

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

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This is to certify that the thesis prepared by Wubitu Elias Gemedu, entitled: Factors Determining Commercial Bank Deposit: An Empirical Study on Commercial Bank of Ethiopia and submitted in partial fulfillment of the requirements for the Degree of master of Business Administration (in Finance) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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***Abstract***

*Factors Determining commercial bank deposit in Ethiopia: An empirical study on commercial bank of Ethiopia*

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*Addis Ababa University, 2012*

*The study had looked at the potential of the country regarding deposit mobilization by taking CBE as an evidence. The study had used both primary and secondary data. The primary data is collected by a means of interview and questionnaire. The secondary data for the study were the values of dependent and independent variables. The study had found variables that can affect the total deposit of commercial banks. Three variables are regressed with the dependent variable, i.e. total deposit, these variables include deposit rate, inflation rate and bank branches. The data for these variables was collected from commercial bank of Ethiopia, national bank of Ethiopia and central statistics authority of the sample year from 2000GC up to 2011GC. The multiple regression model is constructed for the dependent variable and the three independent variables. Different diagnostic tests are tested to know whether the model is valid or not, having the model is valid the regression analysis and hypothesis testing is performed using EViews software. As a result of the hypothesis testing it was found that all the three variables can affect total deposit. Branch expansion had positive and significant effect on total deposit whereas deposit rate and inflation rate had positive and insignificant effect on total deposit. Finally the study had recommend what should be done to mobilize more deposits.*

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## Acronyms

BLUE	: Best Linear Unbiased Estimator
CBE	: Commercial Bank of Ethiopia
CLRM	: Classical Linear Regression Model
CPI	: Consumer Price Index
CSA	: Central Statistics Authority
DR	: Deposit Rate
EViews	: Econometric Views
INFRATE	: Inflation Rate
LIQUIDITY	: Liquidity of Commercial Banks
LNRGDP	: The Logarithm of Real GDP
LNBR	: The Logarithm of Commercial bank branches
LNTD	: The Logarithm of Total Deposit
NBE	: National Bank of Ethiopia
OLS	: Ordinary Least Square
REALIR	: Real Interest Rate
SPSS	: Statistical Package for Social Science

## **Chapter One**

### **Introduction**

#### **1.1. Background of the Study**

There are three main functions of corporate finance. These are capital structure which deals with the sources of finance, capital budgeting which deals with the use of finance and management of working capital which deals with the short term use of finance (Brealey, 2003). In literature we have two types of source of financing, i.e. debt and equity. Organizations have this two alternatives for financing, however the former is mostly used alternative as the latter is used only by share companies. The debt required by the creditors is provided by financial market and institutions.

One of financial institutions in the world that give financing services are commercial banks. Commercial banks are profitable financial institutions that gives financial service to the body in need of the service. They accept money from the depositors and lend it to the borrowers. Thus for commercial banks to lend there have to be deposits in their treasury. 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 resource 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 facts 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.

The researcher had divide factors affecting commercial banks deposit 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 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 includes 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 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.

Regarding the banking sector of the country, Ethiopia appears unique compared to its East African neighbors (namely Kenya, Tanzania and Uganda) and many other developing countries because it has not yet opened its banking sector to foreign participation. The Ethiopian banking sector remains isolated from the impact of globalization. Although Ethiopian policy makers understand the potential importance of financial liberalization, it is widely believed that liberalization may result in loss of control over the economy and may not be economically beneficial. Ethiopia has no capital market and investing in shares of private companies is very limited. A series of financial sector reforms has been introduced since, 1994, when private banks were

allowed to be reestablished. But the three large state-owned banks (commercial bank of Ethiopia, the development bank of Ethiopia and the construction and business bank) continue to dominate the market in terms of capital, deposits and assets. The Ethiopian banking sector is dominated by one large state-owned bank, the commercial bank of Ethiopia (CBE). In 2004, there were three state-owned banks and six private banks. The asset share of the CBE was 66.3%, while the share of all three state-owned banks was nearly 80%.

Ethiopian government has collected a total of one billion and 458 million birr (88.2 million US dollars at the exchange rate of the time) in profit tax from both private and government banks operating in the country in 2009/2010 fiscal year. Ethiopia's income in profit tax from the ten private banks in the country, which have begun making profit, has increased by 162 million birr in 2009/2010 fiscal year from the preceding fiscal year it reached 580 million birr (around 35 million US dollar at exchange rate of the time).

## **1.2. Statement of the Problem**

Households, businesses, government and many other different institutions borrow money from commercial banks. The commercial bank is lending the money from its deposits. Deposits are made from the depositors who are investing their money in commercial banks. So as to undertake this process the deposit should be available first. Deposit is the most liquid money that is found in the treasury of the bank and which is ready to be borrowed by a body in need of the fund. A deposit of the bank may be affected by different factors. Since a deposit is the most useful asset of the bank it is relevant to find out the factors affecting it and determining the relationship between

them. This study filled this gap by identifying the factors that can affect the deposit of the commercial banks and determined the extent they are affecting it.

National bank of Ethiopia indicates that from deposits that should be mobilized by banks only 7% is mobilized. That indicates that from the money that should be deposited in the bank 93% of it did not mobilized. From the countries tradition money may be kept in traditional way. This shows that the deposit mobilization practice among banks in the country is not developed and there should be mechanisms to mobilize such deposit rather than sitting and waiting for depositors to come and deposit their money. The need for studying such mechanisms forces this study to be undertaken.

A research under this article is rarely available. The managers of commercial banks may face a problem of identifying and managing the factors that determine the commercial bank deposit and their effect on it. Accordingly they face a problem of lack of deposit because of their limitation of effort to mobilize it. The banks are not successful in controlling and managing deposit because they did not know about those factors that can affect the deposit.

As the research conducted in this particular area is rarely available academicians lacks the reference material of this area. The researcher motivated to undertake a research in this particular area to fill these gaps.

### **1.3. Research questions**

The research conducted on the title of Factors Determining Commercial Banks Deposits: An Empirical study on Commercial Bank of Ethiopia answers the following questions:-

- ❖ What are the variables that can affect the amount of commercial bank deposit?
- ❖ How did deposit rate, inflation rate and branch expansion related to commercial bank's total deposit?
- ❖ What is the effect of awareness of the society, convenience of bank's office, transaction of deposit mobilization and services in the bank on commercial bank's total deposit?
- ❖ What should be done to manage total deposit of commercial banks?

#### **1.4. Objectives of the study**

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

- ❖ To identify the factors affecting commercial bank deposit and to determine the relation between total deposit and the identified factors, at the end to conclude and suggest.

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

- ❖ To identify the factors that are determining total deposit of commercial banks.
- ❖ To determine the relationship between the commercial bank's total deposit and deposit rate, inflation and bank branches.
- ❖ To determine the relationship between the commercial bank's total deposit and liquidity of the bank, number of branches and transaction cost.
- ❖ To determine the effect of awareness of the society, convenience of bank's office, transaction cost by banks and services in the bank on total deposit of commercial banks.

#### **1.5. Significance of the study**

The study conducted on the title of Factors Determining Commercial Banks Deposit is expected to be used and/or applied by both the academicians and bank

managements. Accordingly the following two are the significances that is attained by the study.

- ❖ This study will help commercial banks to manage their deposit by letting them know what affects it and which variable is the most important so that should be given due emphasis.
- ❖ The study adds knowledge on the field of finance. The studies that are conducted on the factors affecting commercial banks deposit are rare, therefore the study will be an important reference material on the field of finance.

## **1.6. Limitation and Delimitation of the study**

### **1.6.1. Limitation of the Study**

The study is conducted using the data for 12 years from the year 2000GC and 2011GC. 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 regression have one dependent variable, total deposit of commercial banks, and three independent variables including deposit rate, inflation rate and number of commercial bank branches. The other limitation of this study was the fact that it only considers commercial bank of Ethiopia. It is selected because the larger proportion of bank deposit in Ethiopia is on the hands of CBE. The qualitative data is collected by using questionnaires and interviews, 37 questionnaires are distributed to the employees of CBE and interview is conducted with 2 branch managers of CBE.

### **1.6.2. Delimitation of the Study**

There are many subjects that are thought in finance. This study will focus on one of the area of finance, i.e. the factors determining commercial bank deposit. It has determine the effect of these variables on commercial bank's total deposit using multiple regression technique. There are around 14 commercial banks in Ethiopia, however this study has been conducted using the commercial bank of Ethiopia as a base. Commercial bank of Ethiopian had about 500 branches around the country the data needed for this study were collected from the commercial bank of Ethiopian branches selected randomly and the total deposit trend is the sum of all branches total deposit, i.e. the random selection is regarding the questionnaires and the interviews.

### **1.7. Organization of the study**

The final paper for the study is organized into five chapters including the introduction part of the study. The first chapter deals with the background of the study, statement of the problem, research questions, the general and specific objectives of the study, hypothesis of the study, the significance of the study and limitation and delimitation of the study. The second chapter, literature review, deals with the theoretical and empirical literature review on factors determining commercial bank deposit. The first part is theoretical review that explains what the literature says about the relationship between the total deposit of commercial banks and the factors affecting it. Moreover, the theoretical part deals with the difference between saving and spending, the role of banks in the economy, the importance of deposit for commercial banks, about the banking sector in Ethiopia and a brief profile of commercial bank of Ethiopia. The third chapter deals with the data, hypothesis and methodology of this study. The sources of qualitative and quantitative data of the study are indicated. The multiple regression model of the study and methods of diagnostic tests are mentioned on the

third chapter. The fourth chapter deals with analysis of the data and presentation of the output. In the fifth chapter the researcher concludes the findings of the study and recommends based on the conclusion made.

## **Chapter Two**

### **Literature Review**

Literature review is prepared in two parts, i.e. the theoretical review and the empirical review part. In the theoretical review part the theories that states about the commercial banks deposits and the variables that is claimed to affect it are 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 are discussed.

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

There are articles, journals and different reports on the issue of the commercial banks deposits and the factors which controls the commercial banks deposits. Some authors had classified the factors and explain their relationship with commercial banks deposits.

Depositors keep their money in banks for a motive to undertake some activities in the future. According to V. V. Batt(1970), there are motives to save money, the followings are the example of some motives:-

- ❖ To own house
- ❖ To provide for children's education and marriage

- ❖ To provide for old age
- ❖ To bequeath property to children
- ❖ To provide for emergency expenditure

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

Financial sector is broad which consists of the banking sector and other financial institution(such as insurance corporations and pension funds, brokers, public exchange and securities markets etc), however in the context of African continent the banking industry carries the greater share of the financial system(Sheku, 2005). Most of the business rely on banking sector as a source of financing(Medhat, 2004). Banks have historically been viewed as playing role in financial markets for two reasons. 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 by developing expertise as well as diversifying across many borrowers, banks reduce the costs 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 and to the extent that investors want to hold banks liabilities, banks can fund borrowers directly. The main providers of additional financing are domestic commercial banks(Herald et al, 2009).

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

1. They ameliorate the information problem between investors and borrowers by monitoring the latter and ensuring a proper use of the depositors' fund.
2. 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.

### 3. Banks contribute to the growth of the economy.

They perform an important role in corporate governance. The relative importance of the different roles of banks varies substantially across countries and times but banks are always critical to the financial system.

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 Bamindele, 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 play a major role in facilitating the way the financial sector operates(Eduardo et al). Therefore banks are important of all other financial institutions. Banks influence macroeconomic environment, as to Adam(2005), bank failures involve significant macroeconomic costs. Adam(2005), has developed evidence that bank failures have significant and apparently permanent effects on real economic activity. 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 hold more assets than any other 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 the specific country 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 banks 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.

Not only commercial banks are affecting the economy but also the economy 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 periods of boom and reduced level of macroeconomic uncertainty and curtail lending when the economy is in recession.

### **2.1.2. Commercial Bank Deposits**

Commercial Bank deposits are major liabilities for commercial banks. Kelvin(2001) said that deposits of commercial banks account for about 75% of commercial bank

liabilities). Due to the fact that commercial banks are using this liability to lend it and gain return on it their deposits are using them do their business. Therefore, banks will be better 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. Despite all these deposits play an important role in the banking system, whether cooperative or commercial. Deposits provide limits to the working capital of the bank concerned. The higher the deposits, 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 foundations up on which banks thrive and grow and 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). The number one expense item for a bank is interest paid. 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). Hamid(2011) said that if banks lose their deposit base they rely on non deposit based funding which is expensive.

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

1. Current or demand deposits
2. Fixed or Time deposits / Term deposits.
3. Savings deposits

Hence, the competition for deposits is really a competition for profits. Commercial banks compete for deposits in order to become profitable and thus to be able to supply

more funds to the public. 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). That is for commercial banks to attain profit deposits are one of the most important sources of capital. Moreover, according to Richard(1971) capital structure in commercial banks are made up of shareholders' funds, borrowing and deposits. Therefore, deposits are one of the sources of capital for commercial banks.

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

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

Herald(2009) states deposits are the main source of banks to provide loan. This deposit is mainly provided by people as Mohammad and Mahdi(2010). However deposits can also be provided by business organizations, NGOs, government and so on. Therefore, whether deposits are from individuals, businesses and government they are important financial source of banks.

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

Banks as any other business organizations funds from debt and/or equity. In the banks context raising equity is more expensive or costly than attracting deposits. Lorenzo et al (2010) states that, if the lending channel plays a role, the deposit growth should lead to an increase in the supply of loans due to the additional source of financing for banks. As demand for loan increases because of the development work done by individuals, businesses and government, banks should extend their deposit base. When a commercial bank creates a deposit by lending to a business man, it is clearly

performing a function for which it is entitled to a return in the form of interest payments(Harold, 1946).

### **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 objectives 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 bank 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 depend 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 by making a bank deposit more attractive(V. V. Bhatt, 1970).

The ability of a bank's management and staff to attract checking and savings accounts from business 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. George(1972) mentioned the reasons why the variability of banks' deposits are important as follows:-

1. Deposit variability is frequently included as an important determinant of portfolio strategy. The more volatile a bank's deposits are, the more liquid its mix of assets will be.
2. To the extent deposit variability affects bank holdings of cash and excess reserves, variability affects the distribution of total member bank reserves within the banking system and thereby the path and speed of monetary policy actions.
3. To the extent deposit variability affects the mix of banks assets, it affects the availability of funds for loans and consequently the loan rate.
4. To the extent deposit variability affects both the mix of earnings assets and the frequency of engaging in costly reserve adjustments, variability affects the profitability of individual banks.
5. Deposit variability is an important factor influencing bank use of the federal reserve discount window and thereby affects discount administration.

#### **2.1.4. The 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 very difficult 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 unfavorable endogenous factors such as location, type of building and window dressing (furniture, cheque books, vouchers, pay slips etc), which assure the customers about the physical fitness of a bank (N. Desinga, 1975).

As N. Desinga (1975) did the researcher classifies the variables which are claimed to have effect on the commercial banks deposits into two, namely exogenous and endogenous factors. Exogenous has 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 that are from country and banks that can affect the growth of commercial banks deposits. There are discussed as follows:-

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

The country's economic, social and political factors can affect the commercial banks. According to Herald and Heiko (2009), country specific risks such as political, economic and financial risks may affect the propensity for 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, banks success in their

operation is mainly depends on the environment where the business is undertaken. The researcher has identified ten country specific factors that has effect on the commercial banks deposits from the literature. They are saving interest rate or deposit rate, inflation, real interest rate, number of commercial banks available in the country, population growth, per capita income of the society, economic growth, consumer price index, gross domestic product(GDP) and shocks.

### **1. Saving interest rate(Deposit rate)**

One of the most effective factors for deciding to deposit in banking system is the interest rate(Mohammad and Mahdi, 2010). Moreover, this articles 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.

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, that is, interest rate is balanced in supply and demand conditions in proportion with the inflation rate. Eustacius and David(1995) states that deposits are more interest rate

sensitive and banks may choose to increase investments in interest rate sensitive assets and to decrease investments in loans. That is commercial bank deposits are interest rate sensitive, therefore as the interest rate changes the deposit of the commercial banks will change.

It is known that depositors bring money to the bank which the bank in turn lend it to borrowers. The gross earnings of the bank are determined by the volume and composition of loanable funds and the rates at which they are loaned. After losses and expenses of operation are deducted, the net earnings provide a margin out of which interest on deposits can be paid. Because of the competition for these funds among bankers who desire to loan them at a profit, a bank must pay interest or lose deposits to a competitor. The payment of interest on deposits is explained in this wise, like any other interest rate. 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 (Romer, 2001, p. 346; Athukorala and Sen, 2004, p. 498). This can easily be explained by the utility maximization (cost minimization) premise, as a depositor will choose an action that will maximize their welfare or satisfaction. As to Richard(1971), regulation of the commercial banking industry affects the returns which commercial banks realize on their deposits and capital. That is although deposits are the source for profit of banks it is influenced by regulation of the country. Accordingly, the higher profit rate on demand deposits is to a large extent the result of the prohibition against the payment of interest on these deposits. Therefore, depositors are motivated by returns. Using an Adaptive Expectation Model (AEM), it is founded that depositors are indeed motivated by returns in Malaysia(Erna and Ekki, 2004). On the other hand, Erna and Ekki(2004) states that Ghafur's(2003) shows that the rate of interest does not have

influence on the volume of the 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 banks deposits and saving interest rates or deposit rate.

## **2. Inflation**

As to Herald and Heiko(2009), inflation is one of the factor that determines 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 Devinga(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 interms 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 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 more 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, jewelry, 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 interms 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' 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 \$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 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.

#### **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 includes: 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 (Devinga, 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 deposit 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,

- i. 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.

- ii. 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 (proxied 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 to favor 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) finds 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 matters in mobilizing deposit. Riskier banks would be able to attract deposits only paying higher Interest rates. The security of banks have 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 are deposits influenced by bank branches, 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 banks has to generate less deposits in absolute terms to achieve the same deposit growth than large banks, thus possibly favoring 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 can 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 are 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 deposits(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 savings 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. Empirical Review**

Hereafter, published articles which are written on the area of Factors Determining Commercial Banks Deposits are presented. These will help to see where the literature on this area is and how this study will add to the existing literature. Accordingly, the articles will be discussed below one by one.

### **2.2.1. Factors Determining Bank Deposit Growth by State: An Empirical Analysis.**

This article is written in 1965 G.C by Bruce C. Cohen and George G. Kaufman. It identifies the factors determining bank deposit growth and empirically analyze them. Finally it describes the result of the study and recommends how states realize deposit growth.

According to Bruce and George(1965), the total volume of commercial bank deposits in the country is determined largely by the federal reserve system in accordance with the needs and objectives of the economy. However, as Bruce and George(1965) the distribution of these deposits among individuals banks and areas is determined by market forces. When explaining the importance of deposits for banks, they said that bank deposits are one of many forms in which liquid wealth may be held and the very important one. As a medium of exchange demand deposits are an alternative to currency particularly for individuals and small business firms.

In the study of Bruce and George(1965), the following variables are mentioned and claimed to have effect on the banks' deposits:-

Banking industry is one of the service giving industries. Consequently, a major factor influencing decisions of whether to hold commercial bank deposits is convenience of bank offices(Bruce and George, 1965). It is argued that population growth and shifts necessitate corresponding growth and shift in banking offices if banks are to both continue servicing their old customers and attract new ones. Therefore, beside the convenience of the office the commercial banks deposits can also be affected by the population growth.

New bank offices are believed to increase total deposit of banks in an area by capturing some funds which otherwise would have either been placed in banks outside the area or escape the banking system(Bruce and George, 1965). As to them other things being equal deposit growth may be expected to be positively associated with increases in the number of banking offices. Moreover, they concludes that other things being equal states permitting branch banking would experience faster deposit growth than states which forbid branch banking and the more liberal the branching regulations, the faster the deposit growth.

Other things equal, the alternative offering higher returns would be expected to attract the greater amount of funds(Bruce and George, 1965). Therefore, they states that deposits may be expected to grow faster in those states where banks offer higher returns than in other states.

Economic theory relates the volume and composition of liquid assets to the income and wealth of the holders(Bruce and George, 1965). It is said that banks' deposit is among liquid assets. Therefore as banks' deposits are one of liquid asset and liquid assets are affected by the income and wealth of the holders, banks' deposits can be affected by the income and wealth of the society. Moreover, Bruce and George(1965)

also said the demand for money and other liquid assets is theorized to rise as income rises. That leads to concludes that state experiencing faster increases in income may be expected to experience faster increase in banks deposits. Bruce and George(1965), explains this on the other hand, increases in wealth may reduce the incentive to provide for additional liquid assets for reasons of precaution and security, thereby slowing the accumulation of deposits. Here, the relationship of banks' deposits and the income of the holders is not clear. There are two possibilities on this area:-

- i. As income increases banks' deposits may increase because societies have additional money to deposit.
- ii. As income increases banks' deposits may decrease because the society have little liquid asset need and they invest their money on the investment that is not liquid and have higher return than banks' deposits.

The paper by Bruce and George(1965) further explain that a state's importance as a financial center may be expected to be accompanied by increases in deposits, particularly demand deposits an act as a first approximation surrogate for business motivations in apportioning their deposits. That is the importance of the financial institution or banks in relative to the importance of other financial institution that are outside of banks. On the other hand it would also be the importance of the bank in relation with other banks to the society. This comes to be the competition between banks.

Bruce and George(1965), takes 1951-61 year as a sample to gather data. They take 48 states for each year which gives 480 observations. The dependent variables were total deposit of commercial banks, demand deposits and time deposits. Both one- and two-stage linear regressions are estimated. The final regressions were obtained by iteration.

To reduce multicollinearity, independent variables found to be highly intercorrelated are introduced into regressions one at a time and only the yielding the best fit retained. In addition, variables whose coefficients are not statistically significant at the 5% level are removed.

As stated above the study of Bruce and George(1965), have three dependent variables namely total deposit of commercial banks, demand deposits and time deposits of commercial banks. Accordingly, the regression identifies the relationship between the dependent variables and independent variables as follows:-

According to one-stage linear regression results, deviation from the mean percent change in total commercial bank's deposits are best explained by percent change in permanent income, percent change in the importance of the state as a financial center and financial center(level). These three variables explain 42 percent of the variance in interstate deposit growth.

Per cent change in permanent income, per cent change in financial center and financial center(level) also explain differential demand deposit growth among states best. The coefficient of multiple determination is 0.38, somewhat lower than for total deposit of commercial banks.

The regression shows that time deposit growth is related positively to per cent increases in permanent income, importance as financial center, number of bank offices and interest paid on time deposits and to the ratio of interest rates paid by banks to that paid by near banks. Time deposit growth is negatively related to legal ability to branch, wealth per capita and time deposits to income. These variables explain almost 30 per cent of the interstate variance in per cent change in time deposits. In the study branch

banking and per cent change in bank offices enter the regression significant by themselves.

### **2.2.2. Determinants of Commercial Bank Deposits in a Regional Financial Center**

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 center. 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 proxying the availability of funds from the Gulf. At the micro level, they found that in addition, bank-specific variables, such as the perceived riskiness of individual banks, their liquidity buffers, loan exposure, and interest margins, bear a significant influence on the demand for deposits. They have used quarterly data from 1993 to 2008. They have estimated a number of vector error correction model(VECMs) to take account of cointegration 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 proxying 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.

## **Chapter Three**

### **Data and Methodology**

#### **3.1. Data**

The study uses both primary and secondary data. There are questionnaire and interview questions used to gather information from the managers and employees of commercial bank of Ethiopia. Regarding the secondary data the researcher gather quantitative data from the year 2000GC to 2011GC. The data relevant for the study is gathered from commercial bank of Ethiopia(CBE), national bank of Ethiopia(NBE) and central statistics authority(CSA). The readymade data of total deposit of commercial bank of Ethiopia, CBE's branches, inflation rate, and saving interest rate(deposit rate) is collected from these institutions all from fiscal year 2000GC up to 2011GC.

The primary data is collected from commercial bank of Ethiopia employees and the branch managers. The number of questionnaires distributed are 50 and the returned fully answered questionnaires are 37. Interview is conducted with two commercial bank of Ethiopia branch managers.

#### **3.2. Hypothesis**

The study had used the multiple regression technique to show the relationship between commercial banks' total deposit and the factors that the literature claims to affect total

deposit of commercial banks. The null and alternate hypothesis of the regression are explained as follows.

**H<sub>0</sub>:** All the coefficient of right hand side variables are all equal to zero, i.e. all the independent variables(deposit rate, inflation rate and branches of commercial banks) have no effect on the dependent variable(commercial bank deposit).

**H<sub>1</sub>:** All the coefficient of right hand side variables are all different from zero, i.e. all the independent variables(deposit rate, inflation rate and branches of commercial banks) have effect on the dependent variable(total deposit of commercial banks)

**Hint:** The right hand variables are independent variables(deposit rate, inflation rate and branches of commercial banks) whereas the left hand side variable is the dependent variable(total deposit of commercial banks)

### **3.3. Methodology**

#### **3.3.1. Research Design**

Qualitative data received are described. In addition, through multiple regression technique the dependent variable(explained variable), total deposit of commercial banks, regressed with the independent variables(explanatory variables), branch expansion of commercial banks, inflation rate and deposit rate. These shows that the research was descriptive and explanatory in nature. Moreover, the study had used time series data from the year 2000GC up to 2012GC.

#### **3.3.2. Descriptive Analysis**

The researcher had summarize the information gained through interview from the branch managers in the manner that it gives the necessary information. The questionnaires are also analyzed using descriptive analysis techniques. The researcher

had used SPSS software to analyze the questionnaires and describe the result. Accordingly 37 questionnaires are analyzed and interpreted using the statistic result that SPSS displays.

So as to show the trend of total deposit of commercial banks, the researcher had analyze the data using Microsoft excel and SPSS as a result the graph of total deposit of commercial banks trend for the year 2000GC up to 2011GC and its descriptive statistics are displayed and interpreted. The descriptive statistics for the dependent variable(total deposit of commercial banks) and the independent variables(consumer price index, deposit rate, inflation rate, liquidity, branches of commercial banks, real GDP and real interest rate) is displayed by EViews and the results are interpreted.

### **3.3.3. Diagnostic test methods**

The econometric estimation techniques that is used by this study is ordinary least square(OLS). There are five assumptions made in relation to the classical linear regression model(CLRM). The researcher has tested if there exists the violation of these assumptions. The method used to test these assumptions by the researcher is described as follows:-

#### **1. The average value of the error is zero**

This assumption is not violated as the regression line did not forced through the origin to pass. This assumption is violated if the model do not have constant term since the line will be forced to pass through the origin, however in our case the model have constant term which will prove that the line did not pass through the origin and the first assumption of CLRM is not violated. Therefore the variation in the dependent variable, total deposit of commercial banks, is explained by the independent variables.

## **2. The Assumption of Homoscedasticity**

The variance of the errors should be constant, this assumption is called homoscedasticity assumption. If the errors do not have a constant variance, they are said to be heteroscedastic. The researcher uses Breusch Godfrey test(BG test) for heteroskedasticity. In this test the null hypothesis is that there is no evidence for the presence of heteroskedasticity(homoscedasticity does exist) and the alternate hypothesis is that there is evidence for the existence of heteroskedasticity. Therefore, if this hypothesis is rejected it is said to be the variance of the errors are no longer constant or the assumption of homoscedasticity is violated, on the other hand there is evidence for the existence of heteroskedasticity.

## **3. The Assumption of Autocorrelation**

Covariance between the error terms overtime(or cross sectionally, for the type of data) is zero. It is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are autocorrelated or that they are serially correlated. The study uses Durbin-Watson test(DW test) to test autocorrelation. The null hypothesis for this test is the error at the current time and the error at previous time is independent of one another(there is no autocorrelation) and the alternative hypothesis is that the error at the current time is dependent on the error of the previous time(there is evidence for the presence of autocorrelation). Therefore if the null hypothesis is rejected then it is said that there is an evidence for the presence of autocorrelation. Durbin-Watson test(DW test) only tests the correlation between the error and its immediate previous value(first order autocorrelation). For

further test of autocorrelation the researcher uses Breusch-Godfrey test so that the autocorrelation that are not detected by DW test will be found.

#### **4. The Independent Variables are Non Stochastic**

OLS estimator is consistent and unbiased in the presence of stochastic regressors, provided that the regressors are not correlated with the error term of the estimation equation. However, if one or more of the explanatory variables is contemporaneously correlated with the disturbance term, the OLS estimator will not even be consistent. The regressors(independent variables) are not correlated with error term of the estimation equation is the assumption that is violated if the constant term does not exist. This study has a constant term in its model, therefore it can be concluded that it protected from the violation of assumption number one and four.

#### **5. The Assumption of Disturbances are Normally Distributed**

The study uses Bera Jarque(BJ) normality test for non normality. From the result the study uses the value of kurtosis and p-value to identify whether normality exists or not. The null hypothesis is that the distribution is normal and the alternate hypothesis is that the distribution is not normally distributed. Therefore if the null hypothesis is rejected then the distribution is not normally distributed. The researcher had also used kurtosis value to test for non normality and from the literature the normal distribution had a kurtosis value of 3. A normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3(Brooks, 2008). For the residuals to be normal jarque bera value should not be significant.

#### **Test of Multicollinearity**

Multicollinearity test is a test that tests whether there is correlation among the independent variables. If there is multicollinearity  $R^2$  is large however the BLUE character of OLS estimate is not violated.

### 3.3.4. Multiple Regression Model

The type of the data for this study is time series including the 12 years of data in the regression analysis. The model is multiple regression model with one dependent variable and three independent variables.

$$LNTD = \alpha + \beta_2 DR + \beta_3 INFRATE + \beta_5 LNBR + \beta_6 D2002 + \beta_7 D2011 + \epsilon$$

The dependent variable of this multiple regression is total deposit of commercial banks, that is indicated by the symbol LNTD. Whereas the independent variables are deposit rate, inflation rate and branches of commercial banks, which are indicated by the symbol DR, INFRATE and LNBR respectively. The symbol alpha( $\alpha$ ) represents the constant term and betas( $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  and  $\beta_6$ ) represents the coefficient of the independent variables. Two dummy variables, D2002 and D2011 are added in the model to have normal distribution among the residuals. The null hypothesis is rejected at 5% significant level. The relevant data is collected regarding each single variable and analyzed. In the preceding chapters, we are going to see the result of the analysis, that is the effect of each independent variable on the dependent variable.

## **Chapter Four**

### **Data Analysis and Presentation**

#### **4.1. Descriptive Data Analysis**

##### **4.1.1. Analysis of qualitative data**

The study uses questionnaires and interviews to collect qualitative data. The questionnaires are distributed to the employees of commercial bank of Ethiopia(CBE) and the branch managers of the bank are interviewed. Accordingly the data collected from the interviews and from open ended questions of the questionnaire is analyzed as follows.

CBE mobilize its funds from the government budget(since the shareholder of the bank is government), from profit of its operation and deposit of the customers. From these sources the largest proportion is deposit. The bank collects deposit in three forms, i.e. demand deposit, fixed deposit and saving deposit. Among these form of deposits the largest proportion of deposit is on the form of saving deposit. Demand deposit is non interest bearing deposit that the commercial bank collects mainly from merchants with the deal that they can withdraw their money on demand. Fixed deposit is the contract between the bank and its customers, i.e. the

bank negotiates with the customer about the date of the withdrawal and the interest the bank should give to the depositor. The last one, saving deposit is mainly used by the bank and the depositors. The minimum interest on saving deposit is fixed by the national bank of Ethiopia(NBE). Commercial banks of the country can give interest above the fixed amount as a means to compete with each other, however they can't give interest less than the minimum interest rate fixed by the national bank.

The growth of deposit in the bank is growth of business in the bank, in that they can use the deposit for different business and development purpose. Therefore commercial banks should make an effort to mobilize deposit. In the CBE, a bank that is used to be an evidence in this study, is using different mechanisms to mobilize deposit. The bank claims the following are making the bank attractive to depositors:-

- ❖ Service Excellency
- ❖ Good will of the bank
- ❖ Branch expansion
- ❖ Promotional effort
- ❖ Awareness creation for the society about the banking importance.
- ❖ Coupon prize for the depositors who kept above 1000 birr on their account. These coupons are issued and given to the customer from May 1, 2010 to August 30, 2012. The coupons will be changed into lottery and winner will get a prize such as a car.

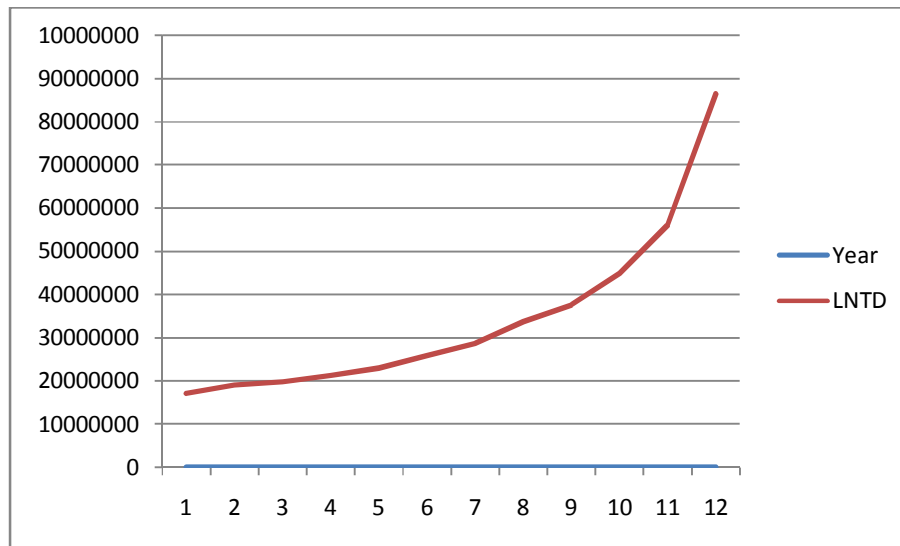
Beyond the above mentioned opportunities and efforts that CBE uses it did not use other mechanism to grow its deposit, such as increasing interest. As described above the national bank fixes only the minimum interest rate, therefore banks can increase the interest rate on deposit for the competition purpose. However, as the researcher gets information from an interview with branch managers, CBE is not using these mechanism to increase its deposit. In the managers speaking the bank did not increase interest on deposits because it have negative impact on the economy of the country. As the banks adds interest rate on deposits it will add an interest rate on loans and the borrower will use the money to invest in the economy to provide goods and services to the society. Finally, since the borrower is expected to pay more interest on the money borrowed, he/she will add price to the goods and services that is provided by his/her business to the society. The result will be the price of products is increased and this will be a cause to inflate the economy. The bank is ready to use core banking system to connect all CBE branches and give quality service for the depositors to deposit to their account and to withdraw from their account from any branches of the banks.

CBE uses advertising in different media electronic or written to create awareness for the society. According to the information gained from CBE, in every branches of the bank one committee is established to create awareness to the people how to use bank service and the importance of using it. The bank had also extend its service by providing electronic cash to the customers, i.e. ATM(Automatic Teller Machine). There are organization that do pay their employees through CBE, therefore the bank had used from this service and it is also using those organizations that pay their customers through CBE.

### **4.1.2. Total deposit of commercial bank of Ethiopia**

Total deposit of commercial banks is the dependent variable in this study. Since the study concludes by taking commercial bank of Ethiopia(CBE) as an evidence, total deposit of the bank is analyzed. In econometric analysis total deposit is regressed with three independent variables namely, deposit rate, inflation rate and branches of commercial banks. The data is time series covering 12 years from 2000GC to 2011GC. As can be seen from the graph(which is displayed by Microsoft excel) the volume of the commercial bank deposit is growing from the year 2000GC to 2011GC.

**Chart 1: The trend of total deposit growth of CBE between 2000 and 2011**



**Source: Microsoft excel output for time series data of total deposit**

The descriptive statistics of the dependent variable, total deposit of commercial banks, is displayed by SPSS as follows. It contains the minimum value, maximum value, average value of the variable and the standard deviation of the variable.

**Table 1: Descriptive Statistics total deposit**

	Minimum	Maximum	Mean
LNTD (total deposit)	86,500,000 birr	17,170,000 birr	34,442,000 birr

**Source: SPSS output for the time series data of total deposit of commercial banks**

The number of observation or the number of non missing values are 12 for the year 2000GC up to 2011GC. The minimum and maximum values of the dependent variable, i.e. total deposit of commercial banks is 17,170,000 birr and 86,500,000 birr respectively. The mean or average of the of total deposit of commercial banks for this sample year is 34,442,000 birr and the data is 20,146,100 birr deviated from its mean.

### 4.1.3. Analysis of the questionnaires

The study had used the frequency distribution output from SPSS software to analyze questionnaires. There are 37 questionnaires analyzed through SPSS software. Accordingly, the result of the frequency distribution as displayed by the software is mentioned and interpreted as follows.

#### The frequency distribution

**Table 2: The frequency distribution for gender of the respondents**

	Frequency	Percent	Cumulative Percent
Female	13	35,1	35,1
Male	24	64,9	100,0
Total	37	100,0	

**Source: SPSS output of frequency distribution of the respondents**

From the total number of the respondents 35.1%(13) of the respondents are female respondents and the other 65.9%(24) are male respondents.

**Table 3: The frequency distribution for marital status of the Respondents**

	Frequency	Percent	Cumulative Percent
Married	9	24.3	24.3
Single	28	75.7	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

24.3%(9) of the respondents are married and the other 75.7%(28) of the respondents are single. There are no respondents in the other option of divorced and other.

**Table 4: The frequency distribution of the age of the Respondents**

	Frequency	Percent	Cumulative Percent
Below 25	21	56.8	56.8
26-35	10	27.0	83.8
36-45	4	10.8	94.6
46 and above	2	5.4	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

56.1%(21) of the respondents are below 25 years old, 27%(10) of them are 26-35 years old, 10.8%(4) of them are 36-45 years and 5.4%(2) of them are 46 and above.

**Table 5: Position of the respondents in the Bank**

	Frequency	Percent	Cumulative Percent
Customer service	3	8.1	8.1
Manager			
Accountant	1	2.7	10.8
Auditor	5	13.5	24.3
General cashier	1	2.7	27.0
Customer service officer	27	73.0	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

8.1%(3) of the respondents are on the position of customer service manager in the bank, 2.7%(1) one of them is accountant, 13.5%(5) of them are auditors, 2.7%(1) of them is general cashier and 73%(27) of them are customer service officers.

**Table 6: Work Experience of the respondents in the bank**

	Frequency	Percent	Cumulative Percent
Below 5 years	28	75.7	75.7
6-15 years	5	13.5	89.2
16-25 years	2	5.4	94.6
26 and above Years	2	5.4	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

75.7%(28) of the respondents have below 5 years work experience on commercial bank of Ethiopia, 13.5%(5) of them have 6-15 years work experience, 5.4%(2) of them have 16-25 years work experience and the other 5.4%(2) of them have 26 and above work experience in the bank.

**Table 7: The employees of the bank being customer**

	Frequency	Percent	Cumulative Percent
Yes	33	89.2	89.2
No	4	10.8	100.0

**Table 7: The employees of the bank being customer**

	Frequency	Percent	Cumulative Percent
Yes	33	89.2	89.2
No	4	10.8	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

89.2%(33) of the respondents are both the employees and the customer of the commercial bank of Ethiopia, the other 10.8%(4) of them are only the employees of the bank not the customer of the bank.

**Table 8: Depositors from which the bank collects its deposit**

	Frequency	Percent	Cumulative Percent
Individual customers	5	13.5	13.5
Business organizations	2	5.4	18.9
Government	2	5.4	24.3
All	28	75.7	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

13.5%(5) of the respondents respond that commercial bank of Ethiopia collects its deposit from individual customers, 5.4%(2) of them says it is mobilizing its deposit from business organizations, 5.4% of the respondents says that the government is the

main depositor of the bank and 75.7%(28) of the respondents says that the bank is mobilizing its deposits from all the individual customers, business organizations and government.

**Table 9: The volume of deposits among Branches**

	Frequency	Percent	Cumulative Percent
Yes	35	94.6	94.6
No	2	5.4	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

94.6%(35) of the respondents agree that the deposit are different in volume among the branches of commercial bank and the other 5.4%(2) are not agreed with the difference in deposit among the commercial bank branches.

**Table 10: The cause of deposit volume variation**

	Frequency	Percent	Cumulative Percent
Convenience of office	7	18.9	18.9
Transportation	11	29.7	48.6
Hard work of employees	3	8.1	56.8
Awareness of the society	12	32.4	89.2
Other reason	4	10.8	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

18.9%(7) of the respondents agree that the convenience of office can be the main reason for deposit volume variation among commercial banks, 29.7%(11) of them claims transportation for deposit volume variation among the commercial banks, 8.1%(3) of them says that hard work of the employees as a reason for deposit volume variation, 32.4%(12) of the respondents says that the awareness of the society(preference of the society where to deposit) can be a reason and the other 10.8%(4) of the respondents says that there may be other reason for deposit variation.

**Table 11: The reason for deposit volume growth**

	Frequency	Percent	Cumulative Percent
Society's preference	9	24.3	24.3
Larger market share	23	62.2	86.5
Service given by the Bank	5	13.5	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

24.3% (9) of the respondents claim that society's preference for commercial bank deposit than other investment opportunity is the reason why the deposit of CBE is growing, 62.2%(23) of them says that growth of deposit is because of the larger market share of CBE and the other 13.5%(5) says that service given by the bank is a reason why the bank's deposit is growing.

**Table 12: The cost of deposit mobilization**

	Frequency	Percent	Valid Percent	Cumulative Percent
Cost of time spent by the banker to mobilize deposit	10	27.0	27.0	27.0
Cost of time spent by credit analyst to examine loans	9	24.3	24.3	51.4
The cost of postage and telecommunication	10	27.0	27.0	78.4
The cost of stationary and office supplies	6	16.2	16.2	94.6
Advertising and publicity cost	2	5.4	5.4	100.0
Total	37	100.0	100.0	

**Source: SPSS output of frequency distribution of the respondents**

27%(10) of the respondents says that the cost of time spent by the banker to mobilize deposit is the main transaction cost incurred that is related to volume of deposit growth, 24.3%(9) of them says that the cost of time spent by credit analyst to examine loan is more related, 27%(10) of them claims the cost of postage and telecommunication is more related, 16.2%(6) of them says that it is the cost of stationary and office supplies that affects the volume of deposits and the other 5.4%(2) claim advertising and publicity cost.

**Table 13: The frequency distribution of respondents for CBE’s cost for the deposit**

	Frequency	Percent	Cumulative Percent
Yes	32	86.5	86.5
No	5	13.5	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

86.5%(32) of the respondents agree that the CBE is mobilizing its deposit at lower possible cost, whereas 13.5%(5) of them do not agree.

**Table 14: The frequency distribution of factor that mostly affect the volume of the deposit**

	Frequency	Percent	Cumulative Percent

Factors determining commercial bank deposit

Economic environment of the country	23	62.2	62.2
The volume of business transaction in the country	2	5.4	67.6
The confidence of people on CBE	9	24.3	91.9
The banking habit of the people	3	8.1	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

62.2%(23) of the respondents claim the economic environment of the country will affect the volume of deposit, 5.4%(2) of them says that the volume of business transaction in the country will affect it, 24.3%(9) of them responds generally people have confidence on the CBE and this will increase the deposit and the other 8.1%(3) of them claim banking habit has effect on commercial banks deposit.

**Table 15: The frequency distribution of effect of awareness creation on deposit growth**

	Frequency	Percent	Cumulative Percent
Yes	37	100,0	100,0

**Source: SPSS output of frequency distribution of the respondents**

The commercial bank of Ethiopia had undertake awareness creation campaign on the area of its branches where the awareness of the people regarding banking service is low. In the questionnaire the employees of the bank asked whether after that

campaign the volume of deposit had increased or not. The result is 100% of the respondents agree that the awareness creation campaign had increased the volume of deposit of the bank.

**Table 16: The frequency distribution Services provided by the bank for depositors**

	Frequency	Percent	Cumulative Percent
Prize for the depositors	34	91.9	91.9
Offering insurance premium	2	5.4	97.3
Consultancy service for the depositors	1	2.7	100.0
Total	37	100.0	

**Source: SPSS output of frequency distribution of the respondents**

91.9%(34) of the respondents respond that the service given to depositors is prize, 5.4%(2) of them says that the bank is also offering insurance premium and the other

2.7%(1) the bank is also offering consultancy service for depositors about where to invest their money(investment portfolio).

**Table 17: The frequency distribution of the growth of deposit after the promotion**

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	36	97.3	97.3	97.3
No	1	2.7	2.7	100.0
Total	37	100.0	100.0	

**Source: SPSS output of frequency distribution of the respondents**

97.3%(36) of the respondents agree that the deposit is growing after the promotional effort, whereas the 2.7%(1) does not agree the increase of deposit volume as a result of promotional effort.

#### **4.1.4. Descriptive analysis of the dependent and independent variables**

A descriptive statistics has conducted for the dependent variable(total deposit of commercial banks) and independent variables(inflation rate, deposit rate and banks' branches). It includes mean, median, maximum, minimum, standard deviation and others statistics value. The result of the descriptive statistics and its interpretations are presented as follows.

The mean of one of the independent variable, deposit rate was 3.91 and the median was 3.5 which was closer to its minimum of 3. This shows that average of the data of deposit rate was closer to its minimum value. Having jarque bera value of 1.79 it was normally distributed. The logarithm of number of branch was used for regression and

its minimum and maximum value were 5.17 and 5.99 respectively. It was closer to its minimum value and it was normally distributed. The other independent variable, inflation rate, had the minimum and maximum value of -1.06 and 3.64 respectively. Having the jarque bera value of 0.5 it was normally distributed. The dependent variable of the study, total deposit of commercial banks, was also normally distributed having the value of jarque bera greater than 0.05.

**Table 18: The descriptive statistics value of the dependent and independent variables**

	DR	LNBR	INFRATE	D2002	D2011	LNTD
Mean	3.91	5.33	1.05	0.083	0.08	2.41
Median	3.50	5.30	8.95	0.00	0.00	2.4
Maximum	6.00	5.99	3.64	1.00	1.00	2.51
Minimum	3.00	5.17	-1.06	0.00	0.00	2.35
Std. Dev.	1.16	0.22	1.21	0.28	0.28	0.49
Skewness	0.88	2.37	0.50	3.01	3.01	0.78
Kurtosis	2.33	7.85	3.22	1.00	1.00	2.68
Jarque-Bera	1.79	2.30	0.52	4.33	4.33	1.28
Probability	0.40	0.00	0.76	0.00	0.00	0.52

### Factors determining commercial bank deposit

Sum	4.70	6.39	1.26	1.00	1.00	2.89
Sum Sq.						
Dev.	1.49	0.53	1.63	0.91	0.91	2.64
Observations	12	12	12	12	12	12

**Source: EView output of descriptive statistics of eight variables**

## 4.2. Econometric Analysis and Results

The researcher had used the econometric model of multiple regression for this study. The model contains one dependent variable, seven independent variable, the constant term and the error term. The ordinary least square(OLS) method is used to come up with the econometric results. For the test statistics 5%(0.05) significant level is used to reject or not to reject the null hypothesis. The first test the researcher tests are diagnostic tests because they are the means to know whether the model is valid or not on the other hand to know if it is OK to continue with the regression. Accordingly, heteroskedasticity test, autocorrelation test, non normality test and multicollinearity test are tested and the results are presented. As these tests prove the validity of the model, the study had continued into regression analysis and hypothesis testing.

### 4.2.1. Diagnostic Test

Before regression analysis and hypothesis testing heteroskedasticity, autocorrelation and normality testing are tested to know if the assumptions of CLRM violated or not. Accordingly, the output of the tests which are displayed by EViews software are presented and interpreted.

#### 4.2.1.1. Heteroskedasticity Test

The test of heteroskedasticity is a test of the second assumption of OLS estimator that says the variance of errors is constant. The researcher uses Breusch Godfrey test(BG test) to test for heteroskedasticity.

Ho: The assumption that there exists homoskedasticity

H1: There is no homoskedasticity(there is heteroskedasticity)

**Table 19: The heteroskedasticity test of the multiple regression model**

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.742934	Prob. F(5,6)	0.6191
Obs*R-squared	4.588529	Prob. Chi-Square(5)	0.4681
Scaled explained SS	1.123755	Prob. Chi-Square(5)	0.9520

**Source: EViews output heteroskedasticity(BG test)**

EViews displays three different type of tests for heteroskedasticity and all fails to reject the null hypothesis of homoscedasticity presence. Therefore it can be concluded that the variance of error term is constant or the second assumption of CLRM is not violated.

#### 4.2.1.2. Autocorrelation test

The Durbin-Watson test only tests the first order autocorrelation. For further test of autocorrelation the researcher uses Breusch-Godfrey test so that the autocorrelation that are not detected by DW test will be found. Moreover, BG test tests the autocorrelation of the residual and several lagged values of it.

Ho: There is no autocorrelation

H1: There is autocorrelation

**Table 20: Autocorrelation test of multiple regression**

Breusch-Godfrey Serial Correlation LM Test:

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F-statistic	0.109714	Prob. F(2,4)	0.8987
Obs*R-squared	0.624051	Prob. Chi-Square(2)	0.7320

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**Source: EViews output of test for autocorrelation**

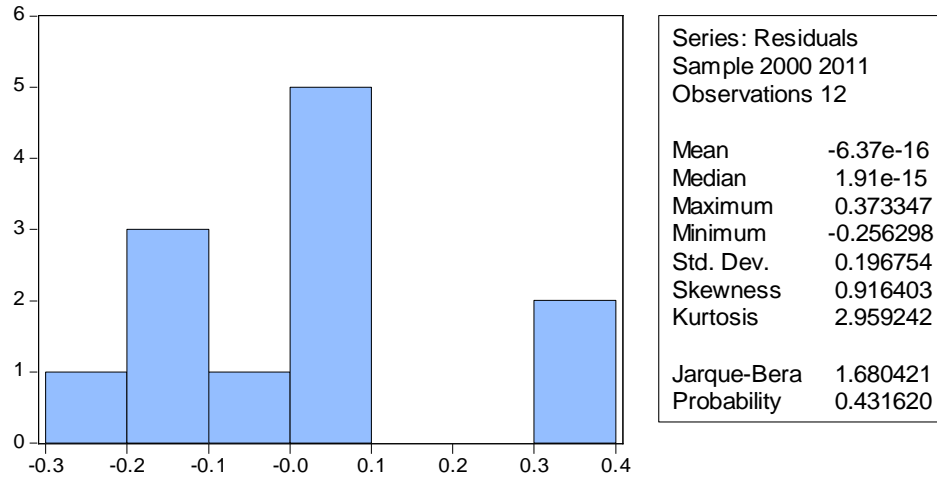
DW test from the regression have a value of 2.19 which is related to 2 and that leads us to conclude there is little evidence of the presence of autocorrelation. The test of autocorrelation of the residuals and several lagged value of it, Breusch-Godfrey test(BG test), presents with two type of test and both fails to reject the null hypothesis of no autocorrelation. Therefore, given these result it can be concluded that there is no evidence for the existence of autocorrelation.

#### **4.2.1.3. Non normality test**

Ho: The residuals are normally distributed

H1: The residuals are not normally distributed

**Chart 2: Non normality test of the multiple regression model**



**Source: EViews output for normality test**

Bera-Jarque normality tests has been used for normality test. The kurtosis value is around 2.95 which is related to 3. Jarque-Bera’s also indicates that the residuals are normally distributed having the value 1.68 which is greater than 0.05. The p-value given at the bottom of the normality test screen should be bigger than 0.05 to fail to reject the null hypothesis at the 5% level(Brooks, 2008). The p-value 0.43 which is greater than 0.05 had failed to reject the null hypothesis of normality presence.

**4.2.1.4. Correlation between explanatory variables**

The three independent variables are tested for correlation and the result shows that there is no correlation between the explanatory variables.

**Table 21: Correlation between independent variables**

	INFRATE	LNBR	DR
INFRATE	1		
LNBR	0.29	1	

## Factors determining commercial bank deposit

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DR	-0.02	0.16	1
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**Source: EViews output for multicollinearity**

The higher correlation is 0.29 for that of branch and inflation rate. Therefore it can be concluded that there is no correlation between the explanatory variables.

### 4.3. Regression Analysis

The relationship between one variable and three independent variables is regressed using econometric software called EViews. The dependent variable is total deposit of commercial banks(LNTD) and the three independent variables include deposit rate(DR), inflation rate(INFRATE) and number of commercial bank branches(LNBR). The regression by ordinary least square method with the data of successive 12 years from the 2000GC onwards, i.e. 2000GC-2011GC.

**Table 22: The regression output of total deposit against independent variables**

Dependent Variable: LNTD

Method: Least Squares

Date: 06/18/12 Time: 18:09

Factors determining commercial bank deposit

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Sample: 2000 2011

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.239762	6.721371	0.928347	0.3890
LNBR	3.350622	1.253320	2.673397	0.0369
INFRATE	0.008870	0.008522	1.040894	0.3380
DR	0.010742	0.082730	0.129846	0.9009
D2002	0.098872	0.357900	0.276256	0.7916
D2011	-1.331562	0.962986	-1.382743	0.2160
R-squared	0.839277	Mean dependent var	24.13991	
Adjusted R-squared	0.705341	S.D. dependent var	0.490777	
S.E. of regression	0.266406	Akaike info criterion	0.499263	
Sum squared resid	0.425833	Schwarz criterion	0.741716	
Log likelihood	3.004421	Hannan-Quinn criter.	0.409498	
F-statistic	6.266262	Durbin-Watson stat	2.195330	
Prob(F-statistic)	0.022482			

**Source: EViews regression output**

The dependent variable is total deposit of commercial banks. The sample years are from the 2000G.C up to 2011G.C, the data for the dependent and independent variables are collected between these years. The regression had 12 observation. The title of the regression includes the variable, coefficient, standard deviation, t-statistics and p-value. The independent variables(deposit rate, inflation rate and branches) with coefficient are mentioned in the regression table. The output of EViews come up with

different statistics that should be interpreted to come to conclusion of the regression analysis.

- ❖ The coefficient estimate of the regression shows that the value of dependent variable if all independent variable become zero. Therefore the total deposit of commercial banks will be 6.24 given all independent variable zero.
- ❖ Deposit rate(DR) had positive insignificant effect on the commercial banks deposits.
- ❖ Inflation rate(INFRATE) had positive insignificant effect on the commercial banks deposit.
- ❖ The branches of commercial bank(LNBR) had positive coefficient estimates and significant at 5% significant level, therefore branch expansion have positive significant effect on commercial banks deposit.

The  $R^2$  and the Adjusted  $R^2$  values are 84% and 70% respectively, that shows 84% of the variation of the dependent variable is explained by the variation of the independent variable. Durbin-Watson stat, its value is 2.19 in the regression. Since the value of DW is near 2 rather, it can be concluded that there is little evidence for the existence of autocorrelation. The F-stat value of the regression shows that the null hypothesis is rejected at 5% significant, having the value of 0.02.

#### **4.4. Hypothesis Test**

Wald test have been used to test the multiple hypothesis. The null hypothesis is rejected with p-value of zero to four decimal places.

**Table 23: The hypothesis test for the coefficient of the independent variables**

Wald Test:

Equation: EQ0120022011FINAL

Test Statistic	Value	df	Probability
F-statistic	16426.72	(6, 6)	0.0000
Chi-square	98560.33	6	0.0000

**Source: EViews output of the hypothesis test(Wald test)**

The null hypothesis says that the coefficient of independent variables on the right hand side is zero, that means the independent variables have no effect on the dependent variable, total deposit of commercial banks. The alternate hypothesis is therefore the coefficient of independent variables are different from zero, that is the independent variables have effect on the dependent variable, total deposit of commercial banks. Therefore the rejection of the null hypothesis shows that the coefficient of variables on the right hand side are different from zero, i.e. independent variables have effect on the dependent variable. Deposit rate, inflation rate and branch expansion positively affects the total deposit of commercial banks.

#### **4.5. Summary of Research Findings**

The research on the title of: Factors determining commercial banks deposit: An empirical study on commercial bank of Ethiopia, had go through both descriptive and empirical analysis. As a result of the analysis and interpretation, the following are the summary of the findings.

- ❖ Commercial bank of Ethiopia mobilize its funds from the government budget(since the shareholders of the bank is government), from profit of its operation and deposit of the customers.
- ❖ Among the three kinds of deposits(demand deposits, fixed deposits and saving deposits), saving deposit is a mainly used by the bank and its customers.
- ❖ The minimum interest rate on saving deposit is fixed by NBE. Commercial banks of the country can provide interest above the minimum interest fixed by NBE as method of competition but cannot provide less than the minimum interest rate.
- ❖ CBE claims service Excellency, good will of the bank, branch expansion, promotional effort, awareness creation and coupon prize as the opportunities and efforts the bank is using to attract depositors. Beyond these the bank did not use other mechanism, such as adding deposit rate, to increase its deposit.
- ❖ Convenience of bank's office, transportation, hard work of employees, awareness of the society and other reasons are claimed to be the cause for deposit volume variation among commercial banks. However awareness of the society and transportation founded to become the main reason.
- ❖ The main costs attributed to deposit mobilization are the cost of time spent by the banker to mobilize deposit and the cost of postage and telecommunications. In addition the cost of time spent by credit analyst to examine loans, the cost of stationary and office supplies and advertising and publicity cost are all related to deposit mobilization.
- ❖ The undertakings of promotional effort and awareness creation campaign is effective in mobilizing deposit.

- ❖ Number of branches available has positive and significant effect on total deposit of CBE.
- ❖ Inflation rate has positive insignificant effect on total deposit of commercial bank of Ethiopia(CBE).
- ❖ Deposit rate has positive insignificant effect on total deposit of commercial bank of Ethiopia(CBE).
- ❖ The hypothesis test result rejects the null hypothesis at 1% significant level, that shows all the independent variables( deposit rate, inflation rate and number of branches) has an effect on total deposit of commercial banks.

## **Chapter Five**

## Conclusion and Recommendation

### 5.1. Conclusion

Given the summary result of descriptive and empirical analysis, the study had concluded the following to commercial banks by taking CBE as evidence of the study.

- ❖ The main source of capital for commercial banks is deposit. Although banks can use other source of funds such as shareholders equity, from the profit of its operation or any other business undertakings the most useful source of capital is deposit.
- ❖ Among the kind of deposits saving deposits are mostly used by commercial banks and their customers. That is from the deposit available in the banks the largest proportion is saving deposit which is fixed interest bearing deposit.
- ❖ Commercial banks of Ethiopia can add deposit rate for competition purpose, however the minimum interest rate is fixed by the national bank.
- ❖ Service Excellency, good will of the bank, branch expansion, promotional effort, awareness creation and coupon prize can be an opportunities that the bank obtains from its environment and efforts that the bank can do to mobilize more deposits.
- ❖ The commercial banks can mobilize more deposit when they have convenient office, good transportation access, hard working employees and society who are aware of the banking system.
- ❖ Deposit mobilization become more simpler if commercial banks become preferable than other commercial banks and grow their market share.
- ❖ Commercial banks incur the following costs to mobilize deposits:-
  - Cost of time spent by the banker to mobilize deposit

- Cost of postage and telecommunication
- Cost of time spent by credit analyst to examine loans
- Cost of stationary and office supplies and advertising and publicity cost.
- ❖ Promotional effort and awareness creation campaign had an impact on deposit mobilization.
- ❖ Branch expansion is an important strategy for deposit mobilization, it significantly increases deposit. Although it is insignificant, deposit rate and inflation rate can increase commercial bank's deposit in Ethiopia. Therefore, branch expansion, inflation rate and deposit rate have positive impact on commercial banks' deposit.

## 5.2. Recommendations

Based on the research findings and conclusions the followings are recommended for commercial banks of Ethiopia as a way to mobilize more deposits than before.

- ❖ Since the main source of funds for commercial banks is deposit the bank should give due emphasis to its deposit and strive to increase it.
- ❖ The bank should provide excellent service for its customers to mobilize more deposits. Incentives such as coupon prizes are also effective for deposit growth. In addition commercial banks should go through promotional effort and awareness creation campaign to have well informed society who have awareness of the banking system who are interested in keeping their money in banks. Moreover, commercial banks should use their good will to attract depositors and for those that do not have good will it is recommended that banks should build good will to be acceptable for the society.
- ❖ Commercial banks should have convenient office environment with hard working employees to attract depositors. Since transportation matters the bank

should also make transportation simpler for depositors by providing the service near to the customers.

- ❖ Commercial banks should also control the customers preference and compete with other commercial banks to attract more depositors in turn to mobilize more deposits through controlling the market or through expanding their market share.
- ❖ There are costs incurred by commercial banks for deposit mobilization. Therefore, commercial banks should use this cost effectively to mobilize deposit.
- ❖ Since deposit rate has positive effect on commercial bank deposit, banks should increase the deposit rate if their plan is to mobilize more deposit than before.
- ❖ Since 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.

### **For further research**

In this study in title: Factors determining commercial banks deposit: An empirical study on commercial bank of Ethiopia had studied and some recommendations are made based on the findings and conclusions. However, commercial banks should not only mobilize more deposit but they should invest those deposits on profitable investments. Therefore, investment opportunities of commercial banks through their deposit can be studied in the future. In that commercial banks found more simpler to invest their deposit which is mobilized through techniques recommended in this study.

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# Appendices

Addis Ababa University

School of Business and Public Administration

Master of Business Administration

Interview Questions

1. How does Commercial Bank Of Ethiopia mobilize funds? Equity or Debt/Deposit? Which one has large proportion? Which one of the two do you think is much more expensive?

2. Who fixes the interest rate on deposits in Commercial Bank of Ethiopia?

Regulation of National Bank of Ethiopia

Market forces (demand and supply of financial market)

Reserve in National Bank of Ethiopia

Other reason (if there is)

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3. Would you explain the practice of deposit mobilization by Commercial Bank Of Ethiopia in relation with other commercial banks in the country? What techniques does the bank use to mobilize deposits? What is the difference from other banks of the country?

4. Are there a time in which Commercial Bank Of Ethiopia faces financial, economic, political and social shocks that affected the volume of deposits of the bank? What where the shocks and how did they affect the volume of the deposit?

5. Is Commercial Bank Of Ethiopia is mobilizing enough deposits, currently? is there a time in which the bank lacks liquidity to lend it to the customers?

Addis Ababa University

School of Business and Public Administration

Master of Business Administration

These questionnaire is prepared to gather data from the employees of commercial bank of Ethiopia to be an input for the accomplishment of MBA thesis on the title of Factors Determining Commercial Bank Deposit: An empirical study on Commercial Bank of Ethiopia.

**I. Personal Information**

1. Sex

Female

Male

2. Marital status

Married

Single

Divorced

Other

3. Age

Below 25 years

26-35 years

36-45 years

46 and above

4. What is your position in Commercial Bank Of Ethiopia?

Branch manager

Customer service manager

Accountant

Auditor

General cashier

Loan officer

## Factors determining commercial bank deposit

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Customer service officer

Other position in the bank

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5. Work experience in commercial bank of Ethiopia:

Below five years

6-15 years

16-25 years

26 and above years

6. Beyond your position as employee of commercial bank of Ethiopia, are you the customer of the bank/Do you deposit your money in commercial bank of Ethiopia?

Yes  No

## II. General Information

1. Mostly where does the commercial bank of Ethiopia collecting its deposits?

Individual customers

Business organizations

Government

All

2. Is the volume of deposit different among Commercial Bank Of Ethiopia branches?

Yes  No

3. What is the cause for the difference in deposit mobilization among the commercial bank of Ethiopia?

Factors determining commercial bank deposit

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- Convenience of bank office(type of building)
- Transportation(Roads and vehicles)
- The hard work of the employees
- Awareness of the society
- Office furniture, cheque book, vouches, pay slips etc.
- Other reasons

4. From the record we knew that, the total deposit of Commercial Bank Of Ethiopia is growing, what is the reason?

- Societies' preference for commercial bank deposit than other investment
- Commercial Bank Of Ethiopia have larger market share
- The service given by the bank
- Other reasons

5. Which of the following transaction or intermediation cost affect the volume of deposit in Commercial Bank Of Ethiopia?

- The cost of time spent by the banker to mobilize deposit
- The cost of time spent by credit analyst to examine loans
- The cost of postage and telecommunication with depositors
- The cost of stationary and office supplies
- The advertising and publicity cost
- Motor vehicle running costs

6. Does Commercial Bank Of Ethiopia mobilizing deposits at lower possible costs?

- Yes  No

7. Which of the following affects the volume of deposits in commercial bank of Ethiopia?

Factors determining commercial bank deposit

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Economic environment of the country

The volume of business transactions of the country

The confidence of the people on Commercial Bank Of Ethiopia

The banking habit of the people

8. What is done in Commercial Bank Of Ethiopia to promote awareness of the society pertaining to banking services?

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9. Do you think that volume of deposits grow after the awareness creation?

Yes  No

10. What special service does the bank provides for depositors?

Prize for the depositors

Offering insurance premium

The bank selects the portfolio of financial investment for depositors

Facility of purchase from recognized dealers

11. Is there any services given by Commercial Bank Of Ethiopia for the depositors, other than services mentioned in question number ten?

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12. Does the volume of deposits grow because of such promotional effort provided for the customers?

Yes  No

Thank You for Your Cooperation to Fill The Questionnaire

### **Appendix Three**

Heteroskedasticity test output

Heteroskedasticity Test: Breusch-Pagan-Godfrey

Factors determining commercial bank deposit

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F-statistic	0.742934	Prob. F(5,6)	0.6191
Obs*R-squared	4.588529	Prob. Chi-Square(5)	0.4681
Scaled explained SS	1.123755	Prob. Chi-Square(5)	0.9520

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Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/18/12 Time: 20:28

Sample: 2000 2011

Included observations: 12

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.212746	1.392813	-0.152745	0.8836
LNBR	0.066234	0.259715	0.255026	0.8072
INFRATE	-0.002487	0.001766	-1.408558	0.2086
DR	-0.016526	0.017143	-0.963978	0.3723
D2002	-0.108579	0.074164	-1.464032	0.1935
D2011	-0.060424	0.199551	-0.302799	0.7723

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R-squared	0.382377	Mean dependent var	0.035486
Adjusted R-squared	-0.132308	S.D. dependent var	0.051880
S.E. of regression	0.055205	Akaike info criterion	-2.648671
Sum squared resid	0.018286	Schwarz criterion	-2.406217
Log likelihood	21.89202	Hannan-Quinn criter.	-2.738436
F-statistic	0.742934	Durbin-Watson stat	2.158808

Factors determining commercial bank deposit

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Prob(F-statistic)      0.619096

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**Appendix Four**

Autocorrelation output

Factors determining commercial bank deposit

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Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.109714	Prob. F(2,4)	0.8987
Obs*R-squared	0.624051	Prob. Chi-Square(2)	0.7320

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 06/18/12 Time: 20:29

Sample: 2000 2011

Included observations: 12

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.258540	9.354831	-0.241430	0.8211
LNBR	0.408200	1.730050	0.235947	0.8251
INFRATE	0.001088	0.010516	0.103437	0.9226
DR	0.018290	0.109914	0.166405	0.8759
D2002	0.064509	0.449536	0.143502	0.8928
D2011	-0.160266	1.200522	-0.133497	0.9002
RESID(-1)	-0.346590	0.759121	-0.456568	0.6717
RESID(-2)	-0.216104	0.748185	-0.288838	0.7871
R-squared	0.052004	Mean dependent var	-6.37E-16	
Adjusted R-squared	-1.606988	S.D. dependent var	0.196754	
S.E. of regression	0.317682	Akaike info criterion	0.779191	

## Factors determining commercial bank deposit

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Sum squared resid	0.403688	Schwarz criterion	1.102462
Log likelihood	3.324853	Hannan-Quinn criter.	0.659505
F-statistic	0.031347	Durbin-Watson stat	2.205342
Prob(F-statistic)	0.999862		

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## Appendix Five

Hypothesis test

## Factors determining commercial bank deposit

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Wald Test:

Equation: EQ0120022011FINAL

Test Statistic	Value	df	Probability
F-statistic	16426.72	(6, 6)	0.0000
Chi-square	98560.33	6	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1)	6.239762	6.721371
C(2)	3.350622	1.253320
C(3)	0.008870	0.008522
C(4)	0.010742	0.082730
C(5)	0.098872	0.357900
C(6)	-1.331562	0.962986

Restrictions are linear in coefficients.