# DETERMINANTS OF LIQUIDITY RISK IN SELECTED COMMERCIAL BANKS IN ETHIOPIA

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## ABSTRACT

*The main objective of this study is investigating determinates of liquidity risk in some selected commercial banks in Ethiopia. 8 year (2010-2017) balanced panel data was extracted from income statement and balance sheet of 11 commercial banks . The random effect model result reveals that profitability, credit risk and efficiency positively affect banks liquidity risk. However bank size, capital adequacy ratio and leverage ratio negatively affects liquidity risk. From macroeconomic variables only political stability situation has negative effect on liquidity risk. The effect of market power from bank specific characteristics and inflation and GDP from macroeconomic is insignificant.*

***KEY WORDS**; liquidity risk, Net SufficientFund Ratio, determinants of liquidity risk*

## INTRODUCTION

Intermediation role between demand and supply of funds is one of the basic functions performed by commercial banks. (Umar and Sun2016,Berger and Bowman 1997, Amin, Mohamad, and Shah 2017). Intermediation theory states that banks will create liquidity for demand and transfer of risks for suppliers (Holmström and Tirole 1998, Kashyap, Rajan and Stein 2002, Berger and Bowman 2010,Cucinelli 2013). Banks are financing their long term or illiquid assets which have long term maturity using funds obtained from short term financial sources or liquid liabilities with a short term maturity (Abdul-Megeid 2017). This causes a mismatch between the two sides of balance sheet or the maturity of assets and liabilities. Therefore this leads to liquidity shocks in banks(Diamond and Dybvig 1983,Alzoubi2017)

Liquidity is the ability of banks to pay their liabilities at its maturity without incurring any additional cost or without selling their assets at fear sells value (Vento and La Ganga 2009, Al- Harbi 2017). Source of funds can be either internal (reserves and owners contribution) or external sources mainly depositors and lenders (Bhattacharya 2011, Elahi2017).

Liquidity risk will appear at a time when illiquid assets are financed using funds obtained from short term matured sources. Because those source of funds with short term maturity (especially depositors), can claim their right at any time but debtors will not return the asset at any time when asked. Therefore this will lead to a liquidity risk.

Liquidity risk was considered as the determinant for other risks and profitability. However after the unexpected fallen of world economy in 2007/08, liquidity risk is considered as one of the main risks of banks (Basel 2008, Al- Harbi 20170 above). Afterward it gets the attention of researchers, bank supervisors and managers, policy makers.

Liquidity risk of bank can be affected by various bank specific, industry specific and macroeconomic variables. To investigate determinants of banks liquidity many researchers has been made around the globe. But most of researchers use accounting ratio measurement method. For instance Amin, Mohamad, and Shah (2017), Elahi (2017), Munteanu (2012),Alzobi (2017), Vodua (2011), Feng (2017) uses total net loan to total asset ratio as a proxy for liquidity risk and Wójcik-Mazur and Zjit (2015), Fentaw (2016), Munteanu (2012)measured liquidity risk as the ratio of liquid asset to total deposit. Other researchers like  Lovin (2013) uses interbank deposit as dependent variable and  Shamas et al (2018) and Iqbal(2012) peroxide liquidity risk by cash to total asset ratio. However Belaid ,Bulouma and Omri(2016) use weighted current asset to weighted liability ratio as a proxy liquidity risk. All of those methods are accounting measurement ratios and they are static in nature. To avoid this Deep and Schaedar (2004) developed a new measurement variable which is a liquidity gap approach to measure banks liquidity potion and Berger and Bounwman (2010) also developed a new measurement technique which is termed as liquidity creation and proved it. Horváth and Seidler (2012), Hackethalet al (2010) has also use the measurement.  Both methods are better ways for measuring the liquidity position of banks however they did not show how much they have to hold or how much is big and how much is too small was not settled. For avoiding this problem, Basal III has developed two measurements of liquidity ratios in 2008 for measuring the long and short term liquidity level of banks (BIS, 2008). The first accords is liquidity coverage ratio(LCR) which is developed to measure capability of banks to pay their debts  for the next 30 days and the other is net sufficient fund ratio(NSFR) which measures the ability of banks to make its payment for one year. Basel III accords are the new measurement ratios and better than

others because it have stated the minimum level to be held in stock as liquid asset. But it is also subject to critics specially difficulty to measure due to requirement of detail information and difficulty of banks to achieve the objective on such levels. Therefore the measurement is modified by different parties like (Basell 2010,2013 and 2014), Distinguin et al. (2013), Umer and Sun (2013), Various researchers like Horrath, Seidler and Weill (2012), Cucinelli (2013)Bruna and Blahová (2016), Abdul-Rahma, Sulaiman and Mohd Said(2017), Giannotti, Gibilaro, and Mattarocci (2011), Mahmood, Gan and Nguyeen(2017),  Ummer and Sun (2016), Belaid, Bellouma and  Omri (2016),uses the new variables developed by Basel 2008 to measure liquidity risk. But most of them are from developed countries (Eurozone) and the others are highly dependent on Islamic banks. In addition to this their outcome of investigation is contradict each other. Therefore this study is aimed at investigating possible determinants of long term liquidity risk which is measured by NSFR of some selected commercial banks in Ethiopia.

## REVIEW OF LITERATURE

Abdul-Rahman, Sulaiman and Said (2017)made a comparative study regarding to the drivers of liquidity risk between Islamic and conventional banks. They founds that size, financing and capital adequacy ratio is positively affecting the liquidity coverage ratio(LCR)of Islamic banks. Increasing in nonperforming financing, lower finance structure ratio, high profitability and lower capital adequacy ratio leads to higher long term risk when it is proxies by NSFR for conventional banks. High nonperforming financing, higher finance structure ratio and high profitability leads to higher long term risk when it is proxies by NSFR for Islamic banks but capital adequacy ratio   effect is not clear.

Belaid, Bellouma and  Omri ( 2016)from Tunisia also analyses the bank specific character determinants of liquidity risk by using balanced panel data from 2000 to 2012. His finding indicates that capital adequacy ratio, management quality, banks business model are negatively linked with liquidity risk but bank size and credit risk are positively affecting the liquidity risk of banks when it is peroxide by liquidity coverage ratio.

Cucinelli (2013)conducted his study with the objective of assessing the determinants of banks liquidity risk which is measured in terms of liquidity coverage ratio and net sufficient ratio with the explanatory variables of bank size, asset quality, capitalization, bank specialization. She founds that a positive relation between size and both dependent

variables but a negative association between the long term liquidity risk (NSFR) and capitalization and specialization. But the impact of asset quality has a significant negative effect only when liquidity risk is measured in terms of LCR.

Giannotti, , Gibilaro and Mattarocci (2011) made a comparative study of liquidity risk performance using  the new Basel committee measurement variables( LCR and NSFR) between specialized and non-specialized real estate banks exist in Italy and their outcome reveals that there is not any significant difference on liquidity performance of those banks. Result of the regression for basic responsible factors of liquidity risks indicates size of the bank, interbank credit and fund availability negatively affects liquidity risk

Mohamood et al (2017) made their investigation regarding to the determinant of liquidity risk or liquidity transformation of Islamic banks using 68 banks annual report(2005-2014) via GMM model. Net sufficient fund ratio which is one of the new measurements set by Basel committee is used as a proxy for liquidity risk. The finding of the study implies that, credit risk, market power and specialization positively affect the liquidity risk but capitalization and bank size negatively influences the banks liquidity risk. Macroeconomic variable like GDP and inflation also significantly affects the liquidity position.

AL-HARBI (2017) uses loan to total asset for measuring liquidity. His finding indicatesthat capital adequacy ratio, foreign ownership, credit risk, inflation rate, monetary policy and deposit insurance negatively affected banks' liquidity. From this one can understand that liquidity risk have positive association with those variables.  On the other hand, efficiency, size, off-balance sheet activities, market capitalization and concentration have a positive link with banks' liquidity but negatively correlate with liquidity risk

Alzoubi ( 2017) made his study with an objective of assessing the factors driving the liquidity risk of a Islamic bank operating in Jordan using data's between 2007-2014. He measured the independent variable or liquidity risk as total loan to total asset ratio and 6 independent variables. His finding indicates negative relation between banks liquidity risk and cash ratio, securities held for sell by banks, bank size and banks equity but liquidity risk is positively linked with high profit assets and bad financial provision.

Amin, Mohamad, and Shah (2017) measure liquidity risk in terms of net loans/deposit and short-term funding and they found that a positive relation with cost efficiency, capital and

bank specialization and GDP but negatively correlate with credit risk, profitability and size inflation

A study made by Shamas et al (2018)from Bahrain using data extracted from financial reports of 7 Islamic banks shows that liquidity risk measured by cash to total asset is positively affected by return on asset but it is negatively affected by non-performing loan, capital adequacy ratio bank size and financial crises.

A study made by Feng (2017) from china also indicates as non-performing loan and capital adequacy ratio has negative relation with liquidity risk when it is measured as loan to total asset ratio.

Hasanovic and Latic(2017) from Bosnia and Herzegovina (B&H) founds that banks with high size, higher non-performing loan, low loan, and lag of excess liquidity have excess liquidity.

Hakimi and Zaghdoudi(2017) investigation made in Tunisia in using the data obtained from 10 banks indicates that loan grant, capitalization, size of banks in financial crises and concentration positively affects liquidity risk which is measured by total loans to total deposits but in contrary inflation negatively affect it.

Fentaw (2016)from Ethiopia investigates the drivers of liquidity positions of commercial banks in Ethiopia by using liquid asset to total deposit as a proxy for liquidity position and Capital adequacy ratio, total loan to total asset ratio and total deposit to total loan as explanatory variables. His findings suggests that all the variables are a significant factors for liquidity position of the banks and his output indicates that, there is mismatching of liquidity problem . The sign of the relation between the independent variables and its explanatory variables is negative for capital, positive for loan to total asset ratio and total deposit to total liability ratio.

A comparative study on determinants of liquidity risk between banks operating in German and UK was made by Elahi M (2017). He uses Total net loans and advances / Total assets to measured liquidity risk and net interest margin, credit risk, bank size, profitability, income diversification and financial leverage as explanatory variable. His finding for United Kingdom banks indicates that net interest income to total asset ratio and income distribution has significant negative effect on banks liquidity risk. In contrast credit risk, leverage, size and profitability have not any significant effect. In case of German banks only net interest

margin and leverage ratio are negatively affects liquidity risk of banks but other variables has not an impact.

Iqbal (2012)from Pakistan investigates possible factors influencing liquidity risk which is measured as the ratio of total cash and cash equivalent assets to total assets for both conventional and Islamic banks using financial statement of those banks from 2007- 2010. His findings revels that size, ROA, ROE and Capital adequacy ratio are positively linked with liquidity risk of both types of banks but NPL is negatively correlated with it.

Wójcik-Mazur and Zjit (2015) compares factors affecting liquidity risk between old union and new European member countries banks. They measure liquidity risk In terms of liquid asset to short term and deposits ratio and net loan to total deposit ratio. The explanatory variables are credit risk, effectiveness, size of banks, financial leverage engagement in interbank market from bank specific characteristics and inflation, GDP, domestic credit provided by banks sector (% GDP), from macroeconomic factors. The finding of the study indicates that, there is a difference in the factors affecting the liquidity risk of banks between the groups

Munteanu(2012) from Romania in analyzed the determinants of liquidity risk. He uses Net Loans/Total Assets and Liquid Assets/Deposits and short term funding as dependent variable. The independent variables are Capital Adequacy ratio, Assets Quality, Interbank Funding, Funding Cost, Cost to income ratio from internal factors and Interest rate ROBOR, Credit risk rate, Inflation rate, GDP real growth rate Unemployment as external variables. He uses 8 years financial statements of 27 banks operating in Romania. His finding indicates that Net Loans/Total Assets is positively affected by Z score, cost to income and credit risk rate but it is negatively affected by interbank funding. When liquidity is measured in terms of Liquid Assets/Deposits and short term funding tier 1 assets, loan provision, funding cost, unemployment and inflation rate has positive affect but credit risk is negatively associated.

Laximikantham and Nigist (2015) from Ethiopian also investigates determinates of commercial banks liquidity creation performance using 7 years data (2007- 2013) of 10 banks. Their outcomes confirm that size of banks positively affects banks liquidity but loan growth rate, capital adequacy ratio and profitability lowers liquidity of banks.

Ramazan and Zafar (2014) from Pakistan investigate determinants of liquidity risk of Islamic banks by using financial data of 5 banks between 2007 and 2014. They measured liquidity

risk in terms of ratio of liquid assets to total asset whereas size, networking capital, ROE, ROA and Capital adequacy ratio as explanatory. Their fixed effect model output reveals that only size of the bank positively affects liquidity risk but the rest are insignificant.

A study made by Shamas et al(2018)from Bahrain using data extracted from financial reports of 7 Islamic banks shows that liquidity risk measured by cash to total asset is positively affected by return on asset but it is negatively affected by non-performing loan, capital adequacy ratio bank size and financial crises.

Singh And Sharma (2016) made an empirical analysis to see how liquidity position of Indian banks which is proxies by liquid asset to total asset ratio is affected by macroeconomic variables and bank specific factors, using data obtained from 59 commercial banks operating in India from 2000-2013. Their finding indicates that deposits, profitability, capital adequacy and inflation are positively affecting the liquidity of banks and this implies that, they negatively correlates with liquidity risk hence increasing in liquidity will reduce liquidity risk. But bank size and GDP have inverse relationship and positively affects liquidity risk.

A study made in banks of Czech Republic by Vodova ( 2012) by using 4 dependent variables which are (liquid asset to total asset ratio, liquid asset to deposit +short term security and borrowings ratio , loan to total asset ratio and total loan to deposit and short term financing ratio) and some bank specific variables. The finding indicates that increasing in capital adequacy ratio, interest rate on loans, share of non-performing loans and interest rate on interbank transaction leads to higher liquidity risk but factors like inflation business cycle and financial crises negatively correlates with liquidity risk

Hackethal, et al (2010) investigates possible factors affecting liquidity creation of German saving banks using financial data between 1996 -2006. He uses two methods to measure liquidity creation performance of those banks, Liquidity Transformation" (LT) Gap which is developed by Deep and Schaefer in 2004 and "BB-Measure" as developed by Berger and Bouwman in 2009.

Horváth, and Seidler (2012) from Czech investigates the relation between capital and liquidity creation using unbalanced data's from 2000-2010 of 31 commercial banks. They supports financial fragility theory that the higher the capital the lower the liquidity creation.

## . RESEARCH DESIGN AND METHODOLOGY

The objective of this study is to investigate basic factors which affect the liquidity risk of commercial banks in Ethiopia. The research is explanatory research design type because the research is aimed at extracting the relation between two different phenomena. For achieving the desired objective 8 years (2010-2017) audited balance sheets and income statement of 11 commercial banks is collected from NBE and the website of each bank. In Ethiopia 18 commercial banks (including development bank of Ethiopia) are in operation. From those 11 commercial banks which have a full 8 years data and which have a common characteristics and operation objectives are selected as a sample

Table 1: **DEFINITION OF VARIABLES AND MEASUREMENT**

| | Variable name | Notation | Measurement |
|---|---|---|---|
| Dependent variable | Liquidity risk( Net sufficient fund ratio)(as: BIS (2009), Mohamood et al (2017)[33],Distinguin et al. (2013)[i], Umer and sun (2013)0 | NSFR | $NSFR = \dfrac{Requierd\ amount\ of\ stable\ funding}{Available\ amount\ of\ stable\ funding}$ <br><br> $NSFR = \dfrac{(0.7*(DD+SD)+1*(LTL+EQ}{(0.5*(LTMA+CA)+0.85*(CL)+1*(CL+OL+OA+FA)}$ |
| Independent variables | profitability (Return on asset) | ROA | $ROA = \dfrac{net\ income}{total\ asset}$ |
| | CREDIT RISK | CR | $CR = \dfrac{NPL}{total\ asset}$ |
| | Capital adequacy ratio | CAR | $CR = \dfrac{tier1\ capital + tier\ 2\ capital}{total\ risk\ weighted\ asset}$ |
| | Leverage | LVR | $LVR = \dfrac{total\ debt}{total\ capital}$ |
| | Market power | MP | $CR = \dfrac{total\ asset\ of\ specific\ bank}{total\ asset\ of\ the\ Industry}$ |
| | Bank size | BSZ | $\log of\ total\ asset$ |
| | Efficiency | EFF | $EFF = \dfrac{operating\ non\ interest\ expense}{total\ asset\ income}$ |
| | Political instability | PIS | |
| | Gross domestic product | GDP | |
| | Inflation | INF | |

## ECONOMETRICS MODEL (RANDOM EFFECT MODEL)

$$NSFR = \beta1\,CARi_{it} + \beta2\,LVR_{it} + \beta3\,ROA_{it} + \beta4\,CR_{it} + \beta5\,BSZ_{it} + \beta6\,EFF_{it} + \beta7\,MP_{it}$$
$$+ \beta8\,PIS_{it} + \beta9\,INF_{it} + \beta10\,GDP_{it} + \mathcal{E}_{it}$$

Where: α i,t indicates the error term for bank i at time t, β 1 , β 2 …. , β 10 are the coefficients of independent*variables and $\mathcal{E}ii$ is the error term.*

## RESULTS AND DISCUSSION

### Diagnostics test

In the study all diagnostics test are made to check whether the basic classical linear regression assumptions are fulfilled or not. The output evidenced that all assumptions except heteroscedasticitytest is good (Brooks2008)[ii].

Normality test is carried out with the null of that, the residual are normally distributed. The outcome of the Shapiro - wilk test is Prob>z is 0.42298. Therefore we have accepted that the residuals are normally behaving. Multicollinarity test is made using variance inflation factor (VIF), and the result shows all variables are below 5 (rule of thumb states they have to be below 10) Wooldridge (1960)[iii]. Therefore there is not multicollinarity problem in the study. Autocorrelation test is made with the null of no first order autocorrelation using Wooldridge test.  The output with Prob > F = 0 .1254 implies that there is no serial correlation. The other basic test is variable omission test. Because its Ramsey RESET test is   (Prob > F =     0.8501), the null of no variable omitted is accepted.  Therefore no need of any additional variable is required in the test

The other very essential assumption of classical linear regression test is heteroscedasticitytest. It is a test made with null hypothesis of that, variables are homoscedasticity in nature.

Table 2: heteroscedasticitytest

```
    . hettest

  Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of NSFR1

        chi2(1)      =      2.98
        Prob > chi2  =    0.0845
```

Source: self-competition using stata 14

But the result of the study, as indicated in the above table (because prob> chi2= 0.0845), there is heteroscedasticity problem at 10% confidence level. Therefore robust remedial action is taken for avoiding the problem. .

**Model selection tests**

For selecting the appropriate econometrics model the researcher made various investigations. The first test was made to compare pooled OLS with random effect using Breusch and Pogan Lagragian multiplier test (LM test) with the null of variances across entities is zero. Because the Prob > chi2    =    0.0000, random effect model is selected than OLS.  For comparing random effect and fixed effect model housman test was made and its output (Prob > chi2    =    0.9591) implies random effect is better model than fixed effect model.

**TABLE 3: HOUSMAN TEST TABLE**

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. hausman  fe re
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| | ── Coefficients ── | | | |
| | (b) | (B) | (b-B) | sqrt(diag(V_b-V_B)) |
| | fe | re | Difference | S.E. |
|---|---|---|---|---|
| CAR | 1.589984 | 1.298925 | .2910583 | .2397746 |
| LVR | .087274 | .0649675 | .0223064 | .0270429 |
| ROA | -7.421448 | -7.684171 | .2627226 | 1.182984 |
| CR | -.4133819 | -.3094137 | -.1039681 | .7781597 |
| BSZ | 18.61093 | 15.41885 | 3.192081 | 4.091657 |
| EFF | -.2398727 | -.260335 | .0204623 | .0600965 |
| MP | .0548238 | .0065273 | .0482965 | .0877947 |
| PIS | .3171242 | .2563209 | .0608033 | .0697572 |
| INF | .0502575 | .0502774 | -.0000199 | .0500638 |
| GDP | .2457135 | .5434383 | -.2977248 | .8199299 |

```
                 b = consistent under Ho and Ha; obtained from xtreg
         B = inconsistent under Ha, efficient under Ho; obtained from xtreg

   Test:  Ho:  difference in coefficients not systematic

          chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =        3.82
          Prob>chi2 =     0.9549
```

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Source: own-competition using stata 14

## TABLE 4: RANDOM EFFECT MODEL RESULT

```
. xtreg NSFR CAR LVR  ROA CR BSZ EFF  MP PIS INF GDP, re robust

Random-effects GLS regression              Number of obs   =       88
Group variable: A                          Number of groups =      11

R-sq:                                      Obs per group:
     within  = 0.2357                                  min =        8
     between = 0.1979                                  avg =      8.0
     overall = 0.1962                                  max =        8

                                           Wald chi2(10)   =   419.53
corr(u_i, X)   = 0 (assumed)               Prob > chi2     =   0.0000

                                     (Std. Err. adjusted for 11 clusters in A)
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| NSFR | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
|------|-------|------------------|------|-------|------------|-----------|
| CAR | 1.298925 | .6032418 | 2.15 | 0.031 | .116593 | 2.481258 |
| LVR | .0649675 | .0217962 | 2.98 | 0.003 | .0222478 | .1076873 |
| ROA | -7.684171 | 2.40917 | -3.19 | 0.001 | -12.40606 | -2.962284 |
| CR | -.3094137 | .1745234 | -1.77 | 0.076 | -.6514733 | .0326458 |
| BSZ | 15.41885 | 6.882183 | 2.24 | 0.025 | 1.930018 | 28.90768 |
| EFF | -.260335 | .1044984 | -2.49 | 0.013 | -.465148 | -.055522 |
| MP | .0065273 | .0945269 | 0.07 | 0.945 | -.1787421 | .1917966 |
| PIS | .2563209 | .1540222 | 1.66 | 0.096 | -.0455571 | .5581988 |
| INF | .0502774 | .2509042 | 0.20 | 0.841 | -.4414857 | .5420406 |
| GDP | .5434383 | .6790628 | 0.80 | 0.424 | -.7875003 | 1.874377 |
| _cons | .9037296 | .4037164 | 2.24 | 0.025 | .11246 | 1.694999 |
| sigma_u | .26072706 | | | | | |
| sigma_e | .15896556 | | | | | |
| rho | .72900357 | (fraction of variance due to u_i) | | | | |

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Source: Own-competition using stata 14

First of all we have to understand as the above regression indicates the effect of each explanatory variable on long term or one year liquidity position of banks which is measured as net sufficient fund ratio (NSFR). NSFR measures the long term (for one year) liquidity position of bank or the funding liquidity position of the bank (Basel 2008). The higher NSFR means they are in a better liquidity position. Therefor the higher the NSFR is the lower the liquidity risk.

R-square of the model is the power of the independent variable to explain the dependent variables. The study output indicates that the dependent variable is (23.57% within, 19.79% and 19.62% overall) explained by the independent variables.

Profitability (ROA) has a negative effecton long term condition of banks liquidity at 5% significant level. It implies that, if banks want to increase their profit they have to hold few assets in stock as a liquid and invest more. Therefore when banks invest or providing high loan to customers their liquidity condition will be in diminish. This raises the liquidity risk of banks. Therefore ROA negatively affects liquidity condition of the banks but in the opposite it positively affects the liquidity risk of banks. Therefore our finding supports that the higher

the profitability the higher the risk condition, and it is in line with the findings of Shamas et al (2018), Laximikantham and Nigist(2015), Iqbal (2012), Abdul-Rahman  Sulaiman and Said (2017) which supports the risk return trade of theory.

As credit risk increases NSFR will decreases at 10% significant level. When liquidity position goes down, liquidity risk will grow up. Therefore credit risk negatively affects the liquidity condition of the bank and in the opposite it will lead to increase the liquidity risk. This supports the outcomes of Zaghdoudi and hakimi (2017), Fentaw (2016), Hasanovic  and Latic (2017), AL-HARBI (2017), Abdul-Rahman,  Sulaiman and Said  (2017), Belaid, Bellouma  and Omri (2016) andMohamood et al (2017).

Size of bank output indicates that, as the size of banks goes up NSFR will also increase at 95% confidence level. This indicates that liquidity condition of big banks is better than smaller banks. This can be due to that, commercial banks have not that much active financial market for trading their securities and other financial assets. Therefore the only option for defending themselves from such shock is to hold enough stock on hand as a liquid. Our finding argues "too-big-to-fail" theory which states banks with higher size will hold only few liquid assets. It in contrast it supports the findings of Zaghdoudi and hakimi (2017), Amein, Mohamad And Shal (2017),Shamas et al(2018), Laximikantham and Nigist (2015),AL-HARBI (2017),  Giannotti, , Gibilaro & Mattarocci (2011)which stated as the size of the bank grow up their liquidity risk will fall.

Capital adequacy ratio refers to the way how highly risk weighted assets are financed, or the amount of stable fund to be held as highquality liquid asset. Therefore when such risk assets are financed from the highly stable funds (especially finance obtained from tier 1 and tier 2 capitals), the NSFR will increase but liquidity risk will decrease in the opposite. This implies that liquidity risk is negatively affected at 5% significant level by capital adequacy ratio. The outcome supports the crowding out theoryin Ethiopian commercial banks. It is with a line of the output of Singh and Sharma (2016), Shamas et al (2018), Fentaw (2016), Feng (2017), Belaid, Bellouma and Omri  (2016), Cucinelli (2013)and Mohamood et al (2017), which states the negative effect of Capital adequacy ratio on banks liquidity risk.

Leverage ratio is the relation between debt and capital financing ratios. The higher the leverage ratio is the higher the NSFR.  In contrast the liquidity risk of the banks will decrease.

Giannotti, , Gibilaro & Mattarocci (2011)have found the same effect of Leverage ratio on NSFR.

Efficiency refers to the relation between operating expense and income. It indicates how much cost is incurred in order to generate one dollar. The lower the rate the higher the efficiency and the reverse is true when the rate is high. Belaied et al (2016)argues that, if the bank efficiency is low in mangling its cost in relation to its income generated, it will difficult to attract depositors which is the main source of fund or they are expected high cost to attract such depositors. Therefore in efficient banks should have to maintain sufficient liquid assets in stock. From this we can understand that efficiency and liquidity position are positively linked but liquidity risk is affected negatively. However this theory is argued by researchers like Zaghdoudi and hakimi (2017), Vodova (2011)' Amein and Mohamad (2017) that, efficiency and liquidity risk have positive relation. They justify that the bank will be efficient when cost ratio in relation to its income is low. Therefore if the bank is expected to be efficient they should get more income by granting various loans and making investments. This will decrease liquid assets to be held in stock and at the same time the liquidity risk of the bank will be increase. The output of this study is also in line with this theory at 5% significant level.

The other most surprising finding of the research is the relation between political sustainability which is one of the most best macroeconomic variable and liquidity risk. According to the study, political sustainability has negative effect on banks liquidity risk of the bank. This can be due to that, banks will hold more assets in stock or they are decreasing their loan grants when the political tension is increasing.

The effect of Market power from bank specific characteristics and GDP and inflation from macro-economic variables are not significant.

## CONCLUSION

The main objective of the research is to investigate the determinants of liquidity risk in some selected commercial banks in Ethiopia. For achieving the desired objective all necessary tests are carried out and satisfied. Theoutput of the study indicatesthat Banks with higher profit are exposed to liquidity risk. Therefore liquidity risk will increase as profitability of banks increases.

As credit risk increases in the same way the bank is also exposed to liquidity risk. This is because as the default of debtors increase the ability of the bank to pay its lenders will also fall. Therefore managing the credit risk will also help to control the liquidity shock of banks. Banks which are financing their highly illiquid assets from funds obtained from stable funds are merely stable and lower exposed such risk exposure.

## REFERENCES

Abdel Megeid, N. S. (2017). Liquidity risk management: conventional versus Islamic banking system in Egypt. Journal of Islamic Accounting and Business Research, 8(1), 100-128.

Abdul-Rahman, A., Sulaiman, A. A., & Said, N. L. H. M. (2018). Does financing structure affects bank liquidity risk?. Pacific-Basin Finance Journal, 52, 26-39.

Al-Harbi, A. (2017). Determinants of banks liquidity: evidence from OIC countries. Journal of Economic and Administrative Sciences, 33(2), 164-177.https://doi.org/10.1108/JEAS-02-2017-0004

Alzoubi, T. (2017). Liquidity Risk in Islamic Banks. Banks and Bank Systems, 12(3).

Amin, S. I. M., Mohamad, S., & Shah, M. E. (2017). Do Cost Efficiency Affects Liquidity Risk in Banking? Evidence from Selected OIC Countries (Adakah Kos Kecekapan Mempengaruhi Risiko Kecairan dalam Perbankan? Bukti dari Negara-negara OIC Terpilih). Jurnal Ekonomi Malaysia, 51(2), 55-71.

Basel Committee (2008) on Banking Supervision Principles for Sound Liquidity Risk Management and Supervision

Beliad, F., Bellouma, M., & Omri, A. (2016). Determinants of Liquidity Risk: Evidence from Tunisian Banks. Emerging Research in Management & Technology.

Berger, A. N., & Bouwman, C. H. (2010). Bank liquidity creation, monetary policy, and financial crises. Journal of Financial Stability, 30, 139-155.

Berger, A. N., & Humphrey, D. B. (1997). Efficiency of financial institutions: International survey and directions for future research. European journal of operational research, 98(2), 175-212

Bhattacharya, H. (2011). Banking Strategy, Credit Appraisal, and Lending Decisions: A Risk–Return Framework. Oxford University Press.

Brooks, C. (2019). Introductory econometrics for finance. Cambridge university press. United States of America: 2nded.Cambridge University Press

Brůna, K., & Blahová, N. (2016). Systemic Liquidity Shocks and Banking Sector Liquidity Characteristics on the Eve of Liquidity Coverage Ratio Application-The Case of the Czech Republic1. Journal of Central Banking Theory and Practice, 5(1), 159-184

Cucinelli, D. (2013). The determinants of bank liquidity risk within the context of euro area. Interdisciplinary Journal of Research in Business, 2(10), 51-64.

Deep, A., & Schaefer, G. (2004). Are Banks Liquidity Transformers?, Harvard University, John F. Kennedy School of Government (pp. 1-53). Faculty Research Working Paper Series RWP04-022.

Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. Journal of political economy, 91(3), 401-419.

Distinguin, I., Roulet, C., & Tarazi, A. (2013). Bank regulatory capital and liquidity: Evidence from US and European publicly traded banks. Journal of Banking & Finance, 37(9), 3295-3317.

Elah M.(2017). Factors Influencing Liquidity in Leading Banks "A Comparative Study of Banks Operating in UK and Germany Listed on LSE" Imperial Journal of Interdisciplinary Research (IJIR). 3(2), 2454-1362, http://www.onlinejournal.in

Feng W. (2017). Analysis of Factors Affecting Bank Liquidity. International Conference on Financial Management, Education and Social Science

Fentaw, L. (2016). Determinants of Commercial Ban s Liquidity Ris: Evidence from Ethiopia. Research journal of finance and accounting, 7 (15), 47, 61.

Giannotti, C., Gibilaro, L., & Mattarocci, G. (2011). Liquidity risk exposure for specialised and unspecialised real estate banks: Evidence from the Italian market. Journal of Property Investment & Finance, 29(2), 98-114.

Hackethal, A., Rauch, C., Steffen, S., & Tyrell, M. (2010). Determinants of bank liquidity creation. Social Science Research Network

Hakimi, A., & Zaghdoudi, K. (2017). Liquidity risk and bank performance: An empirical test for Tunisian Banks. Business and Economic Research, 7(1), 46-57.

Hasanović, E., & Latić, T. (2017). The determinants of excess liquidity in the banking sector of Bosnia and Herzegovina (No. 11-2017). Graduate Institute of International and Development Studies Working Paper.

Holmström, B., & Tirole, J. (1998). Private and public supply of liquidity. Journal of political Economy, 106(1), 1-40.

Horrath, R., Seidler, J., & Weill, L. (2012). Bank Capital and Liquidity Creation Granger-Causality Evidene (No. 1947). Working paper series.

Iqbal, A. (2012). Liquidity risk management: a comparative study between conventional and Islamic banks of Pakistan. Global Journal of Management and Business Research, 12(5).

Kashyap, A. K., Rajan, R., & Stein, J. C. (2002). Banks as liquidity providers: An explanation for the coexistence of lending and deposit- taking. The Journal of Finance, 57(1), 33-73

Laximikantham and Nigist . M. D. (2015). Assessment of Banks Liquidity: Empirical Evidence on Ethiopian Commercial Banks Assessment, 5(21).

Lovin, H. (2013). Determinants of the liquidity in Romanian interbank deposits market. Procedia Economics and Finance, 5, 512-518.

Mahmood, H., Gan, C., & Nguyen, C. (2017). Determinants of maturity transformation risk in Islamic banks: A perspective Of Basel III liquidity regulations. Journal of Islamic Finance, 6, 142-162.

Munteanu, I. (2012). Bank liquidity and its determinants in Romania. Procedia Economics and Finance, 3, 993-998

Ramazan M and Zafar M.I. (2014). Liquidity Risk Management in Islamic Banks: A Study of Islamic Banks of Pakistan. Institute of Interdisciplinary Business Research.5(12)

Shamas, G., Zainol, Z., & Zainol, Z. (2018). The Impact of Bank's Determinants on Liquidity Risk: Evidence from Islamic Banks in Bahrain. Journal of Business & Management (COES&RJ-JBM), 6, 1-22

Singh, A., & Sharma, A. K. (2016). An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks. Future Business Journal, 2(1), 40-53.

Umar, M., & Sun, G. (2016). Determinants of different types of bank liquidity: evidence from BRICS countries. China Finance Review International, 6(4), 380-403.

Vento, G. A., & La Ganga, P. (2009). Bank liquidity risk management and supervision: which lessons from recent market turmoil. Journal of Money, Investment and Banking, 10(10), 78-125

Vodová, P. (2011). Determinants of commercial banks' liquidity in the Czech Republic. ratio, 50, 3

Wójcik-Mazur, A., & Szajt, M. (2015). Determinants of liquidity risk in commercial banks in the European Union. Argumenta Oeconomica, (2 (35)), 25-47.

Wooldridge Jeffrey M.(1960.). Introductory econometrics: a modern approach. Australia: South Western,Cengage Learning, 5th ed., international