

2020-09

# Determinants of Deposit Growth: An Empirical Study on Ethiopian Private Commercial Banks

Matuselam Simegnew Tenaw

---

<http://hdl.handle.net/123456789/11233>

*Downloaded from DSpace Repository, DSpace Institution's institutional repository*



**BAHIR DAR UNIVERSITY**

**COLLEGE OF BUSINESS AND ECONOMICS**

**DEPARTMENT OF ACCOUNTING AND FINANCE**

**DETERMINANTS OF DEPOSIT GROWTH: AN  
EMPIRICAL STUDY ON ETHIOPIAN PRIVATE  
COMMERCIAL BANKS**

**BY**

**MATUSELAM SIMEGNEW TENAW**

**ADVISOR: FRIEW CHEKOL (Ph.D)**

**JULY, 2020**

**BAHIR DAR, ETHIOPIA**

**BAHIR DAR UNIVERSITY  
COLLEGE OF BUSINESS AND ECONOMICS  
DEPARTMENT OF ACCOUNTING AND FINANCE**

**DETERMINANTS OF DEPOSIT GROWTH: AN  
EMPIRICAL STUDY ON ETHIOPIAN PRIVATE  
COMMERCIAL BANKS**

**A THESIS SUBMITTED TO  
BAHIR DAR UNIVERSITY, IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF  
SCIENCE (MSC) IN ACCOUNTING AND FINANCE**

**BY**

**MATUSELAM SIMEGNEW TENAW**

**PRINCIPAL ADVISOR: FRIEW CHEKOL (Ph.D)**

**JULY, 2020  
BAHIR DAR, ETHIOPIA**

## **Declaration**

**This is to certify that the thesis entitled “DETERMINANTS OF DEPOSIT GROWTH : AN EMPIRICAL STUDY ON ETHIOPIAN PRIVATE COMMERCIAL BANKS”,** submitted in partial fulfillment of the requirements for the degree of Master of Science (MSC) in Accounting and Finance Department, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been received during the course of this investigation have been duly acknowledged.

**Matuselam Simegnew**

**Name of the candidate**

\_\_\_\_\_

**Date**

**BAHIR DAR**

**Place**

**BAHIR DAR UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

**Approval of Thesis for defense**

I hereby certify that I have supervised, read and evaluated this thesis titled “DETERMINANTS OF DEPOSIT GROWTH: AN EMPIRICAL STUDY ON ETHIOPIAN PRIVATE COMMERCIAL BANKS” prepared by Matuselam Simegneu under my guidance. I recommend the thesis be submitted for oral defense.

---

Advisor's name

---

Signature

---

Date

**BAHIR DAR UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

**Approval of Thesis for defense result**

We hereby certify that we have examined this thesis entitled “DETERMINANTS OF DEPOSIT GROWTH: AN EMPIRICAL STUDY ON ETHIOPIAN PRIVATE COMMERCIAL BANKS” by *Matuselam Simegnew Tenaw*. We recommend that \_\_\_\_\_ is approved for the degree of “Master of Science (MSC) in Accounting and Finance”

**Board of Examiners**

External examiner’s name	Signature	Date
Internal examiner’s name	Signature	Date
Chair person’s name	Signature	Date

## **Acknowledgement**

I would like to thank several people who contributed in numerous ways to the successful completion of this study. First of all, I thank my advisor, Dr. FRIEW CH. lecturer in the Department of Accounting and Finance, College of Business and Economics, Bahir Dar University. His guidance and valuable constructive critiques, comments, and suggestions, as well as the amount of time he allotted to me, have been influential in accomplishing the objectives of this study starting from initial to the end. Secondly, I thank my Colleagues, their assistance and encouragement through the period of my study are prized. My gratitude also sends to my family for their patience and unreserved assistance.

## Table of contents

<b>Contents</b>	<b>Page</b>
Declaration.....	II
Acknowledgement .....	IV
Table of contents.....	V
List of tables.....	VIII
List of figures.....	IX
Abbreviations and acronyms.....	X
Abstract.....	XI
Chapter One: Introduction .....	1
1.1. Background of the study .....	1
1.2. Statement of the problem .....	4
1.3. Research questions.....	6
1.4. Objective of the study .....	6
1.4.1. General Objective .....	6
1.4.2. Specific objectives .....	6
1.5. Research hypothesis.....	7
1.6. Significance of the study.....	7
1.7. Scope and limitation of the study.....	8
1.8. Organization of the study.....	8
Chapter Two: Related Literature Review .....	9
2.1. Meaning and General Concepts of Deposit.....	9
2.2. Theoretical review .....	10
2.2.1. Milton Friedman’s Permanent Income Hypothesis.....	10
2.2.2. The Keynesian Theory of Absolute Income Hypothesis.....	11
2.2.3. Life-Cycle Hypothesis Theory .....	11
2.2.4. Duesenberg Relative Income Hypothesis.....	12
2.2.5. The Classical Theory of Interest.....	13
2.2.6. Neo-Classical Growth Theory .....	13
2.3. Determinants of deposit growth and variables descriptions.....	14
2.3.1. Bank Specific Factors .....	15
2.3.1.1. Branch expansion.....	15
2.3.2. Macro-economic Factors .....	15
2.3.2.1. Gross Domestic Product (GDP) Growth.....	16
2.3.2.2. Deposit Interest Rate.....	16
2.3.2.3. Exchange rate of Ethiopian Birr to USD .....	17



2.3.2.4. Inflation.....	17
2.3.2.5. Population Growth.....	18
2.4. An Empirical Review .....	19
2.4.1. Empirical Reviews outside Africa.....	19
2.4.2. Empirical Reviews in Other African Countries.....	22
2.4.3. Empirical Reviews in Ethiopia.....	25
2.5. Summary of literature and knowledge gap.....	29
2.6. Conceptual framework .....	30
Chapter Three: Research Methodology .....	33
3.1. Research philosophy .....	33
3.2. Research approach .....	33
3.3. Research design .....	34
3.4. Target population, sample size and sampling techniques.....	34
3.5. Sources of data and methods of data collection.....	35
3.6. Model specification.....	35
3.7. Assumptions tested .....	36
3.8. Method of data analysis .....	37
3.10. Description and measurement of variables .....	37
3.10.1. Deposit growth.....	37
3.10.2. Real GDP growth.....	38
3.10.3. Deposit Interest rate .....	38
3.10.4. Inflation.....	39
3.10.5. Exchange rate.....	39
3.10.6. Population Growth.....	40
3.10.7. Branch expansion rate.....	40
Chapter Four: Data Analysis And Discussion .....	41
4.1. Descriptive analysis .....	41
4.2. Correlation analysis .....	43
4.3. Assumption tested.....	44
4.1.1. Fixed Effects versus Random Effects Model.....	44
4.1.2. Unit Root test .....	45
4.1.3. Test for Model Specification: - Ramsey Reset Test .....	46
4.1.4. The mean value of the residual term is zero .....	46
4.1.5. Test for Normality.....	46
4.1.6. Test for Heteroscedasticity .....	47
4.1.7. Test for Multicollinearity.....	48
4.1.8. Test for Serial Autocorrelation .....	49
4.4. Regression results and discussions .....	49

4.5. Discussion of results .....	52
4.5.1. Real GDP growth and Deposit Growth .....	52
4.5.2. Deposit Interest Rate and Deposit Growth .....	52
4.5.3. Inflation and Deposit Growth .....	53
4.5.4. Population Growth and Deposit Growth.....	53
4.5.5. Branch Expansion rate and Deposit Growth.....	54
4.5.6. Exchange Rate and Deposit growth.....	55
4.6. Summary of findings.....	55
Chapter Five: Conclusion And Recommendation .....	56
5.1. Conclusions.....	56
5.2. Recommendations.....	57
5.3. Recommendation for further study .....	58
References.....	59
Appendix.....	63

## List of tables

<b>Tables</b>	<b>Page</b>
Table 2. 1 Variable Descriptions .....	32
Table 3. 1: List of sampled banks .....	35
Table 4. 1: Summary of descriptive statistics of variables .....	41
Table 4.2: Pearson pairwise Correlation results .....	43
Table 4. 3: Correlated random Effects - Hausman Test.....	44
Table 4.4: Levin-Lin-Chu unit-root test for panel data.....	45
Table 4. 5: Ramsey Reset test .....	46
Table 4. 6: Breusch-Pagan / Cook-Weisberg test for heteroscedasticity.....	48
Table 4. 7: VIF Result for test of Multicollinearity .....	48
Table 4. 8: Breusch-Godfrey LM test for serial correlation .....	49
Table 4. 9: The Panel Model Regression Results .....	50
Table 4. 10: Summary of Expected results and Actual results .....	55

## List of Figures

<b>Figures</b>	<b>Page</b>
Figure 2. 1: Conceptual framework .....	31
Figure 4. 1: Jarque-Bera test for Normality .....	47

## Abbreviations and Acronyms

CLRM-----CLASSICAL LEANER REGRESSION MODEL

OLS-----ORDINARY LEAST SQUARE

NBE-----NATIONAL BANK OF ETHIOPIA

CBE-----COMMERCIAL BANK OF ETHIOPIA

I-----INFLATION

DR-----DEPOSIT RATE

DG-----DEPOSIT GROWTH

BER-----BRANCH EXPANSION RATE

PG-----POPULATION GROWTH

EXR-----EXCHANGE RATE

JB-----JARQUE-BERA

GDP-----GROSS DOMESTIC PRODUCT

USD-----UNITED STATES DOLLAR

PIH-----PERMANENT INCOME HYPOTHESIS

VIF-----VARIANCE INFLATION FACTOR

CSA-----CENTRAL STATISTICAL AUTHORITY

FDIC-----FEDERAL DEPOSIT INSURANCE CORPORATION

## Abstract

*Deposit is one of the resources that commercial banks are highly motivated to get it, and the most liquid money that is found in the treasury of a bank. As a result, the survival of every commercial banks is highly dependent on deposit. Poor deposit growth in commercial Banks lead to inability to disburse loans to qualifying members on demand, inability to meet operation costs, inability to service debts etc. Therefore, managing and controlling deposit is essential for commercial banks to be competitive and attractive. The growth of deposit in Ethiopian private commercial banks is at its infant stage and historically been low and also their deposit is not sufficient to meet the required credit as compared to CBE. The main objective of this study was to empirically examine the macro-economic and bank specific determinants of deposit growth in Ethiopian private commercial banks. A longitudinal/panel secondary dataset was used in this study. This study covers those Ethiopian private commercial banks having available data during the period of 2009/10-2018/19. Explanatory research design, quantitative research approach, post positivism paradigm and OLS estimation technique were employed to examine the effect of explanatory variables (real GDP growth, deposit rate, exchange rate, inflation, population growth and branch expansion rate) on the dependent variable (deposit growth). Ten private commercial banks in Ethiopia were selected purposively. The CLRM assumptions such as heteroskedasticity, normality, multicollinearity etc. were tested. The results from the panel multiple linear regression model revealed that real GDP growth, deposit rate, inflation, population growth and branch expansion rate had statistically significant and positive effect on deposit growth, in the contrary exchange rate had positive but insignificant effect on deposit growth. Finally, the researcher recommends that there shall be stable economic growth, stable inflation, competitive and attractive deposit interest rate, aggressive branch expansions, and healthy population growth.*

**Key words: Determinants, Deposit, Growth and Private commercial banks**

## **CHAPTER ONE: INTRODUCTION**

### **1.1. BACKGROUND OF THE STUDY**

Commercial banks are financial institutions that give financial services to those in need of the service (Sylvester, 2011). Thus, for commercial banks to lend, there have to be deposits in their treasury. They transfer funds from those who don't have productive use of it to those with productive venture. Deposit is one of the resources commercial banks highly motivated to mobilize and the most liquid money that is found in the treasury of the bank and which is ready to be borrowed in need of the fund (James & Tories, 2008). Deposit mobilization is the major activities of commercial banks. According to Mahdi and Mohammad (2010), financial resources of banking systems are naturally provided from people's deposit. As a result, the survival of every commercial bank is highly depending on deposits. Poor deposit growth in commercial banks lead to inability to disburse loans to qualifying members on demand, inability to meet operation costs, inability to pay debts, unstable board of directors due to frequent reshuffle as disgruntled members vote officials out, quitting of members to competitors (Tesfahunegn, 2015). Therefore, managing and controlling deposits is essential for commercial banks in general to be competitive and attractive.

There were many bank failures before, during and after the financial crisis of 2007-2009 in all over the world due to lack of enough deposits in their treasury or inability to pay operational costs, unable to satisfy customers and then lead to bankruptcy (FDIC, 2019). In USA and other developed countries several commercial banks were failed due to poor deposit growth, these includes Southern Pacific Bank, Dollar Savings Bank, Metropolitan Savings Bank, First Integrity Bank, NA, The First State Bank, City National Bank of New Jersey, Highland Community Bank and so on (FDIC, 2019). Recently, the issue of deposit has become one of the hot and debated issue in the field of finance due to the failure of some commercial banks in the world and its adverse effect on the performance of banks. Furthermore, a number of business firms were also wind up their operations around the world due to lack of supply of funds by commercial banks ((Alabania, 2011). This causes for bankruptcy of business firms.

The adverse effect of deposit growth in a bank hovers the continued survival of commercial banks, hence the renewed interest among scholars, academicians and practitioners in investigating what determines deposit growth at the commercial banks level is growing. Prior studies that were conducted by Gunasekara and Prasansha (2018) provided some empirical evidence that poor deposit growth arises in many cases, such as endogenous risks, miss-

management, low level of public awareness, and an inefficient operating structure etc. On the other hand, a very low level of deposit interest rate, low branch expansion rate, very high inflation combined with very high population dependency ratio leads to poor deposit growth (Dipika & Pradhan, 2014; Nighat, 2019). Commercial banks exposed to poor deposit growth faces a variety of problems, such as losses or decrease in performances, plant closings, downsizings, reduced stock prices etc. Hence poor deposit growth leads to cash shortage on the assets side of the balance sheet and the second one is deposit drooping in the liabilities side of the balance sheet. In both circumstances, the same result was obtained which is the insufficiency of deposit.

Empirical studies and related theoretical foundations were conducted on deposit growth of commercial banks in both developed and developing economies. Yet, the issue of deposit and its determinants was ambiguous. Many researchers had investigated the relationship between deposit growth determinants and deposit growth of commercial banks. Finger and Heiko (2009) had empirically examines the demand for commercial banks deposits in Lebanon, a regional financial center. They classified the variables into two, i.e. macro and micro level variables. Joel (2008) empirically examined the determinants of Kenyan Commercial Banks Deposit growth. The results showed that lagged Commercial bank deposits & all the other variables including Structural Adjustment Programs (SAPs) significantly affect Commercial bank deposit growth in Kenya.

In Ethiopia, there is an increasingly growing public and private investment in the area of infrastructure, agriculture, manufacturing, and processing etc. which seeks for continues supply of finances. Intermediation functions of banks play a vital role in the efficient allocation of resources of countries like Ethiopia by mobilizing resources for productive activities (Gerawork, 2016). Even though, the total deposit mobilized by commercial banks in Ethiopia is not sufficient to meet the required loan because in 2018 annual report of NBE the total deposit of Ethiopian commercial banks was 730 billion while the total loan require was 733 billion. In Ethiopia, customers of banks walk to the banking premises to deposit money. This method of deposit mobilization is not able to generate enough deposits. In response to the problem of mobilizing enough deposits, many banks have devised mechanisms of generating deposits. Among the mechanisms for deposit mobilization identified by banks include, collecting the salary of any company for their employees, trying to reach to the public by increasing branch number, internet banking, the use of the agent banking, sending agents to



economic zones to mobilize deposits, among others. It is evident that the bank uses a number of mechanisms to mobilize deposits.

Furthermore, Ethiopian private commercial banks play an important role for the development and success of various private business organizations in the country by providing finance (Habtamu, 2017). Even if their role is vital, they don't have sufficient deposit in their treasury to meet the demand for loan customers (NBE, 2018). The deposits of private commercial banks show an increment from period to period, but still not sufficient to disburse the loan request of the customers. According to (NBE, 2018), the deposit share of Ethiopian private commercial banks was 38.67 % as compare to Commercial Bank of Ethiopia (CBE) which had approximately 61.33% total deposit share in the country.

In Ethiopia, the studies made on the subject of deposit growth were very limited. According to Gerawork (2016) the success of Commercial Bank of Ethiopia greatly lies on deposit mobilization activities. Mobilization of deposit through intensive deposit collection has been regarded as the major task of banking in Ethiopia today (Tsefahunegn, 2015). Moreover, the existing studies were mainly focused on public banks i.e. Commercial Bank of Ethiopia. Thus, this study adds value to the existing literatures about deposit growth by focused on private commercial banks in Ethiopia. Thus, the determinants that affect deposit growth were identified based on their significance from previous literatures. Hence real GDP growth, deposit interest rate, inflation, exchange rate, population growth and branch expansion rate are the major factors that determine deposit growth of a commercial banks (Bargicho, 2015; Belay, 2015; Garo, 2015, & Tsefahunegn ,2015).

Generally, the issue of private commercial bank's deposit growth and its determinants are crucial to the financial sector of developing country like Ethiopia. Thus, this study enables banks and regulators to keep control to the issue of deposit growth which is very important to the security of their operation as well as the economy as a whole in the country. Therefore, this study aimed to empirically examined the macro-economic and bank specific determinants of deposit growth of Ethiopian private commercial banks.

## 1.2. Statement of the Problem

Deposit is an essential resources of banking sector. The survival of every commercial bank highly depends on bank deposit because deposit is the source of funds and the basis for profit of commercial banks (Eriemo, 2014). Commercial banks in both developed and developing economies highly depends on deposits because mobilizing deposit for commercial banks is a matter of survival (Finger and Heiko, 2009). As a result, the issue of bank's deposit and its determinants in commercial banks is become more crucial to the banking sector of developing countries like Ethiopia. Therefore, the efficient mobilization of deposit is decisive for private commercial banks to survive in the industry and to enhance the private sectors development in the country. However, there are factors that affect the deposit of private commercial banks, hence studying those factors is crucial for better control and management of deposits.

In developed economies, several commercial banks were failed due to poor deposit growth, these includes; The First State Bank, City National Bank of New Jersey, Resolute Bank, Southern Pacific Bank, Dollar Savings Bank, Metropolitan Savings Bank, Highland Community Bank and so on (FDIC, 2019). In Ethiopia, the issue of deposit growth is also very serious particularly in private commercial banks. According to the annual report of NBE, Ethiopian banking sector consists of 17 commercial banks. Those commercial banks collected Birr 730 billion in deposits (from around 33 million savers); provided Birr 733 billion (33% GDP) of total credit (NBE, 2018). This showed that the amount of deposit of Ethiopian commercial banks is not sufficient to meet the required loan. Moreover, the deposit share of Ethiopian private commercial banks was 38.67 % as compare to CBE which have approximately 61.33% total deposit share in the country (NBE, 2018). It indicates also deposit practice, particularly in private commercial banks is at its infant stage and there should be mechanisms to enhance deposit through identifying the factors affecting deposit growth. Thus, poor deposit growth is a very serious problem in the banking industry especially in Ethiopian private commercial banks as compared to Commercial Bank of Ethiopia (CBE).

The empirical studies suggest that, determinants of deposit growth are numerous and vary across countries and regions (Mohammud, 2012). Some studies argue that, the main determinants of deposit growth are firm-specific factors, whereas others claim that the macro-economic variables are the most important factors. In addition to these, more than a few studies states that the key determinants of deposit growth are both firm-specific and macroeconomic

factors. This infers that the findings were not consistent across countries, which leads scholars to a continuous debate to identify the key determinants of deposit growth in a given country.

A considerable empirical investigation has been made outside Ethiopia on the determinants of deposit growth in commercial banks, some of them are (Fredric, 2016; Gunasekara & Prasansha, 2018; Nishat & Nighat, 2019; Pradhan & Dipika, 2014). However, their findings lack consistency; For instance, studies conducted by (Haron, Wan, & Wan, 2006; Meyer, Shirin, & Carlos, 1990; Eriemo, 2014; Joel, 2008) indicate that commercial bank's deposit growth rise when there is an increase in inflation and exchange rate. Similarly, studies by (Fredric, 2016; Gunasekara & Prasansha, 2018; Nishat & Nighat, 2019; Pradhan & Dipika, 2014) also showed that the effect of inflation and exchange rate is negative on deposit growth. However, findings by Joel (2008) revealed that inflation and exchange rate have no significant influence on commercial bank's deposit growth.

In Ethiopia, prior researchers mainly focused on factors affecting profitability and performance of commercial banks, they didn't give more attention for deposit of commercial banks. To the knowledge of the researcher, there were some studies conducted on the determinants of deposit growth in Commercial Bank of Ethiopia. Similarly, there were a few studies conducted on deposit growth of private commercial banks in Ethiopia. However, those studies had found different results for the same variables and used different research designs. For instance, the study conducted by (Belay, 2015; Garo, 2015; Tesfahunegn, 2015), found that inflation had negative and significant effect on deposit growth of Commercial Bank of Ethiopia while others such as Bargicho (2015) and Gebre (2019) found that inflation had positive and significant effect on deposit growth. Furthermore, some of the studies conducted by (Belay, 2015; Garo, 2015; Gebre, 2019; Gerawork, 2016; Hailemariam, 2017) were used explanatory research design while Tesfahunegn (2015) and Teshome (2017) were employed descriptive research design. The sample size used by some of prior researchers such as (Hailemariam, 2017; Bargicho, 2015; Gerawork, 2016; Teshome, 2017; Belay, 2015; Garo, 2015) etc. was not sufficient and representative. Moreover, studies conducted on deposit growth in Ethiopian private commercial banks such as (Gerawork, 2016; Gebre, 2019; Hailemariam, 2017; Teshome, 2017) did not examined or included the effect of exchange rate factor on deposit growth.

Generally, there are no universally accepted findings about the determinants of deposit growth, these may be for the reason that countries are different in their economic systems, political systems, financial systems and operating environments. Thus, the conflicting result on the determinants of deposit growth on literatures provide the motivation for the study. Therefore, in this study the researcher has tried to fill the above literature gaps through a detail investigation on the determinants of Ethiopian private commercial bank's deposit growth. Hence the researcher had examined the effect of independent variables such as real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate on the dependent variable i.e. deposit growth of private commercial banks in Ethiopia.

### **1.3. Research Questions**

This study tried to answer the following main research questions:

- What effect does macro-economic factors (real GDP growth, deposit interest rate, exchange rate, inflation and population growth) have on deposit growth in private commercial banks of Ethiopia?
- How do bank specific factor (branch expansion rate) affect deposit growth of private commercial banks in Ethiopia?

### **1.4. Objective of the Study**

#### **1.4.1. General Objective**

The general objective of this study is to examine the determinants of private commercial bank's deposit growth in Ethiopia.

#### **1.4.2. Specific objectives**

- i. To examine the effect of macro-economic factors (real GDP growth, deposit interest rate, exchange rate, inflation and population growth) on deposit growth of Ethiopian private commercial banks.
- ii. To examine the influence of bank specific factor (branch expansion rate) on deposit growth of private commercial banks in Ethiopia.

## 1.5. Research Hypothesis

From different theoretical and empirical literatures, the following hypothesis were formulated (detail explanation presented in literature review part).

**Ho1:** Real GDP growth has not significant effect on Ethiopian private commercial Bank's deposit growth.

**Ho2:** Deposit interest rate has not significant effect on Ethiopian private commercial Bank's deposit growth.

**Ho3:** Exchange rate has not significant effect on Ethiopian private commercial Bank's deposit growth.

**Ho4:** Inflation has not significant effect on Ethiopian private commercial bank's deposit growth.

**Ho5:** Population growth has not significant effect on Ethiopian private commercial Bank's deposit growth.

**Ho6:** Branch expansion rate has not significant effect on Ethiopian private commercial Bank's deposit growth.

## 1.6. Significance of the Study

The aim of this study was to examine the effect of independent variables such as real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate on dependent variable i.e. deposit growth of private commercial banks in Ethiopia. Therefore, the study will have the following contributions:

- It will be used as an input for policy makers in the banking industry.
- It will give some directions to all commercial banks related to their deposits.
- It will give also some directions to the private commercial banks in Ethiopia related to their deposits
- It will help researchers who are interested to conduct their study in the same area.

### **1.7. Scope and Limitation of the Study**

This study was delimited to some macro-economic and bank specific determinants on Ethiopian private commercial bank's deposit growth. This study has been also conducted by using ten years data only (from 2009/10-2018/19). However, other factors like Service quality, Employee satisfaction and customer satisfaction and awareness of the society to use private banking services was not included in the study due to lack of reliable data. The study is also limited to private commercial banks in Ethiopia, not other public Banks in Ethiopia. Only deposit growth was considered and credit operations were not undertaken.

### **1.8. Organization of the Study**

This study has five chapters. The first chapter deals with background of the study, statement of the problem, research questions, objectives of the study, hypotheses of the study, significance of the study, scope and limitation of the study, and organization of the study. The second chapter deals with the theoretical and empirical literatures of the study, and the third chapter deals with the methodology of the study. The fourth chapter consists the analysis, data interpretation and the results of the study. The last but not least chapter provided conclusions, possible recommendations and suggestions for further studies.

## **CHAPTER TWO: RELATED LITERATURE REVIEW**

This section discusses key concepts of deposit growth and the factors influencing deposits. In addition, in this chapter, theoretical frameworks, empirical literatures, summary of literatures and knowledge gaps in the literatures are presented.

### **2.1. Meaning and General Concepts of Deposit**

Deposit is one of the resources commercial banks highly motivated to mobilize and the most liquid money that is found in the treasury of banks and which is ready to be borrowed in need of the fund (James & Torries, 2008). Deposit mobilization is the major activities of commercial banks. According to Mahdi and Mohammad (2010), financial resources of banking systems are naturally provided from people's deposit. The functions of commercial banks of Ethiopia is clearly stated at Art 2 sub Article 2 of the Banking Business Proclamation No 592/2000. Accepting deposits is one of the primary functions of commercial banks in Ethiopia. The commercial banks accept deposit of their customers. The customers deposit in the commercial banks to be safe and secure their many and to be free from theft and robbery. Specially, in this time people have developed culture of saving and they use even ATM method to make commerce in any super market or any other markets where such services are provided.

There are three types of deposits, namely saving, demand deposit and term or fixed time deposits accounts services, are provided by all the commercial banks in Ethiopia. Although the forms of the three deposits and how they are being opened and used differ, they are all used to mobilize deposits to the banks. The definitions and concepts of the three deposit types provided by Ethiopian commercial banks are mentioned as follows:

#### **i. Current account deposits**

Such deposits are payable on demand and are, therefore, called demand deposits. These can be withdrawn by the depositors any number of times depending upon the balance in the account. The bank does not pay any interest on these deposits but provides cheque facilities. These accounts are generally maintained by businessmen and industrialists who receive and make business payments of large amounts through cheques.

#### **ii. Fixed deposits (Time deposits)**

Fixed deposits have a fixed period of maturity and are referred to as time deposits. These are deposits for a fixed term, i.e., period of time ranging from a few days to a few years. These are neither payable on demand nor they enjoy cheque facilities. They can be withdrawn only after

the maturity of the specified fixed period. They carry higher rate of interest. They are not treated as a part of money supply. Recurring deposit in which a regular deposit of an agreed sum is made is also a variant of fixed deposits.

### iii. **Savings account deposits**

These are deposits and its main objective is to save. Savings account is most suitable for individual households. They combine the features of both current account and fixed deposits. They are payable on demand and also withdrawable by cheque. But bank gives this facility with some restrictions, e.g., a bank may allow four or five cheques in a month. Interest paid on savings account deposits is less than interest rate paid on fixed deposit.

## **2.2. Theoretical Reviews**

From prior different theoretical and empirical literature, deposit growth depends on economic, demographic, and policy factors. The theoretical basis for understanding the crucial position of bank deposit is related to saving behaviors. There are six widely accepted theories related to savings or deposits. These theories are Absolute Income Hypothesis (AIH) by Keynes (1936), Relative Income Hypothesis (RIH) by Duesenberg (1949), Permanent Income Hypothesis (PIH) by Friedman (1957), and Life-Cycle Hypothesis (LCH) by Modigliani (1963), Classical theory of interest rate and Noe-classical growth theory.

### **2.2.1. Milton Friedman's Permanent Income Hypothesis**

The core of Friedman's PIH is that individuals are rational and they seek to maximize their lifetime utility subject to the constraint that all their lifetime resources must be spent. In this hypothesis, income and Consumption are divided into two major components, the transitory and permanent components. The permanent income is defined as the lifetime income an individual is expected to earn out of the physical and human assets that he possesses while transitory income has been defined as the difference between actual income and permanent income over a specified period of time. This is because an individual economic agent is thought to plan his expenditures on both incomes received during the current period and income expected during his lifetime. Therefore, consumers plan their expenditure on the grounds of a long-run view of the resources that will accrue to them in their lifetime. Friedman argues that, permanent income should be considered when studying the saving and consumption behavior of economic agents, not absolute income as Keynes suggests (Epapher 2014). According to Friedman's PIH, the saving function at time  $t$  in its simplest form given the transitory and permanent income can be expressed as (Equation 1).



$$S_t = C + \beta Y(p) + \beta Y(T)$$

Where,

$\beta$  is the marginal propensity to save given permanent income  $Y(p)$

$\beta$  is the marginal propensity to save given transitory income  $Y(t)$

$C$  = constant with value less than zero

### **2.2.2. The Keynesian Theory of Absolute Income Hypothesis**

According to Keynes theory, consumption and savings are an increasing function of absolute/disposable income. Keynes postulates that consumption will increase at a decreasing rate as the income increases other things being constant. This implies that part of the income will be saved at an increasing rate as the disposable income increase (Epaphra 2014). Generally, the Keynesian saving function takes a form of linear function with constant marginal propensity to save (MPS).

### **2.2.3. Life-Cycle Hypothesis Theory**

Ando and Modigliani (1963) postulate a life-cycle hypothesis of consumption of an individual in a specified period of time. The life-cycle hypothesis has been utilized extensively to examine savings and retirement behavior of older persons. This hypothesis begins with the observation that consumption needs and income are often unequal at various points in the life cycle. Younger people tend to have consumption needs that exceed their income. Their needs tend to be mainly for housing and education, and therefore they have little savings. In middle age, earnings generally rise, enabling debts accumulated earlier in life to be paid off and savings to be accumulated. Finally, in retirement, incomes decline and individuals consume out of previously accumulated savings. This model suggests that in the early years of a persons' life they are net borrowers. In the middle years, they save to repay debts and provide for retirement. The life cycle model predicts that a higher interest rate increases the current price of consumption vis-à-vis the future price, thus leading to an increase in savings. According to Tochukwu, Nwachukwu, and Peter (2009), the life –cycle hypothesis theory is more focus on what happens in developed economies but little or no regard to the peculiarities of developing countries. So, it needs to modeled separately from that in developed economies because

- Households in developing countries tend to be larger than those in developed ones, and there is a greater tendency for several generations to live together. Such a household has no need for retirement saving because resources are shared between workers and

dependents, and ownership is passed from parents to children. This kind of household can internalize many of the insurance activities that would otherwise require saving.

- Developing-country households tend to be large and poor. They have a different demographic structure, more of them are likely to be engaged in agriculture, and their income prospects are much more uncertain. Uncertainty at low income poses a real threat to consumption levels, a threat that is likely to exert a powerful influence on the way in which income is saved and spent.
- Borrowing is not permitted. This is an extreme simplifying assumption, but more appropriate than its opposite, that households are free to borrow and lend at a fixed real interest rate.

Saving provides a buffer between uncertain and unpredictable income and an already low level of consumption. Saving here is inter temporal smoothing saving, not life-cycle intergenerational saving. The analysis is different, and so are the welfare issues, which are focused on the protection of consumption, particularly among those whose consumption levels may not be far above subsistence. Based on the above point Deaton (1989), modifies the life-cycle theory by developing a model of households which cannot borrow but which accumulate assets as a buffer stock to protect consumption when incomes are low. Such households dissave as often as they save, do not accumulate assets over the long term, and have on average very small asset holdings. However, their consumption is markedly smoother than their income. Furthermore, the life-cycle hypothesis by (Friedman 1957) shows that demographical distribution of the population affects saving behavior. Both young and old populations tend to dissave while the working population tends to save to both pay off past debt and prepare for retirement life.

#### **2.2.4. Duesenberg Relative Income Hypothesis**

According to Duesenberg (1949) cited in Epaphra (2014), an household consumption function depends on household income in relation to other household income, as a result, for any given relative income distribution, the percent of income saved by a household will tend to be unique, invariant, and increasing function of its percentile position in the income distribution. This theory assumes that the percent of income saved is an independent of the absolute level of income. This implies that the MPS (marginal propensity to save) of an individual would be higher if his percentile position in the income distribution is higher.

### **2.2.5. The Classical Theory of Interest**

The classical theory of interest rate is associated with the names of David Ricardo, Marshall, A.C. Pigou, Cassels, Walras, Taussing and Knight. This theory is also known as the real theory of interest rate because in determination of interest rate only real factors like productivity and thrift are considered and monetary factors are not given any importance. According to the classical theory, the rate of interest rate is determined by the intersection of demand for money and supply of money. Interest is the price of investment because firms borrow money for investment. Thus, household save their money to earn interest rate. According to this theory, High interest rate leads to high saving and low interest rate leads to low saving. Thus, saving is directly (or positively) related to interest rate. Firms' demand for investment is fulfilled by households' saving. Thus, interest rate in goods market is determined at the point where both supply of saving and demand for investment crosses each other or intersect each other. In classical theory, saving is an increasing function of rate of interest, which may be written as  $S(r)$ .

### **2.2.6. Neo-Classical Growth Theory**

Theoretically, there is controversy on the relationship between inflation and saving. Mundell (1963) and Tobin (1965) have fruitfully explained the effect of inflation on economic growth and saving based on Neo-Classical Growth Theory. They believe increased nominal interest caused by inflation will make people option to save and investment instead of consumption. This will result in increasing capital accumulation which will stimulate saving and economic growth. Mundell (1963) and Tobin (1965) depict a positive relationship between inflation and saving. Contrary to the conclusion of the Mundell-Tobin Effect, Stockman (1981) develops a long-run equilibrium growth model with assumption of "cash-in-advance constraint". In the model of Mundell (1963) and Tobin (1965), real money balances and investment are substitution. But in the model of Stockman (1981), the two variables' relationship is complemented, there is a negative relationship between the steady-state level of output and the inflation rate. Stockman's insight is prompted by the fact that firms put up some cash in financing their investment projects. Sometimes the cash is directly part of the financing package, whereas other times, banks require compensating balances. Stockman models this cash investment as a cash-in-advance restriction on both consumption and capital purchases. Since inflation erodes the purchasing power of money balances, people reduce their purchases of both cash goods and capital when the inflation rate rises. Correspondingly, the steady-state

level of output falls in response to an increase in the inflation rate (Malla, 1997). If the incomes are not indexed, unanticipated inflation will cause unanticipated cuts in the real income and hence decreased the saving rates. Also, high inflation can increase the opportunity cost of holding money and increase the rewards for the search activities in shopping wasting real resources and thereby reducing savings (Miller and Benjamin, 2008). As against this, another theory proposes that if the real income is correctly anticipated either by indexation or wage inflation, unanticipated inflation will increase the saving rate. Inflation is a good proxy for macroeconomic uncertainty. Higher uncertainty/higher inflation induces people to save a larger portion of their money for precautionary motives.

### **2.3. Determinants of Deposit Growth and Variables Descriptions**

Few studies made on the determinants or factors of deposit growth of commercial banks showed that the factors revealed were categorized differently. For instance, the study made by Elias (2012), divides the factors in to two namely-the country specific factors and the bank specific factors whereas the study by Haron et al, (2006), on the deposit determinants of the commercial banks in Malaysia categorizes the factors as financial factors and economic factors. Another study by Ozcan, Asli, and Seda (2003) outlined six groups of potential saving determinants, namely government policy variables, financial variables, income and growth variables, demographic variables, uncertainty variables and external variables. Yet again the other study by Rao (1975), groups the factors under exogenous and endogenous factors to the banking system. This study categorizes the variables in to two, namely macro-economic and bank specific variables. The macro-economic variables are determinants of deposit growth which are beyond the control of Ethiopian private commercial banks whereas, the bank specific factors are those factors that are manipulated and controlled by the Ethiopian private commercial banks themselves. The macro-economic factors examined in this study were deposit interest rate, real GDP growth, inflation, exchange rate of Birr to USD and population growth rate whereas the relevant bank specific variable that determine deposit growth was branch expansion rate. Some of the factors may have both the bank specific and the non-bank specific nature in which case the researcher categorizes those factors based on subjective judgment as to where they incline in the Ethiopian context. The relation of the independent variables against the dependent variable (deposit growth of private commercial banks) have been summarized below from the past empirical studies done on the subject. Though many factors have been raised under this category that have influence on deposit growth of banks as

discussed in the literature review part, the researcher has focused on the following major macro-economic and bank specific factors for analysis.

### **2.3.1. Bank Specific Factor**

#### **2.3.1.1. Branch expansion**

Branch expansion is expanding new branches or service outlets in and outside the country. Deposit is influenced by branch expansion while the expansion of bank branches is also influenced by the level of deposits (Khalily, Richard, and Leroy, 1987). Deposit potential is one thing that banks consider in expanding its branches, the deposit can also be a reason for branch expansion strategy that the banking sector uses. According to Erna and Ekki (2004), there is a long run relationship between commercial bank branches and commercial banks deposits. Rangarajan (1982), explained that branch expansion, by spreading the banking habit over a wider geographical area, induced a large number of people to use bank deposit. Besides, a wide network of branches by facilitating transactions across different geographical areas reduced the need for holding larger amount of cash.

Sdandhu and Goswami (1986), found that the demand for deposits and branch expansion had positive relationship. (Chakravarty committee,1985) also concluded that the expansion of bank branches are the important factors contributing to the growth of bank deposit. According to the article on NBE's magazine (2012), Ethiopia has low geographic and demographic penetration of bank branches. The study conducted in Ethiopia such as Elias (2012), shows that branch expansion had positive and significant relation with deposit volume. According to Garo (2015), study, branch expansion is the most significant factors of deposit mobilization. Gerawork (2016), in his study branch expansion had positive effect on deposit of the banks. Hailemariam (2017),branch expansion, are positively and statistically significant on bank deposit growth. Eriemo (2014) in his study, bank branches are important determinant of bank deposit. Ukinamemen (2010), also found that number of branches has a negative – weak relationship with bank deposit.

### **2.3.2. Macro-Economic Factors**

These are macro-economic determinants that are not under the control of private commercial banks in Ethiopia categorized for the purpose of the study.

### **2.3.2.1. Gross Domestic Product (GDP) Growth**

According to Jim (2008), the level of GDP divided by the population of a country or region is what is known as per capita income. Changes in real GDP per capita over time are often interpreted as a measure of changes in the average standard of living of a country. Thus, the relation between income of the society and deposit volume is expected to be positive and significant. Studies by Varman (2005) and Khalily, Richard, and Leroy (1987), both reveal that growth in income have a positive effect on deposits. Hailemariam (2017), found that stimulation of economic growth is most important factors that affect bank deposit growth. Geda (2015), in his article published on Mudaye Neway Magazine, states that many African studies show high degree of association between growth of an economy and saving. However, the causality issue (whether saving causes growth or the other way round) is not yet settled. He stated that most studies seem to suggest that economic growth influence saving. And economic growth is found to be the most important variable that has a significant positive effect on saving (Mudaye Neway, 2015). Garo (2015), also found that real per capita GDP growth rate had insignificant effect on deposit mobilization.

### **2.3.2.2. Deposit Interest Rate**

Finger and Heiko (2009) stated that the increase in deposit rate on deposits is expected to improve the deposit volume in commercial banks as people are better attracted to get the advantage of higher interest payments on the deposits they held in banks. Offering of attractive interest rate on bank deposits may be considered to have had a beneficial effect (Philip, 1968). Elias (2012), also stated that there is a positive insignificant relationship between the Commercial Bank of Ethiopia's deposit trend and deposit interest rate. Hence, the deposit interest rate and deposit growth at banks have a positive relationship. Gebre (2019), found that deposit interest rate is negative and statistically significant influence on deposit growth. Ngula (2012), found that deposit interest rate is weak determinate of bank deposit mobilization. According to patra (2014), interest rate had statistically significant influence on household savings in India, both in the long run and short run. According to Bargicho (2015), deposit rate had positively affected deposit mobilization. Tochukwu, Nwachukwu, and Peter (2009), found that deposit interest rate has positive influence on domestic saving in Nigeria. Eriemo (2014), bank interest rate is important determinant of bank deposit. Ayalew (2013), found that deposit interest rate was statistically insignificant determinates of domestic saving. Simon and Jolaosho (2013), states that real interest rate had negatively impacted on the level of savings mobilization in Nigeria. Ukinamemen (2010), found that real interest rate has a negative – weak relationship

with bank deposit. However, Hailemariam (2017), found that deposit rate had positive but insignificant influence on bank's deposit growth.

### **2.3.2.3. Exchange rate**

Exchange rates are quoted as foreign currency per unit of domestic currency or domestic currency per unit of foreign currency (Bishop, 2006). Exchange rate allows denominating the cost or price of a goods or services in a common currency. For the major net importing country like Ethiopia, variability of the exchange rate of the local Ethiopia money (Birr) to foreign currency values is enormous. As the exchange rate of Birr to USD ratio grows, local deposits will deplete in the process of importing goods and services. This means as the country does by far more imports than exports and the exchange rate of Birr to USD grows, then local deposits in banks will reduce showing that there is inverse relationship. There are also cases where it shows the opposite trend by increasing the foreign direct inflows. However, the study by Ngula (2012), on the 'Determinants of deposit mobilization and its role in economic growth in Ghana has demonstrated that a deterioration in the Ghanaian currency with respect to the US currency resulting in a higher deposit mobilization. According to Ngula (2012) as currencies depreciated in one country deposit will be reduced since investors tend to withdraw deposit and exchanged to keep it by appreciating currency (Hard currency) or invest in another form of investment rather than bank deposit. Geda (2015), also confirms that for developing country in general saving is negatively correlated with unstable exchange rate.

### **2.3.2.4. Inflation**

One of the key economic indicators to analyze the economic phenomenon of the country is inflation. Inflation is defined as the persistent increase in the general prices of goods and services within an economy over a given period of time (Ngula,2012). As Deaton (1991) explained inflation is measured alternatively by Consumer price index. He was used three theories to explain how inflation may influence savings. The first theory assumed that greater uncertainty should raise savings since risk-averse consumers set resources aside as a precaution against possible adverse changes in income and other factors. Inflation may increase precautionary savings by individuals. Precautionary saving is additional saving that result from the knowledge that the future is uncertain (D. Carroll, 2006). The second theory was that, inflation could influence saving through its impact on real wealth. If consumers attempt to maintain target level of wealth or liquid assets relative to income, saving will rise with inflation. The last theory was that, saving may rise in inflationary period if consumers mistake an increase in the general price level for an increase in some relative prices and refrain from buying

(Deaton, 1991). Santoni (1985) also defined inflation as Deaton did. Besides, he classified inflation in to two; anticipated inflation and unanticipated inflations. Anticipated inflation is forward looking. It is the rate of change in the general price level that people think will occur during some specific future time period. Any difference between actual or realized inflation and anticipated inflation is called unanticipated inflation. It is known only after the fact happened.

As inflation accelerates, deposits become less attractive, depending on the interest rate. In this case, the assumption would be that as deposit interest rates rise, deposits would increase in principle as well. The narrower the spread between deposit rates and inflation, the less attractive it should be to hold deposits above the required level (Boyd, 2000). Therefore, According to Haron et al.,(2006), inflation is found to have negative relation with deposit in a study made in India whereas another case study in the same country by Athukorala, Prema, and Kunal (2003), found to have positive relation with deposit growth.

#### **2.3.2.5. Population Growth**

For many countries, population growth is the issue in economic development, and the relation between population growth and capital accumulation is one of the most important of the possible link between population policy and economic welfare. The life cycle and permanent income models of consumption and savings suggest that population growth affect the savings rate. Assuming that the bequest motive for saving is of little importance, the young and the old thus tend to have low saving rates, whereas the highest saving rates are observed among people who are at or around the peak of their earnings.

Theory of life cycle hypothesis, developed by Ando and Modigliani in 1963, states that individuals choose a life time pattern of consumption that maximizes their life time utility subject to their life time resource available. Life cycle hypothesis emphasized that income varies systematically over people's lives and that saving allows consumers to move income from those times in life when income is high to those times when it is low. The life cycle theory maintains that the level of savings on the demographic structure of society, namely the age of structure rather than on the level of family income. According to Modigliani, in stationary economy (neither population nor productivity growth), the dis-saving of the retired from previous accumulated wealth will offsets the accumulation of the active population for their old age retirement. Thus, saving could occur only when there is transitory income whereas, in steady growing economy saving rate will be changing through population growth or productivity. When source of growth is population, saving rate will increase. This is because



of the share of younger households in the economy is becoming larger than those of the retired ones. So that saving of younger is much higher than dis-saving of their retirement. While when source of growth is productivity the younger associates have larger lifetime resources than older ones, and, therefore, younger group saving is larger than the dissaving of retired group (Modigliani, 1986). The life-cycle hypothesis assumes that deposits increase in the course of a person's lifetime, only to decrease as the person reaches old age. So, with a population generally ageing, one would have to expect an overall decline in deposits. African based saving studies further shows that demographic and institutional factors are found to be important. The age dependency ratio (more children and old people per household is found to have adverse effect on saving (Geda, 2015). Hailemariam (2017), found that Population growth had insignificant negative influence on bank deposit growth. The study implies that stimulation of economic growth is most important factors that affect bank deposit growth.

## **2.4. An Empirical Review**

There were a number of empirical studies that have been done in both developed and underdeveloped countries that tried to examine the determinants of commercial banks deposit mobilization and growth. The reviewed studies used several models such as Distributed Lag-error correlation, vector error correlation model, fixed effect etc. Most of the studies were focused mainly on public commercial banks particularly on Commercial Bank of Ethiopia (CBE), and only few other studies focused on private commercial banks, such as Awash bank, Abyssinia bank etc. Some of the empirical studies focused on fixed-effect models using Ordinary Least Squares (OLS) techniques to explain the variations in savings performance among countries. Other studies apply co-integration analysis, which allow for heterogeneity in parameters and dynamics across countries to arrive at their conclusion. Some of the empirical studies reviewed are presented as follows:

### **2.4.1. Empirical Reviews outside Africa**

Nishat and Nighat (2019), empirically investigated the determinants of banks deposits growth in Pakistan. The result shows that the increase income level increase the demand for deposit and interest rate influence demand and time deposit. Moreover, Baharumshah, Thanoon, M, and Rashid, S, (2003), empirically investigated the saving behavior in fast growing Asian economies(Singapore, South Korea, Malaysia, Thailand and Philippines). The result shows that income has positive effect on saving while capital inflows had negative influence on savings in short run in all Asian countries except Thailand but mixed results were found in long run.

Likewise, patra (2014), study on the Determinants of Household Savings in India: An Empirical Analysis Using ARDL Approach. This study reveals that GDP, interest rate, and inflation had statistically significant influence on household savings in India, both in the long run and short run. Other study in the same country conducted by Athukorala, Prema, and Kunal (2003), also empirically examined the determinants of private saving covering from 1954 to 1998 period. The result revealed that real interest rate, the growth and the level of per capita income had statistically positive effect on domestic saving. Similarly, Ozcan, Guny and Ertac (2012) investigated Macro and Socioeconomic determinants of Turkish private saving during the period of 1975-2008, they found that Income level, Interest rate are increase saving.

Nabar (2011) also examined how interest rate affects household savings in Chinese provincial level administrative units between 1996 and 2009. A strong positive correlation between household savings and interest rates was established; suggesting that Chinese save to meet a number of needs e.g. retirement consumption and durables purchases. As such high savings rates enable them to meet their target savings. Moreover, Teriba (1993), investigated the hypothesis that interest rate and income levels are strong determinants of bank deposits in West Africa. Although Teriba recognized the fact that other variables tend to change in the same direction as the level of income and volume of transactions to reinforce their positive effects on the volume of deposits, the community environment which a bank serves is the most important factor because it is the level of the income of the community that ultimately determines how much would be saved or deposited with the bank. The findings concluded that interest rate and the level of income are strong determinates of bank deposits.

In the same study by Humyra (2014), investigates Saving Behavior of Bangladesh. He considered time series data to shed light on the saving behavior of Bangladesh in long run horizon and short run dynamic adjustment by employing co integration test and vector error correction model. Findings of the study suggest that, there is a great deal of diversity between urban and rural sector. Deposit rate is not the only factor that stimulates depositors to save, although it has received noticeable attention. Rather, high volatility regarding income and banking facilities influence savers to increase interest-bearing deposit. Rachmawati and Syamsulhakim (2004) in their study, they tried to examined factors Affecting Modaraba Deposits in Indonesia by using quarterly time series in the period of 1993 – 2003, the study

shows Islamic bank's branch offices and profit-sharing rate are significantly affecting the volume of modaraba deposits in Indonesia in the long run, while GDP and interest rate are not.

Moreover, Bersales and Grace (2006) investigated Patterns and Determinants of Household Saving in the Philippines. The study identified the determinants of household saving rate using an econometric model. The study used instrumental variable estimation techniques using a pseudo-panel data constructed from FIES years from 1988 to 2003. It estimated two specifications of the econometric model, using the Generalized Least Squares Estimation and Instrumental Variable Estimation. Both procedures produced the same significant determinants for the two specifications. The study is found that level of income significant determinants of household saving rate. Unexpectedly, factors such as number of banks had insignificant effects. Raut and Virmani (1989), examined the determinate of consumption and saving decisions and tested Hall's random-walk hypothesis of consumption on aggregate data from twenty – three developing countries. The Hall hypothesis states that individuals select a level of consumption in each period based on expected lifetime income, rather than on current income. Since income in any term can be seen to move stochastically while consumption is smoothed over time, the ratio of consumption to current income will appear to vary randomly. Their result reveals that while the real interest rate has a positive effect on consumption, the nominal interest has a positive effect on consumption.

According to Daniel, (2005) cited by Jember Hambissa (2014), a deposit holds 63% of commercial bank liabilities. This indicates that factors that affect deposits mobilization have a huge impact on the performance of commercial banks. Developing economies are characterized by unstable macroeconomic environments such as inappropriate fiscal and monetary policies, interest rate controls. The net effect is the change in liquidity which affects savings and capital formation. Where the macroeconomic environment is favorable to savings then the commercial banks are in a better position to increase savings. On the contrary, where macroeconomic policies erode liquidity from the hands of the people then deposits reduce and may negatively impact on capital growth and investment in the country. Finger and Charles (2009) also tried to examine the demand for commercial banks deposits in Lebanon, a regional financial center classified the variables into two, i.e. macro and micro level variables. The study used quarterly data from 1993 to 2008 and estimated a number of vector error correction model (VECMs) to take account of cointegration in the non-stationary time series. At the macro level,

they found that domestic factors such as economic activity, prices, and the interest differential between the Lebanese pound and the U.S. dollar are significant in explaining deposit demand, as are external factors such as advanced economic and financial conditions and variables proxying the availability of funds from the Gulf. At the micro level, they found that in addition, bank-specific variables, such as the perceived riskiness of individual banks, their liquidity buffers, loan exposure, and interest margins, bear a significant influence on the demand for deposits.

As discussed by Khalily et al.(1987), five major factors are found in the literature of deposit determination functions: income, interest rates, access to banking facilities, transaction costs and yields on alternate investments. Dadzie, Evelyn, and Kofi (2003), provided empirical support of factors affecting deposit to be the level of income, customers' satisfaction, service quality and demographic factors such as number of dependents and location. The deposit and lending activities of banks determine to a large extent, the profitability of banks. This is because banks generate their income from the interest differentials from what they pay for deposit and what they charge for their loans and advances.

#### **2.4.2. Empirical Reviews in Other African Countries**

Joel (2008), tried to investigate commercial banks deposits and their implications on Kenya's resource mobilization policy. Kenya's profile of Commercial banks structure, ownership and importance of bank deposit was analyzed in the study. Its main objective was to analyze the factors that influence commercial banks deposit growth in Kenya. Time series data covering 1968 - 2006 was analyzed. First, the time series characteristics of the data were assessed using unit root tests to examine the stationarity of each variable. Secondly, the test for cointegration was performed to determine the long run relationship of the non-stationary variables. Lastly, estimated model was a single regression equation with deposit as the dependent variable and explanatory variables as deposit rate, nominal exchange rate, investment income ratio, number of cheques cleared (used as proxy for innovations in the financial sector), real GDP, ratio of monetary GDP to total GDP and Structural Adjustment Programs (SAPs). Estimation was done using Ordinary Least Squares (OLS) technique and Econometric Views (E-views) statistical package. Analyzed results showed that lagged Commercial bank deposits and all the other variables including Structural Adjustment Programs (SAPs) significantly affect Commercial banks deposit growth in Kenya. Richard L. Meyer, Shirin Nazma and Carlos E. Cuevas (1990)

tried to empirically examine determinants of deposit variability in the branch banking system of Bangladesh. The result of this study revealed that deposit variability is greatest for small, rural branches. It declines with increases in branch size, the share of long-term fixed deposits, and number of types of deposits in a branch. Likewise, Eriemo (2014), empirically examines the macroeconomic determinants of bank deposits in Nigeria using data covering the period between 1980 and 2010. This study tried to analyze the effects of various macroeconomic indicators, on the performance of banks within the context of deposit mobilization of banks and its determinants. The parsimonious ECM result for this study showed that in Nigeria, bank investment, bank branches, interest rate and the general price level are important determinant of bank deposit. The Vector Error Correction and Johansen cointegration test used in this study indicates that a long run relationship among the variables and the ECM result showed a satisfactory speed of adjustment.

Similarly, Tochukwu, Nwachukwu, and Peter (2009), tried to examine the determinants of private saving in Nigeria from the period 1970 to 2007. The result from this study revealed that deposit interest rate has positive influence on domestic saving in Nigeria. Mashamba, Magweva, R, and Gumbo, L (2014), examined the relationship between banks' deposit interest rates and deposit mobilization in Zimbabwe for the period 2000-2006, and the result of this study showed that deposit rate had positive influence on bank's deposit in Zimbabwe.

Likewise, the study by Eriemo (2014), on Macroeconomic Determinants of Bank Deposits in Nigeria using data covering the period between 1980 and 2010, suggested that interest rate and bank branches are important determinant of bank deposit. However, Simon and Jolaosho (2013), found real interest rate has negatively impacted on the level of savings mobilization in Nigeria while they undertaking empirical assessment on the impact of real interest rate on savings mobilization in Nigeria using the time series data from 1980 to 2008 by using The Vector- Auto Regression(VAR).

On other study in same country Musa, Iyaji, And Success (2014), examines the determinants of private domestic savings in Nigeria during the period covering 1986 – 2010. The study reveals per capita income are strong determinants of private domestic savings but interest rate impotent to drive savings mobilization. Tafirei, Rabson, and Linda (2014), examine the relationship between banks' deposit interest rates and deposit mobilization in Zimbabwe for the period 2000-2006. The study was used developed an Ordinary Least Squares (OLS) model

to show the relationship between the response and explanatory variables and they used Pearson's correlation coefficient to demonstrate the strength of the relationship. The data was first tested for; stationary using the Augmented Dicker-Fuller Test, multicollinearity using correlation matrix and autocorrelation using the Durbin-Watson statistic. The study found a positive relationship between deposit rates and banks' deposits for the period under study and all the other explanatory variables were statistically significant. Also, the coefficient of determination was found to be significantly high showing that the explanatory variables were able to account for the total variation of the dependent variable – deposits.

Ngula (2012), also tried to study on determinants of deposit mobilization and its role in economic growth in Ghana during period of 1980 to 2010, the study reveals deposit interest weak determinate of bank deposit mobilization. Orji(2012) investigated determinants of bank savings in Nigeria as well as examined the impact of bank savings and bank credits on Nigeria's economic growth from 1970- 2006, the study adopted ARDL-ECM models and It revealed positive influence of values of GDP per capita(PCY) and negative influence of Real Interest Rate (RIR) on the size of private domestic savings.

Maende (1992), investigated the determinants of demand for commercial bank deposits in Kenya obtaining time series data between 1968 and 1991. He used Ordinary Least Squares, Two-Stage Least and the Granger test of causality. It was revealed that the number of branch network and national income levels and stability were the main determinants of deposits in the banking industry. He also observed that there is a uni-directional relationship between volumes of bank deposits and branch network expansion. Similarly, Ukinamemen (2010), study the factors that affect deposit mobilization operations of commercial banks in Nigeria, particularly the Union Bank of Nigeria Plc. The study tried to find out the relationship between total volume of commercial bank deposits and interest rate, loans and advances and the number of bank branches. The study relied primarily on secondary data published by official sources. The diagnostic statistic used in the study was the ordinary least square (OLS). From the study, it was found out that all the independent variables were positively related to bank deposit (dependent variable). The result also shows that there is a positive and moderately significant relationship between bank deposit and loans and advances. Number of bank branches has a positive but weak relationship with bank deposit. Real interest rate has a negative – weak relationship with bank deposit. The standard errors for the four explanatory variables were all very low. Hence, all the variable coefficients were all significant and accepted.

Opoku (2011), study to identify the most effective and efficient ways to maximize the volume of domestic deposits in the environment of high rural population, dominant informal sector employment and macroeconomic instability. The study used secondary data of nine sample banks out of twenty-seven commercial banks of the period of 2000 to 2004. The result of study indicated that deposits mobilization of Commercial Banks in Ghana shows increasing trend that is increases at a decreasing rate. Hence, the present level of deposits as a ratio of the total amount of money in circulation is woefully inadequate. The study also reveals certain basic facts about commercial banks in Ghana. Their concentration in the cities and a few urban areas as well as their product design and services are targeted to the literate formal sector employees. In addition, unfavorable macroeconomic conditions have resulted in negative real interest rate on deposits while unnecessary government intervention has reduced the confidence in the banking sector. The effects of these factors are the low deposits that commercial banks receive. Furthermore, Epapher (2014) during the period of 1970-2010. The study reveals that disposable income, real GDP growth and population growth have a positive impact on savings in Tanzania.

### **2.4.3. Empirical Reviews in Ethiopia**

Bahredin (2016), studied on the determinants of commercial banks deposit growth in Ethiopia. The study was used annual data covering from 2000 to 2014. Random effects model had been applied to examine the most significant variables. The estimated results suggested that bank branches and per-capita-income growth had positive and statistically significant on bank deposit growth; whereas, lagged bank deposit and loan-to-deposit ratio had negative influence and but statistically significant on CBE bank deposit growth. Money supply growth had insignificant negative influence on bank deposit growth; whereas deposit interest rate had insignificant positive influence on bank deposit growth. The study implies that stimulation of economic growth, banks presence and financial intermediation are most important factors that affect bank deposit growth. Belay (2015), investigated short and long run impacts of endogenous and exogenous factors on deposit growth of Commercial Bank of Ethiopia for the period 1974/75 - 2013/14. This paper tried to examined the cause and effect relationships between the independent variables and dependent variable. In the empirical VECM model, the control variables include Economic Growth, Interest Rate, Population Growth and Branch Expansion were used to establish the causal relationship and measure their impact on the

outcome variable. The estimated results suggested that interest rate has positive but statistically insignificant influence on deposit growth of CBE both in the long-run and short-run while Branch Expansion has significant positive effect on CBE deposit both in the short run and long-run. Furthermore, Population and Economic Growth have a positive relationship with deposit growth but statistically significant only in the long-run.

Garro (2015), also empirically examined the determinants of deposit mobilization and related costs of commercial Banks in Ethiopia during the (2001/2-2012/13) period. The study revealed that branch expansion is the most significant factors of deposit mobilization. Deposit rate and real per capita GDP growth rate had insignificant effect on deposit mobilization. In this research, as opposed to the conventional economic theory, the deposit rate had negative relation against the deposit volume for the period under study. Gerawork (2016), investigates determinants of deposit mobilization on private commercial banks in Ethiopia using panel data for six private commercial banks from year 2002 to 2012. The empirical results revealed that bank branches and real gross domestic product had positive effect on deposit of the banks whereas, capital adequacy and liquidity had negative effect on the deposit of the private banks.

Similarly, Bargicho (2015), also examined the determinants of commercial bank deposits in case of commercial bank of Ethiopia. The study adopts mixed research approach. Regarding to the secondary data; time series data covering 1998 - 2014 was analyzed. The study reveal that Branch expansion significantly affect deposit mobilization. However, GDP growth and deposit rate positively affect deposit mobilization. With regard to deposit rate Elias (2012), examines factors that determining commercial bank deposit: an empirical Study on Commercial Bank of Ethiopia and points out that deposit rate had positive and insignificant effect on total deposit. Ayalew (2013), also tried to investigate the significance of selected macroeconomic variables in determining domestic saving in Ethiopia, using time series data from 1970/71-2010/11. The study adopts an autoregressive distributed lag (ARDL) bounds testing approach. The study revealed that income growth rate had positive and significantly influence on domestic saving in the long run. Whereas, deposit interest rate, was found to be statistically insignificant determinates of domestic saving. He argued that domestic saving rate increases with income growth, which is consistent with life cycle hypothesis and the result of previous studies in Ethiopia.



Likewise, Teshome (2017), tried to examine the commercial banks deposit with reference to Ethiopian commercial banks. He used mixed research approach to achieve the study objective. The study used semi structured personal interview from the employees of sampled commercial banks of Ethiopia. Regarding to quantitative data the study referenced to Ethiopian commercial banks on basis of data covers sixteen years (1999/2000-2014/2015). He has taken eight commercial banks of Ethiopia as a sample out of eighteen commercial banks by using purposive sampling technique. The result of this study from using random effect panel least square regression exhibited that number of branches, deposit interest rate, loan to deposit ratio, annual inflation rate, real gross domestic product and population number were significant relationship with commercial banks deposit. Results from interview social awareness and regulation of anti-money laundry and counter financial terrorism have an effect on commercial banks deposit. Hailemariam (2017), also empirically examines the determinants of savings in private commercial banks of Ethiopia for the 2001-2015 periods. From total of sixteen private Banks which are engaged in commercial activities, he has taken six banks as a sample. based on the historical time formation of banks. He adopted Quantitative research approach. Both Bank specific and macroeconomic variables were analyzed by using the balanced panel fixed effect regression model. He also used different diagnostic tests (test for assumption of Homoscedasticity, Autocorrelation, Normality, average value of the error is zero and independent variables are non-stochastic) were conducted to check the appropriateness of the model. In his study the result reveals that disposable income, real GDP growth, branch expansion, are positively and statistically significant on bank deposit growth; whereas, loan to deposit ratio (bank's liquidity) influence is negatively and statistically significant on bank deposit growth. He also found that deposit rate and profitability had insignificant positive influence on bank deposit growth. Whereas population growth and capital to loan ratio (capital adequacy) had insignificant negative influence on bank deposit growth. The study implies that stimulation of economic growth is most important factors that affect bank deposit growth.

Furthermore, (Teshahunegn, 2015), investigates the challenges in deposit mobilization for private banks in Ethiopia by concentrating the case on Awash International Bank S.C. He used descriptive research design particularly survey design approach was adopted for the study. In his study the survey was conducted with staff individuals working in Awash International Bank S.C at different positions using questionnaire. In addition, the study used unstructured review of documents and records held by other commercial banks and NBE. He founded that AIB and other private banks are operating in a dynamic and highly competitive environment and there

is high possibility of catch-up and by-pass among these banks. Gebre (2019) in her study, she also tried to empirically examine factors of Private commercial bank deposit growth in Ethiopia. She has used quantitative research approach to achieve the objective of her study. She has taken eight private commercial banks as a sample out of the sixteen private commercial banks found in Ethiopia, these were selected with 10 years back in the industry and registered by NBE under operation in Ethiopia, and selected by using purposive sampling technique for the study. The panel data set for this study used secondary source consisted of annual data spanning from 2008 to 2017 gathered from the National Bank of Ethiopia. The dependent variable used to this study is deposit growth; explanatory variables used in this study were number of bank branch, loan to deposit ratio, economic growth (GDP), deposit interest rate, net interest margin, and age of company. Fixed effects technique has been applied to find out the results of explanatory variables. The result of this study reveals that number of bank branches, economic growth (GDP) and age of company had positively and statistically significant influence on private bank deposit growth; whereas, deposit interest rate and net interest margin are negative and statistically significant influence on deposit growth. Whereas loan to deposit ratio had negative and insignificant influence on private commercial bank deposit growth. The author recommended to the stockholders and users of the banking industry to expand number of branch and create appropriate awareness mechanisms for the society.

Gerawork (2016), also investigates the factors that affect deposit mobilization and the associated costs of deposit mobilization in Ethiopian private banks. This study adopts mixed approach to gather the data. He gathered primary data using questionnaire. This study used purposive sampling technique to collect data from primary sources. This study used also the secondary sources of data from annual reports of all private commercial banks of Ethiopia, data from National Bank of Ethiopia (NBE) and from Central Statistical Authority (CSA). This study used time series data from 2000-2014 for analysis made using Classical linear regression method. The result of the study reveals that Age dependency ratio, Investment and money supply, are the most significant factors of deposit mobilization activity. The other variable such as Per capita income has insignificant power to influence the dependent variable.

## 2.5. Summary of Literature and Knowledge Gap

To sum up, the literature reviewed above; this study was focused on empirically examining private commercial bank's deposits growth as the first objective and second objective identify the determinants of deposit growth based on the above theoretical perspectives and prior research works. Several explanatory variables have been used in the prior literatures. However, all of them have not been used simultaneously in one study.

The existing paper examines the deposit growth of commercial banks in one sort of view that factors influence it in the developed country context. But there have been few comprehensive empirical examinations of macroeconomic and bank specific factors on deposit growth of Ethiopian private commercial banks. Therefore, this paper has a look at desires to comprehensively examine macro-economic and bank specific factors on deposit growth of Ethiopian private commercial banks from 2009/10 to 2018/19. To empirically examined deposit growth of Ethiopian private commercial banks both macro and bank specific variables have been considered. Among others, real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate have been considered.

Based on the above theoretical as well as empirical review, deposit is the major resources for all commercial banks, since their objective is getting more deposits to meet the required loan for credit customers of banks and then to stay profitable. It also revealed that banks deposit growth can be affected by different factors such as macroeconomic and bank specific factors. While this study focused on some of macroeconomic and bank specific factors affecting private commercial banks deposit growth in Ethiopia. Theories on commercial banks deposits are well available in various literatures. But the empirical studies on bank deposit are rarely available especially in Ethiopian private commercial banks. According to the review, most of the empirical studies done on the area of commercial bank deposit and its determinants on Commercial Bank of Ethiopia (CBE). As the result of this, bank deposits become a challenge to private commercial banks and investigating the factors influencing it becomes crucial.

Based on socio-economic factors of the individual countries, an important gap still exists in the empirical literature about deposit growth and its determinants. Some of the studies cited above suggest that commercial banks deposit growth is determined both by bank specific factors and macroeconomic factors. Some of the studies given more attentions to the macroeconomic

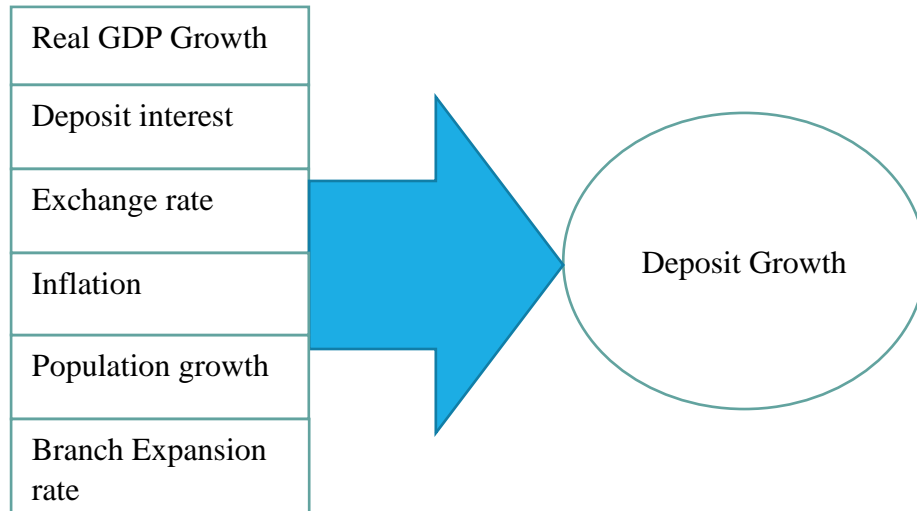
determinants rather than bank specific and the significance of the determinants identified by the studies were completely different. Thus, the researcher concludes that there was no perfect and generally expected relationship between the dependent and independent variables in all of the studies.

To the knowledge of the researcher, there were a few empirical studies done regarding to the determinants of deposit growth in the case of Ethiopian private commercial banks. Since Ethiopian private commercial banks are in the growth stage, several determinants were not included and analyzed well. It is an essential of identifying the important determinants of private commercial bank deposits growth and its influence on the growth of deposit by making empirical investigation.

And finally, this study was different from previous works done by others; specifically, it was examined six determinants of bank deposit growth in Ethiopian private commercial banks. Studies conducted on Ethiopian private commercial banks did not include exchange rate factor of deposit growth. This study also considered ten years financial data for ten private commercial banks by employing explanatory research design. The focus is on bank deposits growth in Ethiopian private commercial banks, and its determinants. The rationale for this selection of Ethiopian private commercial banks as evidence is the smaller share of bank deposits are on the hands of private commercial banks. Therefore, they are mostly exposed to this issue than CBE.

## **2.6. Conceptual Framework**

According to Mugenda and Mugenda (2005), a conceptual framework helps the reader to quickly understand the proposed relationships between variables in the study. Below conceptual framework on factors affecting deposit growth of private commercial banks in Ethiopian has been discussed. According to Bryman and Bell (2007), the variables are referred to as the building blocks of theory. The conceptual framework comprises of six independent variables which the researcher thinks had an effect on deposit growth (Figure 2.1).



**Figure 2. 1: Conceptual framework**

Source: Author's own formulation from theoretical and empirical literatures

**Table 2. 1 Variable Descriptions**

<b>Variables</b>	<b>Symbol</b>	<b>Expected sign</b>	<b>Descriptions and Measurements</b>	<b>Source</b>
<b>Dependent variable</b>				
Deposit growth	DG		Annual deposit growth rate of commercial banks	Annual report of private commercial banks
<b>Explanatory variables</b>				
<b>Macro-economic variables</b>				
Real GDP Growth	RGDP	+	Annual real GDP growth rate of the country	National Bank of Ethiopia
Deposit interest rate	DR	+	The minimum average annual deposit interest rates on deposits are taken in to account	NBE
Exchange rate	EXR	-	Average annual exchange rate of USD to Ethiopian Birr (Official)	NBE
Inflation	I	+	Measured as inflation rate (the annualized percentage change in a general price index, usually the consumer price index)	NBE
Population growth	PG	+	Annual population growth rate of the country	Central Statistics Agency/World Development Indicators
<b>Bank Specific Variable</b>				
Branch expansion rate	BER	+	Annual branch expansion or growth rate of each private commercial banks	NBE

## **CHAPTER THREE: RESEARCH METHODOLOGY**

This section contains research philosophy, research approach, target population, sample size, sampling techniques, sources of data, data collection methods, methods of data analysis, models specification and assumption tested.

### **3.1. Research Philosophy**

According to Creswell (2009), the problems studied by positivists' claims reflect a need to examine causes that influence outcomes, such as the variable that constitute hypotheses and research questions. In addition to this, the author also states in positivistic paradigm, an individual begins with a theory, collects data that either supports or refutes the theory, and then makes necessary revisions before additional tests are conducted. In the quantitative scenario, the researcher has tested a theory by specifying a narrow hypothesis and the collection of data to support or refute the hypothesis. Since the study mainly focuses on quantitatively examining the interaction of variables from the extant literature, the positivists' paradigm has been suitable choice because the objective of this study was to examine the cause and effect relationship between the dependent variable (deposit growth) and explanatory variables (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) and thereby it provides quantitative patterns.

### **3.2. Research Approach**

According to Creswell (2009), the choice of research approach depends on objectives that the researchers want to achieve. The three types of research approach are qualitative, quantitative and mixed (both qualitative and quantitative) research approach. Qualitative research approach is a means for exploring and understanding the meaning of individuals, or groups attribute to a social or human problem. Quantitative research approach is a means for testing objective theories by examining the relationship among variables, while mixed research approach associates both quantitative and qualitative forms. Since the objective of this study was to examine the causal relationship between deposit growth and its determinants (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate), the quantitative research approach was employed.

### **3.3. Research design**

According to Creswell (2009), there are three types of research design, these are descriptive research design, exploratory research design and explanatory research design. Descriptive research design aims to provide an accurate and valid representation of variables that are relevant to the research question. The main aim of exploratory research is to identify the boundaries of the environment in which the issues, opportunities or situations of interest are likely to reside and to identify the silent factors or variables that might be found there and be of relevance to the research. In explanatory research design the main aim is to identify any causal links between the factors or variables that pertain to the research problem. Since the main objective of this study was to examine the cause and effect relationship between the determinants of deposit growth (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) and private commercial bank's deposit growth, the explanatory research design was employed for this study.

### **3.4. Target Population, Sample Size and Sampling Techniques**

The target population of this study was private commercial banks in Ethiopia. This study covered all private commercial banks which have ten years financial data (from 2009/10 to 2018/19) at the time of data collection on variables desired to investigate. Therefore, the researcher purposively selected ten private commercial banks, out of the sixteen private commercial banks that fulfilled financial statements from the period 2009/10 to 2018/19, due to this reason the researcher used purposive sampling technique.

Sampled banks were: -



**Table 3. 1: List of sampled banks**

S/N	Name of banks	Bank Address	License Date G.C.	Sector
1	Awash international Bank	Ethiopia	1994	Banking
2	Dashen Bank	Ethiopia	1995	Banking
3	Bank of Abyssinia	Ethiopia	1996	Banking
4	Wegagen Bank	Ethiopia	1997	Banking
5	United Bank	Ethiopia	1998	Banking
6	Nib International Bank	Ethiopia	1999	Banking
7	Cooperative Bank of Oromia	Ethiopia	2004	Banking
8	Lion International Bank	Ethiopia	2006	Banking
9	Zemen Bank	Ethiopia	2006	Banking
10	Oromia International Bank	Ethiopia	2008	Banking

Source: Author's own formulation

### 3.5. Sources of Data and Methods of Data Collection

The source of data used in this study was secondary source of data through document analysis. The longitudinal or panel data that have been used in this study covers ten private commercial banks having available financial data of ten years from 2009/10 to 2018/19. All of the data were collected from annual report of private commercial banks, National Bank of Ethiopia annual report, Central statistics Agency and World Development Indicators (WDI).

### 3.6. Model Specification

The theoretical and empirical literatures discussed in chapter two suggests that deposit growth of commercial banks had link with real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate. The empirical framework of the study focused on modeling the determinants of deposit growth of private commercial banks in Ethiopia. A modified version of the deposit growth determinants model was adopted to evaluate the determinants of deposit growth. This study examined the following determinant variables of deposit growth: real GDP growth (RGDP), deposit interest rate (DR), exchange rate (EXR), inflation (I), population growth (PG) and branch expansion rate (BER). This study examined the determinants of private commercial bank's deposit growth in Ethiopia; the model used by (Bargicho, 2015; Joel, 2008; Nishat & Nighat, 2019; Teshome, 2017), was adopted. Generally, this model is specified as:

$$DG_{it} = \beta_0 + \sum \beta_i X_{it} + \varepsilon_{it}$$

The General Form of the Equation is:

$$DG_{it} = F(RGDP, DR, EXR, I, PG, BER)_{it} \dots\dots\dots 3.1$$

Where;

DG-----Deposit growth of private commercial banks

RGDP-----Real GDP growth

DR-----Deposit interest rate

EXR-----Exchange rate

I-----Inflation

PG-----Population growth

BER-----Branch expansion rate

Therefore, the Specified Model used for this study has been presented as follows:

$$DG_{it} = \beta_0 + \beta_1 (RGDP_{it}) + \beta_2 (DR_{it}) + \beta_3 (EXR_{it}) + \beta_4 (I_{it}) + \beta_5 (PG_{it}) + \beta_6 (BER_{it}) + \varepsilon_{it} \dots\dots\dots 3.2$$

Where:

DG = Deposit growth

$\beta_0$  = Coefficient of intercept (Constant term)

$\beta_1$  = Coefficient of Real GDP growth rate

$\beta_2$  = Coefficient of Deposit interest rate

$\beta_3$  = Coefficient of Exchange rate

$\beta_4$  = Coefficient of Inflation rate

$\beta_5$  = Coefficient of Population growth rate

$\beta_6$  = Coefficient of Branch expansion rate

$i = 1 \dots 2 \dots 10$  (Private commercial banks)

$t = 1 \dots 2 \dots 10$  years (2009/10----2018/19 years)

$\varepsilon$  = the error term

Therefore, regression coefficients (estimated) measure how much units of deposit growth (DG) change with a unit change in the independent variables included in the model.

### 3.7. Assumptions tested

- i. No autocorrelation between the errors. This means the value which the random term assumed in one period does not depend on the value which it assumed in any other period.
- ii. No 'perfect multicollinearity between independent variables. That is, no explanatory variable can be written as a linear function of other explanatory variables.

- iii. There is no heteroskedasticity problems. This means the variance between the residual terms should be constant. These CLRM assumptions and other diagnostic tests have been tested (the details of test results is presented in chapter 4).

### **3.8. Method of Data Analysis**

The collected data was analyzed by employing both descriptive and inferential statistics. Ordinary Least Square (OLS) regression technique was employed to determine the relationship between the multiple independent variables (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) and the dependent variable (Deposit growth). One regression equation was used to test the hypotheses constructed in relation to both macro-economic and bank-specific determinants and deposit growth. The collected panel data was regressed by using STATA statistical software and regression outputs have been analyzed. On top of this, MS Excel 2010 was also used to compute and feed convenient data into STATA. The panel data has been used and hypotheses were tested and analysis of the results was made based on the panel model regression output. First, data was tested to ensure the validity of classical linear regression model (CLRM) assumptions. Second, test of the hypotheses that were previously developed in chapter one was performed based on the general estimated model which was helpful to examined the relationship between the deposit growth of private commercial banks in Ethiopia and its determinants.

### **3.10. Description and Measurement of Variables**

#### **3.10.1. Deposit growth**

In this study, private commercial banks deposit growth has been used as the dependent variable. Deposit is one of the resources commercial banks highly motivated to mobilize and the most liquid money that is found in the treasury of the bank and which is ready to be borrowed in need of the fund (James & Tories, 2008). It is the proxy as percentage of annual deposit growth or deposit growth rate of private commercial banks in Ethiopia. In other words, deposit growth is measured as total deposit (saving and time deposit) at year t minus total deposit at year t-1 divided by total deposit at year t-1 of each commercial banks over the last ten years. An increase in deposits enhances availability of credit, stabilizes interest rates, investment and results to growth in an economy. This measure was preferred because it gives annual percentage of deposits collected by private Commercial banks. A large portion of commercial banks asset

base is often financed by its deposits. For instance, a commercial banks ability to lend more loans to its customers is determined by the size of its deposits. The growth of the bank is therefore subject to its ability to mobilize more deposit at cheaper cost from the general public.

### **3.10.2 Real GDP growth**

Real GDP growth is one of the explanatory variables commonly used as determinants of economic growth. Gross Domestic product (GDP) refers to the total market value of all final goods and services produced within a country in a given period of time, usually a fiscal year. It is also considered as an estimate of the total money value of all final goods and services produced in a given year by factors of production owned by a particular country's residents. Jagadeesh (2015), point out that GDP growth results in an increase of aggregate savings. Countries with higher GDP growth rates are expected to have higher savings than countries with lower growth rates. GDP is calculated by adding up the value-added at each stage of production (deducting the cost of produced inputs and materials purchased from an industry's suppliers (Jim. 2008). Real GDP growth is measured based on annual real GDP growth rate. It was expected that there was positive relationship between GDP growth and Bank's deposit. The lifecycle theory of saving and consumption predicts that changes in an economy's rate of economic growth will affect its aggregate saving rate.

### **3.10.3 Deposit Interest rate**

The price paid by banks on deposited money to its customers. The borrower then enjoys the benefit of using the assets ahead of the effort required to obtain them. Declining deposit rates therefore will tend to influence deposit growth negatively. A positive relationship is therefore expected between deposits growth and the yield on these deposits. It is also worth noting that the effect of interest rate may also be explained by the inflation effect, that is assuming nominal rates of interest are constant, and a rise in the inflation rate lowers the real cost of borrowing which in turn increases consumer expenditure and lowers the level of deposits. The central bank's policy on interest rate is setting the minimum bank deposit rate, currently at 7%, while the banks are free to pay above the minimum and to set their own lending rates (NBE Annual Report, 2018). Real interest rate is nominal interest rate minus inflation rate. Mahdi and Mohammad (2010) said that negative real interest rate condition, people withdraw their resources from banking system. According to Mahdi and Mohammad (2010), Some research supposed that decrease in deposit interest rate could decrease deposits (in its extensive

definition including savings and time deposits). Therefore, it states that the interest rate and deposit of the banks have positive relationship.

### **3.10.4 Inflation**

Inflation is a sustained rise in the general level of prices – the price level. The inflation rate is the rate at which the price level increases. As Deaton (1991), explained inflation is measured alternatively by Consumer price index. The first theory he assumed that greater uncertainty should raise savings since risk-averse consumers set resources aside as a precaution against possible adverse changes in income and another factor. Hence inflation may increase precautionary savings by individuals. Precautionary saving is additional saving that result from the knowledge that the future is uncertain (D. Carroll, 2006). The second theory was, inflation can influence saving through its impact on real wealth. As inflation accelerates, deposits become less attractive, depending on the interest rate. In this case, the assumption would be that as deposit interest rates rise, deposits would increase in principle as well. The narrower the spread between deposit rates and inflation, the less attractive it should be to hold deposits above the required level. Savings may rise in inflationary environment if consumers mistake an increase in the general price level for an increase in some relative prices and refrain from buying (Deaton, 1991). Different studies show varying results regarding the directional relationship between inflation and deposit volumes.

### **3.10.5 Exchange rate**

For the major net importing country like Ethiopia, variability of the exchange rate of the local Ethiopia money (Birr) to foreign currency values is enormous. This is the number of units of foreign currency that can be purchased for one unit of the domestic currency. Exchange rate is also known as the rate between two currencies and specifies how much one currency is worth in terms of the other. An exchange rate quotation is given by stating the number of units of "term currency" or "price currency" that can be bought in terms of 1-unit currency, also called base currency. Bilateral exchange rate involves a currency pair while effective exchange rate is the weighted average of a basket of foreign currencies and can be viewed as an overall measure of the country's external competitiveness. The National Bank of Ethiopia (Central Bank) follows a managed floating exchange rate regime where the local currency Birr is pegged to the US Dollar. Accordingly, drastic movements in the nominal exchange rate is not expected. Birr continued to depreciate but at a very slow rate and it reached 28.19/USD at the end of 2018.

### **3.10.6 Population Growth**

Population growth is simply overall annual increase in population of the country. Population growth expand the ratio of workers to retirees, but also the ratio of children to adults and saving may be decreased more by latter than it is increased by the former. The net effect depends on the costs and benefits of children, a balance that may itself change (from net benefit to net cost) with economic growth (Deaton, 1989). In this study, population growth is measured as annual population growth rate, which is total population at year  $t$  minus total population at year  $t-1$  divided by total population at year  $t-1$ . In particular, in slow-growing economies the positive "income effect" of faster population growth is likely to dominate the "dependency effect," and savings in the aggregate will be increased. (Saving is assumed to be higher out of transitory income, so upward deviations of income due to population growth can have a stimulating effect on saving). As population increase the working force also increase and then the number of savers increase final saving will increase (Shekur, 2008). This study considered there is a positive relationship between increment of population growth & bank's deposit growth.

### **3.10.7 Branch expansion rate**

Branch expansion means the number of new branches opened by commercial banks annually. It is measured as annual branch expansion rate. Increase the number of commercial bank branches have an effect on getting many customers particularly those in far remote areas who are unbanked society. As more and more people are accessible to banking system, more people would be willing to deposit their idle cash holding or at least a part of their wealth into deposits. More recently the branch expansion by the existing banks is fast increasing to reach out remote locations to seize the resources available particularly deposits. According to the article on NBE's magazine (2012), Ethiopia has low geographic and demographic penetration of bank branches. It is expected that banks make decisions on expanding their facilities by considering factors such as level of competition, deposit potential, regional income and existence of road and vehicles.

## CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

This section analyzed the determinates of deposit growth in the case of Ethiopian private commercial banks. The analysis was made by using ten years balanced panel data of ten Ethiopian private commercial banks from the period 2009/10 to 2018/19. Therefore, the following section presents and discusses both the descriptive statistics and inferential statistics results, including several assumption tests and potential estimates.

### 4.1. Descriptive Analysis

**Table 4. 1: Summary of descriptive statistics of variables**

Variables	Observation	Mean	Std. Dev.	Min	Max
Deposit Growth	100	0.257	0.108	0.014	0.458
Real GDP Growth	100	0.105	0.016	0.075	0.125
Deposit interest rate	100	0.053	0.010	0.04	0.07
Exchange rate	100	0.056	0.014	0.035	0.079
Inflation	100	0.094	0.029	0.028	0.146
Population Growth rate	100	0.031	0.012	0.012	0.052
Branch expansion rate	100	0.100	0.068	0	0.281

Source: STATA output results 2020

The above table 4.1, shows the descriptive statistics (mean, standard deviation, minimum and maximum value) of a complete set of variables. The longitudinal dataset overview statistics of this study include a set of variables for ten Ethiopian private commercial banks over the 2009/10-2018/19 periods. A data sets of 100 observations provides the basis for descriptive analysis.

As shown in the above descriptive statistics table, the average deposit growth percentage of private commercial banks for the last ten years was 0.257. The reason for this average positive increment may attribute to increase in the users of banking services and/or intermediation functions of private commercial banks in the country for the last ten years. The standard deviation of deposit growth of sampled private commercial banks for the same period was 0.108. This means the average dispersion of each observation from the mean value of 0.257 is 0.108. Furthermore, the maximum deposit growth rate of 0.458 was achieved by Bank of Abyssinia in 2017 while the minimum deposit growth rate of 0.014 was achieved by Zemen Bank in 2009.

The average real GDP growth rate for the last ten years was 0.105 and the standard deviation for real GDP growth rate was 0.016. This indicates that there was little dispersion on the real GDP growth rate towards its mean value. The maximum and minimum value of real GDP growth rate for the last ten years was 0.125 and 0.075 respectively.

The mean value of deposit interest rate for the last ten years was 0.053. The standard deviation for deposit interest rate was also 0.010; this implies that there was little variation of each observations of deposit interest rate from its mean value over the periods under study. Thus, this indicates that there was no competition between commercial banks to attract customers with a motive of return on deposit under the study period. The minimum deposit rate of 0.04 was occur in 2009 during the study period and the maximum deposit rate was 0.07 for the last ten years.

The average value of exchange rate was around 0.056 and the standard deviation for exchange rate was 0.014, this shows that there was also little dispersion of each observation of exchange rate from its mean value during 2009/10-2018/19. The maximum and minimum value of exchange rate of Dollar to Birr for the last ten years was 0.079 and 0.035 respectively.

The average inflation rate of Ethiopia for the last ten years was 0.094 and the standard deviation of 0.029 indicates that there were variations of each observations from its mean value of inflation. The maximum inflation of 0.146 was occur in 2017 while the minimum inflation of 0.028 was occur in 2009.

The mean value of the population growth rate over the period under the study was 0.031. The standard deviation of population growth rate of 0.012 indicates that the average dispersion of each observation from its mean. The maximum population growth rate of 0.052 was occur in 2014 while the minimum population growth rate of 0.012 was occur in 2018.

The average branch expansion rate over the period under the study was 0.1. On average each observation of branch expansion rate is varied by 0.068 from its mean value of 0.1. This indicates that there was high variation of branch expansion rate towards its mean. As shown in the above descriptive statistics table, there were higher differences between private commercial banks towards branch expansion. This shows that the effort of some banks to expand branching network. The maximum branch expansion rate of 0.281 was made by Oromia International bank in 2016 while the minimum branch expansion of zero was recorded by Zemen Bank in 2009. From this it can conclude that there is high difference between private commercial banks towards expanding their branch networks.



## 4.2. Correlation Analysis

A correlation is the degree to which two or more variables are associated with or related to each other. Correlation analysis was undertaken to check whether the variables move together or not in the same direction. A correlation coefficient indicates that the strength or degree of association or relationship between two variables. According to (Brooks, 2014), the most widely used bi-variant correlation statistics is the Pearson product moment coefficient, commonly called the Pearson correlation was employed in this study. A correlation coefficient between two variables ranges from +1 (i.e. perfect positive relationship) to -1 (i.e. perfect negative relationship). If the correlation coefficient is 0, there is no correlation or association between variables. The following table 4.2, shows the correlation results for dependent variable (deposit growth) and independent variables (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate):

**Table 4.2: Pearson Correlation results**

Variables	DG	RGDPG	DR	EXR	I	PGR	BER
<b>DG</b>	1						
<b>RGDP</b>	0.8022	1					
<b>DR</b>	0.4467	0.5367	1				
<b>EXR</b>	0.5648	-0.591	-0.5407	1			
<b>I</b>	0.6802	0.5076	0.5047	-0.6364	1		
<b>PGR</b>	0.6738	0.3918	-0.0398	-0.2234	0.4112	1	
<b>BER</b>	0.7761	0.6166	0.185	-0.3711	0.4616	0.651	1

Source: STATA output results 2020

From the above table 4.2, it shows that both macroeconomic variables and bank specific variable are directly or positively correlated with deposit growth of private commercial banks in Ethiopia. As shown above, there is no perfect positive relationship between the dependent variable i.e. deposit growth and independent variables (such as real GDP growth, deposit interest rate, exchange rate, inflation, population growth, and branch expansion rate). Similarly, there is no also perfect or high association among independent or explanatory variables (such as real GDP growth, deposit interest rate, exchange rate, inflation, population growth, and branch expansion rate). If the variables were highly correlated, the regression result for the

study may become invalid. Since, all the correlation coefficients are below the tolerable level or the maximum threshold which is 0.8, it can conclude that there is no correlation problem or highly correlated variable with one another. Even though, there is a problem to test correlation assumption due to lack of clear cut-off point to determine the existence of near correlation problem, Cameron & Trivedi (2005) argued that correlation coefficient below 0.8 may not cause serious correlation problem. Similarly, Brooks (2008), also states that an explanatory variable is not highly correlated with the dependent variable, if its correlation coefficient is not more than 0.8. The positive correlation figure shows that when the mentioned explanatory variables increase or decrease deposit growth will increase or decrease. However, the results in the above correlation matrix show that there is no any correlation coefficient which exceeds 0.8. Thus, there was no such serious pair-wise correlation problem. This means, problem of correlation did not occur among the explanatory variables, and between the dependent variable and independent variables.

### 4.3. Assumption Test

#### 4.1.1. Fixed Effects versus Random Effects Model

In panel data analysis there is also the challenge of which estimator is best applied or used for the model. The commonly used estimators for panel data analysis are fixed effects and random effects. To determine which estimator to best applied for this model, the correlated random effects- Hausman test was employed. If the probability value (p-value) for Hausman test is less than the alpha value of 0.05, the Hausman test would be statistically significant, and the null hypothesis would be rejected in favor of the alternative. Rejecting the null hypothesis implies that the fixed effects estimator is applied to the model, the inverse is also true. The result for correlated random effects- Hausman test is presented below in table 4.3. To perform this, the Hausman test null and alternative hypothesis were formulated as follows:

Ho: Individual effects in the model are not correlated with explanatory variables (random effect)

Ha: Individual effects in the model are correlated with explanatory variables (fixed effect)

**Table 4. 3: Correlated random Effects - Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section fixed	2.57	6	0.008601

Source: STATA output results 2020

The above table 4.3, shows that the Chi- Sq. statistics for Hausman test is 2.57 and the probability value (p-value) is 0.008601, this shows that the p-value for Hausman test is statistically significant. Therefore, the null hypothesis (Individual effects in the model are not correlated with explanatory variables) was rejected, this indicates that individual effects in the model are correlated with the explanatory variables.

#### 4.1.2. Unit Root test

Performing unit root test is common at macro-level data analysis to accommodate non stationary. The time series characteristics of the panel data were assessed for unit root tests to examine the stationarity of each variable. Stationarity is a condition of time series which has constant mean and variance distribution overtime (Gujarati, 2003). It simply measures how a variable is related with its previous value. Testing stationarity of the data is important, because regressing non-stationary time series may lead to spurious regression, in which a model has high R square, but there is no meaningful relationship between the variable's value overtime. The stationarity of variables has been performed based on the Levin-Lin-Chu unit-root test. The result for Levin-Lin-Chu unit-root test is presented below in table 4.4. Under this test the following hypothesis were formulated:

Ho: Panels contain unit roots

Ha: Panels are stationary

**Table 4.4: Levin-Lin-Chu unit-root test for panel data**

Variables	Statistics		Number of lags (L)
	t-Static	Prob-value	
DG	-5.2420	0.0000	L(0)
RGDP	-4.7765	0.0000	L(0)
BER	-3.2052	0.0007	L(0)
I	-8.6875	0.0000	L(0)
EXR	-7.2131	0.0000	L(0)
PG	-6.8581	0.0000	L(1)
DR	-3.4126	0.01636	L(1)

Source: STATA output results 2020

As shown in the above table 4.4, the p-value of each variable (DG, RGDP, BER, I, EXR, PG and DR) is less than the alpha value 0.05. This shows that the null hypothesis which is variables are non-stationary has been rejected, because the result shows that p-value of each variable is statistically significant. A rejection of the null hypothesis implied that the series was stationary.

### 4.1.3. Test for Model Specification: - Ramsey Reset Test

Ramsey has proposed a general test of specification error called RESET (regression specification error test) (Gujarati, 2009). Ramsey Reset test is also known as test for model specification because it is helpful to test whether there is or not any omitted variables in the model. The following table shows the result of Ramsey Reset Test for model specification:

**Table 4. 5: Ramsey Reset test**

Ramsey RESET test using powers of the fitted values of DG
Ho: Model has no omitted variables
F (3, 90) = 1.50
Prob > F = 0.2196

Source: STATA output results 2020

In the above table 4.5, Ramsey Reset test's p-value of 0.2196 was found to be statistically insignificant. This indicates that we failed to reject the null hypothesis (model has no omitted variables). In other words, there was no omitted variables in the model.

### 4.1.4. The mean value of the residual term is zero

One of the Classical linear regression model assumption is that the mean value of the residual term should be zero. The assumption is not violated if the regression model has constant term (Brooks, 2014). In other words, this assumption is violated if the model does not have constant term. However, in this study the model has constant term. Thus, the first assumption of CLRM is not violated.

### 4.1.5. Test for Normality

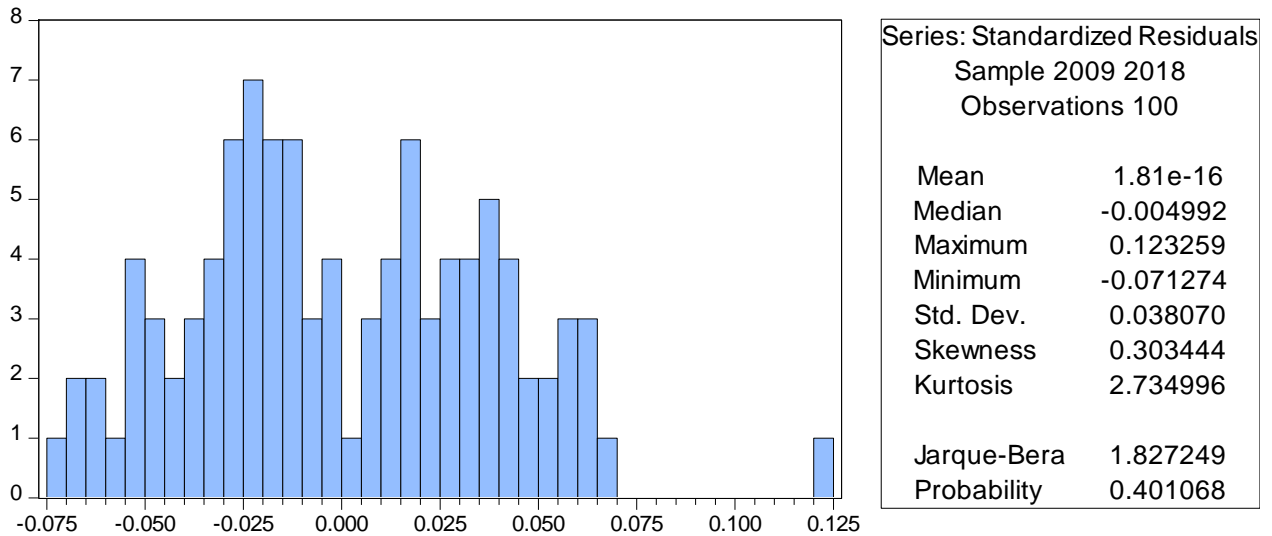
The other important CLRM assumption is normality distribution. The residuals should be normally distributed (Gujarati,2003). One of the most commonly applied tests for normality is the Jarque-Bera (JB) test (Brooks, 2008). If the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic should not be significant. This means that the p-value given at the bottom of the normality test screen should be greater than the alpha value of 0.05 to support the null hypothesis of presence of normal distribution. Any p-value above 0.05 indicates normality. On the other hand, if the test statistic is less than 0.05 which proves significance, then the residuals are not normal. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are close to zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value, and kurtosis measures how flat the tails of the distribution are.

The null hypothesis is that the distribution is normal and the alternate hypothesis is that the distribution is not normally distributed. Therefore, if the null hypothesis is rejected then the distribution is not normally distributed. Under Jarque-Bera, the following hypothesis were tested:

Ho: The data is normally distributed.

Ha: The data is not normally distributed.

**Figure 4. 1: Jarque-Bera test for Normality**



Source: STATA output results 2020

From the above figure 4.1, it can understand that the residuals are normally distributed because p-value of 0.401068 is greater than the alpha value of 0.05. Therefore, it is statistically insignificant. This indicates that it failed to reject the null hypothesis which was residuals are normally distributed. As shown from the above figure 4.1, the Jarque-Bera statistic is 1.827 and the skewness and kurtosis of this test is 0.303 and 2.734 respectively. From this result, it can conclude that the residuals are normally distributed or near to normality.

#### 4.1.6. Test for Heteroscedasticity

The other assumption of CLRM is that the variance of the residual terms should be constant. Thus, heteroscedasticity test was performed based Breusch-Pagan / Cook-Weisberg test. At each level of the predictor variable (s), the variance of the residual terms should be constant. This just means that the residuals at each level of the predictor(s) should have the same variance (homoscedasticity); when the variances are not constant it is said to be heteroscedasticity and

it can lead to the distortion of the findings and overall conclusion. The following table shows the result of Breusch-Pagan / Cook-Weisberg test for heteroscedasticity:

**Table 4. 6: Breusch-Pagan / Cook-Weisberg test for heteroscedasticity**

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of dg
chi2(1) = 0.04
Prob > chi2 = 0.8508

Source: STATA output results 2020

From the above table 4.6, the probability value for Breusch-Pagan heteroskedasticity test is 0.8508, which is statistically insignificant because it is beyond the alpha value of 0.05. Thus, it failed to reject the null hypothesis which was hypothesized as there is constant variance. Therefore, heteroscedasticity problems have not been occurred in this study. In other words, the residual terms have constant variance.

#### 4.1.7. Test for Multicollinearity

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another (Brooks, 2008). However, a problem occurs when the explanatory variables are highly correlated with each other, and this problem is known as multicollinearity. In order to check the presence of collinearity or multicollinearity, variance inflation factor (VIF) test was employed. The following table shows VIF test for multicollinearity:

**Table 4. 7: VIF Result for test of Multicollinearity**

Variable	VIF	1/VIF
RGDP	2.57	0.389497
BER	2.41	0.414722
I	2.22	0.449536
EXR	2.11	0.472953
PG	2.05	0.488065
DR	2.02	0.495377
Mean VIF	2.23	

Source: STATA output results 2020

The above table 4.7, shows the variance inflation factor for multicollinearity test. The VIF indicates whether a predictor has a strong linear relationship with the other predictor(s). Although, there are no fixed rules about what value or cut-off point of the VIF should cause concern. Myers (1990), suggests that a value less than ten is a good value to minimize multicollinearity problem while others state that the tolerable VIF is below four. Thus, the average VIF of this study is 2.23 which is below the maximum cut-off point four. This indicates that there was no perfect or high relationship or association between explanatory variables. Therefore, the null hypothesis which was multicollinearity exist has been rejected.

**4.1.8. Test for Serial Autocorrelation**

Autocorrelation or serial correlation shows the degree of relationship between the current residual and previous residual values (Brook, 2008). The Breusch-Godfrey test for serial correlation was employed to test the correlation or association between the residuals over time. The following Breusch – Godfrey test Hypothesis were formulated:

Ho: There is no autocorrelation in error term

Ha: There is autocorrelation in error term

**Table 4. 8: Breusch-Godfrey LM test for serial correlation**

Breusch-Godfrey LM test for autocorrelation			
lags(p)	chi2	Df	Prob > chi2
1	50.359	1	0.063

Source: STATA output results 2020

As shown in the above table 4.8, the Breusch-Godfrey serial correlation LM test result shows that p-value is 0.063 and the Chi-Square statistic is also 50.359. Since p-value is greater than the alpha value of 0.05, it failed to reject the null hypothesis (there is no serial autocorrelation in error term). Based on the above result, it can conclude that there was no high serial autocorrelation between residuals over time.

**3.4. Regression Results and discussions**

In this section, the empirical results of the panel multiple linear regression model that determines deposit growth of private commercial banks of Ethiopia have been discussed. The purpose of regression analysis in this study is to examine the importance of each independent variable in explaining the variation of deposit growth of Ethiopian private commercial banks. The analysis is made based on the panel data collected from annual report of each private

commercial banks, National Bank of Ethiopia, world economic indicator and central statistics agency over the last ten years (from 2009/10-2018/19). The relationship between the dependent variable and independent variables is regressed using econometric software STATA 14. Therefore, this has been measured by the following model:

$$DG_{it} = \beta_0 + \beta_1(RGDP_{it}) + \beta_2(DR_{it}) + \beta_3(EXR_{it}) + \beta_4(I_{it}) + \beta_5(PG_{it}) + \beta_6(BER_{it}) + \varepsilon_{it}$$

**Table 4. 9: The Panel Multiple Linear Model Regression Results**

Source	SS	Df	MS		Number of observations = 100	
					F (6, 93) =105.81	
Model	1.01849137	6	0.169748561		Prob > F = 0	
Residual	0.149201722	93	0.00160432		R-squared = 0.8722	
					Adj R-squared = 0.864	
Total	1.16769309	99	0.01179488		Root MSE = 0.04005	
DG	Coef.	Std. Err.	T	P>t	[95% Conf. Interval]	
RGDP	2.576731	0.4015	6.42	0.000	1.779431	3.37403
DR	1.117136	0.548136	2.04	0.044	.0286468	2.205626
EXR	0.0162188	0.4147293	0.04	0.969	-.8073514	.839789
I	0.7479199	0.2021831	3.70	0.000	.3464244	1.149415
PG	2.533947	0.464683	5.45	0.000	1.611179	3.456715
BER	0.3814068	0.0917665	4.16	0.000	.1991768	.5636369
Constant term	-0.2639494	0.0571215	-4.62	0.000	-.3773815	-.1505173

Source: STATA output results 2020

As shown in the above regression output table 4.9, the beta coefficients for real GDP growth, deposit interest rate, inflation, population growth and branch expansion rate are positive and significant while the beta coefficient for exchange rate is positive but insignificant. Beta indicates that the level of influence of each explanatory variable (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) on the dependent variable (deposit growth). P-value indicates at what percentage or precession level of each explanatory variable is significant. R-squared value indicate that the explanatory power of the model. Adjusted R-squared value shows the explanatory power of the model with the loss of degrees of freedom associated with adding extra variables. It is helpful to indirectly see the explanatory powers of the models.



Therefore, the estimation results determined based on OLS from the panel multiple linear regression model used in this study is presented in the above table 4.9. As shown in table 4.9, the R-squared statistics and the adjusted-R squared statistics of the model were 87.22% and 86.40% respectively. The R-squared of this study indicates that 87.22% of the variation of the dependent variable (deposit growth) was explained by the changes in the independent variables (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate). Thus, it can be concluded that all the independent variables used in this study collectively, were good explanatory variables of deposit growth of private commercial banks or R-squared of 87.22% is an indication that the model is a good fit. However, the remaining 12.78% variation in Ethiopian private commercial bank's deposit growth was caused by other factors that were not included in the model. Hence, the p-value of F-statistics is zero, the null hypothesis was rejected and the model was significant, which enhanced the fitness of the model. In other words, all the independent variables were jointly significant in causing variation in private commercial bank's deposit growth. This shows that there was significant relationship between the dependent variable and explanatory variables.

As it can be seen from the above regression output, real GDP growth (RGDP), deposit interest rate (DR), inflation (I), population growth (PG) and branch expansion rate (BER) had statistically significant and positive effect on deposit growth of private commercial banks. Whereas, exchange rate (EXR) had statistically insignificant but positive effect on deposit growth of Ethiopian private commercial banks. The coefficient sign of real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion were in-line with the expectation except exchange rate.

In general, macro-economic variables such as real GDP growth, deposit interest rate, inflation, and population growth have statistically significant effect on deposit growth of Ethiopian private commercial banks. The bank specific variable (branch expansion rate) also has statistically significant effect on deposit growth of Ethiopian private commercial banks. Thus, based on the above regression output, the Panel linear regression model for this study could be written as follows:

$$DG_{it} = -0.263 + 2.576(RGDP_{it}) + 1.117(DR_{it}) + 0.016(EXR_{it}) + 0.747(I_{it}) + 2.533(PG_{it}) + 0.381(BER_{it})$$

(0.057)    (0.401)    (0.548)    (0.414)    (0.202)    (0.464)    (0.091)

### **3.5. Discussion of Results**

In this section, the relationship between each independent variable (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) and the dependent variable (deposit growth of private commercial banks in Ethiopia) were discussed as follows on the basis of the panel model regression result from this study.

#### **3.5.1. Real GDP growth and Deposit Growth**

Real GDP growth of the country was one of the macro-economic variables that determine the deposit growth of private commercial banks in Ethiopia. In this study, real GDP growth was measured by annual GDP growth rate in Ethiopia. As per the regression result, the coefficient of real GDP growth and p-value was 2.576 and 0.000 respectively. This shows that real GDP growth has positive and statistically significant effect on deposit growth of private commercial banks. This was expected and conforms to literatures because in growing economy both individuals and companies' income increase. This increase in real GDP leads to increase in earnings (per-capita income) which will then increase deposits of private commercial banks. Thus, a 1 percent change in real GDP growth rate will result in 2.576 units change in deposit growth of private commercial banks. This result is supported by the neo-classical theory of growth and classical theory of interest. Generally, the result of this study was consistent with the findings of (Girma, 2005; Belay, 2015; Bargicho, 2015), on Ethiopian commercial banks, and Metin and Ozcan (2005) on Middle East and North African commercial Bank. Therefore, the null hypothesis (real GDP growth has not significant effect on private commercial bank's deposit growth in Ethiopia) was rejected.

#### **3.5.2. Deposit Interest Rate and Deposit Growth**

Deposit interest rate is a price paid on the amount of money deposited in financial institutions or banks to depositors. As one of the factors that affect deposit growth of private commercial banks, it was hypothesized that deposit interest rate had positive and significant effect on private commercial bank's deposit growth. The results of this study also show that deposit interest rate had positive and statistically significant effect on deposit growth of private commercial banks in Ethiopia. It was found that a 1 percent change in deposit interest rate will lead to a 1.117-unit change in deposit growth of private commercial banks, holding other things constant. The probability value of 0.044 indicated that this variable was significant for deposit

growth of private commercial banks in Ethiopia because it is below the alpha value of 0.05. Therefore, the null hypothesis (Deposit interest rate has not significant effect on deposit of private commercial banks in Ethiopia) was rejected. The increase in deposit rate on deposits is expected to increase the deposits of private commercial banks as people are better attracted to get the advantage of higher interest payments on the deposits they held in private commercial banks. This finding supports the Classical Theory of Interest rate. Herald and Heiko (2009), stated that interest rate as one of the determining factors for commercial banks deposits growth, it has positive and significant effect. Philip (1968), also states that the offering of attractive interest rate on bank deposits may be considered to have had a beneficial effect. This result was also consistent with (Eustacius & David, 1995; Herald & Heiko, 2009). The result is inconsistent with (Gebre, 2019).

### **3.5.3. Inflation and Deposit Growth**

Inflation was one of the macro-economic factors that affect deposit growth of private commercial banks in Ethiopia. According to the regression result, the coefficient for inflation was 0.747 and the value of p was 0.000. This shows that inflation had positive and statistically significant effect on deposit growth of private commercial banks. This indicates that a change in inflation by 1 percent leads to a change in deposit growth of commercial banks by 0.747 units. However, different studies showed varying results regarding the directional relationship between inflation and deposit growth. In many literatures, the effect of inflation was not clearly defined but in this study the relationship between deposit growth and inflation found to have positive and significant. As Deaton (1991) explained precautionary saving increase at the increase of inflation up to certain point. This may be due to lack of entrepreneur skill of the society and lack of other alternative investments in the country or may be the risk-averse mentality of most depositors. This finding supports the Precautionary theory of saving, Classical interest rate theory and Neo-Classical Growth Theory which state inflation has positive effect on deposits or savings. The finding is also consistency with (D. Carroll, 2006; Elias, 2012; Bargicho ;2015; Gebre; 2019; Athukorala, Prema, & Kunal, 2003). Therefore, the null hypothesis (Inflation has not significant effect on deposit growth) was rejected.

### **3.5.4. Population Growth and Deposit Growth**

Population growth is also one the macro-economic variables that determine the deposit growth of private commercial banks in Ethiopia. It was also measured by the annual population growth

rate in Ethiopia. It was found to have positive and statistically significant effect on deposit growth of private commercial banks in Ethiopia. The probability value of 0.000 implies that the coefficient of population growth was significant. Thus, a 1 percent change in population growth leads to 2.533 units change in deposit growth of private commercial banks, being other factors constant. As population increase the working force also increase and then the number of savers increase finally saving will increase (Shekur, 2010). This is supported by the study of (Modigliani, 1986). This finding supports the life cycle theory of population by (Friedman 1957). But the finding was not in agreement with Geda (2015) finding because, he analyzed the impact of population using dependency ratio. Thus, the null hypothesis: population growth has not significant effect on deposit growth of private commercial banks was rejected.

### **3.5.5. Branch Expansion rate and Deposit Growth**

Branch expansion rate is the bank specific factor that affect the deposit growth of private commercial banks in Ethiopia. It was measured by the rate of annually opened branches of private commercial banks in Ethiopia. It was hypothesized that branch expansion has positive and significant effect on private commercial bank's deposit growth. Based on the regression outcome, branch expansion rate found to have positive and statistically significant effect on deposit growth of Ethiopian private commercial banks. The coefficient of 0.381 revealed that, taking other independent variables constant, a 1 percent change in branch expansion rate leads to a 0.381 unit change in deposit growth of Ethiopian private commercial banks. Expanding new branch is helpful to get many customers particularly those in far remote areas who are unbanked society. According to the article on NBE's magazine (2012), Ethiopia has low geographic and demographic penetration of bank branches. Therefore, as more and more people can easily access to banking services, more people would be willing to deposit their idle cash holding or at least a part of their wealth in banks in the form of deposits. This will lead to increase in deposit of private commercial banks in Ethiopia. The expansions of branch network not only reduce transaction costs for depositors but also increase accessibility of banking services especially in remote areas of Ethiopia, and provides other important financial services and increases the awareness of people about banking. Recently, branch expansion by the existing banks is fast increasing to reach out remote locations to seize the resources available particularly deposits. The result of this study was consistent with the findings of (Elias, 2012; Belay ,2015); Bargicho, 2015; Andinet, 2016, & Hailemariam, 2017) on commercial Bank of

Ethiopia. Thus, the null hypothesis (branch expansion has not significant effect on Ethiopian private commercial bank's deposit growth) was rejected.

### 3.5.6. Exchange Rate and Deposit Growth

According to the above regression output exchange rate was found to have positive and insignificant effect on deposit growth of private commercial banks in Ethiopia. The coefficient and p-value were 0.0162188 and 0.969 respectively. This indicates that exchange rate is insignificant factor for deposit growth.

## 3.6. Summary of Findings

In this chapter, the descriptive and inferential statistics results have been discussed. Several assumptions or diagnostic tests such as unit root test, model specification test, multicollinearity test, autocorrelation test, normality test have been also performed to achieve the objectives of this study. In the following table the summary of the expected results and actual or regression results have been summarized as follows:

**Table 4. 10: Summary of Expected results and Actual results**

S. NO.	Independent Variables	Expected sign and effect	Actual Sign and effect
1	Real GDP Growth	Positive and Significant	Positive and Significant
2	Deposit interest rate	Positive and Significant	Positive and Significant
3	Exchange rate	Negative and Significant	Positive and Insignificant
4	Inflation	Positive and Significant	Positive and Significant
5	Population growth	Positive and Significant	Positive and Significant
6	Branch expansion rate	Positive and Significant	Positive and Significant

Source: Author's Summarization from regression result

## CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

In this section, the overall summary of this study, possible recommendations and suggestions for further studies are presented.

### 5.1. CONCLUSION

Deposit is an integral resource of banking sector, and the survival of every commercial banks highly depends on deposit. Deposit has long been regarded as a cornerstone to every commercial bank's growth and development. However, deposit of Ethiopian private commercial banks has historically been low. The main objective of this study was to examine the determinants of deposit growth in Ethiopian private commercial banks. To achieve this objective, the researcher had selected ten private commercial banks in Ethiopia purposely, that fulfilled ten years successive financial data from the period 2009/2010-2018/19. Thus, quantitative research approach, explanatory research design and post positivism research paradigm were employed to examine the relationship between dependent variable i.e. deposit growth and independent variables i.e. real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate. The CLRM assumptions such as heteroskedasticity, normality, multicollinearity, autocorrelation and test of model specification such as Ramsey Reset tests and so on have been performed. OLS estimation technique was employed to estimate the parameters of the model. Descriptive and inferential statistics were also employed to analysis the collected panel data from ten private commercial banks over the last ten years from 2009/10-2018/19.

Based on the finding of this study, it can be concluded that all the independent variables (real GDP growth, deposit interest rate, exchange rate, inflation, population growth and branch expansion rate) used in this study collectively, were good explanatory variables of deposit growth of private commercial banks. R-squared of 87.22% is an indication that the model is a good fit. However, the remaining 12.78% variation in Ethiopian private commercial bank's deposit growth was caused by other factors that were not included in the model. Based on the regression output obtained, it can conclude that real GDP growth, deposit interest rate, inflation, population growth and branch expansion rate are the most important determinants of deposit growth because they have positive and significantly effect on deposit growth of private commercial banks in Ethiopia, while exchange rate had positive but insignificant effect on

deposit growth of private commercial banks in Ethiopia. Generally, this study enables commercial banks and regulators or policy makers to keep control to the issue of deposit growth which is very important to the security of their operation as well as the economy as a whole in the country.

## **5.2. RECOMMENDATION**

This study examined the determinants of deposit growth of Ethiopian private commercial banks. Based on the analysis made and the major findings obtained, the following recommendations are forwarded.

- There should be strong effort by the monetary authorities or policy makers to continuously control and keep stable the economic growth of Ethiopia to increase deposits.
- Private commercial banks should provide competitive and attractive deposit interest rates on selected deposits to enhance deposit growth, keeping sufficient margin of profitability.
- Policy makers or monetary policy authorities should continuously control inflation to enhance deposit growth of private commercial banks in Ethiopia. Increase in inflation up to the point which enhance economic growth can increase deposits. However, unmanaged or abnormal inflation may hinder economic growth and then deposit growth of private commercial banks.
- There should be regulated population growth in Ethiopia. Regulated population growth means an increase in functional labor force that would attract investment and create wealth which would positively affect overall economic growth and then deposits. The concerned authorities should continuously manage or control population growth in Ethiopia. While unmanaged population could hinder economic growth and then deposits.
- Private commercial banks should aggressively expand new branches in remote area and reach the unbanked society to increase deposits. This is due to the reason that the society can easily access banking services and deposit their money at low cost.

### **5.3. Recommendations for Further Studies**

This study has been focused on some macro-economic and bank specific determinants of deposit growth in ten sampled Ethiopian private commercial banks over 2009/10-2018/19 periods. Therefore, future researchers who want to conduct their study in the same topic are recommended to include or examine factors which did not studied under this study such as saving habit of households towards using banking services of private commercial banks, level of education and dependency ratio of the population and consumption of households identified by some literatures to have impact on deposit growth of commercial banks. Thus, a study has to be further strengthened on the significance of these factors on deposit growth of private commercial banks. The researcher also recommends future researchers to take in to consideration both private commercial banks and public commercial bank (Commercial Bank of Ethiopia) to examine the determinants of deposit growth.



## References

- Alabania. (2011). Challenges of commercial banks deposits in Nigeria. *Journal of Accounting and Investment*, 70-75.
- Athukorala, Prema , C., & Kunal , S. (2003). The Determinants of Private Savings in India. *World Development*, 32(3), 491-503.
- Ayalew, H. (2013). Determinants of domestic saving in Ethiopia. *Journal of Economics and International*, 5, 248.
- Baharumshah, A., Thanoon, M , & Rashid, S. (2003). Saving dynamics in the Asian countries. *Journal of Asian Economics*, 13, 827-845.
- Bahredin, A. (2016). Determinants of Commercial Banks Deposit Growth, Addis Ababa University. *Journal of Economics*, 26-45.
- Bargicho, S. (2015). Determinants of commercial bank deposits in ethiopia: a case of commercial bank of ethiopia. *Journal of Finance and Accounting*, 43-49.
- BELAY, H. (2015). Determinants of commercial banks' deposit growth in ethiopia. 39-43.
- Bishop, A. (2006). Saving and Liquidity Constraints. *Econometrica*, 59 (1991), 1221- 1448.
- Boyd, R. (2000). Size and Performance of Banking Firms: Testing the Predictions of Theory. *Journal of Monetary Economics*, 31, 47-67.
- Bris, A., Welch, I., & Zhu, N. (2006). The costs of bankruptcy: liquidation versus reorganization. *The Journal of Investment Management* .
- Brooks, C. (2008). *Introductory Econometrics for Finance* (Second ed.). New York: Cambridge University Press.
- Brooks, C. (2014). *Introduction to Econometrics for finance* (Book, 3 ed.).
- Bryman, & Bell. (2007). *Business Research Methods:2nd edition*. England: Oxford University Press.
- Creswell, J. (2009). Research Design - Qualitative, Quantitative, and mixed Approaches. *Research Design Qualitative Quantitative and Mixed Methods Approaches*. <https://doi.org/10.1016/j.math.2010.09.003>.
- Dadzie, K., Evelyn , W., & Kofi , A. (2003). The Effects of Normative Social Belief Systems and Customer Satisfaction on Rural Savings Programs in Ghana. *Management Decision*, 41(3), 233-240.
- Deaton, A. (1989). Saving and Liquidity Constraints. *Econometrica*, 59(5), 1221-1248.
- Duesenberg. (1949). Relative Income Hypothesis (RIH). *Theories of Savings*.
- Elias, W. (2012). Factors Determining Commercial Bank Deposit: An Empirical Study on Commercial Bank of Ethiopia. *Journal of Accounting and Finance*, 29-34.
- Epapher. (2014). Empirical examine the Determinants of Tanzania's National Savings . *Journal of Economic Development and Accounting*, 54-63.
- Eriemo, N. (2014). Macroeconomic Determinants of Bank Deposits in Nigeria. *Journal of Economics and Sustainable Development*, 5(10), 20-23.

- Erna, & Ekki . (2004). Determinantes of deposit growth in Indonesia. 35.
- FDIC. (2019). *Commercial Bank Failures in the the world*. Nework: FDIC annual report.
- Finger, H., & Heiko , H. (2009). Determinants of commercial banks Deposits in a Regional Financial Center in Lebanon. *IMF Working paper*, 4-9.
- Fredric, M. (2016). Factors affecting the deposit growth of commercial banks in India. *Journal of Finance and Economics*.
- Friedman. (1957). Permanent Income Hypothesis (PIH) . *Theory of savings*.
- Garo, G. (2015). Determinants of Deposit Mobilization and Related Costs of Commercial Banks in Ethiopia. *Journal of Finance and Investment*, 37-42.
- Gebre, T. (2009). Determinants of Private Commercial Banks' Deposit Growth in Ethiopia. *Journal of Accounting and Finance*, 30-38.
- Geda, A. (2015). Will the Government of Ethiopia's policy of saving mobilization be successful? *The lesson from the African Evidence*, 5(2).
- GERAWORK, K. (2016). Determinants of commercial banks deposit mobilization evidence from private commercial banks in ethiopia. *Journal of finance and investment*, 40-45.
- Gunasekara, H. U., & Prasansha , K. (2018). Factors Affecting for Deposit Mobilization in Sri Lanka. *International Review of Management and Marketing*, 8(5), 30-42.
- Habtamu. (2017). The role of Ethiopian private commercial banks in private Business organizations. *Journal of Finance*, 24-33.
- Hailemariam, D. (2017). Determinants of Deposit in Ethiopian Private Commercial Banks. *Journal of Finance and Economics*, 47-50.
- Haron, S., Wan , N., & Wan , A. (2006 ). Deposit Determinants Of Commercial Banks In Malaysia. *Journal of Finance*, 2.
- Humyra. (2014). Study Saving Behaviour of Bangladesh. *Journal of Economics Development*.
- James, & Tories. (2008). The roles of deposits in the bankeng sector; empirical studies in Malaysia . *Journal of Finance and Economics*, 2(1).
- Jim, S. (2008). How-To" Guide: Finding and Interpreting GDP Statistics" Canadian Centre for Policy Alternatives. *Journal of Economics*, 44-51.
- Joel, L. (2008). Determinants of kenyan commercial banks deposit growth. *Journal of finance*, 14-23.
- Keynes. (1936). Theories of Absolute Income Hypothesis (AIH). *Theories of Savings*.
- Khalily, B., Richard , M., & Leroy , H. (1987). Deposit Mobilization in Bangladesh : Implications for Rural Financial Institutions and Financial Policies. *Journal of Finance and Investment*, 15, 13-16.
- Maende, C. (1992). Role of commercial bank deposits in Kenya. *African Economic Research Consortium (AERC) Research*.

- Mahdi, & Mohammad. (2010). The determinantes of savings Mobilization; an emiperical evidence in Italy. *Journal of Finance and Investment*, 6(3).
- Malhotra, N. (2007). *Marketing Research: An applied Orientation, 5th Edition*. New Delhi.
- Mashamba, T., Magweva, R , & Gumbo, L. (2014). Analysing the relationship between Banks' Deposit Interest Rate & Deposit Mobilization: Empirical evidence from Zimbabwean Commercial Banks. *Journal of Business & Management*, 16(1), 64-75.
- Meyer, R., Shirin , a., & Carlos , C. (1990). The Determinants Of Bank Deposit Variability: A Developing Country Case. *Economics and Sociology*, 8-13.
- Modigliani. (1963). Life-Cycle Hypothesis (LCH) . *Theory of Savings*.
- Mohammad, N., & Mahdi. S. (2010). The Role of Inflation in Financial Repression:. *World Applied Sciences Journal*, 11(6), 653-661.
- Mohammud, M. (2012). Prediction of Commercial Banks Deposit Growth: Evidence from Malaysian commercial banks. *Journal of Economics and Finance*.
- Mugenda, & Mugenda. (2005). *Research Methods: Qualitative and Quantitative Approaches*.
- Musa, Iyaji, & Success. (2014). Private Domestic Savings Mobilization by Commercial Banks and Economic Growth in Nigeria. *Beykent University Journal of Social Sciences*, 7, 1307-5063.
- NBE. (2018). *National Bank of Ethiopia Annual Report*. Addis Ababa.
- Ngula, I. (2012). Determinants of Deposit Mobilization and its Role in economic growth in Ghana, Kwame Nkrumah University. *Finance and Accounting*, 60-68.
- Nishat, M., & Nighat , B. (2019). Determinants Of Growth Of Bank Deposits In Pakistan. *Savings and Development*, 13, 391-400.
- Opoku, S. (2011). Mobilizing deposits; The role of Commercial Banks in Ghana. *Journal of Economics and Finance*, 33-36.
- Ozcan, K., Asli , G., & Seda , E. (2003). Determinants of private savings behaviour in Turkey. *Applied Economics*, 35(12), 1405-1416.
- patra, S. (2014). Determinants of Household Savings in India. 33-35.
- Pradhan, R., & Dipika , P. (2014). Macroeconomic determinants of bank deposit of Nepalese commercial banks. *Journal finance and economics*, 9-14.
- Rachmawati, E., & Syamsulhakim. (2004). Factors affecting mudaraba deposits in indonesia. *Journal of management & applied economics*, 4(39), 139-156.
- Rangarajan. (1982). Deposit variability in individual banks. *National Banking Review*, 59.
- Rao, D. (1975). Deposit Mobilization by Co-operative Banks: A Comparison with Scheduled Commercial Banks. *Economic and Political Weekly*, 10(29), 1098-1100.
- Sdandhu, & Goswami . (1986). Factors Affecting deposit growth in India. *Accounting and Finance*, 23.
- Simon, & Jolaosho . (2013). Saving Mobilization in Nigeria. *Journal of Finance and Economics*, 45-49.

- Sylvester. (2011). Mobilizing Deposits. *The Role Of Commercial Banks*, 20-22.
- Tafirei, Rabson , & Linda. (2014). the relationship between banks' deposit interest rates and deposit mobilisation in Zimbabwe. *Journal economics and social work*.
- Teriba, O. (1993). Economics for West Africa, Ibadan, Publishing Consultant Ltd.
- Tesfahunegn, S. (2015). Challenges of Deposit Mobilization for Private Commercial Banks in Ethiopia. *Journal of Finance*, 50-55.
- Teshome, F. (2017). Determinants of Commercial Banks Deposit in Ethiopia. 62-70.
- Thomas, P. (1968). Interest Rate Practices of Commercial Banks: Case for Official Regulation". *Economic and Political Weekly*, 3(20), 789-792.
- Tochukwu, Nwachukwu, & Peter. (2009). The determinants of private saving in Nigeria. *Journal of Investment and Finance*, 20-23.
- Ukinamemen. (2010). Factors that affect deposit mobilization operations of commercial. *Economics and Management*, 60-61.
- Varman, M. (2005). Impact of Self-Help Groups on Formal Banking Habits. *Economic and Political Weekly*, 40, 1705-1713.

## Appendix

### Appendix A: Regression output

```
. regress DG RGDPG DR EXR I PGR BER
```

Source	SS	df	MS	Number of obs	=	100
Model	1.01849137	6	.169748561	F(6, 93)	=	105.81
Residual	.149201715	93	.00160432	Prob > F	=	0.0000
				R-squared	=	0.8722
				Adj R-squared	=	0.8640
Total	1.16769308	99	.01179488	Root MSE	=	.04005

DG	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
RGDPG	2.57673	.4014999	6.42	0.000	1.779431 3.374029
DR	1.117136	.5481359	2.04	0.044	.0286469 2.205626
EXR	.0162189	.4147293	0.04	0.969	-.8073513 .8397892
I	.7479201	.2021831	3.70	0.000	.3464246 1.149416
PGR	2.533947	.464683	5.45	0.000	1.611179 3.456715
BER	.3814069	.0917665	4.16	0.000	.1991768 .5636369
_cons	-.2639494	.0571215	-4.62	0.000	-.3773814 -.1505173

### Appendix B: Hausman test

*Test: Ho: difference in coefficients not systematic*

$$\begin{aligned}
 \text{chi2(6)} &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\
 &= 2.57 \\
 \text{Prob>chi2} &= 0.008601
 \end{aligned}$$

## Appendix C: Fixed Effects Model

```
. xtreg DG RGDPG DR EXR I PGR BER,fe
```

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

R-sq:                                  Obs per group:
    within = 0.9598                    min =          10
    between = 0.2327                   avg =         10.0
    overall = 0.8586                   max =          10

corr(u_i, Xb) = 0.0177                 F(6,84)         =     334.19
                                         Prob > F        =     0.0000
```

DG	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
RGDPG	3.335993	.268934	12.40	0.000	2.801188	3.870798
DR	.0083625	.3351355	0.02	0.980	-.6580913	.6748162
EXR	.0566567	.2339328	0.24	0.809	-.4085443	.5218577
I	.9608401	.1158239	8.30	0.000	.7305116	1.191169
PGR	2.754334	.307719	8.95	0.000	2.142401	3.366266
BER	.1449681	.0885499	1.64	0.105	-.0311231	.3210592
_cons	-.2898104	.0338984	-8.55	0.000	-.3572211	-.2223996
sigma_u	.03708743					
sigma_e	.02219664					
rho	.73627075	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(9, 84) = 24.31      Prob > F = 0.0000
```

## Appendix D: The Random effects

```
. xtreg DG RGDPG DR EXR I PGR BER,re
```

```
Random-effects GLS regression      Number of obs   =       100
Group variable: ID                 Number of groups =        10

R-sq:                                  Obs per group:
    within = 0.9597                    min =          10
    between = 0.2413                   avg =         10.0
    overall = 0.8609                   max =          10

corr(u_i, X) = 0 (assumed)          Wald chi2(6)    =     2003.54
                                         Prob > chi2     =     0.0000
```

DG	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
RGDPG	3.272508	.2647919	12.36	0.000	2.753526	3.791491
DR	.0731615	.3334409	0.22	0.826	-.5803706	.7266936
EXR	.0558389	.2339403	0.24	0.811	-.4026757	.5143536
I	.9471041	.1156121	8.19	0.000	.7205085	1.1737
PGR	2.709983	.3032873	8.94	0.000	2.115551	3.304415
BER	.1705071	.085459	2.00	0.046	.0030106	.3380037
_cons	-.2864375	.0355904	-8.05	0.000	-.3561935	-.2166816
sigma_u	.03593086					
sigma_e	.02219664					
rho	.72378438	(fraction of variance due to u_i)				

## Appendix E: Unit root test

```
. xtunitroot llc DG, lags(0)
```

```
Levin-Lin-Chu unit-root test for DG
```

```
Ho: Panels contain unit roots          Number of panels =    10
Ha: Panels are stationary              Number of periods =    10
```

```
AR parameter: Common                  Asymptotics: N/T -> 0
Panel means:   Included
Time trend:    Not included
```

```
ADF regressions: 0 lags
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-7.7560	
Adjusted t*	-5.2420	0.0000

```
. xtunitroot llc RGDPG, lags(0)
```

```
Levin-Lin-Chu unit-root test for RGDPG
```

```
Ho: Panels contain unit roots          Number of panels =    10
Ha: Panels are stationary              Number of periods =    10
```

```
AR parameter: Common                  Asymptotics: N/T -> 0
Panel means:   Included
Time trend:    Not included
```

```
ADF regressions: 0 lags
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-6.1849	
Adjusted t*	-4.7765	0.0000

```
. xtunitroot llc RGDPG, lags(0)
```

```
Levin-Lin-Chu unit-root test for RGDPG
```

```
Ho: Panels contain unit roots          Number of panels =    10
Ha: Panels are stationary              Number of periods =    10
```

```
AR parameter: Common                  Asymptotics: N/T -> 0
Panel means:   Included
Time trend:    Not included
```

```
ADF regressions: 0 lags
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-6.1849	
Adjusted t*	-4.7765	0.0000





## Levin-Lin-Chu unit-root test for BER

Ho: Panels contain unit roots  
 Ha: Panels are stationary

Number of panels = 10  
 Number of periods = 10

AR parameter: Common  
 Panel means: Included  
 Time trend: Not included

Asymptotics: N/T -> 0

ADF regressions: 3 lags  
 LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-14.4693	
Adjusted t*	-10.1905	0.0000

## Appendix F:

Ramsey RESET test using powers of the fitted values of DG

Ho: model has no omitted variables

F(3, 90) = 1.50

Prob > F = 0.2196

## Appendix G:

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of DG

chi2(1) = 0.04

Prob > chi2 = 0.8508

## Appendix H: Multicollinearity test

. corr DG RGDPG DR EXR I PGR BER  
 (obs=100)

	DG	RGDPG	DR	EXR	I	PGR	BER
DG	1.0000						
RGDPG	0.8022	1.0000					
DR	0.4467	0.5367	1.0000				
EXR	-0.5648	-0.5910	-0.5407	1.0000			
I	0.6802	0.5076	0.5047	-0.6364	1.0000		
PGR	0.6738	0.3918	-0.0398	-0.2234	0.4112	1.0000	
BER	0.7761	0.6166	0.1850	-0.3711	0.4616	0.6510	1.0000

. vif

Variable	VIF	1/VIF
RGDPG	2.57	0.389497
BER	2.41	0.414722
I	2.22	0.449536
EXR	2.11	0.472953
PGR	2.05	0.488065
DR	2.02	0.495377
Mean VIF	2.23	

## Appendix I: Serial Correlation Matrix

. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	50.359	1	0.063

H0: no serial correlation