ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DETERMINANTS OF COMMERCIAL BANKS' DEPOSIT GROWTH IN ETHIOPIA: CASE STUDY ON THE COMMERCIAL BANK OF ETHIOPIA

BY HIBRET BELAY TEGEGN

May, 2015

Addis Ababa

DETERMINANTS OF COMMERCIAL BANKS' DEPOSIT GROWTH IN ETHIOPIA: CASE STUDY ON THE COMMERCIAL BANK OF ETHIOPIA

A THESIS SUBMITTED TO THE COLLEGE OF BUSINESS AND ECONOMICS,

ADDIS ABABA UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS IN BUSINESS ADMINISTRATION (MBA)

BY HIBRET BELAY TEGEGN

May, 2015

Addis Ababa

DECLARATION

Firstly, I declare that this thesis is my original work and all sources of materials used for this thesis have been properly acknowledged. This thesis has been submitted in partial fulfillment of the requirements for Master of Arts in Business Administration (MBA) at the Addis Ababa University. I solemnly declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma, or certificate. Brief quotations from this thesis are allowable without special permission provided that accurate acknowledgement of source is made.

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As an advisor of this Thesis Research, I hereby certify that, I have read and evaluated this thesis prepared under my guidance by Hibret Belay Tegegn, entitled "Determinants of Deposit Growth of commercial banks in Ethiopia: Case Study on the Commercial Bank of Ethiopia." I recommend it to be accepted as fulfilling the thesis requirement.

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As members of the Board of examiners of the Final M.Sc. Thesis Open Defense Examination, we certify that we have read and evaluated the thesis prepared by Hibret Belay and examined the candidate. We recommend that this thesis complies with the measures and regulations of the University and meets the accepted standards with respect to originality and quality and it be accepted as fulfilling the thesis requirement for the Degree of Master of Arts in Business Administration (MBA).

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Name of Internal Examiner Signature Date

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Name of External Examiner Signature Date

ACKNOWLEDGEMENT

Glory to the Almighty God and our Holly mother!!! I thank God for his unconditional love and for helping me through all my way to achieve my goals.

My gratitude also goes to my Advisor, Dr. Yitbarek Takele, for his guidance, constructive advice and contribution to the success of this work.

Luckily, I had two more advisors, my husband Dr. Tilahun Amede, and my sister, Enanu Belay. I would like to thank them both for their encouragement, follow up, support and sharing my burden so that I can be free to do this work. I would also like to thank my Kids for their support.

I am also indebted to Ato Getnet Addisu who helped me a lot for the successful completion of this thesis.

Finally, I say thank you to all who assisted me in different ways directly or indirectly in fulfilling my dream.

May the Almighty God bless you All!!!

Table of contents

Contents **Pages**

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ACRONYMS

ADF: Augmented Dickey-Fuller

ATM: Automatic Tellers Machine

AIC: Akaike Information Criteria

APR: Annual Percentage Rate

CBE: Commercial Bank of Ethiopia

CPI: Consumer Price Index

CSA: Central Statistics Authority

ECT: Error Correction Term

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

HQ: Hannan-Quinn Information Criteria

J-B: Jarque-Berra

LM: Lagrange Multiplier

MoFED: Ministry of Finance and Economic Development

NBE: National Bank of Ethiopia

OLS: Ordinary Least Square

PPF: Production Possibility Frontier

RGDP: Real Gross Domestic Product

SIC: Schwarz (Bayesian) Information Criteria

SWIFT: Society for Worldwide Interbank Financial Telecommunication

UNDP : United Nations Development Program

UNCTAD: United Nations Conference on Trade and Development

VAR: Vector Auto Regression

VECM: Vector Error Correction Model

ABSTRACT

This study primarily aims at determining the short and long run impacts of determinant factors on deposit growth of commercial bank of Ethiopia for the period 1974/75 to 2013/14 using Vector Error Correction Model (VECM). The study also checked the causal relationships that exist between deposit growth and its determinant factors employing test of Granger causality. In the empirical VECM model, control variables (Economic Growth, Inflation, Interest Rate, Exchange Rate, Population Growth and Branch Expansion) are included to enable ceteris paribus interpretation of the relationship and impact on the growth of deposit in commercial bank of Ethiopia. The estimated results suggest that interest rate has positive but insignificant impact on deposit growth both in the long run and short run. While Exchange rate and branch expansion significantly increases banks deposit contemporaneously both in the short run and long-run. Population and Economic growth also has a positive relationship with deposit growth and it is significant in the long run but insignificant in the short run. However, Inflation has positive and significant impact on deposit in the long-run and negative impact in the short run. Using test of granger causality, the study found uni-directional causality that runs from deposit to inflation, from exchange rate deposit, from deposit to interest rate, from population growth to deposit without any feedback response. The finding also indicates that there is bi-directional causality between branch expansion and deposit and economic growth in Ethiopia. This implies that deposit can affect economic growth through investment. These results have important policy implications for both domestic policy makers and the bankers working in the country. The findings are of direct relevance to the development of deposit mobilization policy by the commercial bank of Ethiopia.

KEY WORDS: Deposit, Determinant Factors, VECM, Granger Causality and CBE

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

The financial sector in Ethiopia includes banks, insurance companies, Microfinance Institutions, Saving and Credit Cooperatives and the Informal Financial Sector. The banking industry accounts for about 95% of the total financial sector assets, implying that the financial sector is undeveloped (Zerayesus, 2013). The banking sector is the largest component of the financial system, and it plays great role on all aspects of the national economy (Falkena et al, 2004).

The Ethiopian banking sector was first introduced in 1906, when the first Bank of Abyssinia was inaugurated by Emperor Menelik II. It was a private bank whose shares were sold worldwide until Emperor Haileselassie I introduced reforms into the banking system in 1931. The Bank of Abyssinia was liquidated and newly established Bank of Ethiopia, a fully government owned bank, taking over management, staff and premises of the ceased bank. The Bank of Ethiopia provided central and commercial banking services to the country until the second Italian invasion of Ethiopia.

Briefly summarizing the history of modern banking in different era; during the imperial era different banks was allowed to function in the country both domestic and foreign banks. But after the socialist regime took over power in 1974, it nationalized all private banks and restricted the ownership of any bank by polices (Geda, 2007). Only three state owned banks were running the banking sector in the country. Namely: the National Bank of Ethiopia, the Commercial Bank of Ethiopia and Agricultural and Industrial Development Bank.

A new era after 1991, when EPRDF came in to power and allowed private ownership through licensing and supervision of banking business proclamation no. 84/1994, immediately after the enactment of the proclamation private banks began to flourish. However, the financial sector policy of Ethiopia does reserve investment on the sector only for domestic investors. It is believed that domestic banks are very young to cope up with competition that would have come from the highly experienced, well endowed and hi tech foreign banks.

Ethiopian banking sector is small in absolute and relative size, which could be characterized by low loan deposit ratios and, as a result, large shares of assets held in the form of government securities (IMF, 2006). There is a general view that monopolistic competition among banks in terms of price and investment opportunity. Meaning, Competition in terms of price is relatively weak in the Ethiopian banking industry (Zereauyesus, et al 2003). In general banks in the Ethiopian case are competing in terms of service quality and efficiency including use of technological advances, branch network expansions, advertising and pricing, put in the order of their significance (Zerayesus, 2013).

Most financial sectors and financial intermediaries including banks need to have sustainable resources in order to exist as intermediaries. Mobilization of deposits is one of the main functions of banking to regularly acquire those resources. Deposit is a back bone for banking business since it is an important source of working fund for the bank. Deposit mobilization is an essential factor to increase the sources of the banks to serve effectively. It plays an important role in providing satisfactory service to different sectors of the economy. The Commercial Banks must collect deposits from various sources including, urban and rural areas. This helps the banks to avail large amount of funds to priority sectors for development and investment (Mohammad and Mahdi, 2010).

Currently, the number of commercial banks operating in the country reached 18 of which 16 are private, and the remaining 2 are state owned. During the year 2013/14 these banks opened 480 additional branches raising the total branch network in the country to 2,208 from 1,728 a year ago. As a result, bank branch to population ratio becomes 1:39,402 in 2013/14 (NBE Annual report 2013/14).

Those banks play an intermediary role by collecting excess money in the form of deposit and provide a loan for those who are in need of finance. However, there have been cases whereby private companies and small scale firms complaining about lack of loans and credit facilities, particularly those which were not able to present collateral properties.(World Bank Group, 2011) The shortage has been aggravated by the increasingly growing needs of the public sector, particularly for infrastructure development. This calls for an efficient and coordinated deposit mobilization strategies.

Currently there is an increasingly growing public and private investment in Ethiopia in the area of infrastructure, agriculture, manufacturing, and processing etc which seeks for continues supply of finances. Financial assistance from other is not dependable and unfortunately decisions are made beyond the financial criteria. Moreover, the donation of funding is unpredictable and difficult to plan for long term investment in the economy. This calls for urgent mobilization of financial resources domestically. Thus, banks have a major responsibility to mobilize deposit to reduce dependence on external resources.

Taking in to consideration the current economy of Ethiopia and given the low level income of the people it is difficult to satisfy the financial demand based on limited customer bases. Hence, there is a need to understand factors affecting deposit and develop effective deposit mobilization strategies that would reach the wider customer base, including the rural part of the country. Moreover, deposit mobilization strategies alone could not bring about long-term and sustainable deposit flows unless the bank insures that the service quality is well maintained and its staff is motivated to respond to emerging challenges. This study will examine the most important factors affecting deposit overtime and the incentives required to satisfy both internal and external customers.

1.2. Background of the Organization

The Commercial Bank of Ethiopia(CBE) was established after the Italian invasion of Ethiopia in 1942, with 2 branches and 43 staff, which was granted by the Ethiopian government with the sole right of issuing currency in 1945. It was only in 1963 that the Ethiopian government decided to split the Bank sector into two banks, the National Bank of Ethiopia (the central bank), and the CBE. It opened branches in Sudan, Djibouti and the current Eritrea, which were all lost later on due to nationalization at different times. CBE has been the most dominant bank in Ethiopia, since then, which seizes quasi-monopoly power with more than 900 branches country wide despite increasingly growing and mushrooming private banks in the country. However, its share in total deposit fell from 92% in 1996/97 to 64%in 2014, while its disbursed credit fell from 75 to 57% in 2014.

Commercial Bank of Ethiopia is serving as a major commercial bank in the country, providing short and long terms loan for major economic and infrastructure investments of the public sector.

The fast growing economy of the country, which is proactively investing in road infrastructure, building hydropower dams, constructing thousands of housing condominiums and expanding agricultural and other investments in the country are hugely relying on the CBE and other banks for loans and credits. Moreover, there have been multiple small enterprises incubated in the last decades and increasing number of import and export companies, heavily relying on CBE for loans, foreign currency and trade assurances. This calls for an increased demand for deposit mobilization from public institutions, private sector and other potential contributors. There has been successful deposit mobilization strategies developed and implemented by the banks in the last few years. Banks usually implement different strategies to attract new customers and retain the existing one. For instance, the public fund mobilization for housing development through various financial arrangements could be seen as a good example of deposit mobilization strategy in CBE.

Various literatures explained different factors affecting commercial bank deposits. Wubetu (2012) grouped determinants of deposit in to Macro and Micro level factors. According to his study, among others, Macro level factors are inflation rate, interest rate, economic performance of the country and exchange rate. At micro level factors that believed to affect the growth of deposit are: convenience, comprehensive branch and Automatic Tellers Machine (ATM) network, excellent customer service, products and pricing, promotion and market segmentation (Kane, 2005). Accordingly, the Commercial Bank of Ethiopia has been applying different deposit mobilization strategies. Currently, CBE performed aggressive new branch openings, lottery, and salary payment service for different governmental and nongovernmental offices. This calls for a better understanding of the strategies used to attract bank deposits and its implications on the functionality of the system.

1.3. Statement of the Problem

As mentioned in the introductory part, deposit growth for commercial banks is very crucial to fill the increasing demand of finance. As result, examining factors that can affect deposit growth would help for banks to formulate deposit mobilization strategies. Various researchers tried to study about factors affecting deposit mobilization in Ethiopia.

Determinant variables commonly explained as a factor affecting deposit are, inflation rate, interest rate, exchange rate, demographic change (population growth) and branch expansion. Wubetu (2012) found that Branch expansion had positive and significant effect on total deposit whereas deposit interest rate and inflation rate were insignificant. As opposed to this finding, Tizita (2014) reported that branch expansion has negative effect on private saving in the short term. She also concluded that inflation rate influenced private saving negatively and significantly. As per the finding of Tizita, level of real per capital income and urbanization ratio has significant positive effect on private savings. Moreover, Aberham's finding showed that the banks total deposit is positively related to income, its Asset and loans, liability, and advance granted and consumer price index (Abreham,2014). However, this relationship is expected, since deposit is a liability to the Bank, deposit and liability are positively related to each other.

By the same token, Ngula (2012) found that the exchange rate between the Ghanaian Cedi and US dollar was found negatively and significantly influence bank deposit. As he explained, the rise in exchange rate might lead to lower levels of deposit. People substitute domestic currency for foreign currencies as a means of financial saving. He also found that banks ability to mobilize more deposit is reduced when there is an increase in inflation rate. However, Deposit interest rate found to have a positive relationship with bank deposit mobilization.

These contradictory findings revealed that there is inconsistency among researchers on factors affecting deposit mobilization. This research is designed to understand which factors really affect total deposit at macro level by using validate these contradicting findings and fill the research gaps on factors affecting deposit mobilization in commercial banks.

The results of this research could be used by policy makers to develop informed policies, actions and introduce measures to be undertaken for effective inland resource mobilization. Commercial Banks would also benefit from the research by understanding the real determinant factors that affect deposit mobilization and design strategies to minimize tradeoffs. Academicians will use it in examining the relationship between bank deposit and its stated factors.

1.4. Research Question

The main questions that have to be addressed in this study are the following:

1. Do inflation rate, interest rate, exchange rate, economic growth, branch expansion, and Population growth affect total deposit?
2. What are the short-run and long-run relationship between deposit and its determinant factors?
3. Are there any long run and short run causalities running between deposit growth and its determinant factors?

1.5. Objectives of the Study

The overall objective of this study is to assess the determinants of banks deposit growth in commercial bank of Ethiopia with the purpose of establishing the relationship between the deposit growth and its determinant factors. The specific objectives are to:

- Examine factors affecting commercial bank of Ethiopia's deposit growth.
- Explore the possible existence of long run relationship between deposit growth and its determinant factors
- Assess the short run causality running between deposit growth and determinant factors.

1.6. Significance of the study

Understanding determinants of deposit growth is a prerequisite for successful mobilization of deposit and craft policy and strategies in managing banks. Even though various studies have assessed various topics related to saving and banks' profitability, deposit growth under the changing economic situation in Ethiopia is poorly examined. Some of the studies lack consistency and others considered only few control variables to support some of their claims.

Therefore, this study is intended to provide additional information about deposit related factors and also expand the existing knowledge regarding the factors that affect banks deposit growth in Commercial Bank of Ethiopia and forward necessary policy recommendations. In addition, this paper can serve as a base line for further study in this area.

1.7. Organization of the Study

The study is organized in five chapters: it started with the introduction part, followed by chapter two where relevant theoretical and empirical literature on deposit growth and its determinants are reviewed. Chapter three presents the descriptive analyses of economic and banks performance in terms of deposit, branch expansion and others in Ethiopia. The research design and model specification, including descriptions of variables, are presented in chapter four. Chapter five presents the descriptive and econometric analyses of the relationship among determinant factors and banks deposit with the result interpretations. The last chapter concludes the study with presentation of the policy implications.

1.8. Scope and Limitations of the Study

The aim of this study is limited to examine the short-run and long-run impact of determinant factors on deposit growth in commercial bank of Ethiopia using annual data starting from 1974/75 to the year 2013/14 at macro level. However, other factor like Service quality, Employee satisfaction and customer satisfaction was not included in the study due to lack of reliable data. Lack of operating budget and organized data were also some of the limitations during the course of the study. However, necessary effort has been made so as to achieve the above stated objectives.

CHAPTER TWO: LITERATURE REVIEW

In this chapter, both theoretical and empirical literatures have been reviewed. Potential theories that stated about commercial bank deposit and different factors which are believed to affect total deposit are briefly discussed. Besides, past studies that were empirically conducted on factors determining commercial bank deposit were also reviewed and explained with related to the theoretical concepts.

2.1. Significance of Bank Deposits

For a commercial bank, deposits are the oldest, most stable and, by volume, most significant source of funding. In the traditional model of the bank as an intermediary between savers and borrowers, deposit is the counterpart of the loan. Stable funding is vital for banks and the financial system. This warrants analysis of the significance of a reliable, low-cost way for banks to refinance their operations. Financial resources of banking systems are naturally provided from people's deposits (Mohammad and Mahdi, 2010). Deposits play an important role for both consumers and financial services providers: in Europe, deposits account for approximately 60% of bank funding in the world (Global financial markets, 2012) and 87.7% in Africa (IMF country report 15/55).

The bank provides savers with the opportunity to earn interest on surplus funds and make an investment that is nevertheless readily available for withdrawal and also in safe hands, while granting longer-term loan on fixed term and condition to person or companies that do not have enough fund of their own investment or consumption purposes. Deposits are not only a crucial funding instrument for banks, but also one of the most important forms of investment for private individuals (Sophie and Jan, 2012)

Mobilization of deposits for a bank is as essential as oxygen for human beings. As a result, mobilization of savings is one of the important objectives of the commercial banks and instruments to expand banking operations, by providing subsidy for branch expansion. The successful functioning of commercial banks depends on the extent of funds mobilized.

Savings mobilization becomes the most important strategy for the economy when economic growth is planned within the framework of targets with maximum reliance on internal resources (Roy, 2003)Roy reflecting the current situation of Ethiopia indicated that while most of the mega projects, including the Abay Dam, are financed by internal resources, deposit is now much more significant than ever in Ethiopia.

2.2. Classification of Deposit

There are different types of deposits, with different maturity pattern carrying different rates of interests. According to Sophi, et al., (2012) deposit is classified on three bases: based on depositor, maturity of deposits and geographic origin of the deposits.

A. **Based on Depositor**: Deposit can be classified as Financial Institution's deposit, Government deposit and Private sector deposit. Among the above, private sector deposits are usually considered less mobile than the others and thus particularly reliable.
B. **Based on the maturity of deposits**: deposit can classified in to sight (overnight) deposits, deposit with fixed maturity and deposit redeemable at agreed notice.
    i. Sight (overnight) deposits: Deposit redeemable without notice and with no minimum holding period and widely known as current deposit.
    ii. Deposit with fixed maturity: Savings deposit with agreed maturity. Depending on the contractual agreement, early redemption may trigger a penalty fee and commonly known as fixed time deposit or term deposit.
    iii. Deposit redeemable at agreed notice: Savings deposit for which the saver must observe a fixed notice period, before the deposit may be withdrawn. In some cases it is possible to withdraw a certain amount in a given period without having to provide a notice (Commonly called saving account)
C. **Based on geographic origin of the deposits**: deposit can also be classified as residents deposit and non-resident deposit.

All classification of deposit exists in commercial bank of Ethiopia's trial balance.

Davinaga (2010) also simply classifies deposit in to three kinds: Current or demand deposits, Fixed or Time deposits / Term deposits and Savings deposits.

Whatever the classification is, deposits are one of the most important sources of capital. As Richard(1971). describes capital structure in commercial banks are made up of shareholders' funds, borrowing and deposits Therefore, deposits are one of the sources of capital for commercial banks.

2.3. Determinant Factors of Deposit Growth

Different literatures explain about factors that determine the growth of deposits. Wubetu (2014) divided factors of deposit as exogenous and endogenous factors by citing (N. Desinga, 1975).

i. **Exogenous factors:** factors like the general economic environment of the region, the volume of business transaction of the region, the confidence of the people on the banking system, the banking habit of the people and the saving potential of the region are explained as exogenous factors.
ii. **Endogenous factors:** the main internal factors of banks affecting deposit growth are location, type of building and window-dressing (furniture, cheque books, vouchers, pay slips etc),

Even when exogenous factors are more conducive for deposit mobilization, banks may fail to mobilize deposit because of unfavorable endogenous factors. Wubetu has identified ten country specific factors that have effect on the commercial bank deposits (wubetu, 2014). They are saving interest rate or deposit rate, inflation, real interest rate, number of commercial banks available in the country, population growth, per capita income of the society, economic growth, consumer price index, gross domestic product (GDP) and shocks.

Sophi and Jan (2012) also classified determinants of deposit in to two broad categories; **supply** and **demand side** components. The variables are basically the same as what Wubetu has identified but for ease of explanation, the researcher has combined Sophi's classification with additional variables which the researcher believes to be covered either in supply or demand side. The **Supply side factors** includes income, trust in the banking sector and its stability, demography (population), economic growth (GDP), exchange rate, inflation/interest rates, and risk-reward profile of investment alternatives. **Demand side factors** are regulation, competition, branch expansion, promotion and service quality. This classification was made based on parties

who need deposit, like customers as supply factor and Bank as demand factor. Each factor will be explained item by item.

2.3.1 Supply Side Factors

i. Income

Income is the consumption and savings opportunity gained by an entity within a specified time frame, which is generally expressed in monetary terms. It is money that an individual or business receives in exchange for providing goods, services or through investing capital. For households and individuals, income is the sum of wages, salaries, profits, interests' payments, rents and other form of earnings received in a given period of time. One assumption would be that as incomes rises, deposits with banks do so as well. According to the Narasimham Committee (1991) the growth of bank deposit is a function of the level of income and savings. Poul and Bhattacharyay (1986) had studied the behavior of bank deposit and their components during 1971-81, and reported as income, either permanent or current, seems to be the dominant variable affecting bank deposits. The study concluded that, income to deposit ratio is statistically significant and positively related. The empirical study of Aberham (2014) also supports this finding.

ii. 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 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 et al., 2000).***

iii. Interest Rate

Interest rate is the amount charged, expressed as a percentage of principal, by a lender to a borrower for the use of assets. Interest rates are typically noted on an annual basis, known as the annual percentage rate (APR) (Investopidia). In deposit terminology, a term deposit rate refers to the amount of money paid out in interest by a bank or financial institution on cash deposits. Banks pay deposit rates on savings and other investment accounts.

In essence, deposit rate is the interest rate that a bank pays to the depositor for the use of their money. Deposit interest rates can be either fixed for a certain period of time with a minimum amount of money on deposit, or it can be variable, which fluctuates and is not usually subject to early withdrawal penalties.[1]

In developed countries, the rate of interest is an important determinant of bank deposit. However in developing countries it may be different. An Indian study group on deposit mobilization examined the interest rate structure and argued that the level of deposit rate cannot be far from the rate of competing investment return; the study group recommended a higher rate of interest for deposits in the rural areas and a lower rate in the urban areas (Roy, 2003).

[1] http://www.deposits.org/dictionary/term/deposit-rate/

A similar view was expressed by the Banking commission when it was advocated a well thought out and comprehensive approach to the whole question of interest rate on deposit growth in the banking system and extra banking institutions. The commission also suggested that a dual structure of interest rates since the impact is insignificant on rural areas (higher rate for rural deposit and lower rate for urban deposits) is likely to be useful from the point of view of mobilizing deposit.

Edmister and Merriken (1989) examined to what extent a change in interest rates can shape the volume of deposits. The finding showed that other macroeconomic factors usually exerted a bigger influence on deposit growth than interest rates do. Alemaheyu's findings strongly supports the conclusion that real interest rate (which is the interest less the inflation rate) have little or no impact on saving (Geda 2015).

All the above literatures agreed that interest and deposit are positively related. However, the finding on the significance level was different.

iv. 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 good or service in a common currency. As Thomas's explanation, the term depreciation and appreciation is used to show the decrease and increase in the value of currency. **Depreciation** is a decrease in the value of currency relative to another currency. **Appreciation** is an increase in the value of a currency relative to another currency. As ECONOMIC Help online explained, the main factors that influence exchange rate are: inflation, interest rate, speculation, and change in competitiveness, balance of payment, government debt, government intervention and Economic growth / recession**.**

According to Nugel (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. Alemayeh (2015) also confirms that for developing country in general saving is negatively correlated with unstable exchange rate.

v. ***Risk-reward profile of investment alternatives***:

There are different investment alternative for resource holders. The major differences among investment are its risk, reward (profit) and capital requirement. Risk is quantifiable uncertainty in the future (Knight 1921). It is also defined as a higher probability event, where there is enough information to make assessments of both the probability and the consequences (Holton 2004).

Reward/profit is the surplus remaining after total costs are deducted from total revenue, and the basis on which tax is computed and dividend is paid. It is the best known measure of success in an enterprise. It is reflected in reduction in liabilities, increase in assets, and/or increase in owners' equity.[2]

Large deposits in small banks or cooperative banks or weak banks are not totally risk free and in case of failure of these banks, loss of deposit may happen. Tyler also confirmed that deposit in a bank is not a riskless form of saving. He said, "**Banks are not vaults**. They are thinly capitalized asset managers that make a promise to return depositors' money on demand and at par that cannot always be kept without the assistance of a solvent state" **(**Durden , 2013). It is commonly assumed that money on deposit belongs to the depositor. This is not true, because the depositor lends his money to the bank, so the money becomes the bank's property and merely owes it to the depositor. The depositor is usually the most senior class of unsecured creditor. Deposit in Banks is relatively safe in Banks (Macleod, 2013).

There is strong positive Risk and reward relationship in investment. If the investment is very risky, then its reward is very attractive (Franzen, 2010).

Therefore, the assumption would be that deposit will be decreased if investment alternatives offer more favorable risk-reward profiles.

[2] (http://www.businessdictionary.com/definition/profit.htm)

vi. Economic growth

An article from Economic online defined economic growth based on two meanings: Firstly, and most commonly, growth is defined as an increase in the output that an economy produces over a period of time, the minimum being two consecutive quarters. The second meaning of economic growth is an increase in what an economy can produce if it is using all its scarce resources. An increase in an economy's productive potential can be shown by an outward shift in the economy's production possibility frontier (PPF).The simplest way to show economic growth is to bundle all goods into two basic categories, ***consumer*** and ***capital*** goods. An outward shift of a PPF means that an economy has increased its capacity to produce.[3]

If there is a real growth in the economy, the deposit will grow as well. This hypothesis was proved by the chakravarty committee in 1985. The committee reported that the growth rate of deposit in India at an accelerated pace was attributed to the higher real growth achieved by the economy (chakravarty committee, 1985).

Alemayehu, 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).

vii. Demography

Demography is the science of populations. Demographers seek to understand population dynamics by investigating three main demographic processes: Birth, Migration, and death. All three of these processes contribute to changes in populations, including how people inhabit the earth, form nations and societies, and develop culture.

Today, there is growing interest among the public in demography, as "demographic change" has become the subject of political debates in many developed countries. Most of these countries have birth rates below the replacement level of 2.1 children per woman, and, at the same time,

[3] http://www.economicsonline.co.uk/Competitive_markets/Economic_growth.html

life expectancy has been rising considerably and continues to raise a development sometimes called "the aging of societies."(Max planck- institute for demographic research)[4].

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 the retired. 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 (Alemayehu, 2015).

[4] http://www.demogr.mpg.de/En/education_career/what_is_demography_1908/default.htm

viii. Trust in the banking sector and its stability:

From the researcher own experience, the reputation of the commercial bank is very important for the overall performance of the bank, especially, for making deposit. Customers also develop trust in the bank after assessing stability of the bank. The assumption would be that given pronounced trust in the banking sector the volume of deposits would tend to increase.

2.3.2 Demand side factors

In this context, the term demand means the banks' demand for deposits. The following factors could have an impact on demand.

i. Regulation:

Regulatory bodies of Banking (in case of Ethiopia, The National Bank) issue different directives in relation to banking activities that may increase the demand for deposit. The regulatory regime changes the relative attractiveness of assets. Household deposits have a lower weighting in the liquidity ratios than other liabilities. This could boost demand for deposits, since the relative attractiveness of deposits increases (Sophi, 2012).

ii. **Competition**:

Strong competition in the banking sector could necessitate higher interest rates being offered to attract deposits. From the banks' point of view, this could reduce the attractiveness of deposits as a funding instrument. At the same time, depositors would find it more attractive (Sophi 2012).

iii. Promotion

Promotion plays an important role in today's competitive world by which organizations communicate with their customers, both current and potential. Companies allocate a considerable amount of their sources to different promotional activities, like TV or radio advertisements and sponsoring different programs.

iv. Branch Expansion

Branch expansion is opening new branches or service outlets in and outside the country. According to Baqui, there is a relationship between commercial banks deposits and commercial bank's branch expansion. Deposit is influenced by branch expansion while the expansion of bank branches is also influenced by the level of deposits (Baqui et al, 1987). Banks usually make decisions on expanding their branch by considering different factors. Some of the factors could be; level of competition, deposit potential, regional income and existence of infrastructure and transport facilities. As 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. This prevented the outflow of reserves from the banking system leading to a larger expansion of secondary deposit; therefore, the author observed that one of the structural changes to be expected from a massive branch expansion program was raising deposit.

Sdandhu and Goswami(1986) observed that the demand for deposits was positively affected by the number of bank branches in operation. The impact of branch expansion on deposits mobilization was positive for all type of deposits. The banking commission and Charkaravry committee also concluded that the wide network of branches and expansion of bank branches respectively are the important factors contributing to the growth of bank deposit (chakravarty committee, 1985).

2.4. Conceptual Theoretical framework of the study

From the above theoretical and empirical reviews, there is clear consensus that supports there are factors that can affect commercial banks deposit positively or negatively. The main independent factors are grouped as macro and micro.

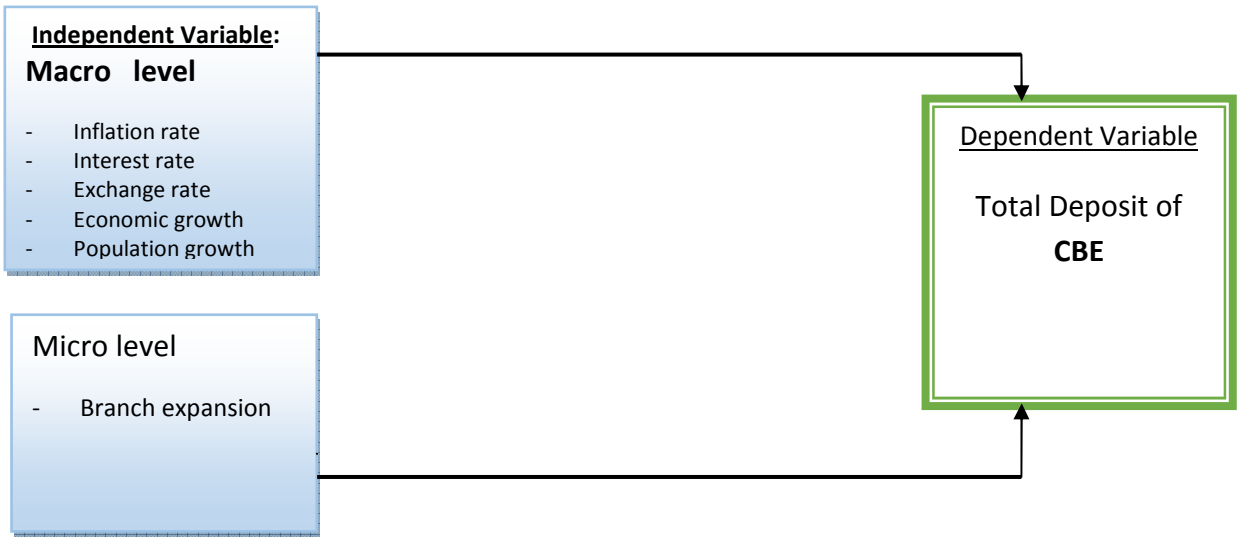


Figure 1: shows the linkage of macro and micro level factors and deposit of commercial banks

Different empirical evidences suggested that deposit growth of financial institution specifically banks is affected by mainly by macro factors. This study used both macro and micro determinants of bank deposit that includes Inflation rate, Interest rate, Exchange rate, Economic growth, Branch expansion. The study has quantified how these variables are determining the deposit of commercial banks in Ethiopia.

CHAPTER THREE: OVERVIEW OF THE CURRENT ETHIPIAN ECONOMIC PERFORMANCE WITH THE FOCUS OF FINANCIAL SECTOR.

3.1. Economic Growth

Ethiopia has registered average annual real GDP growth rate of 10.9% for the last decade. Agriculture, which accounts for 42.7% of GDP, grew by 7.1%, while industry, accounting for 12.3% of GDP, rose by 18.5% and services, with 45% of GDP, increased by 9.9% in 2012/13 (CSA website). According to United Nation Development Program (UNDP) report, this has led Ethiopia being rated as one of the fastest growing economies in the world (UNDP No. 1/Feb.2014). In a 2014 assessment, UNCTAD listed Ethiopia as one of the world's top destinations for FDI (foreign direct investment). Total inflows in 2013 were USD 953 million, with a large proportion coming from Asia to boost the country's industrial base and improve and extend infrastructure.

Table 1: GDP of Ethiopia 2013/14

Year	Agriculture	Industry	Service	GDP
Sector contribution to GDP (In Billions)	251.80	89.60	289.40	630.80
Sector contribution to GDP	*39.9%*	14.2%	45.9%	

Source: Annual Report of NBE 2013/14

3.2. Domestic saving

Domestic saving has been growing significantly in the past few years from 12.8% in 2010/11 to 17.7% of GDP on 2012/13. According to the report, this is partially the result of newly introduced savings instruments (Bonds) and expansion in financial services through the aggressive opening of banking branch networks. In addition, per capita income of the society has been increasing in the last ten years.

Table 2: Ethiopia's gross domestic saving

Year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
%-age	9.5	8.3	12.4	9.2	9.8	9.3	17.2	19.2	19.2	22.5

Source: NBE annual Report

3.3. Inflation

Historically Ethiopia has been one of the low inflation economies with average inflation rate of less than 5 % since 2006. However, In July 2008, an all time high inflation rate of 64 % was recorded. The major causes were suggested to be the then high fuel and food prices shocks, weaker foreign exchange earnings, and rising demand for imports that depleted international reserves of the country. The highest price increase was observed in food, housing, fuel and transport services, making the urban poor the most vulnerable to the impacts of inflation (UNDP 2014).

According to the latest (2010/11) survey on household income and expenditures, households on average spent 53 % of their income on food and non-alcoholic beverages (the percentage is higher for households in the lower expenditure quintile), 16.3 % on housing, water, electricity and fuel with urban households in the lowest expenditure quintile tending to spend more on this category (29 %).

Inflation reemerged in 2012 and reached a peak of about 40 % in September 2012. Looking at the components, the food and nonalcoholic beverages category has been the main drivers of overall price movements. However, year on year food and nonfood inflation rates contained back to single digits in 2013. In January 2014 while headline inflation became 7.8 %, food inflation tumbled down to 5.1 % and non-food inflation to 10.9 %. Although inflation is low compared to the previous two years there are signs of the rate increasing in recent months especially in the non food category (UNDP 2014).

Table 3: Ethiopia's consumer price index and inflation

TYPE		*2012/13*	*2013/14*
Overall index		13.5	8.1
Food and non alcoholic beverage		12.6	5.9
Non food		14.5	10.6

Source: - Annual Report NBE 2013/14

3.4. Interest Rates

The central bank's policy on interest rate is setting the minimum (floor) bank deposit rate, currently at 5 %, while the banks are free to pay above the minimum and to set their own lending rates (NBE Annual Report 2014).

While the minimum bank saving rate was controlled at 5 %, average saving rate was 5.4 % and lending rate at 11.88 % in 2012/13. Real saving rates remained negative as the inflation rate is still much higher than the nominal interest rate. The relatively insensitive nature of savers to interest rate, due to the absence of alternative financial instruments, has allowed the banks to hover around the minimum deposit rate. Real interest rate remained negative, posing a great challenge to incentivizing and mobilizing domestic savings and to further deepen financial intermediation. (UNDP 2014).

3.5. Exchange Rate

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 are not expected. Birr continued to depreciate but at a very slow rate and it reached 18.19/USD at the end of 2012/13. This gradual depreciation is in line with the goal to enhance competitiveness of Ethiopian exports and attract FDI.

The average exchange rate of Birr against US dollar in the official market showed annual depreciation of 5.4 % since 2011/12. In January 2014, the exchange rate reached 19.107 Birr/USD, a 4.85 % depreciation since January 2013.

Table 4: Exchange Ret for the year 2013/14

2013/14	*1st Quarter*	*2nd quarter*	*3rd Quarter*	*4th Quarter*	*2013/14*
Average Exchange Rate	**18.7384**	**18.9390**	**19.1819**	**19.4400**	**19.0748**

Source: NBE Annual Report 2013/14

3.6. Population Growth

According to the report by Population Information Resource of Ethiopia, the population increased fourfold between 1900 and 1988. At the beginning of the present century the crude rate of natural increase was estimated at 0.3% per annum. In 1984 census, it was 2.9% a year. The total population in 1900 was estimated at 11.8 million. It took 60 years for this to double to 23.6 million in 1960. It took only 28 years for the population in 1960 to double to 47.3 million in 1988.

The report also disclosed that the Population grew at average annual rate of 2.5% between 1965 and 1980 and at 2.9% between 1980 and 1989. If the prevailing fertility rate continues and mortality declines as would be expected under improving health service, it is projected that the population of Ethiopia may grow at the rate of 3.1 % or more a year during the remaining part of the present century.

Table 5: Demography of Ethiopia - Year 2014

Age group	Male	Female	Total	% age
0-14	21,376,243	21,308,454	42,684,697	44.2
15-24	9,557,462	9,692,275	19,249,737	19.2
25-54	14,023,218	14,176,263	28,199,481	29.2
55-64	1,826,602	1,919,212	3,745,814	3.9%
65 years and over	1,242,171	1,511,558	2,753,729	2.8
Total	48,025,696	48,607,762	96,633,458	

Source: Mundi Index: Ethiopia Demographics Profile 2014

3.7. Financial Sector Performance

The formal financial system in Ethiopia constitutes commercial banks, development finance institutions, microfinance institutions and insurance companies. More recently capital goods finance business or finance lease has included in the financial system. As of March 31, 2014 there were sixteen private and state owned commercial banks, one state owned development bank, one state owned and sixteen privet insurance companies, thirty one microfinance institutions of which ten are majority owned by regional governments. In addition, cooperatives found in different parts of the country providing financial service to their members. Despite the

increasing number of financial institutions and also branch offices, Ethiopia, similar to other developing countries, remains as one of the least unbanked nations in the world (NBE report 2013/14).

The Ethiopian banking industry is generally characterized by the dominant position of one largest bank, which is CBE. The share of this bank in the overall asset of the banking industry was 80.78 percent in 2001. Since then the structure of the banking sector has evolved significantly to 64.1 percent in 2012 (Biritu vol. 117). Currently, total resources mobilized by Ethiopia's banking system in the form of deposit Spurred by remarkable branch expansion reached Birr 292.8 billion reflecting annual growth rate of 23.5 on the year 2013/14 (NBE annual report 2013/14). The following Table shows the branch net work of commercial banks in Ethiopia.

Table 6: Branch net work of Commercial Banks in Ethiopia

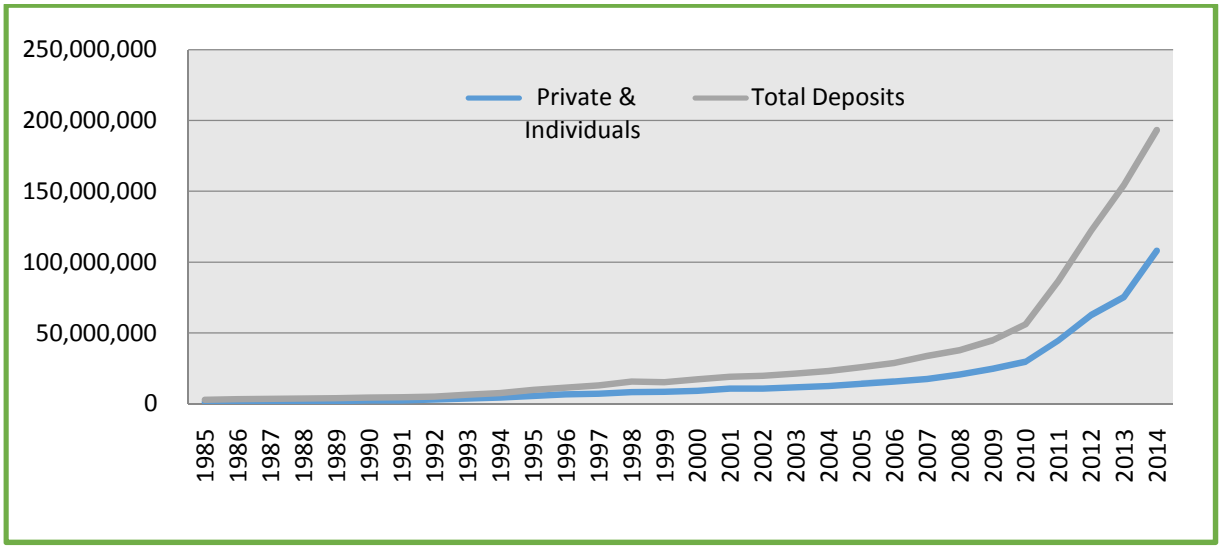
Banks	No of Branches	Banks	No. of Branches
Commercial Bank of Ethiopia	856	Debub Global Bank	19
Construction & Business Bank	115	Dashin Bank	142
Development Bank of Ethiopia	32	Enat Bank	3
Addis International Bank	21	Lion International Bank	62
Awash International Bank	152	Nib International Bank	94
Abay Bank	70	Oromia International Bank	109
Abyssinia Bank	109	United Bank	99
Buna International Bank	63	Wogagen International Bank	100
Birhan International Bank	48	Zemen Bank	9
Cooperative Bank of Oromia	105		

Source: Own compilation form Annual report of each bank. As of 2013/14

3.7.1. Performance of Commercial Bank of Ethiopia

CBE plays a catalytic role in the economic progress & development of the country. In terms of technology also it is the first bank in Ethiopia to introduce ATM service for local users. As a result the bank has more than 8 million account holders and it takes the lion share as compared to total private banks in the country. It has strong correspondent relationship with more than 50

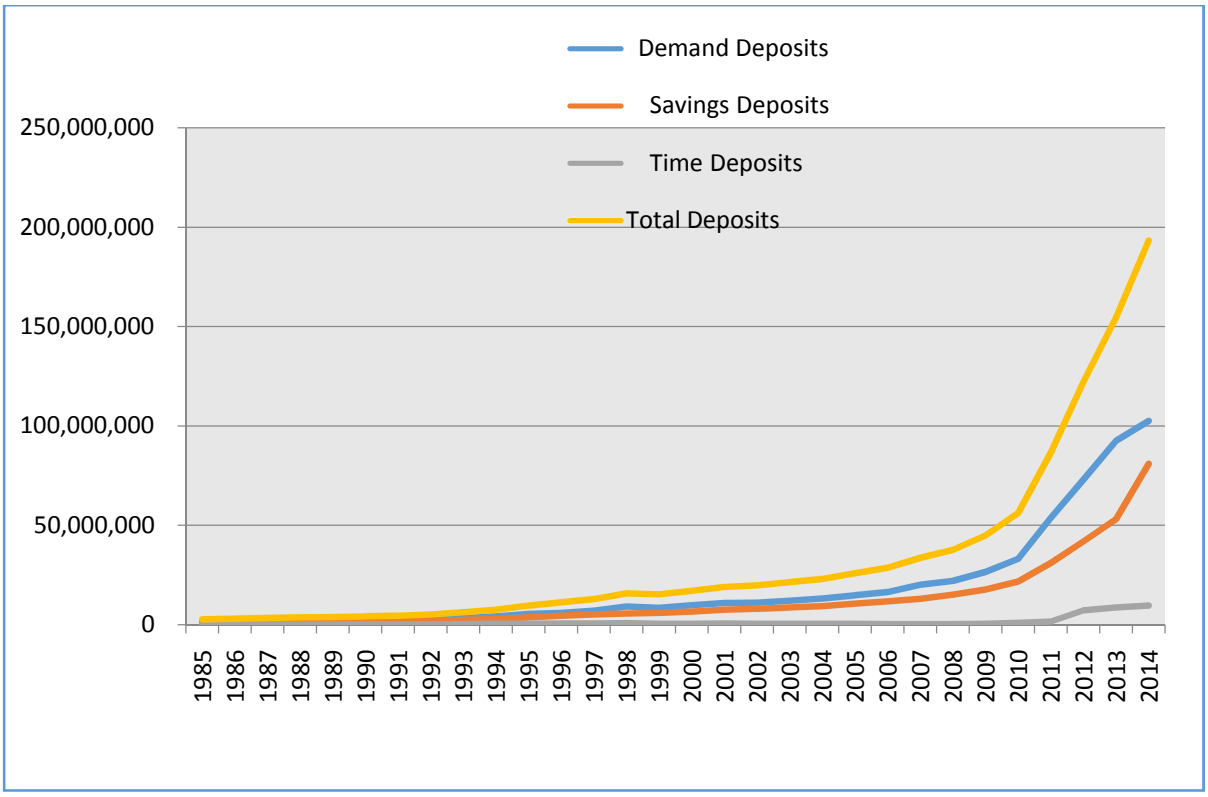
renowned foreign banks, including the Commerz Bank A.G., Royal Bank of Canada, City Bank, HSBC Bank and others. CBE has a SWIFT bilateral arrangement with more than 700 others banks across the world. CBE has also reliable and long-standing relationships with many internationally acclaimed banks throughout the world. As a result, the bank's asset is increasing rapidly in the past six years. Large share of deposit of the bank is mainly from privates and individuals. Others like cooperatives, pubic enterprises and agencies, domestic banks and other financial institutions, central and local governments and foreign banks have their own share in total banks deposit. The banks total deposit growth trend since in 1985 is shown in Figure 2.



Source: Author's graph, data from CBE

Figure 2: Trends of total deposit by ownership

As the figure above shows, both private individual and total deposit of the bank have been stagnated in the previous years. But in recent years, total deposit is increasing. During the Derg period the growth of deposit was stagnant due to its restrictive policy. However, deposit growth has shown a sharp increase after the policy reforms made by the current bank since 2005. Figure 3 below depicts the deposit trend of CBE by deposit type over time since 1985.

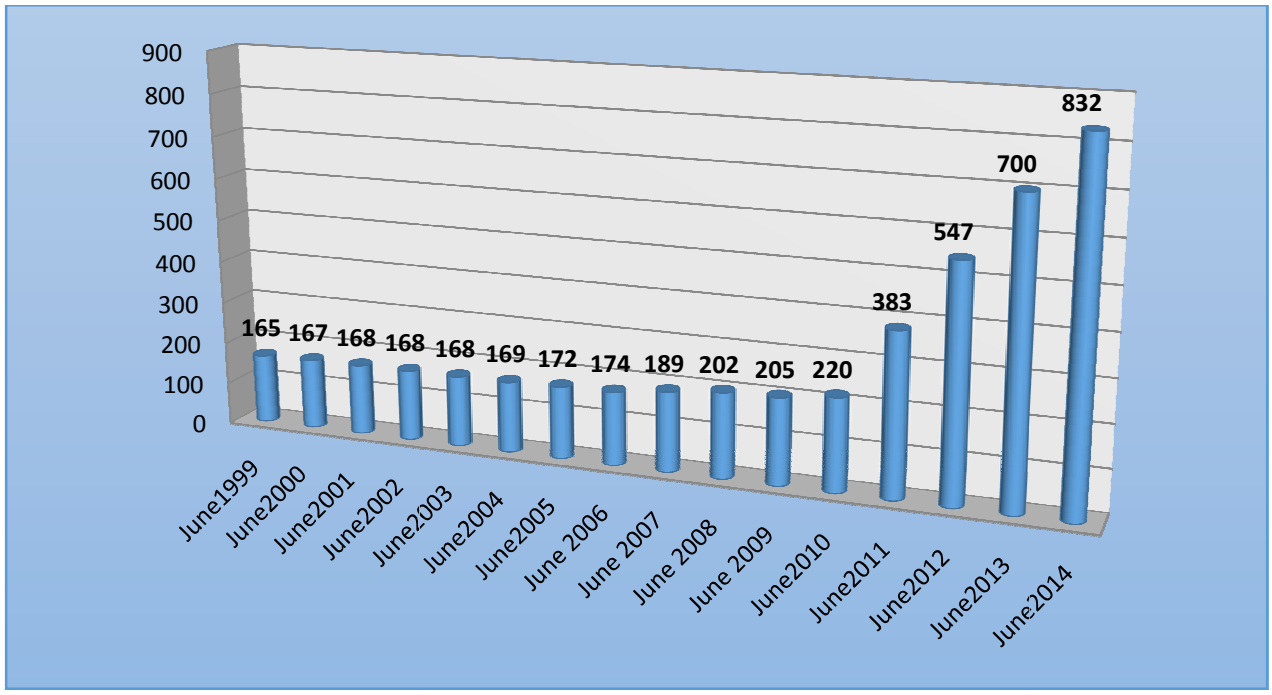


Source: Author's computation, data from CBE

Figure 3: Trends of deposit growth by account/deposit type

As the graph shows, the demand deposit is much greater than saving and time deposits. The negative real interest rate may compel the depositors to put their money in demand deposit type. All deposit types has been showing a rapid increase in current years particularly since 2010. It may be due to rapid expansion of banks branch network over the country, increase of per capita income of the society and rapid economic growth of the country. Both private and state owned banks aggressively expanding their branch network and intensively advertise to create awareness about saving though televisions and radios.

The total branches opened by commercial bank of Ethiopia are depicted by the following figure 4 below.



Source: Author's computation, data from CBE

Figure 4: Numbers of branches CBE opened over time

The total number of branches opened by commercial bank of Ethiopia is showing drastic increase since 2010. Before 2009, there was limited branch expansion while during the period of 1999 and 2009 only forty additional branches were opened throughout the country. Since 2009 CBE aggressively increased the number of its branches, mainly intended to mobilize deposit. Currently, the bank opened nearly 200 branches per year and now branch expansion has reached 945 as of May 2015.

CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

The preceding chapter discusses the overall research design and methodology of the research. It defined the variables, including their measurement. Besides, the model specification, estimation techniques and type and sources of data to be used are presented and briefly discussed.

4.1. Type and Sources of Data

The main source of this research was secondary data from various sources. The study was performed based on annual time series data published by different financial institutions. Annualized total deposit by category of ownership and type of deposit is collected from Commercial bank of Ethiopia along with lending rate, exchange rate and number of branches. Central statistic Agency of Ethiopia was also used as secondary data provider. Moreover, Annual report of the National Bank of Ethiopia, different journals and local bulletins like Mudaye Neway and Biritu were also used.

4.2. Description of Variables and Research Hypothesis

Different articles and masters theses were also searched for assessment, validation and valuable conclusions. The variables used in the study were deposit, interest rate, exchange rate, economic growth, inflation, and branch expansion and population growth. The variables, their units of measurement and representation are shown in Table 7, as below.

Table 7. Variable definitions and Measurement

Variables	Definition	Unit
D	Total deposit	In millions of birr
R	Interest rate	Percentage
E	Exchange rate	Percentage
G	Economic growth	Percentage
BR	Branch Expansion	In number
P	Population Growth	Growth rate (percentage)

4.2.1. Dependent variables

In the study, the researcher used deposit growth as dependent variable. Mobilization of deposits for a bank is as essential as oxygen for human being. As result, mobilization of savings is one of the important objectives of the Commercial Banks. It helps to expand banking operations, by providing subsidy for branch expansion. The successful functioning of commercial banks depends on the extent of funds mobilized. Deposits constitute a vital source of funds required for banking business.

4.2.2. Independent variables

The following independent variables hypothesis is proposed to increase our understanding of the determinant factors of deposit growth in commercial banks. These factors were determined by detailed review of the literatures.

1. **Economic Growth**

Theoretical and empirical evidence suggests that, economic growth is the main source of banks deposit growth. If there is a real growth in the economy, deposit will grow as well. This hypothesis was proved by the chakravarty committee in 1985. The committee reported that the growth of Indian deposit in 1985 at an accelerated pace was attributed to the higher real growth achieved by the economy (chakravarty committee, 1985).

H0*:There is no significant relationship between* ***economic growth*** *and commercial bank deposit*
HA*: There is a positive significant relationship between* ***economic growth*** *and Commercial bank deposit.*

2. 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. Symmetrically, deflation is a sustained decline in the price level. It corresponds to a negative inflation rate. The practical issue is how to define the price level. Macroeconomists typically look at two measures of the price level, at two price indexes: the GDP deflator and the consumer price index. 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 other 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.

H0*:There is significant positive relationship between* ***inflation*** *and commercial bank deposit*
HA*: There is a significant negative relationship between* ***inflation*** *and Commercial bank deposit.*

3. Interest rate

In essence, the deposit rate is the interest rate that a bank pays the depositor for the use of their money for the time period that the money is on deposit. As deposit interest rate increases people can be initiated to put their money in the bank. This leads to increase in deposit growth.

H0*:There is significant positive relationship between* ***interest rate*** *and commercial bank deposit*
HA*: There is insignificant relationship between* ***interest rate*** *and Commercial bank deposit.*

4. Exchange rate

Exchange rates are quoted as foreign currency per unit of domestic currency or domestic currency per unit of foreign currency (Bishop, 2006). According to Nugel (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 other form of investment rather than bank deposit. Alemayehu(2015) also confirms that for developing country in general saving is negatively correlated with unstable exchange rate.

H0*:There is negative relationship between* ***exchange rate*** *and commercial bank deposit*
HA*: There is positive relationship between* ***exchange rate*** *and Commercial bank deposit.*

5. Branch expansion

Branch expansion is opening new branches or service outlets in and outside the country. According to M.A.Baqui, there is a relationship between commercial banks deposits and commercial bank's branch expansion. Deposit is influenced by branch expansion and expansion of bank branches is also influenced by the level of deposits in any area (M.A. Baqui et al, 1987). Banks usually makes decisions on expanding their branch by considering different factors. Commercial bank of Ethiopia has been opening branches in and outside Ethiopia and as of May 2015, the bank has reached 945 branches in Ethiopia and 5 branches outside Ethiopia.

H0*:There is no significant relationship between* ***branch expansion*** *and commercial bank deposit*
HA*: There is a positive significant relationship between* ***branch expansion*** *and Commercial bank deposit.*

6. Population growth

If population is high in a given nation, it can lead to high labor force participation that can rise saving rate or deposit of banks. 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 larger than those of the retired one. So that

saving of younger is much higher than dis-saving of the retired. 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 dis-saving of retired group (Modigliani, 1986). Since in Ethiopia the share of younger society is higher than the retired society, there is positive relationship between saving (deposit rate) and population growth rate.

H0*: There is no significant relationship between* ***population growth*** *and commercial bank deposit.*

HA*: There is a positive significant relationship between* ***population growth*** *and Commercial bank deposit.*

4.3. Research Design

The study used quantitative techniques in analyzing data.

4.3.1 Quantitative Techniques

The quantitative approach involved the use of regression analysis in estimating the relationship between deposits and variables that emerge as its determinants or explanatory variables. The bank deposit is the dependent variable, while inflation rate, deposit interest, exchange rate, population growth and GDP represent the independent variables. Koop (2006, p.49) argues that the most important tool applied economists used to understand the relationship is regression analysis among two or more variables particularly in the case where there are many variables and the interactions between them are complex. Accordingly, the regression analysis technique has been chosen.

4.4. Target Population and Sampling Methods

The target population under review was the macro-economic event of Ethiopia and total deposit of Commercial bank of Ethiopia on annual basis over forty (40) years period spanning the time from 1974 to 2013 using time series data. Commercial Bank of Ethiopia was assumed to represent the banking sector in Ethiopia and selected for the case study because of its presence in

all parts of the country, number and diversity of customers, and its market share of total deposit in the Banking sector.

4.5. Model Specification

The theoretical literature discussed above suggests that bank deposit, inflation rate, exchange rate deposit interest rate, economic growth, population and branch expansion are, somehow, related. The empirical frame work of this study is focused on modeling the determinants of deposit of commercial banks in Ethiopia. A variant of the determinant model can be used to evaluate the determinants of deposit. However, the study used the following determinant variables: Interest rates on deposit (R), Exchange rate (E), Economic growth (EG), inflation (*I*), Population growth (P) and Branch expansion (BR). Based on the above explanation, the models are formulated as follows:

$$D = f(R, E, I, EG, P, BR) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.1$$

Where; D is deposit of commercial bank of Ethiopia. The equivalent equation which will be used for estimation can be written in logarithmic form as follows:

$$LD = \beta_0 + \beta_1 LR + \beta_2 LE + \beta_3 LI + \beta_4 LGDP + \beta_5 LP + \beta_6 LBR + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.2$$

Where, ε_t is the error term and β_0 is the constant term, β_1, β_2, $\beta 3$, $\beta 4$ and $\beta 5$ are slope coefficients. Regression Coefficients (to be estimated) measures how much units of deposit (D) would be changed with a unit change in the independent variables.

4.6. Estimation Techniques

In studying the determinants of deposit levels of conventional banks, the study uses recent techniques in time series econometrics. These techniques are co-integration and error correction method, which are carried on within the vector auto regression (VAR) framework. The first step of the analysis, using the Augmented Dickey-Fuller (ADF) test, is to test for the presence of unit roots of the variables in the system. After the stationary test is examined, we can conduct a co-integration test. If co-integration is found, a vector error correction model (VECM) is constructed. However, if there is no co integration, the analyses will be based on the regression of the first differences of the variables using a standard VAR model. In a VAR model, each

variable is explained by its own lagged values and the lagged values of all other variables in the system. A vector autoregressive process of order k or VAR (k) for a system of 'm' variables can be written in the following matrix form

$$Y = \delta + \sum_{j=1}^{k} AjYt - j + Vt \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.3$$

The term autoregressive is due to the appearance of the lagged value of the dependent variable and the term vector is due to the fact that we are dealing with a vector of two or more variables. Each endogenous variable is explained by its lagged and the lagged values of all other endogenous variables in the model. In general, a VAR model expresses current values of the endogenous variables solely as a function of lagged values of all endogenous variables in the system.

4.7. Unit Root Tests

For time series analysis, the variables are expected to be stationary with a mean of zero and constant variance. In order to examine their stationary, the Augmented Dickey-Fuller test is used to test the null hypothesis of non stationary or unit root. A rejection of the null hypothesis indicates that the series is not stationary at level and therefore requires differencing either in the first order or second order to achieve stationary. The logarithm values of the time series data was taking before Ordinary Least Square (OLS) techniques are used for estimating a model for bank deposits. The logarithm is used in the model in order to transform the non linear data into linear form. All variables in the system have to be stationary in the VAR model before estimation. Therefore, it is necessary to test the stationary of each data series. Under the ADF test, the null hypothesis of a unit root, H0: b1 = 0 (unit root), is tested using the following specification:

$$\Delta Y = b_0 + b_1 Yt_{t-1} + \sum_{j=1}^{k} \theta j \Delta Y_{t-i} + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.4$$

The original level data and the first-differenced level data are both tested for unit roots. If the test statistics (t-ratio) is greater than the critical values given in Fuller (1976), the null hypothesis is rejected and the data is said to be stationary.

4.8. Co-integration Tests

The concept of co-integration was introduced by Granger (1986) and further developed by Engle and Granger (1987). Co-integration implies that the series do not drift too much apart and are tied together by some long run equilibrium relationship. When the series are co integrated, there is no need to difference the variables. Contrary, other techniques require differencing the variables in order to achieve stationary, which involves a loss of potential information about long-run relationships among the levels of variables. Hence, co integration analysis is able to capture these relationships, which are otherwise lost when other techniques are used.

A multivariate test for co integration developed by Johansen (1988) and Johansen and Juselius (1990) is used in this study. The Johansen-Juselius (JJ) procedure of co-integration test is based on the maximum likelihood estimation of the VAR model. The test is carried out through a VAR system such as follows:

$$Dt = B_1 D_{t-1} + B_2 D_{t-2} + B_1 D_{t-3} + \cdots + B_k D_{t-k} + \alpha + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.7$$

$$t = 1, ----, T$$

where D_t is a (n × 1) vector of I(1) variables; βi are (n × n) matrices of parameters; α is a (n × 1) vector of constant; υ_t is a vector of normal log distributed error with zero mean and constant variance; and k is the maximum number of lag length processing the white noise.

The trace and maximum eigenvalue statistics are calculated to test for the presence of r co-integrating vectors. The trace statistics (λ trace) tests the null hypothesis that there are at most r co-integrating vectors against the alternative of r or more co-integrating vectors. The λ trace for the null hypothesis of at most r co-integrating vectors is

$$\lambda_{trace}(r) = -T \sum_{j=r+1}^{n} \ln\left(1 - \lambda_j\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.8$$

The maximum eigenvalue statistic (λmax) for the null hypothesis of r co-integrating vectors against the alternative of r + 1 co-integrating vectors is

$$\lambda_{\max}(r, r+1) = -T\ln(1 - \lambda_{r+1}) \ldots\ldots\ldots\ldots\ldots\ldots 4.9$$

Where, λ_j is the estimated values of the characteristics roots obtained from the Π matrix and T is the number of usable observations

4.9. The Vector Error Correction Model

Engle and Granger (1987) showed that co-integration implies, and is implied by, the existence of an error correction term. This means that changes in the dependent variable are a function of the level of disequilibrium in the co-integrating relationship (captured by the error correction term) as well as changes in other explanatory variables. Once the variables are found to be co-integrated, a vector correction model (VECM) will be used to investigate the dynamic interactions among them in the system. The Granger representation states that for two co-integrated variables, an ECM can be found in the following form:

$$\Delta Yt = \mathrm{B}_{0+}B_1\Delta X_t + B_2\varepsilon_{t-1} + \cdots + V_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.10$$

Where, ϵ_{t-1} represents the error correction term which captures the adjustment toward the long run equilibrium and $\beta_2$is the short run adjustment coefficient.

A principal feature of co-integrated variables is that their time paths are influenced by the extent of any deviation from long-run equilibrium. Hendry and Richard (1983) argued that ECM captures the dynamics of the system whilst incorporating the equilibrium suggested by economic theory. The appeal of the ECM formulation is that it combines flexibility in dynamic specification with desirable long run properties (Dolado et al., 1990).

4.10. Diagnostic Tests

Under the ordinary least squares estimation (OLS) of regression models, the assumptions of no serial correlation of the error terms as well as a constant variance of the error terms are held. The Breusch-Godfrey test for serial correlation and the Breusch-Pagan / Cook-Weisberg were used to test for hetero-skedasticity. If both tests fail, a robust estimator of the covariance will be applied to correct for the presence of serial correlation and heteroskedasticity.

CHAPTER FIVE: EMPIRICAL ANALYSIS AND FINDINGS

This chapter analyses the determinants of deposit growth in Ethiopia using annual data from the year 1974/75 to 2013/14. Before the direct estimation of the model, the unit root tests using ADF has been done to check whether the time-series data is stationary. After identifying the optimal lag length, the presence of the co-integrating vectors is tested using the Johansen procedure. Further, the granger causality test is employed to find the direction of causality between the variables. The long run and short run relationship among variables are also captured.

5.1. Unit Root Tests

The unit root test is a common practice in macro-level data analysis to accommodate non-stationary. If this behavior of macro-variables is left uncorrected, it would lead to the problem of spurious regression when there is a need to model relationships among variables. As explained in the methodology, formal testing for stationary and the order of integration of each variable are primarily undertaken using ADF. The tests with the ADF methods are performed with different trend assumptions (only intercept both linear trend and intercept, and no intercept and no trend). Performing the tests under all three alternatives will identify whether only the intercept or both the trend and intercept are significant. The results from the stationary test under the ADF (Table 8) demonstrate that both trend and intercept must be included in all variables (LnDeposit, LnRGDP, Lninflation, Lninterest rate, Lnexchange rate, and Lnbrexpanision) in testing for stationary, while Lnpopulation is tested without the trend and intercept. A linear trend is found to be insignificant in all of the test equations. The results show that all of the variables included in the model are integrated of order 1, i.e., I (1).

Table 8: ADF Unit Root Test in Level

	Test Statistic Under Different Assumptions		
Variable at Level	ADF test statistic	Critical Value at 5% Level of Significance	Order of Integration
LNDEPOSIT	-1.463756	-3.536601	Critical value is less than test statistic. (In absolute term)
LNRGDP	-0.658953	-3.529758	
LNINFLATION	-1.986868	-3.548490	
LNINTERESTRATE	-3.362962	-3.536601	
LNEXCHRATE	-2.274971	-3.533083	
BREXP	-0.451818	-3.533083	
LNPOPULATION	-1.571379	-3.548490	

Table 9: ADF Unit Root Test at First Difference

	Test Statistic Under Different Assumptions		
Variable First difference	ADF test statistic	Critical Value at 5% Level of Significance	Order of Integration
LNDEPOSIT	-3.755235	-3.533083	I(1)
LNRGDP	-5.875910	-3.536601	I(1)
LNINFLATION	-5.339272	-3.533083	I(1)
LNINTERESTRATE	-6.617931	-3.536601	I(1)
LNEXCHRATE	-4.356993	-3.533083	I(1)
LNBREXPAN	-3.276611	-3.198312*	I(1)
LNPOPULATION	-4.354315	-3.568379	I(1)

* Shows significance at 10%,others at 5%

LNDEPOSIT, LNRGDP, LNINFLATION, LNINTERESTRAT, ELNEXCHRATE, LNBREXP and LNPOPULATION are the natural logarithms of deposit of commercial bank of Ethiopia, real GDP, inflation, interest rate exchange rate, branch expansion and population growth.

The absolute values of the calculated test statistics for all variables are less than its critical value at 5 per cent level of significance. The result indicates that all variables are non-stationary at

level 1, i.e., the series appears to have unit root. So the null hypothesis that each variable has unit root cannot be rejected by the ADF test. However, after applying the first difference, we reject the null hypothesis since the data appeared to be stationary at first difference. Therefore all variables are integrated of order one I (1).

5.2. Optimal Lag Selection

Before applying the test, it is necessary to determine the appropriate lag length and check the stability of the VAR. The lag length is selected according to Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC) and Schwarz Information Criterion (SIC). The more lags we include, the more initial values we lose. If we include too few lags, the size of the test will be incorrect (Wooldridge, 2000). VAR lag exclusion test is also applied so as to check the suitability of the lag included for estimation techniques.

Table 10: Optimal Lag selection

VAR Lag Order Selection Criteria
Endogenous variables: LNDEPOSIT LNRGDP LNINFLATION LNINTERESTRATE LNEXCHRATE LNBREXP
Exogenous variables: C LNPOPULATION
Date: 05/04/15 Time: 19:06
Sample: 1974 2014
Included observations: 35

Lag	Log	LR	FPE	AIC	SC	HQ
0	161.2837	NA	3.43e-14	-8.301926	-7.590910	-8.056483
1	372.0987	301.1642*	8.87e-18*	-16.69135	-13.13627*	-15.46414*
2	440.3957	66.34570	1.45e-17	-16.93690*	-10.53775	-14.72791

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)

FPE, SIC and HQ all chose one lag length to be the optimum lag length. The lag exclusion tests confirmed the first lag to be the appropriate lag. Hence, this study used the optimal lag length of one for estimation techniques.

5.3. Co-Integration Test Result

In order to evaluate the VAR model the next step is to test for the existence of long run relationship among the variables. Lack of co-integration between variables suggested the existence of no long-run relationship between them. Hence, the Johansen co-integration method is applied.

If the test statistics is greater than the critical values, the null hypothesis that there exists r co-integrating vectors against the alternative hypothesis that there are r+1 (for trace) or more than r (for λ max) is rejected. It can be concluded that there is a long-run relationship among the variables. The result of testing the number of co-integrating vectors is shown in Table 11.

Table 11: Unrestricted Co integration Rank Test (Trace)

Date: 05/19/15 Time: 04:43
Sample (adjusted): 1976 2013
Included observations: 35 after adjustments
Trend assumption: Linear deterministic trend
Series: LNDEPOSIT LNRGDP LNINF LNINTERESTRATE LNEXCHRATE LNBREXP LNPOP
Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.875713	211.4466	125.6154	0.0000
At most 1 *	0.806117	138.4660	95.75366	0.0000
At most 2 *	0.589826	81.04848	69.81889	0.0049
At most 3 *	0.458305	49.85738	47.85613	0.0320
At most 4	0.388743	28.40056	29.79707	0.0718
At most 5	0.268718	11.17226	15.49471	0.2011
At most 6	0.006232	0.218788	3.841466	0.6400

Trace test indicates 4 co-integrating eon(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**

Table 12: Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.875713	72.98057	46.23142	0.0000
At most 1 *	0.806117	57.41753	40.07757	0.0002
At most 2	0.589826	31.19110	33.87687	0.1012
At most 3	0.458305	21.45682	27.58434	0.2496
At most 4	0.388743	17.22830	21.13162	0.1615
At most 5	0.268718	10.95347	14.26460	0.1566
At most 6	0.006232	0.218788	3.841466	0.6400

Max-eigenvalue test indicates 2 co-integrating eon(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

It can be seen from Table 11 that the unrestricted co-integration rank test (Trace) shows four co-integrating vectors at the 5% critical value in the system and Table 12, also shows the unrestricted co-integration rank test (Maximum Eigenvalue) shows two co-integrating vectors in the system. Thus, based on the two trace statistics result we can conclude that there exists meaningful long run relationship between the variables under consideration i.e. there is a significant long run relationship among rate of deposit growth, real GDP growth, inflation, interest rate, exchange rate, branch expansion and population growth. Since we got the long run co-integrated relationship at most in four variables, we can thus, estimate the Vector Error Correction model (VECM). The VECM provides important information on the short-run relationship between any co-integrated variables.

The main point of the VECM analysis is the error correction term (the one period lagged error terms) from the above estimated co-integrating equations. These lagged terms provide an explanation of the short run deviations from the long-run equilibrium. Hence, the main interest of the paper was to see the long run co-integrating relationship and short run dynamics between deposit growth rate and control variables.

5.4. Error Correction Model (ECM)

After the co-integrated model is estimated, an optimal lag of one is chosen based on the information criteria results, and the ECM is estimated by making use of these and the results of the Johansen co-integration test. The ECM consists of two parts: the long-run co integrating coefficients (used to derive the long-run co-integrating relationship), and the short run coefficients (for the short-run analysis).

5.4.1 Long-run Relationships

As shown in Johansen co-integration test, there are at most four co-integrating relationships. This part of the study examined the following equation through normalization: the impact of dependent variables on deposit growth. The first normalized coefficients of deposit growth from co-integration equation are indicated in table 13 below.

Table 13: The Estimated Long Run Model for LNDEPOSIT

Dependent Variable: LNDEPOSIT
Method: Least Squares
Date: 05/06/15 Time: 13:53
Sample (adjusted): 1974 2013
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP	0.746919	0.013898	53.74468	0.0000
LNINFLATION	0.396015	0.081562	4.855358	0.0000
LNINTERESTRATE	0.008544	0.038916	0.219559	0.8276
LNEXCHRATE	0.739377	0.062018	11.92195	0.0000
LNBREXP	0.239927	0.104156	2.303539	0.0277
LNPOP	0.374507	0.085944	4.357563	0.0001

R-squared	0.994284	Mean dependent vary	22.96867
Adjusted R-squared	0.993418	S.D. dependent vary	1.438257

The co-integrated estimated result of long run model of LNDEPOSIT is the following equation:

LN DEPOSIT =0.75 LNRGDP+0.40LNINFLATION+0.73 LNEXCHRATE +0.24 LNBREXP +0.37 LNPOP

The result indicated that except interest rate all independent variables at 5 percent level of significance have long run effects on the rate of deposit growth. As can be seen from the above estimated result, the long run equation suggested that GDP, inflation, exchange rate, branch expansion and population growth are positively affecting the total deposit in the long run. Interest rate had positive effect but it was insignificant in the long run. The other variables had a positive and statistically significant relationship with deposit growth in the long run. In summary:

- The Economic growth of the country proxy by GDP had positive and statistically significant impact on deposit. An increase of 10 percent in GDP increased deposit by 7.4 percent. In growing economy, both individuals and companies corporate income will increase. This increase leads to an increase earnings (per-capita income) which will intern increase saving. The finding of Tizita(2014) and Hadush(2012) supports this argument. The study of the chakravarty committee in 1985 clearly indicated that the existence of real growth in the economy, will definitely results in deposit growth.(chakravarty committee, 1985). Indian experience is the same as Ethiopia's in this regard. This finding is also supported by Alemahehu's research (Mudaye Neway, 2015). Therefore, we reject the null.
- A significant positive relationship was observed in inflation and deposit in the long run. 10 percent increase in inflation will results in 3.9 percent increase in deposit. This is the reality on the ground; both private and government saving has been increasing year to year. The finding is not in agreement with Tizita (2014) who argued that households in developing countries such as Ethiopia whose income prospects with inflation and macroeconomic uncertainty are barely enough for subsistence. However, the study performed by CBE indicate that more than 80 percent of the saving customers motive for saving where Precautionary (CBE Informer,2013). As Deaton (1991) explained.

Precautionary saving will increase at the increase of inflation. The finding is consistence with D. Carroll, (2006) and Wubetu (2012). Therefore, we failed to reject the Null.

In Ethiopia, People are actually losing money by putting their money in the bank where interest rate is not compensating the inflation rate. This may be justified by lack of entrepreneur skill of the society, luck of other alternative investment in the country or may be the risk-averse mentality of most depositors.

- The long run relationship between deposit and Exchange rate is positive and statistically significant. 10 percent increase in exchange rate resulted in results in 7.3 percent increase in deposit. The result is inconsistence with the study of Nugel(2012) of Nigeria and Alemahehu (2015) of Ethiopia. The inconsistency of our study with the study of Nigeria could be due to the differing countries policy in foreign currency management. People could buy and hold foreign currency In Nigeria. While this is not possible in Ethiopian case. The main source of foreign currency for Ethiopia is remittance and export of agricultural commodities, particularly coffee. If the exchange rate is high, the amount the receiver gets is high: Hence, deposit will increase. Therefore, we reject the Null in this regard.
- Branch expansion is also one variable, which the researcher expected to positively influence deposit in the long run. The result also confirmed same. Ten percent increase in number of branch will results in 2.3 percent increase in deposit. This finding is supported by Tizita (2014)and Wubetu (2012) of Ethiopia and Rangarajan (182) ,Sdandhu and Goswami(1986) in India. As a result we reject the Null.
- The result also revealed that Population growth had positive and significant impact on deposit. One percent increase in population growth will results in .37 percent increase in deposit. This is supported by the study of Modigliani (Modigliani, 1986). But the finding was not in agreement with Alemahyu's(2015) finding, probably because he analyzed the impact of population using dependency ratio. Therefore, we reject the Null.
- The long run relationship between deposit and interest rate was positive but statistically insignificant. This result is supported by the findings of Tizita (2014) and Hadush(2012).Edmister and Merriken (1989) also showed that interest rates could do little in this regard. Alemaheyu's findings strongly supports the conclusion that real interest rate have little or no impact on saving (Geda 2015). Therefore, we reject the Null.

5.4.2 Short Run Relationships

The other objective of this estimation was to investigate short run relationship between dependent and independent variables. If we get co integrating relationship in the long run, we can estimate the Vector Error Correction model (VECM). This VECM is important to show the short run relationship between any two co-integrated variables. Table 14 showed the first short run error correction model that assumes deposit as independent variable.

Table 14: Short-Run Coefficients when dependent variable is D (LDEPOSIT)

Dependent Variable: D(LNDEPOSIT)
Method: Least Squares
Date: 05/06/15 Time: 12:58
Sample (adjusted): 1975 2013
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.071652	0.011248	6.369938	0.0000
D(LNRGDP)	0.214730	0.151483	1.417523	0.1666
D(LNINF)	-0.026112	0.018463	-1.414253	0.1676
D(LNINTERESTRATE)	0.011926	0.014553	0.819473	0.4190
D(LNEXCHRATE)	0.241443	0.076019	3.176066	0.0034
D(LNBREXP)	0.565349	0.075256	7.512329	0.0000
D(LNPOP)	0.001957	0.076373	0.025631	0.9797
CointEq1	-0.067835	0.039664	-0.85155	0.0444
R-squared	0.762707	Mean dependent var		0.130684
Adjusted R-squared	0.715249	S.D. dependent var		0.090587

The coefficient of the error correction term for the deposit growth equation has the expected negative sign, indicating that it is error correcting. This guaranteed that although the actual real deposit may temporarily deviate from its long run equilibrium value, it would gradually converge to its equilibrium. The error correction term of -0.0678showedthat 6.8 percent of the deviation of the actual deposit from its equilibrium value is eliminated every year. Hence, full adjustment would require a period of about 15 years. This showed that the deviation from the long-run equilibrium is adjusted back to equilibrium at a slow pace in each subsequent year. The relatively low pace of adjustment may be attributed to structural rigidities in Ethiopia that is common in most developing countries that slow down the adjustment processes. In estimating the error-correction model, population is introduced exogenously to capture the effect of the population on deposit growth.

In short run, branch expansion and exchange rate had positive and significant impact on deposit growth while GDP, Interest Rate and population had positive but insignificant relationship. However, inflation has insignificant negative relationship with deposit. Inflation in Ethiopia showed dramatic increase. In 2008, inflation reached 64 %(UNDP 2014). As a result the short run relationship between inflation and deposit growth was insignificant.

The long run and short run relationship was similar with branch expansion, exchange rate and interest rate. Though the positive long-run and short impact is the same for GDP and population, there level of significance was different.

5.5 Granger Causality Test Result

In this part, we examined the Pair-wise granger causality between deposit growth and its determinant factors. The estimated causality test is reported in Table15. As can be seen from the Table below, we fail to accept the null hypothesis that RGDP did not cause DEPOSIT and vice versa , but we also fail to reject the null hypothesis that inflation did not granger cause LDEPOSIT. The granger causality runs one way from inflation to deposit and not the other way: causality is unidirectional from inflation and interest rate to deposit. Deposit could cause branch expansion and vice versa at 5% level of significance. Deposit could also cause exchange rate at 5 % level of significance. As it could be seen from the results, there was no causality between deposit and other determinants.

Table 15. Pair wise Granger Causality Tests

Date: 05/06/15 Time: 15:49
Sample: 1974 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LNRGDP does not Granger Cause LNDEPOSIT	38	1.33789	0.2763
LNDEPOSIT does not Granger Cause LNRGDP		1.43079	0.2536
LNINF does not Granger Cause LNDEPOSIT	38	10.0375	0.0004
LNDEPOSIT does not Granger Cause LNINF		2.28005	0.1182
LNINTERESTRATE does not Granger Cause LNDEPOSIT	35	3.85044	0.0325
LNDEPOSIT does not Granger Cause LNINTERESTRATE		0.86499	0.4313
LNEXCHRATE does not Granger Cause LNDEPOSIT	38	2.06550	0.1428
LNDEPOSIT does not Granger Cause LNEXCHRATE		3.43419	0.0442
LNBREXP does not Granger Cause LNDEPOSIT	38	0.33089	0.7206
LNDEPOSIT does not Granger Cause LNBREXP		2.48934	0.0984
LNPOP does not Granger Cause LNDEPOSIT	38	0.07461	0.9283
LNDEPOSIT does not Granger Cause LNPOP		0.29426	0.0470

CHAPTER SIX: CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Conclusions

Based on the findings of the study both from the descriptive and econometric results, the following conclusions are derived.

1. The ECM model estimate indicates that, in the long run, real GDP, inflation, branch expansion, exchange rate and population growth have positive and significant impact on deposit growth of CBE. As the model result showed economic growth has more positive impact on deposit growth than other determinant factors. Even though interest rate has positive sign but it was insignificant. Moreover, exchange rate has the second higher impact in the long run than other variables included in the model. In general, inflation rate in Ethiopia is low except for, 2008 and 2012. Whenever level of inflation is below the threshold, it has a positive impact on overall economy. Most studies suggest that the optimal level of inflation (threshold) for Ethiopia is 10% (Getenet, 2013) because of this, Inflation has a positive impact on the deposit growth in Ethiopian context in the long run.
2. The VECM estimated output indicates that there is short run association between deposit and its determinants. In short run, there is significant positive impact of exchange rate and branch expansion on rate of deposit growth while real GDP growth rate, interest rate, inflation and population growth are insignificant. Moreover, the estimated result of this model indicates that the deviation of the real deposit growth rate from its long run equilibrium would require a period of 15 years to adjust. There is sluggish dynamic adjustment of deposit from their long run equilibrium.
3. As per estimates of the model, inflation has uni-directional causality with deposit that runs from deposit to inflation, from exchange rate deposit, from deposit to interest rate, from population growth to deposit. But there is bi-directional causality between GDP and Deposit and Branch expansion and deposit. Generally, this Granger Causality test shows that deposit growth and can predict movements of branch expansion and GDP and vice-versa.

Finally, we can conclude that the macroeconomic event of Ethiopia could have strong effect on deposit mobilization, which calls for responsive policy to increase domestic saving for the sustainable financial liberty of the country.

6.2 Recommendation

Based on the analysis made and the major findings obtained, the following policy recommendations are forwarded;

- Improve infrastructure and incentives for banks to open branches in both remote (central) area and reach the unbanked society. There should be also an investment in strengthening the operational capacity of the existing branches. Particularly those which are located in remote areas with limited Human and other resources. The empirical evidence indicated that deposit would increase as the number of branch increases.
- The government should continue to control inflation below its threshold or optimal level.
- There is a well established positive relationship between economic growth and deposit mobilization. This calls for a continued policy support and investment in enhancing economic growth that would not only increase the capacity of banks to mobilize resources, but also trigger the overall growth of the economy both in long and short run.

- Our result also indicates that increase in population growth will positively affect the growth of deposit. While unmanaged population could hinder economic growth and social development, regulated population growth would mean an increase in functional labor force that would attract investment and create wealth which would positively affect overall economic growth. As a result deposit will grow. The study recommends strengthening the current family planning initiatives to allow regulated population growth. And then, enhance Human Resource development in the country. And finally, creating job opportunity for the existing labor force through developing investment friendly policy instruments.

- Under the current financial and investment policy of the country, investment in the financial sector is allowed only for people with Ethiopian citizenship. This inhibits the possibility of foreign banks operating in the country. Since competition would remain low, interest rate would not necessary increase the total deposit. However, experiences from other countries, particularly where there is liberalized economy, indicated that increasing interest rate commonly increases deposit mobilization. Therefore, banks should develop long-run strategies that will align with the policy shift of the country, if any. For example, if Ethiopia decides to be a member of World Trade Organization (WTO), foreign banks would be allowed to operate in the country.

The study attempted to examine the determinant factors that can affect deposit in the short run and long-run. However due to lack of time to collect robust data, the impact of other potential parameters (e.g. service quality and employees satisfaction) on deposit growth were not examined. These additional factors may help further researchers to understand micro economic events that affect deposit. Finally, even though this study accomplished the objectives mentioned, further research might concentrate on additional parameters related to the effect of socio-economic factors on deposit mobilization and flows.

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Appendices

Table 1 : VEC Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h
Date: 05/06/15 Time: 16:41
Sample: 1974 2014
Included observations: 35

Lags	LM-Stat	Prob
1	51.63112	0.3713
2	63.67042	0.0776
3	57.25169	0.1956
4	80.61656	0.0030
5	55.55350	0.2416
6	51.90933	0.3612
7	60.67731	0.1224
8	35.28029	0.9296
9	37.15762	0.8925
10	64.37364	0.0693
11	54.19361	0.2830
12	33.75442	0.9523

Probs from chi-square with 49 df.

Table 2: VEC Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Date: 05/06/15 Time: 17:43
Sample: 1974 2014
Included observations: 33

Component	Skewness	Chi-sq	Df	Prob.
1	0.423754	0.987621	1	0.3203
2	-0.091317	0.045863	1	0.8304
3	-0.888759	4.344408	1	0.0371
4	-0.957523	5.042672	1	0.0247
5	0.327387	0.589501	1	0.4426
6	-0.288928	0.459137	1	0.4980

7	0.134611	0.099660	1	0.7522
Joint		11.56886	7	0.1157

Component	Kurtosis	Chi-sq	Df	Prob.
1	1.749695	2.149487	1	0.1426
2	0.871312	6.230554	1	0.0126
3	3.042159	0.002444	1	0.9606
4	3.010090	0.000140	1	0.9906
5	1.318021	3.889950	1	0.0486
6	1.561644	2.844692	1	0.0917
7	1.332381	3.823813	1	0.0505
Joint		18.94108	7	0.0084

Component	Jarque-Bera	Df	Prob.
1	3.137107	2	0.2083
2	6.276417	2	0.0434
3	4.346852	2	0.1138
4	5.042812	2	0.0803
5	4.479452	2	0.1065
6	3.303829	2	0.1917
7	3.923473	2	0.1406
Joint	30.50994	14	0.0065

Table 3: Hetroscedasticity test

Date: 05/06/15 Time: 17:52
Sample: 1974 2014
Included observations: 33

Joint test:

Chi-sq	Df	Prob.
863.5029	840	0.2795

Individual components:

Dependent	R-squared	F(30,2)	Prob.	Chi-sq(30)	Prob.
res1*res1	0.891955	0.550360	0.8201	29.43451	0.4949
res2*res2	0.913860	0.707263	0.7411	30.15736	0.4576
res3*res3	0.895823	0.573269	0.8080	29.56215	0.4882
res4*res4	0.759375	0.210389	0.9839	25.05936	0.7221
res5*res5	0.842783	0.357376	0.9231	27.81184	0.5804
res6*res6	0.948932	1.238792	0.5445	31.31477	0.4001
res7*res7	0.997657	28.38225	0.0346	32.92267	0.3259
res2*res1	0.914535	0.713383	0.7382	30.17967	0.4565
res3*res1	0.928232	0.862256	0.6728	30.63167	0.4337

res3*res2	0.905205	0.636602	0.7755	29.87175	0.4722
res4*res1	0.819013	0.301684	0.9500	27.02742	0.6218
res4*res2	0.988006	5.491489	0.1656	32.60419	0.3400
res4*res3	0.675483	0.138767	0.9972	22.29093	0.8433
res5*res1	0.906533	0.646594	0.7705	29.91557	0.4700
res5*res2	0.978791	3.076634	0.2750	32.30010	0.3537
res5*res3	0.904331	0.630180	0.7787	29.84292	0.4737
res5*res4	0.838726	0.346709	0.9285	27.67797	0.5875
res6*res1	0.978231	2.995825	0.2812	32.28163	0.3545
res6*res2	0.838205	0.345376	0.9292	27.66075	0.5884
res6*res3	0.915638	0.723579	0.7334	30.21606	0.4546
res6*res4	0.853050	0.387001	0.9078	28.15064	0.5625
res6*res5	0.936544	0.983933	0.6260	30.90596	0.4200
res7*res1	0.962858	1.728251	0.4332	31.77432	0.3781
res7*res2	0.969056	2.087750	0.3759	31.97884	0.3685
res7*res3	0.987037	5.076183	0.1778	32.57222	0.3414
res7*res4	0.721664	0.172852	0.9925	23.81492	0.7803
res7*res5	0.949546	1.254680	0.5400	31.33503	0.3991
res7*res6	0.968319	2.037671	0.3830	31.95454	0.3696