SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF ACCOUNTING AND FINANCE

DETERMINANTS OF LIQUIDITY RISK: EVIDENCE FROM COMMERCIAL BANKS OF ETHIOPIA

BY

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MAY 2018

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST. MARY UNIVERSITY SCHOOL OF GRADUATES STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BUSINESS ADMINISTRATION IN ACCOUNTING AND FINANCE

MAY 2018

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of my Advisor Abreham G/Giorgis. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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St. Mary's University, Addis Ababa **June, 2018**

ENDORSEMENT

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

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St. Mary's University, Addis Ababa **June, 2018**

ABSTRACT

This study examined the determinants of liquidity risk in commercial Banks of Ethiopia. Data were collected from primary and secondary data sources. Questionnaires were used as instrument of primary data collection. The study used descriptive design and explanatory research design. Quantitative research focuses on determining the relationship between variations of independent and dependent variables. Accordingly four banks are selected using purposive sampling techniques. Out of 233 total employees of credit and risk management, 78 of them were participated in this study. The study employed two methods of data analysis in the form of descriptive and inferential statistics. Descriptive statistics, measures of central tendency and as a part of inferential analysis, regression and correlations are used. It was found that liquidity position of commercial banks was excess. The factors that influenced liquidity risk management are absence of secondary markets, lack of enough financial instruments and absence of strong management information system. The banks should improve their liquidity risk management system and develop liquidity contingency plan. The NBE should introduce modern day supervisory tool such as risk based supervisory approach.

Key Words, *Liquidity Risk, Commercial Bank of Ethiopia, Panel data*

Acknowledgement

First of all I would like to thank my God almighty for giving me the inspiration, ability and discipline to finalize my thesis.

Next I would like to thank my Advisor Abreham G/Giorgis (Asst. Prof.) for his technical and professional guidance at various stages in writing this paper. I really thank him for his kindness and necessary encouragement.

I would like to thank my husband Mr. Zerihun Haile he was by my side throughout my study. And special thanks to Commercial Banks Staff for guidance me the important data and information for my study at all.

Last but not least, I would like to extend my gratitude to all my friends, colleagues and my beloved family who have supported and motivated me to come this far.

List of Acronyms

AB	Abay Bank
ADIB	Addis International Bank
ALCO	Asset and Liability committee
AIB	Awash international Bank
BCBS	Basel Committee on Banking Supervision
BOA	Bank of Abyssinia
BIB	Berehan International Bank
BUIB	Buna International Bank
CAP	Capital Adequacy
CBE	Commercial Bank of Ethiopia
CBO	Cooperation Bank of Oromiya
DB	Dashen Bank
DGB	Debub Global Bank
EB	Enat Bank
GNP	Gross national product
GDP	Gross Domestic Product
LGR	Loan Growth rate
LIN	Lion International Bank
NBE	National Bank of Ethiopia
NIB	Nib International Bank
NPL	Non Performing Loan
OIB	Oromiya International Bank
ROA	Return on Asset
ROE	Return on Equity
UB	United Bank
WB	Wogagen Bank
ZB	Zemen Bank

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CHAPTER ONE

1. INTRODUCTION

This chapter includes background of the study, statement of the problem, objectives of the study, significance of the study, scope of the study, research questions, limitation of the study, and organization of the study.

1.1. Background of the Study

Banks play a crucial role in the operation of most economies, (Acaravci & Çalim, 2013). 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.

Bank's liquidity indicates the ability to finance its transactions efficiently. If the bank is unable to do this it faces 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,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).

Lucchetta, (2007) states that ”liquidity is the life and blood of a commercial bank’’. 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.

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.

The significance of the study was that the supervisory authority has required banks to have their own liquidity policy which enforces them 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. Thus, this study has great contribution to the ECB‟s commercial banks to assess their liquidity requirement and to produce their liquidity policy and to give due attention on those factors which have significant impact on banks liquidity risk.

The main objective of the study is to examine the determinates of liquidity risk of commercial banks in Ethiopia. Since liquidity creation is crucial for commercial banks, it is necessary to identify the determinants of liquidity risk in commercial banks of Ethiopia.

There is also no recent and enough research done on this topic attempt was made to include both primary and secondary data; therefore, the purpose of this study is to fill this gap and contribute for future study.

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).

Muranaga and Ohsawa (2002) have 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 their core functions including settlement of their inter-bank obligations (transactions occurring between banks). Banks to have an adequate liquidity, they must understand major determinates of their bank liquidity performance and management effectively before the risk happened. Apart from that this risk can adversely affect both bank's earnings and the capital. 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).

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).

In recent days, following the financial crisis of 2007, liquidity risk has become one of the major concerns of financial institutions throughout the world. The financial crisis revealed that, liquidity becomes one of the top priorities of a bank‟s management to ensure the availability of sufficient funds to meet future demands at reasonable costs. Therefore, identifying the determinants of banks liquidity buffer has become the major concern of all banks and their regulators so as to mitigate liquidity risk (Naser and Masomeh, 2013).

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).

In Ethiopia, during the last two decades, the private banking sector has been playing important role in the economic development of the country. However, as NBE annual report (2011), Ethiopian banks face liquidity risk 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.

Fantew (2016) empirically examined the determinants of liquidity risk in Ethiopian banking industry based on secondary data from the period 2005 to 2014. The results of the analysis revealed that capital adequacy ratio, total loan to total asset ratio and total deposit to total asset ratio affects the liquidity risk of commercial banks negatively and significantly. The study confirms both the share of loans and deposits in total assets and total liabilities respectively indicates mismatch of obtained funds and assets operations.

In addition to the report of the NBE the study were also assessed similar areas previous studies accordingly, there were few studies with some research gaps identified such as, a study by Semu and Tseganesh (2012) focused on the impact of bank liquidity on financial performance, their study were done penal data, However , concluding liquidity risk only based on secondary data might not give comprehensive results. Therefore previous studies conducted

on the area were based on secondary data sources to fill the gap in this study attempt were made to include primary data mixing with secondary data.

1.3 Basic research Questions

In this study the following questions are going to be answered.

1. What does the liquidity practices of banks look?
2. What are the internal factors affecting the liquidity risk of commercial banks?
3. What are the major external factors that affect commercial banks liquidity risk in Ethiopia ?

1.4 Objective of the study

The main objective of the study is to examine the determinates of liquidity risk of commercial banks in Ethiopia.

1.4.1 Specific objectives

Specific objective of the study deals the following:

1. To assess the liquidity trends of commercial banks of Ethiopia.
2. To examine the effect of internal factors on liquidity risk of commercial banks.
3. To investigate the external factors effecting liquidity risk of commercial banks.

1.5 Significance of the Study

The study has great contribution to the existing knowledge in the area to indicate how factors determine liquidity position of commercial banks. The result of this study is important as reference material to the commercial banks of Ethiopia. It 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. Moreover, the supervisory authority has required banks to have their own liquidity policy which enforces them 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. Thus, this study has great contribution to the Ethiopian

commercial banks to assess their liquidity requirement and to produce their liquidity policy and to give due attention on those factors which have significant impact on banks liquidity risk.

1.6 Scope of the Study

This study is designed to examine the determinants of liquidity risk in commercial banks of Ethiopia using structured questionnaire and annual financial report of the selected commercial banks of Ethiopia. In this regard the study was delimited on four commercial banks of Ethiopia such as CBE, Danshen Bank, Wegagen Bank and United Bank. According to their years of establishment the selected banks have more experiences in the market . On the other hand, Dashen Bank is among the experienced commercial banks of Ethiopia, while United and Wegagen banks also have an average experience in the market.

1.7 Limitation of the Study

The study have got some kinds of limitation in the entire study, Though, it is believed in the literature that more observation means more information for generalization, the focus of this study is just to see the bank specific and external factors affecting the liquidity risk position of commercial banks operating in Ethiopia covering the period 2012-to-2016, and in this time span the banks have shown a significant increasing trend in liquidity position, and growth. the other limitation was only four commercial banks were analyzed.

1.8 Organization of the study

All parts of the study are composed of five chapters; the first chapter is being filled of introduction, background of the organization, statement of the problem, research questions, and objectives of the study, scope of the study and significance of the study. Various theoretical and empirical reviews have been raised in the second chapter. Chapter three described research design and methodology with all data collection methods, number of respondents, data analysis techniques and type of data. Data analysis and interpretation are placed in the fourth chapter. Conclusions and recommendations of the study appeared in the fifth chapter of the study.

CHAPTER TWO

2. LITRATURE REVIEW

2.1 Introduction

This chapter cover the literature review on determinates of liquidity risk on commercial banks. Literatures of the study provided 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 determinates of liquidity risk and determinant. Majority of this theoretical frameworks relating to liquidity risk emphasize on risk concept, macroeconomic policies as well as structural and governance failures. The highlighted reviews 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 Moore (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). 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 resulted 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 Management and Measurement of 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. 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). 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 with Basel III Liquidity risk can be measured by two main methods: liquidity gap and liquidity ratios. The liquidity gap is the difference between assets and liabilities at both present and future dates. At any date, a positive gap between assets and liabilities is equivalent to a deficit (Bessis 2009). Liquidity risk is usually measured as liquidity ratio which is practically calculated in two different forms: In first type, liquidity is adjusted by size which includes the ratio of cash asset to total asset (Barth 2003; Demirguc-Kunt 1998), the ratio of cash asset to deposits (savings) (Chen 2010). Second type includes the adjusted loan by the size which includes the ratio of total asset and/or the ratio of net loan to total asset (Kosmidou 2008). In first type, the higher is the liquidity ratio, the higher is the liquidity level, and therefore, it is less vulnerability against bankruptcy. In contrast, in second type, the higher are the values of ratios, it will represent that banks will undergo higher liquidity risk.

2.3 Banks Liquidity Risk Determinant

In most of the literatures, there are two way and sometimes three ways of classifying the determinants of bank Liquidity. Moore (2009), for instance , classified the determinant factors

in to two: bank specific (internal) and macroeconomic variables. 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. 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.

2.3.1 Bank specific factor

The internal factors or bank specific factors are individual bank characteristics which affect the bank's performance. These factors are basically influenced by the internal decisions of management and board. These are:

2.3.1.1 Capital Adequacy

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 (Dia mond and Rajan, 2000, 2001), while higher capital ratios may crowd out deposits and thereby reduce liquidity creation (Gorton and Winton 2000). 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.

In the study of Fentaw (2016), The capital adequacy ratio, total loan to total asset ratio and total deposit to total asset ratio affects the liquidity risk of commercial banks negatively and highly statistically significantly at 0.01% significant level. These variables are found to be the most important bank specific factors that determine the liquidity position of banks. The results of the study confirms the existence of the crowding-out of deposit hypothesis in Ethiopian banking industry that could be assured by the negative and significant effect of capital adequacy. In addition, both the share of loans and deposits in total assets and total liabilities respectively indicates mismatch of obtained funds and assets operations. All in all, the management of each bank should emphasize the importance to consider the liquidity mismatch of assets and liabilities to evaluate the liquidity profile of banks. Moreover, focusing on deposit funding leads to ignore some widely used alternative sources of funding through the issue of commercial paper enter alia, as per the recommendations of international practices. In the study from Pakistan, Akter and Mahmud (2014) examines bank specific and macroeconomic

determinants of commercial bank liquidity in Pakistan. Their results suggest that, 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.

2.3.1.2 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.

In the 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.

2.3.1.3 Bank Size

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, 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.

2.3.1.4 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 (weasel, Harm,& Brandly,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.

2.3.1.5 Interest Rate Margin and Bank Liquidity

Interest rate margin is one of the most important factors that gauge the efficiency of financial institutions. Interest rate margin is the difference between the gross cost paid by a borrower to a bank and the net return received by a depositor (Brock and Suarez 2000). According to (Azeez et al, 2013), interest rate margin is defined as the difference between interest income from loan and advances as a fraction of the total loans and advances and the interest paid out on deposit as a percentage of total deposits. In the financial intermediation process, a bank collects money on deposit from one group (the surplus unit) and grants it out to another group (the deficit unit). These roles involve bringing together people who have money and those who need money. In such intermediation function, the bank will earn interest from loans & advances and pay interest for depositors. Thus, how well a bank manages its assets and liabilities is measured by the spread between the interest earned on the bank's assets and interest costs on its liabilities.

According to the liquidity preference theory, lenders need high interest rate which includes the liquidity premium in order to lend. The basic idea underlining this theory is that, lenders of funds prefer to lend short, while borrowers generally prefer to borrow long. Hence

borrowers are prepared to pay interest rate margin/ a liquidity premium to lenders to induce them to lend long.

The size of interest rate margin/ liquidity premium increases with the time to maturity. Therefore, as they got higher premium, lenders give up their liquid money (Pilbeam 2005).

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.

2.3.1.6 Profitability and Bank Liquidity (ROA)

Profitability accounts for the impact of better financial soundness on bank risk bearing capacity and on their ability to perform liquidity transformation (Rauch et al. 2008 and Shen et al. 2010). A sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou et al. 2005). One of the highest yielding assets of a bank is loans & advances that provide the largest portion of operating revenue. In this respect, banks are faced with liquidity risk since loans and advances are funds from deposit of customers. The higher the volume of loans & advances extended to customers, the higher the interest income and highest profit potentials for banks but it affects liquidity of the bank. Thus, banks need to strike a balance between liquidity and profitability. The relationship between profitability and liquidity varies among different literatures. Further, Myers and Rajan (1998) emphasized the adverse effect of increased liquidity for financial institutions stating that, "although more liquid assets increase the ability to raise cash on short-notice, they also reduce management's ability to commit credibly to an investment strategy that protects investors" which, finally, can result in reduction of the "firm's capacity to raise external finance" in some cases. Thus, this indicates the negative relationship between bank profitability and liquidity. The trade-offs that generally exist between return and liquidity risk

are demonstrated by observing that a shift from short term securities to long term securities or loans raises a banks‟ return but also increases its liquidity risks. As a result of the two opposing views, the management of banks faced with the dilemma of liquidity and profitability.

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

2.3.2 External Factors

The external factors are sector wide or country wide factors which are beyond the control of the company and affect the liquidity of banks. Gross Domestic Product is a macroeconomic factor that affects bank liquidity and Inflation also affects the repayment of loans and discourages savings due to the fact that the money is worth more presently than in the future. Therefore inflation and Gross Domestic Product affects the liquidity of the Commercial Banks.

2.3.2.1 Gross Domestic Product

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 Painceira (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 loanable funds during economic downturn 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."

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 macroeconomic 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.

2.3.2.2 Inflation

Inflation reflects a situation where the demand for goods and services exceeds their supply in the economy . 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 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.

2.4 Literature Gap

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

An important gap still exists in the empirical literature to indicate determinants of bank liquidity risk on commercial banks of Ethiopia. Only few studies aimed and tried to identify determinants of liquidity. 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 Bank s profitability in Ethiopia. The study major focused was to identify any factors that might affect commercial banks profitability.

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.

There was the research made by Fentaw (2016), examine the determinants of liquidity risk in Ethiopian banking industry spanning the period 2005 to 2014. The study assessing determinates of commercial banks liquidity risk in relation with, commercial banks factors such as capital adequacy, operational efficiency, the share of loans in total assets and the share of deposits in total liabilities. But the study sti l didn't focuses in identifying specifically the determinates of liquidity risk relating with several factors. Therefore, this study aimed to fill this knowledge gap, specifically, assessing determinates of commercial banks liquidity risk in relation with, commercial banks specific factors such as size of the bank, non-performing loan, capital adequacy, inflation, and other related factors by collecting both primary and secondary data .

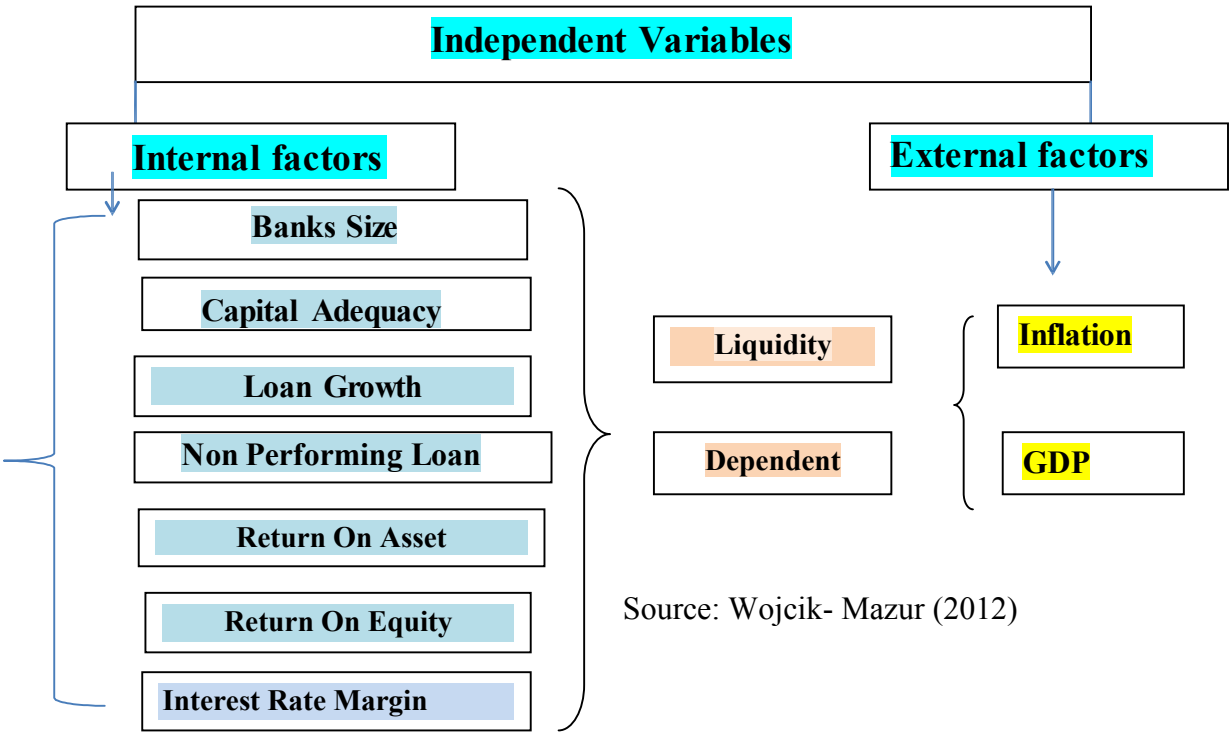
2.5 Conceptual framework

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) loan growth banks external factors are GDP and inflation.

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. (Wójcik-Mazur, 2012).

Liquidity risk is 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). Therefore, considering different types of models the study tried to develop conceptual frame work based on taxonomy of liquidity risk model

Fig.1 Conceptual Framework of the study



Source: Wojcik- Mazur (2012)

CHAPTER THREE

3 Research Methodology

Under this chapter topics like research design, source of data, population and sampling technique, instrument of data collection methods of data analysis and model specification will be discussed.

3.1 Research Design

The study used descriptive design and explanatory research design. According to Muranaga and Ohsawa (2002),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 reason behind using descriptive research design is because the researcher is interested in describing the existing situation under study. (Creswell,1994) stated that the descriptive method of research is a technique of gathering information about the present existing condition. This research design is a fact finding study with adequate and accurate interpretation of findings. This study also used explanatory research design to explaining, understanding, predicting and controlling the relationship between variables. The major purpose of descriptive research is description of the state of affairs as it exists at present. Zikmund (2003) notes that the main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. It can involve collection of quantitative information that can be tabulated along a continuum in numerical form, such as scores on a test. Descriptive research often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Most quantitative research falls into two areas: studies that describe events and studies aimed at discovering inferences or causal relationships. Descriptive studies are aimed at finding out „what is", so observational and survey methods are frequently used to collect descriptive data.

3.2 Research Approach

According to Creswell (2009), there are three basic research approaches; these are quantitative, qualitative and mixed research approaches. Quantitative research focuses on

determining the relationship between variations of independent and dependent variables. The reason for choosing quantitative research approach was to meet the purpose of examining how an independent variable affects a dependent variable (Creswell, 2009). Therefore, for this study both questioner and annual report of each banks were applied and as they are quantified the study is quantitative in its approach.

3.3 Source of Data

To achieve the objectives of the study and to know more about the determinants of liquidity risk and link them to an appropriate study data were collected from primary and secondary data sources. The primary data were collected using structured questionnaire from each bank managements as well as employees working related to risk management on the other hand the secondary data were collected from annual report of each banks. All the selected banks in the banking sector that had continually operated between 2012 – 2016 were included. The reason of selecting this time span was that the banks have shown a significant increasing trend in growth and to ensure that the sampling frame is current and complete.

3.4 Population and Sampling Technique

According to (Zikumund, 2003) The definition of population is identifiable total set of elements of interest being investigated by a researcher. The target population is defined as the entire group a researcher is interested in. In this research, the target population are commercial banks of Ethiopia.

3.4.1 Target Population

The study analyses more depend on the secondary data obtained from NBE annual report and Balance sheet. According to NBE annual report (2015/16), Ethiopia consists of 17 Commercial banks. These are Commercial Bank of Ethiopia (CBE), Dashen Bank S.C (DB), Awash Bank S.C (AB), 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 Oromia S.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).Therefore, the study compared and analyzed secondary data from the stated

sources from 2012 to 2016. Based on this study four commercial banks were selected based on their years of establishment and 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. The total staffs involved in risk management of the sample banks are 233.

3.4.2 Sampling Technique and Sample size

To make the study manageable and because of resource constraint, the study was not able to undertake census survey instead was used sample survey. In addition to support the secondary data the study also tried to include sample managers and employee of each of the selected banks. To determine the sample population of the study area, the study used purposive sampling techniques .The reason behind selecting purposive sampling techniques than others is, it considered more appropriate when the universe happens to be small and a known characteristic of it is to be studied intensively. From 17 total commercial banks of Ethiopia, four of them were part of the study considering their experience. In addition, the study also considered sample employees of each banks that work on areas work related to liquidity management and monitoring of each banks.

In order to determine sample size; the researcher used formula for calculating the required sample size in four sampled banks. The formula was developed by Taro Yamane (1967). It is calculated as follows:

N1 is total number of population in each bank

N= Number of population

$e = sample\ error\ 10\%\ (0.1)$

$$n = \frac{N}{1 + N\,(e)^2}$$

$$n = \frac{233}{1 + 233\,(0.1)^2} \qquad = \frac{233}{1+2} \qquad = \frac{233}{3} = 77.6$$

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

Table 3.1 Distribution of sample size

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

Source: Each banks human resource department (2018)

3.5 Instrument of Data Collection

In order to analyze the determinate 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 financials 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. The reason to collect five years data is to analyzes the recent data and come with new conclusion. 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, to gather the most important information as well as to collect from reliable sources and to ensure correctness of data among different primary data collection methods, structured questionnaire were used as data gathering instrument.

3.6 Methods of Data Analysis

In this study two type of statistical analysis were used to analyzed the result. These are descriptive statistics and inferential statistics to see the effect 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 meaningful form which enables the researcher to understand the practice of liquidity, with statistical description including standard deviation and mean. Then, correlation analyses between dependent and independent variables were also made and finally a multiple linear regression analysis method was used to determine the relative importance of each independent variable in influencing liquidity of Ethiopian commercial banks. The collected data has to be changed

and interpreted in to meaningful information, figure and statement. So it was analyzed, processed and interpreted according to the nature of data. Statistical Package for Social Science (SPSS) software was employed to analyze and present the data through the statistical tools used for this study, namely descriptive analysis, correlation and multiple regression analysis.

3.7 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 cross-sectional element is reflected by the sample of Ethiopian Commercial Bank's from (2012 – 2016). The regression model used for this study was similar with that of Rafique& Malik (2013) and Vodová (2011). The fixed effect panel data model is one of panel data model which enables to control for unobserved heterogeneity among cross sectional units and to get the true effect of the explanatory variables. According to Creswell (2009), the variables need to be specified in quantitative researches so that it is clear to the readers what groups are receiving the experimental treatment and what outcomes are being measured. Accordingly, the study identified both dependent and independent variables. Below the definition of the dependent and independent variables discussed as follow:

3.7.1 Dependent Variables

The liquidity measure provides suggestions about the level of liquidity on which the commercial banks are operating. Most academic literatures prefer liquidity ratio due to a more standardized method . For the purpose of this study, the following three types of liquidity ratios, which are most of the time used by the National Bank of Ethiopiaand which were previously used by Vodova(2011, 2012, 2013), Tseganesh(2012), Rafique& Malik (2013) and Chagwiza, (2014) are adopted.

3.7.1.1 Liquid Asset to Deposit & Short Term Borrowing Ratio (L1)

According to NBE directive No SBB/57/2014, liquid asset includes cash (local & foreign currency), This ratio indicates the percentage of short term obligations that could be met with the bank's liquid assets in the case of sudden withdrawals. It is to ascertain whether the bank's short-term assets are readily available to pay off its short-term liabilities. As deposits are able to be withdrawn at any point in time they play an important role on the bank's liquidity position. This ratio is more focused on the bank's sensitivity to selected types of funding i.e. customer deposit. 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.

$$L1 = \frac{Liquid\ Asset}{Deposit + Short\ term\ borwing}$$

3.7.1.2 Liquid Asset to Total Asset Ratio (L2)

The liquid asset to total asset ratio gives information about the general liquidity shock absorption capacity of a bank. In general when the ratio is high, it tells us that the bank has a capacity to absorb liquidity shock and that the bank is in a better position to meet its withdrawals. While, the higher this ratio may indicate inefficiency since liquid assets, most of the time non-earning assets, yield lower income. As a result maintaining optimum level of liquidity is required to optimize the trade-off between liquidity and profitability by investing excess liquid asset to generate higher return.

$$L2 = \frac{Liquid\ Asset}{Total\ Asset}$$

3.7.1.3 Loans to Deposit & Short Term Borrowing Ratio (L3)

As per 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 portion of a bank's asset and it is the most earning asset of a bank. This ratio tells us the percentage of funding sources tied up by illiquid asset. It relates illiquid asset with liquid liability. This ratio also indicates the percentage of deposit locked in to

illiquid asset. The ratio reflects the proportion of the customers' deposits that has been given out in the form of loans and the percentage that is retained in the liquid forms. The ratio serves as a useful planning and control tool in liquidity management since commercial banks use it as a guide in lending and investment decision. Unlike the above two liquidity measures, the higher this ratio, the less the liquidity of the bank is and interpreted inversely.

$$L3 = \frac{Loan}{Diposit + Short\ term\ borowing}$$

3.7.2 Independent Variables

This section describes the independent variables that are used in the econometric model to estimate the dependent variable i.e. liquidity of commercial banks.

3.7.2.1 Capital Adequacy of Banks (CAP)

Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation (Athanasoglou et al. 2005). There is negative relationship between capital adequacy and bank liquidity whereas, Al-Khouri (2012) found that, bank capital increases bank liquidity through its ability to absorb risk and thus the higher is the bank's capital ratio, the higher is its liquidity creation. Liquidity risk is usually measured as liquidity ratio, liquidity is adjusted by size which includes the ratio of cash asset to total asset (Barth 2003; Demirguc-Kunt 1998), the ratio of cash asset to deposits (savings) (Chen 2010). The higher is the liquidity ratio, the higher is the liquidity level, and therefore, it is less vulnerability against bankruptcy. This study considered that there is a positive relationship between capital adequacy & liquidity, therefore capital adequacy have an inverse or negative relationship with liquidity risk and draws the following hypothesis .

***H1**: Capital adequacy has negative and significant impact on liquidity risk*

$$\mathbf{CapitalAdequacy\ (CAP)} = \frac{\mathbf{Equity}}{\mathbf{TotalAsset}}$$

3.7.2.2 Size of the Bank (SIZE)

The bank's total asset is another bank specific variable that affects the liquidity of a bank. Bank size measures its general capacity to undertake its intermediary function. There are two opposing arguments regarding to the relationship between bank liquidity and bank size. The first view is the "too big to fail" hypothesis which considers negative relationship between bank size and liquidity whereas; the second view considers there is a positive relationship between bank size and liquidity. In this study, bank size is measured by the natural logarithm of total asset of the bank and it is expected positive relationship between bank size. Liquidity risk is usually measured as liquidity ratio, liquidity is adjusted by size which includes the ratio of cash asset to total asset (Barth 2003; Demirguc-Kunt 1998), According to (savings) (Chen 2010) and Basel III, this study considered there is a positive relationship between bank size & liquidity, therefore bank size have the inverse or negative relationship with liquidity risk and draws the following hypothesis and draws the following hypothesis:

H2: Bank size has negative and significant impact on bank's liquidity risk

Bank size (BS) =is natural logarithm of total asset

3.7.2.3 Loan Growth of the Bank (LG)

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. 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. As it was discussed in the literature review part, it is expected that, there is a negative relationship between bank loan growth and liquidity, therefore loan growth have the inverse or positive relationship with liquidity risk and draws the following hypothesis .

***H3**: Loan growth has positive and significant impact on bank's liquidity risk*

LA = Growth of Loan and Advance

3.7.2.4 Non-performing Loans (NPL)

Non-performing loans 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 (NBE directive No SBB/43/2008). The rise of non-performing loan portfolios in banks significantly contributed to financial distress in the banking sector. Non-performing loans are the main contributor to liquidity risk, which exposes banks to insufficient funds for operations. Liquidity risk is usually measured as liquidity ratio, According to (Barth 2003; Demirguc-Kunt 1998) and (Chen 2010). The higher is the liquidity ratio, the higher is the liquidity level, and therefore, it is less vulnerability against bankruptcy. Based on prior studies, it is expected that there is a negative relationship between non-performing loans and liquidity of the bank, therefore non-performing loan have an inverse or a positive relationship with liquidity risk and draws the following hypothesis:

H4: The share of non-performing loan has positive and significant impact on bank's liquidity risk

$$Non\ Performing\ Loan = \frac{Non\ repayed\ Loan}{Total\ Loan}$$

3.7.2.5 Profitability of the Bank (ROA)

Liquidity needs constrain a bank from investing its entire available fund. Banks need to be both profitable and liquid which are inherently conflicts between the two and the need to balance them. As more liquid asset is investing on earning assets such as loans & advances, profitability will increase by the expense of liquidity. As a result, banks should always strike a balance between liquidity and profitability to satisfy shareholders" wealth aspirations as we l as liquidity requirements. The study made by Owolabi, et al (2011) evidence that, there is a trade-off between profitability and liquidity in that, the increase in either one would decrease the other. The other study made by Vodova (2013), suggest a negative influence on bank profitability (measured by return on equity) and bank liquidity. Most commonly, profitability is measured by return on asset (ROA) and return on equity (ROE). For

the purpose of this study, the proxy of profitability is return on asset that measures the overall financial performance of banks and the return on asset (ROA) is measured by the ratio of net profit before tax to total asset. This study considered that there is a negative relationship between ROA and liquidity, therefore ROA have an inverse or positive relationship with liquidity risk and draws the following hypothesis .

H5: Profitability has positive and significant impact on bank's liquidity risk.

$$ROA = \frac{Net\ Profit\ Before\ Tax}{Total\ Asset}$$

3.7.2.6 Interest Rate Margin (IRM)

In the financial intermediation process, a bank collects money on deposit from one group (the surplus unit) and grants it out to another group (the deficit unit). These roles involve bringing together people who have money and those who need money. In such intermediation function, the bank will earn interest from loans & advances and pay interest for depositors. There are number of ways to calculate the interest rate margin, for the purpose of this study, it is defined as the difference between interest income from loan and advances as a fraction of the total loan and advances and the interest paid out on deposit as a percentage of total deposits (previously used by Azeez et al, 2013). As this interest rate margin increases, banks are encouraged to grant more loans from short term deposit and it lowers liquidity, thus the study hypothesized that .

H6: Interest rate margin has negative and significant impact on bank's liquidity risk.

$$NIM = \frac{Interest\ Income - Interest\ Expense}{Total\ loans\ and\ advannce}$$

3.7.2.7 Gross Domestic Product (GDP)

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. According to

previous studies, 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. For the purpose of this study, GDP is measured by the annual real growth rate of gross domestic product and Based on the above promises, the following hypothesis has been framed .

H8: Real GDP growth rate has positive and significant impact on bank's liquidity risk.

3.7.2.8 Inflation (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. 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 performance. 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. For the purpose of this study, inflation is measured by the annual general consumer price index and a negative relationship between inflation rate and banks liquidity is expected and positive liquidity, therefore inflation have an inverse or positive relationship with liquidity risk and draws the following hypothesis .

H9: Inflation rate has positive and significant impact on bank's liquidity risk.

According to Creswell (2009), the variables need to be specified in quantitative researches so that it is clear to the readers what groups are receiving the experimental treatment and what outcomes are being measured. The following equation indicated the model for this study.

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

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 model which incorporate a l of the variables to test the determinants of bank's liquidity were:

L1it = α + β1 (CAPit*) + β2 (SIZEit) + β3 (LGit) + β4 (NPLit) + β5 (ROAit) + β6 (IRMit) +

***β7(IRLit)) + β8 (GDPt) + β9 (INFt) + β10(STIRt) + δi + εit* …….(Model 1)**

Where: ***L1it*:** represents the bank"s liquidity measured by **liquid asset 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 ith bank on the year "t"

***LGit*:** is the loan growth rate of ith bank on the year "t".

***NPLit*:** is the share of non-performing loan on total volume of loans of ith bank on the year "t".

***ROAit*:** is the return on asset of ith bank on the year "t".

IRMit: is interest rate margin of ith bank on the year "t".

***IRLit*:** is interest rate on loans of ith 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". *δi*: denotes fixed effects in bank "i" ***εit*:** is a random error term

CHAPTER FOUR

4 Results and Discussion

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, 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 questionnaire 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 Information of Respondents

As explained in the methodology part the study were distributed 78 questionnaire for the selected respondents, however, the study depend only on 69 questionnaire, the rest were not returned back .

4.1.1 Demographic Characteristics of the Respondent

The demographic characteristics of the respondents include gender, age, level of education and account type. This aspect of the data analysis deals with the analysis personal data on the respondents of the questionnaires. The table below shows the details of characteristics of the respondents and their percentage.

Table 4.1 Characteristics of respondents

Description responds	Response	
	Frequency (No)	**Percent (%)**
A. Position in the bank		
Brach 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	28
Above 10 years	15	22
Total	**69**	**100**

Source Questionnaire result 2018

The above table implied demographic characteristics of respondents from the studied commercial banks. The study considered respondents specifically working related to risk assessment and controlling position. In this regards 42%, 44% and 14% engaged in a position in 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. 65% and 23% of the respondents have first degree and second degree respectively, 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, as implied in the table above.

4.1.2 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 and controlling liquidity risk of the studied Banks

Responsible Bodies	***Frequency***					
	CBE	***WB***	***DB***	***UB***	***Total***	***Percent (%)***
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 control department	32	13	15	9	69	100

Source Questionnaire result 2018

As the above frequency (100%) indicate, all of the banks established banks Asset and Liability Committee (ALCO) and risk control department to control and manage the banks liquidly 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 explained 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.

4.1.3 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 by their respective banks to identify liquidly risk. Accordingly, respondents indicated their respective view as indicated below in the table.

Table 4.3 Risk Identification techniques of the studied banks

Risk Identification Techniques	***Fre***					
	CBE	***WB***	***DB***	***UB***	***Total***	***Percent (%)***
Maturity mismatch analysis of assets & liabilities	30	12	14	7	63	91
Use of liquidly indicators	20	6	6	4	36	52
Cash flow projection	19	5	6	4	34	49

Source Questionnaire result 2018

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.

4.1.4 Measurement tools

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 forwarded related questions which methods were applied in the banks to measures liquidity position of the banks.

Table 4.4 Measurement tools

Tools used to measure liquidity Position	*Frequency*					
	CBE	*WB*	*DB*	*UB*	*Total*	*Percent (%)*
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

Source Questionnaire result 2018

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 loan 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.

4.1.5 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 assessed respondents view 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

Liquidity position	*Frequency*					
	CBE	*WB*	*DB*	*UB*	*Total*	*Percent (%)*
Excess liquidity Position	30	10	11	8	59	85
Shortage of Liquidity	-	6	4	6	18	26
Balanced liquid	4	2	1	2	9	13
Total	34	18	16	16		

Source Questionnaire result 2018

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 26% 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 we l-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 liquidly position of the banks.

4.1.6 Liquidity risks more affected the banks liquidity analysis system

Proper liquidly 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

Determinate factors	*Frequency*					
	CBE	*WB*	*DB*	*UB*	*Total*	*Percent (%)*
Failing to attract new retail to Deposit	-	12	8	8	28	40.57
Imbalance in loan and deposit	30	5	5	6	46	66
Cash flow forecasting risk	4	2	1	2	9	13

Source Questionnaire result 2018

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 (40.57%) 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 and United Bank is more strong than Wegagen bank in attracting new customers next to CBE. On the other hand, risks of imbalance in loan and deposit are higher in state owned 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.

4.2 Liquidity Position of Commercial Banks

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 follow:

Table 4.7 Average Liquidity Ratio

Liquidity Ratio	Years					
	2012	2013	2014	2015	2016	Average
Liquid Asset/Net Deposit	54.80	51.60	49.60	50.20	55.00	**52.24**
Loan/Deposit	69.00	63.20	75.60	73.20	68.80	**69.00**
Liquid Asset/Total Asset	42.20	39.00	36.20	37.00	39.60	**42.20**

Source: Computed from annual report of each bank

4.2.1 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 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).

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, 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.

Table 4.7.1 Liquid Asset/Net Deposit of each bank

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	***54.80***	***51.60***	***49.60***	***50.20***	***55.00***	***52.24***

Source: Computed from annual reports of each bank

The study data also implied the liquid position and trends of each of 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 is72.20 % , is greater than the 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 average of the studied banks. 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.

4.2.2 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. 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.

4.2.3 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.

4.3 Trends of Liquidity position factors

There are several factors that can be affect 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, return on equity interest rate margin, gross domestic product and inflation discussed here under.

Table 4.8 Average Liquidity position factors in percentage

Factors Affect Liquidity Position	Year					
	2012	2013	2014	2015	2016	Average
CAP	0.16	0.15	0.14	0.11	0.10	0.13
SIZE	7.89	8.16	8.62	9.03	9.30	8.60
LG	0.24	0.33	0.34	0.36	0.38	0.33
ROA	1.75	2.50	2.75	2.75	3.25	2.86
ROE	23.25	30.25	33.25	25.50	26.25	27.70
IRM	2.86	2.66	3.08	3.21	2.89	2.95
GDP	8.60	10.60	10.30	10.40	7.6	9.50
INF	23.00	8.07	7.50	12.07	7.29	11.59

Source: Computed from annual reports of each bank except GDP& INF

4.3.1 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 the Table 4.8 above, The average capital adequacy ratio of the studied banks were 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 2011generally.

4.3.2 Bank Size (SIZE)

Bank size is what the bank possesses and it is useful to measure the bank's 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.

As it is shown in the table 4.8 , 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%). 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 expanse 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.

4.3.3 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

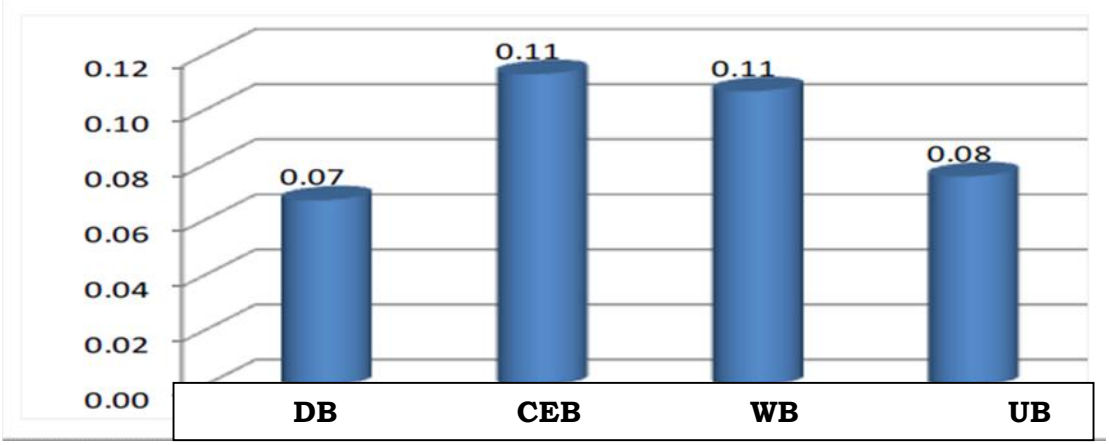
(the deficit unit). Hence, lending is the principal business activity for all commercial banks in Ethiopia and the loan portfolio is the largest asset and the predominate source of revenue. Loan growth is measured by the annual growth rate of total loans & advances of a bank.

As it is shown in the above table 4.8 the average loan growth rate of the studied banks was constantly increased from the year 2012 to 2016. 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.

4.3.4 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 2. Below, shows that, the average NPL ratio of the studied banks during the last five consecutive years (2012 – 2016).

Fig.2 Average Non Performing Loan



As it is shown in the above figure, among the studied banks, CBE and WB has an average 0.11 (11%) NPL ratio followed by UB 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 NPL.

4.3.5 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 4.9 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**
Average	***1.75***	***2.5***	***2.75***	***2.75***	***3.25***	***2.6***

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 Dashen Bank, it is better than CBE and CBB, having an average ROA of 2.6 percent which is the third bank next to WB and UB. This indicates that DB 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.

The ROA of United Bank is uniform at 3 percent except for 2012 which is 1 percent. The average ROA of UB is 2.8 percent which is the highest average next to DB among the private banks. But the bank can improve its ROA if it efficiently utilizes its idle asset to generate income.

Table 4.10 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**
Average	***23.25***	***30.25***	***33.25***	***25.5***	***26.25***	

Source: Computed from annual reports of each bank

The overall average liquid asset-to-deposit and other short term borrowing ratio of commercial Bank of Ethiopia marginally improved from 28 percent in 2012 to 41 percent 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 CBE and the private banks considered in this study.

As shown in table 4.10, 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 considered In comparison with other banks considered 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.

4.3.6 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 4.11 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**
Average	**2.86**	**2.66**	**3.08**	**3.21**	**2.89**	**2.95**

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 increased 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 4.11 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.

4.3.7 Gross Domestic Product (GDP)

Gross Domestic Product 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. As indicated on the above table 4.8 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

4.3.8 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 table 4.8 above, the mean value of the general inflation rate of Ethiopia over the past sixteen years was 11.6.4%, 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 due to minimizing the amount of borrowers and as the result the wide asset of the banks will be idle.

4.4 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.

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. Hence in this study both the direction and the level of relationship the dependent and independent variables indicated below in the table.

Table 4.12 Correlation matrix between dependent and independent variables

	INDEPENDENT									
	(*L1it)*	CAP	SIZE	LG	NPL	ROA	ROE	IR	GDP	INF
(*L1it)*	1	0.213	0.273	-0.023	-0.106	-0.60704	0.289457	-0.222	-0.103	0.134

Based on the above table of correlation analysis; Among the bank specific variables bank size at 0.273 and capital adequacy at 0.213 are positively correlated with Liquid Asset/Net deposit of the studied banks. On the other hand, non-performing loans at (0.106), loan growth (0.023) and interest rate margin (0.222) were 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.

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.

Liquidity risk can be measured by two main methods: liquidity gap and liquidity ratios. The liquidity gap is the difference between assets and liabilities at both present and future dates. At any date, a positive gap between assets and liabilities is equivalent to a deficit (Bessis 2009).

Liquidity risk is usually measured as liquidity ratio which is practically calculated in two different forms: In first type, liquidity is adjusted by size which includes the ratio of cash asset to total asset (Barth 2003; Demirguc-Kunt 1998), the ratio of cash asset to deposits (savings) (Chen 2010). Second type includes the adjusted loan by the size which includes the ratio of total asset and/or the ratio of net loan to total asset (Kosmidou 2008). In first type, the higher is the liquidity ratio, the higher is the liquidity level, and therefore, it is less vulnerability against bankruptcy. In contrast, in second type, the higher are the values of ratios, it will represent that banks will undergo higher liquidity risk.

4.5 Regression Analysis Result

Regression analysis was employed to examine the effect dependent 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 Ethiopia. Based on these below the regression analysis of the study summarized as follow:

Table 4.13 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 86.8% of the variance (R2 = 0.868). Thus, 86.8 % of implied that, the estimated independent variables were determined liquidity position of the studied banks, however, 13.2% unexplored or not addressed in this study.

Table 4.14 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 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.

Table 4.15 Coefficients Analysis of the study

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.146	.149		7.666	.000
	CAP	.863	.090	.993	9.612	.000
	SIZE	.172	.046	.195	-3.776	.000
	LG	.591	.160	.610	-.571	.569
	NPL	.154	.076	.222	-2.025	.046
	ROE	.693	.192	.713	1.003	.318
	IR	.11.	.097	-43	1.150	.253
	GDP	.676	.145	.654	3.150	.321
	INF	.711.	.654	.713	4.150	.212

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. Except the capital adequacy, bank size, and non-performing loan, the other variables (LG, ROE, IR, GDP, and INF) do not affect liquidity risk. The reason for having insignificant result might be due to the number of observations considered in the study.

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 at 1 percent. Capital adequacy was statistically significant impact on the determination of liquidity of the studied commercial banks which was measured by Liquid Asset /Net deposit. While the coefficient sign of 0.863 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 0.863 units being other variables remains constant. This indicates that banks adequate 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. This finding is similar with results (Vodova 2013; Fentaw, 2016; Akter and Mahmud, 2014). Therefore, it has the reverse effect on liquidity risk (Basel III). The higher the capital adequacy ratio the minimum the liquidity risk will be.

Bank Size was measured by natural logarithm of total asset. 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). The result also showed bank size negatively and significantly affected bank liquidity and positively affected the liquidity risk.

Besides, the other insignificant variable that highly contradicts with the literature is ROE that shows no effect on the liquidity risk.

Non- performing loan is measured by non- repaid loan to total loans. This had positive and statistically significant impact on liquidity of commercial banks. This indicates that, when NPL is increases by 1 unit, the liquidity of Ethiopian commercial banks is also increased by 0.154 units and it was opposite to the hypothesis of this study. Therefore, it has the reverse effect on liquidity risk (Basel III). The higher the NPL ratio the lower the liquidity risk will be.

Chapter Five

5 Summary Findings, Conclusion and Recommendations

5.1 Summary 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 , 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, 63respondents 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 the other 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 is, therefore, 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 lows of funds which is caused by low economic development and existence of limited financial instruments 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, non-

performing loans and capital adequacy had statistically significant impact on the determination of liquidity risk of Ethiopian commercial banks measured by Liquid Asset /Net deposit. And among the macro-economic variables GDP and inflation had statistically no significant impact on liquidity risk of commercial banks.

5.2 Conclusion

The main objective of the study was to examine the determinates of liquidity risk of commercial banks in Ethiopia. In this study Commercial Bank of Ethiopia, United, Wegagen, and Dashen banks have been assessed.

The banks are currently facing liquidity risk problems. In order to prevent the above mentioned liquidity risk problems now these banks are using different tools of their own to monitor liquidity risk. The research result showed that they should revise their liquidity risk management parameters and strengthen staff capacity as well as introduce modern day supervisory tools.

There is low organized way of stress testing of liquidity positions within the banks, still there is no that much satisfactory liquidity management practice in the areas of contingency plans that is making one self-ready for the future cash inflows and outflows that are directly linked with the banks day to day business activities. There is no balanced liquidity in commercial banks of Ethiopia as implied by 13% respondents of the areas.

The study indicates there is excess liquidity in the commercial banks considered and this is due to mismatch of inflows and out flows of funds which is caused by low economic development and existence of limited financial instruments in the country.

The overall result of the analysis of the secondary data by using descriptive statistics, correlation analysis to identify the determinants of liquidity position of the banks confirmed that, among the bank specific variables; bank size, Capital adequacy and non-performing loans had statistically significant impact on the determination liquidity risk of commercial banks of Ethiopia. Whereas loan growth, return on asset, return on equity, interest rate margin on loan, inflation and GDP had no statistically significant impact on the determination of liquidity risk of commercial banks.

5.2 Recommendation

Based on the major findings of the study the following recommendations 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. The NBE controls commercial banks operating in Ethiopia using its directives and other special messages send to banks. Therefore, banks should set or upgrade their liquidity risk management system including proper liquidity risk management structure, 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.

- The commercial banks considered in this study have excess liquidity and to use the excess liquidity they should revise their loan 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 liquid asset for granting loan to customers and improve its performance.

- It is important therefore that banks establish the required level of non-performing loans which will help in reducing the liquidity risk. Commercial banks should have a mechanism of identifying loan defaulters and take the necessary action against them. The government (NBE) should come up with policies that limit the amount of money the bank can lend.

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Annexes

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

1. 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

2. 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

3. 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

4. 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

1. Commercial Bank of Ethiopia

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

2. Dashen ban

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
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

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
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

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
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)

1. 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

2. 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

3. 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

4. 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

1. 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 expense (in times)	2.54	2.22	2.51	2.95	2.89

2. 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
Interestincome/interest expense (in times)	2.86	3.08	3.62	3.46	2.59

3. 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
Interestincome/interest expense (in times)	3.61	3.71	3.49	2.35	2.46

4. 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

QUESTIONNAIRE

St. Merry UNIVERSITY

GRADUATE STUDIES

DEPARTMENT OF ACCOUNTING AND FINANCIAL MANAGMENT

Dear respondents,

I'm a graduate student at St. Merry University in Department of Accounting and financial management. Currently, I' m conducting a research entitled **"assess determinates of banks liquidity risk management practice in 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 I: 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

Brach manager [ ] Vice manager [ ]Auditor [ ] Accountant [ ] Others_____

Part II

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 _____

8. . Did the bank face liquidity problem (excess liquidity or shortage) since 2012?

Yes [ ] No [ ]

9. If your answer for question No 1 is yes, What was the challenges? excess liquidity or

Excess [ ] Shortage [ ]

10. 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_____

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

A_____

B. _____

C._____