion could be an indication of an overheating economy endangering bank profitability and financial stability. The current models negative effect on ROA highlights the significance of controlling money supply growth to maintain financial stability by reflecting banks difficulties in maintaining profitability in such environments.

Finally, this relationship which affects the money supply and banks in turn is greatly influenced by the interest rate environment. An investigation by Claessens et al. (2023) and written in *the Journal of Financial Intermediation* explores how banks net interest margins are compressed and profitability is negatively impacted by low-interest rate environments which are frequently brought on by expansionary monetary policies. This mechanism according to which an expanding money supply may result in lower interest rates and decreased bank profitability is supported by the models significant negative relationship.

### **Interest rate spread and ROA**

The interest rate spreads coefficient is 0. 000261 its standard error is 0. 000193 its t-statistic is 1. 352243 and its p-value is 0. 1786. According to this there is a positive correlation between the interest

rate spread and ROA but not at conventional levels of statistical significance. According to the interest rate spreads coefficient of 0.00026 a one-unit increase in the interest rate spread corresponds to a 0.00026 unit increase in ROA, assuming all other variables remain unchanged. Since a larger interest rate spread—the difference between lending and borrowing rates—usually enables banks to earn higher margins on their loans boosting profitability this positive relationship is theoretically expected. The corresponding p-value however is .178. At the 5% level this relationship is not statistically significant as indicated by 0.178. Based on the data used for this study we are therefore unable to state with confidence that the interest rate spread significantly affects ROA. Interest rate spreads are a key factor in determining bank profitability according to recent studies. For instance, higher interest rate spreads have a positive impact on bank profitability because they reflect higher lending rates relative to borrowing rates which raises net interest margins according to research by Dietrich and Wanzenried (2014) in the *Journal of Banking and Finance*. These results are consistent with the models positive coefficient which implies that higher profitability would result from an increase in the interest rate spread. However, the models lack of statistical significance may be due to a number of factors such as the regulatory environment market conditions and the time period under study. A study by Claessens et al. claims that. . . (2018) in the *Journal of Financial Intermediation*).

Depending on the regulatory environment and the economic environment interest rate spreads can have a wide range of effects on bank profitability. The anticipated benefit of interest rate spreads on profitability for example might be lessened or not noticeable in highly regulated settings or during times of economic instability. Interest rate spreads and bank profitability can also be impacted by national bank policies and the state of the economy. According to research published in the *Journal of Financial Stability* by Albertazzi and Gambacorta (2009) lower overall margins during low interest rate periods may lessen the beneficial effect of interest rate spreads on profitability. This is consistent with our findings lack of statistical significance which raises the possibility that outside economic factors.

### **Bank size and ROA**

The t-statistic yields a standard error of 0.002921 and a coefficient for the log of bank size of -0.023684. a p-value of 0.0000 and -8.108408. It would appear that bank size and ROA have a statistically significant negative relationship. With all other variables held constant, a 1 % increase in bank size (as determined by total assets) is linked to a 0.023 unit drop in ROA according to the LOGBS coefficient of -0.023. This inverse relationship suggests that banks profitability as indicated by ROA tends to decline with bank size.

Strong evidence that the relationship is not the result of chance and is statistically significant at conventional levels is provided by the highly significant t-statistic of -8.108 and the associated p-value of 0.0000.

There is some evidence to support the idea that bank size and profitability are negatively correlated. In the *Journal of Banking and Finance* for example a study by Goddard Molyneux, and Wilson (2004) discovered that larger banks typically have lower ROA than their smaller counterparts. Diseconomies of scale where the bureaucracy and complexity of larger institutions can result in inefficiencies and higher operating costs thereby lowering overall profitability are frequently blamed for this. Additionally, studies published in the *Journal of Financial Services Research* by Berger and Mester (1997) show that although economies of scale may help larger banks up to a certain . after that . the extra expenses of running a bigger organization may outweigh the advantages. The negative coefficient for LOGBS in the model indicates that this phenomenon may lead to a drop in profitability. The notable adverse effect on ROA draws attention to the possible difficulties larger banks may encounter in sustaining profitable operations.

Furthermore, the regulatory landscape and heightened scrutiny that frequently accompany bigger banks can also have an effect on profitability. According to a 2010 study published in the *Journal of Financial Stability* by Demirguc-Kunt and Huizinga larger banks are subject to stricter regulatory requirements and oversight which can raise compliance costs and reduce operational flexibility both of which have a detrimental impact on profitability. This feature aligns with our models observed inverse relationship.

### **Loan-to-deposit ratio and ROA**

The coefficient for the loan-to-deposit ratio is -0.001921 with a standard error of 0.000132, a t- statistic of -14.53491, and a p-value of 0.0000. This suggests a statistically significant negative relationship between the loan-to-deposit ratio and ROA. The coefficient of -0.0019 for the loan- to-deposit ratio indicates that a one-unit increase in the loan-to-deposit ratio is associated with a 0.0019 unit decrease in ROA, holding other factors constant. This negative relationship implies that as banks increase their lending relative to their deposits, their profitability, as measured by ROA, tends to decrease. The highly significant t-statistic of -14.53 and the corresponding p-value of 0.0000 highlight the robustness of this finding, indicating that the relationship is not due to random chance and is statistically significant at conventional levels.

Recent literature supports the negative relationship between the loan-to-deposit ratio and bank profitability. A study by Tan and Floros (2018) in the *Journal of Financial Stability* found that higher loan-to-deposit ratios can lead to lower profitability due to increased risk exposure. Banks with higher

loan-to-deposit ratios may face higher default rates and non-performing loans, which reduce overall profitability. This aligns with the negative coefficient observed in our model, suggesting that higher lending relative to deposits can strain bank resources and lead to lower profitability. Furthermore, a high loan-to-deposit ratio can indicate potential liquidity issues. Moreover, regulatory considerations also play a role. Banks with high loan-to-deposit ratios are often subject to increased regulatory scrutiny to ensure they maintain sufficient liquidity buffers. According to a study by Kohler (2015) in the *Journal of Banking and Finance*, stringent regulatory requirements can increase operational costs and limit banks' flexibility in their lending activities, further impacting profitability negatively. This aspect is consistent with the observed negative relationship in our model.

### **Inflation and ROA**

With a t-statistic of -1.945332 and a coefficient of -0.000163 the model estimation shows a statistically significant negative relationship between the Consumer Price Index (CPI) and the Return on Assets Ratio (ROA) for banks. This relationship is significant at the 5% level. Inflationary pressures have been shown to have a negative impact on bank profitability.

According to research published in the *Journal of Banking and Finance* by Solanko and Weill (2015) inflation lowers net interest margins and raises the risk of loan defaults which lowers bank profitability. This is consistent with the model's negative coefficient which suggests that banks might find it difficult to stay profitable in settings with higher rates of inflation. Additionally, the effect of inflation on banks' profitability can differ depending on the regulatory framework and the economic climate. Inflation volatility can make banks' credit risk worse, which can result in increased provisioning costs and decreased profitability according to a study by Aydemir and Demirgüç-Kunt (2020) published in the *Journal of Financial Intermediation*.

This emphasizes how inflation has a detrimental effect on ROA, as our model shows. Furthermore, how the government reacts to inflation may have an impact on bank profitability. Inflationary pressures can lead to tighter monetary policies which could limit credit growth and raise funding costs for banks according to research by Laeven and Levine (2009) published in the *Journal of Banking and Finance*. Because of these regulatory dynamics there is a negative correlation between CPI and ROA which emphasizes how crucial regulatory environments are in determining bank profitability in an inflationary environment.

## Summary of Hypothesis Testing

Hypothesis	Status
➤ <i>(H<sub>0</sub>): There is no significant relationship between the exchange rate and the financial performance of selected commercial banks in Ethiopia.</i>	Rejected
➤ <i>H<sub>1</sub>: There is a significant relationship between exchange rate and financial performance for selected commercial banks in Ethiopia.</i>	Accepted
➤ <i>(H<sub>0</sub>): There is no significant relationship between the inflation rate and the financial performance of private commercial banks in Ethiopia.</i>	Rejected
➤ <i>H<sub>1</sub>: There is a significant relationship between the inflation rate and financial performance of Private commercial banks in Ethiopia.</i>	Accepted
➤ <i>(H<sub>0</sub>) The money supply stock has no significant effect on the performance of commercial banks in Ethiopia.</i>	Rejected
➤ <i>H<sub>1</sub>: Money supply stock has a significant effect on the performance of commercial banks in Ethiopia.</i>	Accepted
➤ <i>(H<sub>0</sub>) There is no significant relationship between the interest rate spread and the financial performance of commercial banks in Ethiopia.</i>	Rejected
➤ <i>H<sub>1</sub>: There is a significant relationship between interest rate spread and financial performance of commercial banks in Ethiopia.</i>	Accepted

*Source: Author summarize, 2025*

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATION**

#### **5.1 Introduction**

This chapter synthesizes the key findings of the study, drawing conclusions that encapsulate the main intuitions derived from the empirical analysis presented in the previous chapter. It begins by summarizing the significant results and their implications. Following this, the chapter offers targeted recommendations based on the findings, suggesting practical applications and strategies for stakeholders to enhance outcomes in the relevant field. Additionally, it identifies areas for further research, outlining potential questions and methodologies that could deepen understanding or address limitations encountered in the current study.

#### **5.2 Conclusions**

Through an analysis of panel data, several insights were gleaned regarding the factors that influence Return on Assets (ROA). The variables examined in this study included the Foreign Exchange Rate (FOREX), the Log of Broad Money Supply (LOG\_BMSR), Real GDP Growth Rate (RGDPR), Interest Rate Spread (SPREAD), Log of Bank Size (LOGBS), Loan to Deposit Ratio (LOAN\_), and Consumer Price Index (CPI). The coefficient estimates alongside the statistical significance of each factor illuminate their respective impacts on ROA within the dataset examined. Notably, the Foreign Exchange Rate (FOREX) is characterized by a significant negative coefficient of -0.0011, accompanied by a standard error of 0.00015. This finding suggests that a rise in the foreign exchange rate is linked to a decrease in Return on Assets.

This inverse relationship implies that as the exchange rate increases, companies might experience diminished profitability, potentially due to heightened import expenses or decreased competitiveness in global markets. Conversely, the logarithm of the Broad Money Supply negatively influences the return on assets. When money supply expands, it can create inflationary pressures or higher operational costs for companies, which in turn, diminishes their profitability. Meanwhile, the growth rate of real GDP seems to lack a statistically significant relationship with ROA. This indicates that changes in economic growth rates across the panel data do not consistently have a significant impact on firms' returns on assets.

Similarly, the Interest Rate Spread and Log of Bank Size show coefficients of 0.00026 and -0.024, respectively, but these coefficients are not statistically significant at conventional. Thus, while interest rate spreads and bank size may influence profitability, the evidence from this analysis suggests a lack of robust statistical significance across the panel. The Loan to Deposit Ratio exhibits a significant negative impact on ROA, with a coefficient of -0.0019 and a very low p-value (0.0000). This indicates those higher loans to deposit ratios are associated with lower returns on assets, possibly reflecting increased credit risk or reduced liquidity management efficiency. Lastly, the Consumer Price Index (CPI) has a positive coefficient of -0.000163 with a p-value of 0.053, suggesting that inflation may have a modest adverse impact on ROA. Higher inflation rates could erode purchasing power and profitability unless firms can adjust their pricing strategies effectively.

### **5.3 Recommendation**

Based on findings of the, the following policy recommendation for private commercial banks are presented.

- ✓ Considering the substantial adverse effect of the Foreign Exchange Rate on Return on Assets (ROA), it is essential for banks to adopt strong foreign exchange risk management strategies. This encompasses hedging against currency variations that may negatively influence profitability. Consistent observation of exchange rate trends and proactive hedging measures can reduce potential losses.
- ✓ The significant negative impact of Loan to Deposit Ratio on ROA suggests that managing liquidity effectively is critical. Banks should maintain an optimal balance between loans and deposits to mitigate liquidity risk. This involves monitoring liquidity ratios closely, diversifying funding sources, and ensuring sufficient liquidity buffers to withstand fluctuations in market conditions.
- ✓ Consumer Price Index (CPI) indicates a slight negative effect on Return on Assets (ROA), it is advisable for banks to explore the adoption of inflation hedging strategies. This may include providing customers with inflation-linked products, investing in securities that are protected against inflation, or modifying pricing strategies to counteract the diminishing of real returns due to inflation.

- ✓ Insignificance effect of Interest Rate Spread and the Log of Bank Size on (ROA), it is recommended that Banks need to concentrate on better cost management and operational efficiency. This involves cost optimization, process simplification, and the use of technology for productivity improvements. A more efficient operation may result in favorable profitability effects, even when operating under competitive and mildly effective environments.
- ✓ Banks should strengthen credit assessment processes, monitor loan quality continuously, and diversify loan portfolios to mitigate credit risk. Implementing robust risk management frameworks can help maintain asset quality and reduce potential credit-related losses.
- ✓ Embrace technological progress and innovation to improve customer experience, operational efficiency, and risk management capabilities. Investing in digital platforms, fintech collaborations, and data analytics can lead to cost reductions, enhance decision-making processes, and promote growth strategies driven by innovation.
- ✓ Banks should have to ensure adherence to regulatory standards and sustain sufficient capital levels to facilitate business expansion and mitigate potential financial disruptions. Financial institutions ought to routinely evaluate capital adequacy ratios, conduct stress tests on financial models, and synchronize capital allocation strategies with risk profiles to bolster resilience in fluctuating market environments.

#### **5.4 Area(s) of further Research**

Based on the findings, several areas are suggested for further investigation. While the study revealed a significant adverse effect of fluctuations in foreign exchange rates on Return on Assets (ROA), subsequent research could explore the broader and more intricate impacts of exchange rate variations over various time frames. This encompasses an analysis of how short-term and long-term currency shifts influence profitability and whether banks modify their strategies based on the type of exchange rate volatility. Given the substantial effect of the Loan to Deposit Ratio on ROA, future studies may also examine the influence of macro-prudential policies—such as capital adequacy requirements and liquidity regulations—and their impact on bank profitability. Furthermore, it is important to investigate whether the relationships identified in this study are consistent across different categories of banking institutions, including conventional and Islamic banks.

As financial technology (fintech) continues to advance, researchers are urged to evaluate how digital transformation is altering bank performance and ROA. Areas of focus could include the effects of online banking platforms, digital payment solutions, and blockchain technology on operational efficiency, customer engagement, and competitive advantage. Understanding customer behavior is also essential. Future research could explore how customer preferences affect profitability, particularly in relation to pricing strategies, product innovation, and service quality. Investigating customer segmentation and the implementation of personalized financial products could provide insights into enhancing customer loyalty and profit margins.

Moreover, the increasing significance of environmental, social, and governance (ESG) factors should not be disregarded. Examining how sustainability initiatives, social responsibility, and governance practices influence bank profitability and ROA can yield valuable insights. Finally, future research could gain from cross-country comparisons to comprehend how varying economic conditions impact these relationships.

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**Appendix: I**  
Covariance Analysis

Covariance Correlation	ROA	LogBMS R	RGDPR D	SPREA D	LOGBS	LOAN_ X	FORE X	CPI
ROA	0.002303							
	1.000000							
LOG_B MSR	- 0.063527							
	0.001227							
	- 1.000000							
	0.101476							
RGDPR	0.003733	- 3.78923						
	0.246229	1						
	0.039967	- 1.00000						
	0.501863	0						
SPREAD	- 0.187446	- 3.408858						
	0.010718	1.628498						
	- 0.402804	- 1.000000						
	0.120983	0.453114						
LOGBS	- 0.074310	- 0.343411	0.252835					
	0.006653	0.403616						
	- 0.586340	- 0.369906	1.000000					
	0.275732	0.412358						
LOAN_ X	- 1.411808	- 8.960812	2.893081	92.37390				
	0.145725	11.68694						
	- 0.582804	- 0.504973	0.598642	1.000000				
	0.315978	0.624670						
FOREX	- 1.671256	- 10.13086	2.198120	71.06711	142.834			
	0.020653	20.20524			0			
	- 0.554816	- 0.459120	0.365777	0.618697	1.00000			
	0.036013	0.868505			0			
CPI	0.019129	- 2.960450	0.124263	13.50780	66.7279	91.1781		
	0.045112	8.355223			1	8		
	0.041749	- 0.167922	0.025881	0.147185	0.58471	1.00000		
	0.018744	0.449508			8	0		

Residual Cross-Section Dependence Test

Null hypothesis: No cross-section dependence (correlation) in weighted Residuals

Equation: Untitled

Periods included: 15

Cross-sections included: 11

Total panel observations: 143

Note: non-zero cross-section means detected in data

Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	22.59266	55	1.0000
Pesaran scaled LM	-3.089918		0.0020
Pesaran CD	-0.347804		0.7280

Panel unit root test: Summary

Series: ROA

Date: 05/20/25 Time: 17:06

Sample: 201 2024

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.65384	0.0000	11	121
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.28990	0.0110	11	121
ADF - Fisher Chi-square	38.1584	0.0176	11	121
PP - Fisher Chi-square	31.9574	0.0781	11	132

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(LOGBS,2)

Date: 05/20/25 Time: 17:10

Sample: 2011 2024

Exogenous variables: None

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.46945	0.0000	11	99
Null: Unit root (assumes individual unit root process)				
ADF - Fisher Chi-square	53.2645	0.0002	11	99

PP - Fisher Chi-square                      171.356      0.0000      11            110

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\*\* Probabilities for Fisher tests are computed using an asymptotic Chi  
-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(LOAN\_)

Date: 04/22/25 Time: 17:11

Sample: 2011 2024

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

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Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.40570	0.0000	11	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.98402	0.0000	11	110
ADF - Fisher Chi-square	75.7519	0.0000	11	110
PP - Fisher Chi-square	164.344	0.0000	11	121

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\*\* Probabilities for Fisher tests are computed using an asymptotic Chi  
-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(FOREX,2)

Date: 04/22/25 Time: 17:12

Sample: 2011 2024

Exogenous variables: None

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.0303	0.0000	11	99
Null: Unit root (assumes individual unit root process)				
ADF - Fisher Chi-square	97.5190	0.0000	11	99
PP - Fisher Chi-square	189.053	0.0000	11	110

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID)

Method: Least Squares

Date: 04/25/25 Time: 16:52

Sample (adjusted): 2011 2024

Included observations: 121 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.617642	0.072186	-8.556238	0.0000
D(RESID(-1))	0.287404	0.074743	3.845226	0.0002
R-squared	0.384899	Mean dependent var		7.63E-05
Adjusted R-squared	0.379731	S.D. dependent var		0.007973
S.E. of regression	0.006279	Akaike info criterion		-7.286704
Sum squared resid	0.004692	Schwarz criterion		-7.240492

Log-likelihood	442.8456	Hannan-Quinn criteria.	-7.267936
Durbin-Watson stat	1.980487		

Panel unit root test: Summary

Series: D(RGDPR)

Date: 05/20/25 Time: 17:07

Sample: 2011 2024

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	3.58324	0.9998	11	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.79835	0.0001	11	110
ADF - Fisher Chi-square	51.4221	0.0004	11	110
PP - Fisher Chi-square	229.441	0.0000	11	121

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(SPREAD)

Date: 05/20/25 Time: 17:09

Sample: 2011 2024

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each Test

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Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.45837	0.0000	11	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.25937	0.0000	11	110
ADF - Fisher Chi-square	67.4304	0.0000	11	110
PP - Fisher Chi-square	158.516	0.0000	11	121

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\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(CPI)

Date: 05/24/25 Time: 17:13

Sample: 2011 2024

Exogenous variables: Individual effects

User-specified lags: 1

Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

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Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-2.84262	0.0022	11	110
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin $W$ -stat	-5.18512	0.0000	11	110
ADF - Fisher Chi-square	66.7822	0.0000	11	110
PP - Fisher Chi-square	94.1655	0.0000	11	121

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\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Dependent Variable: ROA

Method: Panel EGLS (Cross-section SUR)

Date: 15/05/25 Time: 16:37

Sample: 2011 2024

Periods included: 15

Cross-sections included: 11

Total panel (balanced) observations: 143

Linear estimation after one-step weighting matrix

Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	-0.000163	8.39E-05	-1.945332	0.0538
FOREX	-0.001128	0.000159	-7.099305	0.0000
LOAN_	-0.001921	0.000132	-14.53491	0.0000
LOG_BMSR	-0.040567	0.006339	-6.399373	0.0000
LOGBS	-0.023684	0.002921	-8.108808	0.0000
RGDPR	0.000955	0.000676	1.412620	0.1601
SPREAD	0.000261	0.000193	1.352243	0.1786
C	0.367641	0.025019	14.69473	0.0000
@TREND	0.010302	0.000907	11.35717	0.0000

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Weighted Statistics

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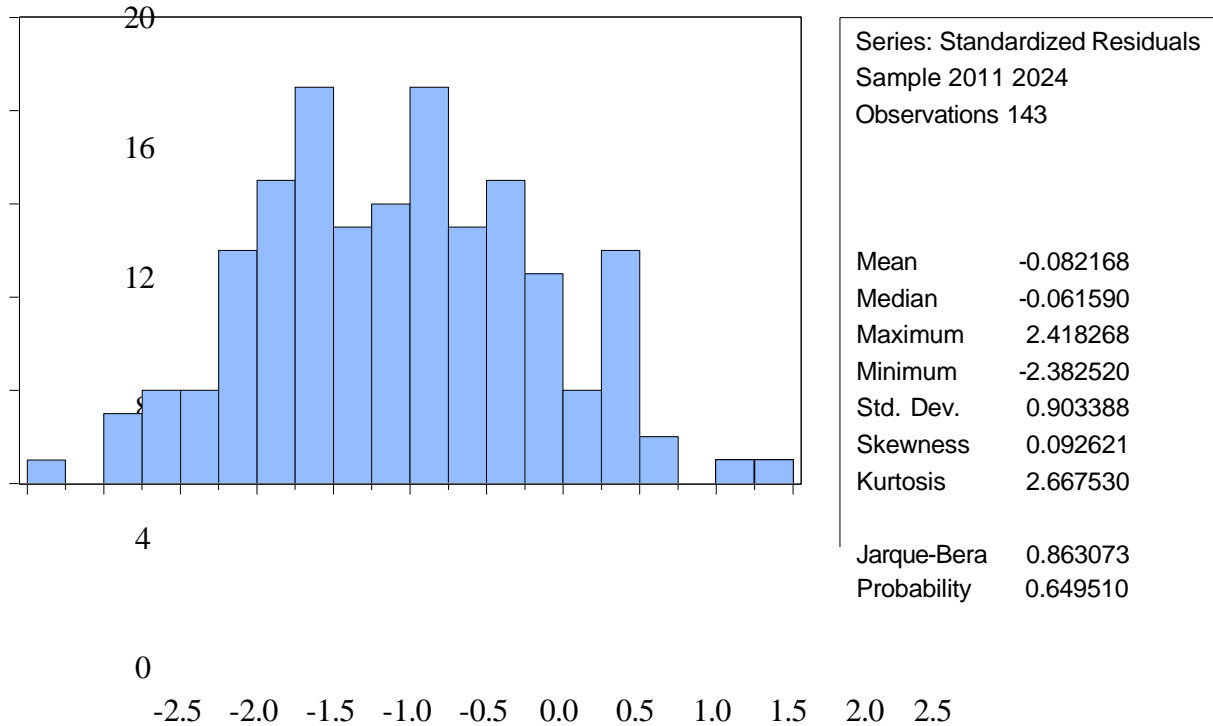
R-squared	0.902129	Mean dependent var	2.769305
Adjusted R-squared	0.896286	S.D. dependent var	3.002253

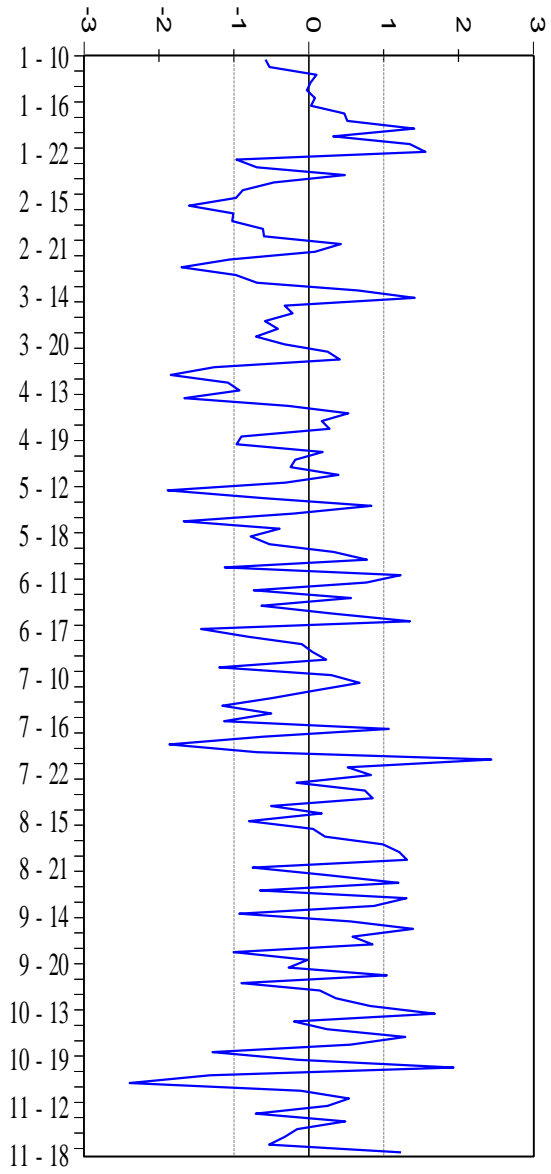
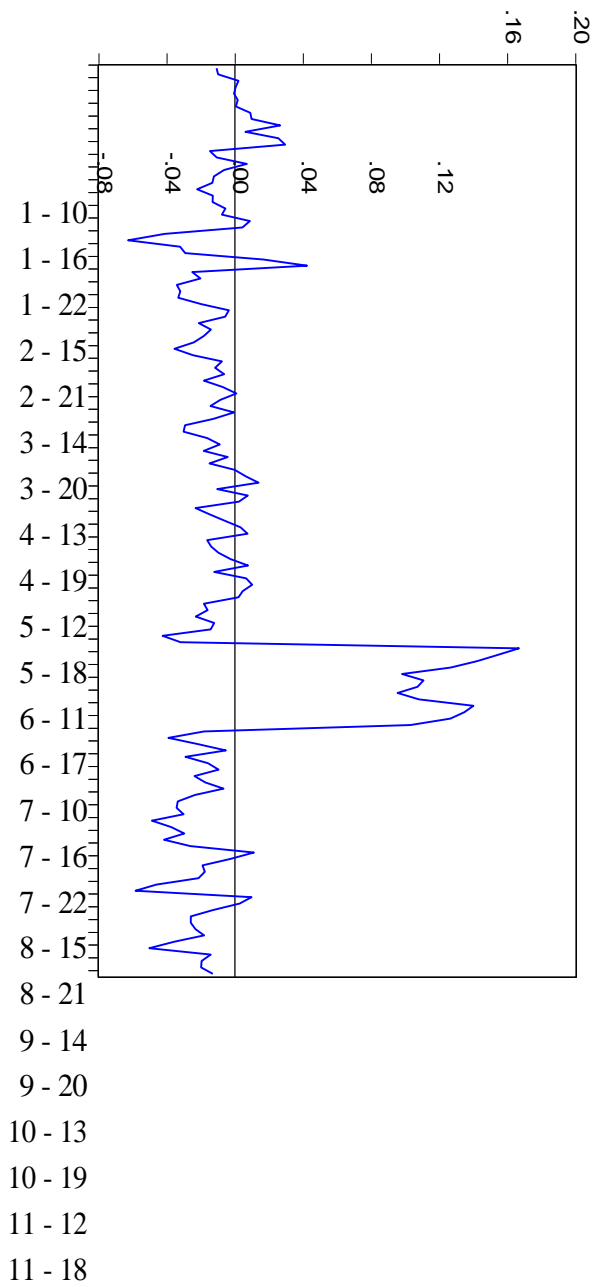
S.E. of regression	0.933830	Sum squared resid	116.8532
F-statistic	154.3938	Durbin-Watson stat	1.516693
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.186563	Mean dependent var	0.044556
Sum squared resid	0.267824	Durbin-Watson stat	0.130496

Figure 4.: Normality test





Residual plot