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

THE EFFECT OF FOREIGN EXCHANGE RATE ON THE FINANCIAL PERFORMANCE OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

By
GIRUM DEMISSIE

Advisor:
SEWALE ABATE (PHD)

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY DEPARTMENT OF ACCOUNTING AND FINANCE IN THE PARTIAL FULFILLMENT OF THE REQUAIRMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN ACCOUNTING AND FINANCE

March, 2020
ADDIS ABABA ETHIOPIA

STATEMENTS OF DECLARATION

I, **Girum Demissie** declare that this thesis entitled **"The Effect of Foreign Exchange Rate on The Financial Performance of Private Commercial Banks of Ethiopia"** submitted in partial fulfilment of the requirements for the Degree of Master of Science in Accounting and Finance, is my own effort and study and that all sources of materials used for the study have been duly acknowledged. I have produced it independently with the guidance and suggestion of my Advisor Dr. Sewale Abate.

Name: Girum Demissie

Signature……

Date…….

Certificate of Declaration

This is to certify that the thesis prepared by Girum Demissie, entitled **"The Effect of Foreign Exchange Rate On Financial Performance of Private Commercial Banks in Ethiopia,"** and submitted for the partial fulfilment of the requirement for the degree of Masters of Science in Accounting and Finance complies with the regulation of the university and meets the accepted standard with respect to Originality and Quality.

Approved by:

Advisor: Dr. Sewale Abate Signature _____ Date _____

Internal Examiner: Dr. Alem Hagos Signature_____Date_____

External Examiner: Dr. Demissie Signature_____Date_____

Acknowledgement

First and foremost, I am thankful to God for the good health and wellbeing that were necessary to complete this paper.

Secondly, I would like to express my heartfelt gratitude and indebtedness to my advisor, Dr.Sewale Abate, for his constructive comments, guidance and encouragement throughout my thesis work.

Lastly, I would like to express my gratitude to all of my friends and Family for their help and supports.

Table of Contents

List of table

LIST OF ACRONYMS

CIRP: Covered Interest Rate Parity

CPI: Consumer Price Index

ETB: Ethiopia birr

Forex: Foreign Exchange

MOT: Ministry of Trade

NBE: National bank of Ethiopia

OLS: Ordinary least square

PPP: purchasing power parity

ROA: Return on asset

ROE: Return on equity

UCIRP: Uncovered Interest Rate Parity

USD: United States dollar

ABSTRACT

Banks played significant role in the foreign exchange market, the international trade involves different currencies; the variability of foreign exchange rates is an interesting factor that drives the level of profitability of commercial banks as it affects their financial intermediation process. This research was aimed to examine the effect of foreign exchange rate on financial performance of private Commercial Banks in Ethiopia. It attempts to identify how foreign exchange rate along with interest rate spread , inflation rate and bank size affects financial performance measured by return to Equity (ROE). In order to satisfy the objective of the study the researcher used quantitative research approach by adopting purposive sampling technique and explanatory type of research design. The samples used for this study were secondary data for a period of 19 years starting from 2000 through 2018 for a cross section of 6 private commercial banks; these data were mined from the audited annual financial statement of banks, NBE annual bulletins and ministry of trade. The study tested for the assumptions of CLRM. Random Effect Regression model has been used to analyse the results. The study used Stata 11econometric software package to aid in data analysis. An econometric model was used to examine the relationship between foreign exchange rate, interest rates spread, inflation rates and bank size with bank performance indicators. Outcomes of the study revealed for the existence of a negative and significant relationship between foreign exchange rates and financial performance of private commercial Banks, a positive and significant relationship between bank size and financial performance of private commercial banks. The study concluded that there was insignificant relationship among interest rate spreads and inflation rates with the financial performance of private commercial banks in Ethiopia in the study period. The study recommends that the Government should put up more measures to increase the country's exports and foreign direct investment and the National Bank of Ethiopia should adequately put measures to safeguard the value of the domestic currency. This would ensure that the value on the same does not fluctuate much day in day out and Banks Management in Ethiopia should adopt appropriate strategies so as to mitigate against foreign exchange risks.

Key Words: Foreign currency exchange rate, financial performance, banking sector in Ethiopia

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The banking industry is one of the most heavily regulated industries in the world and gets a great deal of attention in the economic literature considering that banks serve a pivotal role in the economy. Again banks play an important role in economic development through mobilization of funds from within and outside the country and channelling such funds to various sectors of the economy by moveable fund (Council of ministers, 2010). As the result of banks the best financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. In order to provide a sustainable intermediation services in the economy and reasonable reward for the shareholders, banks need to be profitable. They can do so, if they generate necessary income to cover their operational cost. On the other hand, the bad or poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth (Ongore and Kusa, 2013).

Globalization has encouraged many corporations to extend their businesses beyond the geographical boundaries in order to benefit from competitive advantage and economies of scale, so in the global trade involve different currencies the variability of foreign exchange rates is a potentially interesting factor that drives the level of profitability of commercial banks as it affects their financial intermediation process (Chiira, 2009). Because there is no country that is self-reliant but instead they all transact business with one another, foreign exchange rate becomes hard. In this sense Exchange rate is a vital microeconomic variable and backbone of Trade (Adetayo et al 2004).And exchange rate plays significant roll by provides a key link between a country and the rest of the world, both in goods and assets markets (Afrid, 1996). It affects the volume of both imports and exports (by changing their relative prices), as well as the stock of foreign debt in domestic currency terms. In fact, all transactions with the rest of the world can be potentially affected by the level of the exchange rate. A depreciation of exchange rate or the value of local currency in certain country is associated with competitiveness gains, in a sense

relative price of export will fall and imports become relatively more expensive and the purchasing power of money decreased in other word inflation rate of the country increased. However currency depreciation usually worsens the country's debt position and increase interest payments (Martins, 2009).

The Exchange rate volatility measures the degree to which the exchange rate fluctuates or varies over a period of time. Exchange rate is said to be more volatile if there are more frequent ups and downs or less volatile if there are lesser changes in it over a period of time. There is a real time fluctuation in floating exchange rate (Sabri, 2011). According to Stancik (2006) there are a variety of factors contributing to an exchange rate fluctuating in certain country. These are the openness of an economy, the domestic and foreign money supplies, the exchange rate regime, interest rates, central bank independence, and levels of output, income, inflation, and unpredictable circumstances. But the impact of each of these factors describes in above varies and depends on the economic situation of certain country (Stancik,2006).

All commercial banks face Foreign Exchange risk, in according to Sabri (2011) this risk arise when a bank holds assets or liabilities in foreign currencies and impacts the earnings and capital of bank due to the fluctuations in the exchange rates. Exchange rate can move in either upward or downward direction at any time. This uncertain movement poses a threat to the earnings and capital of commercial banks. Financial managers of banking sector must understand how to measure the exposure to exchange rate fluctuations so that they can determine whether, how to protect their company and how to mitigate this risk from such exposure.

Foreign exchange rate fluctuations could be an important source of risk for banking institutions as explained in above paragraph in the worst case, large foreign exchange losses could lead to bank failures besides causing huge burdens on banks' profitability (Jamal and Khalil, 2011). The foreign exchange exposure can be discerned largely from their accounting data, the indirect exposure, which arises from impacts of exchange rate fluctuations on the economy in general and banks' customers in particular (Kinyuma, 2013)

The average foreign-exchange exposure of private commercial banks in Ethiopia is high. This may reflect the lack of financial instruments available for Ethiopian banks to hedge their foreign-exchange risk, or that the banks are less experienced in managing foreign-exchange risk. Now a day's Ethiopian Private Commercial Banks are required to arrange bank's loan to an exporter by National Bank of Ethiopia which demonstrate that banks that perfectly hedge their accounting exposure could still be exposed to a significant foreign exchange risk if exchange rate movements that affect cash flows, competitiveness, and credit risk of banks' customers significantly (i.e. indirect or economic exposures). In addition to this the directive no 50/2010 issued by National Bank of Ethiopia (NBE) for commercial banks to channel all the windfall earnings they generated from the sale of foreign currencies to the central bank. This indicates that the sources of foreign exchange risk of banks are far more than just their holdings of net foreign assets (Adler, 2004).

According to Popper (1996) like many firms, banks can be affected by exchange rate fluctuations. Exchange rates affect most directly those banks with foreign currency transactions and foreign operations. Even without such activities, exchange rates can affect banks indirectly through their influence on the extent of foreign competition, the demand for loans, and other aspects of banking conditions.

Foreign currency Exchange rate movement in Ethiopia especially USD to ETB has been variable with periods of rapid depreciation of the domestic currency "Ethiopia Birr", which adversely affect the Ethiopian economy. Even though studies have be conducted on the exchange rate regimes and the implications for macroeconomic management as well as managing foreign exchange risk, very little has been done on the study of the firm exposure to exchange risk in Ethiopian. It is in this context that this research was able to evaluate the effects that variations in the exchange rate has in the financial performance of the selected private commercial banks in Ethiopia.

1.1.1 Overview of the Ethiopian exchange rate regime and the trade of Ethiopian currency exchange rate

To begin with the history of exchange rate regimes in Ethiopia, Exchange rate policy has passed different regimes. Before 1992 the country was exercising a fixed exchange rate regime, when the rate is solely determined by the government. Since 1992 the country is implementing an exchange rate policy which is more close to a 'managed floating' one, where there is a governmental intervention whenever necessary to stabilize the foreign exchange market.(Nega,2015) After the birth of IMF and also after the issuance of Ethiopian legal currency, Ethiopia, as one of the founding members, committed itself to the Articles of Agreement of IMF under which each currency assigned a central parity against USD and was allowed to fluctuate by minus or plus 1 percent of this parity. Countries were allowed to devalue or revalue their currencies only in case of 'fundamental disequilibria' (Felleke, 1994).

Ethiopian legal tender currency was issued on 23 July 1945, by defining the monetary unit as the Ethiopian dollar (E$) with a value of 5.52 grains (equivalent to 0.355745 grams) of fine gold and replaced the Maria Theresa which had been circulating as legal tender. The linkage with fine gold was in accord with the monetary system established by the Bretton Woods Agreement of 1944 and it automatically established the exchange rate between the national currency and other currencies with the same arrangement. Accordingly, the official exchange rate of Ethiopian currency with US dollar was created (with the official exchange rate of 2.48 Birr per US dollar) on July 23, 1945. Then after two decades, on January 1, 1964, the Ethiopian Birr was slightly devalued to 2.50 Birr per US dollar. Following the collapse of the Bretton Woods System in 1971 and the floating of dollar and ceasing of its convertibility to gold, the Birr was revalued to 2.30 Birr per US dollar (i.e. by 8.75%) on 21 December1971. The subsequent 10% devaluation of the US dollar had temporarily brought about under valuation of the Birr. To realign the Ethiopian Birr, it was again revalued to 2.07 Birr per US dollar in February, 1973. This fixed official exchange rate was left unaltered for two decades despite the floating of the major world currencies including the US dollar (Derrese, 2001).

According to Equar (2001) as a result of fixation of exchange rate, Birr became over-valued in terms of the US dollar as well as many other foreign currencies. This overvaluation had adverse effect on national economy such as misallocation of resources, loss of international

competitiveness, development of illegal parallel market for foreign exchange and unlawful cross border trade. According to (Lencho, 2013) following the massive devaluation of 1992 took place, in an attempt to liberalize foreign exchange market; the National Bank has taken a number of initiatives. Accordingly, the fortnightly auction market for foreign exchange was introduced on May 1, 1993 with two rates, namely the Dutch auction system (official rate) and marginal pricing auction system (marginal rate). These two rates were unified in July 1995. In August 1996, the fortnightly auction market was changed to weekly to accommodate the growing demand for foreign exchange and commercial banks were allowed to also established foreign exchange Bureaus. In September1998, the retail auction system was replaced by wholesale system .In the same year, the inter- bank foreign exchange market was introduced and worked alongside the auction system until October 25,2001 when the daily inter-bank has fully replaced wholesale auction system. In the present day, the official exchange rate is determined in the daily inter-bank foreign exchange market as the weighted average exchange rate prevailing on the preceding day.

Following the change of exchange rate regime to a managed floating, the Ethiopian currency has experienced a depreciating trend. By the last devaluation took place in, The National Bank of Ethiopia (NBE) announced the devaluation of Ethiopia's currency by 15 percent, effective October 11, 2017 (Heraled 19 Oct 2017). Devaluation affect foreign currency exchange rate directly. During the past nineteen year, Ethiopian birr has been significantly depreciated against major foreign currencies (USD). For example, the exchange rate of ETB to USD has depreciated from Jun, 30 2000 (1$=8.32) to Jun, 30 2019(1$=29.04) (NBE, 2019).

As already discussed above, exchange rate variations affect banks performance. In addition to its direct impact on the value of the foreign assets and liabilities held by banks, the change in exchange rate could also indirectly affect the profitability of commercial banks. Because of this direct and indirect effect of exchange rate on the banks profitability, it is not possible to easily determine the direction and magnitude of the overall impact of the exchange rate variation on the profitability of banks.

1.2 Statement of the problem

Since 1992, the Ethiopian foreign currency exchange rate is characterized by a managed floating exchange rate regime. In this regime, exchange rate is determined by demand and supply forces but the government may intervene to stabilize the exchange rate. Follow of this exchange rate change Ethiopian currency has been radical and continuously depreciating against major hard currencies especially to USD. In addition to this, Ethiopia one of import oriented country, experience price instability in the face of exchange rate volatility because its economy is heavily dependent on imports of raw materials, capital goods and consumer goods, hence, there needs to manage the foreign exchange market. Exchange rate therefore plays an increasingly significant role in any economy as it directly affects domestic price level, profitability of traded goods and services, allocation of resources and investment decision (Agu, 2002)

According to Popper (1996) Banks played significant role in the foreign exchange market, through the exchange rate translation which is very critical to banks performance. And on the other hand banks are the back bone of a nation's economy due their intermediary function and the importance attached to the foreign exchange rate stability in any given economy. So as like many firms, as described in above banks can be affected by exchange rate fluctuations. Exchange rates affect most directly those banks with foreign currency transactions and foreign operations. Even without such activities, exchange rates can affect banks indirectly through their influence on the extent of foreign competition, the demand for loans, and other aspects of banking conditions.

As we can see in table 1.1 below foreign currency exchange rate movement in Ethiopia since Jun, 30 2009 has been in continuous variation with periods of rapid depreciation of the domestic currency: Ethiopia Birr to USD, which adversely affect the Ethiopian economy and this has greatly affected the performance of commercial banks as they seek to provide adequate currency to promote international business.

Table 1.1 **Nineteen year exchange rate movement of ETB against USD**

Year	USD DOLLAR	ETB
Jun, 30 2000	1$	8.32
Jun, 30 2019	1$	29.04

Source: NBE Annual report (2000-2019)

Some of studies done related with the subject matter conducted on title effect of foreign currency exchange rate on the financial performance of private commercial banks in Ethiopia. A Study by (Tadesse, 2015) carried out to investigate impact of exchange rate on the profitability of commercial banks in Ethiopia which was failed to include inflation rate as a factor that determines bank profitability. According to Gray (2014) exchange rates themselves are clearly impacted by general economic conditions, a host of economic variables like relative inflation and interest rates, and obviously by general supply and demand conditions for the currencies therefore this study includes inflation rate as determinant of financial performance. And another study by Lake (2013) tried to investigate the impact of financial risks on the profitability of commercial banks for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011. This study tells foreign exchange rate is insignificant for profitability of the commercial banks of Ethiopia directly opposite to Tadesse (2015) finding .so the researcher will try to a bridge to this inconsistency. Amezenech (2018) and Biruk (2012) were tried to investigate the effect exchange rate volatility on Ethiopian coffee export and the agricultural exports respectively but agricultural product had very difference nature from banking sector so it's necessary to know the effect of exchange rate volatility on the financial performance of bank in order to reduce the financial risk. A lot of studies were done locally and abroad related with the subject matter. However, there is still no consensus on the effect of foreign currency exchange rate on the financial performance of banks. Some school of studies indicated that the effect of foreign currency exchange rate volatility has a strong positive relationship with financial performance indicators, while other school of studies showed exchange rate has statistically negative significant impact on the profitability firms.

Therefore, this study tried to examine the effects of foreign currency exchange rate on the financial performance 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 exchange rate on the financial performance commercial banks in Ethiopia.

1.3. Objective of the research

1.3.1. General Objective

The general objective this study was to examine the effects of the foreign currency exchange rate (appreciation, stability and depreciation) on financial performance of private commercial banks in Ethiopia.

1.3.2. Specific Objectives

The specific objectives of this study are:

- To examine the effect between foreign exchange rate and financial performance of private commercial banks in Ethiopia.
- To examine the effect of bank size on the performance of Private commercial banks in Ethiopia.
- To examine the effect of interest rate spread on the performance of Private commercial banks in Ethiopia.
- To examine the effect of inflation on the performance of Private commercial banks in Ethiopia.

1.4. Research Hypothesis

Research hypothesis is a predictive statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variable (Kothari, 2004). Hypothesis of the study stand on theories and empirical findings related to bank's financial performance that has been developed over the years by banking area scholars.

H1: Foreign exchange Rate has negative and significant effect on profitability of private commercial banks.

As of the main objective the study to examine the effect of foreign exchange rate on the financial performance of commercial banks in Ethiopia in line with Theories suggested that foreign currencies with relatively high interest rates will tend to depreciate because of the high nominal interest rates reflect expected rate of inflation (Madura, 2012), and also According to Bergen (2010), by manipulating interest rates, central banks can exert influence over both inflation and

exchange rates, and changing interest rates impact inflation and currency values. Therefore, higher interest rates attract foreign capital and cause the exchange rate to rise. Further as depicted by Isaac (2005), a unit increases in exchange rate is driven by an increase in profit after tax (PAT) and equally indicated that there is a significant relationship between exchange rate management and performance of financial institutions, most especially banks. Therefore, to fulfil the objective of this study, in light of the empirical and theoretical findings in the area of Foreign Exchange Exposure Theory, Currency Base Theory, Purchasing Power Parity Theory, Interest Rate Parity Theory and the International Fisher effect, this study formulated the above and following hypotheses to be tested, which were the building bases for the connections between the explanatory variables and the dependent variable:

H2: Interest Rate Spread has positive and significant effect on profitability of private commercial banks.

H3: Inflation has negative and significant effect on profitability of private commercial banks.

H4: Size of the Bank has positive and significant effect on profitability of private commercial banks.

1.5. Significance of the Study

This study would be of beneficial to several financial service institutions, specifically to Managers of banks, Government of Ethiopia, academicians and researchers.

This study will provide information to guide their management decisions following the changes in the exchange rate in Ethiopia for a strong banking industry. It would equip them with the necessary knowledge for taking the necessary action to protect the performance of their organizations.

For the Government of Ethiopia, the findings of this study would inform the formulation of policies and regulations for a strong and resilient banking industry. The findings of this study would inform the fragile foreign currency reserves making it difficult for the banking industry to transact freely.

For future academicians and researchers, the findings of this study would be important in providing material for their reference besides suggesting areas for further research. Future scholars would find this study important because it would identify areas for further studies which future scholars can study.

1.6. Scope of the Study

This research is adjusted to fit its objectives of investigating the foreign exchange rate on financial performance of Ethiopian Commercial Banks within the limits of specified time and possibility. The researcher decided to limit this study to the private commercial banks found in Ethiopia namely as Awash International Bank S.C, Dashen Bank S.C, Abyssinia Bank S.C, Nib International Bank S.C, United Bank S.C and Wegagen Bank S.C. those were registered by NBE before 1999/00 and having nineteen year consecutive annual statement.

To this end, this study covers a panel data of these banks over the period 2000 to 2018 because the researcher believes nineteen year data sufficient to this study. Thus, this study is limited to foreign exchange rate, interest rate spread, inflation (Consumer Price Index) and size of the bank as determinants of profitability (Return on Equity) of private commercial banks between the above mentioned periods. The data required for defining those variables were reviewed from balance sheet and income and loss statements of each commercial bank and macroeconomic data were reviewed from National Bank annual reports.

1.7. Limitation of the Study

A study of the effect of foreign exchange rate on financial performance of private Commercial Banks in Ethiopia needs wider coverage in terms of countrywide examination of all factors deemed necessary. The study uses quantitative approach and secondary data. Consequently, the study lacks rich qualitative data that triangulate and further explain the quantitative findings. Furthermore, the sample includes only a few private banks only in Ethiopia. It would be difficult, therefore, to generalize unless this kind of study is undertaken in some more developing

countries like Ethiopia. Despite the limitations, compressive study was conducted leading to the achievement of the research objective.

1.8. Organization of the Study

This study organized in five chapters. The first chapter is dedicated to the background to the study, statement of the problem, research objectives, significance of the study, scope and limitation of the study and organization of the study. Chapter 2 provides the literature review which has composed of theoretical and empirical research. Chapter 3, which is about methodology of the research, presents the research design employed, the sampling and, data collection methods, and the data analysis method and technique. Chapter 4 presents analysis results and findings of the study. Lastly, Chapter 5 deduces the implications of the findings, concludes the investigation and suggests areas for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter presents literature reviewed in order to provide a basis for the study and the concepts. In addition, the chapter highlights theories guiding the study, determinants of financial performance, empirical studies thereby illustrating the research gap after which it presents the summary of empirical literature.

2.2. Theoretical and Conceptual Literature Review

2.2.1. Foreign Exchange Exposure Theory

The general concept of exposure is the level of impact on the net worth of a firm due to fluctuating exchange rates (El-Masry 2006). Many Empirical research works on it according Muller (2006), describes that volatile of exchange rates affect the revenue and profits of both multinational and local corporations. Because of the prevalence of outsourcing activities to foreign countries, corporations incur costs in foreign currency (e.g., wages, taxes and material) and it is important for corporate financial managers to be aware of the extent of this exposure (Abor 2005). Even if corporations not involved in foreign exchange trades are also exposed to the fluctuating exchange rates through competition with multinational organizations, foreign competitors, and macroeconomic conditions. Therefore, many local and multinational organization's find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2006). These effects could be change in prices, the cost of final goods, the cost of raw material, labour costs or the costs of input or output and other substitute goods due to fluctuating exchange rates may have an adverse effect on the competitive position of a domestic firm with no international and foreign activities but this exchange rate effect depends on the type of product and the nature of the competitive environment in which the entity operates. (Bradley & Moles 2001). Hence, foreign exchange exposure theory describes movement of exchange rate greatly affect the firm value through their effect on sales and net assets values.

2.2.2. Currency Base Theory

This theory was developed by Aliber (1971) and the currency base theory is based on imperfect foreign exchange and capital market. He postulates that internationalization of firm can best be explained in the in terms of the relative strength of different currencies, such as firms from a strong-country and firms from a weak country. In a weak-currency country, the income stream is fraught with greater exchange risk and as a result, the income of a strong-currency firm country firm is capitalized at a higher rate, implying that such a firm is to acquire a large segment of income generation in the weak currency country corporate sector.

2.2.3. The Purchasing Power Parity Theory

The purchasing power parity (PPP) is a theory of exchange rate determination. It asserts (in the most common form) the exchange rate change between two currency over any period of time is determined by changes in the two countries relative price levels. (Dornbusch, 1985)

The purchasing power parity (PPP) theory originated from the writings of the Swedish economist Gustav Cassel (1918).The theory states that the value of homogenous goods is similar in different countries based on the currency of each country. According to him, when purchasing power is similar in different countries then the exchange rates between the country's currencies will be at equilibrium. Reid and Joshua (2004) postulated that ratio of commodities price levels should equal the country's currency. According Ross (2008), a country's currency may be incorrectly valued whereby money has no purchasing power against the country's commodities level.

This theory is based on the assumptions that there are no transactional costs, no barriers to trade and the commodities being traded are homogeneous. If the trading currency is exchanged at the spot exchange rate, the price of a homogenous commodity should be identical across borders. The theory suggested use of price indexes to determine the exact price of a homogenous commodity between countries. The main challenge of this belief is in measuring Purchasing Power Parity constructed from price indexes given that different countries use different goods to determine their price level (Reid, 2005).Menon and Viswanathan (2005) showed two classification of PPP; absolute and relative.

2.2.3.1. Absolute PPP

It holds equilibrium exchange rate between two countries is determined entirely by the ratio of the national price levels. It's assumes they are no barriers in the market hence law of one price will operate PERFECTLY. However in reality, the following will prevent: transportation costs; tariffs and quota. Thus the discrepancy of not having one law price for common well in all market will remain. Absolute PPP is generally viewed as a condition of goods market equilibrium. Under absolute PPP, both the home and foreign market are integrated into a single market. Since it does not deal with money markets and the balance of international payments, we consider it to be only a partial equilibrium theory, not the general one. Perhaps because absolute PPP require many strong impractical preconditions, it fails in explaining practical phenomenon, and signs of large persistent deviations from Absolute PPP have been documented (Kanamori, 2006).

2.2.3.2. Relative PPP

This version acknowledges existence of market imperfections and assumes that prices of the same goods may have different prices when measured on the same common currency. It does state that, the rate of change in the prices of the baskets should be somewhat similar when measured in a common currency as long as the transportation costs and trade barriers are unchanged. It holds percentage change in actual spot rate between two countries is determined entirely by differences between actual currencies inflation rates (Mishkin, 2012).

%age actual change in spot rate = actual inflation rate counter currency – actual inflation rate base currency.

2.2.4. Interest Rate Parity Theory

As early as the period of the gold standard, monetary policymakers found that exchange rates were influenced by changes in monetary policy. The rise of the home interest rate is usually followed by the appreciation of the home currency, and a fall in the home interest rate is followed by a depreciation of the home currency. This indicates that the price of assets plays a role in exchange rate variations. The interest rate parity condition was developed by Keynes (1923), as what is called interest rate parity nowadays, to link the exchange rate, interest rate and inflation. The theory used to explain the value and movements of exchange rates. It is also

known as the asset approach to exchange rate determination. The interest rate parity theory assumes that the actions of international investors—motivated by cross-country differences in rates of return on comparable assets—induce changes in the spot exchange rate. In another vein, IRP suggests that transactions on a country's financial account affect the value of the exchange rate on the foreign exchange (Forex) market. The theory also has two forms: covered interest rate parity (CIRP) and uncovered interest rate parity (UCIRP). CIRP describes the relationship of the spot market and forward market exchange rates with interest rates on bonds in two economies. UCIRP describes the relationship of the spot and expected exchange rate with nominal interest rates on bonds in two economies.

2.2.5. The International Fisher Effect

This model was developed by Irving Fisher in his book *The Theory of Interest* (1930). The theory states that nominal interest rates (N) are a function of the real interest rate (R) and a premium (I) for inflation expectations (Mishkin, 2012). This means if all investors of all countries require the same real return, interest rate differentials between countries may be the result of differential in the expected inflation. Ubindi (2006) asserts that differences in interest rates amongst countries are as consequences of expected inflation diverge because investors require the same real return. .The theory suggests that foreign currencies with relatively high interest rates will tend to depreciate because the high nominal interest rates reflect expected rate of inflation (Madura, 2012). This Fisher Effect explain why inflation may not be seen affecting the real interest rate in the long-run. In order for real interest rates not to be effected by inflation, the nominal interest rate must mimic the changes in the inflation rate. If inflation rate increases by 2%, nominal interest rates must increase by 2%. 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. The nominal interest rate would also incorporate the default risk of an investment (Staikourasand Wood, 2004).

The theory holds that a strategy to borrow from one country and invest in another country should not provide positive returns as exchange rates adjust to offset differences in interest rate (Ubindi, 2006). However, this theory is limited by the sense that there are other factors other than inflation that affect exchange rate. Thus the exchange rates do not adjust in accordance with the

inflation differential. This theory is relevant for this study as it explains the purchasing power of each currency which captures the inflation across countries to ensure that at equilibrium exchange rates, the basket of goods and services purchased by one unit of a country's currency equals to those purchased in the second country.

2.3. Determinants of Bank Financial Performance

Financial performance refers to the ability to leverage operational and investment decisions and strategies to achieve a business' financial stability. In other word financial performance Is denotes the percentage of attainment of targets or goal by the firm. It is the measure of a bank's achievement of its financial goals guided by its financial objectives and benchmarks. Profit is the ultimate goal of all Banks. To measure the profitability, there are variety of ratios used of which Return on Asset, return on Equity and Net Interest Margin are the major ones.(Mueni, 2016)

An organization's performance can be determined by a number of factors; these factors are either internal or external. Factors that impact on the management of the board of directors are internal factors and 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 of 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, exchange rate, Inflation, Political instability and Interest rate (Athanasogluo et al 2005).

This study focuses on four factors as influencing the financial performance of banks one from internal factor(size of bank) and three from external factors (exchange rate, interest rate spread, and inflation rate).

2.3.1 Exchange Rate

The foreign exchange rate is the price at which the foreign currency can be acquired. A variety of factors determine the exchange rate between two currencies; unfortunately for those engaged in international business the exchange rate can fluctuate over time.(Hoyle et al,2011).The exchange rate tells the relative value of any two values. Countries have different policies concerning their currency exchange rate. According to Hoyle et al, (2011) There are three major

type of exchange rate system (regime) these are: floating exchange rate system, the currency's foreign exchange rate is allowed to fluctuate freely by supply and demand for the currency , In fixed exchange rate system the government intervene to offset changes in exchange rate caused by change in the currency's supply and demand and Managed floating exchange rate system which falls somewhere between the fixed and floating system. In the managed floating exchange rate system the currency's exchange rate are allowed to fluctuate in response to change in supply & demand, but the government may intervene to stabilized the exchange rate in the short run, avoiding short term wild fluctuation in exchange rate.

The exchange rate is not fixed asset tends to vary based on the particular currencies and also the particular time or period. Certain currencies will have a higher value than others, but when the value decreases it is termed as to depreciate. There are many factors that result in changes in the exchange rates and this includes mainly the balance between demand and supply in the foreign market. These changes occur spontaneously and always seem almost difficult to predict. The changes result in the organizations performance to is changed as well. This is however limited largely to those organization undertaking mainly in international transactions or currencies as the locally based ones will be impacted minimally (Nyandema, 2016). As such high exchange rates will make most foreign investors shun from making any transactions at that particular time. The banks will be affected in the similar way as depreciation in the local currency will mean reduced transactions such as savings and borrowing resulting in reduced returns.

2.3.2. Inflation

Many scholars use the term inflation to describe a situation in which the economy's overall price level is rising but the general definition of Inflation is the percentage change in price level from the previous period and also inflation rate is calculated using consumer price index which is a measure of the overall cost of goods and services brought by a typical consumer. (Mankiw, 2003)

Inflation is referred to a condition whereby the value of currency of a particular currency reduces significantly (Biller, 2007). It could also be seen as the increase in prices of commodities in a country. When inflation occurs, it affects almost all the sectors in the economy ranging from international business to the common citizens. The high prices make its unfavourable to

undertake in numerous transactions as before. Inflation is seen as an economic crisis and therefore each government ensures that the inflation levels are kept relatively low. However, inflation may also result in positive effects whereby an organization invests heavily before inflation has occurred and later benefit during the inflation period. Yet, inflations are not easily predicted and will therefore in most cases lead to negative effects. The banks thus ought to have mechanisms of predicting or managing inflation levels so as to be consistent in their performance.

2.3.3. The size of the Bank

The size of the bank is specific factor organization and one of the best determines an Organization's financial performance. Bank size possesses a very crucial role on bank's performance which cannot be ignored. Large banks exploit the economies of scale and thus have more efficiency as compared to small organizations (Wild, 2010). Ahmed, (2015) explain that large banks tend to be more efficient than small banks because they are capable of exploiting more economies of scale and scope. This means large banks enables them acquire more client and undertaking in more transactions which translate to more returns. Additionally, the large banks tend to be more trusted by the customers and this implies more clients will opt to invest in them as opposed to the smaller ones. Also, in case risk occurs, the larger banks are in a position to mitigate it and be affected minimally whereas the smaller banks will be highly prone to dissolution and insolvency. This has seen most small banks to endeavour to expand their business and market values. Size can be determined by net premium which is the premium earned by a bank after deducting the reinsurance ceded. The premium base of insurers dictates the quantum of policy liabilities to be borne by them (Teece, 2009).

2.3.4. Interest rates

Interest rate is price a borrower pays for the use of money they borrow from a lender or financial institution and expressed as a percentage rate over the period of one year and the same time this price major income of banking sector. Interest rates, inflation and exchange rates are all highly correlated. By manipulating interest rates, Central Banks exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rates attract foreign capital and cause the exchange rate to rise. The impact of higher

interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. The opposite relationship exists for decreasing interest rates - that is, lower interest rates tend to decrease exchange rates (Bergen, 2010).

High interest rates tend to discourage people from borrowing and opting to invest more while low interest rates tend to encourage more loans being acquired. This may be exploited by the regulatory bodies when they want to either increase or decrease cash inflow by the banks. In a similar way, the interest rates may also determine the currency values. The interest rates are directly proportional to the demand in that increase in demand will tend to increase the value of the currency. As know interest rate is the major income of bank sector but it had direct cost deposit interest rate so for this research the researcher used interest rate spread (lending rate minus deposit interest rate).

2.4. Empirical Review

This section reviewed various international and local studies conducted by various scholars on the subject of foreign exchange rate fluctuations/volatility and financial performance of commercial banks. It is divided into international and local studies.

2.4.1. International studies

Isaac (2015) investigated the impact of exchange rate risk on bank performance in Nigeria. The study employs the usage of secondary sources of information and utilizes an auto regression conditional model as means for measuring risk. The model specified the conditional variance as a deterministic function of lagged squared residual. The study revealed that unit increases in exchange rate is driven by an increase in profit after tax (PAT) and equally indicated that there is a significant relationship between exchange rate management and performance of financial institutions, most especially banks. It is recommended that as an effective way of managing exchange rate risk, bank should create a centralized entity within its operations as an institutional strategy to deal with the practical aspects of the execution of exchange rate forecasting, while the hedging approach mechanism should be adopted in the accounting procedure regarding currency risk. Also the type of exchange rate risk that a bank or firm is exposed to, as well as the

measurement of the associated risk exposure must be meticulously identified, as a prerequisite for effective management of exchange risk.

Wong et al (2008) examined the foreign exchange exposure of Chinese banks. Using the Capital Market Approach and equity-price data of 14 listed Chinese banks, this empirical study finds that there is a positive relationship between bank size and foreign exchange exposure, which may reflect larger foreign-exchange operations and trading positions of larger Chinese banks, and their significant indirect foreign exchange exposure arising from impacts of the exchange-rate fluctuations on their customers. Empirical evidence also suggests that the average foreign-exchange exposures of state owned and joint-stock commercial banks in China are higher than those of banks in Hong Kong, notwithstanding that their participation in international banking businesses is still limited compared with their Hong Kong counterparts. It was also found that negative foreign-exchange exposure was prevalent for larger Chinese banks, suggesting that an appreciation of the tends to reduce their equity values, and was therefore likely to hamper the banking sector's performance.

Another study conducted by Ahmed (2015) on the Effect of Foreign Exchange Exposure on the Financial Performance of Commercial Banks in Kenya. The overall objective of the study is to find out the effect of foreign exchange exposure on commercial bank performance. The research used both secondary and primary data. The study found that first; interest rates have an insignificant positive effect on commercial bank performance, secondly, foreign exchange exposure has negative effect on the performance of listed commercial banks in Kenya and finally, inflation has negative effect on bank performance. The study recommended that regulators who include Central Bank of Kenya to manage the interest rates in the country so as to ensure stable exchange rate environment and the management of commercial banks in Kenya to continue improving the foreign exchange exposure management techniques.

Bergen (2010**)** has examined the factors that influence exchange rates and found that interest rates, inflation and exchange rates are all highly correlated. According to Bergen (2010), by manipulating interest rates, central banks can exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rates

attract foreign capital and cause the exchange rate to rise. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. The opposite relationship exists for decreasing interest rates, that is, lower interest rates tend to decrease exchange rates.

Taiwo(2013) examined exchange rate volatility and bank performance in Nigeria. This study investigated the impact of unstable exchange rate on bank performance in Nigeria using two proxies for bank performance, namely loan loss to total advances ratio and capital deposit ratio. Government expenditure, interest rate, real gross domestic product were added to exchange rate as independent variables. The two models specified show that the impact of exchange rate on bank performance is sensitive to the type of proxy used for bank performance. Loan loss to total advance ratio shows that fluctuating exchange rate may affect the ability of lenders to manage loans resulting into high level of bad loans while capital deposit ratio does not have significant relationship with exchange rate. A core recommendation of this study was that a stable exchange rate is needed to improve the ability of the banking sector to channel credit to the economy.

In contrast, C. Lagat and M. Nyandema(2016) examined the influence of foreign exchange rate fluctuations on the financial performance of commercial banks listed at the Nairobi securities exchange. Their paper was based on a study that sought to understand the relationship and effects of foreign exchange liberalization on financial performance of commercial banks listed in Kenya's Nairobi Securities Exchange. Their study used a time series correlation research design with the target population being all commercial banks that are listed in the Nairobi Securities Exchange between 2006 and 2013. Data was sourced from the Central Bank of Kenya and published yearly accounts of listed banks. The study used multivariate Linear Regressions to establish the relationship between foreign exchange rate fluctuations, inflation rates, interest rates and bank performance indicators. Pearson product moment correlation (r) was applied to establish the relationship between the variables. The study found that there was an existence of a strong positive relationship between foreign exchange rates and financial performance indicators. The positive relationship between exchange rate and financial performance may reflect how fluctuating and volatile exchange rate may have contributed to the growth of profitability of banks. The study recommended that the Government should put up more measures to increase the country's exports. And another study by, Addae1, Nyarko-Baasi1 and Tetteh (2014)

examined the effect of exchange rate fluctuations on Ghanaian banks. It looked at the exchange rate sensitivity of some listed banks on the Ghana Stock Exchange (GSE) between 2005 and 2010. It adopted both quantitative and qualitative approaches. Econometric models were employed to deal with both the exchange rate sensitivities and to ascertain the exchange rate exposure of the Banks. The study established that all the banks studied engaged in forex trading and made gains/profits from such activities. It was further found that apart from Ghana Commercial Bank and Standard Chartered Bank who were exposed to foreign exchange risk – pound sterling, the rest of the banks had no exposure to any of the currency risk. All the banks on the other hand had risk management structures in place to mitigate any risks that arise as a result of their operations.

Opaluwa, et al (2010) examined the effect of exchange rate fluctuations on the Nigerian manufacturing sector during a twenty (20) year period (1986 – 2005). The argument was that fluctuations in exchange rate adversely affected output of the manufacturing sector. This was because Nigerian manufacturing was highly dependent on import of inputs and capital goods paid for in foreign exchange whose rate of exchange was unstable. The methodology adopted for the study was empirical. The econometric tool of regression was used for the analysis. In the model that was used, manufacturing output employment rate and foreign private investment were used as the explanatory variables. The result of the regression analysis showed that coefficients of the variables carried both positive and negative signs. The study showed adverse effect and is all statistically significant in the final analysis.

Rutto and Ondiek (2014**)** have also investigated the extent to which exchange rate volatility affect performance of tea exports using time series data for the period of 1970-2008 in order to recognize the short run and long run behavior of the variables. Co-integration and error correction technique (ECM) developed by Engle and Granger was used. Dickey fuller (DF) and Augmented Dickey Fuller (ADF) unit root test for stationarity was employed in the study. Central bank of Kenya, Kenya National Bureau of Statistics, Tea Board of Kenya and the International financial statistics of International Monetary Fund (IMF) were the source of data. The findings of this study indicate that exchange rate volatility negatively affects performance of tea exports in the country and finally it recommends periodic monitoring of the exchange rate so

as to reduce its impact and drawing of fiscal and monetary policy that will make exchange rate manageable.

2.4.2. Local Studies

The study by Tadesse (2015) examined the impact of exchange rate on the profitability (ROE) of commercial banks in Ethiopia using a balanced panel data set of banks over the period of 2000-2014. Furthermore, this study tried to determine how exchange rate affects the growth of bank loan with the intension to identify whether one of the indirect effects of exchange rate on bank profitability is through its effects on loan growth. The finding of this study was exchange rate has statistically negative significant impact on the profitability of commercial banks. But he failed to include inflation rate in the model. Inflation rate one of variable directly affected by exchange rate beside interest rate and other microeconomic variables so this study used inflation rate as determinant of profitability of banks.

Lake (2013) tried to investigate the impact of financial risks on the profitability of commercial banks for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011. The result of the study is Credit risk and liquidity risk has a negative and statistically significant relationship with banks' profitability. And the relationship for interest rate risk and foreign exchange rate risk is found to be statistically insignificant. This study tells foreign exchange rate is insignificant for profitability of the commercial banks of Ethiopia directly opposite to Tadesse (2015) finding .so the researcher will try to a bridge to this inconsistency.

Biruk (2012) tried to examine the impact of exchange rate volatility on the agricultural exports of 29 selected Sub Saharan African countries using 13 years data (1996-2008) data. The result the study shows Exchange rate volatilities is found to have a negative and significant impact on the agricultural exports of the SSA countries across the different estimation techniques. As per finding the researcher concludes that Trade policies that are designed to increase exports might create uncertainty in the exchange rate and ultimately end up reducing exports. So this study recommended, SSA countries should have a stable exchange rate policy.

Again Amezenech (2018) investigated the effect exchange rate volatility on Ethiopian coffee export by using annual time series data (1980/2015) collected from the country's different

institution. Tools of descriptive statistics were used to analyses the data and understand the dynamics of the variables included in the analysis. The finding indicates that coffee export in Ethiopia has negative and significant relationship with exchange rate volatility. However, agricultural product very difference from banking sector so it's necessary to know the effect of exchange rate volatility on the financial performance of bank in order to reduce the financial risk.

2.4.3. Summary of Literature Review and Knowledge Gap

This chapter has reviewed literatures relevant for the study. It specifically reviewed the theories guiding the study including: Foreign Exchange Exposure Theory, Currency Base Theory, Purchasing Power Parity Theory, Interest Rate Parity Theory and the International Fisher effect. Those explain foreign exchange rates effect in the organizations engage in the international trade. The study further reviewed empirical studies done both from abroad and local perspectives. The empirical studies done by (Isaac (2015), Wong et al (2008) Ahmed (2015); Bergen (2010); Taiwo(2013); C. Lagat and M. Nyandema(2016): Addae1, Nyarko-Baasi1 and Tetteh (2014): Opaluwa et al (2010) and Rutto and Ondiek (2014) which done on international setting in countries whose findings may not apply to Ethiopian firms. The ones done in Ethiopia (Tadesse (2015), Lake (2013) ,Amezenech (2018); and Biruk (2012)) where Tadesse(2015) was try to measure the effect of exchange rate on financial performance of commercial banks of Ethiopia but he failed to include inflation rate as determinant of financial performance and Lake (2013) concluded his study exactly opposite to Tadesse(2015) he tells foreign exchange rate is insignificant for profitability of the commercial banks of Ethiopia to the researcher try to a bridge to this inconsistence . Amezenech (2018) and Biruk(2012) was attempted to investigate the impact of exchange rate volatility on the coffee and agricultural exports respectively. However, agricultural product very difference from banking sector so it's necessary to know the effect of exchange rate volatility on the financial performance of bank in order to reduce the financial risk.

From the studies reviewed, the effect of foreign exchange rate on the financial sector profitability and other sector Profitability is inconsistent. The finding some researcher like C. Lagat and M. Nyandema(2016), Addae1, Nyarko-Baasi1 and Tetteh (2014) have strong positive and significant relationship between foreign exchange rates and financial performance indicators

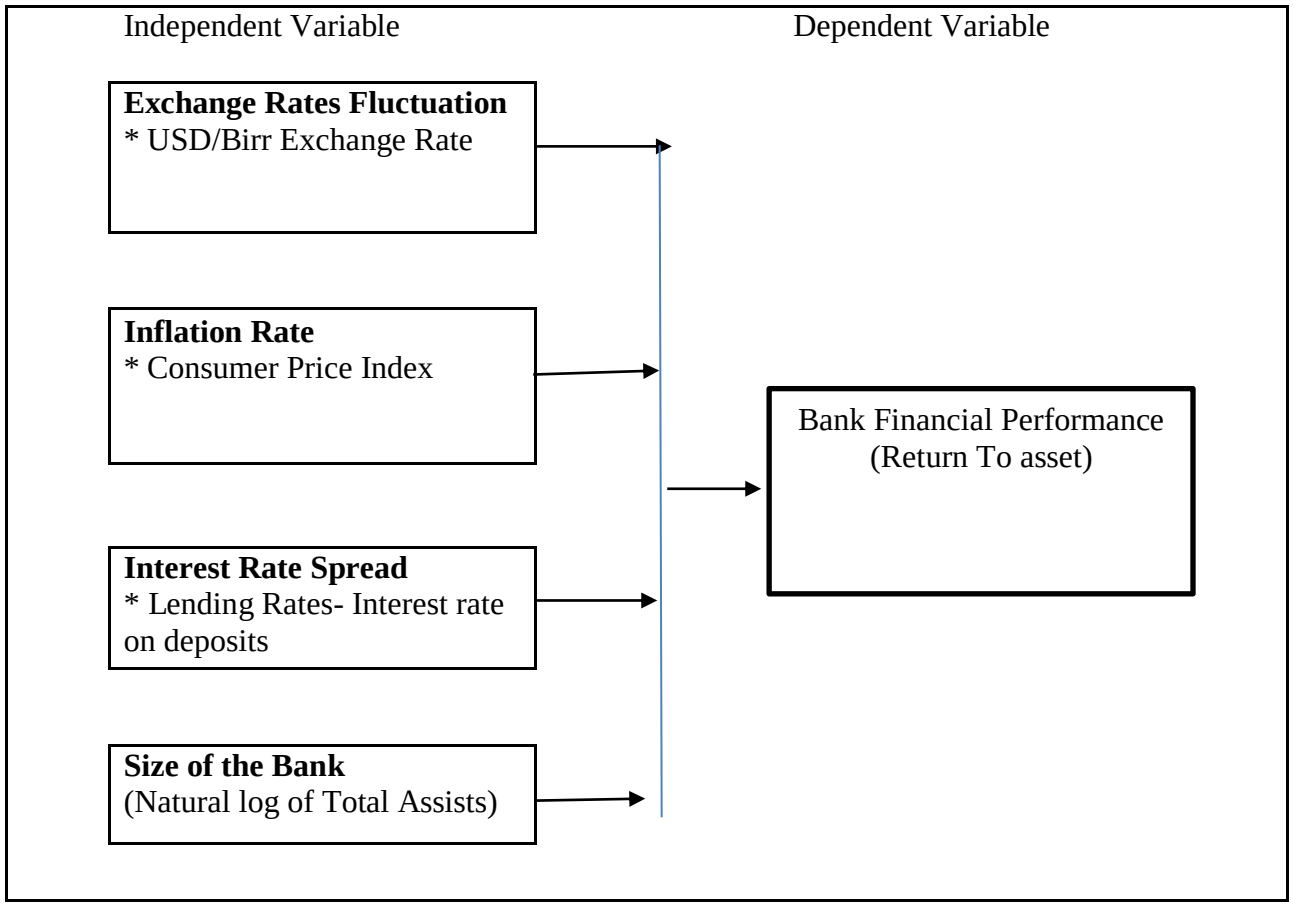
while the finding of other researcher like, Tadesse (2015), Ahmed (2015), Opaluwa, Umeh and Ameh (2010) and Amezenech (2018) exchange rate has statistically negative and significant effect on the profitability firms and the researcher like Lake (2013) exchange rate has statically insignificant effect on the profitability of commercial banks.

Therefore, this study was tried to investigate the effects of foreign currency exchange rate on the financial performance of private commercial banks of Ethiopia and tried to provide empirical evidence that can contribute for bridging this inconsistency.

2.5. Conceptual Framework

In the recent past, Ethiopia has experienced a high foreign exchange volatility which has subsequently led to an increase in the lending interest rate by the national bank of Ethiopia. Since all the commercial banks in Ethiopia operate locally, the fluctuation of the foreign exchange rate may positively or negatively influence their performance and hence needs to be managed. There is some empirical evidence showing how foreign exchange rate influences the financial performance of commercial banks of Ethiopia. A conceptual framework is a graphical or diagrammatic representation of the relationship existing between two or more variables in a study (Mugenda and Mugenda, 2008).

Fig 2.1: Conceptual Framework



Source: Researcher's own Design

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1. Introduction

This chapter discusses the research design and methodology of the study; it highlights a full description of the research design, the research variables and provides a broad view of the description and selection of the population. The research instruments, data collection techniques and data analysis procedure were also been pointed out.

3.2. Research Design

Research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. Research design is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. (Kothari, 2004)

This research was adopted an explanatory type of research Design. This type of research design helps to identify and evaluate the casual relationship between different variables under consideration (Creswell, 2014). Moreover, explanatory research design would be employed to examine the relationship of dependent and independent variables. The study employed quantitative research approach. According to Creswell, 2014 quantitative research is an approach for testing hypothesis and theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. Since this paper is concerned with the study of the relationships between the variables and analysis of the causal relationship among these variables using numerical data and statistics, quantitative approach is appropriate in this regard. The design was appropriate as it allows the description and interpretation of existing relationships, and comparison of variables under the study. In this study, the relationship between foreign exchange rate and financial performance of private commercial banks was determined. The dependent variable in this regard was represented by financial performance and the independent variables were represented by foreign exchange rates, interest rate spread, and Bank size and inflation rate.

3.3. Population Size and Sampling Techniques

As of Jan 2020, there were eighteen commercial banks in Ethiopia. These are Commercial bank of Ethiopia, Awash International Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C, Nib International Bank S.C, Dashen Bank S.C, Development Bank of Ethiopia, Cooperative Bank of Oromia S.C, Lion International Bank S.C, Zemen Bank S.C, Oromia International Bank S.C, Buna International Bank S.C, Berhan International Bank S.C, Abay Bank S.C, Addis International Bank S.C, Debub Global Bank S.C, and Enat Banks S.C. However, from the above listed banks, Development Bank of Ethiopia and Commercial bank of Ethiopia are not private commercial bank. (NBE, 2019)

According to Kothari (2004), good sample design must be viable in the context of time and funds available for the research study. Accordingly, this study employed purposive sampling technique(the reason the researcher choose purposive sample is the bank which are subjected in this study were private commercial banks and relatively similar revenue) to select the sample of banks from the above listed banks since it is viable in line with time and funds available for this study. This sampling method is a form of non-probability sampling in which decision concerning the individual source of data included in the sample were taken by the researcher, based upon variety of criteria.

The selection criteria set by the researcher were two; first, the required banks were only private commercial banks in Ethiopia because the researcher believes moreover the banks' capital and revenue relatively similar. Second, these commercial banks should operate after 1999/2000 and before 2018/19 having financial statements for consecutive nineteen years because the researcher believes nineteen years data was sufficient for this study. Detail of the selected banks are listed below in table 3:1 these banks included Awash International Bank S.C, Dashen Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C, and NIB International Bank S.C

Table 3:1 List of Sampled commercial Banks as of June 30, 2018

s/no	Name of The Bank	Years of Establishment	Ownership	Capital (billion)
1	Awash International Bank S.C	1994	Private	4,210.0
2	Dashen Bank S.C	1995	Private	3,725.6
3	Abyssinia Bank S.C	1996	Private	3,265.8
4	Wegagen Bank S.C	1996	Private	3,195.7
5	United Bank S.C	1998	Private	2,579.9
6	Nib Bank S.C	1999	Private	2,991.4

Source: NBE 2018/2019

3.4. Nature, Source of Data, Collection Methods & Instruments

This study used secondary panel data set for Ethiopian private commercial banks between 2000 and 2018, for nineteen years. Six banks operating in Ethiopia during the period under the study were included in the panel data set. A secondary source of data was preferred by the researcher since it is less expensive in terms of time and money while collecting. And also, it affords an opportunity to collect high quality data (Saunders et al., 2007) cited in (Gadise, 2014).

Accordingly, secondary data was obtained from the audited annual financial statements of the concerned private commercial banks in Ethiopia. These data include both bank specific and macroeconomic factors. Bank-specific data was mined from annual reports and statement of accounts of the selected banks. Data on macroeconomic variable (Inflation & Foreign exchange Rate fluctuations) was collected from annual report bulletins published by the National Bank of Ethiopia (NBE) and Ministry of Trade (MOT), formerly called Ministry of Finance and Economic Development (MoFED)).

3.5. Data Analysis

As noted by (Kothari, 2004), after completion of collection and sorting, data has to be analyzed in line with the purpose of the research plan. Accordingly, secondary data was collected from annual financial statements of the concerned commercial banks in Ethiopia: NBE and Ministry of Trade. Then the data were analysed using econometric software package (Stata 11) to examine the Effects of exchange rate on financial performance of private commercial banks in Ethiopia.

To achieve the research objective, this paper primarily was based on panel data were collected through structured document review. Thus, the collected panel data were analysed using descriptive statistics and multiple linear regression analysis. Mean values and standard deviations were used to analyse the general trends of the data from 2000 to 2019 based on the industry samples of six commercial banks. For this study, the regression analysis known as OLS was used to estimate the relationship between financial performance as measured by ROE and exchange rate volatility, inflation, bank size and interest spread factors. Multiple linear regressions model was running to manipulate the causal relationship among the study variables, and thus, OLS was conducted using Stata 11 econometric software package, to describe the relationship between foreign exchange rate volatility and financial performance of private commercial banks will be determine.

This study also conducted its data analysis based on private commercial banks operating in Ethiopia over the period from 2000-2018. In examining the Effects of exchange rate on financial performance of private commercial banks in Ethiopia, this study used panel data procedures since panel contains data across different banks and over time. To this end, the researcher used panel data methodology to examine the Effects of foreign currency exchange rate on financial performance of private commercial banks in Ethiopia.

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, the researcher derived a multiple regression model as depicted below.

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + €$

Where: ROE(Y) = Profitability of banks (return on equity)

$\beta 0$ = Constant (y-intercept)

$\beta 1$- $\beta 4$=coefficient parameter

X_1= Foreign exchange Rate (exchange rate of United States Dollar to Birr)

X_2 = Interest Rate Spread (Lending Rates- Interest rate on deposits)

X_3= Inflation (Consumer Price Index) and

X_4= Size of the Bank (Natural log of Total Assets)

€ = Error term.

3.7. Definition of Research Variables

3.7.1 Dependent variables

- Return to Equity(ROE)

  There three types of major profitable measurements which are Return on Asset, Return on Equity and Net Interest Margin, for this study the researcher used Return on equity as dependent variable because it shows, the ratio of net profit to equity and measures the extent to which the bank's management is generating returns using the equity of the bank's shareholders. (Hoyle et al, 2011).

3.7.2 Independent variables

- Foreign exchange rate

  For this study the researcher used Foreign exchange rate as independent variable to measure the effect foreign currency exchange rate on the financial performance private commercial banks of Ethiopia. Official exchange rate ETB to USD used for this study because the major trading currency in the international trade is USD. The data mined from NBA, annual average exchange rate ETB to USD report. Some local researcher conclude that effect is foreign exchange rate are negative and significant affect the performance commercial banks. (Tadesse (2015), Amezenech (2018); and Biruk (2012) and in opposite like Lake (2013) the effect of foreign exchange rate is insignificant effect on the performance banks.

- Interest rate spread

  For this study the researcher used Interest rate spread as independent variable to measure the effect foreign currency exchange rate on the financial performance private commercial banks of Ethiopia. The researcher calculated Interest rate spread of each

banks by using of maximum loan rate minus minimum deposit rate. In literature review Lake (2013) and (Tadesse (2015), lending interest rate found to have statistically insignificant and significant negative impact on the bank profitability in Ethiopia respectively.

- Inflation rate

  For this study the researcher used Inflation rate as independent variable to measure the effect foreign currency exchange rate on the financial performance private commercial banks of Ethiopia. The researcher use consumer price index to measure the inflation rate because consumer price index which is a measure of the overall cost of goods and services brought by a typical consumer. (Mankiw, 2003) and data mined from MOT, annual average CPI report. For instance Ahmed (2015) concludes his research that inflation has negative effect on bank performance.

- Bank size

  For this study the researcher used Bank size as independent variable to measure the effect foreign currency exchange rate on the financial performance private commercial banks of Ethiopia. Natural logarithm of total asset used to measure bank size of each banks because banks high hold asset rather than deposit. According to (Wild, 2010) and Ahmed, (2015) Large banks exploit the economies of scale and thus have more efficiency as compared to small organizations in other word bank size has positive effect on bank performance.

Table 3:2 Definition and measurement of variables

Variable	Definition	Measurement
Y	Return on Equity - ROE	This was measured by using of banks ROE ratio; this will use as the measure of financial performance.
X_1	Foreign exchange Rate	This was measured using by annual exchange rate of USD to ETB
X_2	Interest Rate Spread	This was evaluated by lending interest rate minus depositor interest rate.
X_3	Inflation	This was measured using the average annual Consumer Price Index.
X_4	Bank Size	This was evaluated by the Natural log of Total Assets

Source: self –Extracted

3.8. Diagnostic Tests

Diagnostic tests on the assumptions of classical linear regression model were done to ensure that the quality of quantitative assessment is valid. This includes test of heteroscedasticity, multicollinearity, autocorrelation and the normality. Heteroscedasticity occurs when the variance of error term is not constant. The presence of heteroscedasticity makes the standard errors wrong and hence any inferences made could be misleading. The study employed the famous Whites teste for the existence of heteroscedasticity. The Normality of the model was tested by using degree of skewness and kurtosis. Multicollinearity was conducted on the regression model so that incorrect conclusions about the relationship between dependent variable and predictor variables were to be avoided. Variance Inflation Factor (VIF) and tolerance degree were also used to indicate for presence of multicollinearity. Autocorrelation; is assumed 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 used Durbin Watson test to check for the existence of serial correlation among error terms as recommended by. Brook(2008).

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1. Introduction

The preceding chapter presented the research methods adopted in the study. This chapter analysed and interpreted the effects of foreign currency exchange rate fluctuations on the financial performance of the banking sector in Ethiopia, using the annual balanced panel data, where all the variables were observed for each cross-section and each time period. The study has a time series segment covering from the period 2000 up to 2018 and a cross section segment which considered six private commercial banks. This chapter is organized into four sections. Section one discusses descriptive statistics and correlation analysis. Section two presents model specification & tests for the classical linear regression model assumptions. Section three presents discussion of results and the chapter is concluded by a summary of the chapter.

4.2. Descriptive Statistics

This section presents the descriptive statistics of dependent and explanatory variables used in this study. The dependent variable used in this study was profitability of banks (ROE) and the independent variable includes foreign currency exchange rate fluctuations (Ethiopian Birr to United States Dollar), Interest Rate Spread (Lending Rates- Interest rate on deposits), Inflation (Consumer Price Index) and Size of the Bank (Natural log of Total Assets).

Table 4.1: Descriptive Statistics of Secondary Data

```
. sum roe usdbirr irspread inflation asset_size

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
         roe |       114    .2733035    .1048574     -.0203       .522
     usdbirr |       114    13.74947    5.818784       8.14      26.11
   irspread  |       114    .0635351    .0203962        .01       .083
   inflation |       114    .1181404    .1009723       -.011       .364
  asset_size |       114    8.447544    1.386597        4.96      10.74
```

Source: Stata 11 output

The descriptive analysis obtained from the study variables over the study period are shown by Table 4.1.ROE computed by dividing NIBT by Total capital has a mean of 27.33 precent. This

means averagely Ethiopian private commercial banks got 27.33 precent of each birr invested. This shows that the banks have relatively good performance measured by ROE .The maximum and minimum value of ROE was 52.2 and -2 precent respectively. This means that most profitable and least profitable banks earned 52.2 and -2 cents per one birr of investment. And the standard deviation of ROE was 10.48 precent this was relatively low and it is an indication that most of the observations are concentrated around the mean value.

The first independent variable used for the study was Exchange Rate (annual average exchange rate) which has an average of Birr 13.75 per USD with a minimum of 8.14 Birr per USD, and maximum of Birr 26.11 Birr per USD and standard deviation of Birr 5.81 per USD.This indicate that ETB had been depreciated by 220% during the last 19 years (2000-18).

The second independent variable used for the study was Inflation rate (consumer price Index) which has a minimum of -1.01% and maximum of 36.40%, and a standard deviation of 10.01and a mean of 11.81%. On average the 11.8 percent the purchasing power of money decreased during for last 19 years.

The third independent variable used for the study was Interest Rates (leading rate- saving rate) spread has a minimum of 1%, and a maximum of 8.3% with standard deviation of 2.03%, and a mean of 6.35%. This means on average Ethiopian private commercial banks got 6.35 percent of profit for each birr they lend.

The fourth independent variable used for the study was Bank Size (natural log total asset) had a minimum of Birr 9.02 million and maximum of 20.42 Billion, standard deviation 1.38 and a mean of (8.45) 1.84 Billion. On average bank size Ethiopians commercial banks owned 1.84 Billion.

4.3. Diagnostic Tests

This section presents and discusses the result of Diagnostic tests. Diagnostic tests on the assumptions of classical linear regression models were done to ensure that the quality of quantitative assessment was valid. These include heteroscedasticity, multicollinearity, autocorrelation and the normality test.

4.3.1 Heteroscedasticity test

The homoscedasticity is one of the assumptions of the CLRM which states that the variance of the errors must be constant. Heteroscedasticity occurs when the variance of error term is not constant. The presence of heteroscedasticity makes the standard errors wrong and hence any inferences made could be misleading. To test for the presence of heteroscedasticity, the popular white test was employed (Brooks 2008). The *p*-value should be bigger than 0.05 to not reject the null at 5% significance the 5% level.

Table 4.2: Test of Heteroscedasticity; White Test Secondary Data

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(14)     =      9.64
         Prob > chi2  =    0.7879

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	9.64	14	0.7879
Skewness	2.89	4	0.5767
Kurtosis	0.59	1	0.4425
Total	13.12	19	0.8324

Source: Stata 11 output

Accordingly, Table 4.2 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 ROE model. Since the p-value were above 0.05, which dictated that there is no evidence for the presence of the heteroscedasticity.

4.3.2 Multicollinearity test

This assumption is concerned with the relationship that exists among explanatory variables. An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another (Brooks2008). On the other hand, multicollinearity means that there is linear relationship between explanatory variables which may cause the regression model biased (Gujarati, 2004). Thus a correlation matrix of the explanatory variables was used to test for the existence of multicollinearity. As stated by Hair et al. (2006) correlation coefficients below 0.9 may not cause serious multicollinearity problem. In addition to this the variance of inflation factor (VIF) was used to test for the existence of this problem. If the results showed that the variance of inflation factor VIF is more than 10, the regression results would be

affected by a multicollinearity problem (Gujarati 2004). Accordingly, in this study there was no problem of multicollinearity, because as per the results of table 4.3 and 4.4 below the maximum correlation was 0.87 and the mean VIF was 3.25 both of which were below the standard 0.9 and 10 respectively, which enhanced the reliability for regression analysis.

Table 4.3: Correlation table of Independent Variables

```
. corr usdbirr irspread inflation asset_size
(obs=114)

             | usdbirr irspread inflat~n asset_~e
-------------+------------------------------------
     usdbirr |  1.0000
    irspread | -0.1058   1.0000
   inflation |  0.0377  -0.1476   1.0000
  asset_size |  0.8700  -0.1031   0.2759   1.0000
```

Source: Stata 11 output

Table 4.4: Variable Inflation Factor of Independent Variables

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
  asset_size |      5.45    0.183432
     usdbirr |      5.07    0.197068
   inflation |      1.36    0.737867
    irspread |      1.04    0.965039
-------------+----------------------
    Mean VIF |      3.23
```

Source: Stata 11 output

4.3.3 Normality test

According to (Brooks, 2008) 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.

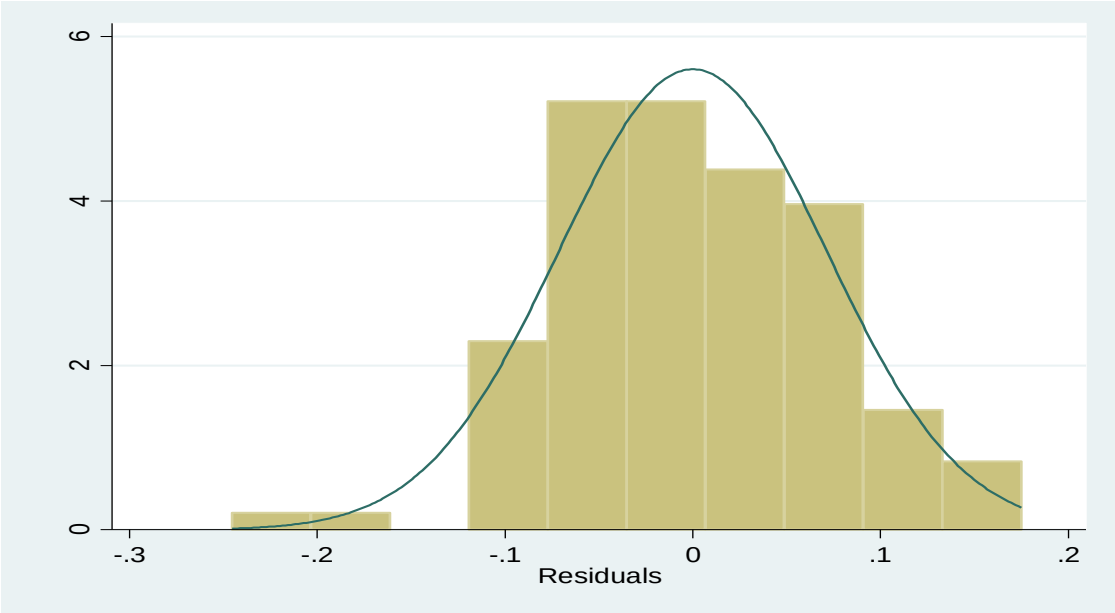
Table 4.5: Kurtosis and Skewness Test of Normality

```
. sum uhat, detail

                        Residuals
-------------------------------------------------------------
      Percentiles      Smallest
 1%    -.1949814       -.245262
 5%    -.0943038      -.1949814
10%    -.0804284      -.1130018       Obs                 114
25%    -.0527056      -.1041261       Sum of Wgt.         114

50%    -.0057971                      Mean           1.37e-10
                      Largest         Std. Dev.       .071179
75%     .0497954      .1402756
90%     .0907723      .1445551       Variance       .0050665
95%     .1258506      .1528306       Skewness      -.0956152
99%     .1528306      .1751138       Kurtosis       3.550595
```

Source: Stata 11 output

Table 4.6: Histogram of Residuals of Secondary Data

```
. hist uhat, normal
(bin=10, start=-.24526198, width=.04203758)
```



Source: Stata 11 output

Table 4.7: Jarque-Berra Test of Normality

```
. jb uhat
Jarque-Bera normality test:  1.614 Chi(2)  .4463
Jarque-Bera test for Ho: normality:
```

Source: Stata 11 output

As shown in table 4.5, 4.6, and 4.7 the histogram is bell-shaped and from the Bera-Jarque statistic we can see that the p-value is 0.4463 which is greater than 0.05, this implies that with a p-value 0.4463 which is greater than 0.05 this study failed to reject the Null hypothesis that there was normal distribution of the residuals of the error terms. On top of this a requirement of kurtosis close to 3 and skewness close to 0 was satisfied by the output of Table 4.3 which indicates a Kurtosis and skewness of 3.55 and -0.095 respectively. Therefore, this study concludes that the residuals of the error terms were normally distributed around the mean, and there was no the problem of normality on ROE Model.

4.3.4 Autocorrelation

According to (Brooks, 2008), 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". To identify the effect of exchange rate volatility on Ethiopian private commercial banks, profitability as measured by ROE, 114 (6*19) observations were used in the regression model. This study used Durbin Watson test to check for the existence of autocorrelation among the error terms.

.

Table 4.8: Durbin Watson Test for Serial Correlation

```
. tsset time
        time variable:  time, 1 to 114
                delta:  1 unit

. estat dwatson

Durbin-Watson d-statistic(  5,   114) =  1.350514
```

Source: Stata 11 output

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). Having 114 observations with four independent variables the result of DW test as shown in table 4.8 above was 1.35 which is closer to 2

indicated that the null hypothesis cannot be rejected. Therefore, there was no evidence of autocorrelation among error terms in this study.

4.4 Correlation analysis

The correlation between two variables measures the *degree of linear association* between them. If it is stated that *y* and *x* are correlated, it means that *y* and *x* are being treated in a completely symmetrical way. Thus, it is not implied that changes in *x* cause changes in *y*, or indeed that changes in *y* cause changes in *x*. rather, it is simply stated that there is evidence for a linear relationship between the two variables, and that movements in the two are on average related to an extent given by the correlation coefficient. The values of the correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that the two variables are perfectly related in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense. A correlation coefficient of 0, on the other hand indicates that there is no linear relationship between two variables (Brooks, 2008). In this study, Karl Pearson's coefficient of correlation was employed in establishing the relationship that existed between the study variables.

Table 4.9: Correlation Matrix of Dependent and Independent Variables

```
. corr roe usdbirr irspread inflation asset_size
(obs=114)

             |      roe  usdbirr irspread inflat~n asset_~e
-------------+---------------------------------------------
         roe |   1.0000
     usdbirr |  -0.0002   1.0000
    irspread |  -0.1054  -0.1058   1.0000
   inflation |   0.4003   0.0377  -0.1476   1.0000
  asset_size |   0.3588   0.8700  -0.1031   0.2759   1.0000
```

Source: Stata 11 output

As per the correlation matrix in Table 4.9 produced statistical evidence that ROE has a positively linear relationship with asset size and inflation rate with correlation coefficient of 0.3588 and 0.4003 respectively. The correlation matrix table also showed that ROE has a negative linear relationship with foreign exchange rate with correlation coefficient of .0002, implying that as the exchange rate increased, ROE goes increasing in the opposite direction, and Interest rate spread was negatively correlated with ROE with correlation coefficient of 0.1054.

4.5 **Model** Specification: Fixed Effect vs. Random Effect

The data collected for this study were estimated based on panel data model, which includes cross sectional and time series observations. In this study the cross sectional units were Awash Bank, Bank of Abyssinia, Dashen Bank, Nib Bank, United Bank and Wegagen Bank for a time series of 19 year starting from 2000 to 2018. According to Brooks (2008), to run regression analysis using panel data there are broadly two classes of panel estimator approaches available that can be employed in financial research. These are fixed effects models and random effects models. It is often said that the random effects model is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a fixed effect model is more plausible when the entities in the sample effectively constitute the entire population. In this study Hausman test has been conducted to choose between fixed effect and random effect regression model. The Null hypothesis in Hausman test is that; random effect model is appropriate, while the alternative hypothesis of Hausman test is: fixed effect model is appropriate. As shown in Table 4.10 below, the Hausman test with a p-value of 0.3760 which is greater than 0.05, implies that the test fails to rejected the Null hypothesis which is random effect model is appropriate in favor of the alternative hypothesis that is fixed effect model is appropriate at 5% significance level. Therefore, random effect model is adapted to regress the annual return to equity (ROE) against the four explanatory variables Foreign exchange Rate fluctuation, interest rate spread, and inflation rate and asset size.

Table 4.10: Hausman Test of Model Selection between Random Effect and Fixed Effect Models

```
. hausman FIXED .

                 ---- Coefficients ----
                 |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
                 |     FIXED        RANDOM       Difference          S.E.
-----------------+------------------------------------------------------------
        usdbirr  |  -.0190048    -.0211122        .0021075        .0010192
      irspread   |  -1.030163    -.6142908        -.415872        .3022302
      inflation  |   .0875014     .0623283        .0251731        .0117811
     asset_size  |    .089539     .1005287       -.0109897        .0053409
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =          4.23
                Prob>chi2 =        0.3760
                (V_b-V_B is not positive definite)
```

Source: Stata 11 output

4.6 Regression Analysis

In the previous sections, different tests were made to check whether the CLRM assumptions are maintained or not. Descriptive statistics and correlation analysis among variables were also presented. 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:

$$ROE = \beta_0 + \beta_1 * FERF_{it} + \beta_2 * IRS_{it} + \beta_3 * CPI_{it} + \beta_4 * SB_{it} + \epsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots 2$$

Where: ROE(Y) = Profitability of banks (Return to Equity) β0 = Constant (y-intercept) β_1= Foreign exchange Rate fluctuations (Ethiopian Birr against the United States Dollar) β_2 = Interest Rate Spread (Lending Rates- Interest rate on deposits) β_3 = Inflation (Consumer Price Index) and β_4= Size of the Bank (Natural log of Total Assets) € = Error term.

In this study ROE was used as proxy for performance measure. The random effect regression analysis result was presented by using the following table.

Table 4.11: Random Effect Regression Output

```
. reg roe usdbirr irspread inflation asset_size

      Source |       SS       df       MS              Number of obs =     114
-------------+------------------------------           F(  4,   109) =   31.89
       Model |  .669934594     4  .167483648            Prob > F      =  0.0000
    Residual |  .572509042   109  .005252377            R-squared     =  0.5392
-------------+------------------------------           Adj R-squared =  0.5223
       Total |  1.24244364   113  .010995076            Root MSE      =  .07247

------------------------------------------------------------------------------
         roe |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     usdbirr |  -.0226488   .0026394    -8.58   0.000    -.0278799   -.0174176
   irspread  |  -.4364462   .3402654    -1.28   0.202    -1.110841    .2379488
   inflation |   .0415269   .0786046     0.53   0.598    -.1142648    .1973186
  asset_size |   .1083245   .0114802     9.44   0.000     .085571    .1310779
       _cons |  -.3075401   .0663232    -4.64   0.000    -.4389906   -.1760896
```

Source: Stata 11 output

R-Squared: according to Wooldridge (2012), R-squared measures goodness of fit, a value of R-squared close to one indicates that the independent variables explain much of the variation in the dependent variable in the sample. This means that the dependent and independent variables are highly correlated. Simply speaking, R-squared is the proportion of the total variation in the

dependent variable that can be explained by the other independent variables appearing in the equation.

According to Brooks (2008), the most common goodness of fit statistic is known as R-squared. One way to define R-squared is to say that it is the square of the correlation coefficient between y and ˆy, that is, the square of the correlation between the values of the dependent variable and the corresponding fitted values from the model. A correlation coefficient must lay between−1 and +1 by definition. Since R-squared defined in this way is the square of a correlation coefficient, it must lie between 0 and 1. If this correlation is high, the model fits the data well, while if the correlation is low (close to zero), the model is not providing a good fit to, further the loss of degrees of freedom associated with adding extra variables is known as adjusted R-squared.

As per table 4.11, above the R-squared value 0.5392 meaning 53.92% of the variance in the model could be predicted using the independent variables or in simple words 53.92% of return on equity is explained by the constructed independent variables. However, the remaining 46.08% changes in return on equity in private commercial banks in Ethiopia are caused by other factors that are not included in the model. Therefore, the constructed model for return on equity (such as exchange rate, inflation rate, interest spread and asset size) are good explanatory variables of the factors for determining the effect of foreign exchange rate volatility on the financial performance of private commercial banks and thus the model was a good fit of the data. The adjusted R-squared value of 0.5223 tells us that after taking in to account the loss of degree of freedom by adding one or more independent variables, indicates that the model is fit enough to estimate the private commercial banks financial performance (ROE). Therefore, standing from the adjusted R-squared value 52% of the model, it possible to infer that on average 52% of dependent variable (ROE) variation is explained by this model independent variables and the remaining 48% variation in the selected private commercial banks performance (ROE) may be explained by other explanatory variables which are not included in the model.

P-value: in a two-tail p-values test the hypothesis that each coefficient is different from 0. To reject this, the p-value has to be lower than 0.05 (95%, researcher could choose also an alpha of 0.10), if this is the case then researcher can say that the variable has a significant influence on the study's dependent variable (y), accordingly as shown in table 4.11 above the p-values of the

independent variables namely exchange rate, interest rate spread, inflation rate and asset size were 0.000, 0.2020, 0.598 and 0.000 respectively, implying that the independent variables exchange rate and asset size were significant at 1% significance level, whereas the independent variables interest rate spreads and inflation rates were found to be insignificant.

F-test: According to Brooks (2008), the F-test is an analysis of the variance of a regression. It can be used to test for the significance of a group of variables or for a restriction, meaning that joint hypothesis can be tested by the analysis of variance (ANOVA).The Null hypothesis for joint significance of a model; $H0{:}\beta2=\beta3=0$, is a joint hypothesis that β2 and β3 are jointly or simultaneously equal to zero. Accordingly, the joint F statistical probability of this study was 0.0000 and the statistic tests criteria earlier the null hypothesis that all the regression coefficients are equal to zero. Therefore, based on the decision criteria the probability of F stat 0.0000 this study confirmed that overall or jointly the model was reliable and valid and statistically also significant.

A. Foreign exchange Rate (Ethiopian Birr changes against the United States Dollar)

The aim of study was to determine what effects do foreign exchange rates have on the financial performance of the private banking industry in Ethiopia. To accomplish this, Random effect regression analysis was used. The results obtained showed that Exchange Rate had coefficient of -0.0226488 and p-value of 0.000. Holding other independent variables constant this finding implied that at their average value, the Exchange Rates do not only have a negative effect on the financial performance, it is also statistical significant at 1% significance level.

This negative relationship implied that holding other things constant a 1 unit increase in foreign exchange rate (depreciation of the Ethiopia Birr against the United States Dollar) on average results in a -0.0226488 (P-value, 0.000) unit decrease in financial performance of private commercial banks which measure by ROE and statistical significant at 1% level. Therefore, there is significant negative relationship between with foreign exchange rate (usdbirr) and ROE of Ethiopian private commercial banks.

It was hypothesized that Foreign exchange Rate volatility (Ethiopia Birr changes against the United States Dollar) has negative and significant effect on profitability (Return on Equity) of private commercial banks, the result of this empirical study showed that foreign exchange rate has significant and negative impact on profitability (ROE). Therefore, the researcher accepts the null hypothesis that Foreign Exchange Rate has negative and significance effect on ROE.

The finding of this result was in line with Tadesse (2015), Ahmed (2015),Opaluwa, Umeh and Ameh (2010) and Amezenech (2018). The possible reason for the significant negative relationship between foreign Exchange Rate and Rate of Return on Equity of sampled commercial banks is that when the value of local currency depreciated, which means that in many private commercial banks of Ethiopian there was a deficit of foreign currency, this is due to low amount of export taken from their customer, income generated form remittance of foreign currency was very low by banks and earnings from service charges of foreign transaction like Letter of credit(LC) and Cash against document was minimum.

B. Interest Rates Spread (Lending Interest Rate-Deposit Interest Rate)

Interest Rates spread is average lending interest rate minus average deposit interest rate which indicates a net interest price which is the borrower has to pay for loan and other debt services. As per 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.

Therefore, the researcher rejects the earlier estimated null hypothesis that there is positive and significant relationship between interest rates spread and ROE. Because of the result of this empirical study showed that interest rates spread had insignificant and negative effect on profitability (ROE).

The possible reason for the insignificant negative relationship between interest rates spread and Rate of Return on Equity of sampled commercial private banks in Ethiopia could be the outcome of the last nineteen year's devaluation of the local currency ETB which continues to depreciate relative major foreign hard currency (USD).This is a major cause for the current interest rate and inflation rate values. So when purchasing power of money (ETB) declined the lending rate would increase. This implies that interest rates are high in Ethiopia Banking Sector as a result of this borrowing became expensive to customers. High interest rates tend to discourage people from borrowing.

C. Inflation (Consumer Price Index)

As per the above Random effect regression output in table 4.6 presented that, Inflation rate with a coefficient of 0.0415269 and P-value of 0.59 implies that, holding other independent variables constant at their average value, when the Inflation Rate (CPI) increase by one percent, return on Equity (ROE) of sampled Ethiopian private commercial banks on average would increase by 4.15% and found to be statistically insignificant at 10% significant level. Therefore, there is insignificant and positive relationship between Inflation Rate and ROE of Ethiopian private commercial banks.

It was hypothesized that Inflation Rate (CPI) has negative and significant impact on profitability (Return on Equity) of private commercial banks, the result of this empirical study showed that Inflation Rate (CPI) has insignificant and positive effect on profitability (ROE). Therefore, the researcher rejects the null hypothesis that Inflation Rate has a significant and negative relationship to ROE.

The possible reasons for inflation rate being insignificant and positive with Return on Equity of sampled commercial private banks in Ethiopia could be the same as above on interest spread; when the purchasing power of money decreased (inflated) banks adjusted the effect by increasing the interest rate to depositor. When adjusted cash flow of the banks will increase as a result of this the earning of banks will increase.

D. **Size of the Bank (Natural LOG of Total Assets)**

In respect to the model specifications, the bank size was proxy by the natural logarithm of total assets. From the Random effect regression analysis result, size of the bank had a coefficient of 0.1083245 and p-value of 0.000. This means that holding other variables constant a 1% change (increase) in asset size generates on average 0.10 unit change (increase) in Return to Equity (ROE).Therefore, there is significant and positive relationship between Asset size (natural log of total asset) and ROE of Ethiopian commercial banks.

In this regard, the researcher accepted the earlier estimated null hypothesis that there is positive and significant relationship between Asset size and ROE, because the result of this empirical study showed that asset size has significant and positive impact on profitability (ROE).

This result was in line with the finding of (Ahmed, 2015) who state that large banks may exploit economies of scale and this enables them acquire more client and undertaking more transactions which translate into more returns. Additionally, the large banks tend to be more trusted by the customers and this implies more clients will opt to invest in them as opposed to the smaller ones. (Liebeg&Schwaiger, 2006 and Maudos& Guevara, 2004) suggested a positive relationship between the size of a bank and ROE. However, the literature presented contrasts these results (Fungacova&Poghosyan, 2009) argue that due to increased economies of scale, banks that maintain sufficient asset should benefit from their size and have lower margins.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This chapter consists of three sections, namely summary, conclusions, and recommendations following that order. The first section provides a summary of the important elements of the study which includes the study objectives, methodology and the findings. The second section discusses the major findings of the study with regards to the specific objectives. The third section discusses the conclusions based on the specific objectives, while using the findings and results which are obtained in the fourth chapter.

5.2. Summary of Findings

The main objective of the study was to establish an understanding on the effect of foreign exchange rate on financial performance of commercial Banks in Ethiopia. The population under study was eighteen commercial Banks. Purposive sampling technique was used, because it has an advantage in that it enables to obtain data from each of the bank which will provide greater accuracy and reliability. Analysis of secondary data was used in the study and data was obtained from private commercial banks annual audited financial statements, National Bank of Ethiopia and MoF. To carry out this study, a Multiple linear regression model was used consisting of the Return to Equity (profitability of banks) as the dependent variable, while Foreign exchange rate , interest rate spread, inflation rate, and Bank size as independent variables. Further Descriptive statistics was employed in the study to give detailed information about each of the variables under study. Data was analysed with the use of STATA 11 statistical software.

Before making the regression analysis, the study went through all below listed diagnostic tests; including multicollinearity, heteroscedasticity; normality and autocorrelation. Through these tests the classical linear regression model and OLS assumptions has been checked by using STATA 11 software package. 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. On top of this the assumptions needed to be fulfilled for

OLS were tested; the data was found to be homoscedastic, free of autocorrelation and free of Multicollinearity and residuals were normally distributed.

- From the random effect regression results this study showed that there was a significant and negative relationship between foreign exchange rate (Ethiopia Birr changes against the United States Dollar) and the financial performance of private commercial banks meaning that as the exchange rate against USD increases the financial performance of private commercial banks which was measure by ROE decreases and it was found to be statistically significant at 1% significance level. The implication of this finding was that exchange rate fluctuations was an important determinant of a financial performance of commercial banks.

- The random effect regression analysis also confirmed that the relationship between the explanatory variable interest rate spread and financial performance of private commercial banks (ROE) was negative and statistically insignificant. This relationship implies when interest rate spread(lending interest rates-Deposit interest rates) increased the financial performance of private commercial banks which measured by ROE decreases but statistical insignificant .This implies that interest rates are high in Ethiopia Banking Sector as a result of this borrowing became expensive to customer. High interest rates tend to discourage people from borrowing.

- The random regression results showed that inflation rate has positive relationship with the Return to Equity but statistical insignificant, which means when inflation rate increases results in increased the financial performance of private commercial banks which measured by ROE but statistical insignificant.

- Based on the random regression analysis, the relationship between Size of the bank and ROE was positive and has a significant effect on the financial performance of the commercial banks. This means that a 100% change (increase) in asset size generates 0.108 unit change (increase) in Return to Equity (ROE). The implication of this finding was that size of bank (asset size) was an important determinant of a financial performance of commercial banks.

5.3. Conclusion

The objective of this study was to determine the effects of exchange rate fluctuations on financial performance of commercial banks in Ethiopia. This study explored the effects of inflation rates, interest rate spread, foreign exchange rate fluctuations and size of the banks on the financial performance of private commercial banks in Ethiopia from 2000 to 2018. From the research findings, the study concluded the following points:

- **Foreign exchange rate** there is a strong and negative relationship between foreign exchange rate fluctuations and the performance of commercial banks in Ethiopia in the study period. This means holding other things constant a 1 unit increase in foreign exchange rate (depreciation of the Ethiopia Birr against the United States Dollar) on average results in a -0.0226488 (P-value, 0.000) unit decrease in financial performance of private commercial banks which measure by ROE and statistical significant at 1% level. The finding of this result was in line with Tadesse (2015), Ahmed (2015),Opaluwa, Umeh and Ameh (2010) and Amezenech (2018). Additionally, the Ethiopia Birr exchange rates against the United States Dollar were observed to be very high during the study period, meaning that the Ethiopian currency has been depreciating in values against the dollar over the recent years and this depreciation has had a negative impact on the returns of commercial banks in Ethiopia. From the finding of the random effect regression result researcher also concludes that foreign exchange rate has negative effect on the profitability of private commercial banks in Ethiopia.

- **Interest Rate Spread**: The difference in rates termed as interest rate spread had a negative relationship with the performance of commercial banks in Ethiopia. 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. The study concludes that interest rates especially lending rates have been increasing over time whereas the same observation was not eminent in deposit rates by banks (minimum deposit rate is set by NBE). 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. This therefore translated to higher returns by banks since customers pay more and earn less when they make deposits in banks. Interest rates can also influence currency values. If interest rates are high in a certain country, it tends to increase the demand for their currency and increase the currency's value. If the foreign nation decides to reduce interest rates, it can cause demand for the currency to fall resulting in a declining currency value.

- **Inflation**: Inflation rates have been increasing continuously over the entire study period. The relationship between inflation and the performance of private commercial banks in Ethiopia was positive and insignificant. This means holding other independent variables constant at their average value, when the Inflation Rate (CPI) increase by one percent, return on Equity (ROE) of sampled Ethiopian private commercial banks on average would increase by 4.15% and found to be statistically insignificant at 10% significant level; hence it positively affects the financial performance. Inflation is another factor that makes it riskier to hold local currency because when inflation increase the value of local currency depreciates and depreciated local currency had diminished purchasing power money. If inflation rises in one country it can make their currency value fall with respect to currencies in other countries that do not experience the same increase in inflation. Inflation is difficult to predict and based largely upon expectations and the monetary policy of the government. For instance, if a certain country decided to print a large amount of new currency to pay off debts, it would likely lead to inflation which could cause the value of the currency to decline rapidly.

- **Size of the Bank**: there is a strong positive relationship between Size of the bank and the performance of commercial banks in Ethiopia in the study period. This means that holding other variables constant a 1% change (increase) in asset size generates on average 0.10 unit change (increase) in Return to Equity (ROE). From the result of random effect regression analysis, the researcher also concludes that a total asset owned by commercial banks was increasing over the years. This may be partly due to the fact that larger banks tend to have more significant foreign-exchange operations and trading positions. Larger banks may also have more businesses with large and international corporations, of which competitiveness and profitability are sensitive to exchange-rate

movements. These may contribute to the more significant foreign-exchange exposure of larger Ethiopian banks.

5.4. Recommendations

From the research findings, the researcher made the following recommendations with regards to the foreign exchange rate, interest rate, inflation rate and Bank size.

- ✓ **Foreign exchange rate** from the finding of this empirical study it has been found that foreign exchange rate has Negative and significant effect on the financial performance of banks measured by ROE, in order to tackle this significant effect: the government of Ethiopia should encourage foreign direct investment so as to shoot the economic growth and as a result local currency to appreciate. One way to encourage and attract FDI is through monitoring of the exchange rate, which attracts foreign investors and their investment. The NBE shall adequately put some measures to safeguard the value of the local currency, to ensure the value of the local currency not fluctuate much on the daily basis. Further in order to have a stable foreign currency exchange rate this county should have enough forex reserve by encouraging exports of value added products to the global market the nation can have enough forex reserve that can be used as a tool to manage the fluctuation of exchange rate. Finally banks management in Ethiopia shall adopt appropriate strategies so as to mitigate against foreign exchange risks since it affects the performance of the banks in Ethiopia.

- ✓ **Interest Rate Spread** this empirical study revealed that interest rate spreads have a negative insignificant effect on the banks performance meaning that as the interest spread increases the financial performance of banks will decrease but insignificantly, thus, The National Bank of Ethiopia shall control variances in the deposit and lending rates. Market stabilization of the banking sector would regulate lending and deposit rates thus ensuring that the rates are almost uniform across all banks. This would translate to a more stable currency against international currencies. This would consequently lower borrowing costs thus making loans even more affordable. Therefore, by lowering the interest rate banks should manage to attract as many borrowers as possible, so that the income of banks increase as a result the financial performance of banks will also do same.

- ✓ **Inflation rate**: The inflation rates have been increasing yearly over the entire study period. The relationship however between inflation and returns on equity was insignificant but positively affected financial performance of commercial banks. It was generally assumed that inflation rate were negative major drivers of financial performance of commercial banks. However, the finding of this study shows that inflation rate have positive and insignificant effect On ROE. That means in the case of the result of this study as the inflation rate increase the financial performance of commercial banks also increased but insignificantly. Based on this the researcher recommended that, thought inflation rates have insignificant effect on ROE, it should be minimized to the lowest possible. One way to achieve this is through the action of the National Bank; if the inflation rate tend to increase above two digit level NBE must devise a mechanism to stabilize the level of general price by executing increasing interest rate through reserve or/and increasing reserve requirement on the amount of money banks are legally required to keep on hand to withdraw or indirectly reduce the Money supply by enacting policies, because as inflation rate decrease the purchasing power of the local currency increases, this in turn has an effect on stabilizing the foreign exchange rate.

- ✓ **Size of the Bank**: From the findings of the random effect regression model analysis it was revealed that bank size has a positive and significant effect on financial performance of private commercial banks which was measured by ROE, implying that as the size of the bank increases the financial performance of the same also increases. In light of this finding the researcher in general recommends that all the stake holders of commercial banks including BOD, high level, middle level and lower level managements should develop and implement an objective that enables the size of the banks to increase, as a result when the size of banks became very large more business with large international corporations of which competitiveness and profitability are sensitive to exchange rate movements. From the finding of this empirical study it was concluded that as the size of commercial banks increase the financial performance of the same also increases which was quantified by ROE.

5.5. Suggestions for Further Research

To achieve the objective of the study, the researcher concentrated on three main macro-economic variables which included interest rates spread, exchange rates, and inflation and one banks specific factor which is bank size. But not sufficient to the entire phenomenon, so additional variables such as GDP growth, market capitalization, and others should be investigated in future studies. Additionally, the study focused purely on the banking industry. Further studies can be done on other sectors and not entirely the banking industry for instance firms in manufacturing, agriculture, tourism and other sectors. This would provide a wide pool of research findings that can be compared across the business fraternity for optimal policy formulation. Also, further studies should be done at a different time frame so as to determine whether there will be any changes. The study therefore opens up a wide range of areas in foreign exchange rates risks and risk management which can be studied.

Reference

Abor, J. (2005). Managing foreign exchange risk among Ghanaian firms. Journal of Risk Finance, 6(4).

Adetayo, J. O. (2013). Management of Foreign Exchange Risks in a Selected Commercial Bank, in Nigeria, Journal of Social Science, 8(3), 207-213.

Adler & Dumas,(2004). Exchange rate exposure and the financial sector.

Agu, C., (2002). Paper submitted for publication Journal of African Finance and Economic Development. Asian Economic and Financial Review, 2013,3(2):178-185 185

Ahmed,(2015).The effect of foreign exchange exposure on the financial performance of commercial bank in Kenya. International Journal of Scientific and Research Publication.

Amezenech, m, (2018). Effect of exchange rate volatility on Ethiopian coffee export: An empirical study on Ethiopian coffee products.

Athanasoglou, P. P.,Brissimis, S. N. & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. International Financial Markets Institutions & Money, 18, 121-136.approaches. London, Uk.

Bergen, J. V. (2010). Factors that Influence Exchange Rates. Investopedia.

Biruk Tekle (2012).The impact of exchange volatility on the agricultural exports of sub Sharan African countries.

Bradley, K., & Moles, P. (2001). The effects of exchange rate movements on non-financial UK firms. International Business Review, 10(1), 51-69.

Brooks, C. (2008). Introductory Econometrics for Finance, 2nd edn, Cambridge University Press, New York.

Cassel, Gustav (1918). Abnormal Deviation in International Exchanges Economic Journal.

Chiira, Z. (2009). A survey of the foreign exchange rate risk management practices by oil companies in Kenya. Unpublished MBA project, University of Nairobi.

Council of Ministers, 2010, Banking proclamation, No 592/2010, Negarit Gazetta, FDRE

Creswell, W. (2014).Research design: Qualitative, Quantitative and Mixed method approaches. London, Uk: Sage publication Ltd.

Deresse Degefa (2001), "Export Performance and Economic Growth In Ethiopia".

Dessalegn Lencho (2013), "The Effect Of Exchange Rate Movement On Trade Balance In Ethiopia".

Dornbusch, Riduger. (1985) "Purchasing Power Parity" Working Paper, NBER Working Paper Series 1591, Cambridge MA

El-Masry, A (2006). The exchange rate exposure of UK nonfinancial companies: industry level analysis. Managerial Finance, 32(2).

Equar (2001), "Determinants of Trade Balance in Ethiopia"

Eneyew Lake, (2013), "Financial risks and Profitability of Commercial Banks in Ethiopia", An Empirical study on Ethiopian commercial banks.

Geda, A. (2006), "The Structure and Performance of Ethiopia's Financial Sector in the Pre- and 1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.6, 2015 globalization. 5th ed. Pearson Education, Inc

Hair, J., Anderson, R., Tatham, R., & Black, W. (1998). Multivariate Data Analysis. 5th ed. New Jersey: Pearson Prentice Hall.

Hoyle, B and Thomas, F, Timothy,(2011). Advanced Accounting, 10th ed, McGraw-Hi

Isaac, Lambe(2015) Assessing the Impact of Exchange Rate Risk on Banks Performance in Nigeria Journal of Economics and Sustainable Development www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.6, 2015

Jeffrey A. frankel. " Foreign Exchange" The Concise Encyclopedia of Economics.2008. Library of Economics and Liberty.

Khrawish, H.A. (2011) Determinants of Commercial Banks Profitability: Evidence from Jordan. International Research Journal of Finance and Economics, Vol 5 No5, pp.19-45.

Kothari,C,R.(2004).Research Methodology: Methods and Techniques. University of Rajasthan, Jaipur (India): New Age International Limited, Publishers.

Mankiw, G. (2003). Principle of Macroeconomics. Unknown country and publisher

Menon, S. & Viswanathan, K. G. (2005). Foreign currency risk management practices in U.S. multinationals. The Journal of International Business and Law, 4(1), 57-67

Mishkin, F. S. (2012). Economics of Money, Banking and Financial Markets New York.

Mueni J (2016). The effect of Macroeconomic variables on the financial performance of commercial banks in Kenya.

Mugenda, A. G. (2008). Social science research: Theory and principles. Nairobi: Applied.

Mugenda, M., O., & Mugenda, G., A., (2008). Research methods: quantitative and qualitative approaches.

Muller, A., & Verschoor, W. (2006). Foreign exchange risk exposure: Survey and suggestions. Journal of Multinational Financial Management, 16(4).

NBE 2018/19, Annual report, National Bank of Ethiopia, Addis Ababa, Ethiopia

Nega Muhabaw Kassie (2015), "Assessment on Real Effective Exchange Rate and External Sector Development of Ethiopia Economics". Vol. 4, No. 4, 2015, pp.64-70.

Nyandema, C., and Langat, (2016). The Influence of foreign exchange rate fluctuations on the financial performance of commercial banks listed at the Nairobi securities exchange. British Journal of Marketing Studies Vol.4.

Ongore,V.O and Kusa, G.B (2013)."Determinants of Financial Performance of Commercial Banks in Kenya". International Journal of Economics and Financial Issues, Vol. 3, No. 1, 2013, pp.237- 252 ISSN: 2146-4138

Opaluwa, H. Umeh, O. and Ame, A. (2010). The effect of exchange rate fluctuations on the Nigerian manufacturing sector, Journal African Finance, 3(1), 145-156

Parsley, D., & Popper, H. (2006). Exchange rate pegs and foreign exchange exposure in East and South East Asia. Journal of International Money and Finance, 25(6).

Pedro M. G. Martins (2009), "Do Capital Inflows Hinder Competitiveness?" CREDIT Research CREDIT Research Paper 10 (07).

Popper, H. (1996). "Banks and Foreign Exchange Exposure". Unpublished

Reid, W and Joshua, D. (2004) The theory and Practise of International Financial Management. Prentice Hall of India.

Ross, S., Westerfield R., Jaffe J., & Jordan B. (2008) Modern Financial Management, 8th Ed, McGraw-Hill Irwin

Sabri, M.(2011). "Foreign exchange risk management in commercial banks of Pakistan", The University of Lahore.

Stancik, J (2006). "Determinants of exchange rate Volatility: the case study of the new EU members", Discussion paper No. 2006-158.

Tadesse G (2015), the impact of exchange rate on the profitability of commercial banks in Ethiopia: An empirical study on Ethiopian commercial banks.

Ubindi, B. S., (2006). A Survey of Foreign Exchange Risk Management Practices by Forex Bureaus in Kenya, Unpublished MBA project, University of Nairobi, Kenya.

Wild J.J., Wild K. L. & Han J. C. (2010). International Business, The challenges of globalization. 5th ed. Pearson Education, Inc

Wong, H. Wong, T. and Leung, F. (2008). The foreign exchange exposure of Chinese. banks. Journal of finance and economics, 12(3), 123-134

APPENDICES

Appendix- I Descriptive Statistics of Secondary Data

```
. sum roe usdbirr irspread inflation asset_size

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
         roe |       114    .2733035    .1048574     -.0203       .522
     usdbirr |       114    13.74947    5.818784       8.14      26.11
    irspread |       114    .0635351    .0203962        .01       .083
   inflation |       114    .1181404    .1009723       -.011       .364
  asset_size |       114    8.447544    1.386597        4.96      10.74
```

Source: Stata 11 output

Appendix- II Test of Heteroscedasticity; White Test Secondary Data

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(14)     =      9.64
         Prob > chi2  =    0.7879

Cameron & Trivedi's decomposition of IM-test

---------------------------------------------------
              Source |       chi2     df      p
---------------------+-----------------------------
  Heteroskedasticity |       9.64     14   0.7879
            Skewness |       2.89      4   0.5767
            Kurtosis |       0.59      1   0.4425
---------------------+-----------------------------
               Total |      13.12     19   0.8324
---------------------------------------------------
```

Source: Stata 11 output

Appendix- III Correlation table of Independent Variables

```
. corr usdbirr irspread inflation asset_size
(obs=114)

             | usdbirr irspread inflat~n asset_~e
-------------+------------------------------------
     usdbirr |   1.0000
    irspread |  -0.1058   1.0000
   inflation |   0.0377  -0.1476   1.0000
  asset_size |   0.8700  -0.1031   0.2759   1.0000
```

Source: Stata 11 output

Appendix- IV Variable Inflation Factor of Independent Variables

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
  asset_size |      5.45    0.183432
     usdbirr |      5.07    0.197068
   inflation |      1.36    0.737867
    irspread |      1.04    0.965039
-------------+----------------------
    Mean VIF |      3.23
```

Source: Stata 11 output

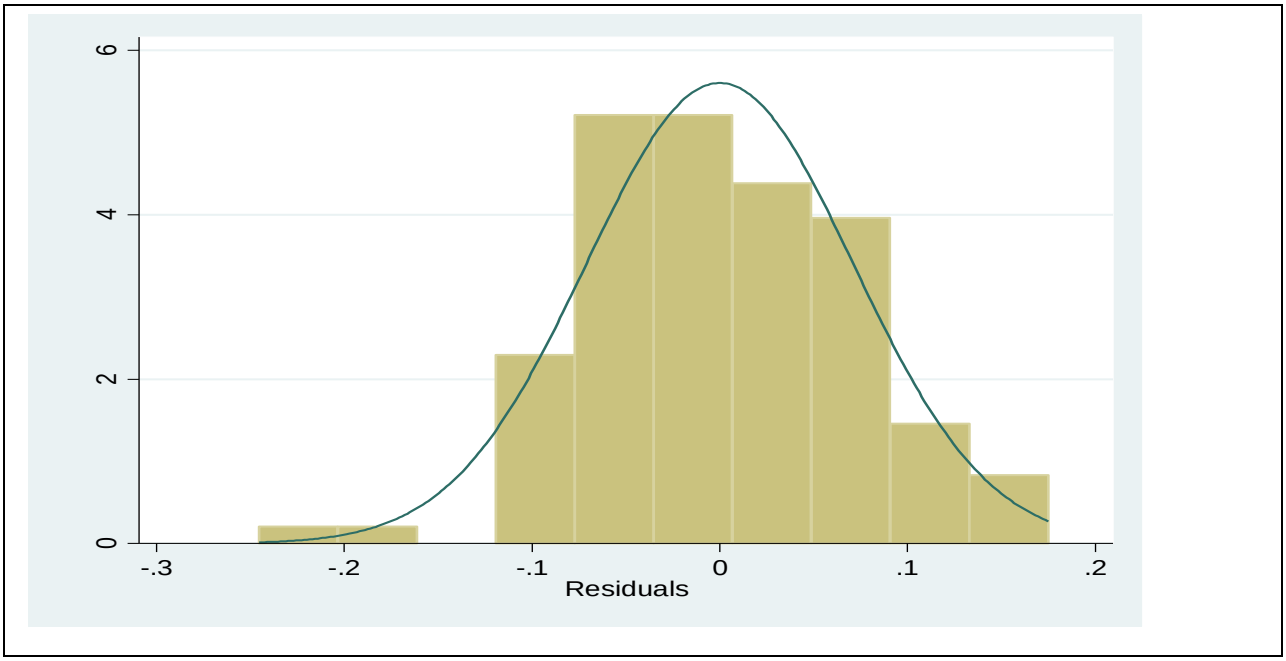
Appendix V: Kurtosis and Skewness Test of Normality

```
. sum uhat, detail

                        Residuals
-------------------------------------------------------------
      Percentiles      Smallest
 1%    -.1949814       -.245262
 5%    -.0943038      -.1949814
10%    -.0804284      -.1130018       Obs                 114
25%    -.0527056      -.1041261       Sum of Wgt.         114

50%    -.0057971                      Mean           1.37e-10
                      Largest         Std. Dev.       .071179
75%     .0497954      .1402756
90%     .0907723      .1445551       Variance       .0050665
95%     .1258506      .1528306       Skewness      -.0956152
99%     .1528306      .1751138       Kurtosis       3.550595
```

Source: Stata 11 output

Appendix- VI: Histogram of Residuals of Secondary Data

```
. hist uhat, normal
(bin=10, start=-.24526198, width=.04203758)
```



Source: Stata 11 output

Appendix- VII: Jarque-Berra Test of Normality

```
. jb uhat
Jarque-Bera normality test:  1.614 Chi(2)  .4463
Jarque-Bera test for Ho: normality:
```

Source: Stata 11 output

Appendix- VIII: Durbin Watson Test for Serial Correlation

```
. tsset time
       time variable:  time, 1 to 114
               delta:  1 unit

. estat dwatson

Durbin-Watson d-statistic(  5,   114) =  1.350514
```

Source: Stata 11 output

Appendix- IX: Correlation Matrix of Dependent and Independent Variables

```
. corr roe usdbirr irspread inflation asset_size
(obs=114)

             |      roe  usdbirr irspread inflat~n asset_~e
-------------+---------------------------------------------
         roe |   1.0000
     usdbirr |  -0.0002   1.0000
    irspread |  -0.1054  -0.1058   1.0000
   inflation |   0.4003   0.0377  -0.1476   1.0000
  asset_size |   0.3588   0.8700  -0.1031   0.2759   1.0000
```

Source: Stata 11 output

Appendix- X: Hausman Test of Model Selection between Random Effect and Fixed Effect Models

```
. hausman FIXED .

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    FIXED        RANDOM       Difference          S.E.
-------------+------------------------------------------------------------
     usdbirr |  -.0190048    -.0211122        .0021075        .0010192
    irspread |  -1.030163    -.6142908        -.415872        .3022302
   inflation |   .0875014     .0623283        .0251731        .0117811
  asset_size |    .089539     .1005287       -.0109897        .0053409
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =          4.23
                Prob>chi2 =        0.3760
                (V_b-V_B is not positive definite)
```

Source: Stata 11 output

Appendix- XI: Random Effect Regression Output

```
. reg roe usdbirr irspread inflation asset_size

      Source |       SS       df       MS              Number of obs =     114
-------------+------------------------------           F(  4,   109) =   31.89
       Model |  .669934594     4  .167483648            Prob > F      =  0.0000
    Residual |  .572509042   109  .005252377            R-squared     =  0.5392
-------------+------------------------------           Adj R-squared =  0.5223
       Total |  1.24244364   113  .010995076            Root MSE      =  .07247

------------------------------------------------------------------------------
         roe |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     usdbirr |  -.0226488   .0026394    -8.58   0.000    -.0278799   -.0174176
    irspread |  -.4364462   .3402654    -1.28   0.202    -1.110841    .2379488
   inflation |   .0415269   .0786046     0.53   0.598    -.1142648    .1973186
  asset_size |   .1083245   .0114802     9.44   0.000     .085571    .1310779
       _cons |  -.3075401   .0663232    -4.64   0.000    -.4389906   -.1760896
```

Source: Stata 11 output

Appendix- XII: Summary of Secondary Data

YEAR	Asset_Size	inflation	irspread	USDBIRR	ROE	BANK
2000	6.63	0.054	0.075	8.14	0.2280	AIB
2001	6.81	-0.003	0.075	8.33	0.1511	AIB
2002	7.01	-0.011	0.075	8.54	0.1309	AIB
2003	7.24	0.011	0.075	8.58	0.1460	AIB
2004	7.48	0.073	0.075	8.62	0.2396	AIB
2005	7.71	0.061	0.083	8.65	0.2381	AIB
2006	7.99	0.106	0.083	8.68	0.3665	AIB
2007	8.25	0.158	0.069	8.79	0.4712	AIB
2008	8.48	0.253	0.069	9.24	0.3416	AIB
2009	8.77	0.364	0.069	10.42	0.3981	AIB
2010	8.98	0.028	0.069	12.89	0.3657	AIB
2011	9.22	0.181	0.069	16.12	0.3779	AIB
2012	9.39	0.341	0.069	17.25	0.3215	AIB
2013	9.61	0.135	0.075	18.19	0.2822	AIB
2014	9.9	0.074	0.075	19.07	0.3191	AIB
2015	10.08	0.101	0.075	20.1	0.2704	AIB
2016	10.3	0.080	0.075	21.11	0.2506	AIB
2017	10.6	0.075	0.075	22.41	0.2807	AIB
2018	10.74	0.082	0.065	26.11	0.3282	AIB
2000	6.58	0.054	0.075	8.14	0.1394	BOA
2001	6.8	-0.003	0.083	8.33	0.1846	BOA
2002	7.04	-0.011	0.083	8.54	-0.0203	BOA
2003	7.2	0.109	0.069	8.58	0.0575	BOA
2004	7.37	0.073	0.069	8.62	0.2813	BOA
2005	7.63	0.061	0.069	8.65	0.3431	BOA
2006	7.95	0.106	0.069	8.68	0.3021	BOA
2007	8.13	0.158	0.069	8.79	0.2375	BOA
2008	8.36	0.253	0.069	9.24	0.5220	BOA
2009	8.61	0.364	0.075	10.42	0.2802	BOA
2010	8.75	0.028	0.075	12.89	0.3353	BOA
2011	8.89	0.181	0.075	16.12	0.3910	BOA
2012	9.02	0.341	0.075	17.25	0.3183	BOA
2013	9.22	0.135	0.075	18.19	0.3173	BOA
2014	9.33	0.074	0.083	19.07	0.2299	BOA
2015	9.52	0.101	0.083	20.1	0.2265	BOA
2016	9.73	0.080	0.069	21.11	0.2294	BOA
2017	10.4	0.075	0.075	22.41	0.2425	BOA

2018	10.5	0.082	0.065	26.11	0.2235	BOA
2000	6.76	0.054	0.069	8.14	0.2041	DB
2001	7	-0.003	0.069	8.33	0.3226	DB
2002	7.3	-0.011	0.069	8.54	0.2810	DB
2003	7.6	0.109	0.069	8.58	0.2990	DB
2004	7.89	0.073	0.069	8.62	0.4651	DB
2005	8.14	0.061	0.075	8.65	0.4174	DB
2006	8.42	0.106	0.075	8.68	0.4922	DB
2007	8.71	0.158	0.075	8.79	0.4906	DB
2008	8.97	0.253	0.075	9.24	0.4552	DB
2009	9.18	0.364	0.075	10.42	0.3879	DB
2010	9.42	0.028	0.083	12.89	0.4079	DB
2011	9.59	0.181	0.083	16.12	0.4511	DB
2012	9.77	0.341	0.069	17.25	0.4887	DB
2013	9.89	0.135	0.069	18.19	0.3974	DB
2014	10	0.074	0.069	19.07	0.3686	DB
2015	10.12	0.101	0.069	20.1	0.3296	DB
2016	10.26	0.080	0.069	21.11	0.2831	DB
2017	10.55	0.075	0.075	22.41	0.2454	DB
2018	10.65	0.082	0.065	26.11	0.2262	DB
2000	5.06	0.054	0.069	8.14	0.0357	NIB
2001	5.82	-0.003	0.075	8.33	0.2765	NIB
2002	6.28	-0.011	0.075	8.54	0.1876	NIB
2003	6.79	0.109	0.075	8.58	0.1486	NIB
2004	7.13	0.073	0.075	8.62	0.2890	NIB
2005	7.46	0.061	0.075	8.65	0.2934	NIB
2006	7.61	0.106	0.083	8.68	0.2907	NIB
2007	7.87	0.158	0.083	8.79	0.2555	NIB
2008	8.2	0.253	0.069	9.24	0.2654	NIB
2009	8.48	0.364	0.069	10.42	0.3015	NIB
2010	8.69	0.028	0.069	12.89	0.3112	NIB
2011	8.87	0.181	0.069	16.12	0.2939	NIB
2012	9.02	0.341	0.069	17.25	0.2549	NIB
2013	9.12	0.135	0.069	18.19	0.2272	NIB
2014	9.28	0.074	0.075	19.07	0.2111	NIB
2015	9.49	0.101	0.075	20.1	0.2025	NIB
2016	9.67	0.080	0.075	21.11	0.1822	NIB
2017	10.32	0.075	0.075	22.41	0.1822	NIB
2018	10.42	0.082	0.065	26.11	0.2176	NIB
2000	4.96	0.054	0.075	8.14	0.1071	UB
2001	5.37	-0.003	0.075	8.33	0.1134	UB
2002	5.75	-0.011	0.083	8.54	0.0649	UB

2003	6.15	0.109	0.083	8.58	0.0785	UB
2004	6.51	0.073	0.069	8.62	0.1042	UB
2005	6.98	0.061	0.069	8.65	0.3543	UB
2006	7.38	0.106	0.069	8.68	0.3291	UB
2007	7.69	0.158	0.069	8.79	0.2540	UB
2008	8.09	0.253	0.069	9.24	0.2690	UB
2009	8.44	0.364	0.069	10.42	0.2568	UB
2010	8.68	0.028	0.022	12.89	0.3885	UB
2011	8.95	0.181	0.024	16.12	0.3578	UB
2012	9.08	0.341	0.025	17.25	0.3384	UB
2013	9.21	0.135	0.023	18.19	0.3115	UB
2014	9.38	0.074	0.023	19.07	0.2292	UB
2015	9.57	0.101	0.025	20.1	0.2124	UB
2016	9.76	0.080	0.025	21.11	0.2068	UB
2017	10.34	0.075	0.075	22.41	0.1943	UB
2018	10.44	0.082	0.065	26.11	0.2774	UB
2000	6.24	0.054	0.048	8.14	0.0857	WB
2001	6.37	-0.003	0.078	8.33	0.1478	WB
2002	6.47	-0.011	0.078	8.54	0.1339	WB
2003	6.79	0.109	0.010	8.58	0.1690	WB
2004	7.04	0.073	0.015	8.62	0.3544	WB
2005	7.39	0.061	0.017	8.65	0.3810	WB
2006	7.72	0.106	0.019	8.68	0.3978	WB
2007	8.15	0.158	0.021	8.79	0.3970	WB
2008	8.32	0.253	0.021	9.24	0.3138	WB
2009	8.54	0.364	0.023	10.42	0.3062	WB
2010	8.66	0.028	0.024	12.89	0.3019	WB
2011	8.99	0.181	0.025	16.12	0.3426	WB
2012	9.03	0.341	0.025	17.25	0.2857	WB
2013	9.25	0.135	0.025	18.19	0.2457	WB
2014	9.33	0.074	0.025	19.07	0.1930	WB
2015	9.53	0.101	0.026	20.1	0.1874	WB
2016	9.69	0.080	0.026	21.11	0.1705	WB
2017	10.32	0.075	0.075	22.41	0.2111	WB
2018	10.44	0.082	0.065	26.11	0.2962	WB