



# **Factors Determining Deposit Mobilization Performance: In the Case of Private Commercial Banks in Ethiopia**

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## Declaration

I hereby declare that this thesis is prepared by Andinet Ferede Alemu, entitled: Factors Determining Deposit Mobilization performance: In the Case of Private Commercial Banks in Ethiopia and submitted in partial fulfilment of the requirements for the degree of Executive Master of Business Administration complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **Abstract**

*The aim of this study is to examine factors influencing deposit mobilization in private commercial banks in Ethiopia. In doing so, the study adopted quantitative methods research approach using secondary data. The study had found variables that can affect the total deposits of the banks. Seven variables are regressed with the dependent variable i.e. total deposit. The explanatory variables are number of bank branches, deposit interest rate, liquid asset to deposit ratio, lagged value of bank deposits, net interest margin, inflation rate and economic growth (GDP). The data for these variables were collected from the respective private commercial banks' financial statements, national bank of Ethiopia, central statistical authority and MOFEC of the sample year 2005 up to 2015. Different diagnostic test were performed to know whether the model is valid or not. All the tests were valid and eventually regression analysis was performed using Eview statistical package. The result from regression analysis showed that number of bank branches, deposit interest rate, net interest margin and GDP were significantly and positively correlated with the explained variable. Lagged value of bank deposit was significantly and negatively correlated with total deposit. However, liquid asset to deposit ratio and inflation rate were insignificantly negatively correlated with bank deposit. Finally the study had recommended what should be done to mobilize more deposits.*

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## **Acronyms and Abbreviations**

BDG	Bank Deposit Growth
BIS	Bank for International Settlement
CLRM	Classical Linear Regression Model
DIR	Deposit Interest Rate
ETB	Ethiopian Birr
FEM	Fixed Effect Model
GDP	Growth Domestic Product
INF	Inflation Rate
JB	Jarque-Bera
LDCs	Least Developed Countries
LOGBD	Lagged Value of Bank Deposit
MFI	Microfinance Institution
MoFEC	Ministry of Finance and Economic Cooperation
NBB	Number of Bank Branches
NBE	National Bank of Ethiopia
NIM	Net Interest Margin
OLS	Ordinary Least Square
REM	Random Effect Model
SMEs	Small and Medium Enterprises
WTO	World Trade Organization

# Chapter One

## Introduction

### 1.1 Background of the Study

Economic growth is the common goal of all nations (Pinchawawee, 2011). Everybody lives with more comfortable, better standard of living than before and holding a better welfare because of the surge in economic growth. Government in each country aims to reduce poverty and increase the level of national income. Therefore, to achieve the main target of economic growth, governments may implement various kinds of policies such as encouraging saving, stimulating investment and production in their countries. Mobilizing domestic resources are vital activity to achieve self- sufficiency. Hence, the financial sector is one major sector of the country's economy that needs to be revitalized constantly in mobilizing domestic deposits to increase investment (Pinchawawee, 2011).

The financial system in every economy is composed of the bank-based system where provision and monitoring of investment funds are made through the banks on one hand and the capital market where investors enter directly through ownership of securities (Shemsu, 2015).

Commercial banks are the main actors of the financial system in performing financial intermediation. They control greater portion of the investment funds from domestic deposits and the main creditors of corporate bodies, small and medium enterprises (SMEs) and individual investors. That is why the traditional banking business of supplying funds to the economy is still of importance. For instance, most business organizations especially in Ethiopia are highly dependent on bank loan as a source of debit financing and the ability of banks in providing loan purely depend on their ability to mobilize deposits (Ibid). The amount of deposit a commercial bank should have at hand shall be enough to make the bank operate in the market and to satisfy the financial need of its customers.

According to Mohammad and Mahdi (2010) financial resources of banking system are naturally provided from people's deposit. Therefore, we can say that deposits are the most important resources of commercial banks. Thus the amount of deposit a commercial bank should have at hand should be enough to make the bank involve in the market and to satisfy the financial needs of its customers. Given this general fact the bank is expected to manage its deposit. Managing deposits is not possible without knowing and controlling the factors affecting it. In literature there are several factors that are claimed to be determinants of deposits (Wubitu, 2012).

According to literatures factors affecting commercial bank deposits are divided into two, namely exogenous and endogenous factors. Exogenous factors are the factors that are not controlled by bank and endogenous factors are factors that are controlled by the bank. Exogenous factors are further sub divided into two, i.e. country specific factors and bank specific factors. Country specific factors includes saving interest rate, inflation, real interest rate, population growth of the country, per capita income of the society, economic growth (as measured by real GDP), consumer price index and shocks. Bank specific factors include liquidity of the bank, profitability of the bank, security of the bank, number of commercial bank's branches, bank size, reserves and transaction cost. The endogenous factors include awareness of the society, convenience of bank's office and services in the bank. These are the variables that are claimed in the literature to affect the volume of total deposit of commercial banks. In this study these variables are studied theoretically and empirically and the relationship between these variables and total deposit of commercial banks is identified.

In addition to the aforementioned variables, there were a memorandum of understanding signed between the state owned commercial bank (Commercial bank of Ethiopia) and the Addis Ababa City Care-taker Administration signed on November 2006, which states the former would provide credit facility to the later for construction of low cost houses in the city. Subsequently any dwellers who want to benefit from the housing scheme shall deposit his/her money only in Commercial bank of Ethiopia. As per the researcher

observation there were mass outflows of money from private banks coffers to the state owned bank.

Commercial banks, being the main player and the most active sector that is highly regulated are considered as the backbone of the country especially in the developing nation like Ethiopia where no presence of capital market at all. They have been playing an essential and peculiar role in the progress of the Ethiopian economy through supporting the private sector and financing government mega projects. In addition to the huge sum paid by private banks as corporate profit tax, private banks are purchasing NBE bills valuing 27% of the total loan they disbursed since April 6, 2011. According to the Reporter newspaper published on August 1, 2015 the total outstanding bills peaks to 36 billion Birr as of June 30, 2015. Since the past couple of years mobilizing deposit became the contest point among commercial banks be it government or privately owned. Unless commercial banks could manage to mobilize enough deposit, their very existence will be questioned.

## **1.2 Back-ground of Private Commercial Banks in Ethiopia**

Private commercial banks are a recent phenomenon in the Ethiopian economy. They came into existence after the downfall of the Dergue regime two and half decades ago. Before the Dergue, in the imperial era, private commercial banks used to operate in the economy. But after Dergue came to power, private commercial banks were nationalized and amalgamated with the state owned banks, then after that Ethiopian economy was dominated by state owned banks. And in the time of Dergue they were not allowed and not only banks but also there were no other private sector. Surprisingly no one was allowed to have a sum of money more than ETB500,000.00 in his/her bank account. The regime was follower of command economy.

After the downfall of the Dergue private commercial banks were allowed to operate and they started to have market share and now they have some growing market share in the Ethiopian economy and are some of the major players in the economy. Their number was also growing from time to time but as a result of entry constraint set by National Bank of

Ethiopia (NBE), minimum paid up capital requirement was initially set 75 million and gradually raised to 500 million and with in the next 5 years they should raise to 2 billion, which is practically impossible not only for new entrants but also for those who joined lately. No new private commercial bank has entered to the market since 2013.

Following the Proclamation of Licensing and Supervision of Banking Business Proclamation No. 84/1994, Awash International Bank S.C was registered as the first private commercial bank in modern Ethiopia banking business. So far 16 private commercial banks are operating in the country. The following table contains list of private commercial banks and their year of establishment.

**Table 1.1: List of private commercial banks**

S.No.	Name of the Bank	Year Established
1	Awash International Bank S.C	1994
2	Dashen Bank S.C	1996
3	Bank of Abyssinia S.C	1996
4	Wegagen Bank S.C	1997
5	United Bank S.C	1998
6	NIB International Bank S.C	1999
7	Cooperative Bank of Oromia	2005
8	Lion International Bank S.C	2006
9	Oromia International Bank S.C	2008
10	Zemen Bank	2009
11	Buna International Bank S.C	2009
12	Berhan International Bank S.C	2010
13	Abay Bank S.C	2010
14	Addis International Bank S.C	2011
15	Debub Global Bank S.C	2012
16	Enat Bank	2013

**Source: National Bank of Ethiopia**

### **1.3 Statement of the Problem**

From various literatures and the researcher own observation, Ethiopian banking industry is still at its infancy stage. As a result, deposit has not yet been mobilized as much as expected. NBE indicates that from deposits that should be mobilized by banks only 7% is mobilized as of 2012 (Wubitu, 2012). This indicates that from the money that should be deposited in the bank 93% of it was not mobilized.

However, mobilizing deposit is not an easy task for the banks. It is known that the performance of any commercial bank is a derivative of the mobilized fund. The more deposit the bank mobilizes the greater the ability to lend it. So long as a deposit has a vital role in commercial banks, we should trace out that which factors are affecting it and determining the relationship between them. According to NBE (2014/15) the share of private banks in deposit mobilization increased only marginally to 32.2 percent from 31.5 percent last year despite their opening of 359 new branches. CBE alone mobilized 66.1 percent of the total deposits due to its large branch network.

The country had permitted the financial institutions for private investors 20 years back. Following the government approval, the first private commercial bank had opened its door in 1995. For various reasons the deposit mobilized by all private commercial banks are by far less than the state owned commercial bank. For instance, according to the annual report issued by NBE for the fiscal year ended June 30, 2015, the total deposit mobilized during the year 2014/15 by all private banks were 26 billion birr whereas 49 billion birr was collected by public banks. In order to do well in the deposit mobilization activities, private commercial banks need to set certain mechanisms to mobilize such deposit rather than doing old way of banking services.

As per personal observation of the researcher, since the past couple of years mobilizing deposit has been the principal activity of private commercial banks in the country. Therefore, to tackle the existing problem and mobilize adequate deposits by the private banks, the researcher would like to know that which factors are determining the deposit

mobilization activity of the private banks. The researcher was motivated to undertake a research in this particular area to fill the gap.

## **1.4 Objective of the Study**

### **1.4.1 General Objective**

This study is intended to identify and evaluate those determining factors in deposit mobilization and give relevant recommendations on the necessary and applicable solutions to the problem.

### **1.4.2 Specific Objectives**

The study has the following specific objectives:

- Determining the relationship between the various factors affecting deposit
- To evaluate the relationship between private banks total deposit against the most significant factors
- To identify and estimate a model that explains the factors, which determine bank deposit

## **1.5 Research Hypotheses**

Hypothesis of the study stand on theories and empirical findings related to bank's deposit that has been developed over the years by banking area scholars. The primary function of the commercial banks is deposit mobilization (Nathanael, 2014). Therefore, this study has tested the following hypotheses:

H1: Number of bank branches has no significant impact on commercial banks deposit growth.

H2: Deposit interest rate has no significant impact on commercial banks deposit growth.

H3: Liquid asset to deposit ratio has no significant impact on commercial banks deposit growth.

H4: Lagged bank deposit has no significant impact on commercial banks deposit growth.

H5: Net interest margin (Profitability) has no significant impact on commercial banks deposit growth.

H6: Inflation rate has no significant impact on commercial banks deposit growth in Ethiopia.

H7: GDP has no significant impact on commercial banks Deposit growth in Ethiopia.

## **1.6 Research Questions**

The research conducted on this title has the aim of answering the following questions:

- What are the variables/factors that can affect the deposit mobilization activity?
- How will relate these factors to total deposit?
- What should be done to manage total deposit of commercial banks?

## **1.7 Significance of the Study**

The Ethiopian economy has yet untapped large potential for commercial banking and private banks in Ethiopia are in their infant stage. They are less in number and scope. However, they are playing a decisive role in the economy of the country at the same time challenges exist in their operation especially mobilizing vital resources. Therefore, the significance of the study was to point out various factors that affect the deposit mobilization activity by private commercial banks.

- This study is helpful to private commercial banks to manage their deposit by identifying factors determining deposit mobilization and further identify which variable is the most important so that more emphasis has to be given
- The study has benefit to stakeholders like government, NBE, bank professionals
- The study have a great contribution to the body of knowledge by identifying the potential relationship between bank deposit and factors determining it
- Finally this study give good insight to the researcher about this specific topic and general knowledge about any research

## **1.8 Scope of the Research**

The work of this research is delimited to some major factors that determine bank deposit mobilization in case of private commercial banks in Ethiopia. The research is not cover all private commercial banks and their branches” rather some banks has be selected purposively based on seniority.

## **1.9 Limitation of the Study**

The study is conducted using the data for 11 years from the year 2005GC and 2015GC. The sample of the study is shortened because of lack of data, however it is believed that it can be the main limitation of the study, which should be considered when interpreting and using the result of the study. The other limitation of this study was the fact that it only uses quantitative approach and secondary data

## **1.10 Organization of the Study**

This research paper was organized in five chapters. Chapter one provides the general introduction about the whole study. Chapter two describes the review of related literatures. Chapter three provide detail description of the methodology. Chapter four contains data presentation, analysis and interpretation. Finally, the last chapter concludes the total work of the research and gives relevant recommendations based on the findings.

## **Chapter Two**

### **Literature Review**

The literature review consists of two parts, i.e. the theoretical and conceptual review and empirical review. In the theoretical review part the theories that states about the commercial banks deposits and the variables that are claimed to affect it will be discussed. The empirical literature part discusses past studies that were conducted on the area of factors determining commercial banks deposits. In this part the variables that were included, the methodology that is used to undertake the study and the results of the study under review will be discussed.

#### **2.1. Theoretical Review**

There are various publications regarding commercial banks deposits and factors that determine the commercial bank deposits. Some authors had classified the factors and explain their relationship with commercial banks deposits.

Banking industry depends mostly on deposit from their customers to manipulate into corporate profit. Deposit mobilization is important in any economy as it determine the level of credit to be offered. Depositors keep their money in banks for a motive to undertake some activities in the future. From depositors" point of view, the key reason to use deposit in bank are safety of their money, easy access and to get a risk free return.

##### **2.1.1. The Significance of Banks in Financial Systems**

Financial sector plays a vital role in the overall economic system of every nation. The two components of a financial sector are the financial market and financial institutions. The former is defined as a market in which financial assets (securities) such as stocks and bonds can be purchased or sold. Financial markets, thus, facilitate the flow of funds and thereby allow financing and investing by households, firms and government agencies (Madura, 2011). Examples include commodity markets, money markets and capital markets.

Financial institutions (such as banks, insurance, microfinances etc.) are institutions that provide financial services for their customers. In the context of African continent, financial institutions in general and banking industry in particular carry the greater share of the financial system (Sheku, 2005). Most of the businesses rely on banking sector as a source of financing (Medhat, 2004). It is no exception to Ethiopia where the others like insurance companies and microfinance institutions (MFI) are by far lesser than banks in terms of capital size, total assets, employment capacity and profits (NBE annual report, 2011/12).

Banks have historically been viewed as playing role in financial markets for two reasons. The first one is that they perform a critical role in facilitating payments. Commercial banks, as well as other intermediaries, provide services in screening and monitoring borrowers; and the other one is by developing expertise as well as diversifying across many borrowers, banks reduce the cost of supplying credit (Katherine, 2004). Thus in their role as lenders, banks are often not merely buying someone's debt, rather they are providing significant financial services associated with extending credit to their customers directly. The main providers of additional financing are domestic commercial banks (Herald et al, 2009). Mckinnon (1973) argues that investment in a typical developing country is lumpy and self-financed and hence cannot be materialized unless adequate savings are accumulated in the form of bank deposits. According to Stiglitz (1996), the financial sector is the „brain“ of the economy since it harnesses savings and reallocates resources to „entrepreneurs“.

Banks perform various roles in the economy (Franklin and Elena, 2008):

- They improve the information problem between investors and borrowers by monitoring the latter and ensuring a proper use of the depositors' fund
- They provide inter temporal smoothing of risk that cannot be diversified at a given point in time as well as insurance to depositors against unexpected consumption shocks. Because of the maturity mismatch between their assets and liabilities, however banks are subject to the possibility of runs and systematic risk.
- Banks contribute to the growth of the economy

Commercial banks are institutions that engage in two distinct types of activities, one on each side of the balance sheet deposit-taking and lending (Anil et al, 2002). So that banks are playing mainly intermediation function, this is supported by (Russell and Bemindsle, 2009). Mahendra (2005) also states banks as the backbones of the trade and commerce playing the intermediary role of capital formation and supply. Even if other financial institutions are available, banks paly a major role in facilitating the way the financial sector operates. Therefore banks are important of all other financial institutions. Banks influence macroeconomic environment. As to Adam (2005), bank failure involves significant macroeconomic costs. Adam (2005), has developed evidence that bank failures have significant and apparently permanent effects on real economic activity. Stiglitz (1996) noted that the financial sector plays an important role in a country's economic growth and development process and in order to ensure macroeconomic stability, the sector ought to be strong. He analysed that growth in countries affected by crisis in the banking sector. Therefore, banks are also important influencers in macroeconomic environment.

Banks mobilize, allocate and invest much of society's savings (Berger et al, 2004). Households and businesses are mainly using banks to save their money to get loan for their project undertakings. Kelvin (2001) said that commercial banks are important financial intermediaries serving the general public in any society. In most cases commercial banks held more assets than any financial institutions. Apart from their many functions, commercial banks facilitate growth and development. Banks lend in many areas or sectors of the economy.

Moreover commercial banks will affect the overall economy of a nation both in a good way or bad way. Commercial banks represent a vital link in the transmission of government economic policies (particularly monetary policy) to the rest of the economy. For example, when bank credit is scarce and expensive, spending in the economy tends to slow and unemployment usually increases as Kelvin (2001) explains. So the event in the commercial banks will affect the country's economy in general.

Bank deposits represent the most significant components of the money supply used by the public and changes in money growth are highly correlated with changes in the prices of goods and services in the economy (Kelvin, 2001). Commercial banks are critical to the development process. By granting loans in areas such as agriculture, manufacturing, services, construction and energy sectors, banks contribute to the development of the country. According to Hyuya (1991), financial intermediaries play key role in Least Developed Countries (LDCs) by encouraging development through the saving-investment process. He emphasised the fact that the banks have specialization of labour as a core competence and must be encouraged to assist in the efficient allocation of resources by pooling funds together into reservoirs from which investment flows. He wrapped up that financial institutions are essential for economic development. Schumpeter (1934) started a classic work on the mobilization of scarce capital funds through domestic financial institutions. He asserts that financial institutions are essential for economic growth.

So far we have seen how the commercial banks are affecting the economy. In the contrary, the economy also affects the functions of commercial banks. Bank loan portfolio including volume, tenor and structure may be generally influenced by their expectations of the performance of economy both in terms of stability and level of performance. As cited by Talavera et al. (2006), Russel et al. (2009) banks make out more loans during period of boom and reduced level of macroeconomic uncertainty and curtail lending when the economy is in recession.

### **2.1.2. Commercial Bank Deposit**

Commercial bank deposits are major liabilities for commercial banks. Kelvin (2001) said that deposits of commercial banks account for about 75% of commercial banks' liabilities. Commercial banks keep lending as long as they possess adequate deposit. Therefore, banks will be better off if they are mobilizing more deposits. However, as N. Desinga (1975) indicates deposit mobilization is a very difficult task. The cost of intermediation for mobilizing deposits is also very important part of overall intermediation cost of the banking system as E.A. Shaw (1995) indicates. In spite of the

difficulties, deposits play an important role not only to the banking sector but also the overall economy.

All the financial performance of most of the commercial banks in one way or the other related to the deposit it managed to be mobilized. Deposits provide limits to the working capital of the bank. The higher the deposit, the higher will be the funds at the disposal of a bank to lend and earn profits (N. Desinga, 1975). Therefore, to maximize its profit the bank should increase its deposit. Mahendra (2005) had also mentioned deposits as a foundation up on which banks thrive and grow and deposit is unique items on a bank's balance sheet that distinguish them from other type of business organizations.

Commercial banking is a service industry with a high degree of built in profit potential (Meenakshi, 1975). Commercial banks mainly depend on the funds deposited with them by the public to lend it out to others in order to earn interest income (Davinaga, 2010). However, banks attract deposits by paying a risk free return to the savers. Interest expense is number one expense on the income statement of most commercial banks. Hamid (2011) said that if banks lose their deposit base they rely on non-deposit based funding that is very expensive and consequently minimize the profit margin.

Deposits are of three kinds (Davinaga, 2010), namely: -

1. Current or demand deposits
2. Fixed or time deposits/term deposits
3. Saving deposits

Hence, the competition for deposits is really a competition for profits. Commercial banks compete for deposits in order to avail enough funds to lend and eventually to maximize their profit. However, such financial growth is profitable only if the commercial bank does not incur additional expenses to obtain and retain cash (Davinaga, 2010). Commercial banks earn a return on their deposits and capital by investing deposit funds and capital funds in assets (Richard E, 1971). For commercial banks ploughing back their profit is the most important source of capital. According to Richard (1971), capital structure of commercial banks is made up of shareholders' funds, borrowing and deposits. Therefore, deposits are one of the sources of capital for commercial banks.

### **2.1.3. The Importance of Deposits for Banks**

Deposits are the foundation upon which banks thrive and grow. All the financial performance of a bank is a derivative of deposit. The followings are some of the importance of deposits: -

#### **1. Deposits as a source of fund for loan**

Herald (2009) states deposits are the main sources of fund that bank to provide loan. This deposit is mainly provided by the general public as Mohammad and Mahdi (2010). However, business organizations, NGOs, government, cooperatives and so on can also provide deposits. Therefore, whether deposits are provided by individuals, businesses or government they are important financial resources of banks.

#### **2. Mobilizing deposit is cheaper than raising equity**

The capital structure of banks likewise other business establishments are composed of debt and/or equity. For banks, raising equity is more expensive than attracting deposits. Lorenzo et al (2010) stated that, if the lending channel plays a role, the deposit growth should lead to increase in the supply of loans due to the additional source of financing for banks. As demand for loan increases by individuals, businesses and governments, banks should expand their deposit base to fulfil the demand of borrowing. Most of the time the interest rate applied to deposits is by far cheaper than the dividend payment to the shareholders.

#### **3. Banks make profit using their deposits**

Mahendra (2005) said that deposits provide most of the raw materials for bank loans and thus represent the ultimate source of the bank's profits and growth. Banks make profit by using their deposits, therefore it is said that depositors can discipline banks. Maria and Sergio (2001), found that depositors discipline banks by withdrawing deposits and by requiring higher interest rates. For depository corporations' mainly deposit money banks, their principal objective is undertaking financial intermediation to make profit and increase their shareholders value (Sheku, 2005). They achieve their objectives mainly by attracting deposits and investing the money on profitable investment portfolio.

#### **4. Fund investment and/or development projects**

Debt is largely held by domestic commercial banks which are funded mainly from deposits, the government demand for bank assets enabled banks to continue to expand their deposit base rapidly and profitably (Herald and Heiko, 2009). Individual investors and government are mainly depending on the deposits of banks to fund their investments and/or development projects.

Generally, the banking system can be viable only if it can mobilize deposits at the required rate. And this can be done only making a bank deposit more attractive (V.V. Bhatt, 1970).

The ability of a bank's management and staff to attract checking and saving accounts from businesses and individuals is an important measure of the bank's acceptance by the public (Mahendra, 2005). Banks' management major concern is the variability of deposits for several reasons.

##### **2.1.4. Factors Affecting Commercial Banks Deposits**

An important indicator of the success and efficiency of any credit agency, which is also a banking institution is, the extent to which it is able to mobilize the savings of the community in the form of deposit. But deposit mobilization is not an easy task. It depends up on various factors exogenous as well as endogenous, to the banking system (N. Desinga, 1975). Exogenous factors are 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. Even when exogenous factors are more conducive for deposit mobilization, banks may fail because of unfavourable endogenous factors such as location, type of building and window-dressing (furniture, check books, vouchers, pay slips etc.), which assures the customers about the physical fitness of a bank (N. Desinga, 1975).

Exogenous is further divided into country specific factors and bank specific factors for clarification purpose. Endogenous factors can be controlled by the banking system, however the exogenous factors cannot be controlled by the banking system. The bank

specific factors are factors that are specific to the banking system and the country specific factors are factors that are beyond the banking system.

#### **2.1.4.1. Exogenous Factors**

These are factors beyond the control of banks that could affect the growth of commercial bank deposits. The followings are some of the factors categorized as exogenous: -

##### **2.1.4.1.1. Country Specific Factors**

The country's economic, social and political factors can affect the commercial banks deposits. According to Herald and Heiko (2009), country specific risks such as political, economic and financial risks may affect the propensity of depositors to place funds in the banking system. Any single bank operates under the rule and regulation of the country where it belongs, also different problems and shocks that has happened in the country has its own concern in the banks operation. Generally, the economic and political environment in which banks operates are highly correlated with its success or failure. The researcher has identified the following factors from the literature that affect commercial banks deposit under this category: -

##### **1. Deposit rate or interest rate on deposits**

One of the most effective factors for deciding to deposit in banking system is the interest rate (Mohammad and Mahdi, 2010). Banks usually pay interest on money collected from depositors. Particularly, saving deposits commonly earn interest for savers at a rate determined by individual banks whereas it must be above the floor per the directive issued by the regulatory body of the country. Herald and Heiko (2009), also mentioned interest rate as one of the determining factor for commercial banks deposits. Philip (1968) also states that the offering of attractive interest rate on bank deposits may be considered to have had a beneficial effect.

Savings or deposits, according to classical economists, are a function of the rate of interest. The higher the rate of interest, the more money will be saved, since at higher interest rates people will be more willing to forgo present consumption. Moreover,

Mustafa and Sayera (2009) said that low deposit rates are discouraging saving mobilization.

Interest rate in the banking system is held as investment cost from the investor's point of view and opportunity cost from the depositor's point of view (Mohammad and Mahdi, 2010). Thus, capital market forces balance interest rates. In other words, the just and correct interest rate should be determined through market mechanism, which is interest rate is balanced in supply and demand conditions in proportion with the inflation rate. Deposits are more interest rate sensitive and banks may choose to increase investment in interest rate sensitive assets and to decrease investments in loans. Commercial banks deposits are interest rate sensitive, therefore as the interest rate changes the deposit of the commercial banks will change (Eustacius and David, 1995).

It is known that depositors bring money to the bank, which the banks in turn lend it to borrowers. The gross earnings of the bank are determined by the volume and composition of the loanable funds and the rates at which they are loaned. After deducting operational expenses, the net earnings provide a margin out of which interest on deposits can be paid. Because of the competition for these funds among different banks who desire to extend loan at a higher interest rate, a bank must be willing to pay premium interest or otherwise lose the potential deposits to a competitor.

As to Erna and Ekki (2004), Economists, mainly conventional ones, believe that depositors are attracted to deposit their money in banks because of the opportunity cost of holding cash in hand is high when the interest rate is also high.

Using an Adaptive Expectation Model (AEM), it is found that depositors are indeed motivated by returns in Malaysia (Erna and Ekki, 2004). On the other hand, Erna and Ekki (2004) stated that Ghafur's (2003) shows that the rate of interest does not have influence on the volume of deposits. However, Rose (2001), said that banks increase their deposits by offering higher deposit rate. These are the articles that contradict to each other in identifying the relationship between the commercial bank deposit and deposit rate or interest rate on deposits.

## **2. Inflation**

According to Herald and Heiko (2009), inflation is one of the factors that determine commercial banks deposits. Fischer showed that in Latin America the effect of inflation on savings and time deposit to GDP was significantly negative (Mohammad and Mahdi, 2010).

The classical belief is that, because bank assets and liabilities are expressed in monetary terms and because these assets will normally grow in line with growth in money supply, banks are relatively immune from the effects of inflation (Devinaga, 2010). In brief, monetary policy works by controlling the cost and availability of credit. During inflation, the Central bank can raise the cost of borrowing and reduce the credit creating capacity of commercial banks. According to Devinaga (2010), this will make borrowing more costly than before and thereby the demand for funds will be reduced. Similarly with a reduction in their credit creating capacity, the banks will be more cautious in their lending policies. Since the banks demand for fund decreases obviously the deposits will decrease. Banking system was affected by inflation in terms of deposit absorption and facilities grant (Mohammad and Mahdi, 2010). As to Mohammad and Mahdi (2010), in developed countries negative correlation between inflation and absorbed deposits and granted facilities has been documented. However, in developing countries the opposite is true.

Inflation is seen as an economic problem in developed countries in the second half of the 20<sup>th</sup> century. Inflation with effect in economic growth, employment, income distribution and wealth as well as social and political conditions of a country can influence its entire dignity (Mohammad and Mahdi, 2010). Moreover Mohammad and Mahdi (2010) Banking system as an important effective factor in economic performance has also been under the influence of inflation. As to Mohammad and Mahdi (2010), as far as the effect of inflation on financial sector conceived the literature demonstrates that inflation affects the capacity of financial sector for optimal allocating of resources. That is as inflation rate increases, true yield rate of money and assets decreases; therefore deposits are no longer attractive. Also the increase of inflation rate has a negative effect on the performance of financial sector through the market credits and in turn, on the performances of banks and capital markets and finally on the long term economic growth (Mohammad and Mahdi, 2010).

With respect to the effect of inflation on savings, it can be mentioned that in general, all individuals who save a part of their incomes in banks are directly damaged by the inflation and their assets decrease in proportion with money value decrease (Mohammad and Mahdi, 2010). In that case as Mohammad and Mahdi (2010) describes people try to change their cashes and savings to more reliable and stable forms such as land, jewellery, antiques, art collections, foreign currencies that causes to definite decrease in commercial bank's total deposit. High inflation rates reduce the real value of deposits (M. A. Baqui et al, 1987). According to M. A. Baqui et al (1987), inflation technically did not decrease deposit, however it decreases the value of deposits.

### **3. Real Interest Rate**

Real interest rate is nominal interest rate minus inflation rate. Mohammad and Mahdi (2010) said that in negative real interest rate condition, people withdraw their resources from banking system. According to Mohammad and Mahdi (2010), Some research supposed that decrease in real interest rate could decrease true demands for money (in its extensive definition including savings and time deposits). Therefore it states that the interest rate and deposit of the banks have positive relationship. According to Voon-Choong et al (2010), while interest rates risk is a major concern for banks due to the nominal nature of their assets and the asset-liability maturity mismatch (Hasan and Sarkar, 2002), some researchers emphasized that higher interest rates had positive impact on banks (Hanweck and Ryu, 2004; Hyde, 2007).

### **4. Population growth of the country**

The twin objectives of commercial banks, i.e. acquiring deposits and advancing credit cannot be attained without good banking habits of the people (Mahendra, 2005). Moreover Mahendra (2005) states that, the number of deposit accounts is more important because it ensures that the probability of account is more important because it ensures that the probability of account holders withdrawing cash at a time decreases as the number of deposit account increase, thereby creating advantage for banks in terms of increasing the size of the loanable fund. So the higher number of deposit accounts the greater is the advantage to banks. The number of deposit accounts depends on the number of deposit account holders.

## **5. Per capita income of the society**

According to Jim (2008), per capita is the level of GDP divided by the population of a country or region. Changes in real GDP per capita over time are often interpreted as a measure of changes in the average standard of living of a country. If households and firms desire to hold more money, deposits will increase (Evan, 2006). So the relationship between income and deposits is positive, that is as the income of the society increases the same happens for the commercial bank's deposits. Income is expected to have a positive effect on deposits (M. A. Baqui et al, 1987). Therefore as society's per capita income increases the same will happen for commercial banks deposits. Mahendra (2005) also indicates that income of the society matters for banks' deposit growth. Eshetu & Mammo (2009), Ethiopia is one of the poorest countries in the world with an estimated per capita income of just USD 203(IMF 2007 cited by the Financial Standards Foundation).

## **6. Economic growth**

Economic performance is generally being measured through GDP (Gross Domestic Product), a variable that has also become the de facto universal metric for 'standards of living (Yanne et al, 2007). It is universally applied according to common standards, and has some undeniable benefits mainly due to its simplicity (Yanne et al, 2007). According to Herald and Heiko (2009), growth is one of the determining factors for commercial banks deposits. GDP is calculated by adding up the value-added at each stage of production (deducting the cost of produced inputs and materials purchased from an industry's suppliers)(Jim, 2008). Erna and Ekki (2004) find four variables, GDP, number of Islamic bank's branch offices, profit sharing rate, and interest rate that are thought to have influence on the volume of deposits. So, GDP can influence the growth of commercial banks deposits.

## **7. Consumer price index**

According to Herald and Heiko (2009), price can also determine commercial bank deposit and it can be indicated by consumer price index. In literature there is an evidence for the influence of consumer price index on commercial banks deposit, however this area was rarely studied.

## **8. Shocks**

Aggregate shocks affect deposits and interest rates during crises, regardless of bank fundamentals and investors' responsiveness to bank risk taking increases in the aftermath crises (Maria and Sergio, 2001). Therefore, given all other variables the shocks happened in the economy can affect the banks' deposits.

### **2.1.4.1.2. Bank Specific Factors**

#### **1. Liquidity of the banks**

The concept of liquidity in finance principally lies in two areas (ISMAL, RIFKI, 2010): -

- a) Liquidity of financial instruments in the financial market
- b) The liquidity related to solvency.

The former related to liquid financial markets and financial instruments, smooth transactions and no barriers. As to ISMAL, RIFKI, (2010), the latter discusses the obligation of banks to make payments to third parties (Fiedler, 2000:442). Some examples of this include: setting up liquidity management policies, reserve liquidity, balancing assets and liabilities and preparing liquid financial instruments (ISMAL, RIFKI, 2010).

An important measure of liquidity is loan to deposit ratio. The loans to deposit ratio is inversely related to liquidity and consequently the higher the loans to deposit ratio the lower the liquidity and vice versa (Devinaga, 2010).

Key liquidity indicators such as central bank credit to financial institutions, deposits as a share of monetary aggregates, loans to deposits ratios, are important for open market operations and liquidity management (Sheku, 2005). According to Voon-Choong et al (2010), the basic need for liquidity, asset, liability, capital adequacy, credit and interest rates risks management are now more challenging than before (Mishkin, 2007). The banks' liquidity management involves acquiring sufficient liquid asset to meet the bank's obligation to depositors (Voon-Choong et al, 2010). According to the findings of Dorothee and Andrea (2009) it is more profitable for savings banks to hold liquid assets than to invest in illiquid assets, such as medium-term interbank lending to other credit institutions.

According to the theories of financial intermediation, the two most crucial reasons for the existence of financial institutions, especially banks, are their provision of liquidity and financial services (ISMAL, RIFKI, 2010). According to ISMAL, RIFKI, 2010, Regarding the provision of liquidity, banks accept funds from depositors and extend such funds to the real sector while providing liquidity for any withdrawal of deposits, however the banks' role in transforming short term deposits into long term loans makes them inherently vulnerable to liquidity risk (Bank for International Settlements (BIS), 2008b: 1). Individual, business and government will be willing to deposits their money in banks if they are certain that they are safe to withdraw the money whenever they want, this is the question of liquidity of banks. The more liquid banks can attract the deposits.

Liquidity risk occurs in two cases, the first one it arises symmetrically to the borrowers in their relationship with the banks, for example when banks decide to terminate the loans but the borrowers cannot afford it and the second case it arises in the context of the banks' relationships with their depositors, for example, when depositors decide to redeem their deposits but the bank cannot afford it.

Liquidity risk is the possibility that depositors may withdraw some or all of their funds, and default risk is the possibility that borrowers may not repay all their debts when due (M. Shubik and M. J. Sobel, 1992). Banks that are perceived as less risky maintain a high level of liquidity or have a lower concentration of assets, particularly to the government, may be expected to be able to attract more deposits than their peers (Herald and Heiko, 2009).

A higher degree of financial intermediation (proxy by the loan-to-assets ratios) may signal a bank's success in generating income as well as a need for it to attract more deposits to support its increased lending activities (Herald and Heiko, 2009). A higher liquidity buffers (measured by the ratio of liquid assets to deposits) tend factor favouring deposit demand (Herald and Heiko, 2009). Liquid banks as well as banks with a higher loan exposure are associated with higher deposit growth. Herald and Heiko (2009), states that the liquidity situation of the bank also plays a significant role in determining banks deposit growth. According to Nada (2010), Banks perceived as risky should have had

more difficulty attracting deposits and making loans than banks perceived as safe. When banks fail to pay for its depositors then it faces liquidity risk that makes other depositors not to deposit in that particular bank.

## **2. Profitability of the bank**

Erna and Ekki (2004) found the long run relationship between commercial banks deposits and the profitability of the banks. Higher bank profits would tend to signal increased bank soundness, which could make it easier for these banks to attract deposits (Herald and Heiko, 2009). However, the effect of bank profitability and bank size are found to be insignificant once controlling for the other variables. So, the effect of profitability and banks size on commercial bank deposit is lower as compared with other variables.

## **3. Security of the bank**

Security of banks affects mobilizing deposit. Riskier banks would be able to attract deposits only paying higher Interest rates. The security of banks has its own impact on its attractiveness for depositors. For example in the existence of deposit insurance the depositors no longer are concerned about the soundness of their banks because their deposits are insured in the event of bank failure. So the bank should secure its system so as to mobilize more deposit than before and to attract new depositors and maintain the exiting depositors.

## **4. Branches**

There is a relationship between commercial banks deposits and commercial bank's branch expansion. Not only do bank branches influence deposits, but the expansion of bank branches is also influenced by the level of deposits in any area (M. A. Baqui et al, 1987). It is expected that banks make decisions on expanding their facilities by considering factors such as level of competition, deposit potential, regional income and existence of road and vehicles. 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 branch and commercial banks deposits.

It is often argued that branching stabilizes banking system by facilitating diversification of bank portfolios (Carlson and Mitcheer, 2006). Mark and Kris (2006), found from theoretical literature on banking regulation that branch banking leads to more stable banking systems by enabling banks to better diversify their assets and widen their deposit base (Gart, 1994, Hubbard, 1994). An argument commonly articulated in the literature is that branch banking stabilizes banking systems by reducing their vulnerability to local economic shocks; branching enables banks to diversify their loans and deposits over a wider geographical area or customer base (Mark and Kris, 2006). Restrictions on branching have been linked to the instability of banking systems.

Daniel (2005), suggest that the lack of widespread branching bank networks hindered the development of large-scale industrial firms. It is stated that unit banks become increasingly incapable of receiving deposits from a widespread geographic area. The single office bank is also not able to monitor geographically diffuse debtors as easily as could be done with multiple offices. Moreover, it can be concludes that under branch banking the mobility of capital is almost perfect.

## **5. Bank size**

Among the factors prominently identified as affecting deposit variability one is bank size. Evidence indicates that the number and diversity of the ownership of individual deposit accounts as well as the distribution of deposits by type vary with bank size (George, 1972). Herald and Heiko (2009) founds that although insignificant once controlled by other variables bank size have an effect on deposits. A smaller bank has to generate less deposit in absolute terms to achieve the same deposit growth than large banks, thus possibly favouring smaller banks in achieving higher deposit growth. But a larger bank with economies of scale as well as larger branch network might be able to better attract deposits (Herald and Heiko, 2009).

## **6. Reserves**

Richard Goode and Richard S. Thom (1959), said that reserves that are fixed legally could influence the deposits that banks can hold. According to them reserve requirements

determine the maximum amount of loans and investments that each commercial banks and the banking system as a whole may maintain in relation to deposits. Thus, if the reserve requirement is 20 percent of deposits, loans and investment (of the bank's own choosing) may not exceed 80 percent of deposits. Therefore, reserve requirements limit the total expansion of bank deposits that can occur on the basis of any primary increase in deposits. Reserve requirements also have the effect of limiting the reduction in bank credit and deposits that is forced up on the banking system by a primary decrease in deposits. The commercial banks can obtain currency to pay out to customers only by drawing down their reserve deposits at the central bank or by using till money (Richard Goode and Richard S. Thom, 1959). Till money, according to Richard Goode and Richard S. Thom (1959) is the currency that banks keep on hand to satisfy day-to-day needs. They pointed out that bank deposits are a large part of the money supply in virtually all countries.

## **7. Transaction cost**

Important indicator of management's effectiveness in any bank is whether or not deposited funds have been raised at the lowest possible cost and whether enough deposits are available to fund those loans the bank wishes to make (Mahendra, 2005).

This last point highlights the two key issues that every bank must deal with in managing its deposit (Mahendra, 2005): -

- Where can the bank raise funds at the lowest possible cost?
- How can management ensure that every bank always has enough deposits to support the volume of loans and other financial services demanded by the public?

### **2.1.4.2. Endogenous Factors**

In the literature three endogenous factors are identified that can affect the growth of commercial banks deposits. They are awareness of the society for using banks to deposit their money, convenience of Bank's office and service in the banks.

### **1. Awareness of the society**

According to M. A. Baqui et al (1987), some analysts argue that demand for deposits is influenced by education level which in turn increases the awareness of the rural people about banking services (Mauri; Von Pischke). Since the study of M. A. Baqui et al (1987) conducted by taking rural area as its base it is obvious that it considers the awareness as a factor of deposit mobilization. It was also found that literacy as a proxy for awareness about banking, positively influence deposits.

### **2. Convenience of Bank's office**

Road and vehicles directly influence interest bearing deposits because of the reduction in depositors' transaction costs through reduced time spent in travelling to and from banks (M. A. Baqui et al, 1987). Banks can mobilize more deposit when they make themselves closer to their customers (depositors).

### **3. Services in the Bank**

It is known that banks are service-giving organizations and the service delivery can affect their business undertakings. M. A. Baqui et al (1987) stated that there is some empirical evidence demonstrating the positive influence of services rendered to depositor (eg Dudzie, Dunson and Akaah). Baqui further suggested two innovations to be tested to provide incentives to depositors: -

- Additional benefit like prize bounds could be given to depositors for maintaining deposits for particular period.
- As recommended by Nathan (1986a), one category of deposits might be specifically tied to future loans. Bank customers might be encouraged to participate in a savings program that, for example, provides machinery or housing after a predetermined amount of saving have been accumulated.

Services in the bank should be attractive enough for the depositors so as to mobilize deposits. If the banks could offer these services, the savers would be inclined to keep a part of their saving in the form of deposits (V. V. Bhatt, 1970).

The followings are services that V. V. Bhatt (1970) claims to use to mobilize deposits:-

- (1) Door-to-door collection of small saving in the form of deposits.
- (2) Offering land revenue or insurance premium: If the banks offer to pay land revenue or insurance premium out of the interest earned on deposits, some persons may be inclined to put deposits of such amounts as would earn enough interest to meet their land revenue or insurance premium liability. To attract deposits these types of services are worth providing.
- (3) An investment service: Some savers have neither the inclination nor the time to select an appropriate portfolio of financial investment. Banks can select the portfolio of investments on their behalf, keep the securities in safe custody, collect Interest/dividend income and even fill income-tax forms; with such services offered, some savers would be inclined to keep their liquid funds in the form of deposits.
- (4) Some persons like farmers get their incomes say once or twice in a year, while their expenditure is spread over the whole year. If banks could collect deposits from them at the harvesting season, and assure them regular withdrawals during the year, farmers may be inclined to keep deposits with the banks. This scheme would ensure safety of their funds, prudence in their management and certainty of regular monthly means to meet their current liabilities. In addition they would earn some interest. With a sympathetic and persuasive approach, farmers could be attracted to such a scheme.
- (5) While giving loans to farmers and small sector, the banks could provide them with facility of purchases from recognized dealers instead of giving them cash. In this case, the dealers could send the bills to the banks, which would debit the accounts of the loan receivers. Some banks have introduced agri-cards with such a purpose in mind. If such facilities are provided to others also, the customers would use bank money rather than currency for making payment and once they form this habit, they would be induced to keep their transaction balances in the form of deposits rather than in the form of currency.

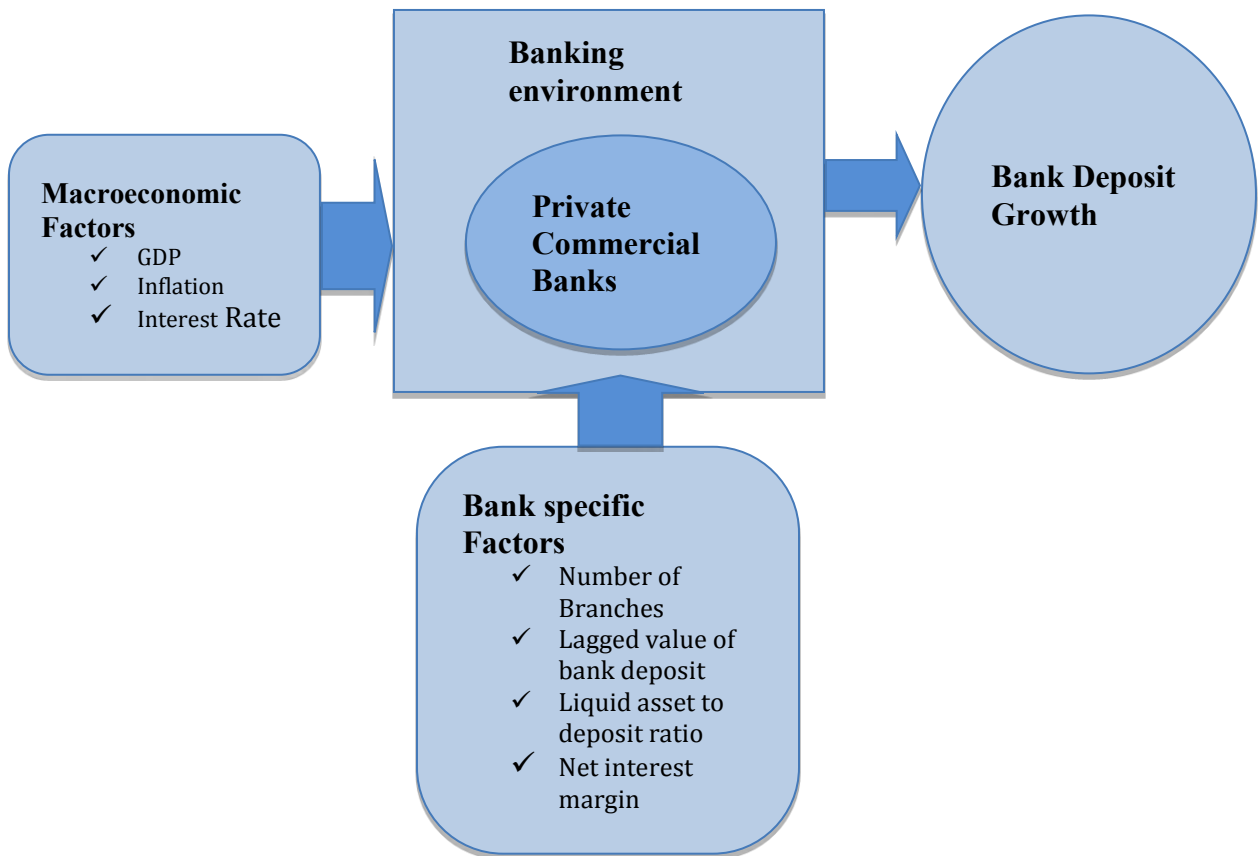
According to V. V. Bhatt (1970) these are some of the new deposit schemes, which if introduced, could raise the rate of saving as well as the rate of growth of bank deposits. To the extent to which the rate of saving is raised, the growth rate of the economy would be higher. To the extent to which the deposit growth rate is raised, the community would have more effective control over the allocation of financial resources for Plan purposes.

## **2.2. Conceptual Framework of the Research**

The researcher will reveal that there are independent factors determining deposit mobilization performance of private commercial banks in Ethiopia (the dependent variable). Deposit mobilization is a deliberate effort by relevant organ vested that right by the central bank. It is normally not brought about by a single variable but rather an interaction of various networks of different variables and factors. Among the factors interest rate, inflation, population growth, per capita income, economic growth, consumer price index, shocks, liquidity of the bank, profitability of the bank, security of the bank, number of branches, reserves, transaction cost, awareness of the society, convenience of bank's office services in the bank are claimed to affect the deposit mobilization activity.

The Conceptual framework of these variables is a guide to this research and shows how they determine deposit mobilization performance of private commercial banks in Ethiopia. Four variables will be selected while assuming other variables remain constant during the research.

**Figure 2.1: Conceptual framework diagram**



**Source: Developed by the researcher**

As it is mentioned in chapter one of this proposal, there are many variables claimed to affect deposit mobilization. Some of the independent variables may affect the dependent variable directly and others indirectly. For instance, branch networks may affect profitability of the bank either negatively or positively in the short run. However, may affect bank deposit positively.

### **2.3. Empirical Review**

The empirical literature part discusses past studies that were conducted on the area of factors determining commercial bank deposits. In this Part the variables that were included, the methodology that is used to undertake the study and the results of the study under review will be discussed. These will help to see where the literature on this study is and how this study will add to the existing literature.

### **2.3.1. Determinants of Commercial Bank Deposits in a Regional Financial Centre**

Herald Finger and Heiko Hesse (2009) had written a working paper, which empirically examines the demand for commercial banks deposits in Lebanon, a regional financial centre. They classified the variables into two, i.e. macro and micro level variables. At the macro level, they found that domestic factors such as economic activity, prices, and the interest differential between the Lebanese pound and the U.S. dollar are significant in explaining deposit demand, as are external factors such as advanced economic and financial conditions and variables proxy the availability of funds from the Gulf. At the micro level, they found that in addition, bank-specific variables, such as the perceived riskiness of individual banks, their liquidity buffers, loan exposure, and interest margins, bear a significant influence on the demand for deposits. They have used quarterly data from 1993 to 2008. They have estimated a number of vector error correction model (VECMs) to take account of co-integration in the non-stationary time series. They have collected the data for their study from 50 Lebanon banks.

They found that both domestic and international factors help explain deposit demand. Among domestic variables, they found that the coincident indicator for real economic activity in Lebanon, consumer prices, and the interest differential between the local currency and the U.S. dollar matter. Among the external variables, advanced economy economic and financial conditions appear significant (especially advanced economy industrial production and the Goldman Sachs Risk Aversion Index), as do some variables proxy the availability of funds from the Gulf. While both domestic and external variables are significant in explaining deposit demand, impulse response functions and variance decomposition analyses underscore the relative importance of the external variables. Regarding bank specific variables they found that the banks' perceived riskiness (z-score), their liquidity buffers, loan exposures and interest margins all bear a significant influence on deposit growth at the bank level, controlling for domestic and external macroeconomic factors.

### **2.3.2 Deposit determinants of commercial banks in Malaysia**

The article was written in 2006 by Professor Sudin Haron and Dr Wan Nursofiza, which investigate the structural determinants of deposits level of commercial banks in Malaysia, using co-integration techniques. The results suggest that determinants such as rates of profit of Islamic bank, rates of interest on deposits, base lending rate, Kuala Lumpur composite index, consumer price index, money supply and gross domestic product have significant impact on deposits. They also found that in most cases, customers of conventional system behave in conformity with the savings behaviour theories.

The objective of the study was to examine the effect of selected economic and financial variables on deposits placed at the commercial banks in Malaysia. Both long- and short-run relationships between these variables are measured using co-integration techniques. The data for the study were taken from the monthly statistical bulletin of Bank Negara Malaysia ([www.bnm.gov.my](http://www.bnm.gov.my)). The study uses monthly data covering the period January 1990 to December 2003. In examining the determinants of deposit levels of both Islamic and conventional banks, the paper employs recent advances in time series econometrics. These techniques are co-integration and error correction framework, which was conducted within the vector auto-regression (VAR) framework. The first step of the analysis was to test for the presence of unit roots of the variables in the system using the Augmented Dickey-Fuller (ADF) test. Once the stationary condition is examined, the next step is to conduct a co-integration test.

And finally they concluded that in most cases, the behavioural patterns of Malaysian depositors are in conformity with the existing saving theories. However, there are also deviations from these theories. For example, both inflation and returns on deposit are supposed to have a positive relationship but the study found otherwise. Similarly, instead of an inverse relationship, both composite index and money supply have positive sign with savings account. For each of the deviation found, an explanation has been put forward. And also the study does not differentiate the behavioural pattern of different classes of depositors. It is interesting to examine whether different types of depositors have the same long-run influencing factors. In view of this, they proposed that future research agenda on this matter.

### **2.3.3 Determinants of Commercial Bank's Liquidity in Slovakia**

This article was written by (PAVLA). It identifies the determinants of liquidity of Slovak commercial banks deposit growth and empirically analyses them. Finally it describes the result of the study and recommends how states realize deposit growth.

By considering bank specific and macroeconomic data over the period from 2001 to 2010 and analyse them with panel data regression analysis. He has found that bank liquidity drops mainly as a result of the financial crisis. Bank liquid assets decreases also with higher bank profitability, higher capital adequacy and with the size of bank. Liquidity measured by lending activity of banks increases with the growth of gross domestic product and bank profitability and decreases with higher unemployment. Key interest rates, interest margin, rate of inflation and the level of non-performing loans have no statistically significant effect on the liquidity of Slovak commercial banks.

### **2.3.4 The key determinants of bank liquidity on commercial banks in Pakistan**

An empirical study made by (Muhammad & Amir, 2013), on commercial banks in Pakistan with the aim of identifying the key determinants of banking liquidity. The study examines the bank specific and macroeconomic determinants of commercial bank's liquidity in Pakistan. The sample of the study consists of 26 Pakistani commercial banks. The study period consists of 5 years from 2007 to 2011, which also covers the period of the Asian financial crisis 2008. Bank's liquidity is measured by two ways; one is cash and cash equivalents to total assets (L1) and second is advances net of provisions to total assets (L2). Two models are estimated based on these measures of liquidity. The results of model 1 (L1) indicate that the bank specific fundamentals (NPL and TOA) and monetary policy interest rate positively determine the bank liquidity whereas inflation has a negative impact. Bank liquidity measured by L1 is negatively and significantly affected by the financial crisis. The results of model 2 (L2) indicate that the bank size and monetary policy interest rate positively and significantly determine the bank liquidity.

### **2.3.5. Determinants of Kenyan Commercial Banks Deposit growth**

Lomuto Joel Katalai (2008) had written a research paper, which empirically examines the determinants of Kenyan Commercial Banks Deposit growth. Its main objective was to analyse the factors that influence Commercial banks deposit growth in Kenya.

Time series data covering 1968 - 2006 was analysed. First, the time series characteristics of the data were assessed using unit root tests to examine how stationary of each variable. Secondly, the test for co integration was performed to determine the long run relationship of the non-stationary variables. Lastly, estimated model was a single regression equation with deposit as the dependent variable and explanatory variables as deposit rate, nominal exchange rate, investment income ratio, number of cheques cleared (used as proxy for innovations in the financial sector), real GDP, ratio of monetary GDP to total GDP and Structural Adjustment Programmes (SAPs). Estimation was done using Ordinary Least Squares (OLS) technique and Econometric Views (E-views) statistical package.

Analysed results showed that lagged Commercial bank deposits and all the other variables including Structural Adjustment Programmes (SAPs) significantly affect Commercial bank deposit growth in Kenya. Based on these results, several policy implications were drawn that aim at encouraging deposits growth by Commercial banks for the benefit of the domestic deposit mobilization. First, growth-enhancing policies promote deposits growth. Second, the stability of macroeconomic system should be maintained. Lastly, financial sector innovations encourage deposit growth in Commercial banks in Kenya as people reduce their demand for carrying cash.

### **2.3.6 Factors Influencing deposit level of commercial banks in Kisumu City, Kenya**

This article was written in 2013 by (Ndichu, Ooko, & James, 2013). The main objective of this study was to investigate the factors that influence liquidity level of commercial banks in Kisumu City.

According to the authors, Liquidity is an important determinant of financial distress, without liquidity a bank cannot meet the deposit withdrawals and satisfy customer loans

and high liquidity level will mean a decline in returns to commercial banks, thus liquidity level becomes a challenge to commercial banks and investigating the factors influencing it comes in handy.

The researcher chose to study on commercial banks due to availability of needed data and convenience. All 27 commercial banks operating in Kisumu City were investigated. Out of the 27 questionnaires distributed to the heads of finance, 26 questionnaires were returned successfully filled giving a response rate of 96.29 %. Exploratory survey research design was used in the study. Data was analyzed using descriptive statistics; Pearson Correlation analysis and multiple regression analysis were used to determine the relationship between the factors and the liquidity level of banks. The study found that that 42.2 % the variations in liquidity level are explained by changes in the various factors notably; contingency planning, profitability, banks major obligations, management policies, credit rating, monetary policies, government expenditure and Balance of payment status with 57.8 % of the variation being explained by other factors external to the model.

From the study they concluded that there are other factors, other than Central Bank of Kenya regulations, which influence liquidity level of commercial banks in Kisumu City. And finally the researcher recommends a further study to be conducted based on various geographical areas.

### **2.3.7 Macroeconomic determinants of bank deposits in Nigeria**

This article was written in 2014 by Nathanael O. Eriemo the main objective of this study was to analyze the effects of various macroeconomic indicators that influence bank deposits in Nigeria.

The paper empirically examines the macroeconomic determinants of bank deposits in Nigeria using data covering the period between 1980 and 2010. It tries to analyze the effects of various macroeconomic indicators, on the performance of banks within the context of deposit mobilization of banks and its determinants. The economic analysis result showed that in Nigeria, bank investment, bank branches, interest rate and the general price level are important determinant of bank deposit. The Vector Error Correction and Johansen co-integration test indicates a long run relationship among the

variables and the economic analysis result showed a satisfactory speed of adjustment. It is thus recommended among others that both the banks and the monetary authorities should take these factors into serious consideration when attempting to improve the deposits of banks and this will go a long way in increasing aggregate investment.

### **2.3.8 Factors Determining Commercial Bank Deposit: An Empirical Study on Commercial Bank of Ethiopia**

This article was written by (Wubitu Elias 2012). The main objective of the study was to determine factors that affect commercial bank deposits. The study empirically examine both endogenous and exogenous determinant factors which affect bank deposit in Commercial Bank of Ethiopia using time series data covering the period 2000 to 2011.

Accordingly, the researcher concluded that both exogenous and endogenous factors affect the deposit mobilization effort of Commercial Bank of Ethiopia positively. Since the bank is totally owned by government, most of its deposit comes from government budget. In addition to getting access to government budget, the bank also mobilizes funds from its customers and profit from operation. Among the three kinds of deposits, (Demand deposit, fixed time deposit and saving deposit), saving deposit is mainly used by the bank and its customers.

### **2.3.9 Determinants of Commercial Bank Deposit a case of Commercial Bank of Ethiopia**

Shemsu (2015) focused on Determinants of commercial bank deposits: A case of study of commercial bank of Ethiopia. The study aimed to identify and evaluate those factors affecting bank deposit in general by taking Commercial Bank of Ethiopia as evidence. Accordingly, the researcher adopts mixed research approach. Time series data covering 1998 - 2014 was analyzed and questionnaire is used to gather information from the employees of commercial bank of Ethiopia with deposit as the dependent variable and explanatory variables as deposit interest rate, overall inflation rate, number of branch opening, gross domestic product, individual foreign remittance and dummy variable. Estimation was done using Ordinary Least Squares technique by E-views7 statistical package. The results from economic analysis showed that all the explanatory variables

were positively correlated with the explained variable. Among these variables, branch opening is an important strategy for deposit mobilization, it is highly significant than others. Individual remittances from diasporas is also next to branch opening is significantly affects CBE's deposit. The other variables affect positively and can increase CBE's deposit.

## **Chapter three**

### **Research Methodology**

#### **3.1. Introduction**

This chapter gives a detailed account of the methodology used to carry out the study. The chapter discusses about model specification, the variables used and diagnostic tests to be conducted. The chapter also presents the data presentation and analysis plan. A summary of the main points is also provided at the end of the chapter.

#### **3.2. Methodology of the Study**

##### **3.2.1. Research Design and Approach**

The choice of research design depends on objectives that the researcher wants to achieve (Admas et al., 2007). Since this study was designed to examine the relationships between deposit growth and its determinants, a logical reasoning either deductive or inductive is required. Induction is the process of reasoning to reach general principles by looking at a set of facts. Whereas, deduction is the process of carefully thinking about known facts to reach an answer or decision about a particular question.

Besides, deductive reasoning is applicable for quantitative research whereas inductive reasoning is for qualitative research (Admas et al., 2007). Thus, due to quantitative nature of data, the researcher used deductive reasoning to examine the cause and effect relationships between bank deposit and its determinants in this study.

As noted by (Kothari, 2004) explanatory research design examines the cause and effect relationships between dependent and independent variables. Therefore, since this study examined the cause and effect relationships between growth of deposit and its determinant, it is an explanatory research. The objective to be achieved in the study is a base for determining the research approach for the study. In case, if the problem identified is factors affecting the outcome having numeric value, it is quantitative approach (Creswell, 2003).

Therefore, the researcher employed quantitative research approach and explanatory research design to see the regression result analysis with respective empirical literatures on the determinants of bank deposit.

### **3.2.2. Population Size and Sampling Techniques**

As to June of 2016, there are eighteen banks in Ethiopia. These are Commercial bank of Ethiopia, Awash International Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C, Nib International Bank S.C, Dashen Bank S.C, Development Bank of Ethiopia, Cooperative Bank of Oromia S.C, Lion International Bank S.C, Zemen Bank S.C, Oromia International Bank S.C, Buna International Bank S.C, Berhan International Bank S.C, Abay Bank S.C, Addis International Bank S.C, Debub Global Bank S.C, and Enat Banks S.C. However, from all the above listed banks, Development Bank of Ethiopia and Commercial bank of Ethiopia are not private commercial bank.

As noted by (Kothari, 2004) good sample design must be viable in the context of time and funds available for the research study. Accordingly, this study employed purposive sampling technique to select the required sample of banks from the above listed banks since it is viable in line with time and funds available for this study. This sampling method is a form of non-probability sampling in which decision concerning the individual source of data to be included in the sample is taken by the researcher, based upon a variety of criteria. The major limitation of purposive sampling is making description rather than generalization (Dawson 2002). The researcher considers that the sample size is sufficient to make sound conclusion about the population as far as it covers around 40% of the total population. Moreover, the big portion of total deposit of private commercial banks is found in the banks selected as sample i.e. banks established before 2005 G.C

The selection criteria set by the researcher was first, the required banks are only private commercial banks in Ethiopia. Second, those commercial banks should operate after 2004/05 and before 2014/15 having financial statements for consecutive eleven years. Third, the researcher chose this sample because they play a major deposit share in the entire research period. With regard to deposit shares, there was also concentration in

favour of CBE, though with a declining trend. Whilst CBE took 65.2% share in 2007, among the private banks, the highest share went to Dashen Bank (9.7%), followed by Awash International Bank (6.2%) and Bank of Abyssinia (5.4%) as of June 30, 2007 (Zerayehu Sime, et al. 2013). Based on such criteria, six private commercial banks out of sixteen private commercial banks operating since 2005 G.C are selected. These banks included Awash International Bank S.C, Dashen Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C and NIB International Bank S.C.

To this end, the sample size for this study is not less than specified sample size required for ones" study. That is why this study used six-experienced private commercial banks in Ethiopia for eleven years. The cut date for the sample size is based on the fact that private commercial banks starts computation with state owned banks starting from 2005 (Sime et al., 2013)

### **3.2.3. Nature, Source of Data, Collection Methods & Instruments**

This study used secondary panel data set for Ethiopian private commercial banks between 2005 and 2015, for eleven years. Six private banks operating in Ethiopia during the period under the study were included in the panel data set. The researcher prefers to use panel data since panel data can take heterogeneity among different units into account over time by allowing for individual-specific variables. Besides, by combining time series and cross-section observations, it gives more informative data. Furthermore, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data (Gujarati, 2004) and panel data models provide much more insights than time series models or cross section data models because it is theoretically possible to isolate the effects of specific effects and actions (Hsiao, 2003).

Accordingly, the researcher used secondary sources of data that is panel in nature. The researcher preferred a secondary source of data since it is less expensive in terms of time and money while collecting. And also, it affords an opportunity to collect high quality data (Saunders et al., 2007) cited in (Gadise, 2014). Secondary data was obtained from the audited annual financial statements of the concerned private commercial banks in

Ethiopia. These data include both bank specific and macroeconomic factors. Bank-specific data was sourced from annual reports and statement of accounts of the selected banks. However, data on macroeconomic variable (GDP growth and inflation were sourced from annual report bulletins published by the National Bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MoFED).

#### **3.2.4. Data Analysis and Regression Methodology**

As noted by (Kothari, 2004), data has to be analysed in line with the purpose of the research plan after data collection. Accordingly, secondary data collected from annual financial statements of the concerned commercial banks in Ethiopia, NBE and MoFEC were analysed to determine its suitability, reliability, adequacy and accuracy. Thus, this study utilized both descriptive and econometric analysis based on a panel data from 2005-2015 to examine the relationship between the growth of deposit and its determinant factors in private commercial banks found in Ethiopia.

In panel data regression methodology three estimation models were adopted, namely, pooled OLS, fixed-effects and random effects. The selection between fixed effect and random effect panel estimation method was based on compatibility of the model, number of cross-section, number of observations and nature of omitted variables. The panel regression results were presented in a tabular form evaluated using individual statistical significance test (T-test) and overall statistical significance test (F-test). The goodness of fit of the model would be tested using the coefficient of determination (R-squared). In conducting all the data analysis, the study used EViews 8 software.

### 3.3. Model Specification and Justification of Variables

#### 3.3.1. Model Specification

The literature reviewed in the previous chapter identified the different factors determining deposit growth in various countries. This section presents a framework of analysis on the basis of these studies, and involves adopting a model that would help to demonstrate the responsiveness of certain key variables that influence bank deposit growth in Ethiopia.

McKinnon (1973) for example, argues that investment in a typical developing country is lumpy and self-financed and hence cannot be materialized unless adequate savings are accumulated in the form of bank deposits. The Life cycle hypothesis, the Keynesian absolute income hypothesis, and the permanent income hypothesis and previous studies (Khalily, Meyer and Hushak (1987); Herald and heiko (2009); Teriba (1968); Oyejide and Soyde (1986); Orji (2012) and Athukorala and Sen (2003)) provided a basis to identify the variables that may affect deposit growth.

A general function accommodating all the hypotheses that explain deposit growth and the variables obtained therefrom, the study can therefore be adopt following Herald and Heiko (2009). The model is consistent with research hypothesis that addresses the internal and external factors for different cross sections. Panel regression model has employed to test the relationship between bank deposit growth and the internal and external determinants.

To decompose the model into its actual variables to be estimated, the equation can be presented as below: -

$$BDG_{it} = \alpha_i + \beta_1 * NBB_{it} + \beta_2 * DIR_{it} + \beta_3 * LATD_{it} + \beta_4 * LOGBD_{-1\ it} + \beta_5 * NIM_{it} + \beta_6 * GDP_t + \beta_7 * INF_t + \epsilon_{it} \dots \dots \dots (4.1)$$

Where:

I=1, 2... N is the i-bank; t=1,2... T corresponds to the year t

$\alpha_i, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6,$  and  $\beta_7$  are vectors of parameters and  $\alpha_i$  represents fixed effect.

$BDG_{it}$ : Bank Deposit Growth (Response Variable) of bank  $i$  at time  $t$

$NBB_{it}$ : Number of Bank Branches (NBB) of bank  $i$  at time  $t$

$DIR_{it}$ : Interest Rate on the Commercial Bank Deposits (DIR) of bank  $i$  at time  $t$

$LATD_{it}$ : Liquid asset to Deposit Ratio (Liquidity Ratio) of bank  $i$  at time  $t$  measured as liquid asset to total asset

$LOGBD(-1)_{it}$ : Lagged Value of Bank Deposit of banks  $i$  at time  $t$

$LIQR_{it}$ : Liquidity risk (LIR) of bank  $i$  at time  $t$  is measured as liquid asset to total asset;

$NIM_{it}$ : Net Interest Margin (NIM) of bank  $i$  at time  $t$  is calculated as Interest Incomes on loan to total Loans minus Interest Expense on Deposit to total Deposits:

$GDP_t$ : Economic growth (GDP) measured as change in the real domestic product/GDP growth of Ethiopia on the year  $t$ . The proxy will be change in growth rate of real GDP.

$INF_{it}$ : Inflation measured as percentage change in consumer price index in Ethiopia on the year  $t$ . and

$\epsilon_{it}$  : Is the error term

### 3.3.2. Justification of Variables

#### 3.3.2.1. Dependent Variable

In this study, the researcher used deposit growth as dependent variable. The primary function of commercial banks is maximization of deposit. 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

#### 3.3.2.2. Independent variable

According to the model presented, there are seven variables that determine deposit growth (BDG) those are number of bank branches (NBB), deposit interest rate (DIR), liquid asset to deposit ratio (LATD), lagged value of bank deposit (LOGBD), inflation rate (INF), economic growth (GDP) and Net Interest Margin (NIM). The following section depicts each independent variable.

**A. Number of Bank Branches (NBB):** The availability of banking services in a country can be measured by the total number of bank branches. The good Bank site occupies in the ability of the positive impact in attracting deposits. This is due to the difficulty of movement of people from one place to another and the difficulties they face in traffic, distinct positions available and free for customer service to the line-up by car, where the applicant is interested in the Bank's website and was approaching his location. Unlike the consumer, who is ready to move long distances in order to get the loan (Ali, 2002, p. 145). Conveniently located bank branches can reduce transaction costs significantly and thereby increases the net return earned on deposits.

**B. Deposit Interest Rate (DIR):** Interest rate determines the price of future consumption relative to current consumption. Economic theory suggests that a rise in interest rate can have either positive or negative effect on saving. If the substitution effect outweighs the income effect, then saving ratio showed a rise with an increase in interest rate. In addition, the most important consideration regarding demand for particular deposit is the return or yield on it, which is price for losing one's liquidity at

particular time. This implies that demand for a particular deposit is positively related to yield paid on it. Theoretically, it is argued that for depositors, the expected rate of interest on deposits is more meaningful rather than current interest rate (Sandhu & Goswami, 1986). Economic theory suggests that a rise in interest rate can have either positive or negative effect on bank deposit growth. Fry (1994), McKinnon (1991) for example suggest a negative relationship between interest rate and saving, while some others (for example, Deaton, 1992; Ma, 1993; and Fry, 1994) have shown that interest can either be positive or irrelevant in the saving function. From the theories of Mckinnon and Shaw, it seems that interest rate is the most vital factor for efficient deposit growth but additional incentives can be provided like prize bond, cash benefit, performance based promotion etc. Moreover, unpredictability regarding income and inflation raise savers desire toward interest bearing deposit. Therefore, policies may affect financial intermediation by altering deposit growth, particularly by altering banks willingness to attract deposit and by stimulating interest of depositors to save.

**C. Liquid Asset to Deposit Ratio (LATD):** is measured by the ratio of liquid assets to total assets or total loan to total deposit. More liquid banks are expected to have higher margins in order to compensate for the opportunity costs of holding extra liquidity. Liquidity risk: Computed as the ratio of bank's liquid assets to total deposit. Bank liquidity is expected to be negatively related to interest spread. An increase in liquidity reduces the bank liquidity risk, which, reduces the interest spread due to a lower liquidity and have a negative impact on deposit growth. According to NBE establishment proclamation (No. 591/PP418) liquid asset of banks includes cash on hand, deposit in other bank, and short term government securities that are acceptable by NBE as collateral (for instance Treasury bill).

**D. Net Interest Margin (NIM):** Net interest margin proxy of measurement of cost of financial intermediation is calculated as the ratio of interest income on loan to total loan minus interest expense on deposits to total deposit (Sibusiso, et al. 2011). It measures the gap between implicit earnings of the bank from interest bearing activities and the implicit costs incurred for attracting interest bearing funds. Thus, the net interest margin represents the charge required by the bank for providing

financial intermediation services. As such, a larger net interest margin may discourage bank clients from using their services, resulting in lower financial deepening.

$$\text{NIM} = \frac{\text{IIOL}}{\text{IEOD}}$$

IIOL is interest income on loan and IEOD is interest expense on deposit.

**E. Economic Growth (GDP):** this factor captures the market conditions that certainly have an impact on deposit growth. During periods of good economic condition, loan demand tends to be higher, allowing banks to provide more loans, which lead commercial banks to mobilize high deposit. Theoretical and empirical evidence suggests that, economic growth is the main source of banks deposit growth. Demirguc-Kunt and Huizinga (1999) show that rapid economic growth increase income of individuals in fact of this deposit will be increase for a large number of countries. One assumption would be that as incomes rise, deposits with banks do so as well. Technically speaking, percapita income captures upswings and downswings manifesting in the business cycles. Consequently, movements in general activity level are expected to generate direct impacts on deposit of banks.

**F. Inflation (INF):** the rate of inflation and the inflationary expectations might have some influence on the growth of overall deposits with the banking system. It is generally assumed that the growth of total deposits is to be negatively related with inflationary expectation. 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. As the rate of inflation increases, people will be tempted to divert their savings from bank deposits to any other kind of tangible assets because these assets act as hedge against. This is the persistent increase or decrease in the average price of goods and services. (Baherdin Awol, 2016)

### **3.4. Summary**

The chapter began by outlining the research methodology that was adopted for the study. It went on to discuss the model specification that was adopted in conducting the research. The chapter outlined the various sources of data that were utilized in the study. It also looked at the justification of the variables that were adopted from the literature and a discussion of the diagnostic tests that were going to be used. The next chapter will look at data analysis, presentation and interpretation.

## **Chapter Four**

### **Data Presentation and Analysis**

#### **4.1. Introduction**

This chapter presents results of the determinants of private commercial banks' deposit growth. The chapter presents the diagnostics test results of multicollinearity, heteroscedasticity, autocorrelation, and normality. The chapter also presents results of the regression analysis and discusses the study results. The chapter is concluded by a summary of the chapter.

#### **4.2. Descriptive Statistics**

This section presents the descriptive statistics of dependent and explanatory variables used in this study. The dependent variable used in this study was bank deposit growth (response variable), and the explanatory variables were liquidity buffer (liquid asset to deposit), inflation rate, lagged value of bank deposit, number of bank branches, economic growth, interest rate on the commercial bank deposits and net interest margin (Profitability).

##### **4.2.1. Summary Statistics**

Table 4.1 shows the summary descriptive results for all the variables used in the study such as mean, maximum, minimum, standard deviation, skewness, kurtosis and number of observation.

Table 1.1-Summary of descriptive statistics of study variables over the period of 2005-2015

	Bank Deposit Growth	Number of Bank Branches	Interest Rate	liquid asset to deposit ratio	Lagged Value of Bank Deposit	Inflation Rate	Economic growth	Net Interest Margin (Profitability).
Mean	0.2437	67.6667	0.0430	0.2228	8.4124	0.1721	0.1047	0.0817
Median	0.2484	55.5000	0.0450	0.2166	8.4993	0.1120	0.1065	0.0817
Maximum	0.5370	207.0000	0.0500	0.4323	9.7775	0.4440	0.1260	0.1159
Minimum	0.0020	20.0000	0.0300	0.0762	6.7881	0.0737	0.0860	0.0505
Std. Dev.	0.1092	39.4048	0.0079	0.0860	0.7123	0.1210	0.0117	0.0166
Skewness	0.4129	1.3410	-0.5793	0.5899	-0.2174	1.2028	-0.0413	0.0900
Kurtosis	3.2070	4.5761	1.8643	2.8691	2.3638	3.1134	2.3649	2.1593
Jarque-Bera	1.8124	24.1936	6.5807	3.5229	1.4842	14.4982	1.0256	1.8480
Probability	0.4041	0.0000	0.0372	0.1718	0.4761	0.0007	0.5988	0.3969
Sum	15	4060	3	13	505	10	6	5
Sum Sq. Dev.	1	91611	0	0	30	1	0	0
Observations	60	60	60	60	60	60	60	60

*Source: EView 8 Output descriptive statistics*

As shown in the table 4.1 above, the mean value of bank deposit growth was around 24.37 percent for sampled commercial banks in Ethiopia. It can be noticed that the bank deposit growth fluctuates between 0.20 and 53.70 percent. This means, commercial banks were achieved 24.37 percent average deposit growth achieved from depositors for the period of 2005-2015. Theoretically, a growth rate of 32.1% in deposits may be considered sufficient to increase supply of loanable funds (Sylvester, 2011). The standard deviation among banks in terms of bank deposit growth was 10.92 percent; this confirms that there were lower variations of deposit growth among commercial banks during the study period. Though the performances of deposit among commercial banks conform to supply the loanable fund, the trend of deposit is increasing year to year at increasing rate. The reason of this increasing deposit growth may attribute to increase the users of banking services and or intermediation of commercial banks in the country.

As shown in the result, there were higher differences among banks regarding branch expansion. The mean value of number of bank branches was 68 units; the standard deviation was 39, while 207 and 20 observed as maximum and minimum values, respectively, exhibits higher dispersion larger than its mean value, this implies that private banks expand banking network aggressively in the study period.

The mean value of the bank deposit interest rate over the period under study was 4.3% with the maximum and minimum values of 5.0% and 3.0% respectively. There was little

variation of interest rate towards its mean value over the periods under study with the value of standard deviation 0.79%. This implies that the stability of deposit interest rate for subsequent years under the study periods in a sense there is a control of minimum and maximum deposit interest rate by the government body. So there was no competition between commercial banks to attract the customers with a motive of return on deposit under the study period.

The mean value of liquid asset to deposit ratio was 22.28 percent and there was low dispersion of liquid asset to deposit ratio towards its mean value among banks that is shown by the standard deviation of 8.60%. The maximum value of liquid asset to deposit ratio was 43.23 percent, which is far above the standard whereas the minimum value was 7.6 percent, which is far below the standard. This indicates that there were some commercial banks in Ethiopia having extra liquidation (banks around 43.23%) and others were going to face bank liquidity risk (banks around 7.6%). Therefore, it can be concluded that liquid asset to deposit ratio was highly dispersed among commercial banks in Ethiopia.

Lagged bank deposit of each bank was proxy to their natural logarithm values. The average value of this variable was 4,503.95 million Birr during the study period, the minimum and maximum values were 887.23 and 17,632.51 million Birr respectively with standard deviations of 2.03 million Birr. This shows that there was discrepancy between banks in terms of lagged bank deposit meaning that there were higher differences among banks regarding to one year lagged 60 bank deposits. Big banks will collect more deposit other than small banks in using its economies of scale. Since logarithms values minimize the variations in terms of total deposit.<sup>1</sup>

Net interest margin (NIM) ratio proxy of measurement of profitability measured by ratio of interest income on loan to total loan minus interest expense to total deposit ranges from 5.05 percent to 11.59 percent. It has a mean of 8.17 percent showing the standard deviation of 1.66 percent from its mean value. This indicates that NIM of Commercial

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<sup>1</sup>  $\ln(X)=y$  implies that  $e^y=x$  where the constant  $e$  represents 2.7182818

Banks in Ethiopia has exhibited an increasing trend in interest rate margin within the study period i.e. 2005 to 2015.

The inflation or average price of goods and service on the basis of inflation in the country over the sample period was recorded an average of 17.21 percent. The maximum inflation was recorded in the year 2008 (i.e. 44.39%) and the minimum was in the year 2014 (i.e. -7.37%). The rate of inflation was highly dispersed which exhibits higher dispersion larger than its mean value over the periods under study towards its mean with standard deviation of 12.10%. This clearly shows that there was a bit more variations in terms of cost of living as it measured by inflation consumer price index.

The other external factor is economic growth showed the mean GDP in Ethiopia during 2005-2015 of 10.47 percent, with a maximum of 12.60 percent in 2010 and a minimum of 8.6 percent in 2012. The standard deviation for GDP was 1.17 percent; this implies that little variation GDP its mean value during the period of 2005 to 2015.

#### **4.2.2. Correlation Matrix**

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. The sample size is the key element to determine whether or not the correlation coefficient is different from zero/statistically significant. The values of the correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that the two variables are perfectly related in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly related in a negative linear sense. A correlation coefficient of 0, on the other hand indicates that there is no linear relationship between two variables (Brooks, 2008). The correlation matrix in table 4.2 predicts the likely relationship among variables in the study.

**Table 4.2-Correlation Matrix (With Dependent Variable)**

Correlation Probability	Bank Deposit Growth	Number of Bank Branches	Interest Rate	liquid asset to deposit ratio	Lagged Value of Bank Deposit	Inflation Rate	Economic growth	Net Interest Margin (Profitability).
Bank Deposit Growth	1							
Number of Bank Branche	-0.380216 0.0027	1						
Interest Rate	-0.486793 0.0001	0.684829 0.000	1					
liquid asset to deposit ra	-0.006991 0.9577	-0.396542 0.0017	-0.110795 0.3994	1				
Lagged Value of Bank Dej	-0.550701 0.000	0.847632 0.000	0.835192 0.000	-0.253349 0.0508	1			
Inflation Rate	0.077977 0.5537	-0.375888 0.0031	0.004791 0.971	0.132036 0.3146	-0.228131 0.0796	1		
Economic growth	0.209316 0.1085	-0.273151 0.0347	-0.387927 0.0022	0.242455 0.062	-0.282845 0.0285	0.094959 0.4705	1	
Net Interest Margin (Prof	-0.297791 0.0208	0.567286 0.000	0.694731 0.000	-0.088754 0.5001	0.547048 0.000	-0.251112 0.053	-0.411636 0.0011	1

*Source: EView 8 Output correlation matrix*

The correlation matrix in Table 4.2 produced statistical evidence that bank deposit growth is insignificantly and positively linear relationship with GDP and inflation even at 10% level with correlation coefficient of 0.209 and 0.078 respectively. Bank deposit growth is significantly and negatively correlated with bank branches, deposit interest rate, lagged bank deposit and net interest margin. Similarly, bank deposit growth has insignificant and negatively correlated with liquid asset to deposit ratio even at 10% level with correlation coefficient of 0.551.

In general, even though the correlation analysis shows the direction and degree of associations between variables, it does not allow the researcher to make cause and effect inferences regarding the relationship between the identified variables, is simply stated that there is evidence for a linear relationship between the two variables, and that movements in variables are on average related to an extent given by the correlation coefficient. Thus, in examining the effects of selected independent variables on bank deposit growth the econometric regression analysis that is discussed in the forthcoming

section of the paper gives assurance to overcome the shortcomings of correlation analysis.

### **4.3. Diagnostic Tests**

Diagnostic tests were performed to check for the validity of the parameters. The researcher is to test for normality, multicollinearity, heteroscedasticity and autocorrelation.

#### **4.3.1. Normality**

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by (Gujarati, 2004), OLS estimators are BLUE regardless of whether the error terms are normally distributed or not. If the disturbances are independently and identically distributed with zero mean and constant variance and if the explanatory variables are constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding  $\beta$ 's.

However, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data. Thus, since the sample size for this study is large enough, it is approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

#### **4.3.2. Multicollinearity**

The term multicollinearity refers to the existence of a “perfect,” or exact, linear relationship among some or all explanatory variables of a regression model (Gujarati, 2004). If it exists the remedy is to drop a variable with a high R-square or do nothing. The correlation matrix was used to detect the presence of severe multicollinearity. A correlation coefficient is high if it is in excess of 0.8.

#### **4.3.3. Heteroscedasticity**

According to (Gujarati, 2004) this is a situation whereby the error variances are not constant. This is a violation of one important assumption of the classical linear regression

assumptions. To detect heteroscedasticity, the research employed the Whites test for heteroscedasticity. The problem of continuing to use data that suffers heteroscedasticity is that whatever conclusion or inferences, they will be misleading.

#### **4.3.4. Autocorrelation**

The violation of the basic assumption that residuals are mutually independent results in serial autocorrelation. In time series data the successive residuals tend to be highly correlated. Autocorrelation can also be extended to cross section data where the residuals are correlated with those of the neighbouring units (Maddala, 1977). The Durbin-Watson method is used to test for autocorrelation. A Durbin Watson statistic around two is generally accepted though there are zones of indifference and zones of both positive and negative correlation.

#### **4.4. Data Presentation and Analysis Plan**

Descriptive statistics of the variables (both dependent and independent) were first calculated over the sample period. This is in line with (Malhotra, 2007), which states that using descriptive statistics methods helps the researcher in picturing the existing situation. Then, a diagnostic test includes multicollinearity; heteroscedasticity, autocorrelation, and normality were to ensure that the data are suitable for ordinary least square (OLS) analysis.

Before moving to interpretation of regression results the suitability of fixed model over random effects model need to be determined based on number of cross-section, number of observations and nature of omitted variables.

#### **4.5. Econometric Analysis**

The researcher conducted diagnostic tests to guard against the possibility of obtaining and interpreting fake regression results. The results of the tests are presented in the following sections.

#### 4.5.1. Multicollinearity Test

The result of the test for existence multicollinearity between independent variable are presented in the test analysis using only independent variables in Table 4.3: -

**Table 4.3-Correlation Matrix (Only Independent Variables)**

	Number of Bank Branches	Interest Rate	liquid asset to deposit ratio	Lagged Value of Bank Deposit	Inflation Rate	Economic growth	Net Interest Margin (Profitability)
Number of Bank Branches	1						
Interest Rate	0.6848	1					
liquid asset to deposit ratio	-0.3965	-0.1108	1				
Lagged Value of Bank Deposit	0.8476	0.8352	-0.2533	1			
Inflation Rate	-0.3759	0.0048	0.1320	-0.2281	1		
Economic growth	-0.2732	-0.3879	0.2425	-0.2828	0.0950	1	
Net Interest Margin (Profitability).	0.5673	0.6947	-0.0888	0.5470	-0.2511	-0.4116	1

*Source: EView 8 Output*

According to Lewis-Beck (1993) suggestion in order to find out the multicollinearity problem, the bivariate correlations among the independent variables should be examined and the existence of correlation of about 0.8 or larger indicates a problem of multicollinearity. Hair et al (2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem. I.e. if pair-wise or zero-order correlation coefficient between two regressors is out of the recommended range of multicollinearity which is -0.9 or 0.9. In the above correlation matrix there is no pair-wise relation, which suggests for not rejecting the+ null hypothesis ( $H_0$ ), which states that there is no perfect pair-wise relation among regressors.

Therefore, it can be concluded that in this study that there is no problem of multicollinearity or the results showed that the problem of multicollinearity did not exist between variables in the model. Hence all the variables were retained for use in the estimations.

#### 4.5.2. Heteroscedasticity Test

It has been assumed that the variance of the errors is constant. This is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are

said to be Heteroscedasticity. The Breusch-Pagan-Godfrey test was used to check for the presence of heteroscedasticity in the residuals (see Table 4.4).

**Table 4.4-Heteroscedasticity Test: Breusch-Pagan-Godfrey (Summary)**

Version of Test	value	df	Probability
F-statistic	0.706058	Prob. F(7,52)	0.6668
Obs*R-squared	5.207796	Prob. Chi-Square(7)	0.6346
Scaled explained SS	5.487555	Prob. Chi-Square(7)	0.6007

*Source: Source: EView 8 Output*

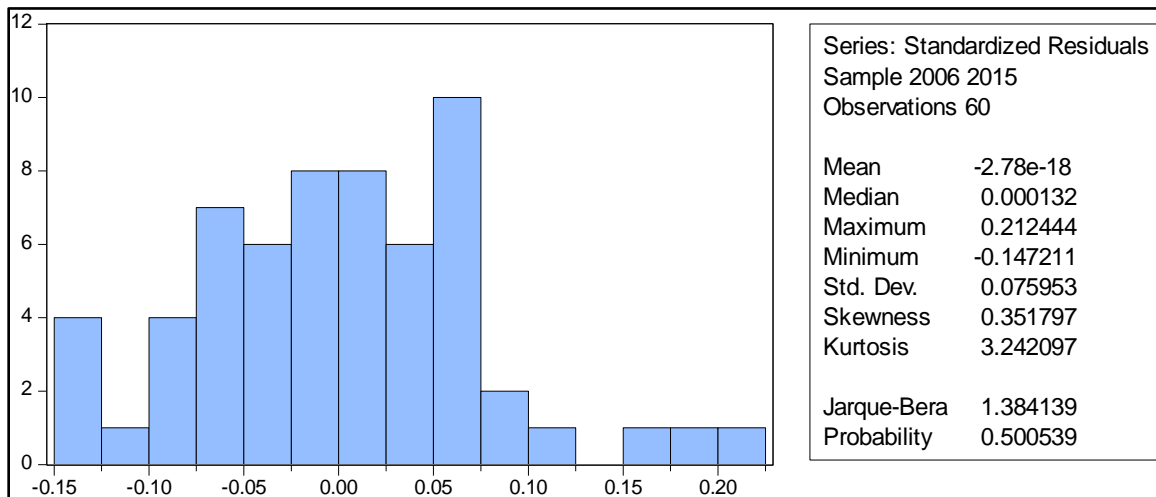
As shown in Table 4.4 both F-statistic and Obs\*R-squared version of test give the same conclusion that there is no evidence for the presence of heteroscedasticity since the p-values in all of the cases were above 0.05. The third version of the test statistics “Scaled explained SS”, which is, as the name suggests, based on a normalized version of the explained sum of squares from the auxiliary regression also give the same conclusion.

Generally, in the regression models used in this study it was proved that the test statistics is not significant and the variance of the error term is constant or homoscedastic and we had sufficient evidence to accept the null hypothesis of Homoscedasticity. The linear model is also correctly specified.

#### **4.5.3. Normality Test**

A normal distribution is not skewed and is defined to have a kurtosis coefficient of 3. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of Skeweness and kurtosis are zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how fat the tails of the distribution are. The Bera-Jarque probability statistics/P-value is also expected not to be significant even at 10% significant level (Brooks, 2008).

**Figure 4.1-Normality Test result**



*Source: EView 8 Output*

As shown in the above histogram, skewness and kurtosis approaches to zero (i.e. 0.351797) and Three (i.e. 3.242097) and the Jarque-Bera statistics (i.e. 1.384139) was not significant even at 10% level of significance as per the P-values shown in the histogram in the appendix was 0.500539). Hence, the null hypothesis that the error term is normally distributed should not be rejected. Even though, this is contradictory to what Table 4.1 shows i.e. Jarque-Bera probability for most of variables suggest lack of normality this would not have any effect as the sample size is large. Therefore, it is possible to say that error terms follow normal distribution.

#### **4.5.4. Autocorrelation Test**

Under this section the researcher incorporates both methods of testing of autocorrelation i.e. Durbin-Watson autocorrelations test in the first section and Breusch-Godfrey Serial Correlation LM Test in the second section. Both confirm that there is no autocorrelations between an immediately previous lag value and the 8<sup>th</sup> lag value respectively.

##### **A. First Order Durbin-Watson Autocorrelations Test**

The test for autocorrelation was made by using Durbin and Watson. Durbin-Watson (DW) is a test for first order autocorrelation i.e. it tests only for a relationship between an error and its immediately previous value. DW is approximately equals to two, when there is no autocorrelation between the error term and its first order lag (Brooks, 2008). The



lagged regress and as an explanatory variable (Gujarati, 2004). The null hypothesis is that there is no serial correlation. The summary statistic is depicted here below:

**Table 4.5-Breusch-Godfrey Serial Correlation LM Test (Summary)**

<b>Version of Test</b>	<b>value</b>	<b>df</b>	<b>Probability</b>
F-statistic	1.574106	Prob. F(8,44)	0.1603
Obs*R-squared	13.351	Prob. Chi-Square(8)	0.1003

*Source: EView 8 Output*

Table 4.5 shows that the Breush-Godfrey Serial Correlation LM Test gives an F-statistic of 1.574106 with a probability of 0.1603 and chi-square version gives statics of 13.351 with probability of 0.1003. Hence, from both versions of the test we fail to reject the hypothesis of no autocorrelation in the residuals at 1% significant level.

#### **4.6. Statistical Distinguish Between Models**

With panel/cross sectional time series data, the most commonly estimated models are probably fixed effect and random effects models. The researcher has used fixed effect regression instead of random effect model because of the following reasons:

- i. According to (Gujarati, 2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence, the choice here is based on computational convenience. On this score, FEM may be preferable since the number of time series (i.e. 11 year) is greater than the number of cross-sectional units (i.e. 6 private commercial banks).
- ii. According to (Brooks, 2008; Verbeek, 2004 and Wooldridge, 2004), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire

population/sample frame. The sample for this study was not selected randomly rather purposively and as such FEM is more appropriate than REM.

- iii. According to (Richard, 2015), the nature of the variables that have been omitted from the model affects the selection of the models i.e. if we think there are no omitted variables—or if we believe that the omitted variables are uncorrelated with the explanatory variables that are in the model, then a random effects model is probably best. However, if there are omitted variables that are correlated with the variables in the model, fixed effects models may provide a means for controlling for omitted variable bias. In a fixed-effects model, subjects serve as their own controls. In this study, the researcher identified variables that are omitted such as quality of management, management style, differences in the skills of the workforce, and others, which were correlated to explanatory variables. Thus, the FEM is more preferable.

Considering the above theoretical backgrounds in to consideration, the researcher has adopted fixed effects regression technique instead of random effect models.

## 4.7. Results of Regression Analysis and its Interpretation

### 4.7.1. Results of Regression Analysis

This section presents the regression result of fixed effect model that examines the determinant of commercial banks deposit growth in private commercial banks in Ethiopia.

**Operational model:** the operational panel regression model used to find the statistically significant determinants of banks deposit growth in private Ethiopian commercial banks was:

$$BDG_{it} = \alpha_i + \beta_1 * NBB_{it} + \beta_2 * DIR_{it} + \beta_3 * LATD_{it} + \beta_4 * LOGBD_{-1\ it} + \beta_5 * NIM_{it} + \beta_6 * GDP_t + \beta_7 * INF_t + \epsilon_{it} \dots \dots \dots (4.1)$$

Accordingly, Table 4.6 below presents the result of fixed effect regression model that examines the impact of explanatory variables on bank deposit growth. Hence, BDG is dependent variable whereas number of bank branches (NBB), deposit interest rate (DIR), liquid asset to deposit ratio (LATD), lagged value of bank deposit (LOGBD), inflation rate (INF), economic growth (GDP) and Net Interest Margin (NIM) are explanatory variables.

**Table 4.6-Results of fixed effect regression model**

Explanatory Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.283335	0.474577	4.811306	0.00000
Number of Bank Branches(NBB)-H1*	0.001295	0.000723	1.790623	0.0798***
Interest Rate(DIR)-H2*	14.71308	5.912183	2.488604	0.0164**
liquid asset to deposit ratio(LATD)-H3**	-0.121485	0.189171	-0.642193	0.5239****
Lagged Value of Bank Deposit(LOGBD)-H4*	-0.376085	0.088851	-4.23278	0.0001*
Inflation Rate(INF)-H5**	-0.202816	0.13438	-1.509274	0.1379****
Economic growth(GDP)-H6*	2.436629	1.209418	2.014712	0.0497**
Net Interest Margin (Profitability)(NIM)-H7*	2.577789	1.400936	1.840047	0.0721***
R-squared	0.516095	Mean dependent var		0.243701
Adjusted R-squared	0.392545	S.D. dependent var		0.109185
S.E. of regression	0.085098	Akaike info criterion		-1.900889
Sum squared resid	0.340359	Schwarz criterion		-1.447114
Log likelihood	70.02666	Hannan-Quinn criter.		-1.723392
F-statistic	4.177211	Durbin-Watson stat		2.370633
Prob(F-statistic)	0.000189			

Note: \* significant at 1%, \*\* significant at 5%, \*\*\* significant at 10% and \*\*\*\* insignificant  
H\* accept null and H\*\* reject null hypothesis

Source: *Source: EView 8 Output*

Based on the regression result, the relationship between the variables included in the model can, therefore, be represented as follows;

$$BDG_{it} = \alpha_i + 0.001 * NBB + 14.713 * DIR - 0.121 * LATD - 0.376 * LOGBD + 2.577 * NIM + 2.436 * GDP - 0.202 * INF + 2.283 \dots\dots\dots (4.1)$$

Where: - Dependent variable-is bank deposit growth (BDG) and independent variables includes- number of bank branches (NBB), deposit interest rate (DIR), liquidity asset to deposit(LATD), lagged value of bank deposit (LOGBD), inflation rate (INF), Economic growth (GDP) and Net Interest Margin (NIM).

**4.7.1.1. Interpretation of R-squared**

As shown in Table 4.6, an R-squared coefficient of 0.516095 obtained from the estimated model; revealing that 51.60 percent of variation in deposit growth (BDG) is explained by the selected explanatory variables (number of bank branches (NBB), deposit interest rate (DIR), liquidity asset to deposit (LATD), lagged value of bank deposit (LOGBD), inflation rate (INF), per capita income growth (GDP) and Net Interest Margin (NIM).

The R-square result makes sense because there are other factors such as size of the bank, degree of financial intermediation and money supply that were not included in the model but could help in explaining deposit growth in private Ethiopian commercial banks. These and other remaining factors can account for the remaining 48.40 percent.

**4.7.1.2. Interpretation of Adjusted R-squared**

An adjusted R-squared value, which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models. In other words, the adjusted R-squared shows satisfactory levels, which mean that nearly 39.25 percent of the volatilities in deposit growth are explained by the volatilities of independent variables included in the equation. Therefore, an adjusted R-square having value of 0.392545 shows that 39.25 percent of dependent variable is explained by the independent variables included in the model.

#### **4.7.2. Interpretation Results of the Regressors Values**

##### **A. Number of Bank Branches (NBB) on Bank Deposit Growth**

The result in table 4.6 shows that number of bank branches has a statistically significant at 10% and positive impact in bank deposit growth. A one-unit increase in number of bank branch generates a 0.0012-unit increase in bank deposit growth. Positive and significant coefficient for bank branches validates the argument of Khalily et al (1987); Hibret (2015); Shemsu (2015); Wubetu (2012) and Nathanael (2014). Rana (1984), Srinivasan and Meyer (1986), Vasquez (1986), and Wai (1992) found a positive and significant relationship between demand for deposits and expansion of bank branches. This finding also agrees with the findings of Lewis (1995) but contrasts with findings of Peter and Michaelo (2015). This implies that the importance of branch expansion of commercial banks over the country that leads to affecting deposit growth meaning that banks with many branches in Ethiopia have high deposit growth. Thus, in general, null hypothesis has been accepting and conclude that bank branches have causality relationship with growth of bank deposit; meaning that it is one of the major factors that banks can use to achieve deposit growth via a proper management of branch expansion. The expansions of the branch network not only reduces transaction costs for depositors but also increase accessibility of banking services and provides other important financial services and increases the awareness of people about banking. The expansion of banking facilities is the key factor in deposit growth because easier physical access should reduce transaction costs for depositors. Even so, rural branches are still clustered in relatively more urban areas so banking services are not evenly distributed, and many potential areas remain unbanked.

##### **B. Deposit Interest Rate (DIR) on Bank Deposit Growth**

Deposit interest rate was found to have a positive relationship with bank deposit growth and the relationship is significant at 1% according to the model in Table 4.6 above a one-unit increase in deposit interest rate generates 14.71-unit increase in deposit growth and concludes that deposit interest rate do significantly contribute to bank deposit growth. This result is supported by the findings of Wubetu (2012); Hibret (2015); Ngula (2012);

Deaton (1992) and Fry (1994) have shown that interest can either be positive or irrelevant in the saving function. Edmister and Merriken (1989) also showed that interest rates could do little in this regard.

One of the most effective factors for deciding to deposit in banking system is the interest rate (Mohammad and Mahdi, 2010). Moreover, this article shows the impact of interest rate on the performance of the banking system to achieve the goals that are expected from the banking system. Herald and Heiko (2009), also mentioned interest as one of the determining factor for commercial banks deposits. Philip (1968), also states that the offering of attractive interest rate on bank deposits may be considered to have had a beneficial effect. Moreover, Mustafa and Sayera (2009) said that low deposit rates are discouraging saving mobilization. V. V. Bhatt (1970), said that the banking system is unlikely to be in a position to meet the demand for bank credit unless concerted policy is pursued to raise the rate of saving generally and the rate of saving in the form of deposits in particular.

This implies that deposit interest rate is a major factor in explaining the private commercial banks' deposit in Ethiopia meaning that interest rate more plays an important role in deposit growth. In fact, there is competition between private commercial banks in terms of attraction using deposit interest rate.

### **C. Liquid Asset to Deposit ratio (LATD) on Bank Deposit Growth**

Bank liquidity is measured in three ratios: liquid asset to deposit, liquid asset to total asset and loan to deposit ratios. The researcher has measured liquidity by liquid asset to deposit ratio, which has insignificant negative impact on private commercial bank deposits growth. The coefficient of this relationship of -0.1214 indicates that holding other things constant, a unit increase in liquid asset to deposit will lead to a 12.14-unit reduction and vice versa in bank deposit growth at a significant level of more than 10 percent.

Liquid banks as well as banks with a higher loan exposure are associated with higher deposit growth. Herald and Heiko (2009), states that the liquidity situation of the bank also plays a significant role in determining banks deposit growth. According to Nada (2010), Banks perceived as risky should have had more difficulty attracting deposits and

making loans than banks perceived as safe. When banks fail to pay for its depositors then it faces liquidity risk that makes other depositors not to deposit in that particular bank.

Generally, the present study is aligning with Devinga, (2010), loans to deposit ratio is inversely related to liquidity and consequently the higher the loans to deposit ratio the lower the liquidity indirectly affect deposit growth and vice versa. According to Vong et al. (2009) study findings exhibits a positive relationship between loan to deposit ratio and deposit. Further Abreu and Mends (2002), found that there is appositive and significant relationship between the ratio of the LDR and bank profits indirectly to bank deposit. Note that the financing position of banks with high loan to deposit ratios can still be more vulnerable overall, as informed creditors are typically the first to run. As there is no national standard for this variable to put implication since there is no base to say so, it is better to let this variable for further research.

#### **D. Lagged Value of Bank Deposit (LOGBD) on Bank Deposit Growth**

Private Banks previous year bank deposit was also found to be statistically significant determinant variable of current bank deposit growth of Ethiopian banking sector. Therefore, holding other things constant a 1-unit increase in lagged bank deposit at present will lead to 0.37-unit reduction and vice versa in the bank deposit growth at a significant level of 1 percent. The results show that the coefficient of lagged bank deposit is negative and statistically significant impact on current bank deposit growth. This could result because the emphasis given by banks mobilizing more deposit in the subsequent period may be lessened. This result is similar to Lommuto (2008).

#### **E. Net Interest margin (NIM) on Bank Deposit Growth**

Profitability measured by net interest margin ratio has a significant positive impact on private commercial bank deposits growth. The coefficient of this relationship of 2.57 indicates that holding other things constant; a unit increase in net interest margin will lead to a 2.57-unit in bank deposit growth at a significant level of 10 percent.

Erna and Ekki (2004) find the long run relationship between commercial banks deposits and the profitability of the banks. Higher bank profits would tend to signal

increased bank soundness, which could make it easier for these banks to attract deposits (Herald and Heiko, 2009). However, the effect of bank profitability and bank size are found to be insignificant once controlling for the other variables. So, the effect of profitability and banks size on commercial bank deposit is lower as compared with other variables.

#### **F. Inflation Rate (INF) on Bank Deposit Growth**

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. According to Herald and Heiko (2009), price can also determine commercial bank deposit and it can be indicated by consumer price index.

The result in table 4.6 shows that inflation rate has insignificant negative impact in bank deposit growth. The coefficient of this relationship of 0.2028 indicates that holding other things constant, a unit increase in inflation rate will lead to an 11.9-unit decrease in bank deposit growth at an insignificant level of more than 10 percent. This implies that persistent inflation has a negative insignificant effect on growth of bank deposit. So higher inflation induces savers to save less, perhaps households get stable price prediction from deposit. This result is consistent with the precautionary motive, suggesting that increased macroeconomic uncertainty induces people to save a proportion of their incomes. This is particularly true for households in developing countries such as Ethiopia whose income prospects are more uncertain than their counterparts in developed countries. This finding supports the idea of Schmidt Hebbel, Webb and Corsetti (1992), which found that non-statistically significant relationship between deposit growth and inflation rate.

#### **G. Economic Growth (GDP) on Bank Deposit 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).

The economic growth of the country proxy by GDP had positive and statistically significant impact on deposit. An increase of 1 unit in GDP increased deposit by 2.44 unit. In growing economy, both individuals and companies' corporate income will increase. This increase leads to 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).

According to Herald and Heiko (2009), growth is one of the determining factor for commercial banks deposits. GDP is calculated by adding up the value-added at each stage of production (deducting the cost of produced inputs and materials purchased from an industry's suppliers)(Jim, 2008). Erna and Ekki (2004) finds four variables, GDP, number of Islamic bank's branch offices, profit sharing rate, and interest rate that are thought to have influence on the volume of deposits. So, GDP can influence the growth of commercial banks deposits.

## **Chapter Five**

### **Summary, Conclusions and Recommendations**

#### **5.1. Introduction**

The study established the factors that determine deposit growth in private Ethiopia banking sector during the period from 2005-2013. Findings indicated that bank deposit growth are influenced by number of bank branches (NBB), deposit interest rate (DIR), liquid asset to deposit ratio(LATD), lagged value of bank deposit (LOGBD), inflation rate (INF), economic growth (GDP) and Net Interest Margin (NIM). This chapter outlines the summary and conclusions of the study in accordance with the study results. It also gives an insight on the policy recommendations as well as suggestions for future studies.

#### **5.2. Summary of the Study**

The thrust of the study was on identifying the factors affecting growth of deposit in private commercial banks operating in Ethiopia. An explanatory research design was adopted to explain the casual relationships between the variables. The study employed quantitative methods on secondary data sourced from financial statements of banks, and NBE publications for macro-economic variables.

Results from the regression analysis estimated by fixed effect regression model showed that number of bank branches has positive significant impact on bank deposit growth, deposit interest rate has positive significant impact on bank deposit growth, bank liquidity (liquid asset to deposit ratio) has negative insignificant impact on bank deposit growth, lagged bank deposit has negative significant impact on bank deposit growth, Net interest margin has positive insignificant impact on bank deposit growth, Inflation rate has negative insignificant impact on bank deposit growth and GDP rate has positive significant impact on bank deposit growth.

Generally, five findings out of seven were in line with literature which postulates that bank specific variables and macroeconomic variables have a significant impact on bank deposit growth. Specific conclusion on each factor is depicted in the following section.

### 5.3. Conclusions

This section presents the conclusion drawn from findings of the study.

- Related to number of branch, the increase in the deposit growth of banks that operate in Ethiopia is significantly and positively affected by large number of branches. Recently banks have been more aggressive towards the expansion in more geographical areas by opening new branches which has caused an increase in the level of number of branches; resulting in deposit growth increase.
- Concerning to deposit interest rate, it implies that deposit interest rate is a major factor in explaining the private commercial banks' deposit growth in Ethiopia private commercial banks meaning that interest rate more plays an important role in deposit growth. In fact, of this the competition between private commercial banks in terms of attraction using deposits interest rate. The effect of deposit interest rate on commercial bank deposit growth is higher as compared with other variables.
- In connection with liquidity, the study indicated that the deposit growth decreases when the bank liquidity increases or reduces liquidity risk. Liquidity arises mainly from the inability/reluctance of commercial banks to extend risky loans at competitive rates or credit selling set by NBE, which leads banks to invest in short-term liquid investments that yield lower interest revenue. During the period were banks are liquid they reluctant to deposit mobilization.
- Private Banks previous year bank deposit was also found to be statistically significant determinant variable of current bank deposit growth of Ethiopian banking sector. The results show that the coefficient of lagged bank deposit is negative and statistically significant impact on current bank deposit growth. This could result because the emphasis given by the bank mobilizing more deposit in the subsequent period may be lessened.
- In regard to profitability measured by net interest margin ratio has a significant positive impact on private commercial bank deposits growth. Higher bank profits would tend to signal increased bank soundness, which could make it easier for these

banks to attract deposits. The effect of profitability on commercial bank deposit growth is higher (2<sup>nd</sup>) as compared with other variables.

- The deposit growth reacts positively towards increase economic growth. The relationship is in line with the expected sign, which implies that efficiency of banks in mobilizing deposits and channelling into investment that would result in an offsetting of gains of GDP.
- The deposit growth reacts negatively towards the increase in inflation. The relationship is similar to the expected sign. Since the county has experienced double digits inflation in the study period that results in higher costs of doing business; which leads to decrease in deposit mobilized by private commercial banks

#### **5.4. Recommendations**

The empirical findings of the research have prompted the researcher to suggest the following policy recommendations:

##### **5.4.1. Improving on Bank Efficiency**

- Branch expansion has positive and significant effect on total deposit of commercial banks; commercial banks should also expand their branches in order to increase their deposit. Rural sector has more potential to save but this sector has not thrived much. The concentration regarding the branch expansion should be in rational. For example, when the bank wants to open a new branch in urban area the regulating body should order the bank to open in rural area before providing the authorisation. 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 that are located in remote areas with limited Human and other resources.
- Increasing in deposit interest rate commonly increases deposit mobilization and in Ethiopia private commercial bank the magnitude of increase is higher than all variables aggregate which means that if there is a change in deposit rate in a country the deposit growth of the banks are highly affected. Private commercial banks in

Ethiopia can add deposit rate for competition purpose, however the minimum interest rate is fixed by the National bank of Ethiopia. Therefore, banks should develop long-run strategies that will align with the policy shift of the country, if any. For example, if NBE decided to live the minimum threshold set for deposit interest rate (5%) or the Ethiopian government decided to be a member of World Trade Organization (WTO) or foreign banks would be allowed to operate in the country. For instance there are many foreign banks who have already opened their representative office in Ethiopia.

- Private commercial banks are highly sensitive organization open to public scrutiny. As such, they must continuously ensure their profitability, which is essential for their deposit growth and viability as also for infusing public confidence. Thus, banks have assumed greater responsibilities in mobilizing domestic resources for financing the priorities of the economy and private commercial banks should have managed liquidity that contributes some for reduction of deposit growth and NBE shall also keep its liquidity requirement in the future to increase the deposit growth of the banks.

#### **5.4.2. Improving Economic Environment**

- At the regulatory or supervisory level, the result of the study is relevant for policy makers, since it implies that in order to achieve higher deposit growth; public policy shall be oriented towards creating the necessary market conditions for banks to enhance their efficiency. The study suggests the importance of ensuring and promoting favourable economic situations such as lower inflation rate and sustainable economic growth like GDP per capita.

Overall, the results provide evidence that bank specific and macroeconomic variables determine the growth of deposit in Ethiopia private commercial banks.

### **5.5. Suggestions for Future Studies**

- The prime focus of this research was identifying factors determining deposit mobilization performance in case of private commercial banks in Ethiopia using selected variables. However, there are other bank specific and macroeconomic specific variables that were not included in this study. Thus, future researchers are recommended to undertake similar study by considering additional macroeconomic and bank specific variables.

## Reference

- Abreu, M., & Mendes, V. (2002). Do Macro-Financial Variables Matter for European Bank Interest Margins. Financial Management Association International.
- Adam B. Ashcraft (2005). "Are Banks Really Special? New Evidence from the FDIC Induced. Failure on Healthy Banks", American Economic Review, PP 1712-17
- Admas, J., Robert, R., & White, D. (2007). Research Method for Graduate Business and Social Science Student.
- Ali, R & Saheb, AH 2002, Bank management, quantitative analysis, Contemporary Alfekar House of Printing and Publishing, 1st Edition, Amman.
- Anil K. Kashyap, Raghuram Rajan and Jeremy C. Stein (2002). "Banks as Liquidity Providers: An explanation for the Coexistence of Lending and Deposit Taking". The Journal of Finance
- Athukorala, P.-c., & Sen, K. (2001). The Determinants of Private Saving in India .-
- Bahredin Awol 2016. "Determinants of commercial banks deposit growth (Evidence from Ethiopia)", Degree of Masters Thesis, Addis Ababa University
- Berger (2004), Bank concentration and competition: An Evolution in the making
- Bhatt, V. V. (1970). Some Aspects of Deposit Mobilization" Economic and Political Weekly, Economic and Political Weekly. Vol. 5, No. 36, pp. 1495-1497.
- Brooks, C 2008, „Introductory Econometrics for Finance“, 2nd edn, Cambridge University Press, New York.
- Chris Brooks (2008). Introductory Econometrics for Finance. Second edition, Cambridge University Press.
- Creswell, W. (2003). Qualitative, Quantitative, and Mixed Methods Approaches (Second Edition ed.).
- Daniel C. Giedeman (2005). "Branch Banking Restriction and Finance Constraints in Early 1965", Cambridge University Press, the Journal of Economics History, Vol. 1, PP 129-151.

- Dawson C., 2002. Practical research methods. Oxford, Howtobooks.
- Deaton, A 1992, „Household saving in LDC'S: Credit markets, insurance, and welfare“, Papers 153. Woodrow Wilson School - Development Studies: Princeton.
- Demirguc-Kunt, A., & Huizinga, H. (1999). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence. *World Bank Economic Review*, 13(2), 379-408.
- Devinaga Rasiah (2010). “Theoretical Framework of Profitability as Applied to Commercial Bank in Malaysia”. *European Journal of Economics, Finance and Administrative Sciences*, Multimedia University, Faculty of Business and Law, Melaka, Malaysia.
- Dorothee Holl and Andrea Schertler (2009). “Why do savings banks transform sight deposits into illiquid assets less intensively than the regulation allows?” Discussion Paper.
- E. A. Shaw(1995). “Operational Results of Commercial Banks in Jamaica(1991-1993)” Sir Arthur Lewis Institute of Social and Economic Studies, University of the West Indies, Social and Economic Studies, Vol. 44, No. 4, Special Monetary Studies Issue(Financial Reforms and Financial Services), PP 23-40.
- Erna Rachmawati & Ekki Syamsulhakim (2004). “Factors Affecting Mudaraba Deposits in Indonesia”. Working Paper in Economics and Development Studies” Padjadjaran University, Indonesia.
- Eshetu Bekele & Mammo Muchie (2009). “Promoting Micro Small & Medium Enterprises (MSMEs) for sustainable rural livelihood” Diiper Research Series, Factors determining commercial bank deposit Working Paper No.11, ISS 1902-8679.
- Eustacius N. Betubiza and David J. Leatham (1995). “Factors Affecting Commercial Bank Lending to Agriculture” Southern Agricultural Economics Association
- Evan Gatev, Til Schuermann and Philip E. Strahan (2006). “Managing Bank Liquidity Risk: How Deposit-Loan Synergies Vary With Market Conditions” Federal Reserve Bank of New York.

- Franklin Allen & Elena Carletti (2008). "The Roles of Banks in Financial Systems"  
University of Pennsylvania, University of Frankfurt and CFS
- Fry, M. (1995). Money, Interest and Banking in Economic Development, Second edition.  
John Hopkins University Press.
- George G. Kaufman(1972). Deposit Variability and Bank Size. The journal of financial  
and pp quantitative analysis, Vol. 7, No. 5, University of Washington School of  
Business Administration, 2087-2096.
- Gujarat, D. (2004). Basic Econometric, 4th edn. USA.: McGrawHill.
- Hair, JF, Black, WC, Babin, BJ, Anderson, RE, and Tatham, RL 2006, „Multivariate Data  
Analysis“, 6 thedn., New Jersey: Pearson Education
- Hamid Rashid (2011). "Credit to Private Sector, Interest Spread and Volatility in Credit-  
Flows: Do Bank Ownership and Deposits Matter? ", DESA Working Paper No.  
105.
- Herald Finger and Heiko Hesse (2009). "Lebanon-Determinants of commercial banks  
Deposits in a Regional Financial Centre" IMF Working paper, WP/09/195
- Hibret, BT 2015, „Determinants of Commercial Banks“ Deposit Growth in Ethiopia: Case  
Study on the Commercial Bank of Ethiopia“, Addis Ababa University College of  
Business and Economics
- Hyuya, M. (1991). Financial intermediation and economic growth in developing  
countries. Journal of economic reflection. Tanzania
- Ismael, Rifki (2010). "The Management of Liquidity risk in Islamic Bank: The case of  
Indonesia" Doctoral Thesis, Durban University.
- Jim Stanford (2008). "A "How-To" Guide: Finding and Interpreting GDP Statistics"  
Canadian Centre for Policy Alternatives
- Katherine Samolyk (2004). "The Evolving Roles of Commercial Banks in US Credit  
Markets" Federal Deposits Insurance Corporation, USA
- Kelvin, A. S. (2001). "The Role of Commercial Banks in Financing Growth and  
Economic Development in Trinidad and Tobago And The Caribbean: A  
Perspective From The Royal Bank of Trinidad and Tobago" Central Bank of  
Belize.

- Lewis, A 1995, „Theory of Economic Growth“, London: Allen and Unwin.
- Lomuto, J. K. (2008). Determinants of Kenyan Commercial Banks Deposit Growth, Masters Thesis, University of - Nairobi, Nairobi.
- Kothari, C. (2004). Research Methodology, Methods and Techniques (Edition, Second Revised ed.). University Of Rajasthan.
- Lorenzo Cappiello, Arjan Kadareja, Christoffer Kok Sorensen and Macro Protopapa (2010) “Do Bank Loans and Credit Standards Have an Effect on Output? A Panel Approach for Euro Area” Working Paper Series, European Central Bank.
- M. A. Baqui Khalily, Richard L. Meyer, Leroy J. Hushak (1987). “Deposit Mobilization in Bangladesh: Implications for Rural Financial Institutions and Financial Policies”. The Bangladesh Development Studies, Vol. 15, No. 4, pp. 85-117
- Maddala G.S (1977), „ Econometrics, New York; MCGrawhill, University of Florida
- Madura J. (2011), Financial Institution and Markets, 9th edition intl. ed, South Western Cengage Learning
- Mahendra Varman (2005). “Impact of Self-Help Groups on Formal Banking Habits”, Economic and Political Weekly. Vol. 40, No. 17, pp. 1705-1713
- Malhotra, N. (2007). Marketing Research: An Applied Approach. New Jersey: Pearson Education, INC.
- Maria Soledad Martinez Peria and Sergio L. Schmukler (2001). “Do Depositors Punish Banks for Bad Behaviour? Market Discipline, Deposit Insurance, and Banking Crises”, The Journal of Finance, Vol. 56, No. 3, pp. 1029-1051, Blackwell Publishing for the American Finance Association. Medhat Tarawneh (2004). A Comparison of Financial Performance
- Mark Carlson and Kris James Mitcheer (2006). Branch Credit Banking, Bank Banking, Competition, and Financial Stability. Ohio State University, Journal of Money, and Vol. 38, No. 5, pp. 1293-1328
- Mckinnon, R.I (1973). Money and capital in economic development. Washington, DC. Brookings Institution press
- Medhat Tarawneh (2004). “A Comparison of Financial Performance in the Banking Sector: Some Evidence from Omani Commercial Banks”. International Research Journals of Finance and Economics, Euro Journals Publishing

- Meenakshi Thyagarajan (1975), "Expansion of Commercial Banking: An Assessment"  
Economic and Political Weekly, Vol. 10, No. 47, PP 1819-1824.
- Mohammad, N., & Mahdi, S. (2010). The Role of Inflation in Financial Repression:  
Evidence from Iran World Applied Sciences Journal 11. Pp. 653-661.
- Muhammad, F. M., & Amir, R. (2013). Commercial Banks Liquidity in Pakistan: Firm  
Specific and Macroeconomic Factors. Romanian Economic Journal, 2013, vol.  
16, issue 48, pages 139-154 .
- Mustafa, K. M., & Sayera, Y. (2009). "An Analysis of Interest Rate Spread in  
Bangladesh" The Bangladesh Development Studies.
- M. Shubik and M. J. Sobel(1992). On Matching Book: A Problem in Banking and  
Corporate Finance. INFORMS, Management Science, Vol. 38, No. 6, pp. 827-839
- N. Desinga Rao (1975), "Deposit Mobilization by Co-operative Banks: A Comparison  
Economic and Political Weekly" No. 29, pp. 1098-1100
- Nada Mora (2010). "Can Banks Provide Liquidity in a Financial Crisis?", Federal  
Reserve Bank of Kansas City, Economic Revision
- National Bank of Ethiopia NBE"s Monetary Policy Framework (2009)
- Nathanael, OE 2014, „Macroeconomic Determinants of Bank Deposits in Nigeria“,  
Journal of Economics and Sustainable Development ISSN 2222-1700 (Paper)  
ISSN 2222-2855 (Online) Vol.5, No.10, 2014
- Ndichu, P. K., Ooko, M. E., & James, G. (2013). Factors Influencing Liquidity Level of  
Commercial Banks in Kisumu City. International Center for Business Research,  
Volume 2 – May 2013; Link: [icbr.net/0205.66](http://icbr.net/0205.66).
- Ngula, Isaac Beligna (2012),"Determinants of Deposit Mobilization and Its Role in  
Economic Growth in Ghana" Degree of Master"s Thesis Kwame Nkrumah  
University of Science and Technology
- Pinchawawee Rasmidatta (2011), "The relationship between domestic saving and  
Economic Growth and Convergence Hypothesis: Case Study of Thailand. Sodertorn  
University College, School of Social Sciences
- Oleksandr Talavera, Andriy Tsapin, Olesksandr Zholud (2006), Macroeconomic  
uncertainty and Bank lending: The case of Ukraine. German Institute for  
Economic Research Discussion paper series 637

- Rana, PB 1984, „Domestic Resource Mobilization through Financial Development: Bangladesh“, Asian Development Bank, March
- Richard, E. B. (1971). Deposit Composition and Commercial Bank Earnings American Finance Association, Blackwell Publishing, The Journal of Finance Vol. 26, No. 1, pp. 39-50.
- Richard Goode and Richard S. Thorn (1959). “Variable Reserve Requirements against Commercial Bank Deposits” Staff Papers - International Monetary Fund, Vol. 7, No. 1, pp. 9-45
- Richard, W. (2015, 02 21). Richard Williams, University of Notre Dame. Retrieved 05 2015, 2015, from [https://www3.nd.edu/~rwilliam/stats3/Panel04-Fixed\\_Vs\\_Random.pdf](https://www3.nd.edu/~rwilliam/stats3/Panel04-Fixed_Vs_Random.pdf)
- Russell Olukayode Christopher and Bamindele M. (2009). “The impact of Macroeconomic Banking, Instability on the Banking Sector Lending Behaviour in Nigeria”. Journal of Money, Investment and Euro journals publishing.
- Schumpeter, J.A (1934). The theory of economic development. New York. Oxford university press Series“, 2nd Edition, Sage Publishing, Newbury.
- SH, Webb, SB and Corsetti, G 1992, „Household saving in Developing“, countries; First cross-country evidence, World Bank Working Paper, No.575.
- Sheku A. Bangura (2005). “Statistical Information and the Banking Sector” For Presentation at the Fourth meeting of the Committee on Development Information (CODI-IV)-Sub-Committee on Statistics, Plenary Session 1: Information in Key Economics Sector, United Nations Conference Centre (UNCC), Addis Ababa, Ethiopia
- Shemsu Bargicho (2015),”Determinants of commercial bank deposits in Ethiopia: a case of Commercial Bank of Ethiopia” Degree of Master’s Thesis Addis Ababa University.
- Sibusiso, M. K., Yinusa, D. O., & Francis, N. (2011). Determinants of Commercial Bank Interest Rate Margins in Swaziland . International Journal of Economics and Business Studies.
- Sime, Z. E., Wolde, K. T., & Ketama, T. A. (2013). Competition in Ethiopian Banking Industry. African Journal of Economics , 176-190.

- Soundres, M., Lewis, P., & Thornhill, A. (2009). *Research Method for Business Students*. Pearson Education Limited.
- Srinivasan, A & Meyer, RL 1986, „An Empirical Analysis of Rural Deposit Mobilization in South Asia“, ESO No. 1249, Department of Agricultural Economics and Rural Sociology, the Ohio State University
- Stieglitz, J.E (1996). *The role of government in economic development*. Annual World Bank conference on developmental economics. Washington, D.C,
- Tizita, GY 2014, „Determinants of Private Saving In Ethiopia“, Maters Theses Arbaminch University.
- Vasquez, AL 1986, „Determinants of Household Deposit Behavior in the Dominican Republic“, Unpublished M.S. thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University
- Verbeek, JM 2004, „A guide to modern econometrics“, 2nd edn., John Wiley & Sons Ltd, Erasmus University Rotterdam.
- Voon-Choong, Yap, Hway-Boom, Ong, Kok-Thim, Chan and Yueh-Sin, Ang(2010). *Factors Affecting Banks“ Risk Exposure: Evidence from Malaysia*. European Journal of Economics, Finance and Administrative Sciences.
- WAI, UT 1992, „What Have We Learned About Informal Finance in Three Decades? In: Adams, D., & D. Fitchett (eds.)“, *Informal Finance in Low-income Countries*, Boulder, San Francisco, Oxford...
- Wooldridge, JM 2004, „Introductory Econometric: A Modern Approach“, International Student edition, 3 rd edn. Canada: Thomson South–Western.
- Wubitu Elias (2012),” *Factors Determining Commercial Bank Deposit: An Empirical Study on Commercial Bank of Ethiopia*” Degree of Master“s Thesis Addis Ababa University.
- Yanne Goosens, Philipp Schepelmann and Isabel Van de Sand (2007). “Alternative Progress indicators to Gross Domestic Product (GDP) as a means towards sustainable development” European Parliament
- Zerayehu Sime, Kagnew Wolde and Teshome Ketama, 2013. *Competition in Ethiopian Banking industry*, African journal of economics Vol 1 (5)

# APPENDICES

## ppendix 1: Raw Data

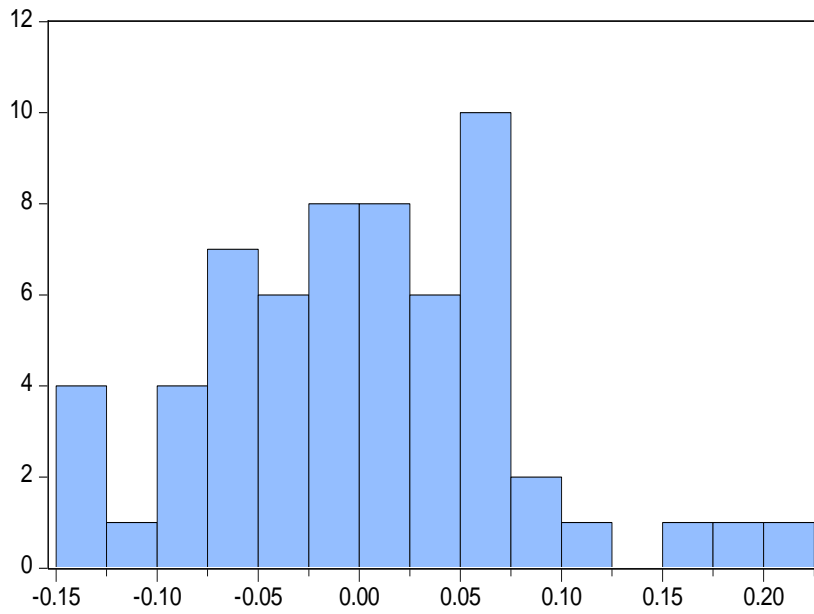
Bank	Year	Bank Deposit growth	Bank Branches (No.)	LOGBD	GDP	Inflation	NIM	Bank Liquidity	Deposit Int.Rate(%)
AIB	2005	0.30000	34.00000		0.11800	0.12900	0.05566	0.28437	0.03000
AIB	2006	0.32351	36.00000	7.57091	0.10800	0.12300	0.05417	0.23426	0.03000
AIB	2007	0.21167	45.00000	7.85119	0.11500	0.17200	0.06547	0.15875	0.03000
AIB	2008	0.24319	45.00000	8.04320	0.10800	0.44400	0.06428	0.19395	0.04000
AIB	2009	0.28244	60.00000	8.26088	0.08800	0.08500	0.07770	0.22043	0.04000
AIB	2010	0.23044	62.00000	8.50965	0.12600	0.08100	0.07105	0.29978	0.04000
AIB	2011	0.26826	70.00000	8.71702	0.11200	0.33200	0.07196	0.17564	0.05000
AIB	2012	0.18859	86.00000	8.95466	0.08600	0.22800	0.09052	0.16950	0.05000
AIB	2013	0.36296	114.00000	9.12743	0.10500	0.08100	0.08655	0.16615	0.05000
AIB	2014	0.19884	152.00000	9.43709	0.09600	0.07370	0.08706	0.13147	0.05000
AIB	2015	0.23146	207.00000	9.61845	0.10300	0.10100	0.08259	0.08897	0.05000
BoA	2005	0.27663	22.00000		0.11800	0.12900	0.06377	0.31016	0.03000
BoA	2006	0.33741	26.00000	7.39492	0.10800	0.12300	0.06626	0.21807	0.03000
BoA	2007	0.24995	28.00000	7.68566	0.11500	0.17200	0.06558	0.34688	0.03000
BoA	2008	0.27802	28.00000	7.90876	0.10800	0.44400	0.06274	0.29127	0.04000
BoA	2009	0.29236	47.00000	8.15407	0.08800	0.08500	0.07691	0.36617	0.04000
BoA	2010	0.14344	47.00000	8.41054	0.12600	0.08100	0.05828	0.43187	0.04000
BoA	2011	0.18222	57.00000	8.54458	0.11200	0.33200	0.08527	0.43235	0.05000
BoA	2012	0.11456	61.00000	8.71198	0.08600	0.22800	0.09686	0.39736	0.05000
BoA	2013	0.25474	86.00000	8.82044	0.10500	0.08100	0.08127	0.23824	0.05000
BoA	2014	0.07066	109.00000	9.04737	0.09600	0.07370	0.11032	0.15386	0.05000
BoA	2015	0.19611	136.00000	9.11564	0.10300	0.10100	0.11118	0.37294	0.05000
DB	2005	0.29853	33.00000		0.11800	0.12900	0.05813	0.18450	0.03000
DB	2006								

		0.30528	37.00000	7.94740	0.10800	0.12300	0.05443	0.14672	0.03000
<b>DB</b>	2007	0.31664	42.00000	8.21382	0.11500	0.17200	0.06111	0.13408	0.03000
<b>DB</b>	2008	0.26561	42.00000	8.48890	0.10800	0.44400	0.06950	0.14597	0.04000
<b>DB</b>	2009	0.28832	54.00000	8.72445	0.08800	0.08500	0.07250	0.12958	0.04000
<b>DB</b>	2010	0.28005	59.00000	8.97779	0.12600	0.08100	0.07113	0.24520	0.04000
<b>DB</b>	2011	0.16734	65.00000	9.22469	0.11200	0.33200	0.06962	0.22320	0.05000
<b>DB</b>	2012	0.18776	75.00000	9.37942	0.08600	0.22800	0.08134	0.20137	0.05000
<b>DB</b>	2013	0.12679	112.00000	9.55149	0.10500	0.08100	0.08428	0.19370	0.05000
<b>DB</b>	2014	0.11254	142.00000	9.67086	0.09600	0.07370	0.08857	0.18490	0.05000
<b>DB</b>	2015	0.12225	164.00000	9.77750	0.10300	0.10100	0.08901	0.13334	0.05000
<b>NIB</b>	2005	0.47115	17.00000		0.11800	0.12900	0.05292	0.21132	0.03000
<b>NIB</b>	2006	0.18611	20.00000	7.10988	0.10800	0.12300	0.05053	0.16872	0.03000
<b>NIB</b>	2007	0.29421	28.00000	7.28056	0.11500	0.17200	0.05855	0.15995	0.03000
<b>NIB</b>	2008	0.31362	28.00000	7.53846	0.10800	0.44400	0.07416	0.16783	0.04000
<b>NIB</b>	2009	0.33273	45.00000	7.81124	0.08800	0.08500	0.09143	0.29716	0.04000
<b>NIB</b>	2010	0.25468	48.00000	8.09847	0.12600	0.08100	0.08285	0.35773	0.04000
<b>NIB</b>	2011	0.24962	51.00000	8.32535	0.11200	0.33200	0.09716	0.27546	0.05000
<b>NIB</b>	2012	0.13199	58.00000	8.54819	0.08600	0.22800	0.09090	0.25928	0.05000
<b>NIB</b>	2013	0.13996	72.00000	8.67217	0.10500	0.08100	0.09779	0.19147	0.05000
<b>NIB</b>	2014	0.19094	94.00000	8.80316	0.09600	0.07370	0.08216	0.08923	0.05000
<b>NIB</b>	2015	0.23318	115.00000	8.97790	0.10300	0.10100	0.09807	0.07623	0.05000
<b>UNB</b>	2005	0.66767	17.00000		0.11800	0.12900	0.05106	0.32526	0.03000
<b>UNB</b>	2006	0.43936	22.00000	6.78807	0.10800	0.12300	0.05380	0.19199	0.03000
<b>UNB</b>	2007	0.31081	30.00000	7.15227	0.11500	0.17200	0.06057	0.28270	0.03000
<b>UNB</b>	2008	0.45821	30.00000	7.42291	0.10800	0.44400	0.06631	0.25240	0.04000
<b>UNB</b>	2009	0.47472	41.00000	7.80012	0.08800	0.08500	0.07336	0.24816	0.04000
<b>UNB</b>	2010	0.31175	42.00000	8.18859	0.12600	0.08100	0.07397	0.25900	0.04000
<b>UNB</b>	2011								

		0.26934	50.00000	8.45995	0.11200	0.33200	0.07953	0.28234	0.05000
<b>UNB</b>	2012	0.13232	69.00000	8.69845	0.08600	0.22800	0.09755	0.22905	0.05000
<b>UNB</b>	2013	0.18247	75.00000	8.82272	0.10500	0.08100	0.09704	0.16001	0.05000
<b>UNB</b>	2014	0.15415	99.00000	8.99033	0.09600	0.07370	0.11002	0.22529	0.05000
<b>UNB</b>	2015	0.26905	128.00000	9.13369	0.10300	0.10100	0.10552	0.14704	0.05000
<b>WB</b>	2005	0.43139	29.00000		0.11800	0.12900	0.07953	0.34530	0.03000
<b>WB</b>	2006	0.42460	33.00000	7.13401	0.10800	0.12300	0.09755	0.21514	0.03000
<b>WB</b>	2007	0.53701	39.00000	7.48790	0.11500	0.17200	0.09704	0.28534	0.03000
<b>WB</b>	2008	0.06805	39.00000	7.91774	0.10800	0.44400	0.07129	0.23238	0.04000
<b>WB</b>	2009	0.24712	49.00000	7.98358	0.08800	0.08500	0.08817	0.19984	0.04000
<b>WB</b>	2010	0.06743	50.00000	8.20441	0.12600	0.08100	0.08064	0.37627	0.04000
<b>WB</b>	2011	0.47378	53.00000	8.26967	0.11200	0.33200	0.09138	0.27545	0.05000
<b>WB</b>	2012	0.00197	60.00000	8.65750	0.08600	0.22800	0.09957	0.26506	0.05000
<b>WB</b>	2013	0.30973	79.00000	8.65947	0.10500	0.08100	0.10200	0.17013	0.05000
<b>WB</b>	2014	0.11256	100.00000	8.92929	0.09600	0.07370	0.11585	0.12214	0.05000
<b>WB</b>	2015	0.21716	119.00000	9.03595	0.10300	0.10100	0.11109	0.07907	0.05000

Source: NBE and CSA via simple excel

## Appendix 2: Normality Test



Series: Standardized Residuals  
Sample 2006 2015  
Observations 60

Mean -2.78e-18  
Median 0.000132  
Maximum 0.212444  
Minimum -0.147211  
Std. Dev. 0.075953  
Skewness 0.351797  
Kurtosis 3.242097

Jarque-Bera 1.384139  
Probability 0.500539

## Appendix 3: Heteroscedasticity Test: White

Version of Test	value	df	Probability
F-statistic	0.706058	Prob. F(7,52)	0.6668
Obs*R-squared	5.207796	Prob. Chi-Square(7)	0.6346
Scaled explained SS	5.487555	Prob. Chi-Square(7)	0.6007

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 09/19/16 Time: 07:20

Sample: 2 66

Included observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.033059	0.04507	0.733494	0.4666
BANK_BRANCHES__NO__	-1.89E-05	9.66E-05	-0.195538	0.8457
DEPOSIT_INT_RATE__	0.137151	0.562658	0.243756	0.8084
BANK_LIQUIDITY	0.004388	0.023391	0.187579	0.8519
LOGBD	-0.005716	0.006451	-0.886098	0.3796
INFLATION	0.006568	0.018044	0.364017	0.7173
GDP	0.030559	0.169764	0.18001	0.8578
NIM	0.156029	0.165322	0.943787	0.3496
R-squared	0.086797	Mean dependent var		0.007651
Adjusted R-squared	-0.036135	S.D. dependent var		0.012924
S.E. of regression	0.013155	Akaike info criterion		-5.700464
Sum squared resid	0.008999	Schwarz criterion		-5.421218
Log likelihood	179.0139	Hannan-Quinn criter.		-5.591235
F-statistic	0.706058	Durbin-Watson stat		1.449513
Prob(F-statistic)	0.666849			

## Appendix 4: Breusch-Godfrey Serial Correlation LM Test:

Version of Test	value	df	Probability
F-statistic	1.574106	Prob. F(8,44)	0.1603
Obs*R-squared	13.351	Prob. Chi-Square(8)	0.1003

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 09/19/16 Time: 07:22

Sample: 2 66

Included observations: 60

Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.125819	0.327703	-0.383943	0.7029
BANK_BRANCHES__NO__	-0.000126	0.000679	-0.186007	0.8533
DEPOSIT_INT_RATE__	-4.206184	4.152392	-1.012955	0.3166
BANK_LIQUIDITY	0.111064	0.167046	0.66487	0.5096
LOGBD	0.034178	0.048508	0.704584	0.4848
INFLATION	0.039421	0.128909	0.3058	0.7612
GDP	-0.652258	1.212423	-0.537979	0.5933
NIM	0.794749	1.209071	0.657322	0.5144
RESID(-1)	-0.006388	0.160893	-0.039702	0.9685
RESID(-2)	0.222326	0.156488	1.420722	0.1624
RESID(-3)	-0.364561	0.166958	-2.183551	0.0344
RESID(-4)	0.164003	0.165039	0.993721	0.3258
RESID(-5)	-0.160209	0.176799	-0.906169	0.3698
RESID(-6)	-0.179857	0.182837	-0.983699	0.3306
RESID(-7)	0.201554	0.193475	1.041757	0.3032
RESID(-8)	-0.374271	0.202904	-1.844571	0.0718
R-squared	0.222517	Mean dependent var		5.31E-16
Adjusted R-squared	-0.042535	S.D. dependent var		0.088207
S.E. of regression	0.090063	Akaike info criterion		-1.75343
Sum squared resid	0.356903	Schwarz criterion		-1.19493
Log likelihood	68.60276	Hannan-Quinn criter.		-1.53497
F-statistic	0.839523	Durbin-Watson stat		1.964886
Prob(F-statistic)	0.630845			