ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ACCOUNTING AND FINANCE

THE EFFECT OF EXCHANGE RATE FLUCTUATION ON THE PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

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STATEMENT OF DECLARATION

I do hereby certify that this thesis entitled “Effect of Exchange Rate Fluctuation on the Profitability of Private Commercial Banks of Ethiopia is my original work and has not been submitted in whole or in part by anybody else for a degree from another institution or university. I have produced it independently under the supervision of Dr.Takele Fufa

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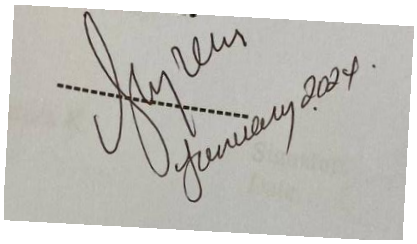

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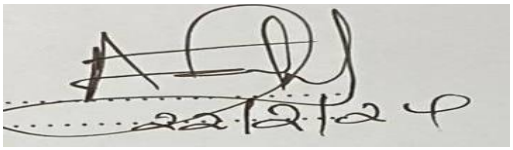
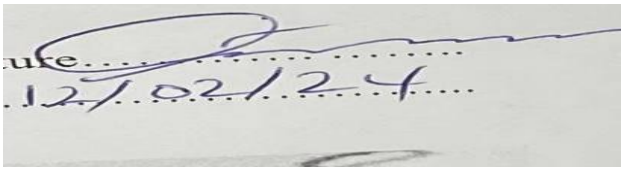
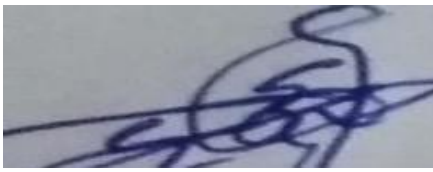
Name of Internal Examiner Dr. Abebaw K.	Signature Date 
Name of External Examiner Dr.Dakito Alem	Signature Date 
Name of Supervisor: Dr.Takele Fufa	Signature  Date
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Abstract

The debate on exchange rate policy in developing countries like Ethiopia is ongoing due to its impact on economic performance. The National Bank of Ethiopia (NBE) manages international reserves and foreign exchange assets, aiming to maintain price stability. The purpose of this study is to examine the experience of six Ethiopian private commercial banks over the past twenty years, focusing on the effects of foreign exchange rate fluctuations on their financial profitability (ROA). The study utilized secondary data sources like audited financial statements of six private commercial banks and the National Bank of Ethiopia's annual report used for a period of twenty years (2003-2022) with the total of 120 observations. The study employed a quantitative research methodology by using purposive sampling technique and explanatory type of research design. The study analyzed panel data using descriptive statistics and multiple linear regression techniques by using E-views version 10 econometric software. This econometrics model was used to examine the relationship between foreign exchange rates, inflation rates, gross domestic product, net interest margin, and bank size with bank profitability indicator. The dependent variable return on assets (ROA) was used as a measure of profitability. The major findings of the study show that foreign exchange rate and inflation rate have statistically insignificant and positive relationship with banks' profitability. Further, the results from the panel regression show that, GDP have a negative and statistically significant relationship with banks' profitability. However, the relationship for net interest margin and bank size is found to be positive relationship and statistically significant. Based on the finding of the study, the researcher recommends focusing and redesigns the banks together with significant bank specific factor and macroeconomic factor of profitability of private commercials banks in Ethiopia.

Ke*ywords:* Panel data, commercial banks, profitability, and ROA

List of Abbreviations and Acronyms

+VtA	Positively Affects
APA	American Psychological Association
CPI	Consumer Price Index
ETB	Ethiopia Birr
FX	Foreign Exchange
FY	Fiscal Year
IMF	International Monetary Fund
INF	Inflation
LNA	Log of Total Assets
MOT	Ministry Of Trade
NBE	National Bank Of Ethiopia
NI	Net Income
NIM	Net Interest Margin
GDP	Gross Domestic Product
OLS	Ordinary Least Square
PM	Profit Margin
PPP	Purchasing Power Parity
ROA	Return On Asset
ROE	Return On Equity
SS	Statistically Significant
BS	Bank Size
USD	United States Dollar
-VtA	Negatively Affects

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

There has been an ongoing debate on the appropriate exchange rate policy in developing countries. The debate focuses on the degree of fluctuation in the exchange rate in the face of internal and external shocks. Exchange rate fluctuations are likely, in turn, to determine economic performance. In judging the effects of exchange rate fluctuations on the financial performances of banks, it becomes, therefore, necessary to evaluate their effects on the micro- and macroeconomic development levels of a nation.

The level and movements in the exchange rate have been a matter of policy concern for the central banks of most countries, including Ethiopia, as erratic changes in the exchange rate not only undermine the goal of price stability but also reduce real output, trade, capital flows, and investment (IMF, 1984), as cited by Abebe Deressa (2006). When Ethiopia emerged from the communist regime and civil war, the first initiative was to devalue the Birr from 2.7 Birr/USD to 5 Birr/USD in 1992. The country followed a crawling peg exchange rate arrangement throughout the 1990s, with a 7% average annual depreciation of the Birr vis-à-vis the USD. Other than the depreciation of the Birr, several of the foreign currency controls that were introduced in 1977 persisted throughout the 1990s and continue to be relevant to this day (Andualem Telaye, 2020).

The National Bank of Ethiopia (NBE) is mandated to i) formulate and implement exchange rate policy; ii) manage international reserves; iii) set limits on foreign exchange assets that banks can hold; and iv) set limits on the net foreign exchange position of banks. (FNG 2008: 4172). Under the Monetary Policy Framework (MPF), the NBE seeks to preserve the purchasing power of the national currency to maintain price stability. (NBE 2009: 2) The headline inflation rate is, however, high, rising by 4% between the third and fourth quarters of 2017/18. (NBE 2018 (6)) The Growth and Transformation Plan (GTP) II, which provides the framework for achieving middle-income status for Ethiopia, aims to enhance export competitiveness within a stable foreign exchange regime (James Lloyd and Bisrat Teshome, 2018).

As a foreign currency exchange rule, exporters and remittance recipients must surrender 70 percent of their account balances and convert them into Birr after 28 days. Commercial banks are in turn supposed to surrender 30% of these proceeds, as well as the foreign currency they receive via remittances, to the National Bank of Ethiopia. In addition, commercial banks are required to allocate their foreign currency holdings to the business community and the general public based on priorities set by the government and on a first-come, first-served basis. Banks are free to buy foreign currency within 0.5% of the middle rate and sell it within 1.5% of the rate set by the National Bank.

Therefore, the rate that the National Bank sets is the only relevant parameter that determines the exchange rate of the Birr and the extent to which a parallel market develops (Andualem Telaye, 2020). In Ethiopia, there was no internal market to sell their retained foreign exchange earnings. In particular, 70% of their earnings will be converted into Birr at the prevailing exchange rate after 28 days. Banks are supposed to allocate the foreign currency surrendered by exporters at the determined exchange rate based on priorities set by the government (National Bank of Ethiopia, 2016). This leads the dollar holders to the black market to sell their dollars at an exaggerated price from the one set by NBE, and the money is circulating outside the banking sector or system for a better price. Some researchers consider the exchange rate regime to be determined as a floating rate regime (set by market forces), and there are some researchers who consider the exchange rate regime to be determined as a fixed exchange rate regime (completely captured by changes in reserve).

There are some, however, who see depreciation (devaluation) of the domestic currency as stimulating economic activity through the initial increase in the price of foreign goods relative to home goods. By increasing the international competitiveness of domestic industries, exchange rate depreciation diverts spending from foreign goods to domestic goods. As illustrated in Guitian Manuel, 1976, and Rudiger Dornbusch, 1988, the success of currency depreciation in promoting trade balance largely depends on switching demand in the proper direction and amount, as well as on the capacity of the home economy to meet the additional demand by supplying more goods (Magda Kandil, 2000). These groups of researchers don’t associate foreign currency exchange rate fluctuations

with bank financial performance. But economic improvement and development by default indicate financial movement, browning, mortgage, and saving behavior of people and working with financial institutions, and hence indicate the financial performance of banks.

There are still some who see banks' financial performance as affected by foreign currency exchange rate fluctuations (Biru, A.M., 2021), (Nawal Hussein Abbas Elhussein & Osama Eltayeb Elfaki Osman, 2019), (GIRUM DEMISSIE, 2020), and (Keshtgar et al., 2020). To date, some researchers consider exchange rate regimes, and there are some researchers who consider depreciation (or devaluation) of the domestic currency as a stimulant of economic activity, while some research has focused on the financial performances of banks from external and internal factors. And there are some researchers focusing on the effects of foreign exchange fluctuations on the financial performances of private banks (GIRUM DEMISSIE, 2020; Biru, A.M., 2021; Andrew J. Manyok, 2016). (Abebe Deressa, 2006), and their titles were about the influences of foreign exchange rate fluctuation on the financial profitability of commercial banks, but they failed to show the integrated effects of FX fluctuation on the financial performances of commercial banks, including the effects of FX on inflation and interest rates, and how the combined effects of FX can affect the performances of Ethiopian commercial banks rather than showing the relationship between bank performance and variables such as interest rate and inflation rate. In this study, the failed attempts and confusions about the FX effect on the rate of return on assets, microeconomic and macroeconomic policies related to the foreign currency exchange rate fluctuation effect on private banks financial performance are examined.

This research was therefore examine the past and present experiences of six Ethiopian private commercial banks for the past twenty years (2003–2022) towards the effects of foreign exchange rate fluctuation on the financial profitability of banks. The paper was empirical in nature and requires data gathering from national bank sources and any available data from private commercial banks that might be included in the study.

1.2. Statement of the Problem

The exchange rate between two currencies is commonly determined by the economic activity, market interest rates, gross domestic product, and unemployment rate in each of the countries. Exchange rates can be free-floating or fixed. A free-floating exchange rate rises and falls due to changes in the foreign exchange market. A fixed exchange rate is pegged to the value of another currency. Changes in exchange rates affect businesses by changing the cost of supplies that are purchased from a different country and by changing the demand for their products from overseas customers. The foreign exchange market allows banks, funds, and individuals to buy, sell, or exchange currencies. The market operates 24 hours a day, 5.5 days a week, and is responsible for trillions of dollars in daily trading activity as traders look to profit by betting that a currency's value will either appreciate or depreciate against another currency (James Chen, 2022).

Exchange rates float freely against one another, which mean they are in constant fluctuation. Currency valuations are determined by the flows of currency in and out of a country. A high demand for a particular currency usually means that the value of that currency will increase. Currency demand is driven by tourism, international trade, mergers and acquisitions, speculation, and the perception of safety in terms of geopolitical risk. Currencies are traded around the clock, 24 hours per day. Even though trading hours vary, morning trading in Tokyo occurs during U.S. nighttime trade, and banking continues around the world. Therefore, as banks around the world buy and sell currencies, their values fluctuate. Interest rate adjustments in different countries have the greatest effect on the value of currencies because investors typically gravitate toward safety with the highest yields (Selwyn M. Gishen, 2022).

The annual pace of nominal depreciation of the birr against the USD has been gradual and quite stable at about 5 percent in recent years. The nominal exchange rate is determined in an interbank foreign exchange market. The NBE supplies foreign exchange to the interbank market based on supply and demand estimates established at the beginning of a year. However, despite the role played by the interbank market, the exchange rate has fallen (Andualem Telaye, 2020). The value of the Birr fell by 2,226 percent between 1991 and 2022. During this time, the birr lost 2,426 percent of its value,

falling from 2.07 to 52 at the time, causing inflation to skyrocket (Ashenafi Endale, 2022).

There have been several studies on the effect of exchange rates on the financial performance of banks and related topics locally and elsewhere in other countries. Literature concurs that there is a negative relationship between exchange rate fluctuations and bank profitability; however, exchange rates mainly affect banks that transact internationally directly rather than those that do not transact globally (Combey, A., and Toybenou, A., 2017). Christian et al. (2018) investigated the effects of exchange rate volatility on firm profitability in Nigeria. Their study established that exchange rates have a direct negative relationship with business profitability. In the same vein, the effects of exchange rates on commercial banks' performance in South Sudan established a negative relationship between financial performance and exchange rate fluctuations. Therefore, an exchange rate fluctuation has a negative impact on both firms' and financial institutions' profitability (Andrew J. Manyok, 2016). The effect of the foreign exchange rate on the financial performance of private commercial banks in Ethiopia (GIRUM DEMISSIE, 2020) has been investigated and has established an insignificant relationship between interest rate spreads and inflation rates and the financial performance of private commercial banks in Ethiopia in the study period. Effects of exchange rate fluctuations on the financial performance of commercial banks in Kenya (ELIZABETH MAJOK, 2015) has investigated and established a positive relationship between foreign exchange rate fluctuations and the financial performance of banks as measured by the returns on assets ratio. The research findings further revealed that the strength of the association between the fluctuations and the returns was weak. Results revealed that a fluctuation in the value of the domestic currency had an effect on the financial performance of the banks. The study revealed that exchange rate movement also greatly affects stock market performance, especially through its spiral effects. The study concluded that there was a weak relationship between foreign exchange rate fluctuations and the performance of commercial banks in Kenya during the study period. In the same way, Tadesse Getachew (2016) conducted studies on the impact of exchange rates on the profitability of commercial banks in Ethiopia for the period from 2000 to 2014. The exchange rate had a negative impact on the profitability of commercial banks in Ethiopia.

As indicated in the above paragraph, different studies were revealing different results; some of the studies said the relationship was positive, some of them said the relationship was negative, and some of the studies said the relationship was insignificant and some of the studies indicated the relationship is significant. This is enough to say there is a clear research gap in which there is greater confusion and controversy on the topic to be cleared with other researchers. As per the study made on review of related literatures, there is not research that were used Net income/profit and Net profit margin as independent variables even though these variables are crucial in determining the banks' profitability study.

Therefore, the intention of this study tried to examine the effects of foreign exchange rate fluctuation on the profitability of private commercial banks in Ethiopia and provided empirical evidence that can contribute for bridging this inconsistency result. It was very important to undertake further studies that focus on developing countries where continuous and volatile exchange rates are highly observed. In this sense Ethiopia is one of them so it important to study the effect of foreign currency exchanges rate fluctuation on the profitability of private commercial banks in Ethiopia. Furthermore, the paper included, but was not limited to, knowledge on how to overcome the above challenges for future headway in the effect of the exchange rate fluctuation on the profitability of private commercial banks in Ethiopia. This study was also touch on the past and current situation in the sector, which was not much taken into account by others.

1.3. Objective of the study

1.3.1. General objective

The general objective of this study is to examine the effects of exchange rate fluctuation on the profitability of private commercial banks in Ethiopia

1.3.2. Specific objectives

The specific objectives of this study are:

- To investigate the effect between foreign exchange rate and financial profitability of private commercial banks in Ethiopia.
- To examine the effect of inflation on the profitability of private commercial banks in Ethiopia.
- To examine the effect of bank size on the profitability of private commercial banks in Ethiopia.
- To examine the effect of net interest margin on the profitability of private commercial banks in Ethiopia.
- To examine the effect of gross domestic product (GDP) on the profitability of private commercial banks in Ethiopia.

1.4. Research Hypothesis

When a prediction or a hypothesized relationship is to be tested by scientific methods, it is termed a research hypothesis. The research hypothesis is a predictive statement that relates an independent variable to a dependent variable. Usually, a research hypothesis must contain at least one independent and one dependent variable. Predictive statements that are not to be objectively verified or relationships that are assumed but not tested are not termed research hypotheses (Kothari 2004, p. 34). On the basis of the model specified for this study, the following hypotheses were drawn:

H1: Exchange rate has positive and statistically significant effect on profitability of private commercial banks in Ethiopia.

Exchange rate volatility impacts bank assets and liabilities and consequently bank performance, just as it does the bank's forecast of asset value, liabilities, income, and related costs. Exchange rate volatility affects banks' performance, increasing production costs and commodity prices, raising economic uncertainty, and increasing non-performing loans. It impacts foreign exchange activities, depositor behavior, and supply chain. Positive shocks increase import costs and export costs, while negative shocks

lower demand for domestic goods. The study focuses on nominal exchange rate fluctuations (Keshtgar et al., 2020).

Theories suggest that foreign currencies with relatively high interest rates will tend to depreciate because the high nominal interest rates reflect the expected rate of inflation. The hypothesis developed below and above this paragraph is based on the factors affecting foreign currency exchange rate includes.

Economic factors		
Short-term	✓ Rate of economic growth ✓ Inflation rate ✓ Interest rate in the country and abroad	✓ Current account balance ✓ Capital account balance ✓ Currency speculation
Long-term	✓ Level of Economic Development of The Country ✓ Competitiveness of the Economy ✓ Technical and Technological Development	✓ Size of the Foreign Debt ✓ Budget Deficit ✓ Relative Domestic and Foreign Prices ✓ Capital Flows
Non-economic factors		
	✓ Political Risk (e.g. risk of armed conflict) ✓ Natural Disasters	✓ Policy Approaches ✓ Psychological Factors

Source: (Twarowska & Kąkol, 2014) and According to the (Fexco, 2023), (Team Iinstarem, 2023) and (FIKADU SISAY, 2021; Tadesse, 2019; Wasike, 2013), factors affecting foreign currency exchange rate includes:

And as (Isaac, 2015) suggests there is a significant correlation between the performance of financial institutions (banks) in particular and exchange rate management. And the other variables used in the study and was base for the development of the following hypothesis was the study made by (ASSEGID MANYAHILIHAL, 2019) in which She used secondary data analysed using descriptive statistics, a correlation matrix, and a random panel regression model. She also used internal factors such as loan growth, lending interest rate, and bank size, whereas external factors are the foreign exchange

rate, real GDP growth, and inflation rate. All the variables used in this study were developed based on the literature, which considered them the determinants of banks financial performances. Moreover, return on assets (ROA) was used to measure the bank's performance. And the theoretical bases for the following hypotheses were those used in chapter two of the document, such as the currency base theory, the purchasing power parity theory, the interest rate parity theory, and the International Fisher Effect. As already mentioned, this paper aims to determine the effect of the exchange rate on the profitability of private commercial banks in Ethiopia. Accordingly, in addition to the primary hypothesis indicated above, the researcher tried to test the following hypotheses based on the theories developed in relation to bank profitability.

H2: Inflation rate has positive and statistically significant effects on profitability of Ethiopian private commercial banks.

H3: Bank size has positive and statistically significant effect on profitability of Ethiopian private commercial banks.

H4: Net interest margin has positive and statistically significant effect on profitability of Ethiopian private commercial banks.

H5: Gross domestic product has positive and statistically significant effect on profitability of Ethiopian private commercial banks.

1.5. Significance of the study

The first and most important significance of this study is its importance for academic purposes. There are limited studies that have examined the effect of the exchange rate on the financial performance of private commercial banks, thereby solving the controversy and confusion arising from the effects of the FX rate on the financial profitability of commercial banks in Ethiopia and elsewhere in developing nations. The importance of this paper will then clear up the mentioned confusion in the research topic. It also contributes to a complete understanding of how the exchange rate affects the financial performance of private commercial banks in Ethiopia, which has vast implications for the industry and helps improve the country's FX policy development. Furthermore, this study will help stakeholders make more informed investment decisions when considering

Ethiopian private commercial bank investment options because it will provide insight into the implications of risk management strategies for banks. Finally, the study will be useful to scholars as it will provide information that can be used as the basis for other research. It also proposes further research areas, which will be very important to researchers who will easily get to know what needs to be done in this particular area.

1.6. Scope of the study

The thematic scope of the study was the FX rate fluctuation effects on the financial performance of private commercial banks in Ethiopia and other controlled variables, as mentioned in the hypothesis part of the study. Spatially (geographically), the study was only concentrated within the geographical boundary of Addis Ababa, and the target population of the study was focused on six private commercial banks that have been in operation for the last twenty years and above. Temporally, the research was concentrated on panel data from these banks over the period (2003–2022). Because the researcher believes two decades of data is adequate enough to meet the intended research objectives of the study,

1.7. Limitation of the Study

A study of the effect of the exchange rate on the financial performance of private commercial banks in Ethiopia needs wider coverage in terms of a sufficient examination of all independent variables considered necessary. The study uses a quantitative approach and secondary data. Consequently, the study lacks rich qualitative data that triangulates and further explains the quantitative findings. The number of independent variables is not entirely sufficient for examining exchange rate effects on the financial performance of an Ethiopian private commercial bank. Because it is true that research with a wider independent variable would be vital in examining the independent variables against the dependent variables. The research used independent variables such as inflation, foreign exchange rate, GDP, net interest margin and bank size, to assess their effects on the bank's financial performance. Therefore, the effects of the other economic variables will not be analyzed in this research. This research will rely on secondary data from banks;

therefore, the research findings will be entirely dependent on the accuracy and validity of the data obtained from the secondary sources.

1.8. Organization of the Paper

The study was organized into five chapters. The first chapter was used to present an introduction, background on the study, a statement of the problem, research objectives, research hypotheses, the significance of the study, the scope of the study, and the limitations of the study. The second chapter was used to incorporate a review of relevant literature. The third chapter covers research methodology, and the fourth chapter was used to include data analysis, and result discussion. The last chapter deals with summarizing the major findings, conclusions, and recommendations.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This chapter will provide the basis for the topic under study and its concepts. It further centers on the review of empirical studies, the theoretical framework, and a general literature review. It also highlights theories guiding the study, such as the effect of the exchange rate on the financial performance of private commercial banks in Ethiopia, thereby explaining the research gap, after which it presents the conclusion based on the empirical literature.

2.2. Theoretical literature review

The theoretical framework constitutes the logical basis upon which the research is conducted. This forms a link between the theoretical aspects and practical aspects of the variables under study. This study adopted three main theories in explaining the relationship that exists between foreign exchange fluctuations and financial performance. These include purchasing power parity theory, foreign exchange exposure theory, and the international fisher effect.

2.2.1. Purchasing power parity theory

This theory was proposed by the Swedish economist Gustav Cassel in 1918. (Majok, 2015) 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. The theory makes the assumption that importers' and exporters' actions are motivated by the differences in prices, which induce spot exchange rates. The theory makes the assumption that there are no transactional costs or any barriers to the trade, with the commodities traded being homogeneous in nature.

(Menon &Viswanathan, 2005), cited in Sharifa Omar Hafidh (2020), the PPP theory explains that in different countries, the value of homogeneous commodities is identical. According to them, when purchasing power is similar in different countries, the exchange rates between the countries' currencies will be at equilibrium. If purchasing power in

different countries is close, then the exchange rates between the currencies of the world should be in balance. According to Ross et al. (2008), cited in Manyok Andrew John (2016), the currency of a nation may be incorrectly priced because money has no buying power against the price of goods in that nation. This hypothesis is founded on the premise that there are no transactional costs, no barriers to exchange, and homogeneity in the goods being exchanged. When the business of currency exchange occurs at the spot rate, the price of a homogenous commodity across borders will be equal.

Reid and Joshua (2004), as cited in Md. Shakhaowat Hossin, postulated that the ratio of commodity price levels should equal the country's currency. According to Ross et al. (2008), a country's currency may be incorrectly valued, whereby money has no purchasing power against the country's commodity level. The theory suggested the use of price indexes to determine the exact price of a homogenous commodity between countries. (Reid and Joshua, 2004) The main challenge of this belief is measuring Purchasing Power Parity constructed from price indexes given that different countries use different goods to determine their price level.

PPP is applied to exchange rates, which says that the exchange rate among two different countries should reflect PPP means that the cost of commodities in one country needs to be the same in the other country's currency when converted. For instance, in the case of the United States (US), the value of commodities for the US is 10 dollars and for the Eth is 520 Br., whiles the fluctuation of the exchange rate between countries is 1 dollar = 52 Eth Br. This shows that the exchange rate reflects PPP, as we would be able to purchase almost the same amount of commodities in the United States, and it is worth 10 dollars when converted to Ethiopian Birr. Even if the Ethiopian commodities increase to 60 Br. and the exchange rate stays the same, this exchange rate cannot represent the PPP, as if 10 dollars of commodities converted to Ethiopian Birr are not yet exactly the same commodity price in Ethiopia, 8 Br must remain to purchase the same amount of commodities across Ethiopia. Menon and Viswanathan (2005) presented two classifications of PPP: relative purchasing power parity and absolute purchasing power parity.

i. Relative purchasing power parity

This theory states that the exchange rate between the home currency and any foreign currency will adjust to reflect changes in the price levels of the two countries. For example, if inflation in Ethiopia is 20% and in the United States is 5%, then the value of the United States dollar must rise by 15% (20%–5%) to equalize the Birr price of goods in the two countries.

ii. Absolute purchasing power parity (The law of one price)

The price of any good is the same after adjusting for exchange rate changes and relative inflation rates. Absolute purchasing power parity holds that the equilibrium exchange rate between two countries is determined entirely by the ratio of the national price levels. It assumes there are no barriers in the market; hence, the law of one price will operate perfectly. However, in reality, the following will prevent this: transportation costs, tariffs, and quotas. Thus, the discrepancy of not having one law price for common wells in all markets will remain. Absolute PPP is generally viewed as a condition of goods market equilibrium. Under absolute PPP, both the home and foreign markets are integrated into a single market.

2.2.2. Foreign exchange exposure theory

Foreign exchange is important when making any international business or international transactions, and when the currency value changes against one another, a business person can make a substantial gain or loss. Exposure refers to the degree to which a company is affected by exchange rate changes. Foreign exchange exposure refers to the risk associated with the foreign exchange rates that change frequently and can have an adverse effect on financial transactions denominated in some foreign currency rather than the domestic currency of the company. In other words, the firm’s risk that its future cash flows will be affected by the change in the value of the foreign currency in which it has maintained its books of accounts (balance sheet) due to the volatility of the foreign exchange rates is termed as foreign exchange exposure. It is not only those firms that directly make financial transactions in foreign currency denominations that face the risk

of foreign currency exposure, but also the other firms that are indirectly related to the foreign currency.

Studies have indicated that rate changes, through their impact on net assets and sales values, are a paramount influence in influencing a company's value (Jongen et al., 2006). For instance, if the Ethiopian company is competing against the products imported from China and if the Chinese Yuan per Ethiopian Birr falls, the importers enjoy a decreased cost advantage over the Ethiopian company.

2.2.3. The international fisher effect theory

This model was developed by Irving Fisher in his 1930 book The "Theory of Interest." This international fisher effect is another major theory in international finance. This theory states that the expected disparity" between" the exchange rates of two currencies is approximately equal to the difference between their countries nominal interest rates. It describes the relationship between the inflation rate and the nominal interest rate. It uses market interest rates rather than inflation rates to explain why exchange rates change over time. The International Fisher Effect states that exchange rate changes are balanced out by interest rate changes. The Fisher theory simply argues that real interest rates across countries are equal due to the possibility of arbitrage opportunities between financial markets, which generally occur in the form of capital flows. Real interest rate equality implies that the country with the higher interest rate should also have a higher inflation rate, which, in turn, makes the real value of the country's currency decrease over time. The relationship between relative interest rates and foreign exchange rates is explained in the interest rate theory of exchange rate expectations. Nominal interest rate differentials between two countries tend to reflect exchange rate fluctuations. If the international Fisher effect holds, interest rates in appreciating currencies tend to be low enough and in depreciating currencies high enough to offset expected currency gains and losses.

The International Fisher Effect (IFE) theory suggests that foreign currencies with relatively high interest rates will tend to depreciate because the high nominal interest rates reflect the expected rate of inflation (Madura, 2012). Does the interest rate differential actually help predict future currency movements? Available evidence is

mixed, as in the case of PPP theory. In the long run, a relationship between interest rate differentials and subsequent changes in the spot exchange rate seems to exist, but with considerable deviations in the short run (Hill, 2004). The International Fisher Effect is known for not being a good predictor of short-run changes in spot exchange rates. One of Fisher's greatest contributions to the field of economics was explaining the relationship between inflation and real and nominal interest rates. This relationship is known as the Fisher Effect. The Fisher Effect states that an increase in the growth rate of the money supply will result in an increase in inflation and an increase in the nominal interest rate, which will match the increase in the inflation rate. This Fisher Effect helps explain the reasons why inflation may not be seen as affecting the real interest rate in the long run. In order for real interest rates not to be affected by inflation, the nominal interest rate must mimic the changes in the inflation rate. If inflation increases by some rate, nominal interest rates must increase by the same rate. This keeps the real interest rate unchanged because the increase in the nominal rate and the increase in the inflation rate cancel out any effect on the real interest rate. Fisher shows that expected changes in asset prices have no effect on the economy, but unexpected changes might have an effect. He also makes the argument that, in the long run, expected and actual inflation will be equal. Carolyn C. Lagat and Daniel M. Nyandema, Kenya) In effect, the Fisher Effect says that currencies with high rates of inflation should bear higher interest rates than currencies with lower rates of inflation. For example, if the inflation rate in Ethiopia is 20% and the US rate is 5%, then the Fisher effect says that the nominal interest rate in Ethiopia should be higher by 15% (20%–5%).

2.3. Conceptual review literature

Bank financial performance is the cornerstone of financial performance, which is essential for the health and capacity of a company. While bank size and branch count have an impact on profitability, overhead effectiveness and asset utilization ratio have a big impact on how well a company does (Mamo et al., 2022). For financial organizations, economists, and experts in the foreign currency market, anticipating exchange rates is essential. Trade flows, domestic investments, and investor decisions

are all impacted by the uncertainty of macroeconomic variables (Gyamerah & Moyo, 2020).

2.3.1. Financial performance indicators for banks

The ability of the business to make a profit compared against a base such as sales, assets, or owner's equity in commercial banks, performance measures are mostly based on the income statement. The potential for success in the company is reflected in the company's financial statements and profitability. In general, the word profit can take either its economic meaning or its accounting concept, which shows the excess of income over expenditure viewed during a specified period of time. In addition, profit is one of the main reasons for the continued existence of every business organization. On the other hand, profit is expected so as to meet the required return from owners and other outsiders.

Profitability in the banking industry is the most important and reliable indicator, as it gives a broad indication of the capability of a bank to increase its earnings. Evaluation of banking companies in terms of profitability instead of profits is better since the former is obtained after purging, with the effect of size variables on the absolute level of profits. It is a relative concept and indicates net profits as a percentage of working funds. It serves as an index to the degree of asset utilization and managerial effectiveness by sharing the efficiency with which a bank deploys its total resources to optimize its profits. An organization's performance can be determined by a number of factors, either internal or external. Factors that impact the management of the board of directors are internal factors that affect the organization's profitability and are bank-specific variables. Internal factors differ from one bank to the next and are within a bank's scope of manipulation. These comprise information technology, capital size, labor productivity, deposit liabilities, management quality, credit portfolio, interest rate policy, bank size, and ownership. External factors affecting the performance of a bank are mainly GDP, macroeconomic policy stability, Inflation, Political instability, and the interest rate (Athanasogluo et al., 2005).

A study by Tigist A. (2014) examines the determinants of the financial performance of commercial banks in Ethiopia by using panel data from banks over the period 2002–2013. She was considered secondary data for the quantitative approach. Additionally, the

researcher used a random effect model based on the Hausman specification test. The researcher also included internal factors (internal capital structure, Income Diversification, operating costs, and bank size) and external factors (effective tax rate, real GDP growth, and inflation). Moreover, the study used ROA and NIM as performance measures. The regression result of the study concluded that all bank-specific variables except bank size affect the performance of the bank significantly but negatively. On the contrary, bank size affects performance significantly and positively. In addition to this, macro-economic factors have no significant effect on the performance of banks except the tax rate, which negatively but significantly affects ROA.

2.3.2. Identifying factors and metrics unique to banks

Financial ratios like net interest margin, which measures a bank's net return on earnings assets and is the most appropriate measure for gauging effectiveness, efficiency, and stability, equity multiplier, bank size, asset utilization ratio, profit margin, and equity to total liability ratio, among others, have an impact on a bank's performance (Mamo et al., 2022).

i. Net Interest Margin (NIM)

It is computed by dividing earning assets by the difference between interest revenue and interest expense. The ratio of net interest margin is used to assess the strength and effectiveness of the bank (Angori, Aristei, & Gallo, 2019). The net interest margin is the most suitable measurement to examine the bank's efficacy, efficiency, and stability in its operation (Puspitasari, Sudiyatno, Aini, & Anindiansyah, 2021) (Mamo et al., 2022).

$$\mathbf{NIM} = (\mathbf{net\ interst\ incom})/(\mathbf{earing\ asset})$$

Where $\mathrm{NII} = \mathrm{interest\ revenue} - \mathrm{interst\ expense}$

ii. The size of the bank

The size of the bank is the main factor that determines an organization’s financial performance. Bank size influences its performance in various ways. The bank's size possesses a very crucial role in the bank’s performance that cannot be ignored. Large banks exploit economies of scale and thus have more efficiency as compared to small organizations (Wild & Han, 2010). Similarly, Ahmed, Ahmed, and Ahmed (2010)

pointed out that large banks tend to be more efficient than small banks because they are capable of exploiting more economies of scale and scope.

The bank's size generally affects its market share, which in turn affects profitability. The larger a firm's market share, the more sales it makes; thus, if we base ourselves on this point, banks increase loans and have better interest rates, hence better profits. The market share of banks captures probable economies or diseconomies of scale. The size of the bank affects its financial performance in different ways. Size can be determined by the net premium, which is the premium earned by a bank after deducting the reinsurance yield (Wild & Han, 2010). Byun (2017) discovered that bank size affects effectiveness, while Anbar and Alper (2011) discovered that bank size has a major impact on bank profitability. Short (1979) thought that the size of the bank could be a factor in accounting for economies of scale. By decreasing risk and establishing economies of scale, larger banks can achieve lower unit costs and better profits.

Bank Size = logarithm of total assets

A bank's operating costs as a percentage of the total value of its assets. Total assets are made up of all assets that generate income, cash owed to banks, bank-owned real estate that has been foreclosed, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued activities, and other assets. A bank's operating costs as a percentage of the total value of its assets. Total assets are made up of all assets that generate income, cash owed to banks, bank-owned real estate that has been foreclosed, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued activities, and other assets. Bank performance is heavily influenced by capital strength, with better-capitalized banks being more lucrative. Since there is a significant positive link between capital and earnings, it stands to reason that raising capital may help to offset earnings losses by lowering interest and bankruptcy expenses. A bank with adequate capital can explore business possibilities more successfully; have greater leeway in handling unforeseen losses, and lower funding costs, which increases profitability (Fithriyanto, 2020) (Negash G/Egziabher, 2021).

2.3.3. Macroeconomic elements

i. Exchange rate

Currency has the same buying power per unit, so knowing the exchange rate helps determine the "value "of an amount of money. Several factors influence exchange rates. Most exchange rates are free-floating, meaning they rise and fall in accordance with fluctuations in supply and demand in the foreign exchange market. Other currencies may be fixed, meaning that their value is tied to the value of another currency within a certain margin (Moyo et al. 2020).

An exchange rate is referred to as the nominal exchange rate when inflation effects are embodied in the rate and as the real exchange rate when inflation influences have not been factored in the rate (Pugel, 2007). There are fixed and floating exchange rate systems. Fixed exchange rates are meant to be fixed for a specified period of time. On the other hand, floating exchange rates move up and down from year to year, week to week, and minute by minute (Clark, Tamirisa, & Shang-Jin, 2004). Under a fixed exchange rate regime, the rise and fall of the exchange rate are referred to as exchange rate devaluation and exchange rate revaluation (Sadoulet & Janvry, 1995). Nevertheless, fixed exchange rates are frequently devalued or revalued, implying that they can change over time and may also be volatile. A wide variety of factors influence the exchange rate, such as interest rates, inflation, and the state of politics and the economy in each country (Pugel, 2007).

Table 2.1: Nominal Exchange Rate

Year	Nominal Exchange Rate	Year	Nominal Exchange Rate
2003	8.6	2013	18.6426
2004	8.63	2014	19.5771
2005	8.66	2015	20.5659
2006	8.69	2016	21.8004
2007	9.03	2017	23.1081
2008	9.61	2018	27.2621
2009	11.3009	2019	28.9109
2010	13.5321	2020	34.9822
2011	16.9081	2021	43.691
2012	17.7305	2022	51.9938

Source: National Bank of Ethiopia Annual report of 2021/22

ii. Inflation Rate

Generally speaking, inflation is an increase in prices over time in an economy. One unit of the local currency will buy fewer goods and services when the cost of goods and services rises. There are numerous causes of inflation. It can be brought on by too much money entering the market, either from commercial banks' lending to the general people or from the government buying bonds. A high inflation rate will result from the economy's money supply growing too quickly relative to economic growth. Businesses and consumers worry more and more that high inflation will reduce their future purchasing power. A low inflation rate is advantageous because it allows companies and consumers to make long-term plans (Moyo et al., 2020).

The relationship between inflation rates and financial performance is also reciprocal. Price level increases so cause a decrease in the value of money and promote portfolio sifting. People's wealth shifts from cash and financial assets to real assets as the inflation rate rises. This basically suggests that weaker money demand in an economy is a result of high rates of inflation. Based on empirical research, studies conducted in developing nations have revealed that inflation resistance is significantly and steadily higher than income resistance (Vong, 2009). In general, a nation with a historically low inflation rate will see its currency appreciate as its purchasing power rises in relation to other currencies.

Table 2.2: Inflation rate, end of period consumer prices (Annual percent change)

Year	Inflation rate	Year	Inflation rate
2003	10.9	2013	13.5
2004	7.3	2014	8.1
2005	6.1	2015	7.7
2006	10.6	2016	9.7
2007	15.8	2017	7.4
2008	25.3	2018	14.6
2009	36.4	2019	12.6
2010	2.8	2020	19.9
2011	18.1	2021	20.2
2012	34.1	2022	33.8

Source: National Bank of Ethiopia Annual report of 2021/22

iii. Gross Domestic Product (GDP)

Rao and Lakew (2012) as cited on Tadesse (2015) find that GDP has positive impact on bank profitability. There is also empirical evidence of a negative relationship between the growth in real GDP and NPLs (Salas and Suarina, 2002; Rajan & Dhal, 2003). The explanation provided by the literature for this relationship is that strong positive growth in real GDP usually translates into more income which improves the debt servicing capacity of borrower, which in turn contributes to lower non-performing loans. GDP is a factor affecting bank loan growth. Therefore, change in real GDP is included in the model as independent variables.

Table 2.3: GDP of the nation within the last twenty years

Year	GDP	Per Capita	Growth	Year	GDP	Per Capita	Grow8.65th
2003	8.62	118	-2.16	2013	47.65	491	10.58
2004	10.13	135	13.57	2014	55.61	558	10.26
2005	12.40	160	11.82	2015	64.59	630	10.39
2006	15.28	192	10.83	2016	54.30	706	9.43
2007	19.71	240	11.46	2017	81.77	756	9.56
2008	27.07	321	10.79	2018	84.27	758	6.82
2009	32.44	374	8.8	2019	95.91	840	8.36
2010	29.93	335	12.55	2020	107.66	919	6.06
2011	31.95	348	11.18	2021	111.26	925	5.64
2012	43.31	459	8.65	2022	126.78	1028	5.32

Sources:<ahref='https://www.macrotrends.net/countries/ETH/ethiopia/gdp-gross-domesticproduct'>Ethiopia GDP 1981-2024. Www.macrotrends.net. Retrieved 2024-01-

2.4. Empirical Review

The mismatch between theoretical and actual findings persists despite the fact that numerous national and international researches on the topics of inflation rate, exchange rate fluctuations, and the financial performance of commercial banks have been conducted.

2.4.1. International Studies

In a recent study (Keshtgar, Pahlavani, and Mirjalili, 2020), he used panel data produced from a random effects model and derived using the GARCH approach to analyze The Impact of Exchange Rate Volatility on Banking Performance (case of Iran) for the period 2007-2014 for 14 Iranian banks. Liquidity and profitability were the two metrics utilized to assess banks' performance. According to the study's findings, banks' capital return ratios are negatively and statistically significantly impacted by exchange rate fluctuation. Similar to the last example, exchange rate volatility influences how much lending there is compared to total bank deposits since it widens the financial gap and raises the credit risk that comes with it.

The study conducted by Sharifa Omar Hafidh (2020) investigated the effects of exchange rate variation on the financial performance of commercial banks in Tanzania. The exchange rate was a significant independent variable, and the paper analyzed financial performance as a dependent variable and measured it by return on assets (ROA) and return on equity (ROE). In addition, he utilized interest rates and the inflation rate as control variables in his analysis. As a result, the researcher used E-views Version 10 to analyze the data. The examiner included 13 commercial banks in Tanzania as the population, and he used secondary data sources for the period of 2004–2017 (for fourteen years) collected from financial statements of commercial banks in Tanzania, the National Bureau of Statistics, and Global Economy.

Using an empirical framework that combines descriptive statistics, the Autoregressive distributed lag model (ARDL), and other models, it is necessary to examine the impact of inflation and exchange rate on the financial performance of commercial banks in South Africa for the period 2003-2019 (Seventeen years) in order to meet the goal of the study made by Moyo, Delani, and Tursoy (Turgut 2020). Return on equity is used as the dependent variable, while inflation and exchange rate are used as the independent variables, to measure financial success. According to the study's findings, there is a limited correlation between the exchange rate and return on equity and a substantial inverse association between inflation and return on equity.

A second researcher from South Asia (Md. Shakhaowat Hossin 2020) used theoretical and empirical study on exchange rates and financial performance to examine the impact of exchange rate variations on the financial performance of financial institutions in Bangladesh. The researcher used secondary data gathered from the World Bank database online and the consolidated financial accounts of the institutions. In order to do this, the researcher described the data using descriptive statistics, specifically measures of central tendency. To further understand the relationship between the independent variables (inflation rates, interest rate spreads, and exchange rates) and the dependent variable Return on Assets (ROA), the study additionally used correlation analysis.

The goal of the study by Manyok A. (2016) was to use semi-annual data to examine the impact of exchange rate variations on the financial performance of financial institutions in South Sudan during a ten-year period from 2006 to 2015. The researcher used a descriptive survey, while secondary data was gathered from the Central Bank of South Sudan and the consolidated financial accounts of the banks. In order to describe the data, the researcher used descriptive statistics that included measures of central tendency. Additionally, correlation analysis was used to explain the relationship between ROA, inflation rates, interest rate spreads, bank size, and exchange rates. A model of multiple linear regressions was used by the researcher. Exchange rate changes, inflation, and return on assets (ROA) were employed by the researcher as the dependent variables.

The study conducted by Majok (2015) employed a descriptive research approach and reported changes in the exchange rate and the financial performance of commercial banks in Kenya. All 43 of Kenya's commercial banks that are now in operation made up the papers target audience. Multiple regression models are used in the study from 2002 to 2014 using the Statistical Package for Social Sciences (SPSS) Version 21.0. In order to analyze the data, the study used secondary data sources from the consolidated financial statements of commercial banks and Kenyan central banks, utilizing ROA as a dependent variable to gauge financial performance. The data gathered revealed that the variation of the exchange rate had favorable effects on the profitability of commercial banks through its indicator of return on assets (ROA).

2.4.2. Studies in Ethiopia

In a recent study, Asrat Abate (2021) used panel data from 16 commercial banks operating in Ethiopia between 2016 and 2019 (a four-year period) to evaluate the impact of foreign currency exchange controls on the performance of commercial banks in Ethiopia. The researcher concentrated primarily on the recently imposed foreign exchange restriction and transparency in currency allocation directives, both of which went into effect in 2016. He evaluated the efficiency of the banks using ROA and ROE. The researcher has also included control variables including bank size, managerial effectiveness, and income diversity. He performed an econometric analysis and descriptive statistics on the data, as well as a panel model selection between random effect and fixed effect utilizing.

Girum (2020) investigated how foreign exchange rates affected the Ethiopian private commercial banks' financial results. Using correlation coefficients and a quantitative technique, he examined the link using panel data from six banks. The size of the bank was an internal issue, and inflation, interest rate spread, and foreign exchange rate were external factors. Return on equity, the dependent variable, was quantified. In contrast to the inflation rate and interest rate spread, the study indicated that exchange rate and bank size had a substantial impact on the financial performance of Ethiopian banks. To boost financial performance, management should reinforce the important aspects that have been recognized.

A study on the effects of exchange rates on the financial performance of private commercial banks in Ethiopia from 2002 to 2016 was done by Kidist (2018). The study examined variables such exchange rate, inflation, GDP, net interest margin, and bank size using 112 data and various linear regression models. The results indicated a negative correlation between net interest margin and bank performance and a strong positive correlation between exchange rate, inflation, GDP, and bank size. The researcher makes the recommendation that the government's fiscal and monetary policy-making divisions take into account how rate changes affect business performance and put in place the necessary measures to lessen their detrimental influence on bank profitability.

The purpose of Temesgen's (2016) study was to look at how the real effective exchange rate affected Ethiopia's trade balance. The study examined the effects of macroeconomic factors on commercial bank profitability, including exchange rate, public spending, trade openness, and money supply. Except for the money supply, the findings indicated that the factors had positive, significant, and both short- and long-term effects on the trade balance. Real GDP, the exchange rate, government spending, and trade openness all had positive short-term benefits, but the money supply had negative short-term consequences. Real GDP, the currency rate, the money supply, government consumption, and trade openness all have significant and advantageous effects over the long term. According to the report, in order to decrease the continuous deficit in the economy, the government should create robust controlling mechanisms to monitor trade structure and policy.

Using data from the Central Statistical Agency and ordinary least squares (OLS) analysis, Tirsit (2011) examined the relationship between currency devaluation and economic growth in Ethiopia from 1980 to 2010. According to the study, devaluation had a negative impact on GDP per person, whereas an exchange rate that was one year behind had a favorable influence. The GDP per capita growth was constrained by drought and education.

2.5. Ethiopian Banking and Foreign Exchange Situation

2.5.1. Banking Industry in Ethiopia

The Bank of Abyssinia established Ethiopia's banking history in 1905, and in 1906 it launched its first branch. Branches were added to Harar, Dire Dawa, Gore, Dessie, and Djibouti during the following fifteen years. With a £750,000 capital, the Bank of Ethiopia became the first indigenous African bank in 1931. It served as the main commercial bank and issued foreign money.

In 1964, the Commercial Bank of Ethiopia, which took over the defunct State Bank of Ethiopia, joined the National Bank of Ethiopia in starting operations. With a 20 million Ethiopia capital, all workers were Ethiopians. Large enterprises were nationalized by the government in 1974, and stronger institutions were created by combining related activities (NBE, 2012).

Following the Dergue government in 1991, the EPRDF announced a liberal economic system and established the national bank as a distinct judicial body. The licensing and supervision of banking business No. 84/1994 and the Monetary and Banking Proclamation No. 83/1994 established the legislative framework for banking sector investment. The declaration for the licensing and regulation of insurance enterprises signaled the start of a new era following the change in the political climate in 1991. Private insurance firms grew rapidly as soon as the proclamation went into effect. There are currently 24 private banks and 2 state-owned banks (As of May 2023).

According to Ebisa (2012), once the Dergue regime was overthrown, opportunities for involvement in financial institutions existed, and legislation encouraged private investors to do so in the banking, MFI, and insurance sectors. Despite having a very short history, private commercial banks have been able to share the monopolies previously held by the state-owned Commercial Bank of Ethiopia and to contribute to the delivery of financial services (Ebisa, 2012). Thus, in addition to the two government banks (the Commercial Bank of Ethiopia and the Development Bank of Ethiopia), Ethiopia had 16 private commercial banks as of December 2021. The first private commercial bank in the nation, Awash Bank, is featured alongside other private commercial banks.

2.5.2. Commercial banks in Ethiopia

Banks, insurance companies, and microfinance organizations are some of Ethiopia's main financial institutions. In 2018, banks made up 87.33% of the total capital in the financial industry. There are 18 state-run banks and 16 privately owned commercial banks in the nation's financial sector. 39.9% of the total capital was held by private banks, while the remaining 51.1% was held by CBE and 9% by DBE.

Private commercial banks play a significant role in the Ethiopian financial system because of the variety of goods and services they offer. In addition to the loans and savings from depositors, they guarantee safekeeping and simple access to funds for both individuals and corporations. Through the Internet, mobile banking apps, and automated teller machines (ATM), banking services are now more readily available to users thanks to recent technological breakthroughs. However, because banks rely so heavily on

foreign money and transactions, changes in foreign currency rates may have an impact on how well the banks perform (Wessen Legessa 2019).

2.5.3. Exchange Rate Regimes in Ethiopia

The exchange rate policy in Ethiopia has undergone various regimes. Prior to 1992, the nation operated under a fixed exchange rate regime, in which the government alone set the currency rate. Since 1992, the nation has been operating under an exchange rate regime that is more akin to managed floating, with government intervention as needed to maintain the stability of the foreign exchange market (Muhabaw, 2015).

Derrese (2001) claims that on July 23, 1945, the official exchange rate between Ethiopian Birr and US Dollar was established (2.48 Birr to 1 USD). On January 1, 1964, the Ethiopian Birr was marginally depreciated to 2.50 Birr per USD, or after nearly 20 years. The dollar was floated and no longer convertible to gold when the Bretton Woods System collapsed in 1971, and on December 21, 1971, the Birr was revalued to 2.30 Birr per USD (or by 8.75%). The consequent 10% devaluation of the USD briefly caused the Birr to be undervalued. The Ethiopian Birr was once more revalued to 2.07 Birr per USD in February 1973 in order to realign it.

According to Equar Desta (2001) as a result of the fixation of the exchange rate, Birr became overvalued in terms of the USD as well as many other foreign currencies. This overvaluation had adverse effects on the national economy, such as misallocation of resources, loss of international competitiveness, the development of an illegal parallel market for foreign exchange, and unlawful cross-border trade.

As a result of the overvaluation and scarcity of foreign currency the unofficial or parallel exchange rate began to spread in the country. In mid-1980 the unofficial rate reached 6 or 7 birr per USD where the official rate was still 2.07 birr per USD. Taking this in to account the transitional government of Ethiopia decided to devaluate the currency to 5 birr per USD in 1992. The devaluation of exchange rate was expected to increase output by encouraging the export sector as well as increase domestic production. (Taye, 1999) (IMF, 2010: MOFED, 2009),After the devaluation in 1992 the exchange rate is changed from fixed to flexible rate in order to control overvaluation through a gradual

depreciation of domestic currency every year. The gap between the unofficial and official rate also decreased compared to the period when the exchange rate was fixed. However during the fiscal year 2007/08 the rate of depreciation against other foreign currencies increased compared to the previous year. In the 2009/10 and September 2010/2011 the Ethiopian birr was depreciated to 23.7% and 16.5% respectively against the USD. The huge devaluation was expected to decrease overvaluation and increase competitiveness.

According to business info Ethiopia (BIE 2022) Four years ago, on October 11, 2017, Ethiopia's central bank made significant decisions to devalue the Ethiopian Birr by 15 percent in a single round as pressures on the foreign exchange intensified. The devaluation pegs the Birr at 26.91 to the USD, up from 23.40 Br on the official market. Similarly, the National Bank of Ethiopia (NBE) has also announced that it has raised the main interest rate to 7 percent from 5 percent to stimulate savings and counter inflation. According to the Government, the devaluation was undertaken to encourage exports and overcome the foreign exchange shortages.

In The Reporter's article titled 'Has depreciating Birr missed its mark?' Alemayehu argues that 90 percent of Ethiopia's imports cannot be discouraged because they are critical imports like fuel, medicine, and strategic items. Furthermore, the Professor said, "Basically, the devaluation is the wrong policy for Ethiopia. Over 60 percent of industrial input in Ethiopia is imported. Only consumable durables, which are considered a luxury, might be discouraged. But vehicles are not a luxury now."

According to Cepheus' newest analysis, Ethiopia's Birr has depreciated at an annualized rate of 26 percent in the 2021/22 fiscal year, much the same rate as the previous year. According to the study, the depreciation rate outpaced inflation for the entire last fiscal year (2020/21 FY), resulting in real currency depreciation. However, according to the research, the situation has turned around this year, with depreciation rates currently substantially below recent inflation rates, potentially contributing to a meaningful appreciation (strengthening) of the birr if present trends continue.

2.6. Summary of literature review and Knowledge gap

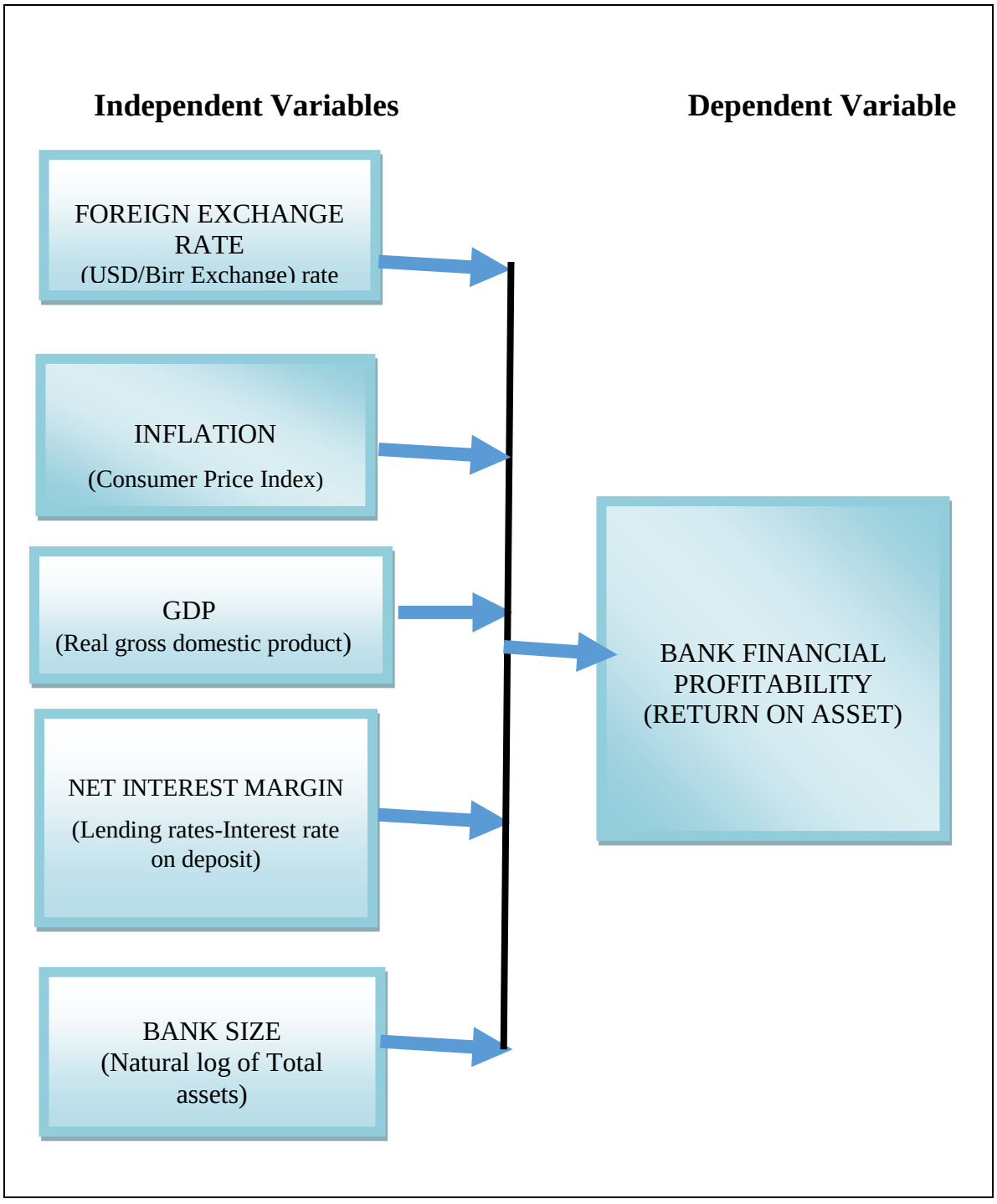
There have been several studies on the effect of exchange rates on the financial performance of banks and related topics locally and elsewhere in other countries. Literature concurred that there is a negative relationship between exchange rate fluctuations and bank profitability however exchange rates mainly affect banks that transact internationally more directly than those that do not transact globally (Combey, A. and Toybenou, A., 2017). Christian et al (2018) investigated the effects of exchange rate volatility on firm profitability in Nigeria. Their study established that exchange rates have a direct negative relationship with business profitability. In the same vein, the effects of exchange rates on commercial banks' performance in South Sudan established a negative relationship between financial performance and exchange rate fluctuations. Therefore, an exchange rate fluctuation has a negative impact on both firms' and financial institutions' profitability (Andrew J. Manyok, 2016). The effect of the foreign exchange rate on the financial performance of private commercial banks in Ethiopia (GIRUM DEMISSIE, 2020) has been investigated and has established an insignificant relationship between interest rate spreads and inflation rates with the financial performance of private commercial banks in Ethiopia in the study period. Effects of exchange rate fluctuations on the financial performance of commercial banks in Kenya (ELIZABETH MAJOK, 2015) has investigated and established a positive relationship between foreign exchange rate fluctuations and the financial performance of banks as measured by the returns on assets ratio. The research findings further revealed that the strength of the association between the fluctuations and the returns was weak. Results revealed that a fluctuation in the value of the domestic currency had an effect on the financial performance of the banks. The study revealed that exchange rate movement also greatly affects stock market performance, especially through its spiral effects. The study concluded that there is a weak relationship between foreign exchange rate fluctuations and the performance of commercial banks in Kenya during the study period. In the same way, Tadesse Getachew (2016) conducted studies on the impact of exchange rates on the profitability of commercial banks in Ethiopia for the period from 2000 to 2014. The exchange rate had a negative impact on the profitability of commercial banks in Ethiopia.

As indicated in the above paragraph, different studies were revealing different results; some of the studies said the relationship was positive, some of them said the relationship was negative, and some of the studies said the relationship was insignificant and some of the studies indicated the relationship is significant. This is enough to say there is a clear research gap in which there is greater confusion and controversy on the topic to be cleared with other researchers. Furthermore, the paper included but was not limited to, knowledge on how to overcome the above challenges for future headway in the effect of the exchange rate on the financial performance of commercial banks in Ethiopia.

2.7. Conceptual Framework

The conceptual framework is developed from the review of the literature discussed above and presented in the following diagram. The diagram presents a conceptual framework of the relationship between the dependent Return on asset (ROA) and explanatory (exchange rate, net interest margin, inflation rate, and size of banks) variables. It also shows that the proposed conceptual framework, basically illustrates the factors that contribute to the effect of financial performance in private commercial banks in Ethiopia.

Table 2.4: Conceptual framework



Source: Researcher's own Design

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

In this section, the methodology that the researcher employed in examining the effect of the exchange rate fluctuation on the profitability of private commercial banks in Ethiopia is discussed. It included the research approach, research design, research methods, data analysis and presentation, validity and reliability, methods of data analysis, and research ethical considerations.

3.2. Research Approach/Methodology

Quantitative research methodology is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomena, i.e., phenomena relating to or involving quality or kind. (Kothari, 2004, p. 3)

In order to accomplish the research with respect to the object and the nature or research questions of the study, a quantitative research approach and panel data were applied. The quantitative research approach uses statistical tools and numbers. Quantitative research is the systematic and scientific investigation of quantitative properties and phenomena and their relationships (Kothari, 2005). Therefore According to Carrie Williams (2007), quantitative research begins with a problem statement and involves the formation of a hypothesis, a literature review, and a quantitative data analysis. The objective to be achieved in the study is the basis for determining the research approach for the study. If the problem identifies factors affecting the outcome that have numeric value, it is a quantitative approach (Creswell, 2003). Hence, based on the above discussions of the research approaches and considering the research problem and objective, this study was used the quantitative research approach.

3.3. Research Designs

Research designs are plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2012). According to Adams, Khan, Reside, and White (2007), research design is the blueprint for fulfilling research objectives and answering research questions. In other words, it is a master plan specifying the methods and procedures for collecting and analyzing the needed information.

The purpose of this study was to evaluate the effect of the exchange rate fluctuation on the profitability of private commercial banks in Ethiopia, an explanatory research design was applied. According to Creswell (2014), this type of research design helps to identify and evaluate the casual relationship between different variables under consideration. Moreover, when explanatory research design is used for quantitative data, it attempts to explain the relationship between the dependent and independent variables (Cruse, 2003).

The Research strategy of the study was case study in which the profitability of private commercial was studied. Whereas Time dimension of the study included both Cross-sectional study across selected banks and the study was used the data from selected six private commercial banks longitudinally for the last twenty years and therefore the study design panel data analysis. Mode of inquiry was quantitative data analysis from the secondary data obtained from the banks report from the nation bank documentary center. The research approach used in the study was deductive approach of in which the formulated a set of hypotheses need to be confirmed or rejected during the research process.

3.3.1 Population Size and Sampling Techniques

In this study, the sample population includes all private commercial banks, of which only twenty-four were collected for the purpose of this study, registered with the National Bank of Ethiopia (NBE, 2022) , and operate in Ethiopia. However, banks with over twenty years of experience were considered at the first attempt due to their experience in the market and data for over twenty years. But after the information was collected from the national bank of Ethiopia, most of the banks did not have all the data for the analysis and only had six banks of information in common; therefore, six banks that had at least

twenty years of data and experience were included by using the purposive sampling technique.

Table 3.1: List of banks included in the study

S.N	Name of Banks	Year of establishment
1.	Awash International Bank	1994
2.	Dashen Bank	1995
3.	Bank of Abyssinia	1995
4.	Hibret Bank S.C	1998
5.	Wegagen Bank	1997
6.	Nib International Bank	1999

Source: NBE annual report, 2021/22

Since only banks with more than twenty years of experience were included in the study, it's possible to make generalizations from sample to population. The researcher set selection criteria for the private commercial banks, including the availability of data in the national bank database, their seniority (in terms of experience), size, and total assets.

3.4. Data Source

There are two types of data: primary and secondary. Secondary data is either published or unpublished (Kothari, 2004). Researchers might use either both or one of the types of data, depending on the research type and the data collected by the researcher (Saunders et al., 2007). In order to get relevant information, the study was purely used secondary data sources. The data for the bank-specific factors such as bank size and liquidity were obtained from audited financial statements, i.e., the balance sheet and income statement of the particular private commercial bank (headquarter). Accordingly, some macroeconomic factors, i.e., foreign exchange rate, inflation and gross domestic product were collected from the National Bank of Ethiopia's (NBE) annual report.

3.5. Data Analysis and presentation method

In the study the panel data analysis was done through descriptive statistics and multiple linear regression analysis techniques. The researcher was made use the econometric

model to identify and measure the effect of the exchange rate fluctuation on the profitability of private commercial banks in Ethiopia and the linear multiple regression model. For effective data analysis, the E-views version 10 econometric software packages were used in the study. Therefore, to determine the relationship, the study was applied the return on assets (ROA) as a substitute for the bank's financial performance as a dependent variable and an independent variable, including Return on Asset (ROA), inflation ,exchange rate, gross domestic product (GDP), net interest margin and bank size**.** In addition to that, the researcher was used the panel regression model, in particular the random effect panel data regression model, to examine the effect of the exchange rate on the profitability of private commercial banks.

As specified by Brooks (2008), panel data is favored for situations that often arise in financial modeling where we have data comprising both time series and cross-sectional elements. Accordingly, the study model focuses on panel data techniques that comprise both cross-sectional and time-series elements; the cross-sectional element is reflected by the different Ethiopian commercial banks, and the time-series element is revealed by the period of study of twenty years (2003–2022). Therefore, the collected panel data is analyzed using descriptive statistics, correlations, and multiple linear regression analysis. The descriptive statistics, including mean value and standard deviation, were used to analyze the general trends of the data based on the industry samples of private commercial banks.

3.6. Model specification

In order to effectively study the effect of foreign currency exchange rate volatility on financial performance of private commercial banks in Ethiopia, Accordingly, this study was adopted a model that has existed in most literature. The multiple regression models have the following form:

$$Y= \beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\beta 5X5+€$$

Where: Y= Financial performance/ Profitability of banks (ROA) Dependent Variable

β0 = Constant (Y- intercept)

X1= Average Exchange Rate

X2= Inflation Rate

X3= Bank size (Natural log of Total Assets)

X4= GDP, Real income

X5=Net Interest Margin

€ = Error term

Definition of The model equation describes a general additive multiple regression model that links a dependent variable (y) to k predictor variables$(x1, x2 \dots \dots., xk)$. Indicates that y has a normal distribution with standard deviations and for fixed $x1, x2, \dots \dots x, k$ values.

$$(Many\ y\ values\ for\ fixed\ X1, X2 \dots \dots, Xk) = \alpha + \beta 1X1 + \beta 2X2 + \beta kXk$$

The β_is, also known as population regression coefficients, represent the actual average change in y that would occur if predictor x_i increased by one unit while the values of all the other predictors remained constant. The population regression function refers to the deterministic portion of the equation $\alpha + \beta 1x1 + \beta 2x2 + \beta kxk$ (Peck et al., 2008).

3.7. Reliability and Diagnostic tests

Reliability has to do with the accuracy and precision of a measurement procedure (Kothari, 2004). Reliability estimates the consistency of the measurement, or more simply, the degree to which an instrument measures the way it is used each time it is used under the same conditions with the same subjects. Reliability is essentially about consistency. That is, if we measure something many times and the result is always the same, then we can say that our measurement is reliable. In other words, when the outcome of the measuring process is reproducible, the measuring instrument is reliable.

This does not mean that it is valid; it simply means that the measurement instrument does not produce an erratic and unpredictable result.

Brook (2008) cited in Girum Diagnostic tests on the assumptions of the classical linear regression model were done to ensure that the quality of the quantitative assessment is valid. This includes tests of heteroscedasticity, multicollinearity, autocorrelation, and normality. Heteroscedasticity occurs when the variance of the error term is not constant. The presence of heteroscedasticity makes the standard errors wrong, and hence any inferences made could be misleading. According to Woodridge (2012), many tests for heteroscedasticity have been suggested over the years. Some of them, while having the ability to detect heteroskedasticity, do not directly test the assumption that the variance of the error does not depend on the independent variables. The study was employing the famous statistical test (White's test) to determine whether or not heteroscedasticity is present. As noted in Brooks (2008), a normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. The normality of the model was tested by using the degree of skewness and kurtosis, Shapiro-Wilk Test, d'Agostino-Pearson and Durbin-Watson Test. Multicollinearity was used in the regression model so that incorrect conclusions about the relationship between dependent variables and predictor variables are avoided. Instead of using variance inflation factor and tolerance degree to indicate the presence of multicollinearity in this study correlation matrix was used as indicator of multicollinearity. Autocorrelation is the assumption that the distribution errors are uncorrelated with one another and that the errors are linearly independent of one another. To test this assumption, this study was used the Durbin-Watson test to check for the existence of a serial correlation among error terms.

3.8. Definition of Research Variables

The regression model was used to specify how to measure the effect of the exchange rate on the financial performance of private commercial banks in Ethiopia. The model was used to determine the overall effect of exchange rate variation on the performance of private commercial banks in Ethiopia. Return on Assets (ROA) is specified as a dependent variable for the model to measure the bank's financial performance (profitability of the bank). Five independent variables (foreign exchange rate, inflation

rate, and GDP net interest margin and bank size) are also identified and included in the model specified for each dependent variable.

Dependent variable

Return on asset (ROA), or a bank's profitability

In general, profitability is a measure of any profit making business revenue relative to its costs and expenses. So, different organization used different models to measure profitability. In the financial industry, the ROE indicator allows investors to gauge how well their investments are producing revenue, whereas the ROA indicator shows how well management is using resources or assets to produce money for businesses (Jackson et al., 2021). for this study the researcher will used return on asset (ROA) as more significant and a better profitability measure and dependent variable because ROA it shows the ratio of net profit to total asset and reflects the ability of commercial banks management to generate profits from the bank's assets and best measures of how bank manage its asset to generate revenue than any profitability measures tool.

$$\textit{Return on Asset (ROA)} = \textit{(Net income/ (Total asset)}$$

Independent variables

This refers to the independent variables that was used the econometric model to predict the dependent variable. To measure the effect of exchange rate variables on the profitability of private commercial banks in Ethiopia, five measures are used as independent variables derived from various studies. For instance, Exchange Rate, Inflation Rate, Gross domestic product, Net interest margin and Bank size (total asset of the bank).

1. **Nominal Foreign Exchange Rate (FX):** The significant descriptive independent variable based on the study is the exchange rate, which can be measured using the annual average exchange rate of the Ethiopian Birr against the USD of private commercial banks.
2. **Bank Size (BS):** Total bank assets (book value) represent the ownership of assets by banks; high asset ownership enables banks to offer more financial services at a low cost. An increase in size may result in a reduction or an increase in banks' financial performance due to the situation (Ani et al. 2012). As indicated by Kaaya & Pastry (2013), small banks generate less profit than large banks.

However, a larger bank with economies of scale as well as a larger number of branches could be able to attract better depositors, as previous studies have shown; this research also uses the total asset to measure the study the effects it have on the profitability of the bank but used as control variable.

3. **Net Interest Margin (NIM):** is one indicator of a bank's profitability and growth that measures the net return on the bank's earning assets that reveals the amount of money of a bank earning interest on loans compared to the amount it is paying in interest on deposits. It is computed by the difference between interest revenue and interest expense. The net interest margin is used to assess the strength and effectiveness of the bank (Angori, Aristei, & Gallo, 2019). The net interest margin is the most suitable measurement to examine the bank's efficiency, and stability in its operation (Puspitasari, Sudiyatno, Aini, & Anindiansyah, 2021) (Mamo et al., 2022).
4. **Inflation Rate (INF)**:

   It is a situation in which the economies overall price level is rising and is determined by a consumer price index. It represents sustained and pervasive increment in aggregate price of goods and services resulting decline in purchasing power of money. Accordingly, when inflation is high and unexpected, it can be very costly to an economy. At the same time, inflation generally transfers resources from savers to borrowers since borrowers can repay their loans with birr that are worthless. The majority of empirical studies demonstrate that inflation has a detrimental, negligible impact on the financial health of commercial banks. However, a study by Illot (2012) established a link between profitability and inflation, indicating that Kenyan banks were able to predict inflation levels.
5. **Gross Domestic Product (GDP)**:-The gross domestic product of a country provides a measure of the monetary value of the goods and services that country produces in a specific year. This is an important statistic that indicates whether an economy is growing or contracting.

   GDP= *private consumption + gross private investment + government investment + government spending + (Export minus Import)*

Table 3.2 Operational Definition and measurement of Variables

Variables	Definition	Measurement
Y	Return on Asset ROA	This was measured by banks ROA ratio, used as a measure of bank profitability.
X1	Exchange Rate	This was measured using by Average Marginal Exchange Rate (Birr per USD)
X2	Inflation	This was measured using the average annual Consumer Price Index.
X3	Bank Size	This was evaluated by the Natural log of Total Assets.
X4	Gross Domestic Product GDP	This was evaluated by Nominal GDP Growth Rate calculated as private consumption plus gross private investment plus government investment plus government spending plus (Export minus Import)
X5	Net Interest Margin	This was evaluated by lending interest rate minus depositor interest rate.

Source: Own design from Conceptual framework developed from different literatures

3.9. Ethical Considerations

Each discipline should have its own ethical guidelines regarding the treatment of human research participants (Vanderstoep and Johnston, 2009). Ethical Consideration The researcher has the consent of the organization for the study. Banks that have completed the secondary data (financial statement) may inform customers about the purpose of data collection, analysis, and the promise to maintain privacy. Regarding published and unpublished materials used in the literature review and throughout the study, all citations from copyright holders can be made properly.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

According to the research purpose and research technique, this chapter gives analysis and study findings. The study's overarching goal was to examine, among twenty four private commercial banks of Ethiopia during a twenty years was taken six banks during the study period from 2003 to 2022, the effect of foreign currency exchange fluctuation on their profitability. The secondary source records at the National Bank of Ethiopia and commercial banks' audited financial reports were the only sources used to collect the data.

4.2 Descriptive Statistics of study results

The outcome of the descriptive statistics for the macroeconomic and bank-specific variables included in the regression model is shown in table 4.1 below presents the summary statistics of the variables used to define ROA in this study. It shows the number of observations which is 120, means, standard deviations, minimum value, maximum value, skewness, kurtosis, Jarque-Bera probability and sum squared deviation of values dependent and independent variables. The mean values of all variables are positive. The statistics results show ROA, bank size and net interest margin have minimal standard deviations whereas inflation, foreign exchange rate and GDP have high standard deviation. In addition to this the maximum and the minimum values show that the range of variables.

Table 4.1: Summary of descriptive statistics results

	ROA	INF	FX	BS	GDP	NIM
Mean	2.772700	15.47500	20.16129	4.024240	54.03200	5.500515
Median	2.805940	13.05000	18.18655	4.24036	45.48000	5.160467
Maximum	4.684208	36.40000	51.99380	5.263378	126.7800	9.329667
Minimum	0.325726	2.800000	8.600000	2.671173	8.620000	2.625103
Std. Dev.	0.814736	9.660444	11.95044	0.577227	36.36335	1.611000
Observations	120	120	120	120	120	120

Source: Own data analysis (E-views 10 result), 2023

Table 4.1 presents the descriptive analysis obtained from the study variables over the study period are shown ROA computed by dividing net income by average total asset has a mean of 2.772%, with a minimum of 0.325% and a maximum of 4.684%. The outcome showed that in the last twenty years (during the study period), private commercial banks in Ethiopia generated an average of 2.773% rate of return on their total assets.

However, the results of descriptive statistics for the macroeconomic variables showed that, for the years between 2003 and 2022, the average inflation rate was 15.74%. The inflation rate is frequently used as a gauge of the economy's overall health, and from the above table 4.1 one can see that the minimum value of inflation was 2.8% and a maximum value of 36.4% This implies that there was a greater fluctuation on the inflation rate in the country in the last couple of decades.

Whereas in the above table 4.1, during the study period the country's average exchanges rate volatility was Birr 20.16 per USD, which ranged from Birr 8.6 per USD to a maximum of Birr 51.99 per USD. This suggested that there was greater exchange rate instability over the time period. This indicates that Ethiopian birr had been depreciated by 504.56% during the study period (2003-2022). This result also indicates that there was an exaggerated foreign currency exchange rate that has a greater implication for the profitability of the banking industry in specific and the whole business in general.

As per the data analysis presented in the above table concerning bank size, the average bank size value is 4.0242 which are obtained by the logarithm of total asset of each banks cross-sectional calculation. During the study period, the bank size value standard deviation was 0.577 and the maximum value of the bank size was 5.2634 (183.391 billion Br.) and the minimum value of the bank size was 2.671 (469 million Br.) Additionally, the standard deviation of 0.577 showed that there was a moderately significant difference among banks in their rate of return on their assets during the study period.

Regarding to the macroeconomic variables, the average growth rate of real GDP of Ethiopia for the last consecutive twenty years was 54.03 with a minimum economic growth of 8.6 and a maximum growth of reaching 126.78. The standard deviation

registered in the period was 36.36; it means that economic growth in Ethiopia during the period of 2003 to 2022 was data analysis provided in the above table implies that there is a greater disparity with respect to the GDP of Ethiopian private commercial banks.

Regarding the net interest margin on a bank's earning assets is measured by the net interest margin (NIM), one of the metrics of bank profitability. As we can see from table 4.1 above, banks' average NIMs in Ethiopia during the last twenty years (within the study period) was 5.5% whereas the maximum and minimum NIM ranged approximately from, 9.32% to 2.625% values. Since NIM table showed likely that all Ethiopian banks were profiting or making money during the study period. In addition to this every NIM table showed a positive result, it is likely that all Ethiopian banks were profiting or making money during the study period.

4.3. Diagnostic Tests

The results of the several tests that were run to make sure the conclusion was reliable are given in this section. The diagnostic tests were carried out to ensure that the best linear unbiased estimators (BLUE), which are commonly known as the coefficient estimators of both (constant term) and (independent variables) that are determined by ordinary least square (OLS), have a number of desirable properties. Therefore, the findings of the diagnostic tests (Heteroskedasticity Test, multicollinearity, and normality and autocorrelation) were carried out to determine whether the data meets the fundamental premises of the classical linear regression model or discussed in the following sections. The next subsections were used to examine the test's implications, decision-making guidelines, test results, and their discussion.

4.3.1. Heteroskedascity Testing

The Heteroscedasticity problems arise when the variance of the error term is not constant. Brooks, (2008) the variance of the errors is constant, this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. The study would be employed the popular white test to detect heteroscedasticity. This test involves testing the null hypothesis that the variance of the

errors is constant (homoscedasticity) or no heteroscedasticity against the alternative that the errors do not have a constant variance. In this study, as shown below, both the F-statistic and Chi-Square versions of the test statistic draw the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05. This indicates that, there is no evidence that we do not reject the null hypothesis implying that the residuals are homoscedastic, since the p-value was considerably in excess of 0.05.

The Breuch-Pagan test is used to determine whether or not there is heteroscedasticity in the residuals. Homoscedasticity is the assumption that the variance of the errors is constant; heteroscedasticity is the absence of this assumption. As per the review made of different books and literatures, the alternative hypothesis claims that the error variances are a multiplicative function of one or more variables (heteroscedasticity), as opposed to the null hypothesis, which argues that the error variances are all equal (homoscedasticity). Let us consider the E-views 10 result of this study provided in the following table 4.2.

Table 4.2: Heteroskedasticity Breusch-pagan-godfrey

F-statistic	4.7265	Prob. F (5,113)	0.0621
Obs*R-Squared	24.07421	Prob. Chi-Square (5)	0.0732
Scaled explained SS	25.9387	Prob. Chi- Square (5)	0.0512

Source: Own data analysis (E-views 10 result), 2023

As per the analysis result shown in the above table 4.2, the probability (p-value) of the study result is much greater than the P-value for the study 0.05 and therefore, there is no exists heteroscedasticity as per Breusch-pagan-Godfrey test result. The number of degrees of freedom is equal to the number of independent variables used in the regression analysis which is 5. Therefore, the above table shows that the probability of chi-square test gave the same conclusion that there is no significant evidence for the presence of Heteroscedasticity in the ROA model. Since the p-value were above 0.05, as it can be seen from the table, both the F-statistic and Chi-Square versions of the test statistic gave

the same conclusion that there is no evidence for the presence of heteroscedasticity, as evidenced by the p-values in excess of 0.05.

4.3.2 Autocorrelation

According to (Brooks, 2008), cited in Girum third assumption of the CLRM said that disturbances of the error terms of and covariance between the error terms over time (or cross-sectional, for that type of data) should be equal to zero. In other words, it is assumed that the errors terms were uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or that they are said to be serially correlated.

Table 4.3 Autocorrelation Test Durbin Watson

Variables	DW static test
All bank specific and macro-economic variables	DW (5,20) = 0.98

Source: Own data analysis (E-views 10 result), 2023

The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non autocorrelation, a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation (Hair et al. 1998). Durbin-Watson stat measures serial correlation in the residuals. As a rule of thumb, a DW statistic less than 2 is an indication of a positive serial correlation. As per the data regression analysis result, the data have a positive serial correlation as the Durbin-Watson static is approximately one (0.98), which is less than 2 that there is no evidence of the presence of autocorrelation.

4.3.3. Normality Test

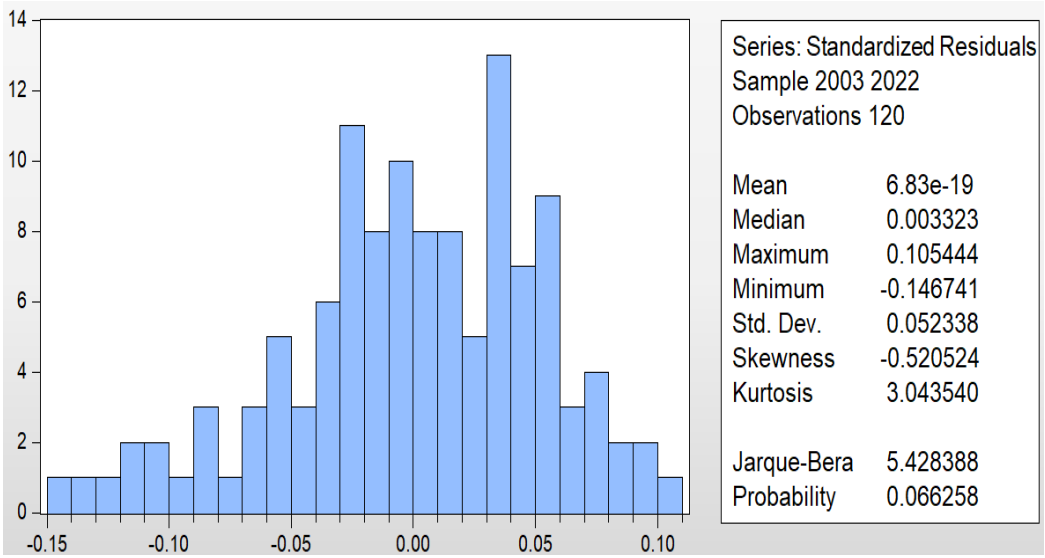
According to (Brooks, 2008) cited in Girum in order to conduct hypothesis test about the model parameters, the normality assumption must be fulfilled. Normality test was carried out to verify if the residuals of the error terms are normally distributed. In this study, the normality of the data was checked with the popular Jarque-Bera statistic test. (Brooks, 2008) noted that the Jarque-Bera statistic would not be significant for disturbance to be

normally distributed around the mean. The p-value should be bigger than 0.05 to not reject the null of normality the 5% significance level.

Graphs that show the continuous data's distribution are called histograms. Because they can disclose aspects of the sample data in ways that summary statistics cannot, they are excellent exploratory tools. Histograms, for example, give the sample data life, whereas the mean and standard deviation can only provide a numerical summary of the data.

Histograms can be used to visualize the distribution's shape, central tendency, and value distribution in the sample data. They can help with recognizing outliers, they can relate to probability distribution functions and they can do hypothesis testing with them. When you have continuous measurements and wish to comprehend the value distribution and search for outliers, use histograms. Your continuous measurements are plotted on these graphs into bins, which are collections of values. A bar for each bin indicates the number or proportion of observations that fall into that bin.

Figure 4.1: Histogram Normality Test



Source: Own data analysis (E-views 10 result), 2023

As per the data analysis shown figure 4.1 above, the probability is closer to zero, which signals that the data have a normal distribution. As per the result, the data has a negative skewness (-0.52) very close to zero, which means that the data is normally distributed but

the distribution has a long left tail; it's skewed to the left. As per the above graph, the data have a kurtosis of approximately three (3.043, which is closer to 3), implying that, the residuals are normally distributed in this study and there is no the problem of normality in the models.

4.3.4. Test for Multicollinearity

Test for multicollinearity should be made to ensure that the explanatory variables are not correlated with one another (Brooks, 2008).The correlation matrix between the dependent variable is shown in table 4.4 below. The distinction between weak, medium, and strong correlation between two variables cannot be made using a universally accepted cut-off point. The Linear relationships among the independent variables, "R2j": In the table below the correlation calculation of the E-views 10 software is given. But a value of R2j near to one, which suggests that X2 explains most of the variation in X1 in the sample, indicates that X1 and X2 are highly correlated since the R-squared measures goodness-of-fit. A value of R2 close to one suggests that X1 and X2 are highly linked, with X2 explaining most of the variation in X1 in the sample. Multicollinearity in statistics refers to the situation where two or more predictor variables have a high degree of correlation and do not give distinct or independent information in the regression model. If the correlation between the variables is strong enough, it may be difficult to fit and comprehend the regression model. Perfect multicollinearity exists when the correlation coefficient, r, is precisely +1 or -1 (Wooldridge, 2012).

Table 4.4: Correlation Matrix of Explanatory variables

	INF	FX	BS	GDP	NIM
INF	1.000000	0.326706	0.260753	0.238375	0.287170
FX	0.326706	1.000000	0.884443	.0956481	0.575778
BS	0.260753	0.884443	1.000000	0.940040	0.471455
GDP	0.238375	0.956481	0.940040	1.000000	0.619335
NIM	0.287170	0.575775	0.471455	0.619335	1.000000

Source: Own data analysis (E-views 10 result), 2023

Multicollinearity is the situation when some or all of the explanatory variables having a high degree of relation with each other's and making it difficult to tell which of them is influencing the dependent variable. It is observed from table 4.4 above, the result of the

correlation matrix acceptable to use both the variables in the model without concern for multicollinearity. As a result, the model is appropriate without worrying about multicollinearity as there is no correlation coefficient, r, which is precisely +1 or -1.

4.3.5 Correlation analysis

Correlation analysis is used to assess the relationship between two or more variables. Besides, it tells us the direction as well as the strength of relationship that exists between variables. This section presents the correlation between dependent variables (ROA) and independent variables (Inflation, foreign exchange, bank size, and gross domestic product and net interest margin).

Table 4.5 Correlation matrix of dependent and independent variables

	ROA	INF	FX	BS	GDP	NIM
ROA	1.000000	0.077966	-0.251677	-0.064352	-0.245297	-0.146087
INF	0.077966	1.000000	0.326706	0.260753	0.238375	0.287170
FX	-0.251677	0.326706	1.000000	0.884443	.0956481	0.575778
BS	-0.064352	0.260753	0.884443	1.000000	0.940040	0.471455
GDP	-0.245297	0.238375	0.956481	0.940040	1.000000	0.619335
NIM	-0.146087	0.287170	0.575775	0.471455	0.619335	1.000000

Source: Own data analysis (E-views 10 result), 2023

From the above Table 4.5, it is simple to observe that ROA has a positive correlation with the inflation rate and a negative correlation with foreign exchange rate, bank size, GDP and net interest margin a correlation value of 7.79%, positive value and 25.17%, 6.4%, 24.52%, 24.52% and 14.6% respectively. According to the statistics provided in the above table, Inflation rate has a linear association (a correlation of 32.67%, 26.07%, 23.83% and 28.71%) with FX, bank size, GDP and NIM respectively. As per the above table, foreign exchange rates have a positive correlation with bank size, GDP and net interest margin with correlation values of 88.44%, 95.60%, and 57.57% respectively. As per the result provided in the same table 4.5 above bank size has a relatively strong linear relationship with GDP 94%, and in the same way bank size has a positive correlation with NIM a value of 47.14%. The data presentation provided in the above table reveals that GDP has a positive correlation with NIM with a correlation value of 61.93%.

According to econometric theory, coefficient estimation is consistently problematic when two variables have complete collinearity. However, the correlation coefficient observed does not lend itself perfect collinearity. Therefore, it's acceptable to use both the variables in the model without concern for multicollinearity. As a result, the model is appropriate without worrying about multicollinearity as there is no correlation coefficient, r, which is precisely +1 or -1.

4.4 Result of Regression Analysis and Discussion

The correlation coefficient is occasionally criticized for lacking a clear intrinsic meaning; therefore researchers occasionally publish the correlation coefficient square. This R^2 is referred to as the "coefficient of determination." The squared correlation coefficient is always a positive number, which makes it impossible to determine the direction of a link when evaluating the coefficient of determination. The ability of the explanatory variables to cause changes in the dependent variable is measured by R^2. In general, stronger models have higher R^2 values, although this is not always the case because time series analysis sometimes lacks significant correlations between dependent and independent variables (Schober et al., 2018)

The impact of the exchange rate, bank-specific characteristics, and macroeconomic factors on bank profitability were all examined using the following regression analyses. In regression analysis, the f statistic is calculated as regression "MS /residual MS". This statistic indicates whether the regression model provides a better fit to the data than a model that contains no independent variables. In essence, it tests if the regression model as a whole is useful (ZACH, 2019). In this study F test in regression analysis was used to test for the overall significance of a regression model. The Critical Values of F-Distribution form F-distribution table (Significance Level (α) Upper: 0.1 (90% confidence level), Middle: 0.05 (95% confidence level), Lower: 0.01 (99% confidence level) which were read from the table as shown in the table 4.6 below:

Table 4.6: Critical Values of F-Distribution (at 0.1%, 5% and 1%)

F Value for α = 0.10			F Values for α = 0.05			F Values for α = 0.01		
Df2	Df1		Df2	Df1		Df2	Df1	
	5	120		5	120		5	120
120	1.89		120	2.29		120	3.174	
5		3.12	5		4.40	5		9.11

https://www.statology.org/how-to-read-the-f-distribution-table/

For this study in which the df1 (5, 120) was considered and the respective value F distribution from the table were: 1.89, 2.29 and 9.11 respectively) and the confidence level used in the calculation for the study with 5% and the critical value of F-distribution considered in the study is therefore, 2.29. The result of the regression calculation given in the table 4.6 above indicates that the F-test of the study is 12.4322. Since our f statistic (12.4322) is greater than the F critical value (2.29).

Figure 4.2: Regression Results

Regression Output division into three parts:

General Information (top panel)

Relative Statistics (middle panel)

Global Statistics (Bottom panel)

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/31/24 Time: 07:42
Sample: 2003 2022
Periods included: 20
Cross-sections included: 6
Total panel (balanced) observations: 120

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.608449	1.305138	-4.297209	0.0000
INF	0.002080	0.015049	0.138222	0.8903
FX	0.020682	0.039804	0.519595	0.6044
BS	2.476714	0.366990	6.748730	0.0000
NIM	0.164870	0.057209	2.881873	0.0047
GDP	-0.050294	0.010209	-4.926212	0.0000

R-squared	0.352865	Mean dependent var	2.772700
Adjusted R-squared	0.324482	S.D. dependent var	0.814736
S.E. of regression	0.669631	Akaike info criterion	2.084528
Sum squared resid	51.11829	Schwarz criterion	2.223902
Log likelihood	-119.0717	Hannan-Quinn criter.	2.141128
F-statistic	12.43220	Durbin-Watson stat	0.977207
Prob(F-statistic)	0.000000		

Source: Own data analysis (E-views 10 result), 2023

4.4.1 Coefficient of determination R-Squared and F-statistic

R2:- measures the success of the regression in predicting the value of dependent variables; adjusted R2 is for the number of independent regressors by penalizing R2 for additional regressors. F-statistic tests whether all slope coefficients (excluding the constants) are zero. Probability (F-static) reports the probability of drawing an F-statistic as the one estimated. The mean dependent variable shows the mean of the dependent variables. S.D.'s dependent variable shows the standard deviation of the dependent variables. For the Akaike info criterion used in model selection, smaller values are

preferred. Schwarz criterion is an alternative to Akaike information criterion (AIC) used also for model selection which imposes a larger penalty for including additional explanatory variables. Hannan-Quinn criterion is an alternative to the Akaike information and Schwarz criterion used for model selection; it employs slightly different penalty functions than the other two. As per the above description, the model used in the study is the Akaiki information criterion model, as its value is the lowest of all the other criterion model selections. Durbin-Watson stat measures serial correlation in the residuals. As a rule of thumb, a DW statistic less than 2 is an indication of a positive serial correlation. As per the data regression analysis result, the data have a positive serial correlation as the Durbin-Watson stat is 0.977, which is less than 2.This section presents the overall results of the regression analysis on the foreign exchange rate and financial performance of private commercial banks is depicted here below:

ROA = $\boldsymbol{\beta o + \beta 1 INF + \beta 2 FX + \beta 3 BS + \beta 4 NIM + \beta 5 GDP}$

Substituted Coefficients:

ROA = -5.608449+ - 0.002080*INF + 0.020682*FX + 2.476714*BS + 0.164870*NIM + -0.050294GDP

The regression model is defined as shown above based on the aforementioned results: The average or mean value of ROA or the mean response of ROA for the given values of the regressors is what we gain from multiple regression analysis, just as it is in the case of two variables (Wooldridge, 2012). As per the estimation output, variables such as bank size, net interest margin and gross domestic product appear to be highly statistically significant (based on p-values and t-stats), while variables such as inflation rate and foreign exchange rate were statistically insignificant.

As per the regression outcome result figure 4.2 above the R-squared value 35.28% of the variance in the model could be predicted using the independent variables: this implies 35.28% of return on asset is explained by the constructed independent variables. However, the remaining 64.72 of the variation is explained by other variables that are not included in this model. Since the adjusted R2 compensates for the addition in explanatory variables, it is discounted to be 32.45%. Therefore, the constructed model for return on asset (such as exchange rate, inflation rate, net interest margin gross domestic product and bank size) are good explanatory variables of the factors for determining the effect of

foreign exchange rate fluctuation on the financial performance of private commercial banks and thus the model was a good fit of the data. The R-squared value results imply that around 35.28% of the variation in ROA can be explained by the other variables in the model. Normally, this would imply a very good fit for the model. We caution against these results: a high R-squared does not necessarily imply that the model is a good or useful one.

4.4.2. Regression results Discussion

Using variables specific to banks, the above-described equation describes the profitability of banks. Macroeconomic factors and currency rates were of utmost significance in this study. According to the regression model, the bank was used to be profitable if exchange rates, bank-specific variables, and macroeconomic variables were held constant at -5.608449 the model's R-squared value was 35.28% of the dependent, bank profitability, is explained by the model. F statistic value 12.43 is a technique to test the null hypothesis that all coefficient parameters are identical, according to (Wooldridge, 2012). As a result, the value of the F statistic serves as a global indicator of the model's relevance. As a researcher, I am aware that the thresholds for statistical significance in the case of a typical normal distribution with a confidence interval value of 5% are z -1.96 and z> 1.96, respectively. When the absolute t value is greater than or equal to 1.96, or |t|=1.96, it was concluded that at value is significant due to the fact that the sample size or number of observations was 120 which is considered large enough. Alternatively, if it is chosen to be set at 0.01, the t value will need to be |t|= 2.58. The same theory, according to which all regression coefficients are simultaneously zero, is supported by (Gujarati, 2003).

Macro-economic factors

The coefficient is divided by the standard error to produce the t-statistic, which represents how far the coefficient is from zero. A smaller standard error is indicated by larger t-statistics, which increases the likelihood that the coefficient is not zero. The p-value is calculated using the t-statistic from the T distribution to determine the significance of a coefficient in a model. A p-value below 0.05 is considered significant, as it indicates that the coefficient does not equal zero and contributes to the model's variance. The coefficient codes visually indicate which coefficients are significant. If the p-value is less

than 0.05, the t-test result is statistically significant, and the null hypothesis that Y and X have no association (m=0) can be rejected (Gujarati, 2003; Wooldridge, 2012).

Exchange Rate

The study had assessed to determine the effects of exchange rate fluctuations on profitability of private commercial banks of Ethiopia. As shown on the result of the study there is a positive relationship but statistically insignificant existed between foreign exchange rate fluctuations and the profitability of banks as measured by the returns on assets ratio. The exchange rate p-value 0.6044, which is greater than 0.05, and the t-statistic value 0.5195 which is less than $|t|=1.96$,which , according to (Gujarati, 2003; Wooldridge, 2012), depicts a statistically insignificant variable that is econometrically unacceptable t-statistic to conclude the significance of the variable, show that exchange rates is statistically insignificant in explaining ROA (profitability). In the model exchange rates have a positive statistically insignificant impact on the profitability of banks, resulting in a 0.020682 increase in return on assets for every percentage change in exchange rates.

This result of the study is similar in direction and opposite in the significance of determining the profitability with the result of research made by Kidist Eshetu (Tuffa, 2018). She revealed that exchange rates have a positive significant impact on banks' profitability, the result of this study reveals positive insignificant effects as the result of Kidist's reveals positive significant effects but the significant level she used in her data analysis was 0.05 and the coefficient was .0012421 and in here analysis result she indicated that significance level change to 1%. As per the result of this study a change in the exchange rate of 1 birr results in an increase in the return on assets of 0.020682 units, allowing a bank to make an extra profit of at least 2.06% of its assets.

The study made by (Lilian et al., 2022) reveals the opposite result with this study in that the study found a significant and opposite direction which indicates a negative relationship between exchange rates and banks' profitability, with a p-value of 0.029 and a t-statistic value of -2.221230. Exchange rates significantly affect banks' return on assets (ROA), with a single percentage change causing a 0.004373 decrease. Kiganda (2014)

also agreed on the existence of a negative relationship between exchange rates and banks' profitability.

Inflation Rate

The inflation rate can have both positive and negative effects on bank profitability and the impact of inflation on bank profitability is not simple and can vary depending on other economic and environmental. The inflation rate the p-value (0.8903), which is greater than 0.05, and the t-statistic value (0.138222) which is less than $|t|=1.96$, which,according to (Gujarati, 2003; Wooldridge, 2012), depicts a statistically insignificant variable that is econometrically unacceptable t-statistic to conclude the significance of the variable, show that inflation rate is statistically insignificant in explaining ROA (profitability). The inflation rate has a positive statistically insignificant impact on the profitability of banks, resulting in a 0.002080 increase in return on assets (ROA) for every percentage change in the inflation rate.

Similar to the result of this study was the study made by (Haile, 2019) his study found that an increase in the average inflation rate (IR) by one percent leads to a 1.72% increase in the return on asset (ROA) of Ethiopian commercial banks. The result of this study is also opposed to the study results made by (MUENI, 2016; Otambo & Nairobi, 2016) According to those researchers the level of inflation rate was anticipated by those commercial banks this gave them the opportunity to adjust the interest rate accordingly and consequently to earn higher profit.

According to the research made by (Lilian et al., 2022) which is contrary to the result of this study in significance but similar in direction of the impact of profitability. In their study, reveals that there exists significant negative relation between inflation rate and banks profitability. The relevance of inflation on ROA is indicated by the p-value of 0.0143 and the t statistic value of -2.520655 with a coefficient of -0.000867. Illustrating that, otherwise unchanged, the banks' ROA will change by -0.000867 for each unit of inflation.

In consistence with the result of this study is the study made by (Fithriyanto, 2020), the current period inflation rate (CPI) has a significant correlation with both ROA and ROE,

according to various studies. This positive impact on bank profitability depends on whether inflation is expected or unexpected. Banks can anticipate future inflation and adjust interest rates to achieve higher earnings, but increased interest rates may raise loan repayment risks. The positive correlation suggests that demand-pull inflation, caused by strong consumer demand and economic expansion, can help banks anticipate inflation and adjust interest rates, ensuring borrowers can still pay their debts.

Gross Domestic Product (GDP

Banks profitability are closely linked, as the performance of banks is influenced by the overall health and growth of the economy and it's important that the relationship between GDP and bank profitability is complex and influenced by other factors. GDP with the p-value (0.000), which is less than 0.05, and the t-statistic value (-4.9262) which is greater than $|t|=1.96$, which, according to (Gujarati, 2003; Wooldridge, 2012), depicts a statistically significant variable that is econometrically acceptable t-statistic to conclude the significance of the variable, show that GDP is statistically significant in explaining ROA (profitability). The GDP has a negative statistically significant impact on the profitability of banks, resulting in a -0.5029 increase in return on assets (ROA) for every percentage change in the GDP and allowing a bank to make an extra profit of at approximately 5.03% of its assets.

In the same way (Wondwossen, 2018) in his study revealed that the growth of GDP was statistically significant at 5% significance level p-value 0.0319 and has a negative relationship with profitability. The coefficient of -0.094663 in the regression output indicates that GDP is a quite significant determinant of banks profitability in Ethiopia under the study period. The results show that one-unit increase in GDP will contribute 0.094663 unit decrease in return on assets. Moreover, higher GDP growth leads to lower bank profitability in Ethiopia.

This result of the study is opposite in direction and similar in the significance of determining the profitability with the result of research made by Kidist Eshetu (Tuffa, 2018). She revealed that gross domestic product have a positive significant impact on banks' profitability, the result of this study reveals negative significant effects as the

result of Kidist's reveals positive significant effects but the significant level she used in her data analysis was 0.05 and the coefficient was 0.04911 and in here analysis result she indicated that significance level change to 10%. As per the result of this study a change in the gross domestic product of 1 birr results in a decrease in the return on assets of -0.05029 units.

Banks Specific Factors

Net Interest Margin

Net Interest Margin is the difference between the interest income generated by a bank and the interest expenses it incurs. It is a key metric used to evaluate a bank's profitability. A higher NIM generally indicates greater profitability, while a lower NIM suggests lower profitability. The result of the regression analysis for study in the Figure 4.2 above reveals that net interest margin was one of the variable considered for any impact on the profitability of commercial banks in Ethiopia and the result reveals that the p-value (0.0047), which is less than 0.05, and t-statistic value (2.8818) which greater than $|t|=1.96$, which, depicts a statistically significant variable that is econometrically acceptable t-statistic to conclude the significance of the variable, show that net interest margin is statistically significant in explaining ROA (profitability). Bank's net interest margin has a positive statistically significant effect on the profitability of banks, resulting in a 0.1648 increase in return on assets (ROA) for every percentage change in banks' net interest margin as per the result of data analysis made for the study.

Surprisingly the study result (Tuffa, 2018) reveals different result as the result of this study in that in Ethiopian commercial banks, net interest margin and their profitability. She revealed in her study net interest margin and bank financial performance do not appear to be significantly correlated. Although the coefficient of net interest margin is -0.0237 in her model, the statistical acceptability is very low when compared to the regression we consider the direction of influence, the result of this study reveals increasing influence whereas the study of (Tuffa, 2018) reveals decreasing influence by -.0237301.

Contrary of this study (Girum, 2020) As per his model of the random effect regression analysis results, the interest rate spread has coefficient of - 0.4364462 and p-value of 0.202, meaning that holding other independent variables constant at their average value, one unit increase in interest rates spread (lending interest rates-deposit interest rates) on average results in 43% decrease in (ROE) financial performance of private commercial banks but this was statistical insignificant. This means interest rate spread has a negative effect on the ROE (performance of private commercial banks) and statistically insignificant at 10% significance level.

Bank Size

The other bank-specific factor considered in the study for its effect on the profitability of commercial banks in Ethiopia along with the macro-economic facts was the total assets of banks. The size of a bank can have a significant impact on its profitability, although larger banks can enjoy certain advantages in terms of economies of scale, diversification, and market power. Bank size was statistically significant at 5% significance level the p-value (0.0000), which is less than 0.05, and t-statistic value (6.7487) which is greater than $|t|=1.96$ which is econometrically acceptable t-statistic to conclude the significance of the variable, show that total asset of banks is statistically significant in explaining ROA (profitability). Bank's total asset has a positive statistically insignificant impact on the profitability of banks, resulting in a positive coefficient of 2.4767 increase in return on assets (ROA) for every percentage change in banks' total assets as per the result of data analysis made for the study.

This result is supported by the study made by (Tuffa, 2018), at the 10 percent significance level, the coefficient of bank size is significant but the direction is negative and which is different from the confidence level in this study. This suggests that a shift in the size of the bank causes a corresponding shift in return on assets. The results of this regression analysis showed that the conventional wisdom that big banks typically mobilize resources at relatively low prices and thus generate better profit was supported by the data. The study reveals that the hypothesis is supported by the statistical importance of bank size on return on assets and by the direction of influence. The

coefficient of bank size in commercial banks in Ethiopia is 2.4767, which means that for every unit increase in bank size, the return on assets increase by 2.476 units.

The result is in line with study, the study made by (Negash G/Egziabher, 2021) reveals that the regression models demonstrate a direct correlation between commercial banks' profitability, as indicated by ROA, and their size, as indicated by the natural logarithm of their total assets. Bank size has a significance level of 0.000 and a coefficient value of 33.78%. The positive coefficient suggests that the association between bank size and ROA is positive. The degree of importance of Bank size on ROA is indicated by the related p-value. Even at a significance level below 1%, bank size and ROA have a strong relationship. According to the coefficient of the variable, a 1% rise in bank size will result in a 33.78% increase in the bank's ROA, meaning that increasing investment in bank size is one of the elements that determine the increase in ROA.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study examined the effect of exchange rate fluctuations on the profitability of private commercial banks in Ethiopia for twenty years, examining factors such as foreign exchange rate, inflation, gross domestic product, net interest margin, and bank size. Also as the result of the analysis, the following summary and conclusion were developed from the study.

5.2 Summary of findings

The panel data of twenty years from 2003 to 2022 with six sampled private commercial banks of Ethiopia used in this analysis. The predictor variables used in the regression models and return on asset (ROA) used as a dependent variable to measure the profitability of private commercial banks. According to the regression results, the bank-specific variables (net interest margin and bank size) were found to be statistically significant and positive relationship in determining profitability. The results indicate that gross domestic product had a negative and statistically significant impact on bank profitability. The results also indicate that foreign exchange rate and inflation rate have positive relationship but statistically insignificant on profitability of private commercial banks in Ethiopia during the study period. Formerly making the regression analysis, the study went through diagnostic tests; including multicollinearity, heteroscedasticity; normality and autocorrelation. Through these tests the multiple linear regression model has been checked by using E-views version 10 software. Regression Analysis was identified as the most appropriate tool for econometric analysis of financial data. The descriptive statistics revealed all the statistical values of the collected secondary data.

- The regression results of this study revealed that there was a positive impact and statistically insignificant relationship between foreign exchange rate and the profitability of private commercial banks, meaning that as the exchange rate against USD increases the profitability of private commercial banks which was

measure by ROA increase. It results statistically insignificant but approximately 2.07% increase in return on assets for every percentage change in the foreign exchange rate. The implication of this finding was suggests caution in interpreting this relationship as meaningful. Further analysis, consideration of other factors, and potential improvements for better understands the implications of exchange rates on bank profitability.

- The study result reveals that the inflation rate is statistically insignificant in explaining bank profitability, with a positive impact on return on assets (ROA) and an increase of 0.002080 for every percentage change in inflation rates.
- The study examines the impact of gross domestic product on the profitability of private commercial banks in Ethiopia, revealing a negative statistically significant effect. The study found that a -0.05029 decrease in return on assets (ROA) was observed for every percentage change in GDP.
- The study found that net interest margin, a factor affecting the business performance of private commercial banks in Ethiopia, is statistically significant in explaining return on assets (ROA). It had a positive, statistically significant impact on profitability, resulting in a 0.1648 increase in ROA for every percentage change in banks' net interest margin.
- The study examines the impact of total bank assets on the profitability of private commercial banks in Ethiopia. Results show that total bank assets are statistically significant in explaining return on assets (ROA), with an increase of 2.4767 for every percentage change in banks' total assets.

5.3. Conclusion

This research addressed the effect of exchange rate fluctuation on the profitability of private commercial banks in Ethiopia and to find out to what extent affects the Ethiopian private commercial banks profitability. This study explored the effect of exchange rate, inflation rate, net interest margin, gross domestic product and bank size on profitability of private commercial banks in Ethiopia for twenty years.

This study examines the effect of both bank specific and macroeconomic factors of the Ethiopian private commercial bank profitability. The bank specific factor included in this study is variables such as net interest margin and banks size. While, as macroeconomic factor are used three variables such as, foreign exchange rate, inflation rate and GDP. Furthermore, the study used return on asset (ROA) as the main measure of bank profitability. Panel data from 2003 to 2022 of 6 private commercial banks in Ethiopia was analyzed using ordinary least square regressions method (OLS).

- Exchange rate have been increasing continuously over the study period and as expected, the result showed statistically insignificant on the other hand positive relationship between foreign exchange rate fluctuations and the profitability of commercial banks in Ethiopia in the study period.
- The effect of inflation on the return on asset is statistically insignificant but positively affected on the performance of the private commercial banks in Ethiopia.
- Concerning the macro-economic indicators, gross domestic product (GDP) plays an important role in explaining the banks' return on assets. The negative relationship and statistically significant between GDP and bank profitability suggests that a bank's income decreases more with GDP growth than its costs. Therefore, the study concludes that the government should deploy adequate measures to safeguard the domestic currency.
- The first bank specific factor net interest margin results of estimating the econometric model using panel data by the regression result indicated that had statistically significant positive relationship as per the regression result. This result concludes that lending interest rates have been increasing over time whereas the same observation was not eminent in deposit rates by the National bank of Ethiopia (minimum deposit rate is set).The study therefore concludes that the interest rates spread has been increasing in the recent years leading to expensive borrowing costs, thus profitability became very small.
- Bank size also the second internal factor of the bank specific factor and profitability had statistically significant positive relationship as per the

regression result. This means that size does great contribute to maximize profitability for the commercial banks or banks are beneficiary of the advantage of economies of scale. The researcher conclude that large banks tend to the opportunity of mobilize resources at relatively small costs and then generates better profit.

5.4. Recommendations

Based on the empirical summary of findings and conclusions of the study, researcher's suggests the following recommendations.

- GDP found to have negative statistically significant effect on financial profitability of private commercial banks in explaining ROA, the government and regulatory agencies such as NBE should ensure that this macroeconomic factors are well managed as it growth affects the profitability of many sectors.
- This empirical study revealed that net interest margin have a positive and statistically significant effect on the banks profitability in explain return on asset (ROA). Thus, the researcher recommends that all stakeholders develop objectives work in collaboration to avert the significant impacts of net interest margin on profitability of private commercial banks positively as competitiveness. In addition to this the high-level management should develop strategies that can be employed to improve this important financial metric by managing their loan portfolio or any other strategies to maximize interest income and reduce interest expenses.
- From the findings of the regression model analysis it was revealed that bank size has a positive and significant effect on profitability of private commercial banks measured by ROA. Therefore the researcher recommends that all the stake holders of commercial banks including board of director and high level managements should develop and implement an objective that enables the size of the banks to increase.
- In general it recommended that banks consult with their internal experts or engage external consultant with expertise in banking and finance to develop a tailored approach to improve the profitability of the bank. On the other hand the central

bank (NBE) should play a crucial role in maintaining overall economic stability by implementing effective monetary and fiscal policies by controlling inflation and managing exchange rates.

- Recommendations include considering macroeconomic variables in policy formulation and creating a contusive environment for commercial banks to operate, promoting economic growth.
- Further research is needed to understand internal and external issues affecting profitability in Ethiopian private commercial banks as a whole. This study focused only on the relation between exchange rate and financial profitability of private commercial banks measured as ROA. There are also other measures of profitability such as, net profit margin (NPM) and ROE to consider for further study and future researcher could increase by incorporating more macroeconomic and bank specific factors as controlling variables.

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Appendixes

I. Appendix- Descriptive Statistics of Secondary Data

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

	ROA	INF	FX	BS	GDP	NIM
Mean	2.772700	15.74500	20.16129	4.024240	54.03200	5.500515
Median	2.805940	13.05000	18.18655	4.024036	45.48000	5.160467
Maximum	4.684208	36.40000	51.99380	5.263378	126.7800	9.329667
Minimum	0.325726	2.800000	8.600000	2.671173	8.620000	2.625103
Std. Dev.	0.814736	9.660444	11.95044	0.577227	36.36335	1.611000
Skewness	-0.556893	0.909517	1.183524	-0.081538	0.477664	0.402242
Kurtosis	3.417851	2.731094	3.730387	2.308481	1.966936	2.430982
Jarque-Bera	7.075601	16.90596	30.68189	2.523957	9.899366	4.854878
Probability	0.029077	0.000213	0.000000	0.283093	0.007086	0.088263
Sum	332.7240	1889.400	2419.354	482.9088	6483.840	660.0617
Sum Sq. Dev.	78.99166	11105.58	16994.75	39.64978	157352.9	308.8430
Observations	120	120	120	120	120	120

II. Appendix- Correlation Matrix

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

	ROA	INF	FX	BS	GDP	NIM
	ROA	INF	FX	BS	GDP	NIM
ROA	1.000000	0.077966	-0.251677	-0.064352	-0.245297	-0.146087
INF	0.077966	1.000000	0.326706	0.260753	0.238375	0.287170
FX	-0.251677	0.326706	1.000000	0.884443	0.956481	0.575778
BS	-0.064352	0.260753	0.884443	1.000000	0.940040	0.471455
GDP	-0.245297	0.238375	0.956481	0.940040	1.000000	0.619335
NIM	-0.146087	0.287170	0.575778	0.471455	0.619335	1.000000

III. *Appendix- Regression results*

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/31/24 Time: 07:42
Sample: 2003 2022
Periods included: 20
Cross-sections included: 6
Total panel (balanced) observations: 120

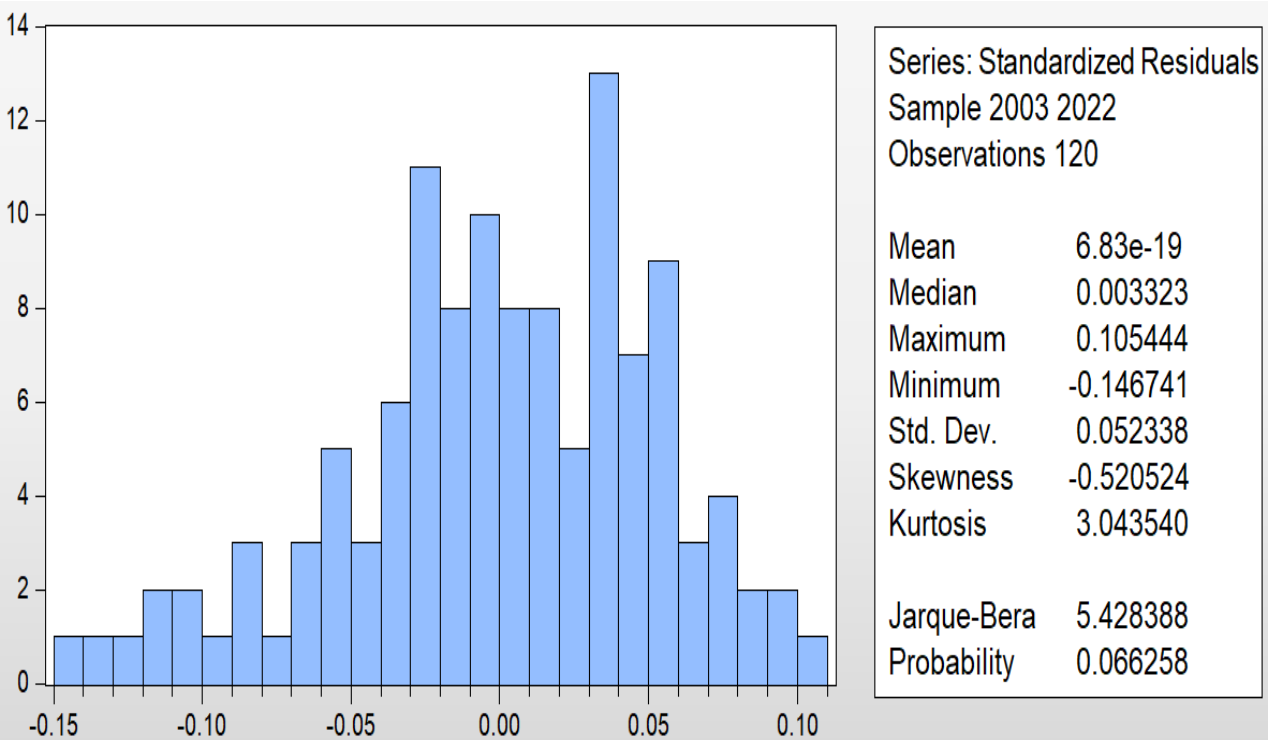
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.608449	1.305138	-4.297209	0.0000
INF	0.002080	0.015049	0.138222	0.8903
FX	0.020682	0.039804	0.519595	0.6044
BS	2.476714	0.366990	6.748730	0.0000
NIM	0.164870	0.057209	2.881873	0.0047
GDP	-0.050294	0.010209	-4.926212	0.0000

R-squared	0.352865	Mean dependent var	2.772700
Adjusted R-squared	0.324482	S.D. dependent var	0.814736
S.E. of regression	0.669631	Akaike info criterion	2.084528
Sum squared resid	51.11829	Schwarz criterion	2.223902
Log likelihood	-119.0717	Hannan-Quinn criter.	2.141128
F-statistic	12.43220	Durbin-Watson stat	0.977207
Prob(F-statistic)	0.000000		

IV. Appendix Critical Values of F-Distribution (at 0.1%, 5% and 1%)

F Value for α = 0.10			F Values for α = 0.05			F Values for α = 0.01		
Df2	Df1		Df2	Df1		Df2	Df1	
	5	120		5	120		5	120
120	1.89		120	2.29		120	3.174	
5		3.12	5		4.40	5		9.11

V. *Appendix: Secondary Data Summary*



VI. *Appendix: Secondary Data Summary*

Banks	YEARS	ROA	INF	FX	NIM	BS	GDP
AIB	2003	1.114206128	10.9	8.6	2.625102543	3.146438135	8.62
AIB	2004	1.639861243	7.3	8.63	2.710413695	3.247973266	10.13
AIB	2005	1.901901902	6.1	8.66	3.342618384	3.34752516	12.4
AIB	2006	3.011583012	10.6	8.69	3.647540984	3.470410491	15.28
AIB	2007	4.215801887	15.8	9.03	5.185311119	3.583198774	19.71
AIB	2008	3.301648605	25.3	9.61	4.260337783	3.683067221	27.07
AIB	2009	2.543340961	36.4	11.3009	4.398996997	3.807707291	29.93
AIB	2010	3.446138589	2.8	13.5321	2.906897825	3.900081876	31.95
AIB	2011	3.99357495	18.1	16.9081	2.734906523	4.004999376	32.44
AIB	2012	3.577124617	34.1	17.7305	4.0116113	4.076883576	43.31
AIB	2013	3.131099066	13.5	18.6426	3.967263548	4.206273944	47.65
AIB	2014	3.423054159	8.1	19.5771	4.022141755	4.301654648	55.61
AIB	2015	2.940148428	7.7	20.5659	4.318346457	4.377845305	64.59
AIB	2016	2.781510692	9.7	21.8004	5.046812978	4.471432584	74.3
AIB	2017	2.803328946	7.4	23.1081	5.224854009	4.622989267	81.77
AIB	2018	3.069478757	14.6	27.2621	6.35370107	4.742474527	84.27
AIB	2019	3.756203672	12.6	28.9109	6.18658749	4.872944865	95.91
AIB	2020	3.161431691	19.9	34.9822	7.001875568	4.950793046	107.66
AIB	2021	3.115590324	20.2	43.691	5.852494419	5.109564171	111.26
AIB	2022	3.422916448	33.8	51.9938	6.513834719	5.263378132	126.78
DB	2003	1.553062985	10.9	8.6	3.125	3.29907126	8.62
DB	2004	2.399314482	7.3	8.63	3.446712018	3.427648371	10.13
DB	2005	2.329014269	6.1	8.66	4.06504065	3.534026106	12.4
DB	2006	3.339191564	10.6	8.69	4.68164794	3.657629431	15.28
DB	2007	3.532634363	15.8	9.03	4.868110658	3.781108836	19.71
DB	2008	3.447182674	25.3	9.61	4.922993176	3.893683382	27.07
DB	2009	2.845836253	36.4	11.3009	4.580009455	3.988227893	29.93

DB	2010	2.934352998	2.8	13.5321	2.678021658	4.091785836	31.95
DB	2011	3.336557316	18.1	16.9081	2.749690147	4.166127808	32.44
DB	2012	4.052320972	34.1	17.7305	3.686970914	4.243535044	43.31
DB	2013	3.256417726	13.5	18.6426	3.507849774	4.295504887	47.65
DB	2014	3.41642186	8.1	19.5771	3.540577368	4.341675803	55.61
DB	2015	3.120886732	7.7	20.5659	3.953664932	4.393818708	64.59
DB	2016	2.726088189	9.7	21.8004	3.718734042	4.456008018	74.3
DB	2017	2.392704638	7.4	23.1081	4.026132442	4.53938474	81.77
DB	2018	2.320935141	14.6	27.2621	5.076650981	4.65729854	84.27
DB	2019	2.000663277	12.6	28.9109	5.048458712	4.749878589	95.91
DB	2020	2.469651807	19.9	34.9822	6.005659577	4.834174682	107.66
DB	2021	2.118628336	20.2	43.691	6.126130714	4.976335973	111.26
DB	2022	2.742209746	33.8	51.9938	6.565390213	5.068720175	126.78
BOA	2003	0.484848485	10.9	8.6	3.664921466	3.124830149	8.62
BOA	2004	2.604523646	7.3	8.63	5.384006334	3.200029267	10.13
BOA	2005	3.349807798	6.1	8.66	5.045550105	3.313234292	12.4
BOA	2006	3.475771826	10.6	8.69	5.724838412	3.452399846	15.28
BOA	2007	2.150882825	15.8	9.03	5.13562387	3.530967682	19.71
BOA	2008	0.380253334	25.3	9.61	5.109629075	3.630421976	27.07
BOA	2009	2.061527561	36.4	11.3009	5.312376272	3.73851237	29.93
BOA	2010	2.391632705	2.8	13.5321	3.549690711	3.797927555	31.95
BOA	2011	2.669047637	18.1	16.9081	4.414665535	3.862009605	32.44
BOA	2012	2.788032171	34.1	17.7305	4.682730265	3.915901332	43.31
BOA	2013	2.877897486	13.5	18.6426	3.992753927	4.006898153	47.65
BOA	2014	2.525665113	8.1	19.5771	4.900427755	4.052170011	55.61
BOA	2015	2.33917355	7.7	20.5659	4.901534249	4.135690671	64.59
BOA	2016	2.364726941	9.7	21.8004	5.293526487	4.226034155	74.3
BOA	2017	2.705927901	7.4	23.1081	5.108651203	4.403545956	81.77
BOA	2018	1.964129612	14.6	27.2621	6.679385401	4.504919619	84.27
BOA	2019	2.18021237	12.6	28.9109	6.24981846	4.594330982	95.91

BOA	2020	1.7536609	19.9	34.9822	6.751754476	4.755039972	107.66
BOA	2021	1.669701064	20.2	43.691	6.048353267	5.016407923	111.26
BOA	2022	2.554924012	33.8	51.9938	8.268234905	5.174500104	126.78
HB	2003	1.277139208	10.9	8.6	5.277777778	2.671172843	8.62
HB	2004	1.224846894	7.3	8.63	4.663212435	2.828659897	10.13
HB	2005	3.548941042	6.1	8.66	5.209513024	3.030599722	12.4
HB	2006	3.293413174	10.6	8.69	6.063193851	3.203848464	15.28
HB	2007	3.384900172	15.8	9.03	6.49627263	3.338954252	19.71
HB	2008	3.351595788	25.3	9.61	7.554140071	3.511877615	27.07
HB	2009	2.36876988	36.4	11.3009	7.587284928	3.667611418	29.93
HB	2010	3.307759269	2.8	13.5321	4.475982766	3.770574342	31.95
HB	2011	3.403826971	18.1	16.9081	4.714163823	3.887933062	32.44
HB	2012	3.607697479	34.1	17.7305	6.652807733	3.943833509	43.31
HB	2013	3.003902072	13.5	18.6426	7.037177772	3.999391257	47.65
HB	2014	2.544739227	8.1	19.5771	7.426626669	4.074683536	55.61
HB	2015	2.144418201	7.7	20.5659	7.591432944	4.15718069	64.59
HB	2016	2.143585842	9.7	21.8004	7.522566388	4.237289043	74.3
HB	2017	1.948903868	7.4	23.1081	7.100132645	4.340502017	81.77
HB	2018	2.297575923	14.6	27.2621	7.788564224	4.447637429	84.27
HB	2019	1.84019887	12.6	28.9109	7.598404264	4.553107106	95.91
HB	2020	2.259060701	19.9	34.9822	8.532494034	4.633453164	107.66
HB	2021	2.132625357	20.2	43.691	7.937396614	4.733149482	111.26
HB	2022	1.796095482	33.8	51.9938	9.329667032	4.828719766	126.78
WB	2003	1.433224756	10.9	8.6	3.516174402	2.948901761	8.62
WB	2004	3.154263184	7.3	8.63	5.200433369	3.056904851	10.13
WB	2005	3.483309144	6.1	8.66	4.289940828	3.208441356	12.4
WB	2006	3.664516129	10.6	8.69	4.617055948	3.353916231	15.28
WB	2007	3.90311901	15.8	9.03	4.550227511	3.541579244	19.71
WB	2008	3.651283227	25.3	9.61	4.999343808	3.615412161	27.07
WB	2009	3.908388397	36.4	11.3009	5.895278239	3.709126417	29.93

WB	2010	4.113003785	2.8	13.5321	4.536147096	3.759057894	31.95
WB	2011	4.684207571	18.1	16.9081	4.414997144	3.906391346	32.44
WB	2012	4.098549786	34.1	17.7305	4.812331786	3.921538166	43.31
WB	2013	3.663817184	13.5	18.6426	5.093161085	4.01677423	47.65
WB	2014	2.905126971	8.1	19.5771	5.117046114	4.061782448	55.61
WB	2015	2.792760762	7.7	20.5659	5.216063508	4.13708047	64.59
WB	2016	2.512394773	9.7	21.8004	5.371309787	4.209240277	74.3
WB	2017	2.865802545	7.4	23.1081	5.517523003	4.321166634	81.77
WB	2018	3.283218521	14.6	27.2621	6.295150744	4.437606382	84.27
WB	2019	2.172680436	12.6	28.9109	6.33650936	4.473778969	95.91
WB	2020	2.448794074	19.9	34.9822	6.544404688	4.5816037	107.66
WB	2021	0.325725569	20.2	43.691	7.199930165	4.598304624	111.26
WB	2022	1.332244919	33.8	51.9938	6.335513816	4.634695501	126.78
NIB	2003	1.832276251	10.9	8.6	3.840472674	2.946943271	8.62
NIB	2004	3.283302064	7.3	8.63	4.279749478	3.095866453	10.13
NIB	2005	3.088284659	6.1	8.66	4.426106527	3.238547888	12.4
NIB	2006	3.085927108	10.6	8.69	4.396910279	3.306853749	15.28
NIB	2007	3.280103582	15.8	9.03	5.082284608	3.416141031	19.71
NIB	2008	3.613171391	25.3	9.61	6.449404074	3.562305596	27.07
NIB	2009	3.634055899	36.4	11.3009	7.334966541	3.68182938	29.93
NIB	2010	3.728064954	2.8	13.5321	4.793205095	3.776011212	31.95
NIB	2011	3.767519549	18.1	16.9081	5.571820407	3.851962558	32.44
NIB	2012	3.720416928	34.1	17.7305	5.801015094	3.917804496	43.31
NIB	2013	3.437025834	13.5	18.6426	7.634466787	3.961161878	47.65
NIB	2014	2.989862272	8.1	19.5771	6.878165299	4.031298523	55.61
NIB	2015	2.808551888	7.7	20.5659	8.225184156	4.122416525	64.59
NIB	2016	2.680177997	9.7	21.8004	8.793976991	4.199491285	74.3
NIB	2017	2.406523229	7.4	23.1081	8.362177299	4.322626782	81.77
NIB	2018	2.158317881	14.6	27.2621	8.704564177	4.426331032	84.27
NIB	2019	2.386352082	12.6	28.9109	8.440025128	4.527854336	95.91

NIB	2020	2.739866176	19.9	34.9822	8.444327558	4.628018303	107.66
NIB	2021	2.517221337	20.2	43.691	9.259830014	4.73399278	111.26
NIB	2022	2.314188227	33.8	51.9938	8.022174572	4.788813781	126.78