



DETERMINATES OF BANK LIQUIDITY RISK OF COMMERCIAL BANKS OF ETHIOPIA

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fulfillment of M.A Degree of the University**

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DECLARATION

I, Liza Birhanu G/mariam, here by to declare that the thesis entitled “**DETERMINATES OF BANK LIQUIDITY RISK ON COMMERCIAL BANKS OF ETHIOPIA**” submitted by me for the award of the degree of Masters of Science in Accounting and Finance from Addis Ababa University. This is my original work and it has not been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other University or institution.

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Abstract

This study was assessed determinants of liquidity risk in commercial Banks of Ethiopia. To find the overall objective of the study data were collected from primary and secondary data sources. Questioners and interviews were also used as instrument of primary data collection while secondary data were collected from annual report of the selected four commercial banks, and other related documents. To determine the sample population of the study area, the study used purposive sampling techniques accordingly; from 18 total commercial banks of Ethiopia, four of them were part of the study considering their experience. In addition, the study also considered sample employee of each banks that work on areas related to liquidity management and monitoring of each banks. Finally the data were interpreted and analyzed using different data analysis techniques such as, using percentage, mean and correlation analysis and multiple regressions. The study overall were analyzed and discussed in three major sections. The first section of the study was discussed data obtained through questioner and interview of each banks employee. The second section of the study were analyzed the major determinant factors of liquidity based on the panel data (reviewed from 2012 - 2016), accordingly, the study tried to analyze the effect of various determinant variables of liquidity such as, the effect of Capital Adequacy, bank size, loan growth, non – performing loan, interest margin profitability, GDP and Inflation on liquidity risk management practice of the studied commercial banks. . The third section of this study was data analyzed cause effect relationship of the major dependent and independent variables using correlation and regression analysis. Accordingly the finding implied that, liquidity position of commercial banks was excess which is caused by low economic development and existence of limited financial instruments in the country. Among the factors that influence liquidity risk management by commercial banks in Ethiopia include: absence of secondary markets, lack of enough financial instruments and absence of strong management information system. Finally, recommendations were forwarded based on the major findings so as to improve the liquidity risk management practice of commercial banks in Ethiopia.

Key Words, *Liquidity Risk, Bank Size, Capital Adequacy, Return on Asset, GDP, Inflation, Loan growth, Non-Performing loan, Interest rate, Return on Equity*

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LIST OF ACRONYMS

CBE	COMMERCIAL BANK OF ETHIOPIA
CAP	CAPITAL ADIQUENCY
GDP	GROSS DOMESTIC PRODUCT
INF	INFLATION
IR	INTEREST RATE
LG	LOAN GROWTH
NPL	NON PERFORMING LOAN
NBE	NATIONAL BANK OF ETHIOPIA
MoFED	MINISTRY OF FINANCE AND ECONOMIC DEVELOPMENT
ROA	RETURN ON ASSET
ROE	RETURN ON EQUITY
UB	UNITED BANK
WB	WEGAGEN BANK

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Bank's liquidity indicates the ability to finance its transactions efficiently. If the bank is unable to do this it is known as the liquidity risk. As this risk increases the bank is considered unable to meet its obligations (such as deposits withdrawal, debt maturity and funds for loan portfolio and Investment) (Ezirim F. 2005).

Liquidity creation is the main concerns of commercial banks because it is crucial for its existence. It is known that the banking sector plays an important role in the economic growth of a country. This is made through matching surplus economic units with deficit economic units. However, this fundamental role of banks in the 'maturity transformation' of short term deposits into long term loans make banks inherently vulnerable to liquidity risk, both of an institution specific nature and that which affects markets as a whole (Kiyotaki and Moore,2008).

Hence, liquidity risk can be defined as the risk of being unable to liquidate a position timely at a reasonable price (Muranaga and Ohsawa 2002). Liquidity risk has become one of the main concerns of financial institutions following the financial crisis of 2007 (Andrew, 2013).

Lucchetta, (2007) states that "liquidity is the life and blood of a commercial bank". Recent studies indicate that liquidity risk arises from the inability of a bank to accommodate decreases in liabilities or to fund increases in assets. An illiquid bank means that it cannot obtain sufficient funds, either by increasing liabilities or by converting assets promptly, at a reasonable cost. In periods the banks don't enjoy enough liquidity, they cannot satisfy the required resources critical conditions, lack of enough liquidity even results in bank's bankruptcy.

Banks play a central role in all modern financial systems. To perform it effectively, banks must be safe and be perceived as such. The single most important assurance is for the economic value of a bank's assets to be worth significantly more than the liabilities that it owes. The difference represents a cushion of "capital" that is available to cover losses of any kind. However, the recent financial crisis underlined the importance of a second type of buffer, the "liquidity" that banks have to cover unexpected cash outflows. A bank can be solvent, holding assets exceeding

its liabilities on an economic and accounting basis, and still die a sudden death if its depositors and other funders lose confidence in the institution (Moore, 2009).

Liquidity and liquidity risk management are the key factors for the safety of business operations in any commercial banks (Kiyotaki, and Moore, 2008). Together with the development of finance market, opportunities and risks in liquidity management of commercial banks will also meet a correlative increase. This shows the importance of planning the liquidity needs by the methods with high stability and low cost in order to sponsor for business operations of commercial banks in the global growing competition (Andrew and Agbada, 2013).

As the concern of this study, Liquidity risk arises from the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans. Liquidity risk could be decomposed in to funding liquidity risk and market liquidity risk. Funding liquidity risk is the risk that the bank will not be able to meet efficiently both expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm. According to Drehman - Nikolau, (2009), market liquidity risk is the risk that a bank cannot easily offset or eliminate a position at the market price because of inadequate market depth or market disruption. Generally, there are a lot of determinant factors of liquidity risk, such as size of the bank, capital adequacy, market situation, operational efficiency of the bank, inflation, loan practice and so forth (Naser and Masomeh, 2013).

1.2 Statement of the problem

Banks play a central role in all modern financial systems. To perform it effectively, banks must be safe and be perceived as such. The single most important assurance is for the economic value of a bank's assets to be worth significantly more than the liabilities that it owes. The difference represents a cushion of "capital" that is available to cover losses of any kind. However, the recent financial crisis underlined the importance of a second type of buffer, the "liquidity" that banks have to cover unexpected cash outflows. A bank can be solvent, holding assets exceeding its liabilities on an economic and accounting basis, and still die a sudden death if its depositors and other funders lose confidence in the institution (Akter and Mahmud, 2014).

Muranagaand Ohsawa (2002) has argued that liquidity is one of the essential requirements for the effective functioning of the banking system. Without adequate liquidity, banks are not able to perform some of the core functions including settlement of their inter-bank obligations (transactions occurring between banks). Banks to have an adequate should have liquidity; they must understand major determinates of their bank liquidity performance and management effectively before the risk happened.

Liquidity risk is the possibility that over a specific time period, the bank will become unable to settle obligations with immediacy. It is a risk arising from a bank's inability to meet its obligations when they come due without incurring unacceptable losses. This risk can adversely affect both banks' earnings and the capital and therefore, it becomes the top priority of a bank's management to ensure the availability of sufficient funds to meet future demands of providers and borrowers, at reasonable costs (Moore, 2009).

There are internal and external sources of liquidity risk. Accordingly, banks specific (internal factors) such as, bank size, capital adequacy, non-performing loan (NPL) and banks external (macroeconomic factors) factors such as, GDP, financial policy of the country, inflation, and financial crisis (Lucchetta, 2007).

The type of liquidity risk involved can result in a variety of implications as to how each individual institution manages its liquidity risk. However, the available information shows that all banks generally pursue the same objectives. These are usually; to ensure solvency at all times, to optimize intergroup cash flows (pooling liquidity, thereby reducing dependency on external refinancing), and to optimize the refinancing structure (Kiyotaki, and Moore, 2008).

Liquidity risk needs to be monitored as part of the enterprise-wide risk management process, taking into account market risk and credit risk to ensure stability in the balance sheet and dynamic management of liquidity risk. A bank should only attempt this if it makes good business sense, not use it as a means to keep afloat. Liquidity risk not only affects the performance of a bank but also its reputation (Jenkinson, 2008). A bank may lose the confidence of its depositors if funds are not timely provided to them. The bank's reputation may become at stake in this situation.

As banks dominate the financial sector in Ethiopia, the process of financial intermediation in the country depends heavily on banks. Hence, keeping their optimal liquidity for banks in Ethiopia is very important to meet the demand by their present and potential customers. Furthermore, the National Bank of Ethiopia has required banks to have their own liquidity policy (Bank Risk Management Guideline, 2010) which enforces banks to monitor their funding structure and their ability to handle short term liquidity problems and provide them with a better means of assessing the present and future liquidity risk associated with their future liquidity position.

In Ethiopia, during the last two decades, the private banking sector has been playing an important role in the economic development of the country. However, as NBE annual report (2011), Ethiopian banks face liquidity credit risk and operational risks more severely than other types of risks. The survey, further also implied that the banks should focus to study and identify major determinates of liquidity risk and their operational practice. These indicate that still there is a research gap that further indicate major determinates of liquidity risk in commercial banks of Ethiopia. The main objective of this study is to investigate determinants of liquidity risk in commercial banks of Ethiopia. .

1.3 Basic research Question

- How operational challenges affect liquidity risk management practice?
- How capital adequacies determine Liquidity risk of Commercial Banks in Ethiopia?
- How bank sizes determine liquidity risk of Commercial Banks in Ethiopia?
- How loan growths determine liquidity risk of Commercial Banks in Ethiopia?
- How non – performing loan determine liquidity risk of Commercial Banks in Ethiopia?
- How Return on Asset (ROA) determine liquidity risk of Commercial Banks in Ethiopia?
- How Interest rate margin determine liquidity risk management practice of commercial banks?
- How GDP determine liquidity risk of Commercial Banks in Ethiopia?
- How inflation rate determine liquidity risk of Commercial Banks in Ethiopia?

1.4 Objective of the study

1.4.1 General objective of the Study

General objective of the study is to assess determinates of liquidity risk of commercial banks in Ethiopia.

1.4.2 Specific objective of the study

Specific objective of the study deals the following:

- To examine the effect of operational challenges and their effect on liquidity risk management practice
- To examine the effect of capital adequacy ratio on liquidity risk of commercial banks
- To examine the effect of bank size on the liquidity risk of commercial banks in Ethiopia
- To examine the effect of loans growth in total assets on liquidity risk of commercial banks in Ethiopia
- To examine the effect of non – performing loan and its effect on liquidity position of the banks,
- To examine the effect of return on asset (ROA) and its effect on commercial banks.
- To examine the effect of Interest rate margin on liquidity risk management practice of the organization.
- To examine the effect of GDP on liquidity risk of the banks
- To examine the effect of inflation on liquidity risk of commercial banks in Ethiopia

1.5 Significance of the Study

The study has great contribution to the existing knowledge in the area of determinants of commercial banks liquidity risk in the context of Ethiopia. The result of this study is important as reference material to the commercial banks of Ethiopia. It will also draw attention to some of the points where corrective actions are necessary and enables them to make such correction. Furthermore, this study would serve as an input and basis for other researches, academicians, consultants and some associations who conduct further researches on related fields.

1.6 Scope of the Study

Though, it is believed in the literature that more observation means more information for generalization, however, this study is designed to examine the determinants of liquidity risk in commercial banks of Ethiopia using structured questioners and annual financial report from the period of 2012 - 2016 for the selected commercial banks of Ethiopia. In this regard the study was delimited on four commercial banks of Ethiopia such as CBE, Dashen Bank, Wegagen Bank and United Bank. The study were selected the banks to such as CBE is government bank it is important assessing the bank experience comparing with private banks. On the other hand Dashen Bank is among the experienced private banks of Ethiopia, while United and Wegagen banks also have an average experience in the market. Therefore, comparing these types of commercial banks can help to give insights the commercial banks challenges and opportunities regarding with liquidity risk management practice.

1.7 Limitation of the Study

The study have got some kinds of limitation in the entire study, some of the challenge were, in the questioner and interview parts with the officials, some of the officials were not interested to give detailed information on the provided question, the other problems was there were no adequate empirical literatures assessed in Ethiopia on related area.

1.8 Organization of the study

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

CHAPTER TWO

2. LITRATURE REVIEW

2.1 Introduction

This chapter covers the literature review on determinantes of liquidity risk on commercial banks and is divided in to two parts. These are theoretical literatures and empirical literatures. The theoretical framework on determinates of liquidity risk will encompass models, theories, and definition, while the empirical literature reviews several studies results highlighting the knowledge gap.

2.2 Theoretical Review

There have been several theoretical studies on determinants of liquidity risk and determinant. Majority of this theoretical frameworks relating to credit risk emphasize on risk concept, macroeconomic policies as well as structural and governance failures. Highlighted below are some of related definitions, theories and models.

2.2.1 Concept of Banks liquidity and Liquidity Risk

Bank liquidity is ability to meet customers demand and provide advances in the forms of loans and overdrafts. Liquidity is also banks' cash and cash equivalent such as commercial paper, treasury bills, etc .Lucchetta (2007) sees liquidity as assets readily convertible to cash without loss and ability to pay depositors on demand. Shim and Siegel (2007) define liquidity as a company's ability to meet its maturing short-term obligations and if liquidity is insufficient serious financial difficulty may occur. Poor liquidity is comparable to a person having a fever; it is a symptom of a fundamental problem. However, if banks unable to liquidate a position timely at a reasonable price the bank is faced a liquidity risk. .

In easier terms, liquidity risk can be defined as the risk of being unable to liquidate a position timely at a reasonable price (Muranaga and Ohsawa, 2002). From this definition, there are two key dimensions of liquidity risk cited namely liquidating the assets as and when required; and at a fair market value.

Banks face liquidity risk if they are not liquidating their assets at a reasonable price. The price fetching remains precarious due to frazzled sales conditions, while liquidating any of the bank's

assets urgently. This may result in losses and a significant reduction in earnings. Large-scale withdrawal of deposits may create a liquidity trap for banks (Andrew, 2013), but this may not be always the primary source of liquidity risk. There are various other factors creating massive liquidity problems for the banks. For example, the extensive commitment based, and long-term lending may create serious liquidity issues (Kashyap et al., 2002). Banks having large commitments are bound to honor them when they become due. Moreover, banks having a large exposure in long-term lending may face problems of liquidating the same during times of immense liquidity pressure.

According to Moor (2007), there are two basic facets of liquidity risk: maturity transformation (the maturity of a bank's liabilities and assets) and the inherent liquidity of a bank's asset (the extent to which an asset can be sold without incurring a significant loss of value under any market condition). As such, the two elements of a bank's liquidity are intertwined. Banks do not need to be worried about the maturity transformation if they have the assets that can be sold without bearing any loss. Whereas, banks having assets that are going to be matured in a shorter period may have a less need to keep the liquid assets. This increases the demand of depositors creating liquidity risk. This may cause the failure of a given bank or even the entire banking system due to contagion effect (Diamond and Rajan, 2005). High liquidity increases the leverage and a highly leveraged bank may turn into the consumer of liquidity from the provider Golin (2001) in Yuqi (2008) states that liquidity is a risk not having sufficient current assets (cash and quickly saleable securities) to satisfy current obligations of depositors especially during the time of economic stress. Therefore, without required liquidity and funding to meet obligations, a bank may fail.

Liquidity risk of commercial banks can result through several factors. According to Bessie (2002), liquidity risk results from size and maturity mismatches of assets and liabilities. Liquidity deficits make banks vulnerable to market liquidity risk. Liquid assets protect banks from market tensions. Then liquidity has been defined by Keating and Marshall (2010) as the moneyless of an asset. Liquidity, according Schwarz (2010), can be decomposed into market, balance sheet, funding and macroeconomic liquidities. Market liquidity is the ability to transform financial assets into cash at current market prices and the balance sheet liquidity focuses on institution's cash holdings. The institution should be able to convert the underlying assets into

cash and this is referred to as the funding liquidity. Lastly, we have the macroeconomic liquidity which focuses on the availability of cash in the economy. There are different methods that can be used to measure banks' asset liquidity such as bid-offer spread, market depth, immediacy and resilience. Basel 3 Accord defined the minimum short-term and long-term resilience that are supposed to be fully adopted by all financial institutions by 1 January 2015 and 1 January 2018 respectively (Basel; 2011).

2.2.2 Theories of Bank Liquidity

In selecting a theoretical framework, many theories were considered as possible explanatory frameworks with in which to fit the determinants of Bank liquidity. In the banking theory and practice, there are no generally accepted indicators measuring the liquidity of banks. Though, there are not enough acceptable indicators for measuring the liquidity, different authors such as Kiyotaki, and Moore2008, offered their own approaches for measuring and expressing the liquidity of individual banks and the banking system, as a whole.

Determinants of Bank Liquidity

In most of the literatures, there are two ways of classifying the determinants of bank Liquidity. Moore (2009), for instance, bank specific(internal) and macroeconomic (external) variables. The internal factors are individual bank characteristics which affect the bank's performance. These factors are basically influenced by the internal decisions of management and board .The external factors are sector wide or country wide factors which are beyond the control of the company and affect the liquidity of banks. Other studies, Kiyotaki, and Moore,(2008), attempted to integrate sector specific factors like bank ownership, bank size and concentration as a specific determinant of bank Liquidity. This approach seems to segregate the external factor determinants in to sector specific and macroeconomic variable. However, some authors, (Chantapong, 2005; Olweny and Shipho, 2011) focused on sector specific variables with total neglecting of the macroeconomic variables like GDP and inflation. In general the two approaches seem similar in context and wide variation is not observed in classifying the determinants of bank liquidity and most of the researchers used both internal and external variables in their studies as follow.

A. Capital Adequacy and Bank Liquidity

Capital can be defined as common stock plus surplus fund plus undivided profits plus reserves for contingencies and other capital reserves. Besides, a bank's loan loss reserves which serve as a buffer for absorbing losses can be included as bank's capital (Basel, 2011). The primary reason why banks hold capital is to absorb risk including the risk of liquidity crunches, protection against bank runs, and various other risks. According to Ezirim(2005) bank's capital plays a very important role in maintaining safety and solidarity of banks and the security of banking systems in general as it represents the buffer gate that prevents any unexpected loss that banks might face, which might reach depositors funds given that banks operate in a highly uncertain environment that might lead to their exposure to various risks and losses that might result from risks facing banks. The recent theories suggest that, bank capital may also affect banks' ability to create liquidity. These theories produce opposing predictions on the relationship between capital and liquidity creation.

The theoretical literature provides two opposite views on the relationship between bank capital and liquidity creation. Under the first view, bank capital tends to impede liquidity creation through two distinct effects: the financial fragility structure and the crowding-out of deposits hypothesis. Indeed, financial fragility structure, characterized by lower capital, tends to favor liquidity creation (Diamond and Rajan, 2000, 2001), while higher capital ratios may crowd out deposits and thereby reduce liquidity creation (Gorton and Winton 2000). Roughly described, the financial fragility structure effect is the outcome of the following process. The bank collects funds from depositors and lends them to borrowers. By monitoring borrowers, the bank obtains private information that gives it an advantage in assessing the profitability of its borrowers. However, this informational advantage creates an agency problem and the bank may extort rents from its depositors by requiring a greater share of the loan income. If depositors refuse to pay the higher cost, the bank withholds monitoring efforts or loan collecting efforts. As depositors know that the bank may abuse their trust, they become reluctant to put their money in the bank. Consequently, the bank has to win depositors' confidence by adopting a fragile financial structure with a large share of liquid deposits. A contract with depositors mitigates the bank's hold-up problem because depositors can run on the bank if the bank threatens to withhold efforts.

Consequently, financial fragility favors liquidity creation since it allows the bank to collect more deposits and grant more loans.

By contrast, higher capital tends to mitigate the financial fragility and enhances the bargaining power of the bank that leads to hamper the credibility of its commitment to depositors. Thus, higher capital tends to decrease liquidity creation. Besides, Gorton and Winton (2000) show that a higher capital ratio may reduce liquidity creation through another effect: the crowding out of deposits. They consider that deposits are more effective liquidity hedges for agents than investments in bank equity. Indeed, deposits are totally or partially insured and withdraw able at par value. By contrast, bank capital is not eligible and with a stochastic value that depends on the state of bank fundamentals and on the liquidity of the stock exchange. Consequently, higher capital ratios shift investors' funds from relatively liquid deposits to relatively illiquid bank capital. Thus the higher is the bank's capital ratio; the lower is its liquidity creation.

Under the alternative "risk absorption" hypothesis, which is directly linked to the risk-transformation role of banks, higher capital enhances the ability of banks to create liquidity. Liquidity creation increases the bank's exposure to risk as its losses increase with the level of illiquid assets to satisfy the liquidity demands of customers (Allen and Gale 2004). The more liquidity that is created, the greater is the likelihood and severity of losses associated with having to dispose of illiquid assets to meet the liquidity demands of customers. Bank capital allows the bank to absorb greater risk (Repullo 2004). Thus, under the second view, the higher is the bank's capital ratio, the higher is its liquidity creation.

B. Non-performing Loans:

Non-performing loans are loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract (Kiyotaki, and Moore (2008)). It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loan measures the quality of bank assets (Basel, 2011). Bank nonperforming loans to total gross loans are the value of nonperforming loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions). The loan amount recorded as nonperforming should be the gross value of the loan as

recorded on the balance sheet, not just the amount that is overdue. Non-performing Loans is measured by ratio of nonperforming loans over the Total Loan (Moore, 2005).

Non-performing loans can lead to efficiency problem for banking sector. It is found by a number of economists that failing banks tend to be located far from the most-efficient frontier because banks do not optimize their portfolio decisions by lending less than demanded (Barr et al. 1994). According to Bloem and Gorter (2001), though issues relating to non-performing loans may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions which tend to have large loan portfolios. Besides, the large bad loans portfolios will affect the ability of banks to provide credit. Huge non-performing loans could result in loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems. Therefore, the amount of non-performing loans has a negative impact on banks liquidity.

C. Bank Size and Bank Liquidity:

Bank size is defined broadly as the banks net total asset. It measures its general capacity to undertake its intermediary function. This variable is included to capture the economies or diseconomies of scale. There is consensus in academic literature that economies of scale and synergies arise up to a certain level of size. Beyond that level, financial organizations become too complex to manage and diseconomies of scale arise (Ezirm, 2005).

When bank size grows it will help them to overcome the risk but it should be noted that it may leads also to failure. According to the “too big to fail” argument, large banks would benefit from an implicit guarantee, thus decrease their cost of funding and allows them to invest in riskier assets (Moore et.,al, 2005). If big banks are seeing themselves as “too big to fail”, their motivation to hold liquid assets is limited. In case of a liquidity shortage, they rely on a liquidity assistance of Lender of Last Resort (Ezirim, 2005). Thus, large banks are likely to perform higher levels of liquidity creation that exposes them to losses associated with having to sale illiquid assets to satisfy the liquidity demands of customers (Kiyotaki and Moore, 2008). Therefore, “too big to fail” status of large banks could lead to moral hazard behavior and excessive risk exposure and thus there can be negative relationship between bank size and liquidity.

D. Loan Growth:

The loan portfolio is typically the largest asset and the predominate source of revenue. Diamond & Rajan (2002) stated that lending is the principal business activity for most commercial banks. As such, loan is one of the greatest sources of risk to a banks safety and soundness (Kiyotaki and Moore, 2008). Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank.

According to Eakins (2008), in practice the amount of liquidity held by banks is heavily influenced by loan demand that is the base for loan growth. If demand for loans is weak, then the bank tends to hold more liquid assets(short term assets), whereas if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable.

Therefore, a growth in loans and advances has negative impact on banks liquidity (Weisel, Harm, & Brandley, 2003). Loan Growth will be measured by the Current year total loans less previous year total loans over the previous year total loans.

Loan Growth and Bank Liquidity the loans & advances portfolio is the largest asset and the predominate source of revenue of banks. According to Muranaga, and Ohsawa, (2002), lending is the principal business activity for banks. Since loans are illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. The amount of liquidity held by banks is heavily influenced by loan demand and it is the base for loan growth (Basel, 2011). If demand for loans is weak, then the bank tends to hold more liquid assets whereas, if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable. Therefore, loan growth has negative relationship with bank liquidity.

According to the “too big to fail” argument, large banks would benefit from an implicit guarantee, thus decrease their cost of funding and allows them to invest in riskier assets (Iannotta et al. 2007). Therefore, “too big to fail” status of large banks could lead to moral hazard behavior and excessive risk exposure. If big banks are seeing themselves as “too big to fail”, their motivation to hold liquid assets is limited. In case of a liquidity shortage, they rely on a liquidity assistance of Lender of Last Resort. Thus, large banks are likely to perform higher levels of liquidity creation that exposes them to losses associated with having to sale illiquid assets to satisfy the liquidity demands of customers. Hence, there can be positive relationship between

bank size and illiquidity. However, since small banks are likely to be focused on traditional intermediation activities and transformation activities (Rauch et al. 2008; Berger and Bouwman 2009) they do have small amount of liquidity. Hence, there can be negative relationship between bank size and illiquidity.

E. Gross Domestic Product (GDP):

The economy health of a nation is measured by its growth rate in national income. The economic growth is measured as percentage change in Gross Domestic Product (GDP) or Gross National Product (GNP). The GNP is broader than GDP, although both proxies are used to measure economic growth.

GDP is a macroeconomic factor that affects bank liquidity. For which, a major recession or crises in business operations reduces borrowers' capability to service obligations which increases banks' NPLs and eventually banks insolvency (Gavin & Hausmann, 1998). In reference to Paineira (2010), research on liquidity preference during different business cycle states that banks liquidity fondness is low in the course of economic boom. Where, banks confidently expect to profit by expanding loanable funds to sustain economic boom, while restrict loan able funds during economic down turn to prioritize liquidity. To sum up, banks prefer high liquidity due to lower confidence in reaping profits during economic downturn.

Macroeconomic context is likely to affect bank activities and investment decisions as the profile of bank liquidity (Pana et al. 2009 and Shen et al. 2010). For example, the demand for differentiated financial products is higher during economic boom and may improve bank ability to expand its loan and securities portfolios at a higher rate. Similarly, economic downturns are exacerbated by the reduction in bank credit supply. Based on these arguments, we can expect banks to increase their transformation activities and their illiquidity during economic booms

According to the theory of bank liquidity and financial fragility, the relationship between banks' liquidity preference and the business cycle is fundamental to explain the inherent instability of the capitalist system as an endogenous market process (Minsky 1982, p. 74). In periods of economic expansion, which are characterized by high degree of confidence of the economic units about their profitability, there is a rise in the level of investment. During this expansion, economic units decrease their liquidity preference, preferring more risky capital assets with

higher return. In this environment, economic units are more likely to hold less liquid capital assets and to incur short-term debt with higher interest rates (Painceira 2010). As in Pilbeam (2005) in line with the above argument the “loan able fund theory of interest” states that the supply for loan (i.e. illiquid assets for banks) increases when the economy is at boom or going out of recession. Aspachs et al. (2005) indicated that banks hoard liquidity during periods of economic downturn, when lending opportunities may not be as good and they run down liquidity buffers during economic expansions when lending opportunities may have picked up. Thus, it can be expected that higher economic growth make banks run down their liquidity buffer and induce banks to lend more.

Bordo et al. (2001) suggest two explanations on the cause of liquidity runs on deposit money banks. They explained that runs on banks are a function of mass psychology or panic, such that if there is an expectation of financial crisis and people take panic actions in anticipation of the crisis, the financial crisis becomes inevitable. Bordo et al. (2001) also "asserts that crises are an intrinsic part of the business cycle and result from shocks to economic fundamentals. When the economy goes into a recession or depression, asset returns are expected to fall. Borrowers will have difficulty repaying loans and depositors, anticipating an increase in defaults or non-performing loans, will try to protect their wealth by withdrawing bank deposits. Banks are caught between the illiquidity of their assets (loans) and the liquidity of their liabilities (deposits) and may become insolvent.”

F. Liquidity and Inflation in Commercial Banks:

Inflation reflects a situation where the demand for goods and services exceeds their supply in the economy (Karl et al, 2002). Inflation causes many distortions in the economy. It hurts people who are retired and living on a fixed income. When overall prices rise these consumers cannot buy as much as they could previously. It also affects the repayment of loans and discourages savings due to the fact that the money is worth more presently than in the future and inflation therefore affects the liquidity of the Commercial Banks.

In any economy inflation is undesirable. This is because of the specific economic costs associated with inflation. First, when inflation is high, currency and non-interest-bearing checking accounts are undesirable because they are constantly declining in purchasing power.

Secondly, there are tax distortions, for example, when inflation rages, the actual value of these deductions are much less than it should actually be (Ludi and Ground, 2006).

A growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation interfere with the ability of the financial sector to allocate resources effectively. More specifically, recent theories emphasize the importance of informational asymmetries in credit markets and demonstrate how increases in the rate of inflation adversely affect credit market frictions with negative repercussions for financial sector (both banks and equity market) performance and therefore long-run real activity (Huybens and Smith 1998, 1999). The common feature of these theories is that there is an informational friction whose severity is endogenous. Given this feature, an increase in the rate of inflation drives down the real rate of return not just on money, but on assets in general. The implied reduction in real returns exacerbates credit market frictions. Since these market frictions lead to the rationing of credit, credit rationing becomes more severe as inflation rises. As a result, the financial sector makes fewer loans, resource allocation is less efficient, and intermediary activity diminishes with adverse implications for capital/long term investment. In turn, the amount of liquid or short term assets held by economic agents including banks will rise with the rise in inflation. Hence, there is positive relationship between increase in inflation rate and banks liquidity.

2.2.3 Managing Liquidity Risk

Liquidity risk management is an essential component of the overall risk management framework of the financial services industry, concerning all financial institutions (Guglielmo, 2008). Ideally, a well-managed bank should have a well-defined mechanism for the identification, measurement, monitoring and mitigation of liquidity risk. A well-established system helps the banks in timely recognition of the sources of liquidity risk to avoid losses. The balance sheets of banks are growing in complexity and dependence upon the capital markets has made the liquidity risk management more challenging (Goodhart, 2008). Moore (2005) further argues that the banks having enhanced exposure in the capital markets must have a deep understanding of the risks involved. The said banks should develop the mechanism required for proper risk measurement and management. A bank should have continuous awareness about the breakdown of its various funding sources in terms of individual strata of clientele' financial markets and instruments (Falconer, 2001).

According to Gatev and Strahan (2003), the deposits provide a natural hedge to banks against the liquidity risk. Under the stressed market conditions, the banks are perceived as a haven for investors who do not intend to issue funds against their loan commitments. The cash flows in any bank complement each other. The inflows of funds give a natural hedge to banks for outflows due to loan advancements. Therefore, banks use deposits to hedge the liquidity risk. This argument also finds support from the work of Guiliemoet,al (2008) who provided a rationale of risk management to define the features of a commercial bank, commonly labeled as “financial intermediary” combining demand deposits with loan commitments.

One possible counter measure to reduce liquidity pressure is the transformation of illiquid assets in to cash. In times of immense funding pressure, securitization techniques are usually employed by the banking system for liquidation of assets like mortgages (Jenkinson, 2008). A bank should respond to funding shortfall by acting on the assets side of the balance sheet if it is facing restrictions on raising liquidity. It will be forced to squeeze the advancement of loans to its customers to reduce funding requirements. Despite its features to support funding and increase liquidity, Basel (2011) has narrated two main drawbacks of the above stated policy. First, this strategy needs a bit longer period to be matured. Many of the lending decisions are taken in advance and hard to be reversed instantly, thereby not generating liquidity drainage quickly. Second, reduced lending affects a large part of the economy. In the non availability of funds to companies and households, it becomes difficult to support long-term investment and consumption in the economy.

2.3 Empirical Studies

Liquidity risk is the possibility that over a specific time period, the bank will become unable to settle obligations with immediacy (Halling and Hayden, 2006). The vulnerability of banks to liquidity risk is determined by the funding risk and the market risk (Gorton and Winton, 2000,). The funding liquidity risk is caused by the maturity mismatch between inflows and outflows and/or the sudden and unexpected liquidity needs due to contingency conditions. The market liquidity risk refers to the inability to sell assets at or near the fair value, and in the case of a relevant sale in a small market; it can emerge as a price slump (Hassan, 2009).

The study made on bank specific determinants of liquidity on English banks studied (Halling and Hayden, 2006), and assumed that, the liquidity ratio as a measure of the liquidity should be

dependent on the following factors: bank profitability and loan growth had negatively correlated with liquidity while size of the bank is ambiguous. Liquidity created by Germany's state-owned savings banks and its determinants has been analyzed by (Hassan, et, al 2009). In the first step they attempted to measure the liquidity creation of all 457 state owned savings banks in Germany over the period 1997 to 2006 and they analyzed the influence of monetary policy on bank liquidity creation. To measure the monetary policy influence, the study developed a dynamic panel regression model. According to this study, the following factors determine bank liquidity: monetary policy interest rate, where tightening monetary policy expected to reduces bank liquidity, level of unemployment, which is connected with demand for loans having negative impact on liquidity, savings quota affect banks liquidity positively, size of the bank measured by total number of bank customers have negative impact, and bank profitability expected to reduce banks liquidity.

Naser, Mohammed and Ma'Someh(2013) aimed to examine the effect of liquidity risk on the profitability of commercial banks using of panel data related to commercial banks of Iran during the years 2003 to 2010. In the estimated research model, two groups of bank-specific variables and macro economic variables are used. The results of research show that the variables of bank's size, bank's asset, gross domestic product and inflation will cause to improve the profitability of banks while credit risk and liquidity risk will cause to weaken the performance of bank.

Vodova (2011) aimed to identify important factors affecting commercial banks liquidity of Czech Republic. In order to meet its objective the researcher considered bank specific and macroeconomic data over the period from 2001 to 2009 and analyzed them with panel data regression analysis by using EViews 7 soft ware package. The study considered four firm specific and eight macroeconomic independent variables which affect banks liquidity. The expected impact of the independent variables on bank liquidity were: capital adequacy, inflation rate and interest rate on interbank transaction/money market interest rate were positive and for the share of non-performing loans on total volume of loans, bank profitability, GDP growth, interest rate on loans, interest rate margin, monetary policy interest rate/repo rate, unemployment rate and dummy variable of financial crisis for the year 2009 were negative whereas, the expected sign for bank size was ambiguous (+/-). The dependent variable (i.e. liquidity of commercial banks) was measured by using four liquidity ratios such as liquid asset to total

assets, liquid assets to total deposits and borrowings, loan to total assets and loan to deposits and short term financing.

The study by Vodova (2011) revealed that bank liquidity was positively related to capital adequacy, interest rates on loans, share of non-performing loans and interest rate on interbank transaction. In contrast, financial crisis, higher inflation rate and growth rate of gross domestic product have negative impact on bank liquidity. The relation between the size of the bank and its liquidity was ambiguous as it was expected. The study also found that unemployment, interest margin, bank profitability and monetary policy interest rate/repo rate have no statistically significant effect on the liquidity of Czech commercial banks.

Bank-specific and macroeconomic determinants of liquidity of English banks were studied by (Aspachs et al. 2005). The researchers used unconsolidated balance sheet and profit and loss data, for a panel of 57 UK-resident banks, on a quarterly basis, over the period 1985Q1 to 2003Q4. They assumed that the liquidity ratio as a measure of the liquidity should be dependent on following factors: Probability of obtaining the support from LOLR, which should lower the incentive for holding liquid assets, interest margin as a measure of opportunity costs of holding liquid assets expected to have negative impact, bank profitability, which is according to finance theory negatively correlated with liquidity, loan growth, where higher loan growth signals increase in illiquid assets, size of the bank expected to have positive or negative impact, gross domestic product growth as an indicator of business cycle negatively correlated with bank liquidity, and short term interest rate, which should capture the monetary policy effect with expected negative impact on liquidity. The output of the regression analysis showed that probability of getting support from LOLR, interest margin, and loan growth have negative and significant effect on banks liquidity whereas, profitability and bank size had statistically insignificant impact on liquidity. Using a measure of support expectations based on the Fitch support rating, the researchers also found strong evidence of the existence of such an effect, which may point to a rationale for regulatory liquidity requirements as a quid pro quo for LOLR support.

In another study from Pakistan, Akter and Mahmud (2014) examines bank specific and macroeconomic determinants of commercial bank liquidity in Pakistan. Their study period covers from 2007 to 2011. They have used two models of liquidity. The first model L1 is based

on cash and cash equivalents to total assets. The second model L2 is based on advances net of provisions to total assets. Their results suggest that, Non-Performing Loan (NPL) and Return on Equity (ROE) have a negative and significant effect with L1. Capital adequacy (CAP) and inflation (INF) are negatively and significantly correlated with L2, Additionally there is a significant and positive impact of financial crisis on the liquidity of commercial banks. The central bank regulations greatly affect the liquidity of commercial banks which means tight monetary policy can regulate the undesirable effect of inflation on liquidity.

Abera, (2012) studied Factors Affecting Profitability on Ethiopian Banking Industry. This study examined the bank-specific, industry-specific and macro-economic factors affecting bank profitability for a total of eight commercial banks in Ethiopia, covering the period of 2000-2011 using a mixed methods research approach by combining documentary analysis and in-depth interviews. The result of the interview revealed that the liquidity of banks was one of the major determinants of Ethiopian banks profitability. But, the output of the regression analysis and the interview were in agreement in relation to the direction of the effect of liquidity as far as both of them proved the existence of negative or inverse relationship between liquidity and profitability of Ethiopian banks. The study concluded that the impact of Ethiopian banks' liquidity on their performance remains ambiguous and further research is required.

2.4 Research Gap Analysis

In Ethiopia there were studies that took place related to liquidity risk and banks profitability determinates of profitability of commercials banks, bank liquid risk and their management practice, however, there were no timely studies that indicated the current situation of banks liquidity risk management practice.

An important gap still exists in the empirical literature to indicate determinates of bank liquidity risk on commercial banks of Ethiopia. Only few studies aimed and tried identify determinates of liquidity. Studies cited on the empirical literature above suggest that commercial identified such as a study doing by Belay (2010) factors that determine Commercial Bank profitability as an explanatory variable for bank profitability which is traditional measured by ROA and ROE, and the result indicated that, liquidity risk is one of the major challenges of Commercial Banks profitability in Ethiopia. The study major focused was to identify any factors that might affect

commercial banks profitability. In contrarily to this study the center of focus will be to identify determinates of liquidity risk rather than focusing other factors outside liquidity.

There was although the researches made by Semu (2012), focused on the impact of bank liquidity on financial performance) and also Tseganesh (2012) focused on the impact of bank liquidity on financial performance through the significant factors affecting liquidity using the traditional measurement of ROA and ROE. Therefore, the study examined some of bank specific and macroeconomic factors affecting banks liquidity and their impact on Profitability using Net interest margin which shows how well the bank is earning income on its assets. High net interest

Income and margin indicates a well-managed bank and also indicates future profitability. But the study still didn't focuses in identifying specifically the determinants of liquidity risk relating with several factors. Therefore, this study aimed to fill this knowledge gap, specifically, assessing determinants of commercial banks liquidity risk in relation with, commercial banks specific factors (such as size of the bank, operational activities, inflation, bank size, share deposit and other related factors).

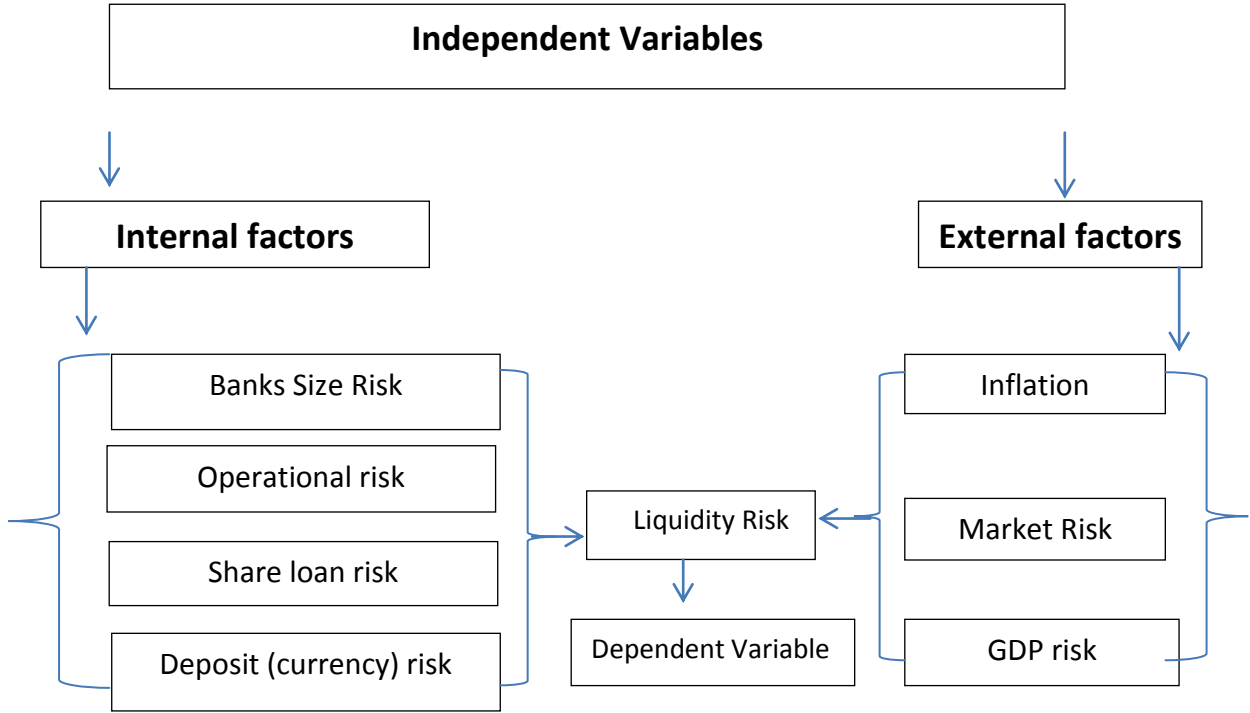
2.5 Conceptual frame work

Most studies confirm that, banks liquidity risk determined by several factors. There are internal and external sources of liquidity risk. As examined above banks specific (internal factors) such as, bank size, capital adequacy, non-performing loan (NPL) and banks external (macroeconomic factors) factors such as, GDP, financial policy of the country, inflation, and financial crisis. Therefore, considering different types of models the study tried to develop conceptual frame work based on taxonomy of liquidity risk model.

The models analysis shows that the foundation for creating liquidity risk is the mismatch of cash flows that cause the liquidity gap. The mismatch gap is the result of the process of the adopted credit-deposit policy and the generation of the balance sheet structure. This gap may be broadened by not anticipating the customer's behavior and the improper process of assets and liabilities management. As a result, it can lead on one hand to the too low share of liquidity reserves, including assets classified as liquid, or to difficulties in selling them at a fair price, and on the other hand, to the improper diversification of funding sources or the low level of their stability as well as to the "freezing" of the market (Wójcik-Mazur, 2012).

Liquidity risk is therefore directly linked to the generation of loss, which results from the inability to sell assets, as well as to raise funds at an economic, moderate cost in order to cover expected and unexpected liabilities (Basel 2011). This definition of liquidity risk illustrates its two basic types, which are funding risk and market liquidity risk.

Fig2.6 Conceptual Framework of the study



Source: Wójcik-Mazur (2012)

CHAPTER THREE

3. Research Methodology and Design

3.1 Research Design

The study used descriptive and explanatory research design. According to Muranaga and Ohsawa (2002), a descriptive and explanatory types of research design is important for a research types if the dependent variable affected by several independent variables. Based on this liquidity risk can be affected by several determinate factors. The descriptive part of the study were presented using ratio, while the explanatory part of the study were used correlation analysis and multiple regression. According to Lucchetta, (2007) a correlation as well as regression research design is a procedure in which subjects' score on multiple variables and indicates casual relationships. The study also used cross-sectional design in which data was gathered just once over the period 2012 to 2016 and cross sectional study were used to determine the interrelationship between the variables under consideration of different banks of Ethiopia.

3.2 Source of data

To achieve the objectives of the study both qualitative and quantitative data were collected from primary and secondary data sources. The primary data were collected using structured questionnaires as well as interview from each bank managements and employees working related to risk management. On the other hand the secondary data were collected from annual report of each bank, related literatures, such as, articles, journals and research's. All the selected banks in the banking sector that had continually operated between 2012 – 2016 were included to ensure that the sampling frame is current and complete.

3.3 Population Sampling Technique of the Study

In this research, the target population is the banking sector in Ethiopia. According to NBE annual report (2015/16), Ethiopia consists of 18 Commercial banks. Commercial Bank of Ethiopia (CBE), Development Bank of Ethiopia(DBE) Dashen Bank S.C (DB), Awash International Bank S.C (AIB), Wogagen Bank S.C (WB), United Bank S.C (UB), Nib International Bank S.C (NIB), Bank of Abyssinia S.C (BOA), Lion International Bank S.C (LIB), Cooperative Bank of OromiaS.C (CBO), Berehan International Bank S.C (BIB), Buna International BankS.C (BUIB),

Oromia International Bank S.C (OIB), Zemen Bank S.C (ZB), Abay Bank (AB), Addis International Bank (ADIB), Debub Global Bank (DGB) and Enat Bank (EB). Since the study analyses more depend on the secondary data obtained from NBE annual report and Balance sheet as well as availability of other related articles and journals, it was difficult to indicate all banks experiences. Therefore the study was compared and analyzed secondary data from the stated sources from 2012 to 2016. Based on these, the study were selected only four commercial banks based on their experience in the market such as, CBE and Dashen bank are more experienced in the market while, two average experienced banks such as, United Bank and Wegagan bank.

In addition to support the secondary data the study also tried to include Sample managers and employee of each of the selected banks. The choice of employee respondents from the given banks will only focus on employee worked related to credit analysis and appraisal; credit monitoring, risk management and credit relationship managers. The total staffs involved in credit management of the sample banks are 233. Therefore, the sample size that was selected out of 233 total populations based up on the following sampling technique:

$$n = \frac{N}{1 + Ne^2}$$

Where n = sample size

N= Number of population

e = sample error 10% (0.1)

$$\begin{aligned} n &= \frac{233}{1 + 233 (0.1)^2} \\ &= \frac{233}{1 + 2} \\ &= \frac{233}{3} = 77.6 \end{aligned}$$

Based on the above sampling technique nearly 78 sample respondents will be presented in the study.

Table 3.1 Distribution of sample size

Types Of Banks	Population	Sample Population
CBE	121	41
Dashen Bank	40	15
Wegagen Bank	44	13
United Bank	28	9
Total	233	78

Source: Each banks human resource department (2017)

3.4 Instrument of data collection

In order to analyze the determinant factors of bank specific variables, computed ratios for four Commercial banks for five consecutive years i.e. from 2012 – 2016 were collected from an audited financial report of commercial Banks and macro-economic variables, macro economic data were collected for the same years. Those macro economic data were gathered from the records held by NBE and MoFED through structured document review. Conducting appropriate data gathering instruments helped researchers to combine the strengths and amend some of the inadequacies of any source of data to minimize risk of irrelevant conclusion. On the other hand, structured questionnaires and interviews also used as instrument of data collection from employees and management bodies.

3.5 Methods of Data Analysis

In this study two type of statistical analysis were used to test the proposed hypotheses. These are descriptive statistics and inferential statistics/correlation analysis to see the effect (relationship) of explanatory or independent variables on the dependent variable. The descriptive statistics of both dependent and independent variables were calculated over the sampled periods. This helps to convert the raw data in to a more meaning full form which enables the researcher to understand the ideas clearly. And then interpret with statistical description including standard mean and ratio. Then, correlation analyses are made between dependent and independent variables and finally a multiple linear regression analysis method were used to determine the relative importance of each independent variable in influencing liquidity of Ethiopian commercial banks.

3.6 Model Specification

As it was discussed in the research design section of this study, the nature of data used is a balanced panel data which was deemed to have advantages over simple cross sectional and time series data. Panel data involves the pooling of observations on the cross sectional over several time periods. The panel data or longitudinal data comprises both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the sample of Ethiopian private commercial from (2012 – 1016). Thus, the following equation indicated the general model for this study.

$$Lit = \alpha + \beta Xit + \delta i + \epsilon it$$

where Lit is one of the three liquidity ratios for bank i in time t , Xit is a vector of explanatory variables for bank i in time t , α is constant, β are coefficient which represents the slope of variables, δi denotes fixed effects in bank i and ϵit is the error term. The subscript i denote the cross-section and t representing the time-series dimension

Therefore the general models which incorporate all of the variables to test the determinants of bank's liquidity were:

$$L1it = \alpha + \beta 1 (CAPit) + \beta 2 (SIZEit) + \beta 3 (LGit) + \beta 4 (NPLit) + \beta 5 (ROAit) + \beta 6 (IRMit) + \beta 7(IRLit) + \beta 8 (GDPt) + \beta 9 (INFt) + \beta 10(STIRt) + \delta i + \epsilon it \dots\dots\dots(\text{Model 1})$$

$$L2it = \alpha + \beta 1 (CAPit) + \beta 2 (SIZEit) + \beta 3 (LGit) + \beta 4 (NPLit) + \beta 5 (ROAit) + \beta 6 (IRMit) + \beta 7(IRLit) + \beta 8 (GDPt) + \beta 9 (INFt) + \beta 10(STIRt) + \delta i + \epsilon it \dots\dots\dots(\text{Model 2})$$

$$L3it = \alpha + \beta 1 (CAPit) + \beta 2 (SIZEit) + \beta 3 (LGit) + \beta 4 (NPLit) + \beta 5 (ROAit) + \beta 6 (IRMit) + \beta 7(IRLit) + \beta 8 (GDPt) + \beta 9 (INFt) + \beta 10(STIRt) + \delta i + \epsilon it \dots\dots\dots(\text{Model 3})$$

Where: $L1it$: represents the bank's liquidity measured by liquid asset to deposit & short term borrowing ratio of i^{th} bank on year "t"

$L2it$: represents the bank's liquidity measured by liquid asset to total asset ratio of i^{th} bank on year "t"

L3it: represents the bank's liquidity measured by loan to deposit & short term borrowing ratio of i^{th} bank on year "t"

CAPit: is capital adequacy ratio of i^{th} bank on the year "t"

SIZEit: is the size of i^{th} bank on the year "t"

LGit: is the loan growth rate of i^{th} bank on the year "t".

NPLit: is the share of non-performing loan on total volume of loans & advances of i^{th} bank on the year "t".

ROAit: is the return on asset of i^{th} bank on the year "t".

IRMit: is interest rate margin of i^{th} bank on the year "t".

IRLit: is interest rate on loans of i^{th} bank on the year "t"

GDPT: is the real gross domestic product growth of Ethiopia on the year "t".

INFt: is the inflation rate in Ethiopia on the year "t". ***STIRt***: is the short term interest rate of Ethiopia on the year "t". δ_i : denotes fixed effects in bank "i" ***εit***: is a random error term

CHAPTER FOUR

4. Data Analysis and Interpretation

Introduction

This core chapter deals with the discussion and analysis of data collected both from employee of the sampled banks as well as annual publications of the national bank of Ethiopia (NBE) and

each commercial banks audited annual financial reports. The audited financial statements of the banks over the study period has been obtained from National Bank of Ethiopia, (which is responsible for maintaining the audited financial statements of all banks operating in the country and regulate their operating activities), the country’s central bank. Basically, the balance sheet and income statements were the main sources of the relevant data to address the stated objectives of the study. Based on this the study were analyzed in three major sections. The first section presented descriptive analysis of the data collected through questioner while the second section presented the secondary data results obtained from annual report of each of the banks and the third section were presented the correlation analysis to determine cause effect relationship between dependent and independent variables.

4.1 Background of respondents

As explained in the methodology part the study were distributed about 78 questioners for the selected respondents, however, the study depend only on 69 (90%) questioners, the rest were not returned back and omitted due to their error and all non respondents were from commercial bank of Ethiopia.

Table 4.1 Characteristics of respondents

Description responds	Response	
	Frequency (No)	Percept (%)
A. Position in the bank		
Risk assessment department manager	29	42
Auditor	30	44
Board Director	10	14
Total	69	100

B. Educational level		
Diploma	8	12
BA degree	45	65
MA Degree	16	23
Total	69	100
C. Work Experience		
Less than 3 years	10	14
3 – 5 years	25	36
6 – 10 years	19	27
Above 10 years	15	22
Total	69	100

Source Questionnaire 2017

The above table implied demographic characteristics of respondents from the studied commercial banks. Accordingly, the study participated respondents specifically staffs' working related to risk assessment and controlling position in this regards 42%, 44% and 14% engaged in a position of branch manager, auditor and board of directors. Similarly the study were also assessed respondents educational level, this is because educational level have its own contribution in the effective controlling of risk of the banks, in this regard 65% and 23% of the respondents respectively have First degree and second degree, while the rest 12% are diploma level. Regarding educational level of the respondents the data implied that, majority of the respondents found in a good educational status, however, 12% of the respondents relatively found in low level of educational status. Finally the study were assessed respondents work experience, and they were more experienced except few respondents as implied in the table above

4.2 Responsible Bodies in managing Liquidity risk of the studied banks

The study was assessed to identify responsible bodies of each of the studied banks liquidity risk managing and controlling bodies. Accordingly respondents implied that, several responsible bodies engaged in controlling the banks liquidity risk such as, board of directors, senior managements, asset and liabilities committee (ALCO), risk management committee, as well as

risk control departments, Below the table implied respondents view on their respective banks responsible bodies of in managing and controlling liquidity risk

Table 4.2 Responsible bodies of managing ad controlling liquidity risk of the studied Banks

<i>Responsible Bodies</i>	<i>Frequency</i>					
	<i>CBE</i>	<i>WB</i>	<i>DB</i>	<i>UB</i>	<i>Total</i>	<i>Percent (%)</i>
Board of directors	25	7	12	6	50	72
Senior management	12	6	7	5	30	43
Asset and liabilities committee	32	13	15	9	69	100
Risk management committee	1	2	3	2	8	11
Risk management department	32	13	15	9	69	100
Total	102	41	52	31		

Source questioner 2017

As the above frequency 69 (100%) indicated, all of the banks established banks Asset and Liability Committee (ALCO) and risk management department to control and manage the banks liquidity risk. In addition each of the above banks also have responsible bodies work in the risk controlling system of the banks such as, board of directors (72%), and Senior management (43%). To explain further, how each of the banks specifically worked in a form of a chain the study investigate in detail their procedures, accordingly, Wegagen bank (WB), established Asset and Liability Committee (ALCO) in the name of Resource Mobilization committee. In CBE, DB, and UB, the ALCO performs such functions as managing the overall liquidity risk of the bank and facilitating, coordinating communicating and controlling balance sheet planning regarding risks inherent in managing liquidity. The risk management unit (department) also involves in managing liquidity risk of the banks. Each of the studied banks have risk management department, this department performs such activities which includes developing liquidity risk management framework, giving training and creating awareness about how to manage liquidity risk in the banks. It also consolidates and reports the liquidity position of the bank to higher authorities. When it is appropriate, this department reviews the bank's liquidity risk management and recommends changes (if necessary) in the liquidity risk management processes of the bank.

In coordination with the finance and treasury departments, the risk management department implements the bank’s liquidity risk management policies, procedures and strategies.

To this end the finance /treasury/ department measures and identifies the prevalence of liquidity risk in the bank and reports the liquidity position of the bank to senior managements and the board. The integrated activities performed by different bodies and departments in managing liquidity risk of each bank do have a great role in meeting the requirements of National Bank of Ethiopia.

4.3 Liquidity Risk Identification techniques of the banks

Different circumstances that cause bank’s liquidity need differ. Likewise, the supply of liquidity by creditors or depositors will change given differing situations. Too much liquidity can impact a Financial institution’s profitability; too little liquidity can bring negative impacts due to the inability to meet contractual obligations. In this regards commercial banks need to identify the liquidity risk faced their respective banks. There are several types of liquidity risk identification techniques used by banks such as, maturity mismatch analysis of assets and liabilities, using of liquidity risk indicators, Cash flow projections and other several techniques. Based on these concepts the study were asked respondents each banks respondents the techniques used their banks to identify liquidly risk. Accordingly, respondents indicated their respective view as indicated below in the table.

Table 4.3Risk Identification techniques of the studied banks

<i>Risk Identification Techniques</i>	<i>Frequency</i>					
	<i>CBE</i>	<i>WB</i>	<i>DB</i>	<i>UB</i>	<i>Total</i>	<i>Percent (%)</i>
Maturity mismatch analysis of assets & liabilities	30	12	14	7	63	91

Use of liquidity indicators	20	6	6	4	36	52
Cash flow projection	19	5	6	4	34	49
Total	69	23	26	15		

Source questioner 2017

According to the response forwarded by respondents of each bank, 63(91%) respondents stated that the commercial banks used maturity mismatch analysis of assets and liabilities. In addition to this, 52% and 49% of the respondents respectively implied that the commercial banks used liquidity and cash flow projection as one way of identifying liquidity.

4.4 Tools used by the bank to measure liquidity position

The commercial banks apply different tools to measure their liquidity position, such as loan/deposit ratio, liquid asset /total asset ratio and liquid asset /deposit ratio. Based on these the study was forwarded related questions which methods were applied in the banks to measures liquidity position of the banks. The result respondents indicated below in the table

Table 4.4 Tools Used to measure liquidity position of the banks

<i>Tools used to measure liquidity position</i>	<i>Frequency</i>					
	<i>CBE</i>	<i>WB</i>	<i>DB</i>	<i>UB</i>	<i>Total</i>	<i>Percent (%)</i>
Loan/deposit ratio	25	11	12	8	56	81
Liquid asset/deposit ratio	26	10	11	9	56	81
Liquid asset/total asset ratio	19	8	10	8	45	65
Deposit/net loan ratio	15	6	6	7	34	49
Depositor concentration ratios	8	3	4	3	18	26
Total	93	38	43	35		

Source questioner 2017

As can be seen from the above respondents accounted for 81% implied that, majority of commercial banks used loan /deposit ratio and liquid assets/ deposit ratio as a major measurement tools of commercial banks liquidity position. In addition, commercial banks also applied liquid asset/total asset ratio (65%), deposit/net ratio (49%) and depositors' concentration ratio (26%). Therefore, commercial banks in Ethiopia monitored liquidity risk using several

tools. However, commercial banks monitor and measures liquidity risk in accordance with NBE requirement.

4.5 Liquidity challenges faced by commercial banks

Liquidity of commercial banks in Ethiopia can be affected by several factors, as stated in the literature parts. To identify the major factors that affect commercial banks credit risk management practice of each banks the study were priory assess whether the studied banks were affected by liquidly risk or not since 2012 to 2016. In this regard all of the respondents from the respective banks were assured there are liquidly risk management challenges. Based on this the study were forwarded a related question, whether the banks are faced excess liquidity or shortage of liquidity. Accordingly respondents below in the table implied their respective answer.

Table 4.5 Liquidity challenges of Commercial banks

<i>Liquidity position</i>	<i>Frequency</i>					
	<i>CBE</i>	<i>WB</i>	<i>DB</i>	<i>UB</i>	<i>Total</i>	<i>Percent (%)</i>
Excess liquidity Position	30	10	11	8	59	85
Shortage of Liquidity	-	6	4	6	18	43
Balanced liquid	4	2	1	2	9	13
Total	36	15	14	11		

Source questioner 2017

As shown in table above, 85% of the respondents indicated that the commercial banks have excess liquidity position. In addition the respondents response implied by 43% also implied Except CBE private banks also challenged by shortage of liquidity. The excess liquidity in the commercial banks caused by low level of economic development in the country and the existence of limited financial instruments.

Based on personal interview made with some higher officials, there are general problems for the industry as whole and specific problems for a bank. For instance one interviewee from, CBE stated that “Absence of secondary markets, absence of well-developed payment system and management information (MIS) are the basic problems for the industry as a whole and CBE in particular. From WB and UB, two individuals have also said that in addition to the absence of

strong MIS, there is shortage of short-term investment opportunities and weak inter-bank borrowing system in the banking industry in general that can affect the liquidity position of the banks.

4.6 Liquidity risks more affected the banks liquidity analysis system

Proper liquidity handling system of the banks can be affected by several types of challenges. However, in this study it was focused to assess one of the major determinates such as, Failing to attract new retail or wholesale to deposit, imbalance in loan and deposit and challenges of cash flow forecasting risk . In this regards respondents implied their respective view below in the table

Table 4.6 factors affected liquidity risk of the banks

<i>Determinate factors</i>	<i>Frequency</i>					
	<i>CBE</i>	<i>WB</i>	<i>DB</i>	<i>UB</i>	<i>Total</i>	<i>Percent (%)</i>
Failing to attract new retail to deposit	-	12	8	8	28	75
Imbalance in loan and deposit	30	5	5	6	46	66
Cash flow forecasting risk	4	2	1	2	9	13
Total	36	15	14	11		

Source questioner 2017

The above table reveals high risks in private banks than government banks in relation to failure to attract new retail to deposit. These were indicated by majority (75%) of respondents. However, there is also some variation among private banks in attracting new customers, accordingly from the related private banks in this study, Dashen Bank is more strong than Wegagen and United bank in attracting new customers next to CBE. On the other hand, risks of imbalance in loan and deposit are higher in state owned bank of CBE than the private banks. As stated in the above CBE is highly affected by excess liquidity. To summarize, the banks management of risk is achieved by applying stress tests to all liquidity components in order to

determine what would happen if conditions were to change. The banks were effectively handle liquidity risks in order to meet its cash and collateral obligations without incurring unacceptable losses. In addition, government banks are efficiently met both expected and unexpected cash flows and collateral needs without adversely affecting either daily operations or the financial condition of their institution than private banks. Most of the time private banks ever actually run out of cash than government banks, because of the ease with which liquid funds can be borrowed from other banks. The liquidity position of CBE is stronger than other banks. Something more common is a shortage of liquidity due to unexpected heavy deposit withdrawals, which forces a bank to borrow funds at an interest rate. Nevertheless, banks do not have an effective mechanism to prevent a reduction in deposits which match their assets, which tend to be loans granted on a medium-term basis. There is, therefore, a liquidity risk.

4.7 Liquidity position of Commercial banks (2012 -2016/17) Based on NBE and each Banks annual report Documents

In this section the study presented descriptive analysis of the dependent and independent variables using graphs and tables to provide an insight on the distribution of the data by banks and across time. Accordingly, the dependent and independent variables were described as follows:

4.7.1 Liquidity position of the studied banks

Liquidity position of commercial banks of Ethiopia is dependent variable of the study, it can be affected by several factors that can be considered as independent variables such as, bank size, operational challenges, GDP, Inflation, etc. To describe liquidity determinates of banks there are two types of widely used approach these are liquidity gap approach (flow approach) and liquidity ratio approach (stock approach). Though both approaches are intuitively applying, the flow approach is more data intensive and there is no standard technique to forecast liquidity inflows and outflows. As a result, the stock approaches are more popular in practice and in the academic literature due to the availability of a more standardized method. The most popular stock ratios which are used in this study are Liquid Asset /Net deposit, Loan /Net Deposit and Liquid Asset /Total Asset

4.7.2 Liquid Asset/Net Deposit Ratio of Commercial Banks

Liquid asset/net deposit ratio indicates the extent to which the bank's total liquid assets are composed of deposits from customers and other financial institutions. Liquidity position of commercial banks is evaluated based on liquid assets which include cash on hand, deposits with local and foreign banks and treasury bills and other items compared with its liability.

Net deposit is composed of demand deposits, saving deposits and time deposits which are liabilities for the bank. One of the liquidity measures of this study is liquid asset-to-deposit and other short-term borrowings ratio. The National Bank of Ethiopia also uses this ratio as the measurement of banks liquidity level and the liquidity requirement directive is based on this ratio. As per NBE directive number SBB/57/2014 issued by the National Bank of Ethiopia, any licensed commercial banks are required to maintain liquid asset of not less than fifteen percent (15%) of its net current liabilities (which includes the sum of demand deposits, saving deposits, time deposits and similar liabilities with less than one-month maturity). below, the overall average liquid asset-to-deposit and other short term borrowing ratio of the studied banks indicated from 2012 to 2016 implied as follow:

Table 4.7 Liquid Asset/Net Deposit

Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	86	78	75	74	48	72.20
DB	40	36	31	34	47	37.60
WB	47	48	37	48	61	48.20
UB	54	56	47	45	57	51.80
Average	<u>54.80</u>	<u>51.60</u>	<u>49.60</u>	<u>50.20</u>	<u>55.00</u>	<u>52.24</u>

Source: Computed from annual reports of each bank

The overall average liquid asset-to-deposit and other short term borrowing ratio of the studied banks was 52.24%. The ratio shows consistent declining from the period 2012 to 2014 minimum reaches 49.60% and then it has shown increments in the year 2016 reaches the maximum ratio of 55%. Accordingly both are by far above the minimum liquidity requirement standard of the supervisory authority which is currently 15%. In general, the higher this ratio signifies that the bank has the capacity to absorb liquidity shock and the lower this ratio indicates the bank's increased sensitivity related to deposit withdrawals.

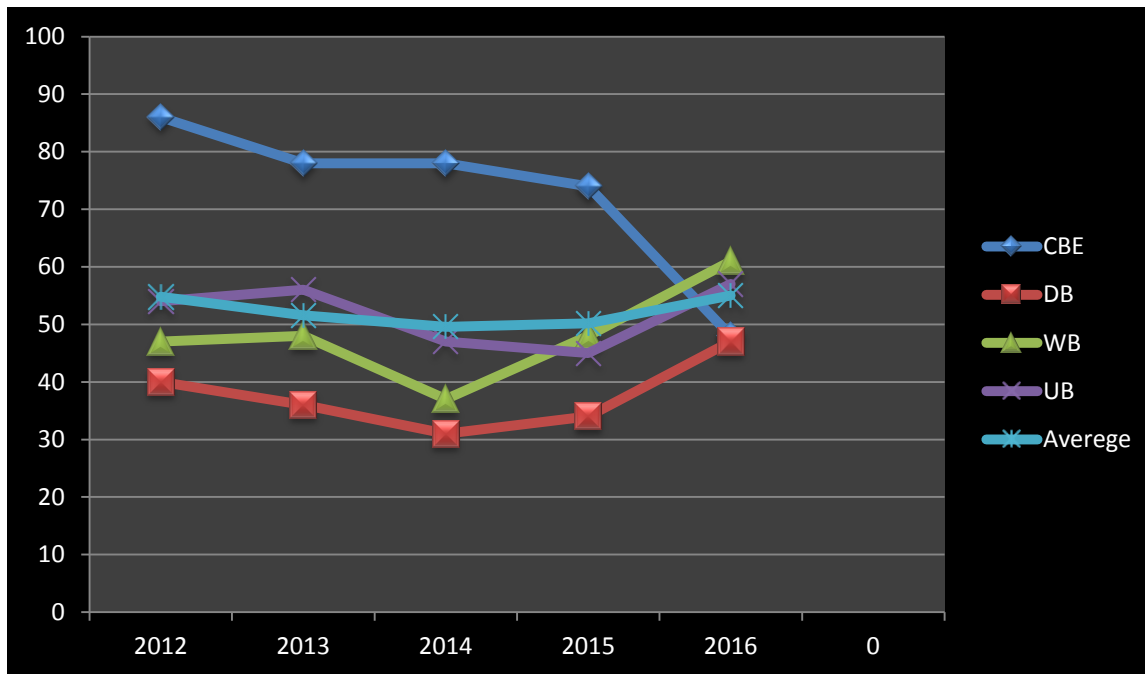
The study also implied the liquid position and trends of each the studied commercial banks of Ethiopia. Accordingly, deposit ratio of Commercial Bank of Ethiopia is decreasing from year to year since 2012 to 2016. The average ratio of CBE, which is 72.20 %, is greater than the industry average for the years 2012 to 2016. The continuous decline in the liquid asset/net deposit ratio is attributed to the shift in investment from Treasury bill (liquid asset) to bonds (illiquid assets). In all the years under this study except 2016 the liquid asset/net deposit ratio is more than the industry average. This indicates that the liquidity position of CBE with respect to this ratio is more than two times the requirements of NBE. This high liquid asset/deposit ratio of the CBE indicates that the bank is highly liquid in the industry.

When we look into the private banks, UB maintains the highest average of liquid asset/net deposit ratio followed by WB and DB. In comparison with the industry average, DB has liquid asset/net deposit ratio which is less than the industry average of each year. On average basis, WB and UB maintained more than the NBE requirement which affects the return on asset negatively because as more liquid assets are kept idle with respect to net deposits, no profit will be generated from these assets unless they are invested in alternative investment avenues.

Generally, the commercial banks considered in this study have excess liquidity when it is measured by liquid asset/net deposit ratio.

The change in the average liquid asset/net deposit ratio of the industry and each bank's yearly liquid asset/net deposit ratio during the five years under review is also depicted by the following graph.

Fig 1 Liquidity Asset /net deposit of each banks



As can be seen from the graph, the highest average is maintained in 2016 which indicates Commercial banks maintain high level of liquid asset with respect to net deposit which is attributed to low economic development.

Graph 1 also depicts that CBE has a liquid asset/Net deposit ratio which above the industry average in each year except for 2016. On the other hand DB has a liquid asset/Net deposit ratio which is less than the industry average in all the years. The remaining banks, WB and UB have a fluctuating ratio against the industry average in each year.

4.7.3. Loan/deposit Ratio of commercial banks

Loan & Advances to deposit and other short-term borrowing ratio relates illiquid assets with volatile liabilities. It indicates what percentage of the volatile funding of the bank is tied up in illiquid loans. This ratio serves as a useful planning and control tool in liquidity management since commercial banks use it as a guide in lending and investment decision. Unlike the above ratio measures, the higher this ratio is the less the liquidity of the banks and interpreted inversely. Below the study shows that the average loan to deposit ratio of the studied commercial banks

Table 4.7.1 Loan/Deposit (in percentages)

Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	28	30	27	25	44	30.80
DB	75	76	83	80	70	76.80
WB	79	74	85	76	75	77.80
UB	69	66	75	81	74	73
Average	<u>69.00</u>	<u>63.20</u>	<u>75.60</u>	<u>73.20</u>	<u>68.80</u>	

Source: Computed from annual reports of each bank

Table 4.8 shows that the loan/net deposit ratio of CBE is fluctuating between 28 percent and 44 percent. In all the years considered in this study, the loan/net deposit ratio of CBE is less than the industry averages and the remaining banks' ratio in each year. This indicates that CBE maintained much deposit than loans granted to customers. CBE has more deposits because it is a bank that has the largest number of branches.

When we see the private banks, the loan/net deposit ratio of the three private banks in each year is greater than the industry average of the respective years. If the banks follow effective collection efforts, the profitability will be high because the loan/net deposit ratio is directly related with return on asset.

4.7.4 Change in Deposit and Loan

In this section the study were analyzed each banks liquidity position when changes happened in deposit and loan. Accordingly, below in the table the annual report of each of the studied banks analyzed as follow:

Table 4.7.2 Change in Net Loan in Amount and percentage

Bank	Year			
	2013	2014	2015	2016
CBE (in Amount)	1,425,291,950	-75,057,416	717,285,722	7,900,037,171
In percentage (%)	23	-1	9	4
DB (in Amount)	533,263,202	919,630,812	808,740,363	402,700,865
In percentage (%)	23	43	26	10
WB (in Amount)	255,802,266	565,811,011	543,767,229	147,321,558
In percentage (%)	37	59	36	7
UB (in Amount)	201,363,251	404,924,359	392,933,665	442,019,754
In percentage (%)	55	71	40	32

Source: Computed from annual reports of each bank

As shown in table the relative change in net deposits of CBE is a positive figure with fluctuating pattern, while the change in net loan shows a negative figure in 2014 indicating that the bank was over liquid. In the year 2016, the change in net loan is by far more than the change in deposit which indicates that CBE has granted more loans relative to its deposit compared with the prior year. If the change in net loan increases relative to change in deposit, it will cause deterioration of the liquidity position of the bank.

The relative change in deposit with relative change in net loan of Dashen Bank shows that the bank is highly liquid. As shown in table, the percentage change in deposit increases from 2014 to 2015 and declines in 2016. On the other hand, the percentage change in net loan is high in 2014 and declines to 26 percent and 10 percent in 2015 and 2016 respectively. This indicates that the bank has still excess deposit which can grant to credit worthy debtors.

On the other hand, the absolute change in deposit of WB has an increasing trend except for the year 2016, whereas the absolute change in net loan has a fluctuating pattern and in 2016 lowest change in net loan is indicated. But still the bank has excess deposit than outstanding loans.

Table 4.9 also shows that the absolute amount of change in deposit of UB is the least from all private banks considered in this analysis except for the year 2016 in which WB has the least change in deposit and table shows that the absolute change in net loan of UB is also smallest among private banks considered in this study except for the year 2016.

4.7.5 Liquid Asset/Total Asset

The other measure of bank liquidity is liquid asset-to-total asset ratio which gives information about the long-term liquidity shock absorption capacity of a bank. As a general rule, the higher the share of liquid assets in total assets, the higher the capacity to absorb liquidity shock, given that market liquidity is the same for all banks in the sample. This measure of liquidity was taken as benchmark measure. Below the data implied each of the studied banks Analysis of Liquidity Position.

Table 4.7.3 Liquid Asset/Total Asset (in percentages)

Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	69	59	59	57	35	55.8
DB	33	30	25	25	37	30.00
WB	36	38	29	38	44	37.00
UB	43	45	37	35	43	40.60
Average	<u>42.20</u>	<u>39</u>	<u>36.20</u>	<u>37</u>	<u>39.60</u>	

Source: Computed from annual reports of each bank

As shown in table Commercial Bank of Ethiopia has average liquid assets which are more than 50 percent of its total assets. When it is compared with the industry, its liquid asset/total asset ratio in each year is by far greater than the industry average in each year except in 2016 in which case this ratio is less than the industry average of the year .Although the liquid asset/total asset ratio has a declining pattern across the trend, CBE has the highest average of this ratio showing that CBE has excess liquidity and this is because it has long age and has more branches than other banks.

4.8 Major factors Affecting Liquidity position of Commercial Banks

There are several factors that can be affected the liquidity position of commercial banks. In this study the study identified some of the major factors that can determine liquidity position of each banks such as, capital adequacy ratio, bank size, loan growth, non-performing loans, return on

asset, interest rate margin, interest rate on loans, gross domestic product, inflation and short term interest rate and discussed here under.

4.8.1 Capital Adequacy Ratio (CAP)

Capital adequacy refers to the sufficiency of funds available to absorb losses to protect depositors, creditors, etc. in the interest of maintaining financial system stability. As per Basel Committee on Banking Supervision (BCBS 2004) revised framework and NBE requirement (NBE directive no SBB/9/95) capital adequacy is measured by the ratio of regulatory capital to risk-weighted assets and accordingly a minimum of 8% is required. However, the proxy for capital adequacy measurement used in this study was the ratio of total equity to total asset. The higher this ratio entails the capability of the bank to absorb losses from its own capital. As it is shown on Figure 4.11 below,

Table 4.8 **Average Capital Adequacy Ratio**

Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	0.12	0.11	0.11	0.09	0.09	0.11
DB	0.13	0.12	0.11	0.09	0.09	0.10
WB	0.19	0.17	0.16	0.12	0.11	0.15
UB	0.19	0.19	0.18	0.15	0.12	0.16
<i>Average</i>	<i>0.16</i>	<i>0.15</i>	<i>0.14</i>	<i>0.11</i>	<i>0.10</i>	

The average capital adequacy ratio of the studied banks was above the minimum requirement set by the NBE which is 8%. The maximum CAP ratio of 16% which was recorded in the year 2012 shows that, during that time the total asset of the studied banks were at its lowest level as compared to its capital. The capital adequacy ratio reaches the minimum 10% in the year 2016. Starting from 2012, the average capital adequacy ratio shows consistent slight decrement from the year 2012 to 2016. This indicates that commercial banks have increased their capital by mobilizing funds from sale of additional shares and especially newly established banks make an effort to meet the increased minimum paid up capital requirement of 500 million set by the NBE on October 2011 generally, the study depicted that, the average capital adequacy ratio of the studied banks for the studied period such as, Dashen Bank has shown the lowest average capital adequacy ratio of 10% and united Bank shows the highest average capital adequacy ratio of 16%

of the last five years. It is also depicts that relatively oldest banks have lowest average capital adequacy ratio than the lately opened banks.

4.8.2 Bank Size (SIZE)

Bank size is what the bank possesses and it is useful to measure the banks general capability to undertake its intermediary function. In this study, the proxy used to measure bank size was the natural logarithm of the total asset. Below the table implied the effect of bank size on the studied commercial banks

Table 4.8.2 Average natural logarithm of total asset

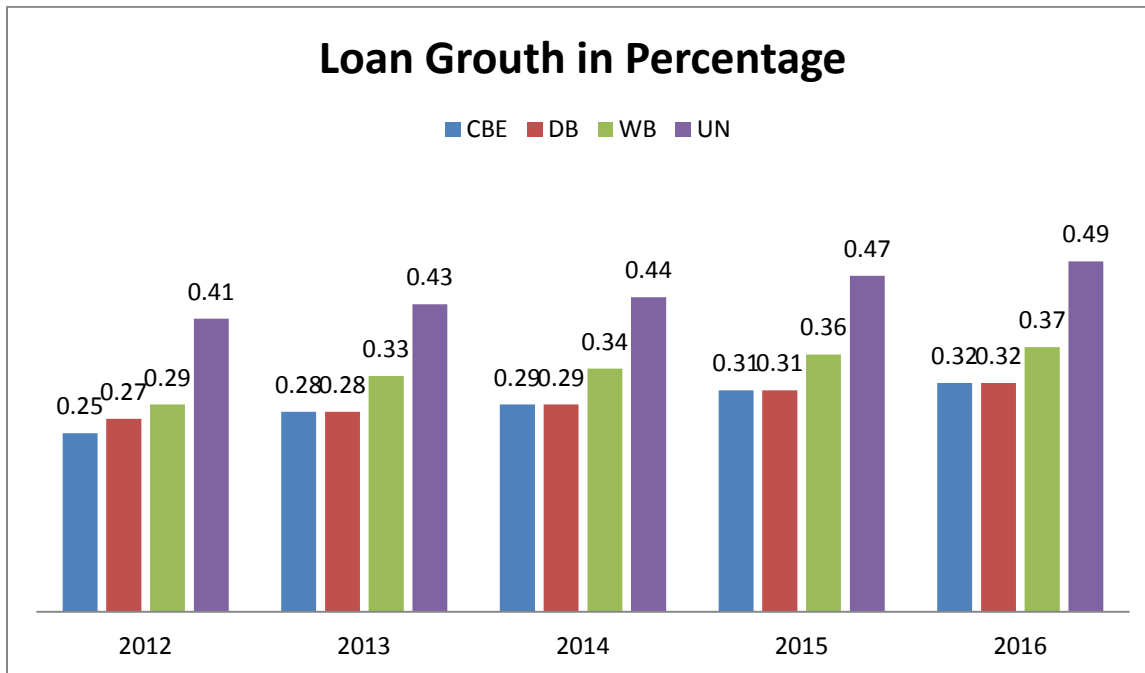
Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	9.72	9.99	11.21	12.11	13.23	11.25
DB	8.86	9.09	9.22	9.40	9.54	9.22
WB	6.96	7.24	7.52	7.63	7.75	7.42
UB	6.04	6.33	6.53	6.62	6.86	6.47
<u>Average</u>	<u>7.89</u>	<u>8.16</u>	<u>8.62</u>	<u>9.03</u>	<u>9.3</u>	<u>8.6</u>

As it is shown in the above table, the average total assets of Ethiopian private commercial banks have shown consistent growth throughout the studied period. As indicated on the consecutive years the minimum total assets growth of the banks observed in 2012 (7.89%) while, the banks highest assets growth were observed in the 2016 (9.3%). Regarding with the development of Total assets CBE is indicated the highest growth rate throughout the studied years, followed by Danshen Bank, Wegagen and United Banks. Based on the banks size development the study deduced that, when banks size increase the banks may enforced investment cost, for the branches, building, rents, as well as employee administrative cost and this expense for a hot period may affect the bank liquidity on the other hand, when the banks size (total asset) increase the bank become profitable in the long run and keep the bank liquidity in a good position.

4.8.3 Loan Growth Rate (LG)

The major role of commercial banks are its intermediation function in which a bank collects money on deposit from one group (the surplus unit) and funds it out to another group (the deficit unit). Hence, lending is the principal business activity for all commercial banks in Ethiopia and

the loan portfolio is the largest asset and the predominate source of revenue. Loan growth is measured by the annual growth rate of total loans & advances of a bank. Below the table implied average loan growth of the studied commercial banks and how it determine liquidity position of the banks

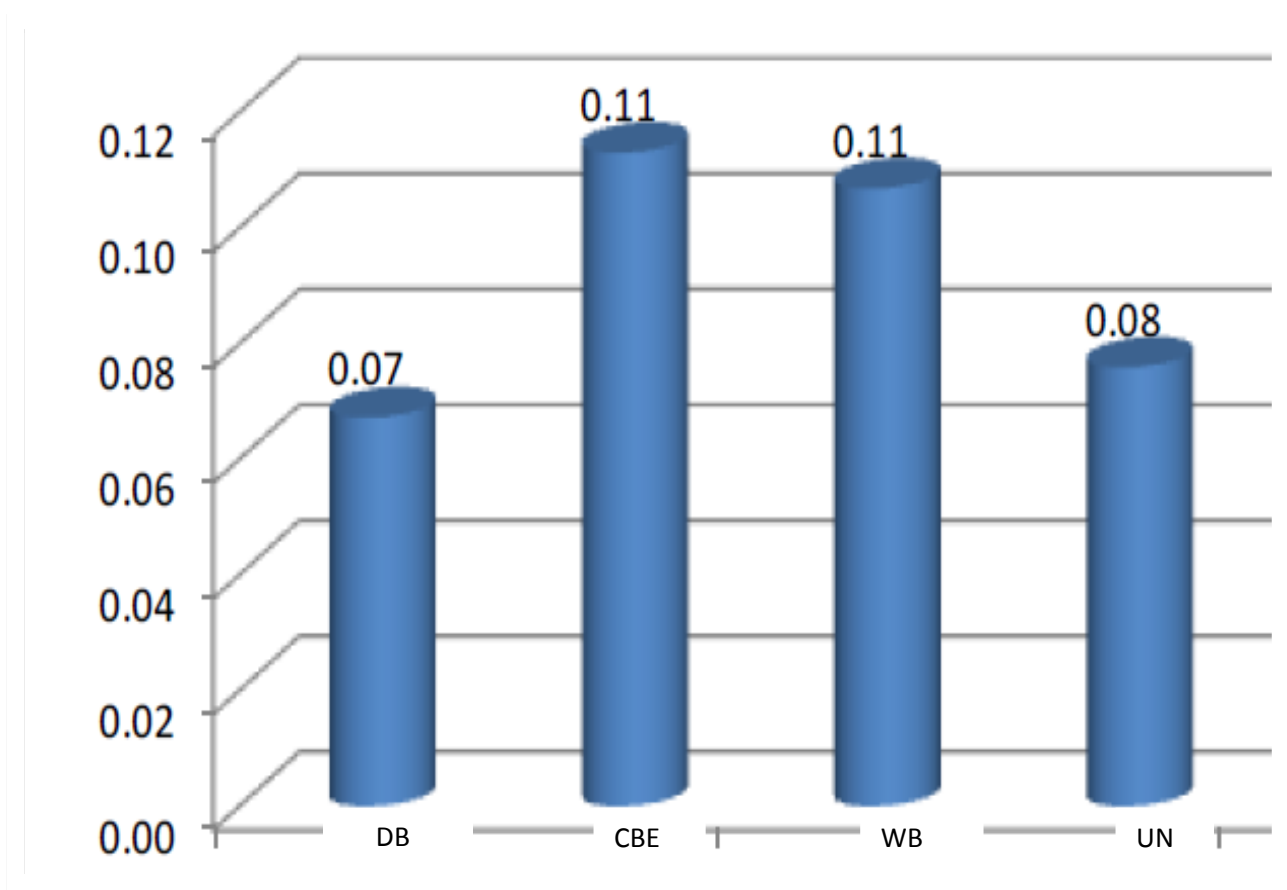


As it is depicts in figure above the average loan growth rate of the studied banks was constantly increased from the year 2012 to 2016. As indicated from the given commercial banks, United bank loan growth were higher than the rest commercial banks, followed by Wegagen Bank, Dashen and commercial bank of Ethiopia. According to NBE directive No. SBB/43/2008, loans & advances means any financial asset of a bank arising from a direct or indirect advances fund by a bank to a person that is conditioned on the obligation of the person to repay the fund on a specified date or on demand with interest. Loans & advances are the major earning asset of the bank. Loans & advances are granted to customer from the amount collected from depositors of the bank. In this regard, when banks transform short term deposits to long term loans, which have a maturity mismatch, they will be vulnerable to liquidity problem. Therefore, the increase in loan means increase in illiquid assets and decrease in short term liquid assets. Therefore, as indicated on the above figure the banks mostly affected by the loan growth were United Bank, followed by Wegagen Bank as their loan growth were highly grow in the consecutive year.

4.8.4 Non-Performing Loans (NPL)

As it is defined by NBE, non-performing loan means loans & advances whose credit quality has deteriorated such that full collection of principal and/or interest in accordance with the contractual repayment term of the loan or advance is in question. In this study, NPL is measured by the share of non-performing loans from the total loans & advances of the bank. The National Bank of Ethiopia has provided direction to all commercial banks to maintain the NPL ratio below 5%. Figure 4.2.6 below shows that, the average five years NPL ratio of the studied banks during the last five consecutive years.

Average Non Performing Loan



As it is shown in the above figure, among the studied banks, CBE and WB has an average of (11%) NPL ratio followed by UN and DB in the last five consecutive years. Even though some of the banks indicated highest NPL however, all of the studied banks in the studied years were affected by NPL therefore, liquidity position of the banks were determined by non-performing loan.

4.8.5 Profitability (ROA)

Profitability is the likelihood of a business earning the desired level of income within a specific period of time under certain prevailing business conditions. Profitability can be measured by return on asset (ROA) and return on equity (ROE). While for the purpose of this study, it was measured by the return on asset and the return on asset was measured by the ratio of net profit before tax to total asset. Net profit before tax was used in order to avoid the impact of different period's tax rate on the net profit of the bank. Below the table indicated profitability of the studied banks for the consecutive five years

Table 4.8.5 Return on Asset (ROA) (in percentages)

Table Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	1	2	2	2	3	2
DB	2	2	3	3	4	2.8
WB	3	3	3	3	3	3
UB	1	3	3	3	3	2.6
<u>Average</u>	<u>1.75</u>	<u>2.5</u>	<u>2.75</u>	<u>2.75</u>	<u>3.25</u>	<u>8.6</u>

Source: Computed from annual reports of each bank

As shown in table, the Return on Asset (ROA) of CBE is fluctuating between 1% and 3% having an average ROA of 2% which is the lowest average of ROA of all banks considered in this study. As it is seen in the analysis of liquidity using liquid asset/total asset ratio, CBE maintains more than 50 percent of its total assets in the form of liquid asset except for the year 2016, in which it has 35 percent liquid asset/total asset ratio. This high amount of asset tied up with liquid asset reduces its ROA. This indicates that the bank can increase its profit by using its assets properly to generate return.

When we see the ROA of United Bank, it is better than CBE, having an average ROA of 2.6 percent which is the third bank next to WB and DB. This indicates that United bank has tied up relatively lower level of assets in the form of liquid assets.

The average ROA of Wegagen bank is the highest of all the banks assessed in this study. As it is discussed in analyzing liquidity, WB is a bank having liquid asset/total asset ratio in all the years greater than 29 percent and can improve its profitability if the bank utilizes its idle liquid assets to generate profit. Moreover the bank has the second highest liquid asset/net deposit ratio of all

the private banks discussed earlier. This affects its return on assets negatively. But the bank can improve its ROA if it is efficiently utilizes its idle asset to generate income.

Table 4.8.6 Return on Equity (ROE) (in percentages)

Table Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	28	41	52	21	30	34.20
DB	33	29	35	35	33	33.00
WB	25	26	28	28	23	26.00
UB	7	25	23	18	19	28.40
<u>Average</u>	<u>23.25</u>	<u>30.25</u>	<u>33.25</u>	<u>25.5</u>	<u>26.25</u>	

Source: Computed from annual reports of each bank

Commercial Bank of Ethiopia marginally improved from 28 percent in 2012 to 41percent and 52 percent in 2013 and 2014 respectively. The average ROE of CBE is the highest showing that the bank has better performance than the other banks and it is greater than the industry averages in each year.

The ROE of Dashen Bank fluctuated for some years, but the average ROE is the second highest average next to CBE, which indicates that performance of DB is better than the private banks considered in this study.

As shown in table 4.17, in terms of average ROE, Wegagen Bank is found next to DB, but it can improve this ratio if it uses its excess fund for generating return through granting loans to creditworthy customers and increasing collection effort simultaneously. In comparison with other banks in this study, United Bank has the lowest average for ROE. Unlike other private banks, UB has highest liquid asset/net deposit and liquid asset/total asset ratios, which affects its performance or profitability.

4.8.6 Interest Income/Interest Expense (in times) (IRM)

This ratio is measured by the interest earned on loans & advances as a fraction of total loans & advances. This variable was included in the model in order to test the relationship of interest on loans & advances to the liquidity of the bank.

Table 4.8.7 Interest Income/Interest Expense (in times)

Table Bank	Year					
	2012	2013	2014	2015	2016	Average
CBE	2.54	2.22	2.51	2.95	2.89	2.62
DB	2.86	2.08	3.62	3.46	3.29	3.12
WB	3.61	3.71	3.49	3.35	2.66	3.36
UB	2.41	2.63	2.68	3.09	2.72	2.71

Source: Computed from annual reports of each bank

The interest income/interest expense ratio of CBE is fluctuating from year to year with an average of 2.62 times which indicates that the interest income is more than twice of the interest expense. But the average interest income/interest expense is the lowest of the banks considered in this study. This is because CBE is a bank with excess liquidity and it maintains more than 50 percent of its total assets in the form of liquid assets. Moreover loan given to debtors is not significant enough to generate interest income relative to interest expense paid to depositors. The bank can improve this ratio if it increases loan granted to creditworthy customers without decreasing its liquidity position to an undesirable level.

When we see the average interest income/interest expense ratio of Dashen Bank it is more than three times which implies that the bank generates interest from loans and advances and surplus fund deposited in foreign and local banks which is three times the interest expense paid for depositors. As it is discussed in the analysis of liquidity using change in deposit, the absolute amount of deposit maintained by Dashen Bank has decreased across the trend and this has contributed for the increase in interest income/interest expense ratio. Therefore, the bank can improve its profit generated from interest by granting idle cash to debtors without lowering its liquidity position below the statutory requirement.

Table 4.18 also shows that Wegagen Bank has the highest average of interest income/interest expense ratio of all the banks considered in this study which indicates better performance. This is attributed to more loans granted to debtors than deposits. The bank can even improve this ratio by granting its idle cash as loan to customers.

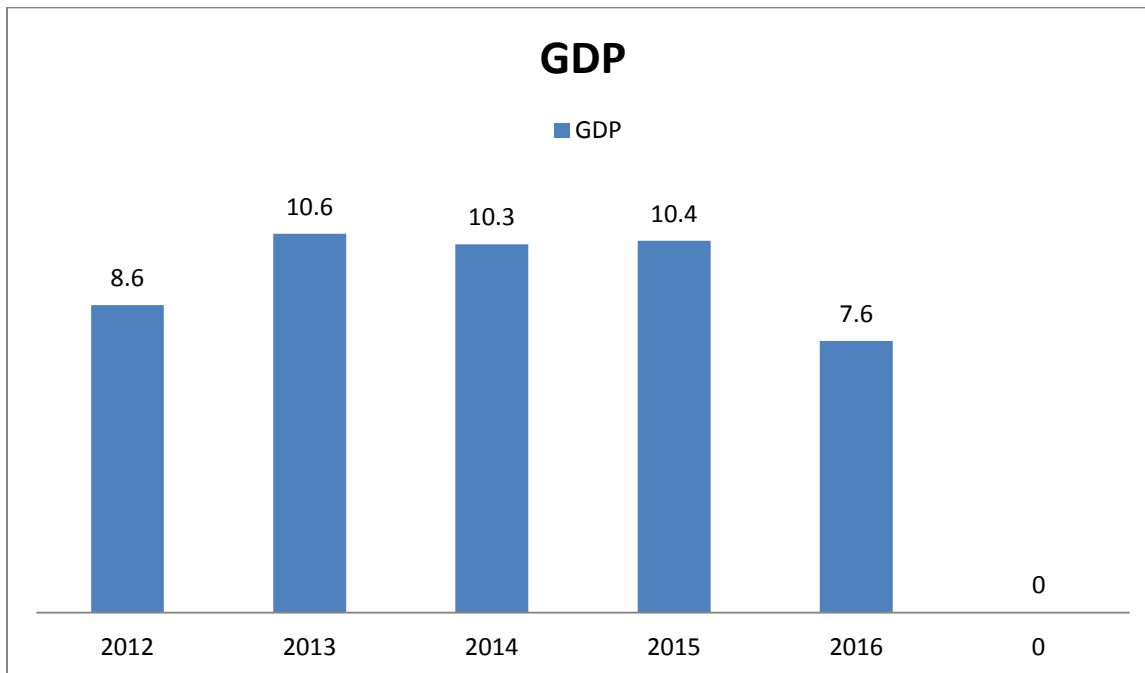
The average interest income/interest expense ratio of United Bank is better than CBE but lower than DB and WB. As it is seen in the analysis of liquidity, the bank has maintained an average of 40.60 percent of its total assets in the form of liquid assets which increases its liquidity but

affects its profitability. So, to improve its profitability in terms of interest income on loans with respect to interest expense paid to depositors, the bank can use its idle liquid assets.

4.8.7 Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is an indicator of the economic health of a country as well as the gauge of a country's standard of living. It is the measurement of level of economic activity of a country. For the purpose of this study, GDP is measured by the annual real growth rate of gross domestic product. Below the figure indicates the country GDP for the following 5 consecutive years

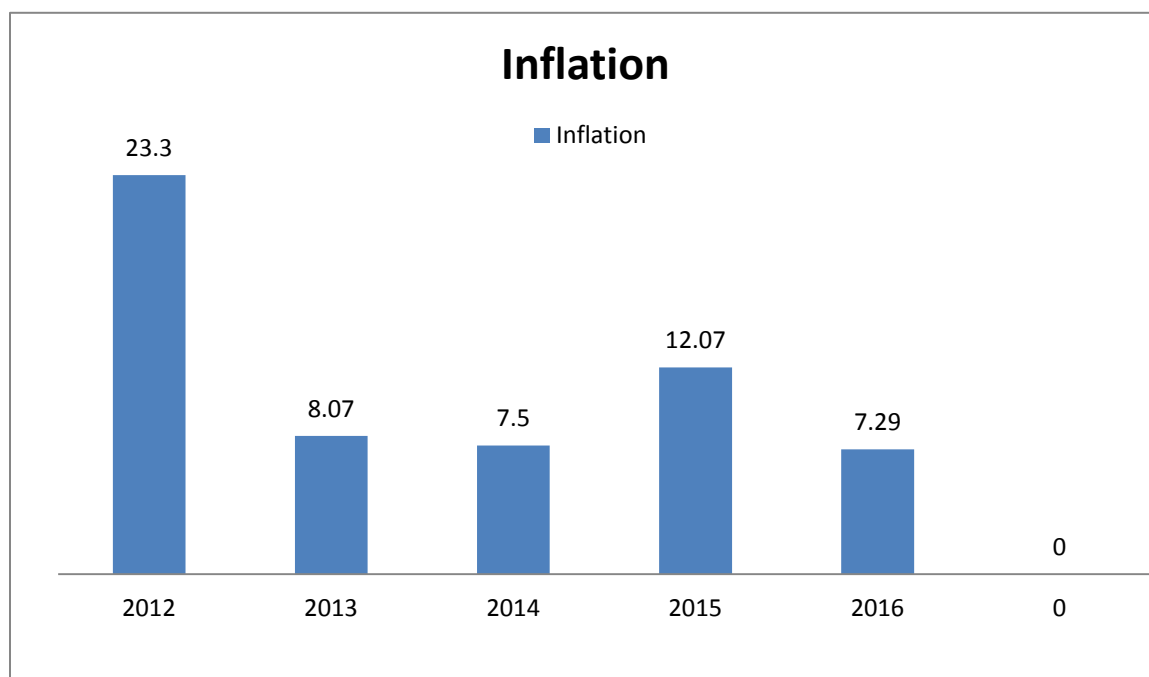
Figure 4.8.7.1 Average Gross Domestic Product



As indicated on the above figure the country GDP growth were less in 2012 (8.6%) and 2016 (7.6%) otherwise the country GDP was Growth in Double digit. According to the study results when the economy is at boom or goes out of recession, economic units including banks are optimistic and increase their loans & advances and as a result decrease their holding of liquid assets. On the other hand, during recession, business operations reduces borrowers' capability to service their obligations which increases bank's NPLs and eventually decreases bank's liquidity. Therefore, liquidity position of the banks determined by the country GDP

4.8.8 Inflation Rate (INF)

Another important macroeconomic variable which may affect liquidity of banks is the inflation rate. During inflation, the central bank can raise the cost of borrowing and reduce the credit creating capacity of commercial banks. During inflation, it is expected that, banks will make fewer loans and the amount of liquid or short term assets held by economic agents including banks will rise. On the other hand, during inflation the cost of living will rise and deposits are expected to be reduced and as a result liquidity will be affected negatively.



As indicated on the above Figure, the mean value of the general inflation rate of Ethiopia over the past sixteen years was 11.64%, which was more than that of the average real GDP growth rate. The maximum inflation rate was recorded in the year 2012 (i.e. 23.3%) followed by the year 2015 (12.07%) and the minimum inflation rate which was recorded in 2014 (7.5%). Therefore,

inflation of the country determines liquidity position of the commercial banks this is because the amount of borrowers minimized of the wide asset of the banks will idle.

4.9 Correlation Analysis

To find out the relationship between liquidity position of the studied commercial banks and the determinate variables, Pearson's correlation coefficient (r) were applied that measures the strength and direction of a linear relationship between two variables. Values of Pearson's correlation coefficient are always between -1 and +1. A correlation coefficient of +1 indicates that two variables are perfectly related in a positive sense; a correlation coefficient of -1 indicates that two variables are perfectly related in a negative sense, and a correlation coefficient of 0 indicates that there is no linear relationship between the two variables. A low correlation coefficient; 0.1 - 0.29 suggests that the relationship between two items is weak or non-existent. If r is between 0.3 and 0.49 the relationship is moderate. A high correlation coefficient i.e. >0.5 indicates a strong relationship between variables. The direction of the dependent variable's change depends on the sign of the coefficient. If the coefficient is a positive number, then the dependent variable will move in the same direction as the independent variable; if the coefficient is negative, then the dependent variable will move in the opposite direction of the independent variable (Thumb, 2006). Hence in this study both the direction and the level of relationship the dependent and independent variables indicated below in the table.

Table 4.14 Correlation Analysis

Dependent	Independent								
	CAP	SIZE	LG	NPL	ROA	ROE	IR	GDP	INF
Liquid Asset /Net deposit	0.213	-0.273	-0.023	0.106	-0.60704	0.289457	-0.222	-0.103	0.134
Loan /Net Deposit	0.074	-0.214	0.231	0.191	-0.649306	-0.59147	-0.234	-0.006	-0.223
Liquid Asset /Total Asset	-0.322	-0.643	-0.584	0.217	-0.55258	0.320694	-0.567	0.298	0.349

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Based on the above table of correlation analysis; among the bank specific variables capital adequacy at 0.213 and non-performing loans at 0.106 are positively correlated with Liquid Asset /Net deposit of the studied banks. On the other hand, bank size, (- 0.271) loan growth (-0.023) and interest rate margin (-0.022) are negatively correlated with Liquid Asset /Net deposit of the banks.

The correlation coefficient for liquid asset/Net deposit ratio is negative against ROA (-0.60704) which indicates that there is an inverse relationship between liquidity as measured by liquid asset /Net deposit ratio and profitability when it is measured by ROA. A result implied that, a one unit increase in liquid asset/Net deposit ratio will result in a decrease in ROA by 0.60704. Therefore, the higher the liquid asset /Net deposit ratio, the lower will be the ROA.

The correlation of the three independent variables with ROE is also shown that, the coefficients of liquid asset/Net deposit ratio are positive which show that these variables are directly related with ROE. In this case a one unit increase in liquid asset /Net deposit ratio will cause the ROE to increase by 0.289457. The other macroeconomic variables, gross domestic product (GDP) and short term interest rate (IR) have negatively correlated with Liquid Asset /Net deposit ratio of the banks.

With regard to, Loan /Net Deposit the relation have to be interpreted in the reverse direction in which positive sign of the coefficient means negative linear relationship with liquidity and negative sign of the coefficient means positive linear relation with liquidity. There is a positive linear relation between Loan /Net Deposit and Capital adequacy, loan growth and non-performing loans. Size of the bank, return on asset, interest rate margin, gross domestic product and inflation have negatively correlated with Loan /Net Deposit

With regards to Liquid Asset /Total Asset Non-performing loans and inflation have positively correlated. Capital adequacy, size, loan growth and interest rate margin rate have negatively correlated. The correlation between Liquid Asset /Total Asset and return on asset and gross domestic product is almost no different from zero.

4.10 Regression Analysis

Regression analysis is employed to examine the effect of independent variable over the dependent one. The result also helps us to understand which variables more affect liquidity risk management practice of the studied commercial banks of Ethiopia. Based on these below the regression analysis of the study summarized as follow:

Table 4.15 Model Summary of the study

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.936 ^a	.876	.868	.37891

a. Predictors: (Constant), CAP, SIZE, LG, NPL, ROE, IR, GDP, INF

As it can be depicted from the table there is a positive and statistically significant Relationship between the independent variables and the dependent variable In overall, the results revealed that all independent variables accounted for 87.6% of the variance ($R^2 = 0.876$). Thus, 87.6 % of implied that, the estimated independent variables determined liquidity position of the studied banks, however, 12.4% unexplored or not addressed in this study.

Table 4.16 ANOVA Result of the study

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	92.608	6	15.435	107.503	.000 ^b
	Residual	13.065	91	.144		
	Total	105.673	97			
a. Dependent Variable: Liquidity Position						
b. Predictors: (Constant), CAP, SIZE, LG, NPL, ROE, IR, GDP, INF						

The result in the ANOVA table confirmed that the significance of the overall model by p- value of 0.000 which is below the alpha level, i.e. 0.05, which means, the independent variables taken together have statistically significant relationship with the dependent variable under study. Accordingly, among the major factors which affect liquidity risk practice of commercial banks were establishment of appropriate measurement and monitoring of liquidity. Operational challenges, challenges of liquidity risk management, market challenges as well as legality

challenges are the most important factor that affects effective liquidity risk management of commercial banks.

Table 4.17 Coefficients Analysis of the study

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.146	.149		7.666	.000
CAP	.172	.046	.195	-3.776	.362
SIZE	.863	.090	.993	9.612	.000
LG	.591	.160	.610	-.571	.025
1 NPL	.676	.145	.654	-3.150	.046
ROE	.693	.192	.713	1.003	.034
IR	.11.	.097	-.43	1.150	.253
GDP	.676	.145	.654	-2.025	.321
INF	.711.	.654	.713	-4.150	.031

a. Dependent Variable: liquidity position

In the table- above, coefficients indicated how much the dependent variable varies with an independent variable, when all other independent variables are held constant. The beta coefficients indicated that how and to what extent the independent variables influence the dependent variable. Accordingly the result coefficient value of regression analysis indicated that, Bank size, (beta = .993, t = 9.612, p = < .000), ROE (beta = .713, t =1.003, p = .034), INF (beta = .713, t = 4.150 < .031), NPL (BETA = .654, t =3.15<.046) and LG (beta = .610, t =-.571 < .025) respectively and highly influenced liquidity position of the studied commercial banks.

4.11 Discussion of the Results

In this section, the relationship between the dependent variable and each independent variable were discussed on the basis of the findings on this study with others similar studies.

Capital adequacy was measured by the ratio of total capital of the bank to total asset of the bank and it was hypothesized that capital adequacy has positive and significant impact on bank's liquidity. Correlation result, capital adequacy was statistically insignificant impact on the

determination of liquidity of the studied commercial banks which was measured by Liquid Asset /Net deposit. While the coefficient sign of 0.213 reveals that, there is a positive relation between liquidity of commercial banks measured by Liquid Asset /Net deposit and capital adequacy of banks. This indicates that, when capital to total asset is increases by 1 unit, the liquidity of Ethiopian commercial banks is also increased by 0.213 units being other variables remains constant this idea were similar with study took place by Vodova(2013) on Hungary commercial banks.

On the other hand, capital adequacy had negative relation and statistically insignificant impact on liquidity of commercial banks which was measured by Liquid Asset /Total Asset. This result was opposite to our hypothesis and the coefficient sign was also in the opposite direction of our expectation. However, capital adequacy has positive and statistically significant impact on liquidity which was measured by Loan /Net Deposit.

With regards to BOA and EOR the study result implied that, the correlation of the three independent variables with ROE, the coefficients of liquid asset/Net deposit ratio and liquid asset /Total asset ratio are positive which show that these variables are directly related with ROE. In this case assuming that the other two independent variables are kept constant, a one unit increase in liquid asset /Net deposit ratio will cause the ROE to increase by 0.289457. Similar interpretation is applicable for the correlation between liquid asset /total asset ratio and ROE. The coefficient of loan /Net deposit ratio is negative which denotes the existence of inverse relationship between loan/Net deposit ratio and ROE. In this case, if the other two independent variables are kept constant, a one unit increase in loan /Net deposit ratio will result in a 0.59147 decrease in ROE. From the above analysis it is possible to say that liquidity position of a bank has an impact on the performance or profitability of the bank. This study was supported by a similar study of Richard (2012) in Poland.

Regarding with the bank size and liquidity position the result of correlation analysis implied that, the result in this study found that bank size had a negative and statistically significant impact on liquidity of the studied commercial banks in which was measured by Liquid Asset /Net deposit and Liquid Asset /Total Asset. This negative sign of the coefficient indicates an inverse relationship between bank size and bank's liquidity. This finding is fully corresponds to the well-known "too big to fail" hypothesis and seems that if big banks assuming themselves as "too big

to fail”, their motivation to hold liquid asset is limited. According to the “too big to fail” argument, large banks would benefit from an implicit guarantee, thus decrease their cost of funding and allows them to invest in riskier assets (Iannotta et al. 2007).

With related to the correlation results of the study measured by the three of independent variables implied that, non- performing loans had positive and statistically significant impact on liquidity of commercial banks. Positive and statistically significant impact of non-performing loans on liquidity was consistent with the result of Malik and Rafique (2013) on Pakistan commercial banks and Vodava(2011) on Czech Republic commercial banks while the positive sign was opposite to our expectation.

Chapter Five

5. Summary Major Findings and Recommendations

5.1 Summary Major finding of the study

The research was intended to take an assessment on determinates of liquidity risk management practice of commercial banks of Ethiopia. The assessment of the study depend on primary and secondary data, the primary data were collected from the selected commercial banks management bodies through questioner as well as interview, on the other hand the secondary data were collected from the annual financial report of each banks. Based on these the analysis of the study were took place in three major parts, in the first section the study were discussed the primary data, in the second part the study were analyzed the secondary data that were collected from each banks annual report, finally, the study were tried to determine the cause effect relationship between the dependent and independent variables using correlation analysis method.

With regard to the responsible bodies of the studied banks liquidity control, Board of directors Senior management, Asset and liabilities committee, Risk management committee and Risk management departments were involved in managing liquidity of the banks.

Regarding the studied commercial banks risk identification process, respondents of each bank, 63(91%) respondents stated that the commercial banks used maturity mismatch analysis of assets and liabilities. In addition to this, 56% and 49% of the respondents respectively implied that the commercial banks used liquidity and cash flow projection as one way of identifying liquidity.

Respondents accounted for 81% implied that, majority of commercial banks used loan /deposit ratio and liquid assets/ deposit ratio as a major measurement tools of commercial banks liquidity position. In addition, commercial banks also applied liquid asset/total asset ratio (65%), deposit/net ratio (49%) and depositors' concentration ratio (26%). Therefore, commercial banks in Ethiopia monitored liquidity risk using several tools. However, commercial banks monitor and measures liquidity risk in accordance with NBE requirement.

Regarding liquidity position 85% of the respondents indicated that the commercial banks have excess liquidity position. In addition the respondents response implied by 43% also implied except CBE private banks also challenged by shortage of liquidity. However, there is no balanced liquidity in commercial banks of Ethiopia as implied by 13 % respondents of the areas.

The overall average liquid asset-to-deposit and other short term borrowing ratio of the studied banks was 52.24%. The ratio shows consistent decrement from the period 2012 to 2015 minimum reaches 49.60% and then it has shown increments in the year 2016 reaches the maximum ratio of 55%. Accordingly all of the studied commercial banks are by far above the minimum liquidity requirement standard of the supervisory authority which is currently 15%. In general, the higher this ratio signifies that the bank has the capacity to absorb liquidity shock and the lower this ratio indicates the bank's increased sensitivity related to deposit withdrawals

The liquidity position of CBE is stronger than other banks. Something more common is a shortage of liquidity due to unexpected heavy deposit withdrawals, which forces a bank to borrow funds at an interest rate. Nevertheless, banks do not have an effective mechanism to prevent a reduction in deposits which match their assets, which tend to be loans granted on a medium-term basis. There for, there is a liquidity risk.

The study also indicates that there is no standardized and centralized liquidity risk management in the banking industry instead each bank designs its own policy and procedure. The National Bank of Ethiopia which is the central bank of the country issues directives regarding liquidity and reserve requirements.

Overall, the study indicates that there is excess liquidity in the commercial banks considered and this is because of the mismatch of inflows and out flows of funds which is caused by low economic development and existence of limited financial institution in the country.

Regarding the analysis of the secondary data the study was used panel data for the sample of four commercial banks in Ethiopia over the period 2012 to 2016. The bank specific data were mainly collected from annual audited financial reports of the respective sample banks and the macroeconomic data were collected from NBE and MoFED. Data was presented and analyzed by using descriptive statistics, correlation analysis to identify the determinants of liquidity position of the banks. Accordingly the overall result of the discussion implied that, the result of this study confirmed that, among the bank specific variables; bank size, loan growth, non-performing loans and profitability had statistically significant impact on the determination liquidity of Ethiopian commercial banks measured by Liquid Asset /Net deposit & Liquid Asset /Total Asset. And among the macro-economic variables only inflation had statistically significant impact on liquidity of commercial banks. Whereas capital adequacy, interest rate margin on loan and GDP had no statistically significant impact on the determination of liquidity of commercial banks.

Recommendation

Based on the major findings of the study the following recommendations were forwarded:

- ❖ The study also indicates that there is no standardized and centralized liquidity risk management in the banking industry instead each bank designs its own policy and procedure. The National Bank of Ethiopia which is the central bank of the country issues directives regarding liquidity and reserve requirements. NBE controls commercial banks operating in Ethiopia using its directives and other special messages send to banks. Therefore banks should improve or upgrade their liquidity risk management system including proper liquidity risk management structure, set their own standards and /or limits, develop liquidity contingency plan, strengthen staff capacity and conduct stress testing. The NBE should also revise its liquidity risk management parameters, strengthen

its staff capacity and introduce modern day supervisory tools such as risk-based supervisory approach.

- ❖ Ethiopian Banks should consider both internal and macro economic variables in their strategy design. The study finds that the real GDP growth rate which measures the economy growth of Ethiopia has impacted negatively and significantly on the profitability of commercial banks. The findings in this direction implies that the commercial banks do not respond to the dynamics of economic growth which can be taken as an indication of ineffective competition and inefficiency in the Banking sector. Hence, at national level there is a need to reduce concentration and spur competition. In addition, the inflation rate which appears to be significant to affect commercial banks liquidity need to be monitored. In such endeavor the effect of inflation on the debt repayment capacity of borrowers, the saving potential of depositors, and the resource mobilization and profitability of Banks.
- ❖ The study found that high levels of inflation affected the financial performance of listed commercial banks negatively and that inflation volatility was more effect than the actual levels of inflation. The study recommended that commercial banks should devise strategies to protect themselves against spikes in inflation rates as well as inflation volatility. Such may involve originating loans which are inflation protected.
- ❖ The commercial banks considered in this study have excess liquidity and to use the excess liquidity they should revise their credit policy and NBE should support commercial banks on revising credit policy. CBE is the bank with the highest average liquid asset /Net deposit ratio but the lowest average loan /Net deposit ratio. So, the bank has to use its idle liquid asset for granting loan to customers and improve its performance.

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QUESTIONNAIRE

ADDIS ABABA UNIVERSITY

GRADUATE STUDIES

DEPARTMENT OF ACCOUNTING AND FINANCIAL MANAGMENT

Dear respondents,

I'm a graduate student at Addis Ababa University in Department of Accounting and financial management. Currently, I'm conducting a research entitled '**Determinates of banks liquidity risk on Commercial Banks Ethiopia**' as a partial fulfillment of the requirements for the Degree of Master of Arts.

The purpose of this questionnaire is to gather data for the proposed study, and hence you are kindly requested to assist the successful completion of the study by providing the necessary information. Your participation is entirely voluntary and the questionnaire is completely anonymous. I confirm you that the information you share will stay confidential and only used for the aforementioned academic purpose. So, your genuine, frank and timely response is vital for the success of the study.

Sincerely,

Please Note:

- No need of writing your name.

- Indicate your answer with a check mark (✓) on the appropriate block/cell for all questions.

Part One: Biographical Information (please use the right (✓) mark to show your choice)

1. Name of the bank that you belong _____
2. Educational Background Diploma [] B/A or BSc [] MA/MSc []
If other Specify -----
3. Work Experience
Less than 3 year [] 3 – 5 years [] 6 years – 10 years [] above 10 years []
4. Your position in the bank
Branch manager [] Vice manager [] Auditor [] Accountant [] Others _____

II. Part Two

Please read each of the following statements very carefully and decide according to the provided options:

5. Which bodies are involved in the liquidity risk management of the bank?
 - A. Board of directors []
 - B. Senior management []
 - C. Asset and liabilities committee (ALCO) []
 - D. Risk management committee []
 - E. Risk control department []
6. How is liquidity risk identified in the bank?
 - A. By maturity mismatch analysis of assets and liabilities []
 - B. Use of liquidity risk indicators []
 - C. Cash flow projections []
 - D. Others, please specify _____
7. What are the tools used by the bank to measure liquidity position?
 - A. Loan/deposit ratio []
 - B. Liquid asset/deposit ratio []
 - C. Liquid asset/total asset ratio []
 - D. Deposit/net loan ratio []

E. Depositor concentration ratios []

F. Others, please specify _____

➤ What are the responsibilities of the risk management (unit) in the liquidity risk management process in the bank?

A. Developing liquidity risk management framework []

B. Giving training and creating awareness about liquidity risk management []

C. Recommending changes in liquidity management process []

D. Reviewing the bank's liquidity risk management []

E. Consolidating and reporting to higher authorities []

F. Others, please specify _____

11. Did your bank face liquidity problem, what was the challenge? Excess liquidity or shortage

Excess [] Shortage []

12. What were the causes for the liquidity problem you mentioned in question No 11?

A. Lack of professionals []

B. Weak interbank system []

C. Absence of school as a training center []

D. Inadequate assistance from NBE []

E. Low level of economic development in the country []

F. Limited financial instruments []

G. Weak payment system []

H. Others, please specify _____

13. What is the current status of the bank in meeting the requirements of NBE regarding liquidity?

A. As expected []

B. Over liquid []

C. Deficient []

14. Which one of the liquidity risks more affected the banks Financial Performance?

A. Failing to attract new retail or wholesale to deposit []

B. Imbalance in loan and deposit []

C. Cash flow forecasting risk []

D. If any other please indicate _____

15. Please explain the major factors that are affecting the bank liquidity risk management practice

A. _____

B. _____

C. _____

Secondary Data Annex

Annex 1. Liquidity Position Each Banks Liquid Asset/Net deposit

1. Commercial Bank of Ethiopia

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	19,217,049,890	1,9,684,34,8,150	21,213,696,090	24,525,670,550	17,844,632,070
Net deposit	22,439,132,708	25,379,691,717	28,142,775,934	32,993,864,674	37,000,992,619
Liquid Asset/Net deposit(%)	86	76	75	74	48

2. Dashen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	871,3,79,873	1,020,251,117	1,148,973,836	1,670,891,886	2,915,507,984
Net deposit	2,676,644,049	3,419,808,716	4,546,012,178	6,039,408,979	7,839,844,530
Liquid Asset/Net deposit(%)	33	30	25	25	37

3. Wegagen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	408,327,676	619,515,948	661,353,873	1,319,806,130	1,803,396,676
Net deposit	875,649,961	1,288,449,072	1,778,418,028	2,723,625,857	2,966,330,157
Liquid Asset/Net deposit(%)	47	48	37	48	61

4. United Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	290,690,781	484,382,029	592,675,420	757,713,731	1,385,712,083
Net deposit	536,096,713	865,168,231	1,292,759,807	1,680,769,579	2,443,351,910
Liquid Asset/Net deposit(%)	54	56	47	45	57

Annex 1B Loan/Net deposit

5. Commercial Bank of Ethiopia

Particulars	Years				
	2012	2013	2014	2015	2016
Deposit	22,439,132,708	25,379,619,717	28,142,775,934	32,993,864,674	37,000,992,619
Net loans	6,307,555,863	7,732,847,763	7,657,790,347	8,375,076,069	16,275,113,242
Loan/deposit (%)	28	30	17	25	44
Change in deposit (amount)	-	294,048,701	27,631,56220	4851088740	4007127940
Change in deposit (%)	-	13		717,285,722	12
Change in Net loan (amount)	-	1,425,291,900	11	17	7,900,037,171
Change in net loan (%)	-	23	-1	9	24

Dashen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Deposit	2,177,734,062	2,833,007,115	3,691,603,055	4,860,574,506	6,151,521,540
Net loans	1,627,369,234	2,160,632,436		3,889,003,611	4,291,704,476
Loan/deposit	75	76	83	80	70

(%)					
Change in deposit (amount)	-	655,273,053	858,595,940	1,168,971,451	1,290,947,039
Change in deposit (%)	-	30	40	32	27
Change in Net loan (amount)	-	533,263,202	919,630,812		402700865
Change in net loan (%)	-	33	33	26	10

Wegagen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Deposit	875,649,961	1,288,449,072	1,778,418,028	2,723,625,857	2,966,330,157
Net loans	695,226,066	951,028,332	1,516,839,343	2,060,606,572	2,207,928,130
Loan/deposit (%)	79	74	85	76	75
Change in deposit (amount)	-	412,799,111	489,968,956	945,207,829	242,704,300
Change in deposit (%)	-	47	58	53	09
Change in Net loan (amount)	-	255,802,266	565,811,011	543,767,229	147,321,558
Change in net loan (%)	-	37	39	36	07

United Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Deposit	536,096,713	865,168,231	1,292,759,807	1,680,769,579	2,443,351,910
Net loans	368,661,808	570,025,059	974,949,418	1,367,883,083	1,809,902,837
Loan/deposit	69	66	75	81	64

(%)					
Change in deposit (amount)	-	329,071,518	427,591,576	388,009,772	762,582,331
Change in deposit (%)	-	61	49	30	45
Change in Net loan (amount)	-	201,363,251	404,924,359	392,933,665	442,019,754
Change in net loan (%)	-	55	71	40	32

Annex 1C Liquid Asset/Total Asset

CBE

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	19,217,049,890	19,684,348,150	21,213,696,096	24,525,670,550	17,853,632,070
Total Asset	27,873,804,757	33,173,014,909	35,829,015,698	43,392,602,532	50,367,688,180
Liquid Asset/Total asset (%)	69	59	59	57	35

Dashen ban

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	871,379,873	1,020,251,117	1,148,973,836	1,670,891,886	2,915,507,984
Total Asset	2,676,644,049	3,419,808,716	4,546,012,178	6,039,408,979	7,839,844,530
Liquid Asset/Total asset (%)	33	30	25	25	37

Wegagen bank

	Years
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Particulars	2012	2013	2014	2015	2016
Liquid Asset	408,327,676	619,515,948	661,353,873	1,319,806,130	1,803,396,676
Total Asset	1,140,136,535	1,615,652,586	2,259,544,521	3,480,280,390	4,124,891,893
Liquid Asset/Total asset (%)	36	38	29	38	44

United Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Liquid Asset	290,690,781	484,382,029	592,675,420	757,713,731	1,385,712,083
Total Asset	674,415,525	1,072,932,254	1,599,568,803	2,182,743,809	3,250,281,316
Liquid Asset/Total asset (%)	43	45	37	35	43

Annex 2. Profitability of Commercial Banks in Ethiopia

Annex 2A. Return on Asset (ROA) and Return on Equity (ROE) (in Percentages)

Commercial Bank of Ethiopia

Particulars	Years				
	2012	2013	2014	2015	2016
Net income	411,584,566	579,258,308	792,604,432	866,565,301	1,362,564,554
Total Asset	27,873,804,757	33,173,014,909	35,829,015,689	43,392,602,532	50,367,688,180
Equity	1,447,433,785	1,429,774,125	1,510,161,669	4,228,176,884	4,570,223,659
ROA	1.00	2.00	2.00	2.00	3.00
ROE	28	41	52	20	30

Dahen bank

Particulars	Years				
	2012	2013	2014	2015	2016
Net income	56,262,396	71,155,956	133,589,788	187,988,216	239,055,070

Total Asset	2,676,644,049	3,419,808,716	4,546,012,978	6,040,914,220	7,839,844,530
Equity	172,149,359	242,883,014	385,872,802	544,472,122	730,609,657
ROA	2.00	2.00	3.00	3.00	3.00
ROE	33.00	29.00	35.00	35.00	33.00

Wgagen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Net income	31,624,196	47,709,622	70,863,014	110,975,052	138,837,507
Total Asset	1,140,136,535	1,615,652,586	2,259,544,521	3,480,280,390	4,124,891,893
Equity	128,740,563	180,179,760	254,668,268	403,205,966	605,448,788
ROA	3.00	3.00	3.00	3.00	3.00
ROE	25	26	28	28	23

United bank

Particulars	Years				
	2012	2013	2014	2015	2016
Net income	7,212,000	17,270,169	49,875,856	55,870,539	84,176,029
Total Asset	1,092,910,945	1,832,533,722	1,797,234,873	1,888,880,128	2,393,899,519
Equity	89,214,834	106,485,003	1,91,359,638	359,734,335	259,007,428
ROA	1.00	1.00	3.00	3.00	4.00
ROE	8	16	32	26	32

Annex 2B: Analysis of Profitability Using Interest Income and Interest Expense

Commercial Bank of Ethiopia

Particulars	Years				
	2012	2013	2014	2015	2016
Interest income	680,341,494	645,754,976	826,764,128	1,036,505,089	1,541,154,077
Interest expense	267,836,746	291,303,402	329,781,744	350,965,733	533,886,462
Interest income/interest	2.54	2.22	2.51	2.95	2.89

expense (in times)					
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Dashen Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Interest income	116,637,552	161,886,146	241,893,298	319,927,692	420,074,747
Interest expense	40,763,454	52,530,315	66,887,818	92,511,233	162,148,506
Interest income/interest expense (in times)	2.86	3.08	3.62	3.46	2.59

Wegagen

Particulars	Years				
	2012	2013	2014	2015	2016
Interest income	66,353,902	79,913,317	120,457,213	185,021,035	238,242,127
Interest expense	18,386,974	21,515,429	34,553,832	55,291,901	89,677,115
Interest income/interest expense (in times)	3.61	3.71	3.49	2.35	2.46

United Bank

Particulars	Years				
	2012	2013	2014	2015	2016
Interest income	26,614,076	45,955,806	71,269,924	122,146,169	171,133,541
Interest expense	10,975,580	17,447,956	26,553,034	39,576,527	62,829,571
Interest income/interest expense (in times)	2.42	2.63	2.68	3.09	2.72

times)					
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