Portfolio Behavior of Commercial Banks in Ethiopia

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Acronyms

- CBE Commercial Bank Of Ethiopia
- DB Dashen Bank
- AIB Awash International Bank
- BOA Bank of Abyinnia
- WB Wegagen Bank
- NBE National Bank of Ethiopia

Abstract

As a part of financial intermediaries, commercial banks channel funds from the savers to borrowers in their profitability objective. Moreover, the monetary policies of the central bank are undertaken by the direct availability of funds or via interest rates for the banks.

The study examines how interest rates banks & deposit relate to the portfolio choice in the commercial banks. In examining these questions, annual data are collected for the different the assets & deposits of commercial banks and interest rates from National Bank of Ethiopia report. The relations among asset holdings, interest rates & bank deposits are examined based on correlation& regression methods.

As a result, the holdings of excess reserves ,deposits in foreign banks ,treasury bills ,government bond and loans &advances in the portfolio found to be change in different degree with the change in the rates of ,deposit in foreign banks. treasury bills, government bonds& loans Moreover .assets holdings in the portfolio constrained by demand, saving & time deposits

Chapter one-Introduction

The financial system encompasses markets, institutions, laws, regulations, and techniques through which different types of securities are traded, interest rates are determined and financial services produced and delivered.

As a part of the financial sector, commercial banks allocate capital among alternative uses. The efficiency of the commercial banks influences the overall consumption versus saving decision of the public.

In financial intermediation ,commercial bank's primary profit making activities entail acquiring funds at a cost from savers and lending those funds to borrowers ,adding value by providing risk sharing & liquidity .Like any business ,banks try to maximize profits. The difference between the return earned from lending and the cost of obtaining the needed funds-the spread-represents profit margin (Gleen Hubbard 1994p.305).

Moreover, regulation is an important characteristic of banking environment .However the rationale for regulation, and the form that regulation should take differs significantly between banking and non banking financial services especially when long term contracts are involved .In particular, systematic issues are central in the regulation of banks.

The rationale for bank regulation and supervision is based on four main considerations: The pivotal position of banks in the financial system (especially in clearing and payment system),the potential systematic danger resulting from bank runs, the nature of bank contacts and adverse selection & moral hazards associated with the lender-of -last resort role and other safety net arrangements that apply to the banks(Charles Good hart, Philip, David, Lillan and Steven 1998pp10-11).

Central bank sets the reserve requirements that forces commercial banks to set aside a certain percentage of deposits in non interest fee account of the bank in the stabilization policy. However, there are controversies among different economists and policy makers whether central bank should set the reserve requirements because of its effect on the cost of funds and lending of banks, besides, slow down effect on the economy.

Monetary policy initiatives are through bank lending behavior by direct availability of loan able funds or via interest rates. Focusing on banks' portfolio behavior leads to skepticism regarding the central banks alleged inability to affect short term monetary control. Commercial banks, with their wealth maximization objectives, respond in many ways taking into account stabilization policy as strategic driver.

There are a number of studies subject to such discussion devoted to the analysis of the following three important issues:1)the behavior of commercial banks in the financial market,2)allocation of capital in financial markets, and 3) the effectiveness of monetary policy through banks' portfolio behavior.

The degree to which different categories of securities are substitutable for one another in commercial banks portfolio has a lot to say in the above interrelated issues as a tie to better explain and predict the phenomena.

The National Bank of Ethiopia(NBE) monetary policy instruments comprise the sale of treasury bills & government bonds ,setting reserve requirement ratio& determining the minimum deposit interest rate(NBE annual report)

Raging with the prevailed inflation, currently the National Bank of Ethiopia (NBE) has undertaken different changes in the policy instruments. However, there are uncertainties among different policy analysts on the effectiveness of the decision made by the

regulatory bank(Fortune, Volume 8, No.375, July 8, 2007).Thus, the portfolio composition behavior of commercial banks is a worth considerations.

In this study, I examine the following research question in the year 1998 to 2006:-

- How interest rates& bank deposits relate to the portfolio choice of commercial banks?

1.1Objectives

The main objective of the study is to explain & predict the portfolio behavior of commercial banks in Ethiopian context. In this regard, taking insights from the theory of portfolio allocation, I set the following specific objectives:-

- To describe the trends in interest rates, deposits & primary holdings of commercial banks in the portfolio
- Examine the relations among asset holdings, interest rates, and bank deposits and
  - ✓ Evaluate the substitutability & complementarities in the portfolio.
  - ✓ Evaluate how bank deposits, as a wealth constraint, affect the portfolio choice

1.2 Significance of the study

The study has significance on two points: capital allocation of the banks & implications for the monetary policy

- First, Commercial banks, with their profitability objective, from optimal composition of assets better off in alternative fund environment. For commercial banks, capital ought to flow into areas that have the highest rates of return.

Furthermore, this flow of capital should occur with a relatively small inducement via changes in rates of return and relative interest rate. The flow of funds will be desirable as long as the rate of interest offered in each securities bears some relationship to the profitability of the bank.

If the assets are good substitute for each other in the bank portfolio, perhaps only a slight change in the relative yield would be required to the effect the desired change in the direction of the flow of funds. If two securities are very poor substitute, perhaps a huge shift in relative yields would be required to produce the desired result(W.Silber).This would imply the commercial banks are not performing their capital allocation function in a reasonable way. So, the study has significance to the commercial bankers to know where they are? What to do, and how to do in their portfolio composition of assets in the current regulatory environment.

- Secondly, the degree to which different securities of commercial banks are substitutable has implications in the effectiveness of monetary policy to affect interest rates in stabilizing prices. The effectiveness of monetary depends on how great an adjustment banks make in their portfolio decision (Robert O. Edmister P.449).If the assets in the commercial banks are not good substitute one for the other, the desired effects from the decisions of regulatory bodies would be far fetching. So, the monetary authorities must have considerations for the effect of the commercial banks portfolio composition choice.

1.3 Assumptions

- Categories of securities in each commercial banks are homogeneous with regard to maturity
- There is one major portfolio of commercial banks that will be included in the study

Chapter Two-Literature Review

There are voluminous literatures in the portfolio behaviors of commercial banks. However, contributions from different studies address parts of dimensions in the portfolio of commercial banks. In fact the previous studies complemented each other for today's body of theory portfolio allocation that better explain the portfolio choice. As a result, in this chapter first, theory of portfolio allocation, as a conceptual frame work of this study, is presented in how the determinants of portfolio choice affect the asset demands. Secondly, I pinpoint the portfolio dimensions in commercial banks. Finally, the contributions & shortcomings of some of studies to explain & predict the portfolio are presented.

2.1 Conceptual frame work: Theory of portfolio allocation

The theory of portfolio allocations describes how individuals or institutions behave as they do when selecting one asset rather than another. Moreover, financial institutions reduce their risk by holding of a group of assets or a portfolio. The decision they make about assets allocation affect the performance of the entire portfolio.

The theory of portfolio allocation indicates that when deciding what investment to make, investors consider factors, or determinants of asset demand. The theory of portfolio allocation seeks to explain trends in a way in which individuals or financial institutions allocate their funds among alternative assets. According to this theory ,individuals /financial intermediaries evaluate different criteria when deciding what investment to make & how much to invest in each alternative asset through time(Gleen Hubbard).

2.1.1 Determinants of portfolio allocation (Assets demand)

The asset problem that commercial banks face can be explained by taking in to account prescription from the theory of portfolio allocation.

Several aspects of the institutional structure of commercial banks lead to unique problems in modeling their portfolio behavior. First, the structure and characteristics of the liability side of commercial banks' balance sheets may have both direct and indirect effects on their selection of assets. Second, the markets assumption, which is often used appropriately to model the asset side of the balance sheets of other financial institutions, may be violated in several instances.

Despite the complexities of the portfolio behavior of commercial banks, several factors that especially influence their securities portfolio may be isolated: Wealth, the expected return on asset relative to that of other assets,(i.e compared with attributes - the degree of risk associated with the asset's relative to that of other assets, liquidity of assets and credit risk) (R. Gleen Hubbard 1994 p.127).and regulation(Peter Rose)

a) Wealth :Bank liabilities

As financial institutions become wealthier, the size of the portfolio of assets increases because they have more funds to allocate to the acquisition of assets .As the institution grow richer, they don't increase the quantities of all they have in their portfolio; rather,

they choose to increase their purchase of some assets than others(Hubbard, W.L.Silber). The wealth elasticity of demand describes how responsive the percentage of a change in the quantity of an asset chosen is to a percentage change in wealth. The wealth elasticity of demand doesn't depend on the actual dollar/Birr value. Rather, it equals the percentage increase in the quantity of an asset demanded divided by the percentage increase in total wealth.

'A necessity' asset is one for which the wealth elasticity of demand is less than 1. Commercial banks demand necessity assets such as cash in order to conduct regular transactions. 'A luxury asset', however, is one for which the wealth elasticity of demand exceeds 1. What makes them luxuries? They are assets that are held for investments rather than facilitating transactions. Individuals / Institutions must also consider the high fixed cost of owning a 'luxury 'asset or the high transaction costs of acquiring the asset. Thus, as wealth increases, commercial banks hold more of their wealth in investments and less in cash items (Hubbard)

i. Cost, Volatility, and Maturity of incoming funds

The incoming funds cost, volatility and maturity of funds provided by surplus budget units (depositors) also have significant impact upon the financial assets acquired by commercial banks. Commercial banks, which derive a substantial proportion of their funds from checking accounts, the incoming funds are relatively inexpensive but highly volatile .Such institutions will tend to concentrate its lending activities in short and medium term loans in order to avoid an embarrassing and expensive shortage of

cash(liquidity)(Peter Rose) .

b) Yield and risk on assets

Given the choice between two otherwise similar assets, individuals/commercial banks will pick the one with the higher expected return in allocating their wealth (Hubbard ,Faggozi, Modiglian).

The correct measure of expected return is the expected real rate of return .Individuals / Institutions must assess the impact of inflation on returns because the changes in the value of money will affect the real value of returns. The expected real return that investors consider equals the nominal return less the expected inflation.

Because taxation on return, investors also compare expected real after tax returns. Taxation of returns varies significantly among different asset investments. Generally, investments in the government securities are exempt from taxation (Fagozzi,Modiglian)

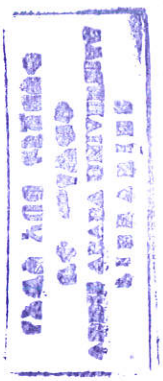
The own rate of return & the relative rate of return attached to different financial assets will affect the composition of commercial banks portfolio(W.L.Silber). When assets are similar, that is, holding other factors constant- an increase in the expected return on one asset relative to other assets leads to an increase in the quantity demanded. The risk attributes from different uncertainties are used to compare the return on assets in

order to make portfolio decisions.

i) Portfolio risks

It is important to distinguish between risky assets and risk free assets to have the clear picture of the relationship between yield and risk. A risky assets is the one for which the return that will be realized in the future is uncertain .There are assets, however, in which the return that will be realized in the future is known with certainty today. Such assets are referred to as risk free or risk less assets. The risk free asset is commonly defined as short term obligations of the government issuance of securities-taken the rate in such assets as base/minimum interest rate (Faggozi).

There are a number of uncertainties that affect the risk rating of various securities that result in different array of rates. The appropriate interest rate is the minimum interest rate plus a risk premium. The amount of the risk premium depends on the risk associated with realizing the cash flow.The commercial banks securities (Hubbard,Fagozzi) rates are affected by different types of risks.



Risk associated with asset returns-First, interest rate risk, when the profits that the banks earn from lending to borrowers are exposed to risk due to changes in interest rates in the financial markets.

In making investment decisions, individuals /financial institutions evaluate the variability (fluctuations up & down) in the expected return as well as the size of return

.The investor's view of the risk determines which asset the investor will buy. Obviously, if management of commercial banks is interested in maximizing profit and has a minimal aversion to risk ,it will tend to pursue the highest yielding financial assets available. A more risk averse institution, on the other hand, is likely to surrender some yield in return for a greater safety available .Thus, in risk averse commercial banks, an increase in the risk of one asset relative to the other assets leads to a decline in the asset chosen(Rose ,Hubbard,Fagozzi,Modiglian).

Second, default risk/Credit risk, the risk that borrowers might default on their loan. This occurs when certain securities are tied to very specific assets or to a particular management.

Liquidity on assets-Assets with greater liquidity help individuals /financial institutions to smooth out normal activities or to draw down funds for emergencies. Obviously, cash is the most liquid asset. Many marketable securities, such as government securities are mostly liquid assets.

The average investor favors assets that are liquid over those that are not .The investor must weigh the benefits of liquidity against the lower return that are generally available on liquid assets when selecting assets for a portfolio(Bringham,Fagozzi)Liquidity risk occurs when the bank exposes to risk when the depositor request to withdraw or borrowing demands from customers more funds than the bank has on hand.

ii) Portfolio Risk and substitutability

In general, two assets are good substitute for each other to the extent that they share the same risk. In order to reduce the overall risk of the portfolio, the bank manager diversifies the holdings of securities by holding assets that have independent risks. There is a trade off, naturally, between risk reduction and yield; that is, risk reduction will be scarified to some extent under the inducement of higher yield.

Given the categories of uncertainties, it possible to contrast the different types of assets to see whether they share similar uncertainties thus making their risk components very similar. Securities that share the same risks are likely to be substitutes. Securities whose risk components are independent may be used to diversify the portfolio .If the risk components of different securities compensate for each other to a great extent, the diversification of the portfolio might actually result in a complementary relationship between these securities, that is , an increase in yield on asset A would increase the demand for asset B at the expense of another group of substitute assets(W.L.Silber).

The substitute- complement relationship between assets may vary between the different commercial banks that arise may be from the variability in the volatility of liabilities and different legal arrangements that limit the investment opportunities of the bank from the point of view of public and private ownerships of commercial in emerging markets.

Substitutes or Complements?

In micro economics theory, y & x are substitutes if an increase in the price of good x induces an increase in the demand for good y. If we translate the substitution term from

the commodity market securities market, two securities are substitutes if the quantity of asset (security y) increase in the price of security x(positive).

Since the price of securities defined in terms of interest rate and interest rates are inversely related with rates, two securities are substitute if the change in the demand for security y with the increase in rate x is negative. Whereas, two assets are complementary if the change in demand for asset y with the change in rate of interest in asset y is positive.

c) Regulations

Regulation, as external force, plays major roles in shaping both the sources and use of funds for commercial banks. Because they hold the bulk of the public savings and are so crucial to economic growth and investment activities, banks are the most heavily regulated of all financial institutions and other business firms. Most regulations in commercial banks pertain to assets that can be acquired, adequacy of net worth, and services that can be offered to the public. In theory, at least,such regulations are designed to promote competition and ensure the safety of the public's funds((Charles Good hart, Philip, David, Lillan and Steven ,Peter Rose).

Moreover, commercial banks are exposed to regulatory risk. The banks are exposed to such risk when regulatory rules affect adversely earning of the bank. To be specific in this study, the regulatory risk may affect the fund availability through different stabilization policies and tools

2.2 Portfolio characteristics of commercial banks

Because of the prominence of commercial banks in the financial system, banks' portfolio behavior is instrumental in most discussions of financial markets. Commercial banks interact directly with all sectors of the economy through their role as depository financial intermediaries. Commercial banks also hold more different categories of assets than any other type of financial institution.

Thus, changes in monetary policy and/or the non bank public's demands for both money and credit are immediately reflected by adjustments in commercial banks' portfolios, which may be ultimately transmitted throughout the entire financial system.

Banks fill a market need for a service and earn a profit by charging customers for that service. The primary business of banking is one of collecting funds from the community and extending credit (making loans) to people for useful purposes. Furthermore the bank is responsible to its stockholders. Bank is a profit seeking business which attempts to maximize the wealth of shareholders (Robert O.Edmister,Peter Rose).

Thus, commercial banks, as the other financial intermediaries, accept deposits. These deposits represent the liabilities of commercial banks as deposit accepting institution. With the funds raised through deposits and other funding sources, commercial banks make direct loans to various entities and also invest in securities. Their income is derived from two sources: the income generated from the loans they make and the securities they purchase, and fee income.

Commercial banks offer a wider array of financial services than any other forms of institutions, meeting the saving, credit, and payment functions. In this way, commercial

banks play a key role in any economic system. These services promote the efficiency of the financial system and contribute to health economy. Our understanding of the financial system would be incomplete without the knowledge of how banks operate and remain or would be strong

Assets, with different functions & characteristics, in commercial banks portfolio have different demands in the market. Taking into account the balance sheet configuration of the commercial banks (Faggozi, Modigilain , Peter Rose) securities in the commercial banks with their functions presented as follows:-

- **Sources of funds :**

  - Bank Liabilities

Bank Liabilities are the fund the bank acquires from savers. The bank uses the funds to make investments or loans to borrowers .To obtain funds, banks offer savers a range of deposit accounts that provide depositors with services such as paying by checks or incentives (interest payments) that encourage savers to keep their deposit at the bank. These accounts include demand(checkable) deposits and non transaction(saving & time) deposits. In addition, banks often borrow in money & capital markets.

- ✓ Demand (checkable) deposit -demand deposit-more commonly known as checking accounts, are the principal means of making payments because they are safer than cash and widely accepted. It pays no interest and can be withdrawn

upon demand In other words ,the bank must exchange a depositors check for cash immediately, provided that at least the amount of the check on deposit. Savers use checkable accounts to settle transactions by exchanging checks for goods & services. These deposits provide a liquid asset for savers, because savers value liquidity , these deposits are non interest bearing accounts(G.Hubbard,Peter Rose).

- ✓ Non Transaction (Saving & Time deposits)-Savers use only some of their deposits for day to day transactions. To attract funds from depositors, who want to earn interest on their funds, banks offer non-transaction deposits. These include saving deposits(sometimes called passbook accounts) and Time deposits .

Saving deposits bear a relatively low interest rate but withdrawn by depositor with little or no notice. Time deposits carry a fixed maturity and offer the highest interest rates a bank can pay. Time deposits may be divided into negotiable certificate of deposits that may be traded in the open market and are purchased mainly by the corporations and non negotiable CDs, which are small, consumer type accounts.

- ✓ Borrowing – banks often have more opportunities to make more loans than they can finance with the funds they attract from depositors. To take advantage of these opportunities, banks raise money by borrowing .non deposit funds are borrowed to meet banks cash needs, especially as competition for deposits has increased. Principal non deposit sources of funds for banks are purchase of excess

reserves from other banks.

- **Use of funds (Assets):**

✓ Cash items- the most liquid asset held by the commercial banks is reserves, which consist of vault cash –cash on hand or in deposit at other bank-and deposit at the central bank reserve system .As part of its regulation of the banking system, the central bank requires that banks hold some of their deposit in non-interest bearing accounts –as vault cash or in reserve accounts at the central bank. These required reserves, which are a percentage of the bank's deposits ,are a tax on banks intermediation because they bar a bank from lending of all its deposits .Banks also hold cash assets to provide them with the liquidity needed to meet normal outflows from demand deposit(Peter .Rose,Hubbard). These assets are the bankers' first line of defense against immediate cash needs to cover expense.

✓ Security – marketable securities are relative liquid assets that banks trade in securities markets. Banks are allowed to invest in Treasury securities. Because of their liquidity banks' holdings of Treasury securities are sometimes called Secondary reserve, which help to meet short run cash needs of institutions, businesses, and governments. Commercial banks also hold securities acquired in the open market, as long term investment like government bonds.

- ✓ Loans-the principal business of commercial banking is to make loans to qualified borrowers. Loans are illiquid relative to government securities and entail greater default risk and higher information costs. As a result loans are among the highest yielding assets a bank can add to its portfolio and they provide the largest portion of operating revenue.

  For commercial banks, the most important type of loans are commercial &industrial loans and real estate (Mortgage) loans. Other bank loans are made to customers or overnight loans to other banks through inter-bank money market.

- ✓ Other assets- this category covers banks physical assets in equipment & buildings .It also includes collateral received from borrowers in default

- **Bank Equity Capital(Net worth)**

Equity capital supplied by a bank's shareholders provides a portion of the total funds for most banks. It is generally indicated as the difference between the source & use of funds. However, in most cases, the ratio of bank loans and deposits generally low due to falling profit margins, inflation and efforts by bank managers to employ greater financial leverage to magnify returns in good economic conditions (Frank Fagozzi, Modigilian). As a result, the central bank's tend set risk based capital adequacy regulation to control the systematic risk in their supervisory regulation (Prudential).

2.3 Previous studies on the portfolio behavior of commercial banks

The management of commercial banks is called up on daily to make portfolio decisions, that is , what financial asset to buy or sell, what the commercial banks sources and uses of funds (Peter Rose).Commercial banks seek to earn a positive spread between the asset it invests in and the cost of its funds. The spread income should allow commercial banks to meet operating expenses & earn a fair profit on its capital. In generating spread income commercial banks face several risks including credit risk, regulatory risk, interest rate risk and liquidity risk(Frank Fagozzi,Modiglian)

Given the uncertainties from environmental factors and profit maximization objectives, there are different studies on the portfolio behavior of commercial banks (Robinson ,Hodigman, Edgeworth, Porter ,Orr and Mellon, Markwitz and Tobin).

2.2.1 Priority Concept

Roland Robinson's analysis is an excellent example of the traditional banking approach. Robinson sought to describe methods of achieving the most profitable employment of commercial bank funds consistently with safety. For him, these methods essentially consist of setting & following a hierarchy of priorities in the employment of bank funds. The priorities in descending order are:1)legally required reserves 2)secondary reserves 3) customer credit demands and 4) open market investments for income

According to Robinson, the interest rate paid on deposits, implicitly for demand and

explicitly for savings and time balances, is not viewed as a decision variable for the individual bank. Given the volume and composition of its deposit liabilities, the bank makes a sequence of decisions concerning the composition of its portfolio. First , the bank meets its legal reserve requirements. Second, it determines secondary reserve holdings; these reserves consist of short term assets. The decision for secondary reserve arises out of possible but unforeseen cash drains associated with deposit losses and loan requests. The decision to hold secondary reserve is assumed to be independent of prevailing and expected interest rates.

While this framework provides many insights into bank motives for holding various assets, it does not indicate how a bank optimizes when deciding whether or not to shift funds from one asset to another; marginal analysis plays no part in traditional banking analysis. What if strong loan demand causes a bank to exhaust its slack resource investment? Robinson didn't explain how banks do or should allocate scarce funds. Because rates of return do not enter the analysis, there is no way for loan customers to bid funds away from the portfolio of reserve assets. Clearly, the priority concept requires modification if it is to form a reliable base upon which to build.

2.2.2 Inventory Model

Among the most difficult problems facing the banking firm is uncertainty about inflows and out flows of cash over the given period .This uncertainty arises from three sources: First, the bank doesn't exactly know in advance what in and outflows it will experience in its deposit accounts. Second, the bank faces uncertainty about the repayment of matured

loans (due to the existence of default risk) and possibly about the granting of new loans. Third, the bank faces uncertainties from regulatory bodies from the change of reserve requirement as a monetary control or liquidity argument.

This uncertainty induces banks to carry inventories of cash into the period (Edgeworth, Orr,Mellon,Porter,Morrison, Frost,Baltensperger). To hold such inventories reduces the risk of cash deficiencies during the period and of the cost of portfolio adjustments forced upon the bank by that event. These studies emphasize the economizing information costs as the main economic function of inventories. Thus, commercial banks use different practice in managing liquidity risk and credit risk. However, different studies (Ernst Baltensperger, Hellmuth Milde) indicate that a bank can use resources(including real & time)in order to acquire more information about its customers and reduce the degree of uncertainty it faces

The importance of random deposit variations for the determination of a bank's optimum portfolio was first suggested by Edgeworth. Later this uncertainty is introduced explicitly in the model of banks behavior. Porter applied an inventory model to describe banks portfolio behavior under the conditions of uncertainty. Porter inventory model for the banks behavior indicate that banks that maximize profits will hold diversified portfolio in uncertain world. Because of its inventory approach in its approach, it is useful in analyzing banks demand for excess reserve and other liquid assets. Later work by Orr and Mellon,Morrison, Charnes ,Thore and Poole indicate the theoretical importance of behavior under uncertainty.

2.2.3 Diversification

Another approach to the question of bank portfolio optimization under uncertainty stems directly from Markowitz's pioneering study of efficient portfolio selection and from Tobin's liquidity preference. Securities that are candidates for an investor's portfolio can be characterized by two factors that help determine the ultimate asset composition of the portfolio: yield and risk (Fagozzi, Frank).

These methods have been applied to the problem of determining a bank's optimal portfolio. Banks operate in a world in which asset rates of return are not known with certainty and in which return-risk characteristics differ among assets. Further, bankers are likely to be risk averse. The application of the theory of portfolio selection to banking can yield precise statements about asset substitutions that banks will make in response to changes in expected rates of return and/or risk.

Diversification refers to constructing a portfolio in such a way to reduce portfolio risk without scarifying returns. This is certainly the goal that investors seek. However the question is how does one do this in practice(Fagozzi,Modiglian).

Individuals/ financial intermediaries purchase assets with the expectations that these assets will increase in value over time , but not all assets appreciate in this way. From our description of individuals /institutions behavior in selecting of an asset ,we might expect could sort through the maze of available assets and find one that does increase in value and is best choice for individuals/institutions investment dollars/Birr. But implicit in the discussion of theory of portfolio allocation is the importance given to each asset the individuals/institutions decide to include in a portfolio. Why did we assume that the individuals /institutions would hold more than one asset if they could locate the perfect

investment? The answer is that the real world is full of uncertainties, and despite all the analysis & careful decision making, individuals /institutions cannot be certain that an asset will perform as expected. To compensate for inability to find a perfect asset, investors typically hold various types of assets. Even with in categories of financial assets, investors usually hold many individual issues. Allocating investments among different assets is known as diversification (Hubbard).

In the real world, returns on assets don't move together perfectly because their risk are imperfectly correlated. That is , assets don't all fare well or poorly at the same time. Thus, the return on the diversified portfolio is more stable than the returns on individual assets making up the portfolio. Diversification effectively allows the investor to divide risk into smaller and thus less potentially harmful pieces (Fagozzi,Modiglian, Hubbard, R. O.Edmister).

A portfolio is efficient if it is impossible to increase its expected return without raising its risk (variance).The problem of portfolio selection is one of maximizing expected utility subject to the trade-off between risk and rate of return available to from the set of efficient portfolios. This maximization for risk averse investor will usually imply the selection of a diversified portfolio.

Individuals/financial intermediaries cannot eliminate risk entirely because assets share some common risk called systematic (market) risk. Assets also carry their own unique risk called idiosyncratic(unsystematic) risk(Hubbard,Fagozzi,Modiglian).

Diversification can eliminate idiosyncratic risk but not systematic risk .Indeed, even if assets return are independent (completely uncorrelated),increasing the number of assets held in the portfolio reduces the overall risk. Diversification reduces the riskness of the

return on the portfolio unless asset's move together perfectly .The less the return on the assets move together, the greater the benefit individuals and institutions reap from diversification.

The mean-variance expected utility maximization model of Tobin-Markowitz reveal factors that are fundamental to any portfolio selection problem. In particular, using various versions of this approach, it follows that the composition and in some cases the size of a commercial bank's portfolio depends on expectations, variances, and co variances of the holding-period yields on the individual assets and liabilities comprising the portfolio. Furthermore, the dependence between assets and liabilities in the balance sheet is emphasized, although this dependence is strictly in terms of risk and return properties which exclude liquidity motives for holding assets.

Imperfect market assumptions-usually with respect to the loan market-have also been incorporated into the mean-variance approach. Both the perfect and imperfect market versions of the mean-variance model have been applied empirically, and the evidence suggests that this approach embody at least some of the important determinants of commercial banks' holdings of assets.

Chapter Three – Methodology

3.1 Data Sources, techniques of collection & Sample

The portfolio behavior of commercial banks examined using the data collected from the NBE's reports on the commercial banks. These are the sources of data for different categories of securities in the commercial banks for historical analysis. The National Bank of Ethiopia (NBE) data gives the levels of assets & liabilities on the annual basis and the interest rates on the different assets for the period of year 1998 to 2006 for participant commercial banks in longitudinal form of the study.

For the consistency of data, I collect annual reports in each commercial bank in the same period. Moreover, I conduct personal interview with individuals related to banking & insurance supervision department at NBE and those individuals related with different securities at particular commercial bank to probe into unclear data and assess any peculiarities of the institution. I use a combination of sample based and data base specific techniques of data collection.

NBE report indicates 3 publicly owned banks (including the specialized development bank of Ethiopia) 9 private commercial banks (including currently inaugurated and excluding that are on the process of formation private commercial banks). For this study I select commercial banks based on judgment, which I believed that own the large proportion of funds in the financial intermediation that the interrelationships I like to

ascertain and participants for the period specified: CBE (from public owned banks) and Dashen, Awash International , Wegagen & Bank of Abyssina (from private banks).

3.2 Variables & Measurements

Interest rates & bank deposits are taken as explanatory variables & asset holdings commercial banks are taken as the dependent variables in the study.

- **Interest rates**- measured in percentage, the own interest rate (the rate on the asset that is the dependent variable) & rates on alternative assets appear as explanatory variables. The variables to be used and their measurements in the study are presented as follows:-

- ✓ Rates of deposits in foreign banks-is the yearly effective yearly weighted average interest rate at the prevailed rate of exchange of the year in the series.
- ✓ Treasury bill rate- is the yearly weighted average yield on treasury bills.
- ✓ Rates on the bonds-is the effective yearly weighted average yield on government bonds.
- ✓ Lending rate– is the yearly weighted average lending rate

- **Bank deposit:**
  - Demand deposits-the data are yearly levels in the series
  - Saving deposit-the data are the yearly levels in the series
  - Time deposit- the data are the yearly levels in the series

- **Asset holdings**

- Excess Reserve - the data are last holdings cash reserves including cash at the premise of banks & deposits at the National banks of Ethiopia not to back up the public deposits of the year in the series
- Deposits in foreign banks-the data are the last holdings of banks in foreign banks adjusted to birr at the prevailed exchange rate.
- Treasury bills- the data are the last holding of banks of the year in the series
- Government bonds-the data are the last holdings of banks as the other investment of the year in the series (adjusted for investments in affiliates & subsidiaries).
- Loans & advances–the data are for the all gross holdings of banks of the year in the series

3.3 Data Presentation and Analysis &Results.

In this section, the data observed in the variables specified as indicants of the portfolio theory constructs are presented and analyzed using statistical techniques. In this regard, firstly, the raw data collected in the portfolio dimensions are presented with the specific observational units (holding commercial banks).

Secondly, the raw data collected & tabulated are manipulated& analyzed using the statistical techniques. The descriptive statistics are used in analyzing a single variable The relation among different variables examined using correlation & regression analysis. Moreover, the results from the analysis are drawn & interpreted in its implication to the

portfolio behavior of commercial banks.

3.3.1 Data presentations

The raw data on the interest rates, bank deposits and asset holdings are observed in the commercial banks selected in the study.

Interest Rates & Bank deposits

Interest rates in the primary holdings of commercial banks are the candidates to be used in estimating the demand for assets & examining the behavior of commercial banks. The interest rate on in deposits from foreign banks, the treasury bills, in government bonds and lending rates are the weighted average interest rates which are in nominal terms Taking the assumption that I set in the study where commercial banks holds assets in the homogenous maturity range, these interest rates are taken as constant across commercial banks.

All the customer deposits at the commercial banks, that is, demand deposits, saving deposits & time deposits are the principal sources of funds. Stock of funds from these customer deposits are taken as the explanatory variables in analyzing the portfolio composition of commercial bank.

The data collected on these variables are collected from the annual report of commercial banks at the National banks are presented in the table 1 below, with classification given to the holding commercial banks and the characteristics of the variables for the year 1998 to 2006

Notations -

I DIFB: rates of deposits in foreign banks

I TB: Treasury bills rate

I GB: government bond rate

I L : lending rate

DD: Demand deposits

SD: Saving deposits

TD: Time deposits

Table 1.Raw Data: Interest rates & bank deposits

Year

No	Variables	1998	1999	2000	2001	2002	2003	2004	2005	2006
Weighted average interest rates (in percentage)										
1	*i DIFB*	3.8	3.2	2.3	3.2	1.7	1.5	1.4	2.5	2.5
2	*i* TB	3.8	4.8	1.11	0.61	0.95	0.62	0.53	0.09	0.04
3	*i GB.*	3.3	3.3	3.3	2.51	1.55	1.38	2.54	2.5	2.5
4	*i* L	11.3	11.75	12.00	12.75	10.75	10.5	10.5	10.5	10.5
Bank deposits (in millions of birr)										
1	**DD**									
	CBE	7178	6921	7856	8961	9230	9779	12150	13886	15790
	DB	141	186	183	261	393	466	623	793	1039
	AIB	82	108	132	136	166	245	287	422	574
	WB	24	58	119	159	172	251	375	590	725
	BOA	24	52	81	94	134	207	223	333	403
2	**SD**									
	CBE	5641	6021	6639	7494	8130	8745	9347	10653	11870
	DB	187	245	371	533	737	1056	1448	1897	2343
	AIB	243	290	409	552	713	875	1141	1437	1833
	WB	80	164	201	232	202	274	351	518	723
	BOA	94	181	330	468	631	719	937	1183	1548
3	**TD**									
	CBE	726	468	498	504	493	420	383	413	324
	DB	35	38	51	92	61	99	107	143	310
	AIB	26	34	50	63	713	44	65	81	160
	WB	8	33	53	58	137	179	150	180	330
	BOA	24	61	71	89	144	150	115	111	226

Asset holdings

As indicated in the variables specification, the data in the primary asset holdings of commercial banks include excess reserves, deposits in foreign banks, investment in

government securities (treasury bills & government bonds) and loans & advances are presented in table2 below:-

Notations:

ER: Excess reserves DIFB: Deposits in foreign banks

TB: Treasury bills GB: Government bonds L&A: Loans& Advances

Table2. Data: portfolio choice

No	Variables	1998	1999	2000	2001	2002	2003	2004	2005	2006
Set of dependent variables(use of funds in commercial Banks millions of Birr)										
1	Cash items **1.1 ER**									
	CBE	2044	1895	3612	1712	1755	2705	3128	9970	5227
	DB	74	121	137	117	127	194	274	433	418
	AIB	29	47	48	118	127	81	231	267	236
	WB	23	70	107	131	138	139	180	206	324
	BOA	23	27	79	61	304	312	268	485	469
	1.2DIFB									
	CBE	2667	2170	1189	1720	2157	2506	2090	847	1395
	DB	167	128	139	192	192	245	190	446	546
	AIB	30	35	45	104	66	100	116	267	367
	WB	32	49	91	56	64	140	185	350	248
	BOA	48	58	58	84	85	141	123	193	203
2.	**Securities** **2.1 TB**	103	240	586	1800	3081	7558	10189	4610	10414
	CBE	0	89	20	0	130	129	299	0	0
	DB	10	15	150	46	130	316	337	235	198
	AIB	0	25	20	16	0	0	0	0	0
	WB	0	0	0	0	0	0	173	0	0
	BOA									
	2.2 GB									
	CBE	2094	2095	2096	5130	5129	2508	2772	5491	6716
	DB	0	0	0	10	31	23	26	28	28
	AIB	0	0	1	8	10	3	3	3	3
	WB	0	0	0	0	0	0	0	0	0
	BOA	0	0	5	5	5	5	5	0	0
3	**L&A**									
	CBE	8947	9785	10343	10051	9751	8565	8336	9756	9302
	DB	233	301	533	714	872	1267	1690	2232	3164
	AIB	341	378	447	561	637	800	946	1290	1872
	WB	99	196	262	344	406	571	738	1002	1516
	BOA	103	256	522	687	669	809	962	1234	1963

3.3.2 Analysis & Results

The raw data collected in the commercial banks are analyzed to examine their portfolio behavior. The different statistical data analysis techniques are employed to describe the specific variable in the portfolio & to estimate the relations among the variables.

3.3.2.1. Descriptive & Correlation Analysis

I. Interest rates & deposits

As indicated from the theoretical prescriptions and the specifications I make, each interest rate in asset holdings & bank deposits described as explanatory variables. However, to have the clear picture of the effects of determinants in the portfolio choice, we need to look into the explanatory variables themselves.

a. Interest rates and the relations among set of interest rates & deposits

Interest rates, which are measured & collected as the weighted average interest rates, are taken as the return of the assets of every commercial bank in the sample that hold assets in the homogenous maturity range. The trends in the interest rates are presented in the graphical representation as indicated in figure 1 below:-

Percentage (%)

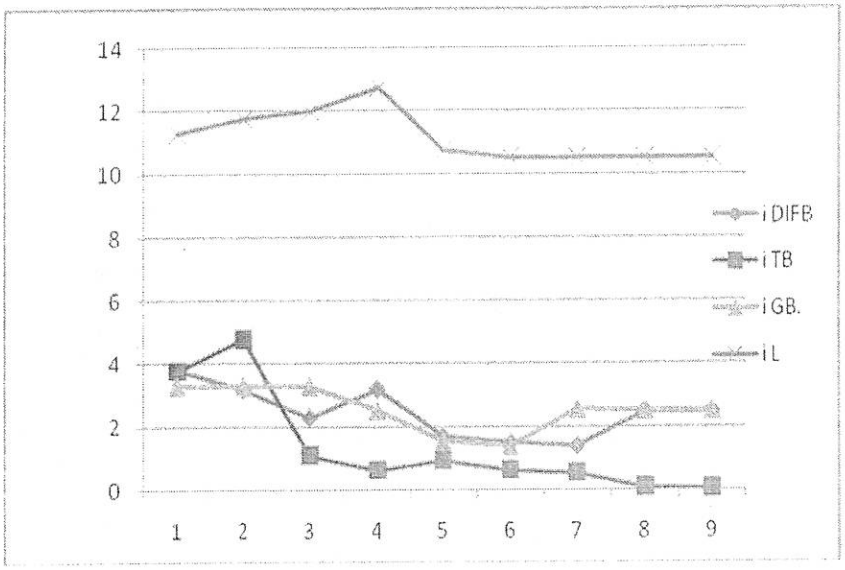


Figure 1.Weighted Average Interest Rates in year 1998 to 2006

The relations among interest rates are examined based on the correlation analysis. The correlations of among i DIFB, i TB, I GB & i L are indicated in the upper part of the matrix as indicated in the table3 below. The reciprocal relationships among interest rates are not presented to avoid redundancy. Bank deposits are also looked in to its relation with set of interest rates and within the set of bank deposits.

Table3 Correlations, means and standard deviations' among interest rates &bank deposits

Variables	iDIFB	I TB	I GB	I L	DD	SD	TD	Mean	std
1 i DIFB	1.000	0.625	0.695	0.598	-0.448	-0.422	-0.032	2.45	0.83
2. I TB		1.000	0.584	0.343	-0.735	-0.736	-0.390	1.40	1.72
3. I GB			1.000	0.500	-0.382	-0.373	-0.135	2.54	0.71
4. I L				1.000	-0.687	-0.643	-0.395	11.17	0.83
5.DD					1.000	0.988	0.694	2285.22	758.64
6.SD						1.000	0.747	2193.78	810.07
7.TD							1.000	196.44	110.14

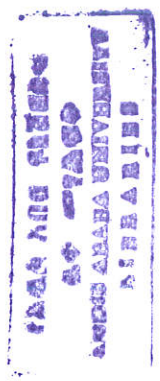
The first explanatory variable that is taken to explain the asset holdings in portfolio of commercial banks is the rates of deposits in the foreign banks. Interest rates in the deposits in foreign banks are taken as the variable not from its significance as the yield assets. In practice, banks hold assets as deposits in foreign banks to facilitate the international trade. But, taking deposit in foreign correspondents as only the interest bearing assets assumption, we can observe the behavior of banks from the yields of these deposits. The return from these assets was indicated to be low in the observations .As can be seen in figure1, the trends in this rates of deposits in foreign banks experienced some variations. There was the general decline in returns from deposits in foreign bank. The highest yield on deposits in foreign bank was occurred in the first year of observation in 3.8%.The lowest of this rate was observed in year 2003.This can be explaining the liquidity need of assets as the short term trading instruments. The higher the liquidity preference of banks sacrificed the return on the asset. The relation of rates on the deposits in the foreign banks with i TB, i GB, i L are examined based on the correlation analysis as indicated in the table3 above. There was an indication of significant positive correlation between i DIFB and i TB, 0.625,i GB,0.695and i L,0.598. The reciprocal relationship in these rates takes the same value. These significant positive correlations among the return of assets give implications for portfolio risk in banks. The higher the positive correlations entail the higher risk in the portfolio. Moreover, the relationships of I DIFB with the customer deposits are examined. The correlations of I DIFB with demand & saving deposits found to be significantly negatively correlated with the coefficients of -0.448&-0.422.However, the relationships of I DIFB with time deposits found to be negligible correlation with the coefficients of -0.032.This implies in the

relative volatility & costs of incoming funds from deposits, commercial banks tends to behave in choice of the relatively low return but liquid assets in the portfolio.

Treasury bill rate are usually taken as the minimum base interest rate in the structure of interest rates. As we see in the figure 1, treasury bills are by far lower than the rates in deposits in foreign banks, government bonds rate, and lending rates in the periods observed, particularly in the year 2000 to 2006. The risk premium on rates compensates the commercial banks for foreign exchange risk, illiquidity, maturity& default risk associated with deposits in foreign banks, government bonds and loans. The treasury bills are tax free assets but negative in real terms. The negative real treasury bills rates offset by the tax benefits embedded in it. The treasury bills rates were higher in the first two years of observations in about 3.8% and 4.88% but it continually dropped in the remaining period of observations. It was less than 1% for the year 2001 to 2006.The relation of treasury bills rates are examined with i GB, i L and of course, with i DIFB as indicated above. The correlation of I TB with I GB found to be significantly positively correlated with the coefficients of 0.584.However, i TB indicated to have low correlation with i L in the coefficients of 0.343.The relations of i TB with the customer deposits are examined in the analysis. In examining the relation of I TB with demand,-0.735, & saving deposits,-0.736, it indicated to have high correlation. However, correlations i TB with time deposit,-0.390, found to be low in the analysis.

Interest rates on the government bonds are the weighted average interest for the government bonds return on the holdings of commercial bank adjusted for its long maturity to be the effective interest rates in government bonds. The yield from the bonds

reflect the long maturity of the instruments .As we see in the figure1, the return from investments in the bond were very low in the comparisons to the lending rate. This indicates the credit risk premium in the lending rate tends to be higher than the default risk free of rates in government bonds. Government bonds rates found to be higher than treasury bills from the period of observations in the study. This indicates in part the maturity & liquidity premium over the treasury bills rate. Government bonds rates found to be stable around 3.3% in the first three years of observations in the series. However, the trend in the government bonds rates found to decline consistently in the year 2001 to year 2003 to touch the lowest observation about 1.38% .The government bonds rate reshape its trend to rose to about 2.5% in the year 2004 to 2006.These variations in the distributions of bond rates are examined in its relations with I DIFB, I TB &I L. The reciprocal relations of I GB rate with I DIFB & I TB holds the same correlations as stated above. The relations between I GB & I L, 0.500, found to have significant positive correlations. Government bonds rates are also examined with its relations with the customer deposits .The correlation of I GB with demand,-0.382, and saving,-0.373 deposits indicated to have low negative correlation in the analysis. However, the relations between I GB & time deposits,-0.139, found to be negligibly correlated that implies the government bonds rates are highly affected with the flow of demand & saving deposits than time deposits.



Lending rates are the principal return for commercial banks for holdings assets in the loan markets. The lending rates in the commercial banks vary in the specific categories of borrowing sector that may reflect the credit risk associated with the asset& maturity. As

specified in the study, the variations in rates in the borrowers are only indicated by the weighted average of lending rate as indicated in the National Bank of Ethiopia as the proxy. The data collected in the lending rates of commercial banks were indicated to be high from any other asset return for banks However; lending rates vary in its observation for the period specified in the study. Lending rate was relatively higher in the first four years of the observation in which the highest level of lending rate occurred at the year 2001 at the weighted average interest rate of 12.75% and remained stable for year 2002 to 2006 around 10.5%. These distributions of the lending rate are examined with the set of other explanatory variables of asset holdings. The relation between lending rates with I DIFB,I TB and I GB are examined based the correlation analysis. The correlations among these set of interest rates are found to hold the same correlation coefficients parameter as stated above from the reciprocal relationships. The relations of the lending rate examined with the observed customer deposits. The lending rate indicated to be significantly, negative correlated with demand in -0.687 and saving in -0.643 coefficients of the deposits. However, the lending rate shown to have low negative correlation with the time deposits in correlation coefficients of -0.395.

b .Bank deposits &the relations among set of deposits & interest rates

As we see in the table1 of the raw data in bank deposits, the deposit mobilizations of commercial banks are generally increasing for the period specified in total terms. But, there are a number of variations in deposit composition which have many bearings in the cost, volatility and maturity of the incoming funds which can affect the asset choice of banks.

The data collected in the deposits across observational units are averaged out for the specific year in the series. As a result, the raw data are manipulated to reflect the deposits of the average commercial bank in Ethiopia. This analysis can help to look into their deposits mobilization controlling the differences in the size of commercial banks. The deposit mix in average bank is presented in the figure 2 below:-

Percentage (%)

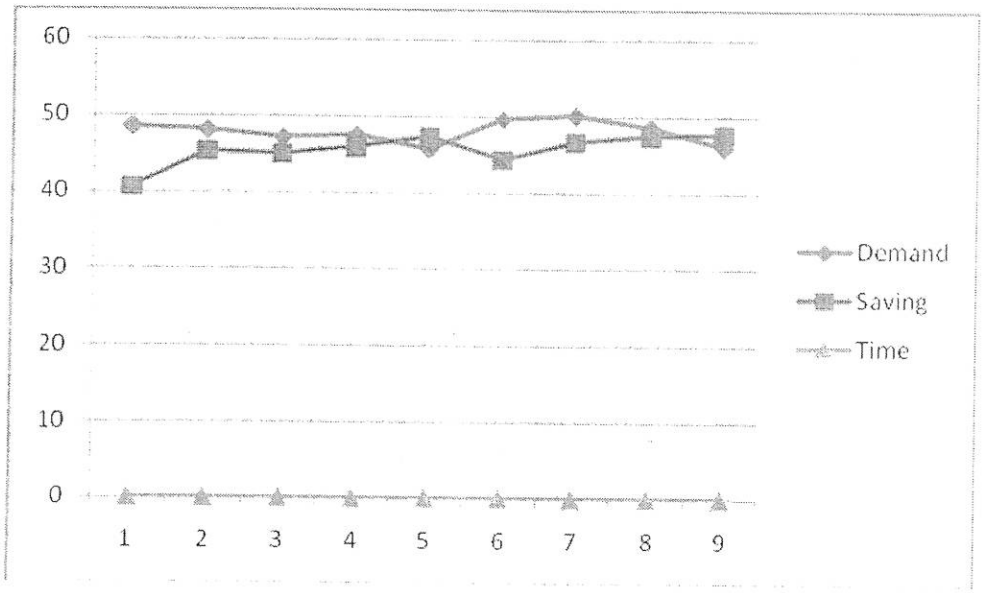
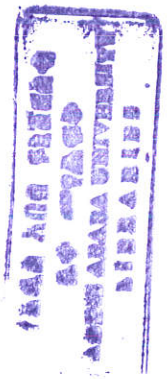


Figure2. Deposit mix percentage for average commercial bank (in year1998 -2006)

As can be seen in table 3, the descriptive statistics that can analyze the measure the central tendency and measure of variability in the distributions of deposits are examined for the specific variable. DD, SD &TD in their relations with the i DIFB, i TB, i GB, & i L are examined. Moreover, the relations among DD, SD &TD are also examined in their correlations analysis.

Saving deposits, as the non transaction deposits, also were indicated to be the principal source of resource mobilizations of commercial banks in Ethiopia. Saving deposits are high in costs and less volatile in the comparison to demand deposits. Technically, saving depositors must give prior notice for the bank for the withdrawal of funds in excess of birr 5000 as indicated in the customers passbooks, but banks usually waive this requirements, making saving deposits, in practice, demandable. Saving deposits in the customer deposits compositions generally increase, with some variations, in the commercial banks through time. Average banks held the lowest proportion of saving deposits in the year 1998 at about 41% the deposit mix. For the year 1999 to year 2004, it was stable around 45% in the mix of deposits that rose to reach its peak in the last two years of observations in about 47.5% of the deposit mix. The relationships of saving deposits are examined with the set of interest rates and demand deposits from the reciprocal correlation analysis. The correlation coefficients that can estimate the relation of the variables were obtained as indicated above. In addition, saving deposits relations with time deposits are found to have significant positive correlation, 0.747, in the analysis.



Time deposits, as the other non transaction deposits, indicated to be the lowest proportion of the deposit compositions of commercial banks. Unlike saving deposits, time deposits have specified maturities that typical ranges up to 1 year,1-2 years and over 2 years(source: the National Bank of Ethiopia report). Fixed (time) deposits are relatively high in costs compared to demand & saving deposits .The funds that flow from these sources of funds to banks indicated to be less than 1% & continuously declined in the periods of observation. Time deposits of the commercial banks examined in its relations

with the set of interest rates selected, demand & saving deposits. The correlations analysis of time deposits in the reciprocal analysis results the same estimations as indicated in the interest rates, demand and saving deposits correlations with time deposits previously.

II. Asset holdings and the relations with Interest rates & Deposits

The data collected in the five observational units in the portfolio choice with in the period specified for the study are summarized to simplify the phenomena so we can understand & describe it better. The data collected in the asset holdings across observational units are averaged out for the specific year in the series. As a result, the raw data are manipulated to reflect the holdings of the average commercial bank in Ethiopia. This analysis can help to uncover their behavior controlling the differences in the size of commercial banks.

As we see in the table 2, the raw data the portfolio compositions of commercial banks consist of three broad categories of assets indicated as the cash items (Excess reserves, deposits in foreign banks), securities holdings(treasury bills& government bonds), and loans &advances. The holdings of these assets across observational units vary cross-sectional & longitudinally .The holdings of these assets in the portfolio are the variables that are to be explained in the study (dependent variables). These asset compositions are examined longitudinally through percentage distributions. The percentage of portfolio choice for average commercial banks are indicated in the figure 2 below

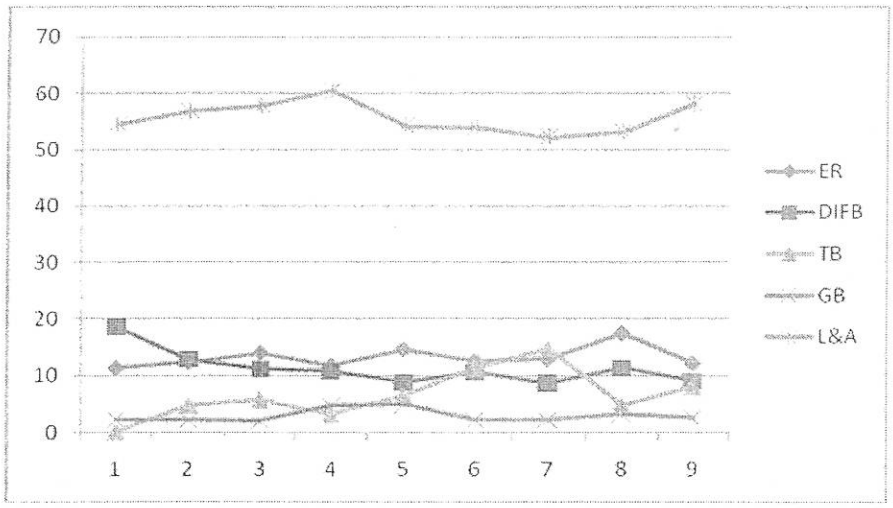


Figure3. Percentage of portfolio choice in Average commercial bank (in year1998-2006)

Note: These percentages of asset composition considers the effect of holdings as the required reserves &other miscellaneous assets to deal with balance sheet identity constraint (see the attached annex for the raw data of these assets in the portfolio)

The descriptive statistics that can analyze the measure the central tendency and measure of variability in the distributions of asset holdings are examined for the specific variable. Moreover, the data described in the asset choices, interest rates and bank deposits are analyzed to look into their relations with each other in the commercial bank. The relations among variables are examined based on the correlation analysis. Correlation analysis for asset holdings, interest rates and deposits are examined on the Pearson's correlation coefficients.

The correlation among the variables takes in to account the relation between each dependent variable with the stated independent variables (r $y_i x_j$). The correlation coefficients that can estimate the degree of association in the relationship is undertaken in the analysis by taking Excess reserves, deposits in foreign banks, Treasury bills, Government bonds and Loans& Advances as the dependent variables. Interest rates are taken as independent variables. Moreover, deposits also included as variables in the arguments.

The descriptions of each asset holdings and its relations with the interest rates& bank deposits are presented in the table 4 below. The correlations among the variables indicate the set of relationships among the assets choice of commercial banks, the set of interest rates and bank deposits.

Table 4.Means& Standard deviations of Asset holdings and its correlations with interest rates,& deposits

Variables	Y i	I DIFB	I TB	I GB	I L	DD	SD	TD	Mean	std
Yi ER	1.000	-0.278	-0.565	-0.200	-0.544	0.718	0.736	0.336	937.4	558.2
DIFB	1.000	-0.258	-0.579	-0.158	-0.490	0.803	0.806	0.415	1363	628.1
TB	1.000	-0.609	-0.632	-0.461	-0.704	0.870	0.841	0.680	958	896.5
GB	1.000	-0.031	-0.576	-0.442	-0.124	0.501	0.568	0.361	925	272.5
L&A	1.000	-0.222	-0.693	-0.229	-0.381	0.884	0.934	0.824	2578	451.5

Cash reserves including excess reserves and required reserves are non interest bearing accounts that commercial banks set aside in the national bank of Ethiopia or as a vault cash held in the premise of banks. Required reserves demand are exogenously determined

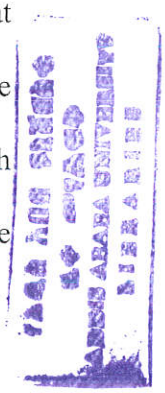
as the required reserve ratio that is 5% in Ethiopia for the period specified in the study, times the volume of eligible deposits (demand, saving, time deposits) that are needed to back up the public deposit and to affect the money multipliers so as to increase or decrease the money supply. However, excess reserves consist of cash & deposits at the NBE owned by the commercial banks that are not needed to back up the public deposits and may be used to make loans, purchase securities, and repay debt or other purposes.

Excess reserves reflect the excess of the actual reserves over the required reserves as indicated in the reports of the NBE and cash in the commercial banks. The commercial banks holdings of assets as excess reserve is at the nexus of the current prevailed & 'unexplainable' prevailed level of inflation. The compositions of Excess reserves indicated to be the high proportion of the total assets of the average commercial bank. The highest proportion of excess reserves occurred in the year 2005 in about 17.5% which was followed in that occurred in the year 2000& 2002 at around 14% of the total assets compositions. The lowest being occurred in the year 1998 in about 11%, it is indicated to be about 12% of the total portfolio choice of average bank in the other years of observations.

Banks holding high excess reserves incurs opportunity costs .Whereas, banks holding low excess reserves banks may result in adjustment costs that may result from reserve deficiencies. The bank needs to strike the balances that minimize opportunity costs & adjustment costs in the demand for Excess reserves (Ernest Barnster, Helmuth) .Besides, commercial banks hold assets as excess reserves to satisfy the liquidity needs that may

arise from the withdrawal demands from the depositors, the credit risk from borrowers and loan demands .Thus, the average variability &volatility deposits force banks to hold as reserves. In the change of these variables, commercial banks lead to adjustments in the flow of funds to cash reserves.

The variations in the holdings of excess reserves, as indicated above, have cost implications for the commercial banks and the inefficiency of the policy makers. Holding high proportion of excess reserve in the year 2005, 2000 &2002 has an indications that the commercial banks may incur high opportunity costs that lost from the alternative use of funds .In other round, holding low amounts of the cash reserve may indicate the high adjustment costs in the year 1998 &other years of observations that may arise from the liquidity needs of the savers, regulatory bodies and borrowers.



However, the cost implications highly depend on the relative interest rates and the deposits volatility. The relations of excess reserves among these variables are indicated in the correlation matrix. Excess reserves holdings of commercial banks are indicated to be negatively correlated with the change in the interest rates. The relation between excess reserves and Treasury bill rates & lending rates are indicated to be significant and inversely related at about 0.567& -0.544 . However, the rates in deposits from foreign banks and rates from government bonds indicated to have low relations -0.278 & -0.200.The relation of excess reserves and interest rates indicate the opportunity costs associated in holdings as cash reserves. The opportunity costs in relative interest rates of alternative use of funds particularly, in the treasury bills & lending rate affect the Excess

reserves holdings of commercial banks. Moreover ,the deposit of commercial banks also affect the holdings of excess reserves .Demand deposits & saving deposits, which are relatively volatile ,are indicated to be highly related with the excess reserve holdings of commercial banks 0.718& 0.736,that is significant at the test than the fixed deposits 0.336. The change in the set of relative interest rates & the bank deposits indicate the desired level of holdings of assets as excess reserves.

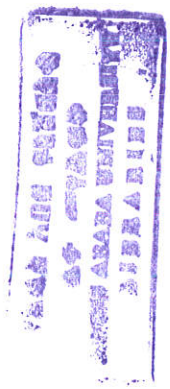
Deposits at the foreign banks holdings of commercial banks arise mainly from the international trades of the country. Banks hold assets as the short term trading instruments in facilitating foreign transactions. However, assuming that deposits in foreign banks are only as the interest bearing assets can have implications in examining the behavior of commercial banks .Deposits at the foreign banks also took a high share of funds in the portfolio of commercial banks. The highest proportion of this asset in average commercial bank was occurred in the year 1998 in about 18.7% of the total portfolio of Commercial banks. However, it experienced continuous decline in the holdings of commercial banks for the other periods of observations to only rise to 11.4% in the year2005. This trend in the holdings of assets as the deposits in the foreign banks can be explained in the yields of the relative rates. This holding of assets in the portfolio has an effect in the portfolio return and the portfolio risk. Moreover, these holdings of deposits in foreign banks are also examined in its associations with bank deposits.

The relationship among the own rate &rates of return in alternative assets and the holding of assets as the deposits in the foreign banks are examined in the correlation analysis. The relation of deposits in foreign banks holdings and interest rates indicated to

have low negative correlations with its own rate -0.278 & government bond rates -0.158. The degree of association with its own rate reflects the primary motive of bankers in the holdings of deposits in foreign bank in their portfolio. The default risk free of government bonds rate also indicated to be low in offsetting of the liquidity risk in the holdings of the relatively liquid assets as the deposits in foreign banks than the relatively long maturity of government bonds. However, there was substantial degree of negative correlations with treasury bills rate and lending rates with -0.579 & -0.490. These relations of deposits in foreign banks in the portfolio of banks indicate the liquidity & default risk free of treasury bills and default/credit risk & maturity of loans and advances in the portfolio. The bank deposits correlation with banks holdings as deposits in foreign banks also examined in its correlations. In this regard, the high correlation among demand and saving deposits 0.803&0.806 and substantial correlation with time deposits 0.415. These degrees of association of deposits in foreign banks with deposits indicate the relative volatility of funds from these sources of funds tends commercial banks hold assets that are relatively liquid

The securities holdings (treasury bills & Government bonds) indicate the allocation funds by commercial banks on the behalf of ultimate savers to the ultimate borrowers (specifically government of Ethiopia) in the financial markets. Because of the ill structured& crippling nature of our financial markets, the holdings of these assets in commercial banks experienced a lot of discontinuity in the flow of funds & holdings in commercial banks, particularly government bonds. These assets are the tools that the National Bank of Ethiopia used to channel the monetary policy of the country.

Commercial Banks allocated its portfolio as investments in the financial market of Ethiopia. Assets compositions in these categories of assets were lowest in the first year of observation which accounted for about 2.8 % of total compositions in the portfolio to rose to about to 7% and 8% in the year 1999 to 2001.The total holdings of these categories of assets in average bank indicated to be high in year 2002 to 2004 with 11.4%, 13.5% & 16.9% of the portfolio compositions, to decline to about 8% in the year2005.The proportion of these categories of assets revived in the year 2006 to about 10.6% of average bank portfolio. These variations in the categories of assets were the reflections in the variations in the banks holdings of Treasury bills and government bonds.



Treasury bills, which are the relatively liquid assets & default risk free, are usually taken as the secondary reserve that can satisfy the demands of depositors and borrowers from the banks intermediation. Treasury bills observed to vary in the holdings of average commercial bank across the time. The funds allocated to this asset were lowest in the year 1998 at about 0.05% that rose to 4.8% and 5.7% in the year 1999 & 2000 respectively. The decline to 3.1% in the year 2001 was observed to rise to about 6.5% in the year 2002. Treasury bills holdings of average bank was observed to highest in the year 2003 & 2004 in about 11.3%&14.7%of total portfolio of the bank .However, there was a sharp decline to 4.8% in the year 2005 that rose to 8% in the year 2006.This variations in the holdings of treasury bills in the portfolio behavior can be better explained in its relations with the set of interest rates and the bank deposits that can reflect the profitability objectives and the risks that embedded with it.

Treasury bills, as the dependent variables, are examined in its correlation with the own rate (i TB) and the relative interest rates (i DIFB ,i GB ,i L) as in indicated in table 2. Based on the correlation coefficients & the test, treasury bills holdings indicate significant negative correlation with its own rate and rates in deposits from foreign banks and government bond rate -0.609, -0.632 & -0.490, respectively. Moreover, the lending rate indicated to be highly negatively correlated with treasury bills holdings of banks with -0.703These relations of treasury bills holdings indicate the credit /risk free of government bonds rate, liquidity of deposits in foreign banks rate and the high return from loans as affecting its demand. Treasury bills also examined as it is constrained by the resources mobilizations from deposits of savers. In this regard, demand & saving deposits, which are highly volatile in its characteristics, are also found to be highly positively correlated 0.870 &0.841 with treasury bills holdings of banks. Time deposits .which is relatively less volatile & fixed in its maturity found to be significantly positively correlated 0.681 with treasury bills.

Government bonds are relatively long period of maturity & default risk free issued by the government of Ethiopia to finance budget deficit and to channel the policies .Average commercial bank holdings of bonds indicated some variations across the time. In the year 1998 to2000, it was stable around 2%. Bank held the highest proportion of its funds in bonds, in the year2001&2002 about 4.9%. In the year 2003&2004, it was declined to the small proportion of the portfolio allocated to the bonds holdings with around 2.2% that rose to 3.3% & 2.6% in the average commercial bank in the last two years of observations respectively. These variations in the holdings of government bonds in the

portfolio were examined the relations with the set of interest rates and deposits mobilizations from the savers.

Government bonds holdings of banks are analyzed in its correlation with its own rate and relative interest rates (i DIFB, i TB& i L) as the determinants of the asset holdings. The Pearson's correlation analysis of government bonds tend to have significant negative correlations with treasury bills -0.567 and relatively with its own rate -0.442 .However, it shows the negligible correlation with rates of deposits in foreign banks -0.031 and lending rates -0.124.This indicate the government bonds holdings of commercial banks is in part depends on the credit risk embedded to the returns .The correlation among demand, saving and government bonds holdings found to be significant with 0.501&0.586. However, time deposits& government bonds holdings of banks indicated to have low correlation in 0.361.

Loans & advances are the principal businesses of commercial banks in Ethiopia. Commercial loans & advances encompassed mainly borrowing of the central government , public enterprises , inter- bank lending , cooperatives and private & individuals or in terms of economic sectors , it shows government deficit financing, agriculture, industry ,Domestic trade , International trade(export & import).(Source: NBE annual report).Loans & advances are the highest yield assets of commercial banks but it is high risk assets that usually arise from the default/credit risk and the prevailing adverse selection& moral hazards.

Assets holdings of commercial banks of Ethiopia in loans market indicated to be high from the observed data. The holdings of loans & advances in the commercial banks were the highest proportion of any other portfolio dimensions in the trend. It was high for average commercial bank in the year 1998 to 2001 by holding about 55%to 60% of the total assets in the portfolio. The consistent decline for the year 2002 to 2005 that touch its lowest proportion in about 53% rose to 58% in the year 2006 of the total portfolio. The trend in the loans& advances holdings in the portfolio is examined in its relations with interest rates and bank deposits.

The relationship between loans & advances and set of interest rates (I L-its own rate, i DIFB, i TB& i GB-relative interest rates) were examined based on the correlation analysis. The Pearson's correlation coefficients of treasury bills rate with the loans & advances holdings of commercial banks indicate the high negative correlations in -0.696. However, Loans & advances holdings found to have low negative correlations with rates of deposits in foreign banks -0.222, government bonds rate -0.229 and its own rate -0.381. Loans &advances indicated to be highly positively correlated with demand 0.884, saving 0.934 and time deposits 0.824.

3.3.2.2 Regression Analysis

Given the description & correlation of Asset holdings (portfolio choice) with the interest rates& deposits(r yixi) as indicated in table 4 and the description & correlation of among interest rates & bank deposits & the reciprocal relationship(r $x_i x_j$ & r x_j x_i) as indicated in table 3(Recall, the reciprocal correlation among explanatory variables holds the same

value are not indicated to avoid redundancy),we can estimate the asset holdings of commercial banks with the change in the interest rates and deposits based on regression analysis.

The relationship among interest rates, bank deposits determinates of portfolio choice can be estimated using regression analysis. The regression coefficients of interest rates,& bank deposits are taken as slopes of the regression line and constants can indicate estimated asset demands. In regressing assets holdings of commercial banks with the explanatory variables, the regression coefficients of the explanatory variables& constants are estimated as presented in the table 5 below:-

Table 5.Regressions among asset holdings, interest rates& deposits

		Coefficients						
Variables	Const.	Set of interest rates				Bank deposits		
		i DIGB	i TB	i GB	i L	DD	SD	TD
ER	22247.7	992.59	-582.17	814.26	-1864.75	-5.78	4.71	-13.55
DIFB	99002.8	6025.56	-1250.01	429.45	*-8485.42*	-6.02	-3.01	-56.83
TB	-11440.1	-1925.67	333.92	1105.71	2057.36	-0.111	-7.12	42.17
GB	1507.69	190.46	11.48	-446.99	7.644	-1.819	2.098	-1.12
L&A	3596.76	-367.98	147.56	172.2	-278.22	-0.081	0.051	1.011

The demand for Excess reserves of commercial banks are estimated by taking *I difb*, *i*

TB, *i GB* , *i L* (relative interest rates assets),& deposits as a as explanatory variables. Regressing the holdings of ER with these variables provide the relations with regression coefficients and constants that can estimate demand stated in the table 5above.

The demand for the deposits in foreign banks are estimated by taking the own rate (i difb), i tb, i GB, i L (as the relative interest rates), deposits as explanatory variables. The regression coefficients of the determinants are estimated in the asset holdings as the deposits in the foreign banks & the intercept of the regression line also indicated as in table 5

The demand for treasury bills are estimated by taking *i TB* (the own rate) and I DIFB,I GB & *i L* (the relative interest rate).Moreover ,deposits are also used in estimating the demand for treasury bills. Commercial banks hold assets in the treasury bills of the financial markets of Ethiopia for its liquidity and low default/ credit risk but it has low yield in comparison to the lending rate. Regressing the treasury holding of commercial banks with these variables result in the coefficients & constants as indicated in table 6 above.

The demand for government bonds are estimated by taking i GB(the own rate) and i difb , i TB, i L(the relative interest rates).Moreover, deposits as the wealth constraints and lagged holdings are also included as the variables in the arguments ,The determinants variables are regressed to determine the coefficients. The intercept of the regression line also estimated.

In estimating the demand for loans and advances, I take the weighted average lending rate (the own rate) , i DIFB, treasury bills rate, i GB (the relative interest rate) and

deposits as a constraint variables. Regression these variables with the holdings of loans & advances, I found the indicated estimated demands for loans &advances as in table 5.

From the estimated asset demand , we can examine each asset holdings separately with regard to the remaining objectives formulated in the study in its implication for the behavior of portfolio in the commercial banks .Thus, the demand equations for Excess reserve, deposits in foreign banks, Treasury bills ,government bonds, and loans &Advances are examined in the substitutability& complementary in assets, deposits as constraint variables and the speed of adjustments in the discrepancy between the desired holdings & actual holdings of assets.

- ***Substitutability- Complementarities in the portfolio***

In evaluating the substitutability- complementary in the portfolio of commercial banks, we need to interpret the interest rate regression coefficients in the demand equations for each asset.

As we have seen the estimated demand for Excess reserves, the treasury bills rate and & the lending rate included as explanatory variables. The negative sign attached to i TB & i L reflects the increase opportunity costs in the demand for Excess reserves. The excess reserves holdings of commercial banks decreased on average about 582&1864.75millions of birr for a unit change in i TB, & i L respectively. However, excess reserves holdings of commercial banks increase on average about 992.5 & 814.6 millions of birr for a unit change in the i DIFB & i GB.

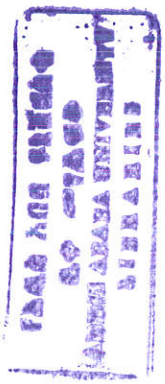
In the demand for deposits in the foreign banks, the negative sign attached to the

regression coefficients of treasury bills rate& lending rate reflects the substitutability among the deposits in foreign banks, & treasury bills .However, the regression coefficients positive sign attached to government bonds rate & lending rate indicate the complementary between government bonds with the holdings as the deposits in foreign banks in the portfolio. The holdings of deposits in foreign banks in the portfolio found to decrease on average about 1250&8485.45 millions of birr for a unit change in the treasury bills rate& lending rate respectively. However, the holdings (demand) for deposits in foreign banks tends to increase on average about 6025.6 & 429.1millions of birr for a unit change in rates of deposits in foreign banks government bond rate & lending rate.

In the demand of treasury bills holdings, the negative sign attached to the I DIFB indicate the substitutability between the deposits in foreign banks & treasury bills holdings in the portfolio. However, the positive sign attached to the coefficients of I GB & i L in the holdings of treasury bills indicate the complementarities in the portfolio. The holding of treasury bills of commercial banks found to increase on average about 1105.71 & 2057.36 million of birr for a unit change in I GB& I L respectively. However, the demand for treasury bills decrease on average about 1925.37& 333.92 millions of birr for a unit change in I DIFB&I TB respectively.

In the demand for government bonds, the rate of deposits in foreign banks coefficients indicated to be positive in the regression analysis, consistent to with DIFB equation, and positive sign attached to the lending rate that indicate their complementarities in the

portfolio. Moreover, the positive sign attached to the coefficients treasury bills rate, which is consistent to the demand equation to the treasury bills demand, indicate their complementarities in commercial banks. As we have seen in the demand equation for the government bonds holdings in the portfolio of commercial banks indicated to increase on average about 190.46, 11.48 &7.664 millions of birr for a unit change in the rates of deposits at the foreign banks, treasury bills rate& lending rates respectively. However, government bonds holdings of commercial banks indicated to decrease on average about 446.99 millions of birr for a unit change government bond rate respectively.



In the demand for loans & advances, the positive sign attached to regression coefficients of i TB, & i GB indicate the holdings of loans & advances complementarities with holdings as the deposits in foreign banks and government bonds in the portfolio. However, the negative sign attached to regression coefficients of i DIFB indicate their substitutability in the portfolio . As we see in the estimated demand for loans & advances, it indicated that loans &advances holdings increase on average about147.56 & 172.2 millions of birr for a unit change in the treasury bills rate & government bonds rates. However, it is found that the demand for loans & advances decrease on average about367.98 & 278.22 millions of birr for a unit change in rates of deposits in the foreign banks &lending rate respectively.

- ***Deposits as constraints in the portfolio***

The effects of bank deposits, as constraint variables, are indicated in the coefficients of the DD, SD&TD in the estimated demand.

In the demand of Excess reserves, the regression coefficients attached to demand & time deposits found to be negative in sign .These indicates that the holding of Excess reserves decreases with demand & time deposits. Demand deposits, which was found to be found to be high in the deposit compositions and time deposits, which was found to be the lowest proportion in the deposits mix indicated to decrease the holdings of excess reserve in average about 5.79 & 13.55 millions of birr for a million of birr change in the deposits sources respectively. However, excess reserves holdings of commercial banks are on the average to increase by about 4.71millions of birr for a million of birr change in the saving deposits. These entail banks hold enough amounts of cash reserves that are needed to satisfy the demand & time depositors. However, the positive sign attached to the regression coefficients of saving deposits indicate the increase in holdings of excess reserves with the change in saving deposits. This explains the 'necessity' to hold assets as the cash reserves to satisfy the withdrawal demands of saving depositors.

In the demand for asset holdings as the deposits in the foreign banks, the regression coefficients of demand, saving &time deposits indicated to be negative. These indicate the holdings of the deposits in foreign banks found to be decreased in the portfolio with the change in the demand, saving deposits & time deposits. The holdings of assets as the deposits in foreign banks are found to decrease on average about 6.02, 3.01 and 56.83 millions of birr for a million of birr change in the demand, saving &time deposits of banks .This indicates commercial banks holds asset as deposits in foreign banks, not to satisfy the withdrawal demands of depositors.

In the demand of treasury bills, the regression coefficients of demand & saving deposits found to be negative in sign but the positive sign attached to the regression coefficients of time deposits. These indicate that the treasury bills holdings of the banks decrease with the change in demand & saving deposits but the increase with the change in the time deposits. The treasury bills holdings of commercial banks in the portfolio indicated to decrease on average about 0.111&7.12 millions of birr for a unit change of demand & saving deposits in the commercial banks. However, the treasury bills holdings increase on average about 42.17 millions of birr for a million of birr change in time deposits. These indicate the holdings of enough cash reserves that can satisfy the volatility of the demand & saving deposits and the 'inferiority' of treasury bills in the portfolio, as the yield asset. However, time deposits, which are relatively long& fixed maturity, increase the holdings of treasury bills, as the secondary reserves, to minimize the opportunity costs in holding as the primary reserves (excess reserves).

In the demand of governments bond, the regression coefficients of demand & time deposits found to be negative in sign but the coefficients of the time deposits found to be positive. These indicate that the demand for the Government bonds indicated to be decreased with the change in demand & time deposits but increased with the saving deposits. The demand for government bonds found decrease on average about 1.819& 1.22 millions of birr for a million of birr change in demand & time deposits respectively. However, government bonds found to increase on average about 2.089 million of birr for a million of birr change in saving deposits.

In the demand of loans & advances, the regression coefficients of demand deposits found to be negative in sign .This indicates the decrease of the loans & advances in a change with demand deposits in the portfolio. This relationship in the demand equation can explain the volatility of demand deposits that results in the liquidity risks which may arise from the withdrawal of depositors upon demand by holding relatively illiquid loans & advances. However, the regression coefficients of saving & time deposits in loans& advances found to be positive in sign. These indicate that loans & advances holdings in the portfolio increase with the change in saving deposits& the time deposits. The demand for loans & advances found to increase on average about 0.051&1.011 millions of birr for a million of birr change in the saving & time deposits respectively. However, loans& advances demand found to decrease about 0.081millions of birr for a million of birr change in the demand deposits of banks. The increase in the loans & advances with the change in saving & time deposits indicate the 'luxury' of holding of assets as loans & advances in the elasticity of wealth, from relatively less volatile of saving and long& fixed maturity of time deposits.

Chapter Four-Conclusion

I looked into the portfolio behavior of commercial banks in Ethiopia .In this regard, the data collected from the sample which comprise the majority of assets are analyzed and a number of results are produced in the study.

In this chapter, I set out the following general conclusions that are drawn from the analysis made & its findings:

- Interest rates &bank deposits as explanatory variables are described& the degrees of associations with in them are examined. In this regard, the rates of deposits in foreign banks, treasury bills rates, & lending rates found to positively co-vary. The demand & saving deposits indicated to move in opposite to treasury bills & lending rates than rates of deposits in foreign banks & government bond rate. There are also significant associations in demand & saving deposits than time deposits.
- The primary assets holdings in the portfolio are examined in their association with the set of interest rates, bank deposits and lagged dependent variables. The asset holdings indicated to move in opposite to interest rates. Moreover, asset holding indicate associations with demand& saving deposits
- The holding of excess reserves, deposits in foreign banks, treasury bills, government bonds, and loans& advances are estimated based on regression analysis:-

- ✓ The commercial banks holdings of excess reserves are found to sensitive with the change in the treasury bills & lending rates in the increase in opportunity costs with the demand for excess reserves than rates in deposits in foreign banks &government bonds. Deposit in foreign banks and treasury bills are found to be substitutable in the portfolio. Deposits in foreign banks and loans & advances found to be substitutable to each other in the portfolio. However, Treasury bills, Government bonds and loans & advances are complementary to each other in the portfolio.
- ✓ The holding of Excess reserves decreases with demand & time deposits but increases with the saving deposits. Holdings for deposits in the foreign banks in the portfolio of commercial banks found to decrease in a change in all types of bank deposits. Holdings of government securities (both treasury bills& government bonds) indicated to decrease with the change in the demand & saving deposits .But the holdings of these assets found to be increase with time deposits. The holdings of loans &advances are also examined with the change in bank deposits. As a result ,commercial banks holdings of loans &advances found to decrease with the change in the demand deposits but increase with the change in saving & time deposits

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Statement of Declarations

I hereby certify that the study has not presented for a degree in other university and all the sources of the material used for the study have been duly acknowledged.

Teramaje

I hereby certify that Ato Teramaje has undertaken the study diligently & specify others work appropriately.

Adivisor,Dr Ulungatham

ANNEX

	17,434	19,828	21,489	22,146	24,200	27,975	33,169	35,849
	17,434	19,828	21,489	22,146	24,200	27,975	33,169	35,849

Awash International Bank

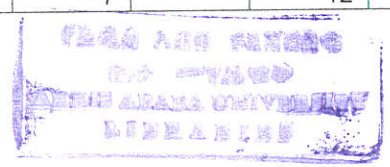
Balance Sheet

Year ending June

(In millions of Birr)

Assets	1998	1999	2000	2001	**2002**	**2003**	**2004**	**2005**	**2006**
	A	A	A						
Cash on hand	24	33	39	69	120	76	100	129	125
Cash at Bank	2	0	14	6	6	2	0	2	2
Reserve Account with NBE	21	36	27	81	81	61	206	233	237
Deposit with foreign Banks	30	35	45	104	66	100	116	267	367
Treasury bills	10	15	150	46	130	316	337	235	198
Other Investments		0	1	8	10	3	3	3	3
Trust Funds	-					-			
Other debit balances	13	25	27	22	48	30	61	72	152
Total Loans Advances	341	378	447	561	637	800	946	1290	1872
Less Provision For Doubtful Debts	4	5	14	19	24	44	73	80	92
Net Loans & advances	337	373	433	542	613	756	873	1,210	1,780
Customers' liability for L/C						-			
Fixed assets	15	19	23	29	38	57	74	75	90

Total	**452**	**536**	**759**	**907**	**1,112**	**1,401**	**1,770**	**2,226**	**2,954**
Liabilities									
Deposits	351	432	591	751	930	1,164	1,493	1,940	2,567
Demand Deposits	82	*108*	132	136	166	245	287	422	574
Saving Deposits	243	*290*	409	552	713	875	1141	1437	1833
Fixed Deposits	26	*34*	50	63	51	44	65	81	160
Foreign Bank their A/C	-								
Trust Funds	-								
Short term loans	-								
Other credit balances	53	48	74	43	51	73	94	16	83
Margin held on L/C						27	22	42	
Loang term loans									
Provision for taxation							6		
State dividend payable	-								
Other provisions	-								
Bank's liability to L/C									
Capital & reserves	48	56	94	104	131	137	155	228	304
Authorized & paid	*34*	41	73	91	100	111	127	155	188
Legal reserves	*4*	7	9	12	17	19	23	32	43
General reserves	*1*	1	5	1	2	2	3	7	8
Retained Earning				9					
Profit & loss A/C	*9*	7	7		12	5	2	34	65



Total	452	536	759	907	1,112	1,401	1,770	2,226	2,954
	452	536	759	907	1,112	1,401	1,770	2,226	2,954

Bank of Abyssinia

Balance Sheet

At year ending June

(In millions of Birr)

Assets	1998	1999	2000	2001	2002	2003	2004	2005	2006
	A	A	A						
Cash on hand	4	14	19	22	28	51	58	110	101
Cash at Bank	1	4	21	21	252	242	170	16	5
Reserve Account With NBE	26	24	63	51	70	73	104	440	472
Deposit with foreign Banks	48	58	58	84	85	141	123	193	203
Treasury Bills	-	-	0	0	0	0	173	0	0
Other Investments	-	-	5	5	5	5	5	0	0
Trust fund		-	0	0	0	0	0	0	0
Sundury Debtors & Other debit balances	21	31	32	32	58	61	44	90	113
Total Loans & Advances	103	256	522	687	669	809	962	1234	1963
Less Provision for doubtful Debts	-	4	8	18	38	62	73	61	61
Net Loans & advances	103	252	514	669	631	747	889	1,173	1,902
Custemers liability		-	-	-	-	90	67	174	180
Fixed assets			6	12	13	13	19	35	38

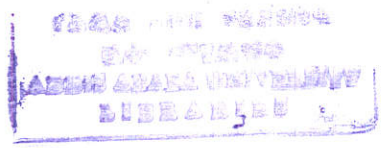
	3	5							
Total	**206**	**388**	**718**	**896**	**1,142**	**1,333**	**1,585**	**2,057**	**2,834**
Liabilities									
Deposits	#REF!	294	482	651	909	1,076	1,275	1,627	2,177
Demand Deposits	*33*	*52*	81	94	134	207	223	333	403
Saving Deposits	*94*	*181*	330	468	631	719	937	1183	1548
Fixed Deposits	*24*	*61*	71	89	144	150	115	111	226
Foreing Bank		-	0	0	0	0	0	0	0
Trust fund		-	0	0	0	0	0	0	0
Short term loans		-	0	0	0	0	0	0	0
Other credit balances	8	17	45	42	54	67	84	118	173
Margin held on L/C	20	33	59	40	29	39	17	37	45
Long term loans		-	0	0	0	0	0	0	0
Provision for taxation	1	5	9	0	9	2	16	21	37
State dividened		-	0	0	0	0	0	0	0
Other provisions		-	0	16	0	0	0	0	0
Bank liability		-	0	0	0	90	67	174	180
Capital & reserves	26	39	123	147	141	149	193	254	402
Authorized & paid	*25*	*31*	108	120	129	132	137	166	265
Legal reserves	-	*2*	2	10	10	11	21	36	58
General & Special reserves	-	*1*	1	4	4	4	6	6	13
Retained Earning				13	-2	2	29	46	66

	1	*5*							
Profit & loss A/C			12	0					
Total	**#REF!**	**388**	**718**	**896**	**1,142**	**1,333**	**1,585**	**2,057**	**2,834**
	206	**388**	**718**	**896**	**1,142**	**1,333**	**1,585**	**2,057**	**2,834**

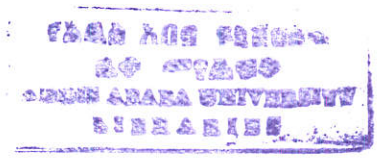
Wegagen Bank
Balance Sheet
(In millions of Birr)

Assets	1998	1999	2000	2001	2002	2003	2004	2005	2006
	A	A	B						
Cash on hand	9	14	53	68	69	86	75	104	147
Cash at bank	11	23	12	27	30	33	54	104	91
Reserve Account with NBE	21	46	61	59	65	55	95	62	175
Deposit with foreign Banks	32	49	91	56	64	140	185	350	248
Treasury Bills	-	25	20	16	0	0	0	0	
Other Invesments	-			0	0	0	0	0	
Trust Funds	-	-		0	0	0	0	0	
Sundury Debtors & Other debit balances	7	9	13	19	18	18	20	24	57
TotalLoans & Abvances	99	196	262	344	406	571	738	1002	1593
Less Provision for Doubtful Debts	-	3	7	15	20	29	43	51	77
Net Loans & advances									

	99	193	255	329	386	542	695	951	1,516
Customers' liability for L/C	-	-		0	0				
Fixed assets	6	7	9	9	14	15	16	21	25
Total	**185**	**366**	**514**	**583**	**646**	**889**	**1,140**	**1,616**	**2,259**
Liabilities									
Deposits	112	255	373	449	515	704	876	1,288	1,778
Demand Deposits	*24*	*58*	119	159	172	251	375	590	725
Saving Deposits	*80*	*164*	201	232	202	274	351	518	723
Fixed Deposits	*8*	*33*	53	58	137	179	150	180	330
Foreign Bank their A/C	-	-	0	0	4				
Trust Funds	-	-		0	0				
Short term loans	-	-		10	0				
Other credit balances	14	37	47	32	41	55	72	89	118
Margin held on L/C	16	23	40	26	20	33	50	43	85
Long term loans	-	-	0	0	0				
Provision for taxation	-	5	4	8	6	4	13	16	23
State dividend payable	-	-	0	0	0				
Other provisions	-	-	0	0	0				
Bank's liability to L/C	-	-	0	0	0				
Capital & reserves	43	46	50	58	64	93	129	180	255
Authorized & paid	43	43	44	46	53	77	89	113	151



Legal reserves	-	2	2	4	6	8	16	28	46
General reserves	-	-	1	1	0			3	5
Retained Earning				0	0	8	24	36	53
Profit & loss A/C	-	1	3	7	5				
Total	**185**	**366**	**514**	**583**	**646**	**889**	**1,140**	**1,616**	**2,259**
	185	**366**	**514**	**583**	**646**	**889**	**1,140**	**1,616**	**2,259**



Commercial Bank of Ethiopia

Balance Sheet

At year ending June

(In Millions of Birr)

Assets	1,999	2,000	2,001	**2,002**	**2,003**	**2,004**	**2,005**	**2,006**
		A	A					
Cash on hand	391	316	440	430	609	406	669	573
Cash at Bank	-	-	-	-			50	
Reserve Account with NBE	2,193	4,080	2,142	2,262	3,196	3,934	11,304	6,656
Deposit with foreign Banks	2,170	1,873	1,719	2,157	2,291	2,090	837	1,392
Treasury Bills	240	586	1,800	3,081	7,558	10,189	4,610	12,586
Other Investments/bonds	2,096	2,099	5,121	5,125	2,481	2,828	5,488	4,566
Trust Funds	24	41	-	-	-		22	
Sundury Debtors & Other debit balances	1,665	1,683	1,335	1,507	1,782	2,004	2,428	2,194
Total Loans Advances	9,785	10,347	10,658	9,751	8,553	8,325	9,556	9,296
Less Provision For Doubtful Debts	1,355	1,438	1,959	2,394	2,478	2,029	2,023	1,643
Net Loans & advances	8,430	8,909	8,699	7,357	6,075	6,296	7,533	7,653
Customers' liability for L/C								
Net Fixed assets	225	241	233	227	208	228	228	229
Total	17,434	19,828	21,489	22,146	24,200	27,975	33,169	35,849
Liabilities								

Legal reserves	-	2	2	4	6	8	16	28	46
General reserves	-	-	1	1	0			3	5
Retained Earning				0	0	8	24	36	53
Profit & loss A/C	-	1	3	7	5				
Total	**185**	**366**	**514**	**583**	**646**	**889**	**1,140**	**1,616**	**2,259**
	185	**366**	**514**	**583**	**646**	**889**	**1,140**	**1,616**	**2,259**

Deposits	13,775	15,715	17,471	18,530	19,762	22,531	25,367	28,127
Demand Deposits	*6,921*	*7,867*	*8,954*	*9,223*	*10,907*	12,707	13,896	14,908
Saving Deposits	*6,021*	*6,672*	*7,494*	*8,138*	*7,845*	9,326	10,631	11,814
Fixed Deposits	*468*	*449*	*504*	*492*	*383*	373	407	1,405
Foreign Bank their A/C	*339*	*686*	*519*	*677*	*627*	125	433	
Trust Funds	*26*	*41*	-	-	-			
Short term loans								
Other credit balances	1,476	1,505	2,511	2,757	2,990	2,408	6,157	5,898
Margin held on L/C	784	813	-	-	-	1,387		
Long term loans	3	3	-	-	-			
Provision for taxation	167	204	194	30	171	153	216	318
State dividend payable	43	237	12	-	-			
Other provisions	62	62	-	-	-			
Bank's liability to L/C								
Capital & reserves	1,124	1,289	1,301	829	1,277	1,496	1,429	1,506
Authorized & paid	*620*	*620*	*620*	*620*	*620*	620	620	620
Legal reserves	*299*	*402*	*407*	*407*	*657*	624	677	886
General reserves	*65*	*65*	*65*	*64*	-	65	65	
Retined Earning		*202*	*209*	- *262*	-	187	67	
Profit & loss A/C	*140*		-					
Total