Innovations

The effect of liquidity on profitability of private commercial banks in Ethiopia

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Abstract

Liquidity can be defined as the ability of a financial institution to meet all legitimate demand for funds. The purpose of this study was to examine the effect of liquidity on profitability of private commercial banks in Ethiopia. Both primary and secondary data were used to address the objective of the study. Purposive sampling was used to gather primary data through questionnaires to test applicability of national bank directive number 57/2014 and effectiveness of liquidity measurement tools used to six banks employed and additional primary data used only to support secondary data. Quantitative method particularly explanatory and descriptive design was adopted for the study. The panel data was taken from the audited financial statements of the commercial banks for ten consecutive year starting from 2010/11 till 2019/20.The SPSS version 20 for windows was used to process the primary and secondary data, and multiple regression analysis was employed to test the hypothesis. The main findings of the study are that liquidity ratio, quick ratio, cash deposit ratio and capital ratio has positive and significant effect on return on asset or Profitability, whereas loan to deposit ratio, deposit to asset ratio and bank sizes has significant negative effect on return on asset. However, the effect of NBE Bill purchase was found to be not significant on return on asset of private commercial banks in Ethiopia. Those results suggest that the National Bank of Ethiopia should come out with strict rules and regulations for control mechanism of liquidity measurement tools and liquidity management policy and the private commercial banks should also give more attention to the aspects and instruments of liquidity management.

Key words: 1*.Liquidity ratio,* ***2.****quick ratio,* ***3.****cash deposit ratio,* ***4.****loan to deposit ratio,* ***5.****deposit to assetratio,****6.****capital ratio,* ***7.****NBE Bill purchase* ***8.*** *Bank size*

1. Introduction

The health of financial sector is a cornerstone for the overall economic development of a country. Banks are financial institutions that play intermediary role in the economy through channeling financial resources from surplus economic units to deficit economic units. In turn, they facilitate the saving and capital formation in the economy. As it was pointed out by Diamond and Dybvig (1983), one of the key reasons why banks may not be in healthy condition is their role in transforming maturity and providing insurance to depositors' potential liquidity needs.

The fundamental role of a bank is to channel funds from surplus economic unit to deficit economic units. They also provide a channel for policy makers to conduct monetary policies that control the price and foreign exchange stability. However, the activity of the bank is not without problems, since banks have fundamental role in the maturity transformation of short-term deposits into long- term loans that inherently exposed for liquidity risk. In such circumstance, banks will be exposed to liquidity problem and may frustrate their customers and may affect the financial sector as a whole. On the other hand, when banks hold excess liquid asset which are non-earning assets such as cash and non-interest bearing deposits, the bank's profitability will be affected (Ibe, 2013).In order to safely and successfully run the business operations and to build healthy relations with the stakeholders, the banks as intermediaries, should manage the supply and demand of the liquidity. If the firm fails to manage liquidity then it may lead to certain irregular exposures, i.e. the risk to maintain the high bank reserve, high interest rate risk and the risk to decrease the reputation of banks (Ismal, 2010).

Nowadays liquidity is major issue in the banking industry and this is the reason that the National Bank of Ethiopia is strictly following banks. The NBE had regulated banks to maintain liquidity requirement consistent with reserve requirement of banks. According to NBE directive number SBB /57/2014, any licensed commercial bank shall maintain liquid assets of not less than fifteen percent (15%) of its net current liabilities and all commercial banks shall submit to the Banking Supervision Directorate of the National Bank properly certified liquidity positions report of the week ended each Wednesday not later than Tuesday of the following week using the form.

A study entitled "The Impacts of Liquidity on Profitability in Banking Sectors of Five banks by Ibrahim (2017), that used liquidity measures current ratio, capital ratio, cash ratio and Quick ratio and deposit to assets as independent variables and profitability measures (return on asset and return on equity) as dependent variable and found out that there exist a positive relationship between liquidity and profitability. The theories and research conducted in the same area have varying conclusion towards the impact of liquidity on profitability of commercial banks. For some studies there exists a negative relationship between liquidity and profitability (Vintila and Alexandra, 2016; Eljelly, 2004), while for some others (e.g. Khan and Ali, 2016), there exist a positive relationship between liquidity and profitability.

There are different studies made in Ethiopia by using different measurement, for instance Tseganesh (2012) made a study so as to identify determinants of commercial banks liquidity in Ethiopia and then to spot the impact of banks liquidity upon financial performance through the significant variables explaining liquidity. Berhanu (2015) used liquid asset to total asset ratio, loan to deposit and short term financing and net interest margin on his study. Alemayehu (2016) only used liquid asset to total deposit ratio to measure the determents of liquidity using data from 2002 to 2013. So, study done attempt to investigate this transaction and what kind of relationship exists between the aforementioned dependent and independent variables in

the context of selected private commercial banks in Ethiopia.

2. Reviews of Literatures

2.1. Theoretical Literature

The importance of liquidity of private commercial banks, several theories have been advanced, noted in introductory section, in terms of liquidity and profitability. This chapter informs both the theoretical and empirical foundation upon which the ideas and opinions developed in its study were constructed and discuss the variables that influences the safety and soundness of selected private commercial bank in terms of liquidity and profitability in Ethiopia. And also, chapters consists of concepts of bank liquidity and profitability, theoretical literature of determinants of bank liquidity, conceptual framework, review of empirical international studies and discuss the knowledge gap.

2.1.1. Liquidity at a Bank

According to Douglas (2014), liquidity at a bank is a measure of its ability to readily find the cash it may need to meet demands upon it. Liquidity can come from direct cash holdings in currency or on account at the Federal Reserve or other central bank. More commonly it comes from holding securities that can be sold quickly with minimal loss. This typically means highly creditworthy securities, including government bills, which have short-term maturities. Bank liquidity is ability to attain customers demand and provide proceeds in the outward appearance of loans and overdrafts. Liquidity as a company's ability to meet its maturing short-term obligations and if liquidity is insufficient serious financial difficulty may occur (Shim and Siegel 2007). Poor liquidity is comparable to a person having a fever; it is a symptom of a fundamental problem. Yuqi (2008) defined that liquidity is a risk not having enough current assets like cash and quickly saleable securities to satisfy current obligations of depositors mainly during the time of economic stress. Therefore, without required liquidity and funding to meet obligations, a bank may fail. Liquidity is current assets which should be managed efficiently to safeguard the firm against the risk of illiquid (Pandey 2010). Lack of liquidity in extreme situations can lead to the firm's insolvency. Thus if the firm does not invest sufficient fund in current assets, it may become illiquid which is risky. Hence, in sufficient liquidity is one of the major reasons of bank failure. Liquidity is necessary to enable banks providing funds on demand and credits needed by customers which are associated with the default risk. Additionally (Douglas, 2014) stated that bank's liquidity situation, particularly in a crisis, will be affected by much more than just this reserve of cash and highly liquid securities. The maturity of its less liquid assets will also matter, since some of them may mature before the cash crunch passes, thereby providing an additional source of funds. Or they may be sold, even though this incurs a potentially substantial loss in a fire sale situation where the bank must take whatever price it can get. On the other side, banks often have contingent commitments to pay out cash, particularly through lines of credit offered to its retail and lines of credit that allow them to borrow within set limits at any time.) Of course, the biggest contingent commitment in most cases is the requirement to pay back demand deposits at any time that the depositor wants.

2.1.2. Liquidity measurement tools

It refer to liquidity management tools on balance sheet items indicates, liquid ratio, quick ratio , cash deposit ratio, deposit to asset ratio and capital ratio.

2.1.2.1. Liquid Ratio

Liquidity ratios are various balance sheet ratios which should identify main liquidity trends. These ratios reflect the fact that bank should be sure that appropriate, low-cost funding is available in a short time. This

might involve holding a portfolio of assets than can be easily sold (cash reserves, minimum required reserves or government securities), holding significant volumes of stable liabilities (especially deposits from retail depositors) or maintaining credit lines with other financial institutions. For the purpose of this research the researcher used the ration of current asset to current liability (Sardar .S, 2017).

2.1.2.2. Quick Ratio

Quick ratio is calculated by dividing the quick asset (current asset less inventories) by current liabilities. The quick assets are the assets that can be converted into cash immediately without losing their values. Inventories are subtracted from the current assets because they normally require some time for realizing cash and their value has a tendency to fluctuate. Quick ratio is considered to be a better guide to the short-term solvency of a firm. A quick ratio is considered to represent a satisfactory current financial condition (Al Nimer et al.,2015).

2.1.2.3. Cash Deposit Ratio

The cash ratio is the most stringent and conservative of the liquidity ratios. According to Richard(2012), "the cash ratio is an indicator of a company's liquidity that further refines both the current ratio and the quick ratio by measuring the amount of cash, cash equivalents or invested funds there are in current assets to cover current liabilities". As per Rosemary (2017), most companies don't use the cash ratio as assess of liquidity because it is so conservative. If the cash ratio of 1:1 would mean that the firm is holding too much cash and this lose valuable interest income on firm's money. Their expected cash ratio will be lower than 1. However, in the creditor mind, the cash ratio is 1 mean that the company has ability to pay all current liabilities in short term. So, creditors usually prefer high in cash ratio.

2.1.2.4. Loan to Deposit Ratio

According to Sardar (2017), loan to deposit ratio is the ratio of credit to deposits may give indications of the ability of the bank to mobilize deposits to meet credit demand. This indicates the degree to which a bank can support its core lending business through its deposits and the ratio of loan and advances to deposits reflects the quantity or proportion of the customers' deposits that has been given out in form of loans and the percentage that is retained in the liquid forms.

As per Crosse and Hempel (1980), loan-to-deposit ratio is most popular stock ratio, where the higher the loan-to-deposit ratio (or the lower the liquid asset to total assets ratio) the less able a bank to meet any additional loan demands.

2.1.2.5. Capital Ratio

The theoretical literature provides two opposite views on the relationship between bank capital and liquidity creation. Under the first view, bank capital tends to impede liquidity creation through two distinct effects: the financial fragility structure and the crowding-out of deposits hypothesis. Indeed, financial fragility structure, characterized by lower capital, tends to favor liquidity creation (Diamond and Rajan, 2000, 2001), while higher capital ratios may crowd out deposits and thereby reduce liquidity creation (Gorton and Winton 2000).

Both Basel II and III accord admits that most frequent bank insolvencies are mostly coursed by credit losses and for this reason it is prudent for commercial banks to have higher quality of capital in order to be able to absorb more loss hence to better withstand stress periods; (Basel Committee's response to the Financial Crises 2010).

2.1.3. Inventory Management

Model Baumol's (1952) inventory management model and Miller and Orr's (1966) model which recognized the dynamics of cash flows are some of the earlier research efforts attempted to develop models for optimal liquidity and cash balances, given the organization's cash flows the focus was on using quantitative models that weighed the benefits and costs of holding cash (liquidity). These earlier models help financial managers understand the problem of cash management, but they rest on assumptions that do not hold in practice. The model postulates that firms identify their optimal level of cash holdings by weighting the marginal costs and marginal benefits of holding cash. The benefits related to cash holdings are: reducing the likelihood of financial distress, allows the pursuance of investment policy when financial constraints are met, and minimizes the costs of raising external funds or liquidating existing assets. The main cost of holding cash is the opportunity cost of the capital invested in liquid assets. Firms will therefore trade-off holding cash and investing it depending on its investment needs.

2.1.4. Demand for Money Model

Miller and Orr (1966) model of demand for money by firms suggests that there are economies of scale in cash management. This would lead larger firms to hold less cash than smaller firms. It is argued that the fees incurred in obtaining funds through borrowing are uncorrelated with the size of the loan, indicating that such fees are a fixed amount. Thus, assets into cash help to maintain depositors‟ confidence. Raising funds is relatively more expensive to smaller firms encouraging them to hold more cash than larger firms. Firms with more volatile cash flows face a higher probability of experiencing cash shortages due to unexpected cash flow deterioration. Thus, cash flow uncertainty should be positively related with cash holdings. Barclay and Smith (1995), however provide evidence that firms with the highest and lowest credit risk issue more shortterm debt while intermediate credit risk firms issue long-term debt. If we consider that firms with the highest credit rating have better access to borrowing, it is expected that these firms will hold less cash for precautionary reasons, which would cause debt maturity to be positively related to cash holdings.

2.1.5. Keynes -Liquidity Preference Theory

The economics and finance literature analyze possible reasons for firms to hold liquid assets. Keynes (1936) identified three motives on why people demand and prefer liquidity. The transaction motive, here firms hold cash in order to satisfy the cash inflow and cash outflow needs that they have. Cash is held to carry out transactions and demand for liquidity is for transactional motive. The demand for cash is affected by the size of the income, time gaps between the receipts of the income, and the spending patterns of the cash available. The precautionary motive of holding cash serves as an emergency fund for a firm. If expected cash inflows are not received as expected cash held on a precautionary basis could be used to satisfy short-term obligations that the cash inflow may have been bench marked for. Speculative reason for holding cash is creating the ability for a firm to take advantage of special opportunities that if acted upon quickly will favor the firm.

2.1.6. Theory of Corporate Liquidity

Almeida et al. (2002) proposed a theory of corporate liquidity demand that is based on the assumption that choices regarding liquidity will depend on firms‟ access to capital markets and the importance of future investments to the firms. The model predicts that financially constrained firms will save a positive fraction of incremental cash flows, while unconstrained firms will not. Empirical evidence confirms that firms classified as financially constrained save a positive fraction of their cash flows, while firms classified as unconstrained do not. The cost incurred in a cash shortage is higher for firms with a larger investment opportunity set due to the expected losses that result from giving up valuable investment opportunities. Therefore, it is expected a

positive relation between investment opportunity and cash holdings. The theory further predicts that firms with better investment opportunities have greater financial distress costs because the positive Net Present Value (NPV) of these investments disappears (almost entirely) in case of bankruptcy. In this case, firms with better investment opportunities will keep higher levels of cash to avoid financial distress. To the extent that liquid assets other than cash can be liquidated in the event of a cash shortage, they can be seen as substitutes for cash holdings. Consequently, firms with more liquid asset substitutes are expected to hold less cash.

2.1.7. Theory of Bank Liquidity Requirements

Liquidity is an entity's capacity to finance increases in its volume of assets and to comply with its payment obligations on maturity without incurring unacceptable losses. In this regard, liquidity risk can be expressed as the probability of incurring losses through insufficient liquid resources to comply with the agreed payment obligations within a certain time horizon, and having considered the possibility of the entity managing to liquidate its assets in reasonable time and price conditions (Basel Committee on Banking Supervision, 2008).Sound liquidity management can reduce the probability of serious problems.

According to Khan& Ali (2016), liquidity and profitability has got tremendous importance in the corporate world. Liquidity refers to the management of current assets and current liabilities of a company. It plays key role in defining whether a firm is able to effectively manage it short term obligations. Due to its dire importance it is important for firms to maintain a reasonable amount their assets in the form of cash in order to meet their short term obligations. Balanced liquidity level is necessary for the effectiveness and profitability of a firm. Therefore, firms need to determine the optimum level of the liquidity in order to ensure high profitability. According to Saleem&

Rehman (2011), liquidity management is very important for every business organization. The business has enough liquid assets (i.e., Cash in hand, Cash at bank etc.) to meet the payment obligations. Liquidity ratios work with cash and near-cash assets (i.e., liquid fund) of a business on one side, and the immediate payment obligations (current liabilities) on the other side. If the coverage of the current liabilities by the cash and near-cash is insufficient, it indicates that the business might face difficulties in meeting its immediate financial obligations. Therefore, banks should strike the tradeoff between liquidity position and profitability to keep their health sound.

2.1.8. Liquidity Measurement Theory

Banks generally face liquidity risk which increases in times of crisis and then endanger the functioning of financial markets. Vento and Ganga (2009) defined three methods to measure liquidity risk: the stock approach, the cash flows based approach and the hybrid approach. The first approach looks at liquidity as a stock. This approach aims to determine the bank's ability to reimburse its short-terms debts obligations as a measurement of the liquid assets' amount that can be promptly liquidated by the bank or used to obtain secured loans. The idea behind this model is that each financial institution is exposed to unexpected cash outflows that may occur in the future due to unusual variations in the timing or extent therefore needs a quantity much higher than the cash amount required for banking projects. The second approach aims to safeguard the bank's ability to meet its payment obligations and calculating and limiting the liquidity maturity transformation risk, based on the measurement of liquidity-at-risk figures. The last approach combines elements of the stock approaches and of the cash flows based approaches.

2.1.9. Bank Liquidity on Profitability

According to Al- Nimer (2015), liquidity might impact profitability but this impact might not be clear is it a positive or negative. For instance, in the latest study conducted by showed a significant impact of liquidity (quick ratio) on the profitability (ROA).While Since, Commercial banks are profit seeking organizations, the way they handle their portfolio is how the profits are reflected in their books. Portfolio management is basically how the commercial banks handle their assets and liabilities. On the other hand, maintaining large amount of liquid asset affects profitability of a bank, that raises the importance of liquidity management and sustaining the optimal level of liquidity is a real art of bank's management. In the banking industry, maintaining of optimum level of liquidity is greatly linked with the efficient banking operations.

According to Obilor (2013), Sulieman (2014) and Khan & Ali (2016), bank liquidity is influenced by both bank specific and macroeconomic factors. However, those factors which were statistically significant impact on liquidity in one country may not be replicated in another country. In the light of this, the study will ascertain the impact on Liquidity on Profitability. It will decide if a relationship exists between bank liquidity and bank profitability. Additionally Douglas, (2014) stated that bank's liquidity situation, particularly in a crisis, will be affected by much more than just this reserve of cash and highly liquid securities. The maturity of its less liquid assets will also matter, since some of them may mature before the cash crunch passes, thereby providing an additional source of funds. Or they may be sold, even though this incurs a potentially substantial loss in a fire sale situation where the bank must take whatever price it can get. On the other side, banks often have contingent commitments to pay out cash, particularly through lines of credit offered to its retail and lines of credit that allow them to borrow within set limits at any time.)

2.1.10. Bank's Risk

Bank Risk, which we define as any source of uncertainty impacting business operations, comes in various forms. According to Eric Bank (2005), any taxonomy of risk is subjective; we begin by segregating risk into financial risk, or the risk of loss arising from financial variables that impact balance sheet and off-balance sheet activities, and operating risk, or the risk of loss arising from variables that impact the physical characteristics and operations of a business. While operating risks (including exposure to non-financial inputs/ outputs, property and casualty losses, environmental liability, fiduciary liability, workers‟ health, safety, and compensation, and so forth) are crucial to understand and manage, we shall not consider them in further detail, except in the context of how they might lead to cash flow pressures. Instead, we focus on financial risks, decomposing them first into three broad classes: market risk, credit risk and liquidity risk.

2.2. Empirical Studies

2.2.1. Empirical Study in Case of Developed Country

According to Khan& Ali (2016), the study aim to identify the impact of liquidity on profitability of commercial banks in Pakistan. The researcher consider the nature of relationship exist between variables1 , the data over the period from the last five year (2008-2014) and analyzed them correlation and regression analysis it was found as significant positive relationship between liquidity with profitability of the banks.

According to Ibrahim (2017), the study examines the influence of liquidity on the profitability of Iraqi commercial banks. The bank randomly selected and analyzed for the current study over the period 2005 to 2013. Moreover, annual reports of these banks have studied and the main ratios of profitability and liquidity were calculated. These reports are available at Iraqi Stock Exchange site. The variables that were identified as

independent for liquidity were, loan deposit ratio, deposit asset ratio and cash deposit ratio, while return on assets as dependent variable for profitability. The regression model used to examine the impact of liquidity on profitability. The study observes that any increase in liquidity ratios as above mentioned will lead return on asset to increase as well. Depending on this study it could be better for Iraqi banks to keep a balance between liquidity and profitability.

According Shaker (2017), liquidity ratios have a positive impact on profitability in the objective banks. Particular used income statements and balance sheets from banks. It should be noted that this study has covered only banking sectors. Depending cash & equivalents, loans and advances, and total deposit will increase the net income for the banks. So that banks should prefer more safety and confidence in order to attract more customers or more depositors for gaining more profits and be safe at the same time. It might be a good idea for banks to keep a balance between liquidity and profitability to avoid any financial risks.

According to Al-Nimer (2015), liquidity might impact profitability but this impact might not be clear is it a positive or negative as some authors mentioned, For instance, in the latest study 1 Dependent variables (return on asset) independent variables (liquidity ratio, quick ratio ,cash deposit ratio, loan to deposit ratio, deposit to asset ,capital ratio, NBE Bill purchase ,bank size and Return on asset.

Vodová (2010), the study aims to identify determinants of liquidity of Slovak commercial banks. The researchers consider bank specific and macroeconomic data over the period from 2001 to 2010 and analyze them with panel data regression analysis. Conclude that bank liquidity drops mainly as a result of the financial crisis. Bank liquid assets, or more precisely the share of liquid assets in total assets and in deposits and short term funding, decreases also with higher bank profitability, higher capital adequacy and bigger size of bank. Big banks rely more on the interbank market or on a liquidity assistance of the Lender of Last Resort. Liquidity measured by the share of loans in total assets and in deposits and short term borrowing increases with the growth of gross domestic product: borrowers reduce their debt during expansionary phases and increase the demand for loans in recessions. This fact is also the reason why banks tend to lend more (and thus decrease their liquidity) even in periods of higher unemployment and lower profitability. Also interest rates (on loans, on interbank transaction and monetary policy interest rates), interest rate margin, the share of non-performing loans and the rate of inflation have no statistically significant effect on the liquidity of Slovak commercial banks.

Lucchetta (2007) made empirical analysis of the hypothesis that interest rates affect banks risk taking and the decision to hold liquidity across European countries. The liquidity measured by different liquidity ratios should be influenced by: Behavior of the bank on the interbank market the more liquid the bank is the more it lends in the interbank market, interbank rate as a measure of incentives of banks to hold liquidity, monetary policy interest rate as a measure of banks' ability to provide loans to customers, share of loans on total assets and share of loan loss provisions on net interest revenues, both as a measure of risk-taking behavior of the bank, where liquid banks should reduce the risk-taking behavior, and bank size measured by logarithm of total bank assets. The results of the study revealed that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the interbank market. Conversely, the inter-bank interest rate has a positive effect on such decisions. Typically, it is the smaller, risk-averse banks that lend in the inter-bank markets. Meanwhile, the risk-free interest rate is positively correlated with loans investment and bank risk-taking behavior.

2.2.2. Related Empirical Studies in Ethiopia

According to Sirak(2016), the impact of liquidity on profitability of private commercial banks: the case of Nib International Bank, it also attempts to examine the possible factors on the impact of liquidity on profitability. The time series data taken from the audited financial statements of the Bank, particularly balance sheet and income statements during 1999-2015 were analyzed using multiple regressions. Results of the regression model indicated that Liquidity ratio, NBE Bills and inflation rate had significant positive impact on profitability. However, loan to deposit ratio and deposit interest rate had an inverse relation with insignificant impact on profitability of Nib International Bank. In addition, the existing liquidity measurement tools were found out to be applicable and effective in terms of liquidity measurement and management. Finally, the study concluded that the impact of liquidity on profitability of Nib International Bank was positive and significant.

The study conducted by Mekbib(2016) on the determinants of liquidity in commercial banks of Ethiopia: the case of selected private banks. The general objective of the study was to identify the determinants of banks liquidity in Ethiopian private commercial banks. The researcher collected data from a sample of six private commercial banks in Ethiopia over the period from 2000 to 2015. Bank's liquidity is measured in three ratios: liquid asset to deposit, liquid asset to total asset and loan to deposit ratios. The findings of the study revealed that, bank size and loan growth has negative and statistically significant impact on liquidity; while non-performing loans, profitability and inflation have positive and statistically significant impact on liquidity of Ethiopian private commercial banks. However, capital adequacy, growth rate , interest rate on loans and short term interest rate have no statistically significant effect on the liquidly of Ethiopian private commercial banks.

According to Belainesh (2017), to identify the main determinants of Ethiopia commercial banks liquidity, secondary source of data were collected from eight commercial banks in the sample covering the period from 2005 to 2016 and analyzed them with panel data regression analysis. The result of regression analysis showed that Actual reserve ratio had positive and statistically. Bank size, loan growth and GDP had negative and statistically significant impact on banks liquidity measured by Liquid asset to total asset. Capital adequacy, inflation and non performing loan had insignificant effect on liquidity. Since, commercial banks do not respond to the dynamics of economic growth which can be taken as an indication of ineffective competition and efficiency in the Banking sector, NBE should come out with strict rules and regulations for control mechanism of firm specific and macroeconomic factors.

The study conducted by Tseganesh (2012) on the determinants of bank liquidity and their impact on the financial performance: empirical study on commercial banks in Ethiopia. It also attempts to examine the possible factors that on the determinants of bank's liquidity. Balanced fixed effect panel regression was used for the data of eight commercial banks in the18 sample covered the period from 2000 to 2011. Eight factors affecting banks liquidity were selected and analyzed. The results of panel data regression analysis showed that capital adequacy, bank size, share of non-performing loans in the total volume of loans, interest rate margin, inflation rate and short term interest rate had positive and statistically significant impact on banks liquidity had statistically insignificant impact on banks liquidity.

2.3. Research gap analysis

The present global economic meltdown is the justification for arise the importance of the study about liquidity and its impact on profitability of commercial banks. Apart from this liquidity, it has always been a

source of concern with most banks profitability. The importance of liquidity has even acquired a new dimension in the advanced countries of the world in recent years. This is basically because of responses to structural changes and funds management techniques in the countries. Liquidity is important to all business specially for banking industry since their function is creation of liquidity both on the asset and liability side of their balance sheet.

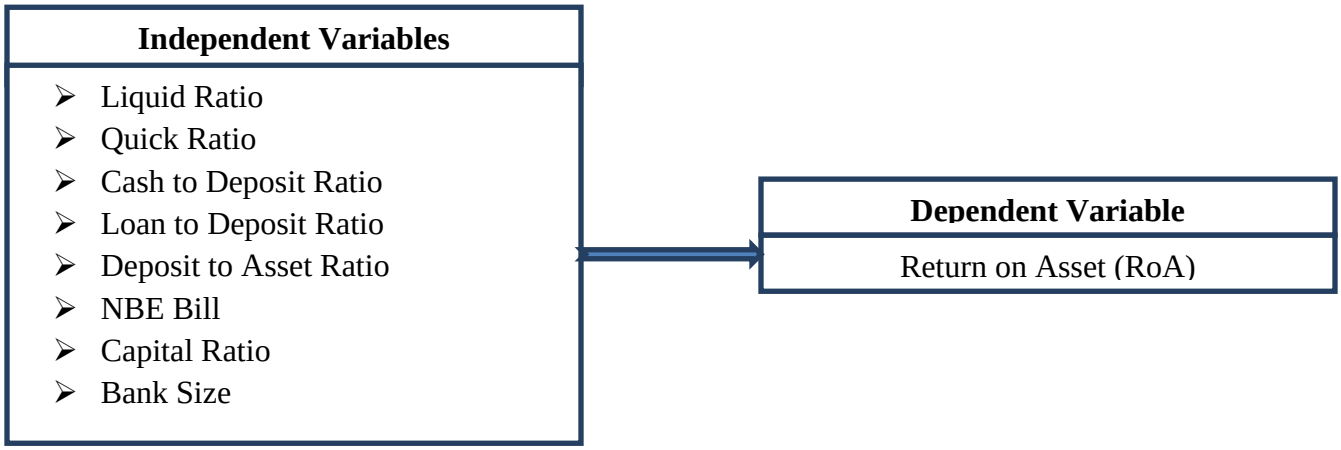
In Ethiopia there were studies that took place related to the Impacts of Liquidity on Profitability in Banking Sectors. However, an important gap still exists in the empirical literature to indicate the effects of liquidity on profitability of commercial banks of Ethiopia. A study entitled "The Impacts of Liquidity on Profitability in Banking Sectors of Five banks by Ibrahim (2017), that used liquidity measures current ratio, capital ratio, cash ratio and Quick ratio and deposit to assets as independent variables and profitability measures (return on asset and return on equity) as dependent variable and found out that there exist a positive relationship between liquidity and profitability. The theories and research conducted in the same area have varying conclusion towards the impact of liquidity on profitability of commercial banks. Tseganesh (2012) made a study so as to identify determinants of commercial banks liquidity in Ethiopia and then to spot the impact of banks liquidity upon financial performance through the significant variables explaining liquidity.

Berhanu (2015) used liquid asset to total asset ratio, loan to deposit and short term financing and net interest margin on his study. Alemayehu (2016) only used liquid asset to total deposit ratio to measure the determents of liquidity using data from 2002 to 2013. Therefore, this study aimed to fill this knowledge gap and attempts to examine the effect of liquidity on profitability of the private commercial banks in Ethiopia and examines compliance with NBE directives related to liquidity ratio requirement which have been ignored in the previous empirical studies.

2.4. Conceptual Framework for the study

The study mainly concerned on the impact of liquidity on profitability of the banks and its deal with theoretical framework and overall of related concepts. For each context, various factors have been identified from the literature but only those that are consider bank liquidity measurement and other external factors and return on asset are included in the framework. The below conceptual frame work shows the relationship between dependent and independent variables.

Figure 2.1: Conceptual Framework



Source: Developed by the researcher, 2020

The figure above is to study the relationship between dependent and independent variables for the conceptual framework. The figure shows the conceptual framework is the essential basis of this research project.

3. Research Design and Methodology

3.1. Research Design

Research design is crucial as it acts as a blue print for collection, measurement and analysis of data. The researcher has selected past ten year data, because this study required structured and précised way to show the relationship among different variables tests. The research has both Primary and secondary sources of data. In line with this, the study has inferential statically tools such as regression to analyze the secondary data thus in order to investigate the objective of the study and test the hypothesis explanatory method is the best suited. Descriptive Statistical tools are used for analysis of the primary data and secondary data.

3.2. Data Source and Method of Data Collection

The research used secondary source of data to found banks liquidity and profitability. In addition, primary data was used to support secondary sources of data. Since the study used quantitative research approach, banks annual audited financial reports were collected from sample banks and different directives were collected form National bank of Ethiopia.

3.3. Population of the Study and sample

The study populations are all private commercial banks in Ethiopia. There are sixteen privately owned commercial banks. The total population of the banks is sixteen but for the study purpose the researcher used sample of six banks. Those data are collected from 2010/11 to 2019/20 and used for analysis purpose. Thus banks were selected because the operation times of the others are less than fifteen years and having few years' observations which is not reasonable to conclude results with little information. The study covered a period of 10 years from 2010/11-2019/20 and included all Private commercial banks, with fifteen and above establishment year.

3.4. Analytical Model/ Mode of Analysis

Data has analyzed using Statistical Package for Social Sciences (SPSS Version 20.0) program. Being that the study was descriptive in nature, both quantitative analysis and inferential analysis was used as data analysis technique. The data collected was run through a regression model so as to clearly bring out the effect of Liquidity on profitability of private commercial banks. The results obtained from the models were presented to aid in the analysis and ease with which the inferential statistics were drawn and furthermore primarily data to use support secondary source of data. In order to assess whether the banks use any liquidity measures and the effectiveness of those measure, primarily data are collected through questioners which were administered to be sample respondents. The relationship equation was presented in the linear equation below.

$$ROA=\beta 0+\beta 1LiQ+\beta 2QR+\beta 3CDR+\beta 4LDR+\beta 5DAR+\beta 6CAPR+\beta 7NBEbill+\beta 8Bs+ Ut\ldots$$

Where ROA is return on assets, LIQ is liquidity ratio, QR is Quick Ratio, CDR is Cash deposit ratio, LTD is loan to deposit, DAR is Deposit asset Ratio, CAPR is capital ratio, NBE bill is NBE bill purchase and BS is Bank size.

4. Data Presentation, Analysis and Discussion

4.1. Descriptive Analysis

Descriptive analysis provides detailed information about the main characteristics of the sample used in this study. It is mainly important to make some general observations about the data gathered with the help of general or demographics questions.

4.1.1. Respondents' Demography

The demographics factors used in this research are gender, age and level of education of respondents are as follows;

Based on the data about the 60 respondents of the banks, It is evident that the percentage of male and female respondents are 80 % and 20 %, respectively, which shows the male dominancy of the members of banks. All the respondents fall in different age groups and 65 % are fall under ages of 31-40 years, followed by the respondents whose ages are 20- 30 contributes 28.33 %. The rest 6 % and null % are between 41&50 and above ages of 50 respectively. The Educational levels of the respondents were 80 % degree holders, while 16.66% and 3.33% of respondents were master's degree and diploma holders respectively. The work experience of were 11.66 % less than two year work experience, while 23.33% and 51.66% of respondents were 2-5 and 6-10 year experience respectively. The rest 13.33 % and null % are between 11-15and above of 15 year related work experience respectively; while work position of respondents 80 % were senior work position, while 3.33% and 15% of respondents were junior officer and Line manager respectively. The remaining result is 1.66 % above of line manager.

4.1.2. Assessment of Liquidity measurement tools of the Bank

It is found out regarding established asset and liability management committee, 76.66 % of respondents were established asset and liability committee(ALCO). On the other hand 16.66% and 6.66 % of respondents' banks has not establishment ALCO and not awareness for the outstanding cases respectively. Generally, 76.66% of the respondents agreed that the overall National bank 5th replacement liquidity requirement Directive SBB57/2014 to established ALCO.

It is also found out that 46.66% of the total respondents believe that the effectiveness of the overall liquidity measurement tools of the Bank is Effective. On the other hand 26.66% and 18.3% of the respondents respond that the effectiveness of the liquidity measurement tools of the Bank is Highly Effective and satisfactory, respectively. The remaining 8.33% of respondent to respond effectiveness of the liquidity measurement tools of the Bank is poor. Generally, 46.66 % of the respondents agreed that the effectiveness of liquidity measurement tools is at Effective level.

It is also found out that 76.66% of total respondents believe that liquidity management towards profitability is positive. On the other hand 21.66% and 1.66 % of the respondents respond that the liquidity management of the bank profitability is Negative and not understand the outstanding concept respectively. Generally, 76.66 % of the respondents agreed that the impact of liquidity management towards profitability is has positive impact.

4.2. Descriptive Statistics of the Primary Data

The descriptive statistic of liquidity management of the mean scores and standard deviation of two major questions are liquidity management policy and liquidity measurement tools. The interpretation was made

based on the following measurement scale intervals or range. Mean scores 4.51-5.00 excellent or very good, 3.51-4.50 good, 2.51-3.50 average or moderate, 1.51- 2.50 Fair and 1.00-1.50 is poor (Btawee, 1987, cited in Hailu 2013)

And it was found that, overall mean rating and the standard deviation of the of respondents' evaluation of attitude factors was 3.45 and .769 respectively. It indicates that developed liquidity management policy is Average (Moderate) according to (Btawee,1987), the mean score of 2.51-3.50. All the mean value of the respondents shows a Moderate result. From this it can be understood that, respondents were in a modest implementation liquidity management as per national bank directive no 57/2014.The maximum and minimum values of developed liquidity management policy were 4 % and 1 % respectively. For cash flow projection mean rating and standard deviation is 3.37and.637 respectively. This implies that the cash flow projection is moderate. The Diversification of funding sources has scored the overall mean and standard deviation of 3.37 and 0.637 respectively. The result revealed that banks modestly (Average) implemented for diversification fund because of the funding source diversify make better to implantation liquidity for management. The maximum and minimum values of develop liquidity management policy were 4 % and 1 % respectively. Major currency has scored the average mean rating and standard deviation of 3.32 and 0.767 respectively. The result showed that respondents were Average to analysis the system due to the fact that there are implemented NBE Directive SBB 57/2014. The Management information system has scored the average mean rating and standard deviation of 3.22 and 0.767 respectively. Whereas respondent mean value moderately implemented. The maximum and minimum values of develop liquidity management policy were 4 % and 1 % respectively and Also the evaluation of Maturity gap analysis and Contingency planning has scored the average mean value to implemented equal mean value. The standard divisions were 0.819 and 0.777 respectively. Finally, The mean rating and the standard deviation of the of respondents' evaluation of Stress tests/scenario analysis was average. A standard deviation of 0.962 has been scored. Whereas respondents overall mean rating was3.02.

Liquidity measurements for requirement limit of liquidity ratio the average mean and standard division of 3.48 and 0.676 respectively. The reserve requirement ratio has scored the average mean and standard Division of 3.4 and 0.741.Moreover, Reserve account with national bank is guarantee in nature to depositor. However, the excess of statutory limit the bank over and above the statutory limit is considered to be highly liquid less than one day basket. In this case reserve and liquidity moderately implemented by NBE Directive no 57/2014.Liquidity management policy for the scenario analysis, maturity gab analysis and cash flow projection the average mean and standard deviation were 3.02, 3.20, 3.37 and 0.965, 0.819 and 0.637.moreover, the banks has moderately implemented NBE directive SBB 57/2014 and also Maturity ladder Guide line and contingency plan fund clearly stated the outstanding cases. While one of liquidity measurement is Loan to deposit ratio has scored the average mean rating and standard deviation 3.5 and 0,725 respectively. The ratio of loan and advance to deposit in the most commonly used measure of the bank liquidity. The ratio can also indicate how far the bank used depositor fund on credit activity which is level to default risk. As per the descriptive statics highest value mean score 3.47 loan and deposit ratio of selected Ethiopia commercial banks with standard division of 0.747). and also current asset to total asset ratio, Current deposit to total deposit ratio and Saving deposit to total deposit ratio were same mean value 3.34 but standard division value which shown 0.777, 0.685 and 0.755 respectively. Generally standard division amount 77.70 percent show deposit amount of selected Ethiopia private banks moderate Gap for deposit. Time deposit to total deposit ratio was mean value and

standarddeviationamount3.20and0.819respectively.Foreign Deposit to total deposit ratio moderate mean value 3.1 and standard division value 0.819. Top 10 depositors to total deposit ratio was mean value 3.20 and standard deviation 0.819.however, top ten depositor moderately deposit amount to other customer deposit amount.

4.3. Descriptive Statistics of the Secondary Data

The descriptive statistics for the dependent and independent variables for Six Private commercial banks of Ethiopia from year 2010/11 to 2019/20 with a total of 60 observations are presented below.

The mean of dependent variable ROA was 3.7% with a maximum of 6 % and a minimum of 2%. Regarding the standard deviation, it means the value of ROA deviate from its mean to both sides by 8.25 percent which indicate there was low variation from the mean. Liquidity measures banks' ability to fund increases in assets and meet obligations as they come due, without incurring unacceptable costs. The mean value of liquidity was 42.24% that was above the NBE‟s requirement of 15% commencing from 1st October, 2014 (NBE Directives No. SBB/57/2014). The standard deviations of 15.46 % showed higher dispersion of liquid assets to total liabilities ratio from its mean for banks. The maximum and minimum values of liquidity were 72% and 18 % respectively. The mean value of the independent variable quick or Acid test ratio was 39.21% and maximum and the minimum value of 70 % and 16% respectively. The standard deviation of the quick ratio was 15%. The mean value for cash deposit ratio as measured cash and cash equivalent over total asset was 27.44% with standard deviation of 14.47, maximum of 72% and the minimum of 8%.The mean value for the other independent variable loan to deposit ratio and Deposit to asset ratio were 61.92% and 75.20% with standard deviation of 16.57% and 7.11%, maximum of 117 % and 98% and minimum of 31% and53% respectively. The mean value for other independent variable Capital ratio was 13.51 % with standard deviation of 3.51%, maximum of 20% and minimum of 4%. The mean value of NBE Bills to Net loans ratio was 28.53 %.The standard deviation for NBE Bills was 24.67% which implies higher dispersion from its mean. This is mainly due to the directive for the bills purchase was implemented (Directive no MFA/NBE Bill/002/2013). The maximum value for NBE Bills to Net loans ratio was 69 % and the minimum value was 0%. Bank size which is measured by natural log of total asset had the mean value and standard deviation which is 100.1 % 23.97 % respectively, which means it is the most deviated variable from its mean compared to other variables.

4.4. Pearson Correlation Coefficient Analysis

Correlation matrix is used to check the pattern of relationship in Pearson Correlation Coefficient. This is to ensure all variables in this study have determined strength of linear relationship. Preliminary analysis was conducted before multiple regression analysis to ensure the regression model does not consists of any serious violation.

4.4.1. Correlation between Liquidity and Return on Asset in Ethiopia Private Banks

Pearson correlation test was conducted for Liquidity and profitability in Ethiopia private banks and the results shows that there is a significant positive correlation between liquidity and return on asset with a positive significant value of 0.000 lower than 0.05.

4.4.2. Correlation between Quick/Acid Test Ratio and Return on Asset in Ethiopia Private Banks

Pearson correlation test was also conducted to know the degree of relationship between the independent variable, which is Quick ratio, and the dependent variable which Return on asset. The results of the

correlation between these variables are shows positive significant correlation between quick ratio and return on asset in private banks a significant value of 0.000 lower than 0.05.

4.4.3. Correlation between Cash Deposit Ratio and Return on Asset in Ethiopia Private Banks

In order to see the correlation between cash deposit ratio and return on asset, Pearson correlation test was conducted, and the results found is a positive and significant correlation between cash deposit ratio and return on asset with a significant value of 0.000 lower than 0.05.

4.4.4. Correlation between Capital Ratio and Return on Asset in Ethiopia Private Banks

In order to see the correlation between capital ratio and return on asset, Pearson correlation test was conducted, and the results found is a positive and significant correlation between capital ratio and return on asset with a significant value of 0.000 lower than 0.05.

4.4.5. Correlation between NBE Bills Purchase and Return on asset in Ethiopia Private Banks

Pearson correlation test was also conducted to know whether there is significant correlation between NBE Bills purchase and Return on asset, and the results are shows that there is a negative and a significant correlation between NBE Bills purchase and return on asset with a significant value of 0.000 lower than 0.05.

4.4.6. Correlation between Bank Size and Return on Asset in Ethiopian Private Banks

Pearson correlation test was also conducted to know whether there is significant correlation between bank size and Return on asset, and the results shows a negative and a significant correlation between bank size and return on asset with a significant value of 0.000 lower than 0.05.

4.4.7. Correlation between Deposit to Asset Ratio and Return on Asset in Ethiopia Private Banks

Pearson correlation test was also conducted to know whether there is significant correlation between deposit to asset ratio and Return on asset, and the results shows a negative and a significant correlation between deposit to asset ratio and return on asset with a significant value of 0.000 lower than 0.05.

4.4.8. Correlation between Loan to Deposit Ratio and Return on Asset in Ethiopia Private Banks

The loans to deposit have a negative correlation of -0.159 with no significant impact on the return on asset.

4.5. Multiple Regression Analysis

Multiple linear regressions were examining the relationship between the Bank's profitability, which is expressed in terms of ROA, and explanatory variables, a regression analyses was run. This analysis was undertaken to investigate the relationship between dependent variable to indicate profitability (ROA) and the independent variables of liquidity measurement and other external factors such as liquidity ratio, quick ratio, loan to deposit ratio and deposit to asset ratio and that of the external factors such as NBE Bills to Net Loans Ratio, capital ratio and bank size to identify independent variables.

4.5.1. Regression analysis of Dependent and Independent Variables

Based on the regression equation, the statistical results are shown below:

$$ROA=0.069+0.006(QR)+0.005(CDR)+0.050(CAPR)+0.001(LIQ)-0.007(LDR)-0.027\ (DAR)\ -\ 0.006\ (NBE\ Bill)\ -\ 0.001(BS)$$

Where: ROA= Return on asset, LIQR=Liquidity ratio QR = Quick ratio CDR = Cash deposit Ratio LDR = Loan deposit Ratio DAR = Deposit to asset Ratio CAPR = Capital Ratio NBEBill= National bank Bill purchase BS = Bank size

Based on the results, in order to increase 1 unit of Return on asset (Profitability) of banks, there shall be a decrease of 0.007(LDR), 0.027(DAR), 0.006(NBE Bill), 0.001(BS) and an increase of 0.001(LIQ), 0.006(QR), 0.005(CDR) and 0.050(CAPR).Besides that, capital ratio considered as main predictor that has the strongest return on asset to banks.

4.5.2. Discussion on Regression Results

Based the result of the multiple linear regression, the researcher tested the following hypotheses;

Ho: Liquidity Ratio has negative and significant effect on profitability

The result of the regression analysis shows that there is a positive impact and significant relationship between liquidity ratio (LIQ) and profitability **(β = 0.016,**).This **p <0** implies that for each percentage increase in liquidity ratio, there is an increase in profitability of Private commercial banks by 1.6 %. The finding of this research is consistent with Adebayo et.al. (2011) and Sirak (2015). Therefore, the researcher accepts the alternative hypothesis and rejects the null hypothesis.

Ho: Quick Ratio has negative and significant effect on profitability

The result of regression indicate that positive impact and significant relationship between quick ratio and profitability (β = 0.111, p < 0.05). This implies that for each percentage increase quick ratio there is an increase in return on asset 11.1%. The result is consistent with Nimer (2013) and Tarek.A(2016) was study on the impact of Jordanian bank profitability. Therefore, the researcher accepts alternative hypothesis and rejects null hypothesis.

Ho: Cash deposit ratio has negative and significant effect on profitability

There is positive and significant relationship between cash deposit ratio and profitability (β = 0.092, p<0.05). This implies that for each percentage increase in cash deposit ratio there is an increase in return on asset by 9.2%.The finding of the research is supported with Belaynesh (2017). Therefore, the researcher accepts the alternative hypothesis and rejects the null hypothesis.

Ho: Loan to deposit ratio has negative and significant effect on profitability

One of independent explanatory variables loan to deposit reveled a negative beta coefficient value for the model (β- 0=.148, p <0.05). However, the result is significant. This finding contradicts with the study conducted by sirak (2015); assess the impact of liquidity on profitability. The result of sirak found the proposed that continuous increase in loan to deposit ratio was the result in liquidity risk. It can be explained as much of deposit, which has undefined maturity, change to long term loan and advance maturity mismatch will be wider, In general, based on model one result, the study supported the hypothesis saying loan to deposit significant contributions on loan to deposit ease of use to model was supported by previous studies. Thus, researcher accepts the null hypotheses and rejects the alternative hypotheses.

Ho: Deposit to asset ratio has negative and significant effect on profitability

Result of study is negative and significant relationship on return on asset (β =-.233,p <0.05). This implies that deposit to asset ratio each percentage decrease in other hand return on asset decrease by 23.3 percent. The finding of the research supported with Main.k (2013).Therefore; the researcher accepts the null hypothesis

and rejects the alternative hypothesis.

Ho: Capital ratio has negative and significant effect on profitability

Capital ratio:one independent variable measurement of the result of capital ratio is positive impact and significant relationship between capital ratio and profitability (**β = 0.213,p <0.05**)

This implies that for each percentage increase in capital ratio there is increase in profitability

21.3 percent. The result supports with Radhe.S (2016),to examine the effect of liquidity on financial performance of Nepalese commercial banks. Therefore, the researcher accepts the alternative hypothesis and rejects the null hypothesis.

Ho: NBE bills purchase has negative and significant effect on profitability

Concerning NBE Bills Directive (MAF/NBE bills 001/2011), the regression result indicated that NBE Bills purchased has a negative impact on performance which as measured by ROA (β = - 0.175, p > 0.05,). The finding is supported by previous studies by Tesfaye (2014), which assessed the impact of policy measures on Ethiopian private banks performance by taking NBE Thus, the researcher accepts the null hypotheses and rejects the alternative hypotheses.

Ho: Bank size has negative and significant effect on profitability

It is one of explanatory variable which has statistically significant and negative influence on the profitability (β = -.041, p < 0.05). Profitability is decreasing with the size of the bank. Thus, regression result of fixed effect model is inconsistent with the hypothesis developed in this study. The negative sign indicates an inverse relationship between bank size and Profitability. Therefore, the researcher accepts the null hypothesis and rejects the alternative hypothesis.

5. Conclusions and Recommendations

5.1. Conclusions

Regarding the studied commercial banks establishment of asset and liability management committee, respondents of each bank, 46(76.6%) respondents stated that the commercial banks are established asset and liability management committee. In addition to this, 46.6% and 76.6% of the respondents respectively implied that the overall liquidity measurement tools are effective and the effects of liquidity management toward profitability are positive. With regard to developed liquidity management policy it understood that banks are on moderate implementation.

Descriptive analysis results revealed that the profitability measurement, ROA indicated that Private commercial Banks has positive profit during the periods considered for this study. On average it earned 3.79 on each one birr value of assets.

Descriptive analysis results liquidity measures banks' ability to fund increases in assets and meet obligations as they come due, without incurring unacceptable costs. The Average value of liquidity was 42.24% that was above the NBE's requirement of 15% commencing from 1st October, 2014 (NBE Directives No. SBB/57/2014).The result shows that liquidity ratio had positive and significant impact with less than 5 % level of significant on profitability. This impact that bank liquidity ratio determined bank return on asset (profitability). Similarly, the results of quick ratio, cash deposit ratio and capital ratio are found that positive and statistically significant effect with less than 5% level of significant on the return on asset of private commercial bank in Ethiopia.

The result shows that loan to deposit ratio and deposit to asset ratio had negative and significant impact with less than 5 % level of significant on the return on asset. This implies that when banks' loan to deposit ratio determines banks profitability (ROA). Bank size had a significant effect with less than 5% level of significant on the return on asset with a negative relationship. This implies that bank size has determined by return on asset.

5.2. Recommendations

Based on the study findings, the following recommendations are forwarded;

- Ethiopian private commercial banks is better to have liquidity management policy to ensure that they are operating to satisfy their profitability target as well as the ability of meeting the financial demands of their customers by maintaining optimum level of liquidity.
- The banks must consider strong liquidity management practices and must design and implement strategies that in tamp helps banks to keep the bank business of between liquidity measurement and profitability in order to boosting business profit.
- The regulatory authority (NBE) is better to encourage using debit card and other financial instrument (Cheques and cashier payment order…) for the large amount of transaction. This will reduce the movement of cash from the banks vault and national bank of Ethiopia payment and settlement account will be able to meet unexpected withdrawals easily manage which means banks informally manage liquid asset and also banks to properly implement NBE Directives No. SBB/57/2014.
- Banks not only focus on profitability alone but also ensure that there is effective and efficient liquidity measurement policy. This will enhance to minimizing liquidity and operational risk.
- Banks provide adequate training to the some concerned staff members so as to the utilization and analysis on liquidity measurement tools;
- The negative relationship between bank size and profitability revealed the "too big to fail" hypothesis, in which big banks may encourage to disburse more loans and advances. Thus, big banks needs to manage their liquidity position and shall give due attention on resource mobilization and liquidity management and to meet annual profit plan.
- The banks better to have extended their out reached of people by openings up more and more branches every year throughout the country, and have significantly improved their banking services by introducing new products and services like Agent Banking to serve unreached ones for collecting more fund from the public and promote people to make deposit by different mechanism like: giving incentive for deposit made with certain time and use good advertisement mechanism to show the importance of saving money.
- Recommendation for further study: As this study identifies only limited bank specific and macroeconomic variables for a sample of six private commercial banks in Ethiopia, there have to be further researches which include more bank specific variables, macroeconomic variables that affect the liquidity of Ethiopian commercial banks.

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