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DETERMINANTS OF COMMERCIAL BANKS DEPOSIT MOBILIZATION IN ETHIOPIA

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DECLARATION

I, the undersigned, declared that this thesis is my original work and has not been presented for a first degree or master's degree in any other university, and that all source of materials used for this thesis have been duly acknowledged.

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Place and date of Submission_____

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

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Advisor Signature

St. Mary's University, Addis Ababa June, 2017

APPROVAL SHEET

As members of board of examining of the final MSc thesis open defense, we certify that we have read and evaluated the thesis prepared by Ketema Getachew under the title "**DETERMINANTS OF COMMERCIAL BANKS DEPOSIT MOBILIZATION IN ETHIOPIA**" we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Science in Development Economics

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Dedication

I would like to dedicate this Master Thesis to My Mother W/ro Gettie Demissie and to My Father Ato Getachew Bogale. Emye I always remember all your pain, all your suffering, all your love to me and to all your children and I always remember it and love you both Rest In Peace.

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Acronyms & Abbreviations

ATM	Automatic Teller Machine
CBE	Commercial Bank of Ethiopia
CD	Certificate of Deposit
CLRM	Classical Linear Regression Model
CPI	Consumer Price Index
CSA	Central Statistical Authority
FDI	Foreign Direct Investment
FMOLS	Fully Modified Ordinary Least Square
GDP	Gross Domestic Product
MOFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
OLS	Ordinary Least Square
ROA	Return on Asset
ROE	Return on Equity
USD	United State Dollar
WDI	World development Indicator
WAMA	West African Monetary Agency
REM	Random Effect Model
FEM	Fixed Effect Model

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Abstract

Deposit mobilization is a fundamental part of banking activity. Hence, deposit mobilization is critical to Banks. Understanding the nature of Deposit Mobilization behavior is critical in designing policies to promote savings and investment which in turn enhance economic growth through capital formation. This paper empirically examines the determinants of commercial banks deposit mobilization in Ethiopia for the periods 2000-2015. From total of seventeen Commercial Banks which are engaged in commercial bank activities, seven selected based on the historical time formation of banks. The researcher adopted Quantitative research approach. Bank specific and macroeconomic variables were analyzed by using the balanced panel fixed effect regression model. Different diagnostic tests (test for assumption of Homoscedasticity, Autocorrelation, Normality, average value of the error is zero and independent variables are non-stochastic) were conducted to check the appropriateness of the model. The results reveal that credit risk, exchange rate, and Bank Profitability are positively and statistically significant on bank deposit growth; whereas, Loan to Deposit ratio (Bank's Liquidity) and Money Supply influence is negatively and statistically significant on bank deposit growth. Deposit Interest Rate had insignificant positive influence on bank deposit growth. Whereas Inflation and Government Expenditure had insignificant negative influence on bank deposit growth. The researcher recommends that Government should decrease the broad Money Supply to the economy since it had a negative significant effect on deposit mobilization. Since the depositor confidence will increase if the commercial banks are profitable and have adequate asset return so commercial banks should sustain their profitability to increase their amount of deposit. Commercial Banks should also decrease their outstanding loan and advance to reduce their credit risk and decreases their liquidity by mobilizing more fixed time deposit instead of individual and demand deposit since credit risk had a positive and significant effect on bank deposit.

Keywords: Commercial Banks, Deposit Mobilization, Fixed Effect Model

Chapter One

1. Introduction

1.1 Background of the Study

Economic growth is the common goal of all nations. Everybody lives with more comfortable, better standard of living than before and holding a better welfare because of the surge in economic growth. Government in each country aims to reduce poverty and increase the level of national income. Therefore, to achieve the main target of economic growth, governments may implement various kinds of policies such as encouraging saving, stimulating investment and production in their countries (Pinchawawee, 2011).

Mobilizing deposits is one of the essential issues in developing countries as domestic funds provide cheap and reliable source of funds for development, which is of great value to these countries, especially when the economy has difficulty raising capital from international donors, investors and markets. Yet, in many developing countries, there is a considerable amount of savings that are not intermediated through the formal sector particularly there exist significant savings potential in the rural (and/or semi-urban) sector of many developing countries.

Selvaraj & Kumar (2015) State that, the success of the banking greatly lies on the deposit mobilization. Performances of the bank depend on deposits, as the deposits are normally considered as a cost effective source of working fund. Mobilization of rural savings is one of the important objectives of the Commercial Banks. It helps to expand banking operations. The successful functioning of commercial banks depends on the extent of funds mobilized. Deposits constitute a vital source of funds required for banking business. There are different types of deposits, with different maturity pattern carrying different rates of interests. Mobilization of deposits for a bank is as essential as oxygen for human being.

Compared to most countries, Ethiopia has taken a cautious approach toward the liberalization of its banking industry. For all intents and purposes, its industry is closed and generally less developed than its regional peers. The industry comprises one state-owned development

bank and the financial giant dominant Commercial Bank of Ethiopia (CBE) which embarks on aggressive branch network expansion aimed at mobilization of deposit resources; continued amassing of foreign currency proceeds of export items channeled from China, channeling of savings made for the housing project in the capital city (though it also lends householders at a lower interest rate); imposition of private banks to purchase NBE-Bills and the sum effect of the above and other factors enable the CBE secure competitive edge over private banks with assets accounting for more than 65 percent of the industry's total holdings. The banking industry's nonperforming loan ratio is commendably low, and profitability is good, but the dominance of public sector banking certainly restricts financial intermediation and economic growth. It contrasts with regional and international peer countries where banking industries have a much higher share of private sector and foreign participation (Dereje, 2017).

According to (Abay, 2010), by sub-Saharan Africa standards, Ethiopia's rate of domestic saving has been very low. From 1997 to 2010, the average saving rate in low-income countries of the region was about 9 per cent, while it was about 19 per cent for middle-income countries. In the same period, the average saving rate of —fragile sub-Saharan African states was 11.5 per cent, still significantly higher than Ethiopia's rate of 4 per cent.

In this study the determinants of commercial bank deposit at macro level and micro economic level were studied empirically and the relationship between these variables and total deposit of commercial banks is identified. Issue of banks deposits and its determinants is crucial to the financial sector of developing country like Ethiopia. This study enables banks and regulators to keep control to the issue of deposit which is very important to the security of their operation as well as the economy as a whole in the country. Therefore, this paper aimed to identify and evaluate those factors affecting deposit of Commercial Banks in Ethiopia.

1.2 Statement of the Problem

Deposits are the primary source of funds for a bank, which facilitates the uses of funds (loans and investments). The higher the deposits amount, the bigger the lending and investments portfolio can be maintained by the banks to sustain its expansion and future growth. The banks must have adequate deposits to meet the lending volume required by the public and at the same

time maintain extra cash for withdrawals by depositors. The cash reserve is a component of liquidity reserves which measure the ability of the bank to meet its expected withdrawals and recurring withdrawals. The withdrawals made from there serves are oddly-offset against new deposits which the banks should continuously mobilize. The inability to get sufficient deposits could result in negative fund situation. The level of deposits growth also indicates the bank's performance in relation to customers' satisfaction on interest payout and services rendered.

The fast growing economy of the country, which is proactively investing in road infrastructure, building hydropower dams, constructing thousands of housing condominiums and expanding agricultural and other investments in the country are hugely relying on the commercial banks for loans and credits. Moreover, there have been multiple small enterprises incubated in the last decades and increasing number of import and export companies, heavily relying on commercial banks for loans, foreign currency and trade assurances. This calls for an increased demand for deposit mobilization from public institutions, private sector and other potential contributors (Hibret, 2015).

Ethiopian banking industry is still in its growing stage. The deposit generated by the county economy not yet been mobilized as much as expected. NBE indicates that from deposits that should be mobilized by banks only 7% is mobilized as of 2012 (Wubitu, 2012). This indicates that from the money that should be deposited in the bank 93% of it was not mobilized.

Moreover, in the contexts of Ethiopia, the related research has mostly focus on only one public Bank (Commercial Bank of Ethiopia) or Private commercial Banks separately to assessed the factors affecting the total amount of deposits of Ethiopian commercial banks. In addition to this, there is also inconsistency finding among researcher. This inconsistency of results might be attributable to the method of data analysis used by different researchers, the time period used and different category of banks. Determinant variables commonly explained as a factor affecting deposit are Inflation and Interest rate.

For instance; Inflation Rate taken as explanatory variable by (Andinet, 2016) the result of his study indicates inflation has a negative relation and insignificant to Privets Commercial Bank Deposit. (Giagn, 2015) also used the variable in his study to determine the effect of inflation

to Commercial Bank Deposit Growth result of the study was positive relation and significant for deposit. Finally (Shemsu, 2014) used Inflation rate as an explanatory variable to determine the effect on the Commercial bank of Ethiopia deposit result was positive relation and insignificant to the dependent variable deposit.

Interest rate: was taken as an explanatory variable by (Andinet, 2016), the result is positive and significant to deposit. (Shemsu, 2014) the result is positive and insignificant and (Giang, 2015) the result is negative and insignificant and lastly (Wubit, 2012) result shows positive and insignificant.

The study also take the recommendation for further study made by (Andinet, 2016), (Shemsu, 2014) & (Dereje, 2017)to determine the factors affecting the commercial bank deposit by introducing additional variable at Micro level Bank Credit Risk and at Macro level Government Expenditure.

Thus commercial banks found in Ethiopia must increase their deposits by overcoming the existing challenges. To do so they have to knows the main factors that determine deposit mobilization or financial savings. This study empirically investigates determinants of deposit mobilizations in financial savings for banks in Ethiopia and which of those factors are influential and also minimize the research gaps on factors affecting deposit mobilization in commercial banks.

1.3 **Objectives of The Study**

1.3.1. General Objective

The study aims to examine the determinants of commercial banks deposit mobilization in Ethiopia.

1.3.2 Specific Objective

- To Evaluate and estimate a model that explains the factors which determine commercial bank deposit.
- To Examine the effect of Bank Profitability on commercial bank deposit
- To Examine the effect of Bank Liquidity on Commercial bank deposit
- To Examine the effect of Bank Credit Risk on Commercial Bank Deposit
- To Examine the effect of Money Supply on Commercial Bank Deposit

- To Examine the effect of Government Expenditure on Commercial Bank Deposit
- To Examine the effect of Exchange Rate on Commercial Bank Deposit
- To Examine the effect of Deposit Interest Rate on Commercial bank Deposit
- To Examine the effect of Inflation rate on Commercial bank Deposit

1.4 Hypothesis of the study

H1: Exchange Rate has significant effect on commercial banks deposit.

H2: Deposit interest rate has significant effect on commercial banks deposit.

H3: Inflation has a significant effect on commercial banks deposit.

H4: Government Expenditure has insignificant effect on commercial banks deposit.

H5: Liquidity Ratio has significant effect on commercial banks deposit.

H6: Loan to Asset Ratio has significant effect on commercial banks deposit in Ethiopia.

H7: Money Supply has significant effect on commercial bank deposit.

H8: Return on Asset has insignificant effect on commercial banks Deposit growth in Ethiopia.

1.5 Significance of the study

The study conducted on the Determinants of Commercial Banks deposit mobilization is expected to be used by all stakeholders. Accordingly, the following are the significances that are attained from the study:

- This study is helpful to commercial banks to manage their deposit by identifying factors determining deposit mobilization and further identify which variable is the most important so that more emphasis has to be given
- It is also helpful to the regulatory body to take as an additional input for future policy making.
- It provides information for all stakeholders especially for boards and management of the commercial banks in order to minimize the impact of factors determining deposits mobilization by making them to design effective strategies.
- It serves as source of reference for further studies in the area of deposit mobilization.

1.6 **Scope of the Study**

The work of this research is delimited to some major macro and micro level factors that determine commercial bank deposit mobilization in Ethiopia. The research is not cover all commercial banks and all factors which affects the deposit mobilization of the commercial banks rather some banks has be selected purposively based on seniority and some factors are selected in the study.

1.7 **Limitation of the Study**

As of June 30, 2016 the number of banks engaged in operation reached 18 in Ethiopia which includes 17 commercial banks and 1 development bank. But this study was conducted on seven selected commercial banks in Ethiopia, excluding ten private commercial banks with less than 16 years services, and the other financial institutions, Micro finances institutions, saving and credit associations, Iqube and Idir respectively. The study excludes the year 2016 because of Commercial Bank of Ethiopia June 2016 report is not publish and not released to the public. The study focused only on one of the area of finance which the factors determining commercial banks deposit. The regressions have one dependent variable (total deposit of selected commercial banks), and eight independent variables including Interest Rate, Inflation, Government Expenditure, Money Supply, Liquidity ratio or Liquidity risk, Loan to Asset ratio or Credit risk, Return on Asset or ROA and Exchange rate

1.8 **Organization of the paper**

This thesis paper organized into five chapters. The first chapter is the introduction part which consists of the background of the study, history of banking development in Ethiopia, statement of the problem, objectives of the study, research questions, significance of the study, and delimitation of the study. The second chapter introduces related literature review which deals with the theoretical and empirical literatures on commercial bank deposits. The third chapter deals with research design and methodology of the study. The fourth chapter concerned with findings and discussion of the study. The fifth chapter which is the last but not the least focused on conclusions, limitations and recommendation of the study.

Chapter Two

2. Related Literature Review

Literature Review is prepared in two parts, the theoretical part and the empirical part. In the theoretical review part the theories that states about the commercial banks deposits and the variables that are claimed to affect it will be discussed. The empirical literature part discusses past st udies that were conducted on the area of factors determining commercial banks deposits.

2.1. Theoretical and Conceptual Literature Review

Financial sector mainly constitute financial markets and financial institutions. A financial market is a market in which financial assets (securities) such as stocks and bonds can be purchased or sold. Financial markets, thus, facilitate the flow of funds and thereby allow financing and investing by households, firms and government agencies (Madura, 2011). Examples include commodity markets, money markets and capital markets. Financial institutions (intermediaries) are institutions that provide financial services for their customers. They play an important role in the economy because they provide liquidity services, promote risk sharing and also solve information problems thereby allowing small savers and borrowers to benefit from the existence of financial markets.

Financial institutions can be divided into:

1. Depository institutions (e.g. commercial banks, savings institutions, credit unions) that obtain funds mainly through deposits from the public; and,

2. Non-depository institutions (e.g. finance companies, mutual funds, securities firms, insurance companies, pension funds) that finance their investment activities from the sale of securities or insurances.

Commercial banks are the most dominant depository institution. They serve investors by offering a wide variety of deposit accounts, and they transfer deposited funds to deficit units by providing direct loans or purchasing debt securities. Commercial banks serve both the private and public sectors, as their deposit and lending services are utilized by households, businesses, and government agencies.

2.1.1 Commercial Bank Deposit

Commercial bank deposits are major liabilities for commercial banks. (Kelvin, 2001) said that deposits of commercial banks account for about 75% of commercial banks liabilities. Commercial banks keep lending as long as they possess adequate deposit.

Therefore, banks will be better off if they are mobilizing more deposits. However, as (N. Desinga, 1975) indicates deposit mobilization is a very difficult task. The cost of intermediation for mobilizing deposits is also very important part of overall intermediation cost of the banking system as (E.A. Shaw 1995) indicates. In spite of the difficulties, deposits play an important role not only to the banking sector but also the overall economy.

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

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

2.1.2 Major Types of Deposit products

Deposit account is a savings account, current account or any other type of bank account that allows money to be deposited and withdrawn by the account holder. These transactions are recorded on the bank's books, and the resulting balance is recorded as a liability for the bank and represents the amount owed by the bank to the customer. Some banks may charge a fee for this service, while others may pay the customer interest on the funds deposited. The account holder

has the right to withdraw any deposited funds, as set forth in the terms and conditions of the account. The following are most common type of bank deposit.

Demand Deposit: it consists of funds held in an account from which deposited funds can be withdrawn at any time without any advance notice to the depository institution. Demand deposits can be "demanded" by an account holder at any time. Many checking accounts today are demand deposits and are accessible by the account holder through a variety of banking options, including teller, ATM and online banking.

Savings Account: is a deposit account held at a bank or other financial institution that provides principal security and a modest interest rate. Depending on the specific type of savings account, the account holder may not be able to write checks from the account (without incurring extra fees or expenses) and the account is likely to have a limited number of free transfers/transactions.

Time Deposit: time deposit or certificate of deposit (CD) held for a fixed-term, with the understanding that the depositor can make a withdrawal only by giving notice. A time deposit is an interest-bearing bank deposit that has a specified date of maturity. Generally speaking, the longer the term the better the yield on the money (Dereje, 2017)

2.1.3 Importance of Deposit mobilization

A. A source of investment

According to (Ongore & Kusa, 2013), Intermediation function of banks play a vital role in the efficient allocation of resources of countries by mobilizing resources for productive activities. They transfer funds from those who don't have productive use of it to those with productive venture. (Nwanko, Ewuim, & Asoya, 2013) States that, savings are resources which one decides to put aside for investment purposes and not for luxury. What people save, avoiding to consume all their income, is called "personal savings". These savings can remain on the bank accounts for future use or be actively invested in houses, real estate, bonds, shares and other financial instruments.

B. Low cost

According to (Shettar & Sheshgiri, 2014) the success of the banking greatly lies on the deposit mobilization. Performances of the bank depend on deposits, as the deposits are normally considered as a cost effective source of working fund.

Elser, Hannig, & Wisniwski, (1999) savings are a source of funds with low financial costs i.e., interest costs, Compared to other commercial funds. With regard to financial costs, most of the institutions apply a differentiated interest rate schedule, compensating for the higher administrative costs with no or low interest rates on small savings and increasing them according to the size of the deposit.

C. A source of profit

According to (Varman, 2005) the ability of a bank‘s management and staff to attract checking and saving accounts from business and individuals is an important measure of the bank‘s acceptance by the public. Deposits provide most of the raw materials for bank loans and thus represent the ultimate source of bank profits and growth.

Tuyishime, Memba, & Mbera, (2015) also affirmed that, Deposits are an indispensable tool commercial banks use to enhance its profitability through advancing deposits mobilized to its customers in form of loans which make in return interest to commercial banks.

D. Economic Growth and Development

According to (Ongore & Kusa, 2013), In addition to resource allocation good bank performance rewards the shareholders with sufficient return for their investment. When there is return there shall be an investment which, in turn, brings about economic growth. On the other hand, poor banking performance has a negative repercussion on the economic growth and development. Poor performance can lead to runs, failures and crises. Banking crisis could entail financial crisis which in turn brings the economic meltdown.

2.1.4 The Effects of Poor Deposit Mobilization

According to (Khalayi, Ondiek, & Musiega, 2014) there are a number of effects that are brought about as a result of the poor deposit mobilization. These Include

- Inability to disburse loans to qualifying members on demand,
- Inability to meet operation costs,
- Inability to service debts,
- Unstable board of directors due to frequent reshuffle as disgruntled members vote officials out,
- Quitting of members to competitors,
- Falsification of financial reports.

These can cause the voting out of elected officials on accusations of fraud, financial mismanagement practices. In addition, dissatisfied members can quit in large numbers to join alternative and emerging financial institutions for fear of losing their savings if the situation deteriorates.

2.2 **The Determinants of Commercial Banks Deposits- Theory**

According to (Dereje, 2017) the determinants of commercial band deposit is classified as macroeconomic factors and micro economic factories that can affect the growth of commercial banks deposits. There are discussed as follows:-

2.2.1 Macroeconomic Factors

The external or macro determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and deposit positions of Banks. The macroeconomic factors that can affect bank's deposit include factors such as; Deposit Rate, Exchange Rate, Inflation and Government Expenditure among others.

Deposit Rate

The main focus of every financial system is financial intermediary that is, mobilizing financial resources from the surplus sector and lend to the deficit outlets to facilitate business transactions and economic development based on the monetary and fiscal policy of the nation. The attraction for getting the deposit from the surplus sector is interest payment, which must be reasonable and acceptable to the owner of the money (Dereje, 2017).

The classical theory of interest otherwise called the demand and supply theory of interest, maintains that the rate of interest is determined by the demand for and the supply of funds by

businessmen and households respectively. The supply of funds is governed by the time preference and the demand for capital by the expected productivity of capital.

McKinnon (1973) and Shaw (1973) argue that for the typical developing country, the net impact of a change in real interest rate on saving is likely to be positive. This is because, in the typical developing economy where there is no robust market for stocks and bonds, cash balances and quasi-monetary assets usually account for a greater proportion of household saving compared to that in developed countries.

Government Expenditure

Government expenditure refers to all monetary expenditure on goods and services made by the government on behalf of the community. It includes both recurrent and capital expenditure on items like health, education, administration and so on. The recurrent expenditure refers to the expenditures that occur at regular intervals in the annual budget of the government. These expenses include expenditure on defense, administration and debt servicing particularly payment of interest on loans, road maintenance, and cost of health and education services.

Sahoo et al (2001) in the Indian case "accepts that "saving is the engine of growth. Expenditure that creates jobs ensures regular income and savings, hence, bank deposits increase. On the other hand, expenditure on investment such as importation of capital goods, development of institutional and infrastructure facilities which aid private sector investments may generate employment and multiplier on savings and output in the long run. Where the latter situation holds, all things being equal, deposit mobilization will increase".

Generally, an Increase in government expenditure injects more money into the hands of the people and assuming no change in inflation and tax rates as well as demand for more goods and services, more income will be available for savings and deposits will increase accordingly. Also, where expansionary government expenditure leads to increase in domestic borrowing, interest rates on loans increase and all other things being equal, more deposits would be attracted.(Osie, 2015)

Inflation

"Banks in their quest to boost deposits and increase self-sufficiency must analyze the behavior of depositors in a period of inflation. The latter is the persistent increase in the general price level for a specified period of time. Thus, it is a fall in the market value of money (purchasing power) as a result of persistent rise in prices. Real value of money declines resulting in benefit to debtors and loss to creditors" (Brealey and Myers 2003). "From the monetarist point of view inflation is demand pull and an exogenous rise in money supply is the causality. In the short run an increase in money supply induces demand above supply of goods and services which causes prices to rise until the market adjusts to the equilibrium.

The structuralist, however, argues from the effect of changes in the socio-political, economic and institutional structures with the view to increasing growth in the economy of market failures". (Kirkpatrick and Nixon, Beim 2001) expresses the most popular view held by economists by characterising on int1ationary period as the period of uncertainty. Distortion of capital gains and negatively impacts on the real interest rates making markets difficult to allocate resources efficiently (Beim et al., 2001). Investors with surplus funds hold on to assets which can appreciate in value rather than money whose value are frequently eroded away. Empirical evidence from Latin American countries as stated in the World Development Reports indicates that inflation is an implicit tax on depositors and has the capacity to reduce profits through low deposit rates. A strong correlation exists between real interest rates and inflation as both can impact on deposits and savings

Monetary Policy

Monetary policy to be "a policy used by a government or central bank to influence the supply of money and credit in private hands, used for controlling inflation. In Ethiopia the government controls money supply through the central bank unlike in the United Kingdom where the Bank of England is independent of the government in pursuing monetary policies. The central bank being the main actor in this respect uses monetary tools such as reserve ratios, discount rates, and open market operations to control money supply and inflation in the economy. Control of money supply has a direct relationship with deposit mobilization and inflation control.

Exchange Rate

Exchange rates are quoted as foreign currency per unit of domestic currency or domestic currency per unit of foreign currency (Bishop, 2006). Exchange rate allows denominating the cost or price of a good or service in a common currency. As Thomas's explanation, the term depreciation and appreciation is used to show the decrease and increase in the value of currency. Depreciationis a decrease in the value of currency relative to another currency. Appreciationis an increase in the value of a currency relative to another currency. The main factors that influence exchange rate are: inflation, interest rate, speculation, and change in competitiveness, balance of payment, government debt, government intervention and Economic growth / recession.

According to (Nugel 2012) as currencies depreciated in one country deposit will be reduced since investors tend to withdraw deposit and exchanged to keep it by appreciating currency (Hard currency) or invest in another form of investment rather than bank deposit. (Alemayeh 2015) also confirms that for developing country in general saving is negatively correlated with unstable exchange rate.

2.2.2 Bank Specific Factors

The Bank specific factors are factors that are related to internal efficiencies and managerial decisions. Such factors include determinants such as Bank Profitability, Bank Liquidity, Bank Credit Risk and the like.

Bank Profitability

Many researches have found return on asset to be significantly related to commercial banks deposit mobilization. The known measures of banks deposit performance over the years have been either based on return on assets or return on equity. However, in the measuring these performance, many researchers have argued for the return on assets (ROA) as against return on equity (ROE). According to (Hassan & Bashir 2003), "ROA shows the profit earned per dollar of assets and most importantly, it reflects the management's ability to utilize the bank's financial and real investment resources to generate profits. For any bank, ROA depends on the bank's policy decisions as well as on uncontrollable factors relating to the economy and government regulations".

Rivard and Thomas (1997) suggest that "bank deposit performance is best measured by ROA in that ROA is not distorted by high equity multipliers and ROA represents a better measure of the ability of a firm to generate returns on its portfolio of assets". ROE on the other hand, "reflects how effectively a bank management is in utilizing its shareholders funds. Since ROA tend to be lower for financial intermediaries, most banks heavily utilized financial leverage heavily to increase their ROE to competitive levels". (Hassan and Bashir, 2003).

Bank's Liquidity

Liquidity can be defined as a measure of the relative amount of asset in cash or which can be quickly converted into cash without any loss in value available to meet short term liabilities. The liquidity measure provides suggestions about the level of liquidity on which the commercial banks are operating.

According to (Olagunju, Olanrewaju, Olabode and Samuel 2011) Liquidity involves three elements or characteristics namely Marketability, Stability and Conservatism. Liquid assets should be more marketable or transferable. That means, they are expected to be converted to cash easily and promptly, and are redeemed prior to maturity. All assets that cannot be redeemed at maturity are said to be illiquid. the fact that the prices of the former are fixed and have lesser variability than the prices and value of the later that experience considerable fluctuation.

Conservatism quality of liquidity refers to the ability of the holders of liquid assets to recover the cost of the asset on the time of resale. On the basis, common stocks are not considered highly liquid asset despite its ready marketability. This can be attributed to the fact that on certain periods, the current prices are lower than their initial or original prices. In consideration of these qualities, people and firms decide to hold cash which is the only perfectly liquid asset. Another quality of liquid asset is price stability. Based on this characteristic, bank deposits and short term securities are more liquid than equity investments such as common stocks and real estates due to Banking liquidity is the ability to meet obligations when they come due without incurring unacceptable losses.

Credit Risk

According to (Osie, 2015) "institutional governance, ownership and reputation of the financial institutions is key factors for successful deposit mobilization. Prior to offering voluntary

deposit services, Financial Institutins must ensure that they have the institutional structures that allow them to mobilize savings legally. "Institutional capacity requires that adequate governance, management, staff and operational structures are in place to provide savings services". (Ledgerwood, 1998) Moreover, (Klaehn et al, 2002) expound that the "vision, commitment and disposition of the pro poor institutions are critical in successfully mobilizing deposit from the public".

2.3 Empirical Literature Review

Under this section, previous empirical studies on the determinants of commercial banks deposit mobilization and related studies in developed and developing countries like Ethiopia will be reviewed.

The past models for banks deposit have been further developed in recent times and empirically tested worldwide. Many empirical studies have estimated the effects of various economic and demographic variables on bank deposit in cross-country, using time series and panel data samples. The literature suggests that there are a number of factors that crucially determine the commercial banks deposit including Interest Rate, Inflation, Gross Domestic Product(GDP) ,Equity to Asset ratio, Liquidity ratio or Liquidity risk, Loan to Asset ratio or Credit risk, Return on Asset or ROA and Bank size. The significance of each factor, however, differs across group of countries, countries, and time period.

Empirical Review about Determinant of Commercial Banks Deposit Outside Ethiopia

Azmi & Haron (2006) this study investigates the structural determinants of deposits level of commercial banks in Malaysia, using cointegration techniques. The results suggest that determinants such as rates of profit of Islamic bank, rates of interest on deposits, Base Lending Rate, Kuala Lumpur Composite Index, Consumer Price Index, Money Supply and Gross Domestic Product have significant impact on deposits. We also find that in most cases, customers of conventional system behave in conformity with the savings behavior theories.

This is a seminal work, which attempts to identify factors that influence depositors' behaviour in Malaysia. Both financial and economic variables are introduced and their long- and short-run relationships examined using cointegration techniques. We consider in our analysis a number of factors that have been identified in the economic literature as potential determinants of savings.

This includes rates of return, inflation, money supply and GDP. New variables, namely base lending rate and composite index were introduced as a factor believed to have an influence on the level of deposits in Malaysia. In most cases, the behavioural patterns of Malaysian depositors are in conformity with the existing saving theories. However, there are also deviations from these theories. For example, both inflation and returns on deposit are supposed to have a positive relationship but this study found otherwise. Similarly, instead of an inverse relationship, both composite index and money supply have positive sign with savings account. For each of the deviation found, an explanation has been put forward. Finally, this study does not differentiate the behavioural pattern of different classes of depositors. It is interesting to examine whether different types of depositors have the same long-run influencing factors. In view of this, we will focus this subject matter in our future research agenda.

Siaw & Lawer (2015) the study investigates the influence of selected macroeconomic and financial level variables on bank deposits in Ghana. It specifically examines the dynamic effect of deposit interest rate, inflation, monetary policy rate, growth of money supply and stock prices on the level of bank deposits. The dataset for the study consisted of quarterly data spanning the years of 2000 to 2013 gathered from the Bank of Ghana monetary time series database and the World development Indicator (WDI) database. Employing a Co-integration analysis and Fully Modified Ordinary Least Square (FMOLS), both short and long run elasticity's of the model are estimated. The short run effects of a change in the independent variables on bank deposit were found to have the expected influence on bank deposits. However, only inflation and growth of money supply variables were found to be significant in explaining the short run dynamics of bank deposit.

A change in the growth of money supply produced a negative sign as expected by the model and a change in CPI also produced a negative impact on bank deposit, which conforms to theory. The study results also reported a significant speed of adjustment (error correction term) with the sign of the error correction factor indicating that the variables share a common trend in the long run, and that approximately 15 per cent of any disturbances in the model is corrected every year.

The results also revealed that the saving pattern of the Ghanaian depositor conforms to existing theories, although there were some deviations. The study found that inflation as a measure of consumer price index (CPI) negatively impacts on bank deposits in both the short run and long rum. This means that in periods of high inflation, economic agents, both households and firms are

forced to supplement their expenses by drawing from the bank accounts, hence a reduction in bank deposits.

It is therefore imperative for banks to adopt some promotional campaigns and other prudent measures to curb the adverse effects of inflation on deposits. In anticipation of inflation, banks could adjust their deposit interest rate in some high volume deposits in order to minimize the level of leakages (withdrawals) from the bank's vaults. Again, the growth of money supply was found to have both negative and positive impacts on the level of bank deposits in the short and long run.

However the long run positive effect of growth of money supply on bank deposits was found to far outweigh the negative effect in the short run. It is however also important that the bank curbs the level of withdrawals in the short run when there is an increase in money supply. On the macroeconomic level also, this result serves as a tool to the policy makers, especially the Central Bank in its monetary policy. Thus, if the bank of Ghana wants to reduce the level of loan advancement by commercial banks in the short-run, it could achieve this by implementing a contractionary policy through decreases in money supply. This results in excess demand for money which increases the cost of loanable fund, hence a reduction in people's willingness to acquire or take bank loans all things being equal.

Osei, (2015) the general objective of this study is to examine whether equity to asset ratio or capitalization, Liquidity ratio or Liquidity risk, Loan to asset ratio or credit risk, Return on asset or profitability and Log of assets or bank size are the factors that determine rural banks deposit mobilization in Ghana. The research included 112 rural banks in Ghana out of a total number of 137. These banks have been selected depending on the availability of their quarterly data from 2009Q1 to 2013Q4. Panel least regression with fixed effects has been used for analysis. The equity to asset ratio also known as the capitalization of the rural banks was found to negatively insignificantly influence rural banks deposit accumulation meaning a rise in capital requirements might lead to lower levels of deposit and vice versa.

Again, the results indicated that liquidity ratio thus cash and due balances held at other financial institutions to total assets is positively correlated with rural banks deposit growth rate. This suggests that as liquid assets of rural banks increases deposit mobilization also increases and vice versa.

The coefficient of loan to asset ratio is positively and significantly related to rural banks deposit mobilization. A rise in the loan portfolio of the bank has a significant impact on the banks‟ ability to attract deposit from the general public and in the same vein a reduction in loan portfolio can reduce a banks deposit growth rate. Most deposit customers of rural banks have the desire to contract loans from the bank they save with after a certain point in time. The banks failure to meet this expectation will cause a sense of disappointment in the customers and hence may stop contributing or saving with the bank. However, the banks ability to deliver on its promises of providing loans to the clients has the potency of attracting several deposit customers.

Return on asset, representing profit before interest and tax, was found to have a negative relationship with bank deposit mobilization but the relationship is however insignificant. An increase in profit leads to a decrease in rural deposit mobilization whiles a decrease in deposit mobilization can be attributed to fallen profitability. The insignificant nature of this fact could be due to the fact that in Ghana, the customers of rural banks are not ways better informed about the financial performance of a rural bank. Besides rural depositors do not see any motivation in rural banks profit since they are not the ultimate beneficiaries of the profits.

The coefficient of size (log of assets) is positive and significant, suggesting size is important in explaining deposit performance of rural banks, with this finding being consistent with most studies of Western banks, where size has a positive influence on performance, which is often attributed to benefits achieved through economies of scale. But it is inconsistent with the results of (Shih et al. 2007) and (Lin and Zhang 2008). This result also agrees with (Sufien et al., 2008) that "log of total assets is a variable that measures bank size and is generally used to capture potential economies or diseconomies of scale in the banking sector". Bigger banks are able to open branches at the convenience of depositors. As the rural bank gets closer to the people, more people are able to save.

Empirical Review about Determinant of Ethiopian's Commercial Bank Deposit Mobilization

Andinet (2016) the aim of this study is to examine factors influencing deposit mobilization in private commercial banks in Ethiopia. In doing so, the study adopted quantitative methods research approach using secondary data. The study had found variables that can affect the total deposits of

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

Kibebe(2016) the research tried to determine factors that affect deposit mobilization, the associated costs of deposit mobilization in private banks. Therefore, the study adopts mixed approach to gather the data. The primary data is gathered using questionnaire. Sampling method of the primary data is purposive sampling technique. While the secondary sources of data were extracted from annual reports of all private commercial banks of Ethiopia, data from National Bank of Ethiopia (NBE) and from Central Statistical Authority (CSA). Regarding the secondary data, the study used time series data from 2000-2014 for analysis made using Classical linear regression method. The study shows that, Age dependency ratio, Investment and money supply, are the most significant factors of deposit mobilization activity. The other variable such as Per capita income has insignificant power to influence the dependent variable. As a result, the study recommended that, Government should increase investment so as to promote economic growth to mobilize deposits since there exists a positive relationship between Deposit and Investment. And private banks ought to increase number of branches to mobilize more resources.

Shemsu(2015) this study aimed to identify and evaluate those factors affecting bank deposit in general by taking Commercial Bank of Ethiopia as evidence. Accordingly, the researcher adopts mixed research approach. Regarding to the qualitative data; questionnaire is used to gather information from the employees of commercial bank of Ethiopia particularly for those employees

who actively participated in deposit mobilization tasks in CBE city branches. Regarding to the secondary data; time series data covering 1998 -2014 was analyzed. First, the time series data were assessed using descriptive statistics for the variables as well as the test for heteroskedasticity, autocorrelation and normality testing to know if the assumptions of CLRM violated or not.

Second, estimated model was a single regression equation with deposit as the dependent variable and explanatory variables as deposit interest rate, overall inflation rate, number of branch opening, gross domestic product, individual foreign remittance and dummy variable.

Estimation was done using Ordinary Least Squares technique by E-views7 statistical package. The results from economic analysis showed that all the explanatory variables were positively correlated with the explained variable. Among these variables, branch opening is an important strategy for deposit mobilization, it is highly significant than others. Individual remittances from diasporas is also next to branch opening is significantly affects CBE's deposit. The others are affects positively and can increase CBE's deposit. And finally, the study had recommended what should be done to encouraging deposits growth by Commercial bank of Ethiopia for the benefit of the domestic deposit mobilization.

Dereje (2017) the purpose of this study is to investigate determinants of deposit mobilization in private commercial banks of Ethiopia using panel data of six private commercial banks from year 2002 to 2012. The study used both quantitative and qualitative research approach. Secondary financial data are analyzed using multiple linear regressions models for the six bank"s deposit. Fixed or random effect regression model was applied to investigate the impact of bank branches, exchange rate, Real Gross domestic product, Capital Adequacy and Liquidity on private commercial banks deposits. Besides, the study used primary data analysis to solicit managers" perception towards the determinants of private commercial banks deposit mobilization. The empirical results from regression analysis showed that bank branches, exchange rate, and real gross domestic product affects deposit of the bank positively whereas, capital adequacy and liquidity affects the deposit of the private banks negatively. This implication show that better capitalized banks tend to create less liquidity that leads to mobilize little deposit amount. On the other hand the feedback of respondents depicted that managerial efficiency, government policy, convenience of bank office, technology, bank size and awareness of savings by society affected deposit level of the banks significantly. Thus, management bodies of private commercial banks should strive to

strengthen the identified significant factors and government bodies should also see the adverse effect of tight polices imposed on the existing private commercial banks as well as for the new entrant banks.

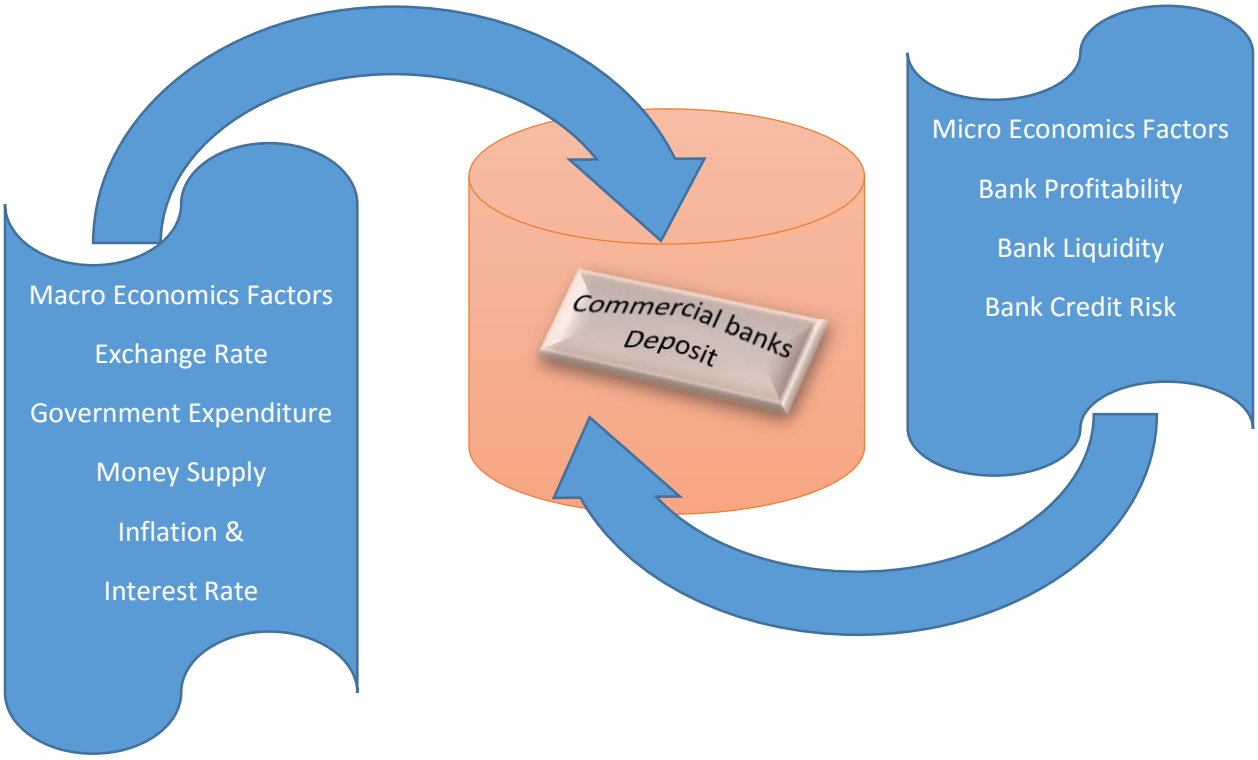
Giragn (2015) this paper then explores the theoretical as well as empirical analysis of those factors having an impact on deposit volume in banks and even assesses which ones are more significant or less significant. To do the practical investigation in terms of commercial banks in Ethiopia, the researcher collected the relevant data from annual reports of twelve years (2001/2-2012/13) and from questionnaires and interviews made to senior bank officers of seven banks. The data is analyzed through the econometric analysis using SPSS software.

The study reveals that the branch expansion, the money supply, the exchange rate of Birr to USD and general inflation are the most significant factors of deposit mobilization activity. The other variables-deposit rate and real per capita GDP growth rate have insignificant power to influence the dependent variable. In this research, as opposed to the conventional economic theory, the deposit rate is found to have negative relation against the deposit volume for the period under study. The study also exposes that the deposit mobilization activity is becoming challenging, its associated costs are escalating and the competition is also becoming stiff-the outcome of the competition favoring the big size state banks. Beyond that the government policies are also favoring the latter in an effort to mobilize huge fund for a national development activities. The research recommends that banks have to do much in branch expansion studying potential deposit areas.

2.4 **Conceptual Framework**

From the above theoretical and empirical literature reviews the main factors that determine the deposit growth of financial institution specifically banks is divided by mainly by both macro and micro economic factors. This study used both macro and micro determinants of bank deposit that includes Inflation rate, Interest rate, Exchange rate, Money Supply, Government Expenditure, Bank Profitability and Bank Credit Risk. The study has quantified how these variables are determining the deposit of commercial banks in Ethiopia.

The conceptual schema of the relationship between the dependent variable (commercial banks deposit) and independent (Interest Rate, Inflation, Government Expenditure, Money Supply, Liquidity ratio or Liquidity risk, Loan to Asset ratio or Credit risk, Return on Asset or ROA and Exchange rate) variables are depicted here below:



Source; The Researcher Construction (2017)

2.6 Knowledge Gap

Mobilization of deposits is one of the important functions of banking business. It is an important source of working fund for the bank. Deposit mobilization is an indispensable factor to increase the sources of the banks to serve effectively. Mobilization of deposit plays an important role in providing satisfactory service to different sectors of the economy. The success of the banking greatly lies on the deposit mobilization. Performances of the bank depend on deposits, as the deposits are normally considered as a cost effective source of working fund.

As it was discussed in the literature review part, Most of study undertaken in our country related to the topic of determinates of deposit mobilization focus on a separately treating the total deposit amount to the private banks and the public Banks and some internal and external factors that are reviewed by different researchers indifferent research techniques also showed different effect on Bank deposit. Thus, the inconsistency funding among researchers and little attention given by researcher on the determinate of the overall deposit mobilization commercial banks of Ethiopia, motivated the researcher to undertake a research in this particular area by adding new additional variable to fill these gap.

Chapter Three

3. Research Methodology

3.1 Introduction

This chapter covers the research approach, the type and source of data and the research design. It explains the type of data used for the study and the techniques employed in identifying the factors that influence the mobilization of deposits, identifies the challenges facing commercial banks in deposit mobilization and offers recommendation. The validity and reliability of the data were also high –lighted.

3.2 Research Approach and Research Design

The study examine the cause and effect relationships between growth of deposit and its determinant, therefore it is an explanatory research and the problem identified factors affecting the outcome having numeric value, it is quantitative approach.

Therefore the researcher had employed quantitative research methodology and techniques using an econometric model and Descriptive Quantitative & Qualitative Analysis in order to address the research questions. Multiple regression using OLS (Ordinary Least Square) estimates of the dependent(Total Deposit Amount) and independent five macroeconomic variables Inflation, Interest Rate, Money Supply, Government Expenditure and Exchange and three bank specific variables Bank Profitability, Bank Liquidity and Bank Credit Risk were employed. It uses time series data covering the period from 2000 through 2015.

3.3 Data Types and Source

The sources of data for this research were secondary sources. The researcher gathered the annual reports of seven commercial banks from proper source. The bank specific data were collected from financial statements (i.e. Balance Sheet and Profit & Loss Statement) of each selected commercial banks included in the sample and macroeconomic data were collected from NBE and Central Statistical Authority (CSA). The data were collected from 2000 to 2015 on annual base and the figures for the variables were on June 30th of each year under study.

3.4 **Sample and Population**

As to June of 2016 there are eighteen banks in Ethiopia, These are Commercial bank of Ethiopia, Awash International Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C, Nib International Bank S.C, Dashen Bank S.C, Development Bank of Ethiopia, Cooperative Bank of Oromia S.C, Lion International Bank S.C, Zemen Bank S.C, Oromia International Bank S.C, Buna International Bank S.C, Berhan International Bank S.C, Abay Bank S.C, Addis International Bank S.C, Debub Global Bank S.C, and Enat Banks S.C. However, from all the above listed banks, Development Bank of Ethiopia is not commercial bank. Among the total eighteen banks, two of them are owned by the government and the remaining sixteen are privately owned (Birritu 2015) Hence, The main objective of the study is to investigate the determinant of commercial banks deposit in Ethiopia, the seventeen commercial banks can be treated as population of the study.

In line with balanced panel data approach, to meet the desired objective of this study and to make generalization from sample to population, the researcher used maximum combination of years and number of banks and achieved the maximum number of observations through purposive sampling technique. Thus, out of seventeen commercial banks that are registered and operated in Ethiopia, seven are selected.

Therefore, the matrix for the frame is 16*7 that includes 112 observations. The sampled commercial Bank are Commercial Bank of Ethiopia, Awash International Bank S.C, Bank of Abyssinia S.C, Wegagen Bank S.C, United Bank S.C, Nib International Bank S.C, and Dashen Bank S.C,

These Commercial Banks are selected purposively, because the use of purposive sampling enables the researcher to generate meaningful insights that help to gain a deeper understanding of the research phenomena by selecting the most informative participants that is satisfactory to its specific needs.

3.5. Description of Variables

This section deals with the analysis of variables for determining commercial banks deposit mobilization. A summary of the variables and how they are measured is presented in table.

3.5.1 Dependent variables

In this study, commercial banks deposit has been used as the dependent variable. Deposit represents the total accumulated amount of customer financial savings with the commercial banks. The performance of commercial banks is best measured by the size of its deposit liabilities. A large portion of commercial banks asset base is often finance by their deposit mobilization. For instance, a commercial banks ability to lend more loans to its customers will be determined by the size of its deposit. The growth of the bank is therefore subject to its ability to mobilize more deposit at cheaper cost from the general public. In view of this it is worth studying and identifying the major determinants of efficient deposit mobilization.

3.5.2 Independent variables

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

1. Exchange Rate

The National Bank of Ethiopia (Central Bank) follows a managed floating exchange rate regime where the local currency Birr is pegged to the US Dollar. Accordingly, drastic movements in the nominal exchange rate are not expected. Birr continued to depreciate but at a very slow rate and it reached 18.19/USD at the end of 2012/13. This gradual depreciation is in line with the goal to enhance competitiveness of Ethiopian exports and attract foreign direct investment (IFD).

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

H1: Exchange Rate has significant effect on commercial banks deposit.

2. 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 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).

H2: Deposit interest rate has significant effect on commercial banks deposit.

3. Inflation

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

H3: Inflation has a significant effect on commercial banks deposit.

4. Government expenditure

All monetary expenditure on goods and services made by the government on behalf of the community is named as capital expenditure. It includes both recurrent and capital expenditure on items like health, education, administration and so on. The recurrent expenditure refers to the expenditures that occur at regular intervals in the annual budget of the government. These expenses include expenditure on defense, administration and debt servicing particularly

payment of interest on loans, road maintenance, and cost of health and education services. Thus, if Government expenditure increases, it will create additional job opportunities that lead to enhance the income of the nation and increase deposit mobilization of the society.

H4: Government Expenditure has insignificant effect on commercial banks deposit.

5. Bank's Liquidity

Managing liquidity is a daily process requiring bankers to monitor and project cash flows to ensure adequate liquidity is maintained. Maintaining a balance between short-term assets and short-term liabilities is critical. For commercial bank, clients' deposits are its primary liabilities, whereas reserves and loans are its primary assets. Bank liquidity can be measured with different liquidity ratio.

For the purpose of this study, Total loan and advance to deposit liquidity ratio is used. The ratio serves as a useful planning and control tool in liquidity management since commercial banks use it as a guide in lending and investment decision. Loans & Advances are the major portion of a bank's asset and it is the most earning asset of a bank. This ratio tells us the percentage of funding sources tied up by illiquid asset. It relates illiquid asset with liquid liability. This ratio also indicates the percentage of deposit locked in to illiquid asset. The ratio reflects the proportion of the customers' deposits that has been given out in the form of loans and the percentage that is retained in the liquid forms. As this liquidity ratio decreased, Bank can easily able to respond to their withdrawal needs, thus the following hypothesis is drawn

H5: Liquidity Ratio has significant effect on commercial banks deposit.

6. Credit Risk

According to (Osie, 2015) "institutional governance, ownership and reputation of the financial institutions is key factors for successful deposit mobilization. Prior to offering voluntary deposit services, Financial Institutins must ensure that they have the institutional structures that allow them to mobilize savings legally. "Institutional capacity requires that adequate governance, management, staff and operational structures are in place to provide savings services".

H6: Loan to Asset Ratio has significant effect on commercial banks deposit in Ethiopia.

7. Money Supply

Money supply is one of the tools used by the government in the conduct of its monetary policy. Hence, any changes in money supply can have a major impact on economic conditions. An increase in money supply makes loanable funds cheaper, thus reducing cost of borrowing for corporate and individual customers. In this case, it is expected that people will increase consumption and reduce savings and thus money supply will have an inverse relationship with deposits. On the other hand, it could also be argued as well that as more money is supplied to the economy, more deposits could put in banks accumulating the fund for transactional and investment purposes.

H7: Money Supply has significant effect on commercial bank deposit.

8. Profitability

Profitability accounts for the impact of better financial soundness on bank risk bearing capacity and on their ability to perform liquidity transformation (Rauch et al. 2008 and Shen et al. 2010). Most commonly, profitability is measured by return on asset (ROA) and return on equity (ROE). For the purpose of this study, the proxy of profitability is return on asset that measures the overall financial performance of banks and the return on asset (ROA) is measured by the ratio of net profit after tax to total Asset. (Bhalla 2006), in his book, explains ROA as a ratio which is used to measure the company's efficiency in the use of its assets to generate profit. It means that a more efficient company will generate a higher level of profit from a given level of total asset than its less efficient competitor.

Finger and Hesse (2009) state that higher bank profits would tend to signal increased ban soundness, which could make it easier for these banks to attract deposits. (Rachmawati and syamsulhakim 2004) also find that there is a long run relationship between commercial banks deposits and the profitability of the banks. This study considered there is a positive relationship between Profitable & Bank's Deposit and draws the following hypothesis.

H8: Return on Asset has insignificant effect on commercial banks Deposit growth in Ethiopia.

Table 3.1 Variables, definitions, notations and expected signs

Dependent Variable

Variable	Definitions	Notations	Expected Signs
Deposit mobilization of commercial banks	The annual growth of the total amount of deposit	DEP	

Independent Variables

Variable	Definitions	Notations	Expected Signs
Interest Rate	The rate of interest on deposit given by commercial banks	INT	+
Inflation	The overall inflation rate in Ethiopia	INF	-
Money Supply	The Growth of Broad Money Supply	MSG	+
Loan to Asset ratio	Total loans divided by total assets	CRISK	+
Return on Asset	Profit before interest and tax divided by total assets	ROA	-
Government Expenditure	The growth of total amount of the Current and Capital Expenditure	GOVEXG	_
Exchange Rate	The Growth Ethiopia Birr with USD	EXG	+
Bank Liquidity	Total Deposit divided by Total Asset	LIQ	_

Source; The Researcher Construction (2017)

3.6 Model Specification

The theoretical literature discussed above suggests that commercial bank deposit, Inflation, Interest Rate, Money Supply, Government Expenditure, Exchange Bank Profitability, Bank Liquidity and Loan to Asset Ratio are related. (McKinnon 1973) for example, "argues that investment in a typical developing country is lumpy and self-financed and hence cannot be materialized unless adequate savings are accumulated in the form of bank deposits"

Following these theoretical views and based on (Ang and McKibbin 2005), "the study estimated the linear regression equation by calculating the values of the variables in the following equation":

$$DEPG_{it} = \alpha_i + \beta_1 * INT_{it} + \beta_2 * INF_{it} + \beta_3 * MSG_{it} + \beta_4 * CRISK_{it} + \beta_5 * ROA_{it} + \beta_{it} * GOVEXG_{it} + \beta_{it} * EXRG_{it} + \beta_{it} * LIQ_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots eq(1)$$

Where`q

$\boldsymbol{DEP_{it}}$ is the dependent variable and represents the growth total amount of deposits held by all commercial banks for period t,

INT_{it} Represents commercial bank interest rate on deposit for period t,

INF_{it} Represents the overall inflation rate in Ethiopia for period t,

MSG_{it} Represents the growth broad money of Ethiopia for period t,

$GOVEXG_{it}$Represents the growth of government expenditure for period t,

EXG_{it}Represents the growth of the exchange birr to USD for period t,

LIQ_{it}t Represents total deposit to total asset ratio for period t,

CRISK$_{it}$t Represents Loan to asset ratio for period t ,

ROA$_{it}$t Represents Bank Profitability for period t,

µt represent the stochastic error term of the linear regression model. It also represents all the relevant variables, which were omitted from the model as well as the random errors from the estimation process and

β represent the estimated parameters or represent the slope co-efficient to the dependent variable.

3.7. Data Analysis Methods

Data analysis as defined by Montgomery (1991) is a careful examination of collected information in an organised form in order to understand the growing trend in any situation. Creswell (2005) defined data analysis as a process which involves drawing conclusions and explaining findings in words about a study.

Panel regression analysis has conducted using E-View 9 data analysis econometric packages to determine the exact nature of the relationship that exist between commercial banks deposit and Interest Rate, Inflation, Government Expenditure, Money Supply, Liquidity ratio or Liquidity risk, Loan to Asset ratio or Credit risk, Return on Asset or ROA and Exchange rate in Ethiopia over the period under study. Prior to the estimation of the regression line, descriptive analysis was used to describe the behavior of the individual variables over the period under review. Correlation analysis was also conducted to see the relationship among the dependent and independent variables. This would help to get an initial picture as to the nature of the relationship among the variables before proceeding to regression analysis.

Ordinary Least Square

According to Brooks (2008), ordinary least squares (OLS) or linear least squares is a method to estimate the slope and intercept in a linear regression model. This study used an ordinary least squares (OLS) regression to estimate the linear equation. The rational for choosing OLS is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks, 2008). In addition, as noted in Petra (2007) OLS outperforms the other estimation methods when the following holds; the cross section is small and the time dimension is short. Therefore, as far as both the above facts hold true in this study it is rational to use OLS. Thus, the following section discussed the CLRM assumptions.

According to Brooks (2008), the assumptions of ordinary least squares are:

1. The assumption of average value of the error is zero $E(u_t)=0$.
2. The assumption of Homocedasticity $Var(u_t)=\sigma^2<\infty$.
3. The assumption of autocorrelation $Cov(u_i,u_j)=0$ for $i \neq j$.

4. The assumption of independent variables are non-stochastic $Cov(u_t, x_t)=0$.
5. The assumption of disturbance are normally distributed $u_t \sim N(0, \sigma^2)$.

3.8 Diagnostic Analysis

Diagnostic checking is done to test whether the sample is consistent with the above assumptions. If all the above assumptions are consistent with the sample, E-view result will be accurate and reliable. The following tests are done in this research to test the above assumptions.

Heteroscedasticity

According to Brooks (2008), Heteroscedasticity means that error terms do not have a constant variance. If Heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. There are several tests to detect the Heteroscedasticity problem, which are Park Test, Glesjer Test, Breusch-Pagan-Goldfrey Test, White's Test and Autoregressive Conditional Heteroscedasticity (ARCH) test. In this study, the popular Breusch Godfrey test (BG test) was employed to test for the presence of Heteroscedasticity. The hypothesis for the Heteroscedasticity test was formulated as follow:

Autocorrelation

According to Brooks (2008), when the error term for any observation is related to the error term of other observation, it indicates that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model.

Normality

Normality tests are used to determine if a data set is well-modeled by a normal distribution. With the normality assumption, ordinary least square estimation can be

easily derived and would be much more valid and straight forward. This study used JarqueBera Test (JB test) to find out whether the error term is normally distributed or not.

Correlation Matrix & Multicollinearity

First, there is a correlation matrix created in which all variables are included. This matrix shows the correlations and their corresponding significance between the variables. The correlation matrix gives a first insight in the direction and the strength of the relationships between the variables. When the correlation between two or more independent variables is (too) high, the problem of multicollinearity occurs (Wooldridge, 2000). The problem of multicollinearity may lead to less accurate results in the analyses; the coefficients may have very high standard errors and perhaps even incorrect signs or implausibly large magnitudes. Multicollinearity can be detected by calculating the variance inflation factors (VIF) for each independent variable. Multicollinearity is present when VIF values are larger than 10. Furthermore, the critical value can be calculated by 1/VIF. If this value is below 0.1, this would mean that more than 90% of the variation in the variable is explained by the other variables. The variable(s) with VIF values larger than 10 or 1/VIF values below 0.1 should be excluded from the analyses (Rabe-Hesketh and Everitt, 2004)

Different empirical studies show different argument towards the mulitcolinarity problem. Mashotra (2007) stated that multilicolliantory problems exist when the correlation coefficient among variables greater than 0.75. Cooper and Schindler (2009) suggested that a correlation above 0.8 between explanatory variables should be corrected for. Lastly, Hair et al. (2006) argued that also correlation coefficient below 0.9 may not cause serious multicolinary problem. A correlation matrix was used in this study to ensure the correlation between explanatory variables. Then balanced panel data models are applied to control for multicollinearity.

3.9 Estimation Procedure

This study used deductive approach as it tried to find the relationship that exist between real deposit, Inflation, Interest Rate, Money Supply, Government Expenditure, Exchange, Bank Profitability, Bank Liquidity and Loan to Asset Ratio within the Ethiopia economy. The multiple regressions are used to statistically establish the model for the study by expressing, testing

operationally fit and examining the outcomes. Under the ordinary least squares estimation (OLS) of regression models, the assumptions of no serial correlation of the error terms as well as a constant variance of the error terms are held. The logarithm values of the time series data were taken before Ordinary Least Square (OLS) techniques were used for estimating a model for bank deposits.

3.10 Validity and Reliability of Data

Reliability of data concerns its consistency. Thus, reliability refers to the extent to which the data is the same irrespective of their source. That is, the data specifically, the annual reports of the commercial banks and publications of Association of Commercial Banks Apex Bank were not at variance with each other and therefore were reliable. This study, however, is threatened by the fact that the data used was mainly from secondary sources and therefore any error from that data collection process will definitely affect the outcome. The methodology used for this study was selected because of its suitability in its dependence on certified information from recognized institutions other than subjective opinions, which would have been associated with primary sources. The F test and the coefficient of determination were used to test the validity and reliability of the relationship established by the regression analysis.

Chapter Four

4. Data Analysis and Discussion of Findings

This chapter consists of the analysis of quantitative data identified in the previous chapter. It has five sections. The first section presents descriptive analysis of the dependent and independent variables using graphs and tables to provide an insight on the distribution of the data by bank and across time. Section two presents the classical linear regression model assumptions diagnostic test results. Section three presents the correlation analysis result of dependent and independent variables. The Fourth section presents the results of the regression analysis and finally discussion of the regression results are presented under section five.

4.1 Descriptive Analysis of Independent Variables and dependent Variable

In this section, the summary statistics of each variables of the study has been discussed. The variables included the dependent and independent. The dependent variable used in this study in order to measure the sampled commercial banks deposit is bank deposit growth whereas the explanatory variables are: Inflation, Interest Rate, Money Supply, Government Expenditure, Exchange, Bank Profitability, Bank Liquidity and Loan to Asset Ratio.

Table 4.1 Summary statistics – Dependent and Independent Variable

	DEPG	CRISK	EXG	GOVEXG	INF	INT	LIQ	MSG	ROA
Mean	0.303632	0.517066	0.065905	0.193725	0.120544	0.041875	0.762857	0.205013	0.025511
Median	0.264349	0.514303	0.049759	0.197997	0.1035	0.04	0.78	0.2068	0.027699
Maximum	1.666667	0.766741	0.250324	0.495741	0.364	0.06	0.87	0.3921	0.046801
Minimum	-0.03341	0.224572	0.003375	-0.027323	-0.106	0.03	0.49	0.1013	-0.02159
Std. Dev.	0.214557	0.116301	0.075259	0.125923	0.117516	0.010783	0.066012	0.07764	0.011003
Skewness	2.962934	-0.151924	1.52649	0.271817	0.496172	0.228547	-1.468586	0.621916	-1.000744
Kurtosis	17.24836	2.263165	4.169533	3.47462	3.063112	1.680218	5.864384	2.913885	4.901131
Jarque-Bera	77.60421	2.964502	49.87966	2.430415	4.61407	9.10354	78.54784	7.2545	35.56119
Prob	0	0.227126	0	0.296648	0.099556	0.010549	0	0.026589	0
Sum	34.00683	57.91141	7.381311	21.69724	13.5009	4.69	85.44	22.9614	2.857226

Sum Sq. Dev.	5.109832	1.501368	0.628692	1.760076	1.532916	0.012906	0.483686	0.669097	0.013438
Obs	112	112	112	112	112	112	112	112	112

Source: E-Views 9 Output

As shown in the table 4.1 above, the mean value of bank deposit growth was around 30.36 percent for sampled commercial banks in Ethiopia. It can be noticed that the bank deposit growth is between -3. and 1.66 percent. The minimum deposit growth is recorded by Wegagen bank the year 2012 and the maximum deposit growth is recorded by NIB bank after its establishment in 200. This means, commercial banks were achieved 24.3 percent average deposit growth achieved from depositors for the period of 2000-2015.

Theoretically, a growth rate of 32.1% in deposits may be considered sufficient to increase supply of loanable funds (Sylvester, 2011). The standard deviation among banks in terms of bank deposit growth was 21.4 percent; this confirms that there were high variations of deposit growth among commercial banks during the study period. Though the performances of deposit among commercial banks conform to supply the loanable fund, the trend of deposit is increasing year to year at increasing rate.

As shown in the result, there were higher credit risk the mean value of was 51.7 percent the standard deviation was 11.6 percent, while 76.7 and 22.4 observed as maximum and minimum values, respectively, exhibits higher dispersion larger than its mean value, this implies that commercial bank loan disbursement is increasing for the study period. The mean amount in credit risk is greater than the mean amount of the deposit collected. The result shows the commercial banks credit risk is higher.

In the above table 4.1 the result of average growth of exchange rate is 6.59 percent. The minimum and the maximum growth was .3 percent and 25.03 percent the growth is increasing from year to year with the standard deviation of 7.5 percent which is a very low dispersion.

The average growth rate of government expenditure is 19.37 percent with minimum growth rate negative 2.7 percent and the maximum growth rate of 49.5 percent. The result indicate the government expenditure increases from year to year with an increasing rate. The dispersion of the government expenditure growth is 12.59 percent which is moderate. The increase of the

government expenditure is related to the increase of the budget and the increase of capital expenditure for different big government projects.

The average general inflation of the country over the sample period was recorded 12.05 percent. The maximum inflation was recorded in the year 2008 value 36.4 percent and the minimum was in the year 2002 value -10.6 percent. The rate of inflation dispersed which exhibits higher dispersion larger than its average value over the periods under study towards its mean with standard deviation of 11.75%. This clearly shows that there was a bit more variations in terms of cost of living as it measured by inflation consumer price index.

The mean value of the bank deposit interest rate over the period under study was 4.2 percent with the maximum and minimum values of 6.0 percent and 3.0 percent respectively. There was little variation of interest rate towards its mean value over the periods under study with the value of standard deviation 1.07 percent. This implies that the stability of deposit interest rate for subsequent years under the study periods in a sense there is a control of minimum and maximum deposit interest rate by the government body. So there was no competition between commercial banks to attract the customers with a motive of return on deposit under the study period.

The average loan to deposit ratio of the studied commercial banks was 76.28 percent. The maximum loan to deposit ratio of 87 percent was registered in the year 2005 and 2006 by Awash International Bank. This indicates that, on average the commercial banks in Ethiopia have higher amount of volatile deposits which are tied up with illiquid loans. On the other hand, the minimum loan to deposit ratio of 49 percent was register in the year 2001 by NIB. The standard deviation of 6% percent shows there was low dispersion of loan to deposit ratio from its mean value.

The mean growth rate of broad money supply by the government is 20.5 percent, the maximum and the minimum growth rate of broad money supply was 39.21 percent and 10.13 percent. The growth rate of dispersion is 7.7 percent which is moderate.

Profitability is the likelihood of a business earning the desired level of income within a specific period of time under certain prevailing business conditions. Average return on asset of studied banks for the period from 2000 to 2015 was 2.5 percent. The minimum return on asset of -2.1 percent was registered in the year 2002 by CBE and the maximum return on asset of 4.6 percent was registered on the year 2011 by Wegagen Bank. The standard deviation of 1.1 percent

reveals that there was very little dispersion of average return on asset of studied banks towards their mean value.

4.2 Testing the Classical Linear Regression Model (CLRM) Assumptions

This study focuses on the relationship between banks deposit and the determining factors of bank deposit. The researcher had used the econometric model of multiple regressions. The model contains one dependent variable, eight independent variables, the constant term and the error term. The ordinary least square (OLS) method is used to come up with the econometric results. There are five assumptions made in relation to the classical linear regression model (CLRM).The researcher has tested if there exist the violation of these assumptions. The method used to test these assumptions by the researcher is described as follows:

The Assumption of Average Value of the Error is Zero

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. In our case the model have constant term which is proved 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, deposit of commercial banks, is explained by the independent variables.

The Assumption of Homoscedasticity

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

Ho: The assumption that there exists homoscedasticity

H1: There is no homoscedasticity (there is Heteroskedasticity)

Table 4.3 : The Heteroskedasticity test of the multiple regression

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.228693	Prob. F(8,103)	0.2899
Obs*R-squared	9.757276	Prob. Chi-Square(8)	0.2825
Scaled explained SS	12.47371	Prob. Chi-Square(8)	0.1313

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/02/17 Time: 06:31
Sample: 1 112
Included observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.074461	0.036515	2.039190	0.0440
CRISK	0.011484	0.025282	0.454214	0.6506
EXG	0.009239	0.047380	0.194993	0.8458
GOVEXG	0.000288	0.027750	0.010385	0.9917
INF	0.003241	0.024453	0.132537	0.8948
INT	0.037114	0.261697	0.141820	0.8875
LIQ	-0.089550	0.038927	-2.300482	0.0234
MSG	-0.039225	0.067568	-0.580519	0.5628
ROA	0.301384	0.291570	1.033658	0.3037

R-squared	0.087119	Mean dependent var	0.014341
Adjusted R-squared	0.016215	S.D. dependent var	0.025047
S.E. of regression	0.024843	Akaike info criterion	-4.475530
Sum squared resid	0.063569	Schwarz criterion	-4.257079
Log likelihood	259.6297	Hannan-Quinn criter.	-4.386897
F-statistic	1.228693	Durbin-Watson stat	1.875594
Prob(F-statistic)	0.289885		

Source:EViews 9 output for heteroskedasticity

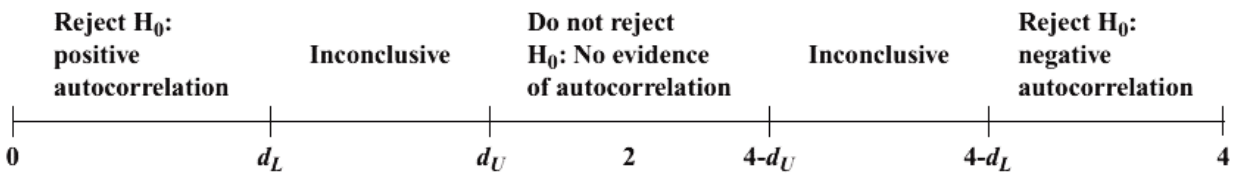
Based on the result displayed in the above table 4.3 the three different types of tests for heteroskedasticity and all fails to reject the null hypothesis of homoscedasticity presence. Therefore it can be concluded that the variance of error term is constant or the second assumption of CLRM is not violated.

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. In other words, 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.

According to Brooks (2008), the DW test does not follow a standard statistical distribution such as a t, F, or χ2. DW has 2 critical values: an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line below



The null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value (dL); the null hypothesis is rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value (4-dL); the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value (dU) and 4 minus the upper critical limits (4-dU) (Brooks 2008).

The study has eight explanatories variables (k) and 16 years period of time .So it has total of ninety observations and as per the DW table in Appendix-II for 128 observations with eight explanatory variables at 1% level of significance, the dL and dU values are 1.515 and 1.737, respectively Accordingly, the value of 4-dU and 4-dL are 2.263 and 2.485, respectively. The DW value of this study is 1.877707, (Appendix-II) which lies in the no evidence of autocorrelation region where the null hypothesis of no autocorrelation do not be rejected. Therefore, given these result it can be concluded that there is no evidence for the existence of autocorrelation.

The Assumption of Independent Variables are Non Stochastic

The assumption of 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 estimations 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

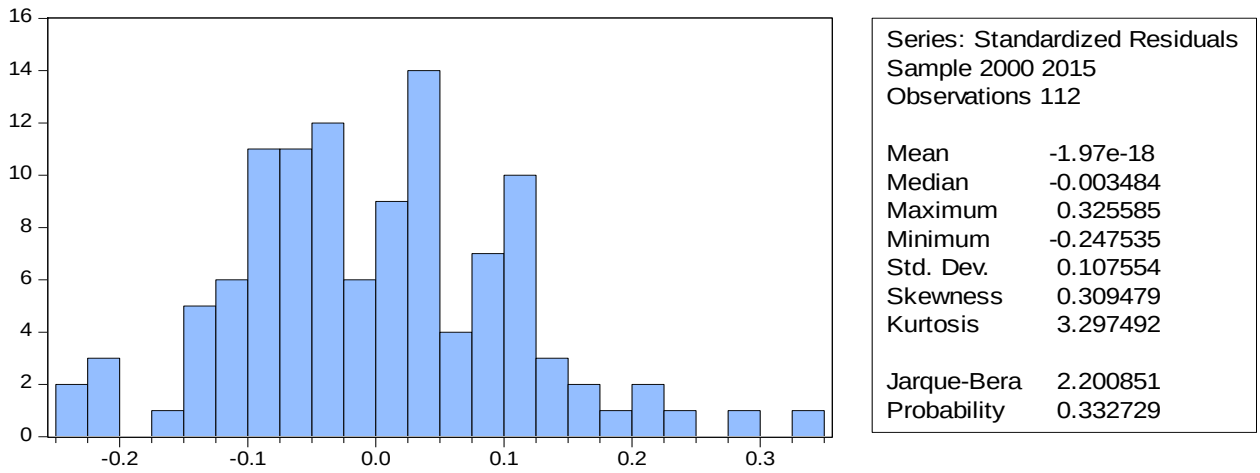
The Assumption of Disturbances are Normally Distributed

Test for non-normality test

Ho: The residuals are normally distributed

H1: The residuals are not normally distributed

Table 4.2 Test for non-normality test



Source: EViews9 output for normality test

A Jarque-Bera normality test has been used for normality test. The non-normality test table 4.2 indicates that the kurtosis value is around 3.29 which are related to 3. Jarque-Bera's also indicates that the residuals are normally distributed having the value 2.20 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 (Chris, 2008) In this case the p-value 0.33 which is greater than 0.05 had failed to reject the null hypothesis of normality presence.

Test for Multicollinearity

The results of correlation tests are depicted by a correlation matrix table:

Table 4.4 : Correlation matrixes

Covariance Analysis: Ordinary

Date: 06/02/17 Time: 06:24

Sample: 2000 2015

Included observations: 112

Correlation

Probability	CRISK	EXG	GOVEXG	INF	INT	LIQ	MSG	ROA
CRISK	1.000000							

EXG	-0.488979	1.000000						
	0.0000	-----						
GOVEXG	-0.251749	0.347667	1.000000					
	0.0074	0.0002	-----					
INF	-0.255142	0.211565	0.461064	1.000000				
	0.0066	0.0251	0.0000	-----				
INT	-0.231785	0.340560	-0.089580	0.085135	1.000000			
	0.0139	0.0002	0.3476	0.3721	-----			
LIQ	-0.031754	-0.063013	0.154082	0.034788	-0.224022	1.000000		
	0.7396	0.5092	0.1048	0.7158	0.0176	-----		
MSG	-0.546821	0.704361	0.636056	0.483095	0.323503	0.099231	1.000000	
	0.0000	0.0000	0.0000	0.0000	0.0005	0.2979	-----	
ROA	-0.164706	0.305185	0.514563	0.460505	0.110963	-0.083467	0.579116	1.000000
	0.0827	0.0011	0.0000	0.0000	0.2441	0.3816	0.0000	-----

Source: EViews 9 output for Correlation matrixes

The above table reports the correlation matrix of the variables of the estimation model. The correlation matrix also shows that the pair-wise correlations between explanatory variables are not quite high, indicating that multicollinearity is not a serious problem.

4.3 Fixed Effect Versus Random Effect Model

The collected data were estimated based on panel model, which includes cross sectional and time series observations for seven commercial banks that ranges over 16 years. The estimation technique was carried out on the basis of balanced panel data regression. A balanced panel data have equal time series observations for the study entities. In this study, the cross sectional units are seven and the time series (period taken for the study) is 16 years. The commonly used models for panel data are fixed effects and random effects a models. The random effects model is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population while fixed effect model is more appropriate when the entities in the sample effectively constitutes the entire population (Brooks, 2008). According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational convenience. On this score, FEM may be preferable. Since the number of time series (i.e. 16 year) is greater than the number of cross-sectional units (i.e. 7 commercial banks), FEM is preferable in this case.

According to Brooks (2008); Verbeek (2004) and Wooldridge (2004), it is often said that the REM is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a FEM is more plausible when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame FEM is appropriate.

4.4 Results of Regression Analysis

This section discusses the regression results of fixed effect model that determines deposit mobilization in commercial banks of Ethiopia. This regression analysis is based on the data collected from National Bank of Ethiopia and MOFED from the year 2000 to 2015. The relationship between one dependent variable and eight independent variables is regressed using econometric software called EViews 9 Thus, the model used to examine statistically significant determinants of commercial banks deposit measured by

$$BDG_{it} = \alpha_i + \beta_1 * ROA_{it} + \beta_2 * LIQ_{it} + \beta_3 * CAP_{it} + \beta_4 * L\&AA_{it} + \beta_5 * INF_{it} + \beta_{it} * GDP_{it} + \beta_{it} * GGOV\ EX_{it} + \beta_{it} * BOP_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots eq(1)$$

Accordingly, Table 4.5 below presents the result of fixed effect regression model that examines the impact of explanatory variables on bank deposit growth. Hence, DEPG is dependent variable whereas Inflation(INF), Interest Rate(INT), Money Supply(MSG), Government Expenditure(GOVEXG), Exchange Rate(EXG), Bank Profitability(ROA), Bank Liquidity(LIQ) and Loan to Asset Ratio(CRISK)

Table 4.5-Results of fixed effect regression model

Dependent Variable: DEPG
Method: Panel Least Squares
Date: 06/02/17 Time: 06:33
Sample: 2000 2015
Periods included: 16
Cross-sections included: 7
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CRISK*	0.520230	0.166480	3.124885	0.0023*
EXG*	0.403632	0.225250	1.791929	0.0763**
GOVEXG**	-0.130463	0.129678	-1.006056	0.3169
INF**	-0.028525	0.113663	-0.250957	0.8024
INT**	0.091312	1.245806	0.073296	0.9417
LIQ*	-0.892431	0.254464	-3.507108	0.0007*
MSG*	-0.692737	0.339808	-2.038615	0.0442*
ROA*	2.578504	1.474057	1.749257	0.0834**
C	0.780484	0.227741	3.427072	0.0009

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.582041	Mean dependent var	0.294152
Adjusted R-squared	0.521717	S.D. dependent var	0.166365
S.E. of regression	0.115054	Akaike info criterion	-1.362755
Sum squared resid	1.284038	Schwarz criterion	-0.998671
Log likelihood	91.31429	Hannan-Quinn criter.	-1.215035
F-statistic	9.648595	Durbin-Watson stat	1.877707

Prob(F-statistic)	0.000000

Note: * significant at 1%, and ** significant at 5%

H* accept null and H** reject null hypothesis

Source Eview 9 Result for Regression analysis

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

4.4.1 Interpretation of R-squared

As shown in Table 4.5, an R-squared coefficient of 0.582041 obtained from the estimated model revealing that 58.20 percent of variation in deposit growth (DEPG) is explained by the selected explanatory of Inflation(INF), Interest Rate(INT), Money Supply(MSG), Government Expenditure(GOVEXG), Exchange Rate(EXG), Bank Profitability(ROA), Bank Liquidity(LIQ) and Loan to Asset Ratio(CRISK)

4.4.2. Interpretation of Adjusted R-squared

An adjusted R-squared value, which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models. In other words, the adjusted R-squared shows a very good levels, which mean that nearly 52.17 percent of the volatilities in deposit growth are explained by the volatilities of independent variables included in the equation. Therefore, an adjusted R square having value of 0.521717 shows that 52.17 percent of dependent variable is explained by the independent variables included in the model.

4.4.3. Interpretation Results of the Regressors Values

A. Bank Credit Risk and Commercial Bank Deposit

Bank credit risk was measured as a ratio of total deposit to total asset which has a significant positive impact on commercial bank deposit. The coefficient of this relationship is 0.520230 indicates that holding other things constant one unit increase in commercial bank deposit resulted 0.520230 unit increase the credit risk of the commercial bank. The result of the study is consistent with the finding of (Osie, 2015)

B. Exchange Rate and Commercial Bank Deposit

Exchange Rate was found to have a positive relationship with commercial bank deposit growth and the relationship significant according to the model in Table 4.5 above. This could be the attribution of remittance from Diasporas to families in home-country is increasing. According to NBE report, in Ethiopia remittance from Diaspora is one of the most beneficial sources to offset foreign trade deficit of the foreign currency for the country. It has positive impact on individual's income and savings (Shemisu, 2014). The correlation coefficient for deposit rates is 0.403632 indicating that ceteris paribus a 1unit increase in exchange rate leads to a 0.403632 increase in commercial bank deposit deposits. The significant relation was consistent with the findings of (Jembere 2014), Hibret (2015) and Girang(2015).

C. Government Expenditure and Commercial Bank Deposit

The other macroeconomic variable included in this study was Government Expenditure. According to the regression result of this study, Government Expenditure has negative and statistically insignificant impact on deposit of commercial banks. The negative relation of the Government Expenditure and Commercial Bank's deposit is not consistence with our expectation. Thus, the hypothesis: Government Expenditure has positively and significant effect on commercial bank deposit should be fail to accept.

One of the depositor of commercial banks are government organization so this organization will withdraw their deposit if their expenditure will increases and the commercial banks will be influenced by holding higher amount of money to meet the request of the customer withdrawal.

D. Deposit Rate and Commercial Bank's Deposit

Interest rate on deposit as a fraction of total deposit is taken as a measure for interest rate on deposit. It was hypothesized that deposit rate has positive and insignificant impact on bank's deposit. The result of the regression shows that, interest rate on deposit has positive and insignificant impact on commercial banks deposit.

The positive relation was consistent with the findings of Hibret and Shemsu (2015) on commercial Bank of Ethiopia and (Andebet, 2016) on Private Commercial Banks.

E. Inflation and Commercial Bank Deposit

The other macroeconomic variable included in this study was Inflation. According to the regression result of this study, Inflation has negative and statistically insignificant impact on deposit of commercial banks. The negative relation of the Government Expenditure and Commercial Bank's deposit is not consistence with our expectation.

The coefficient of this relationship of 0.028525 indicates that holding other things constant, a unit increase in inflation rate will lead to an 2.8-unit decrease in bank deposit growth at an insignificant level of more than 10 percent. This implies that persistent inflation has a negative insignificant effect on growth of bank deposit. So higher inflation induces savers to save less, perhaps households get stable price prediction from deposit. This result is consistent with the precautionary motive, suggesting that increased macroeconomic uncertainty induces people to save a proportion of their incomes. This is particularly true for households in developing countries such as Ethiopia whose income prospects are more uncertain than their counterparts in developed countries. The negative relation was consistent with the findings of (Hibret 2015) on commercial Bank of Ethiopia on the long run and (Andebet, 2016) on Private Commercial Banks. Thus, the hypothesis: population growth has positively and significant impact on deposit should be rejected.

F Bank Liquidity and Commercial Bank Deposit.

In this study, Ratio of total loan and advance to total deposit is used as a proxy bank liquidity. The ratio of loan and advances to deposits reflects the quantity or proportion of the customers' deposits that has been given out in form of loans. When the ratio is high it means that large portion deposit is given out in the form of loan. The result in this study found the at Bank liquidity is negatively and statistically significant impact on commercial banks deposit at 1% significant level. According to the regression result, a one unit change in the Bank's liquidity, keeping other things constant, has resulted in .892431 unit change on the level of deposit of commercial banks in opposite direction. In other word, it means that the depositors are concerned with liquidity position which determines a bank's ability to respond to the withdrawal needs which are normally on demand or on a short notice as the case may be.

This significant impact relation Bank's liquidity and deposit is consistent with the funding of Jemeber (2012) and Bahredin (2016).

G. Money Supply and Commercial Bank Deposit

The other macroeconomic variable included in this study was Money Supply. According to the regression result of this study, Money Supply has negatively and statistically significant impact on deposit of commercial banks. The negative relation of the Money Supply and Commercial Bank's deposit is not consistence with our expectation.

The coefficient of this relationship of 0.692737 indicates that holding other things constant, a unit increase in Money Supply will lead to an 0.692737-unit decrease in bank deposit growth at a significant level. This significant impact relation of Commercial Bank Deposit and Money Supply is consistent with the funding of (Jemebere2012), (Hibret, 2015) and (Girang, 2015).

However, according to WAMA (West African Monetary Agency), Excess money supply, whether created though the direct or indirect channels, influences economic activity (growth) and may provide downside risks on macroeconomic stability, impacting negatively on inflation, interest rates and exchange rate

H. Profitability and Commercial Bank's Deposit

Profitability in this study is measured by the return on asset (ROA). The regression result shows that, profitability has positive and statistically significant impact on Bank's deposit. The positive sign of the coefficient indicates a directly relationship between profitability and banks deposit. According to the regression result, a one unit change in the Bank's Profitability, keeping other things constant, has resulted in 2.578504 unit change on the level of deposit of commercial banks in.

Chapter Five

5. Conclusions and Recommendations

5.1 Summery

The study established the factors that determine Commercial Bank Deposit in Ethiopia banking sector during the period from 2000-2015. Findings indicated that Commercial Bank Deposit bank deposit growth are influenced by Inflation(INF), Interest Rate(INT), Money Supply(MSG), Government Expenditure(GOVEXG), Exchange Rate(EXG), Bank Profitability(ROA), Bank Liquidity(LIQ) and Loan to Asset Ratio(CRISK)

This chapter outlines the Conclusion and Recommendation of the study in accordance with the study results.

5.2 Conclusions

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

Nowadays, finding deposit is becoming a challenging job for the banks in Ethiopia compatible with the growing need of loans. Owing to the growing need for finances from new and existing businesses of the country coupled with the banks own desire to make profits from those finances, deposit mobilization is becoming the critical success factor for banks. The main objective of this study was to identify the macroeconomic and bank specific determinants of deposit of Ethiopian commercial banks. To comply with the objectives of the study, three bank specific and five macroeconomic variables were used.

The bank specific variables includes; Bank Credit Risk, Bank Liquidity and Bank Profitability, and the macroeconomic variables were Inflation, Deposit Rate ,Government Expenditure, Money Supply and Exchange Rate. The study was used panel data for the sample of seven commercial banks in Ethiopia which had sixteen years of banking service over the period 2000 to 2015. The bank specific data were mainly collected from annual audited financial reports of the respective sample banks and the macroeconomic data were collected from NBE and Central Statistical Authority (CSA). Data was presented and analyzed by using descriptive statistics, correlation analysis and balanced fixed effect regression analysis to identify the determinants

of deposit of Ethiopian commercial banks. Before performing OLS regression the model was tested for the classical linear regression model assumptions. From eight explanatory variables, 60% of them proved to be statistically significant.

- The result of this study showed that, among the bank specific variables Bank Credit Risk is positively and statically significant to the growth of commercial bank deposit.
- Concerning to deposit interest rate, it implies that deposit interest rate is not a major factor in explaining the commercial banks deposit growth in Ethiopia.
- In connection with liquidity, the study indicated that the bank liquidity have negative and statically significant effect on commercial bank deposit. Deposit growth decreases when the bank liquidity increases or reduces liquidity risk. Liquidity arises mainly from the type of deposit where commercial banks were collected. Most of the deposit of the commercial banks are either individual or demand deposits and this deposits are withdrawn by the depositor at any time so the commercial banks should have adequate money to meet the withdrawal of the customer.
- In regard to profitability measured by Return on Asset has a significant positive impact on commercial bank deposits growth. Higher bank profits would tend to signal increased bank soundness, which could make it easier for these banks to attract deposits. The depositor confidence will increase if the bank is profitable and have adequate asset return.
- The deposit growth reacts negatively towards the increase in inflation. The relationship is similar to the expected sign. Since the county has experienced double digits inflation in the study period that results in higher costs of doing business; which leads to decrease in deposit mobilized by commercial banks
- The other micro level determinant of commercial bank deposit is money supply which have a negative significant impact on the commercial bank deposit. When the government supplies excess money to the economy the economic growth will be affected negatively by increasing the inflation, exchange rate etc. and also the commercial bank deposit will decrease.

5.3 Recommendation

This study was intended to identify the empirical determinants of deposit of Ethiopian commercial banks; and hence on the basis of the findings of the study, the following recommendations are drown.

- It is well known that deposits are the critical resource for the banks to stay profitable, by the same analogy commercial Banks major activity is mobilizing deposit. Therefore the bank should give due emphasis to its deposit mobilizing tasks by considering mobilizing deposit is a way to survival.
- Commercial banks are highly sensitive organization open to public scrutiny. As such, they must continuously ensure their profitability, which is essential for their deposit growth and viability as also for infusing public confidence. Thus, banks have assumed greater responsibilities in mobilizing domestic resources for financing the priorities of the economy and commercial banks should have managed liquidity that contributes some for reduction of deposit growth and NBE shall also keep its liquidity requirement in the future to increase the deposit growth of the banks.
- A lack of liquidity can put a quick and final end to a financial institution's efforts to mobilize deposits and, in the worst case, can cause it to collapse or close. Deposit mobilization requires clients to trust that they will always be able to access their savings when they want or need them. As the study point out, commercial bank required to have enough liquid asset to meet the demand for cash outflows, so as to generate and sustain public confidence of the depositors.

- The government should decrease its supply of broad money to the economy. Since the excess supply of money will have a negative impact to the growth of the country and the growth of the commercial bank deposit.

- Since government is also one of the depositor in commercial bank deposit the growth of the government expenditure have a negative impact on the commercial bank deposit. So commercial banks should give to increase their time deposit instead of individual and demand deposit.

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Appendices

Appendix I

Trend of Commercial Bank Deposit

	AIB	BOA	CBE	DB	NIB	UB	WB
2000	248	98	2775	220	78	30	176
2001	225	127	3959	265	79	43	167
2002	322	365	5668	408	162	105	163
2003	494	434	10458	511	204	118	259
2004	553	524	12685	647	269	243	314
2005	633	319	6166	631	366	349	558
2006	692	309	14551	667	342	307	486
2007	608	589	16456	810	417	617	993
2008	935	621.86	8965	1142.773	613	820	958
2009	1415	1002.699	7871	1261.167	1428	1155	1022
2010	2382	1355.976	6328	3029.082	2135	1527	2161
2011	1776.726	1573.298	16303	3272.061	1960	2181	2221
2012	2023.72	1637.031	12013	3528.016	2146	2013	2212.338
2013	2469	1206.635	20587	3824.949	1750	1597	1769
2014	2633.25	1735.031	20154	4060.79	958.95	2675.6	1373.21
2015	2123.69	5097.217	8724	3302.026	1010.498	2111.56	1084.22

Appendix II

Durbin-Watson Statistic: 1 Per Cent Significance Points of dL and dU

	k'*=1		k'=2		k'=3		k'=4		k'=5		k'=6		k'=7		k'=8		k'=9		k'=10	
n	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU
6	0.390	1.142	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7	0.435	1.036	0.294	1.676	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	0.497	1.003	0.345	1.489	0.229	2.102	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
9	0.554	0.998	0.408	1.389	0.279	1.875	0.183	2.433	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	0.604	1.001	0.466	1.333	0.340	1.733	0.230	2.193	0.150	2.690	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	0.653	1.010	0.519	1.297	0.396	1.640	0.286	2.030	0.193	2.453	0.124	2.892	-----	-----	-----	-----	-----	-----	-----	-----
12	0.697	1.023	0.569	1.274	0.449	1.575	0.339	1.913	0.244	2.280	0.164	2.665	0.105	3.053	-----	-----	-----	-----	-----	-----
13	0.738	1.038	0.616	1.261	0.499	1.526	0.391	1.826	0.294	2.150	0.211	2.490	0.140	2.838	0.090	3.182	-----	-----	-----	-----
14	0.776	1.054	0.660	1.254	0.547	1.490	0.441	1.757	0.343	2.049	0.257	2.354	0.183	2.667	0.122	2.981	0.078	3.287	-----	-----
15	0.811	1.070	0.700	1.252	0.591	1.465	0.487	1.705	0.390	1.967	0.303	2.244	0.226	2.530	0.161	2.817	0.107	3.101	0.068	3.374
16	0.844	1.086	0.738	1.253	0.633	1.447	0.532	1.664	0.437	1.901	0.349	2.153	0.269	2.416	0.200	2.681	0.142	2.944	0.094	3.201
17	0.873	1.102	0.773	1.255	0.672	1.432	0.574	1.631	0.481	1.847	0.393	2.078	0.313	2.319	0.241	2.566	0.179	2.811	0.127	3.053
18	0.902	1.118	0.805	1.259	0.708	1.422	0.614	1.604	0.522	1.803	0.435	2.015	0.355	2.238	0.282	2.467	0.216	2.697	0.160	2.925
19	0.928	1.133	0.835	1.264	0.742	1.416	0.650	1.583	0.561	1.767	0.476	1.963	0.396	2.169	0.322	2.381	0.255	2.597	0.196	2.813
20	0.952	1.147	0.862	1.270	0.774	1.410	0.684	1.567	0.598	1.736	0.515	1.918	0.436	2.110	0.362	2.308	0.294	2.510	0.232	2.174
21	0.975	1.161	0.889	1.276	0.803	1.408	0.718	1.554	0.634	1.712	0.552	1.881	0.474	2.059	0.400	2.244	0.331	2.434	0.268	2.625
22	0.997	1.174	0.915	1.284	0.832	1.407	0.748	1.543	0.666	1.691	0.587	1.849	0.510	2.015	0.437	2.188	0.368	2.367	0.304	2.548
23	1.017	1.186	0.938	1.290	0.858	1.407	0.777	1.535	0.699	1.674	0.620	1.821	0.545	1.977	0.473	2.140	0.404	2.308	0.340	2.479
24	1.037	1.199	0.959	1.298	0.881	1.407	0.805	1.527	0.728	1.659	0.652	1.797	0.578	1.944	0.507	2.097	0.439	2.255	0.375	2.417
25	1.055	1.210	0.981	1.305	0.906	1.408	0.832	1.521	0.756	1.645	0.682	1.776	0.610	1.915	0.540	2.059	0.473	2.209	0.409	2.362
26	1.072	1.222	1.000	1.311	0.928	1.410	0.855	1.517	0.782	1.635	0.711	1.759	0.640	1.889	0.572	2.026	0.505	2.168	0.441	2.313
27	1.088	1.232	1.019	1.318	0.948	1.413	0.878	1.514	0.808	1.625	0.738	1.743	0.669	1.867	0.602	1.997	0.536	2.131	0.473	2.269
28	1.104	1.244	1.036	1.325	0.969	1.414	0.901	1.512	0.832	1.618	0.764	1.729	0.696	1.847	0.630	1.970	0.566	2.098	0.504	2.229
29	1.119	1.254	1.053	1.332	0.988	1.418	0.921	1.511	0.855	1.611	0.788	1.718	0.723	1.830	0.658	1.947	0.595	2.068	0.533	2.193
30	1.134	1.264	1.070	1.339	1.006	1.421	0.941	1.510	0.877	1.606	0.812	1.707	0.748	1.814	0.684	1.925	0.622	2.041	0.562	2.160
31	1.147	1.274	1.085	1.345	1.022	1.425	0.960	1.509	0.897	1.601	0.834	1.698	0.772	1.800	0.710	1.906	0.649	2.017	0.589	2.131
32	1.160	1.283	1.100	1.351	1.039	1.428	0.978	1.509	0.917	1.597	0.856	1.690	0.794	1.788	0.734	1.889	0.674	1.995	0.615	2.104
33	1.171	1.291	1.114	1.358	1.055	1.432	0.995	1.510	0.935	1.594	0.876	1.683	0.816	1.776	0.757	1.874	0.698	1.975	0.641	2.080
34	1.184	1.298	1.128	1.364	1.070	1.436	1.012	1.511	0.954	1.591	0.896	1.677	0.837	1.766	0.779	1.860	0.722	1.957	0.665	2.057
35	1.195	1.307	1.141	1.370	1.085	1.439	1.028	1.512	0.971	1.589	0.914	1.671	0.857	1.757	0.800	1.847	0.744	1.940	0.689	2.037
36	1.205	1.315	1.153	1.376	1.098	1.442	1.043	1.513	0.987	1.587	0.932	1.666	0.877	1.749	0.821	1.836	0.766	1.925	0.711	2.018
37	1.217	1.322	1.164	1.383	1.112	1.446	1.058	1.514	1.004	1.585	0.950	1.662	0.895	1.742	0.841	1.825	0.787	1.911	0.733	2.001
38	1.227	1.330	1.176	1.388	1.124	1.449	1.072	1.515	1.019	1.584	0.966	1.658	0.913	1.735	0.860	1.816	0.807	1.899	0.754	1.985
39	1.237	1.337	1.187	1.392	1.137	1.452	1.085	1.517	1.033	1.583	0.982	1.655	0.930	1.729	0.878	1.807	0.826	1.887	0.774	1.970
40	1.246	1.344	1.197	1.398	1.149	1.456	1.098	1.518	1.047	1.583	0.997	1.652	0.946	1.724	0.895	1.799	0.844	1.876	0.749	1.956
45	1.288	1.376	1.245	1.424	1.201	1.474	1.156	1.528	1.111	1.583	1.065	1.643	1.019	1.704	0.974	1.768	0.927	1.834	0.881	1.902
50	1.324	1.403	1.285	1.445	1.245	1.491	1.206	1.537	1.164	1.587	1.123	1.639	1.081	1.692	1.039	1.748	0.997	1.805	0.955	1.864
55	1.356	1.428	1.320	1.466	1.284	1.505	1.246	1.548	1.209	1.592	1.172	1.638	1.134	1.685	1.095	1.734	1.057	1.785	1.018	1.837
60	1.382	1.449	1.351	1.484	1.317	1.520	1.283	1.559	1.248	1.598	1.214	1.639	1.179	1.682	1.144	1.726	1.108	1.771	1.072	1.817
65	1.407	1.467	1.377	1.500	1.346	1.534	1.314	1.568	1.283	1.604	1.251	1.642	1.218	1.680	1.186	1.720	1.153	1.761	1.120	1.802
70	1.429	1.485	1.400	1.514	1.372	1.546	1.343	1.577	1.313	1.611	1.283	1.645	1.253	1.680	1.223	1.716	1.192	1.754	1.162	1.792
75	1.448	1.501	1.422	1.529	1.395	1.557	1.368	1.586	1.340	1.617	1.313	1.649	1.284	1.682	1.256	1.714	1.227	1.748	1.199	1.783
80	1.465	1.514	1.440	1.541	1.416	1.568	1.390	1.595	1.364	1.624	1.338	1.653	1.312	1.683	1.285	1.714	1.259	1.745	1.232	1.777
85	1.481	1.529	1.458	1.553	1.434	1.577	1.411	1.603	1.386	1.630	1.362	1.657	1.337	1.685	1.312	1.714	1.287	1.743	1.262	1.773
90	1.496	1.541	1.474	1.563	1.452	1.587	1.429	1.611	1.406	1.636	1.383	1.661	1.360	1.687	1.336	1.714	1.312	1.741	1.288	1.769
95	1.510	1.552	1.489	1.573	1.468	1.596	1.446	1.618	1.425	1.641	1.403	1.666	1.381	1.690	1.358	1.715	1.336	1.741	1.313	1.767
100	1.522	1.562	1.502	1.582	1.482	1.604	1.461	1.625	1.441	1.647	1.421	1.670	1.400	1.693	1.378	1.717	1.357	1.741	1.335	1.765
150	1.611	1.637	1.598	1.651	1.584	1.665	1.571	1.679	1.557	1.693	1.543	1.708	1.530	1.722	1.515	1.737	1.501	1.752	1.486	1.767
200	1.664	1.684	1.653	1.693	1.643	1.704	1.633	1.715	1.623	1.725	1.613	1.735	1.603	1.746	1.592	1.757	1.582	1.768	1.571	1.779

*k' is the number of regressors excluding the intercept

Appendix III

Raw Data Associated with regression analysis

Bank	YEAR	DEPG	INF	INT	MSG	EXG	GOVEXG	LIQ	CRISK	ROA
AIB	2000	0.368056	0.054	0.06	0.1432	0.084076	-0.02355	0.78	0.588933	0.0232
AIB	2001	0.270728	-0.003	0.06	0.1054	0.022757	0.129036	0.83	0.618523	0.013205
AIB	2002	0.238349	-0.106	0.03	0.1144	0.025769	-0.02732	0.84	0.572842	0.011887
AIB	2003	0.251613	0.109	0.03	0.1013	0.004495	0.145825	0.83	0.571021	0.011142
AIB	2004	0.282646	0.073	0.03	0.1517	0.004522	0.140917	0.84	0.534463	0.016399
AIB	2005	0.299397	0.061	0.03	0.1603	0.003724	0.191074	0.87	0.579515	0.019019
AIB	2006	0.323196	0.106	0.03	0.1533	0.003375	0.071388	0.87	0.633717	0.030116
AIB	2007	0.21231	0.158	0.03	0.2215	0.013051	0.495741	0.81	0.655875	0.042158
AIB	2008	0.243573	0.253	0.04	0.2035	0.051147	0.231467	0.80	0.56805	0.033064
AIB	2009	0.282171	0.364	0.04	0.2101	0.12726	0.234716	0.77	0.422388	0.025438
AIB	2010	0.230552	0.028	0.04	0.2657	0.237071	0.315367	0.77	0.395972	0.034521
AIB	2011	0.268261	0.181	0.05	0.3921	0.250324	0.32596	0.77	0.394075	0.039976
AIB	2012	0.188533	0.341	0.05	0.3028	0.070469	0.237203	0.77	0.461138	0.035732
AIB	2013	0.362994	0.135	0.05	0.2424	0.054546	0.20492	0.84	0.518877	0.037916
AIB	2014	0.34971	0.0737	0.05	0.2653	0.048371	0.242891	0.75	0.458158	0.035428
AIB	2015	0.231411	0.101	0.05	0.2472	0.053516	0.18397	0.78	0.522926	0.029402
BOA	2000	0.57657	0.054	0.06	0.1432	0.084076	-0.02355	0.67	0.727019	0.0217
BOA	2001	0.350622	-0.003	0.06	0.1054	0.022757	0.129036	0.73	0.766741	0.023544
BOA	2002	0.396313	-0.106	0.03	0.1144	0.025769	-0.02732	0.80	0.585814	-0.00196
BOA	2003	0.183718	0.109	0.03	0.1013	0.004495	0.145825	0.80	0.606902	0.004848

BOA	2004	0.184944	0.073	0.03	0.1517	0.004522	0.140917	0.80	0.60694	0.026045
BOA	2005	0.276078	0.061	0.03	0.1603	0.003724	0.191074	0.79	0.599903	0.033498
BOA	2006	0.338045	0.106	0.03	0.1533	0.003375	0.071388	0.77	0.692661	0.034758
BOA	2007	0.249885	0.158	0.03	0.2215	0.013051	0.495741	0.80	0.67874	0.021509
BOA	2008	0.278207	0.253	0.04	0.2035	0.051147	0.231467	0.81	0.659764	0.003803
BOA	2009	0.292122	0.364	0.04	0.2101	0.12726	0.234716	0.82	0.494642	0.020615
BOA	2010	0.143525	0.028	0.04	0.2657	0.237071	0.315367	0.81	0.502146	0.023916
BOA	2011	0.182137	0.181	0.05	0.3921	0.250324	0.32596	0.84	0.455579	0.02669
BOA	2012	0.114568	0.341	0.05	0.3028	0.070469	0.237203	0.82	0.473014	0.02788
BOA	2013	0.254763	0.135	0.05	0.2424	0.054546	0.20492	0.84	0.464202	0.023552
BOA	2014	0.070621	0.0737	0.05	0.2653	0.048371	0.242891	0.81	0.448815	0.041804
BOA	2015	0.222296	0.101	0.05	0.2472	0.053516	0.18397	0.82	0.432062	0.023392
CBE	2000	0.140835	0.054	0.06	0.1432	0.084076	-0.02355	0.80	0.521838	0.0143
CBE	2001	0.11174	-0.003	0.06	0.1054	0.022757	0.129036	0.81	0.495975	0.00092
CBE	2002	0.060615	-0.106	0.03	0.1144	0.025769	-0.02732	0.83	0.440305	-0.02159
CBE	2003	0.066487	0.109	0.03	0.1013	0.004495	0.145825	0.82	0.35343	0.023519
CBE	2004	0.140117	0.073	0.03	0.1517	0.004522	0.140917	0.80	0.297587	0.012803
CBE	2005	0.125871	0.061	0.03	0.1603	0.003724	0.191074	0.76	0.2881	0.01871
CBE	2006	0.115071	0.106	0.03	0.1533	0.003375	0.071388	0.79	0.25931	0.02324
CBE	2007	0.162165	0.158	0.03	0.2215	0.013051	0.495741	0.76	0.224572	0.021789
CBE	2008	0.1448	0.253	0.04	0.2035	0.051147	0.231467	0.75	0.343919	0.028997
CBE	2009	0.155608	0.364	0.04	0.2101	0.12726	0.234716	0.73	0.351888	0.034982
CBE	2010	0.256548	0.028	0.04	0.2657	0.237071	0.315367	0.74	0.323736	0.029462

CBE	2011	0.21702	0.181	0.05	0.3921	0.250324	0.32596	0.74	0.314891	0.030384
CBE	2012	0.374828	0.341	0.05	0.3028	0.070469	0.237203	0.73	0.392371	0.039798
CBE	2013	0.307092	0.135	0.05	0.2424	0.054546	0.20492	0.77	0.362981	0.034317
CBE	2014	0.261763	0.0737	0.05	0.2653	0.048371	0.242891	0.80	0.362975	0.030555
CBE	2015	0.250386	0.101	0.05	0.2472	0.053516	0.18397	0.79	0.354075	0.026949
DB	2000	0.35853	0.054	0.06	0.1432	0.084076	-0.02355	0.70	0.616185	0.0065
DB	2001	0.464463	-0.003	0.06	0.1054	0.022757	0.129036	0.81	0.649091	0.021374
DB	2002	0.344244	-0.106	0.03	0.1144	0.025769	-0.02732	0.80	0.58681	0.018561
DB	2003	0.361041	0.109	0.03	0.1013	0.004495	0.145825	0.81	0.636364	0.015531
DB	2004	0.343615	0.073	0.03	0.1517	0.004522	0.140917	0.82	0.631304	0.023993
DB	2005	0.300735	0.061	0.03	0.1603	0.003724	0.191074	0.83	0.652632	0.02329
DB	2006	0.303212	0.106	0.03	0.1533	0.003375	0.071388	0.81	0.695996	0.033392
DB	2007	0.316631	0.158	0.03	0.2215	0.013051	0.495741	0.80	0.660156	0.035326
DB	2008	0.265583	0.253	0.04	0.2035	0.051147	0.231467	0.78	0.559743	0.034472
DB	2009	0.288199	0.364	0.04	0.2101	0.12726	0.234716	0.82	0.457382	0.028458
DB	2010	0.280126	0.028	0.04	0.2657	0.237071	0.315367	0.82	0.408701	0.029344
DB	2011	0.167176	0.181	0.05	0.3921	0.250324	0.32596	0.81	0.424122	0.033366
DB	2012	0.187906	0.341	0.05	0.3028	0.070469	0.237203	0.80	0.463687	0.040523
DB	2013	0.126902	0.135	0.05	0.2424	0.054546	0.20492	0.80	0.448789	0.032564
DB	2014	0.11545	0.0737	0.05	0.2653	0.048371	0.242891	0.80	0.429357	0.034164
DB	2015	0.120638	0.101	0.05	0.2472	0.053516	0.18397	0.80	0.465476	0.031209
NIB	2000	0.59158	0.054	0.06	0.1432	0.084076	-0.02355	0.49	0.373418	0.0274
NIB	2001	0.65063	-0.003	0.06	0.1054	0.022757	0.129036	0.62	0.625	0.028011

NIB	2002	0.658654	-0.106	0.03	0.1144	0.025769	-0.02732	0.65	0.606742	0.015152
NIB	2003	0.704348	0.109	0.03	0.1013	0.004495	0.145825	0.66	0.621469	0.012771
NIB	2004	0.414966	0.073	0.03	0.1517	0.004522	0.140917	0.67	0.630313	0.012248
NIB	2005	0.469952	0.061	0.03	0.1603	0.003724	0.191074	0.70	0.654157	0.035489
NIB	2006	0.44496	0.106	0.03	0.1533	0.003375	0.071388	0.72	0.727676	0.032934
NIB	2007	0.294077	0.158	0.03	0.2215	0.013051	0.495741	0.72	0.69697	0.033845
NIB	2008	0.314529	0.253	0.04	0.2035	0.051147	0.231467	0.68	0.579178	0.033499
NIB	2009	0.334413	0.364	0.04	0.2101	0.12726	0.234716	0.68	0.461827	0.023791
NIB	2010	0.252124	0.028	0.04	0.2657	0.237071	0.315367	0.69	0.426394	0.032992
NIB	2011	0.249576	0.181	0.05	0.3921	0.250324	0.32596	0.72	0.389061	0.034063
NIB	2012	0.132054	0.341	0.05	0.3028	0.070469	0.237203	0.71	0.448163	0.036093
NIB	2013	0.139945	0.135	0.05	0.2424	0.054546	0.20492	0.73	0.496774	0.022808
NIB	2014	0.190577	0.0737	0.05	0.2653	0.048371	0.242891	0.74	0.503173	0.018145
NIB	2015	0.233592	0.101	0.05	0.2472	0.053516	0.18397	0.74	0.520065	0.021444
UNB	2000	1.054054	0.054	0.06	0.1432	0.084076	-0.02355	0.53	0.615385	0.0274
UNB	2001	0.697368	-0.003	0.06	0.1054	0.022757	0.129036	0.60	0.626168	0.023364
UNB	2002	0.465116	-0.106	0.03	0.1144	0.025769	-0.02732	0.60	0.519108	0.012739
UNB	2003	0.518519	0.109	0.03	0.1013	0.004495	0.145825	0.61	0.618337	0.010661
UNB	2004	0.51306	0.073	0.03	0.1517	0.004522	0.140917	0.79	0.569733	0.010386
UNB	2005	0.62594	0.061	0.03	0.1603	0.003724	0.191074	0.80	0.552656	0.028891
UNB	2006	0.53178	0.106	0.03	0.1533	0.003375	0.071388	0.76	0.627892	0.027517
UNB	2007	0.263115	0.158	0.03	0.2215	0.013051	0.495741	0.70	0.6459	0.029317
UNB	2008	0.585334	0.253	0.04	0.2035	0.051147	0.231467	0.75	0.572308	0.028

UNB	2009	0.480147	0.364	0.04	0.2101	0.12726	0.234716	0.77	0.462597	0.020206
UNB	2010	0.306692	0.028	0.04	0.2657	0.237071	0.315367	0.80	0.443351	0.029512
UNB	2011	0.28381	0.181	0.05	0.3921	0.250324	0.32596	0.79	0.424152	0.030028
UNB	2012	0.114078	0.341	0.05	0.3028	0.070469	0.237203	0.77	0.464891	0.033914
UNB	2013	0.193104	0.135	0.05	0.2424	0.054546	0.20492	0.81	0.472139	0.021447
UNB	2014	0.2041	0.0737	0.05	0.2653	0.048371	0.242891	0.75	0.426866	0.016694
UNB	2015	0.325547	0.101	0.05	0.2472	0.053516	0.18397	0.82	0.477693	0.019589
WB	2000	0.462745	0.054	0.06	0.1432	0.084076	-0.02355	0.73	0.509728	0.0068
WB	2001	0.203753	-0.003	0.06	0.1054	0.022757	0.129036	0.77	0.590051	0.010939
WB	2002	0.146993	-0.106	0.03	0.1144	0.025769	-0.02732	0.80	0.628483	0.009764
WB	2003	0.36699	0.109	0.03	0.1013	0.004495	0.145825	0.79	0.642295	0.014332
WB	2004	0.244318	0.073	0.03	0.1517	0.004522	0.140917	0.77	0.647368	0.031543
WB	2005	0.47032	0.061	0.03	0.1603	0.003724	0.191074	0.80	0.62005	0.034833
WB	2006	0.380435	0.106	0.03	0.1533	0.003375	0.071388	0.79	0.705179	0.036645
WB	2007	0.532058	0.158	0.03	0.2215	0.013051	0.495741	0.79	0.619253	0.039031
WB	2008	0.08884	0.253	0.04	0.2035	0.051147	0.231467	0.72	0.56897	0.036555
WB	2009	0.256912	0.364	0.04	0.2101	0.12726	0.234716	0.73	0.412661	0.039165
WB	2010	0.052307	0.028	0.04	0.2657	0.237071	0.315367	0.68	0.43086	0.041068
WB	2011	0.18266	0.181	0.05	0.3921	0.250324	0.32596	0.74	0.360997	0.046801
WB	2012	-0.03341	0.341	0.05	0.3028	0.070469	0.237203	0.69	0.42718	0.040956
WB	2013	0.311393	0.135	0.05	0.2424	0.054546	0.20492	0.73	0.451222	0.036604
WB	2014	0.110317	0.0737	0.05	0.2653	0.048371	0.242891	0.74	0.409552	0.028193
WB	2015	0.177362	0.101	0.05	0.2472	0.053516	0.18397	0.72	0.442838	0.028248