

THE FACTORS AFFECTING BANK LIQUIDITY: CASE OF TUNISIA

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Abstract

Liquidity is a vital importance to banking institutions. In this study we studied a sample of 11 banks in Tunisia over the period (2005...2020). We used 2 measures of bank liquidity (ALA (liquid assets / total assets); CD (total credits / total deposits). We utilize a method of panel static (estimation by GLS (generalized least square). We found that (return on equity; size; capital; operating costs; financial expenses; deposits) have a significant impact on ALA. Also (capital; deposits; total credits / total assets) have a significant impact on CD. But (return on assets; economic growth; net interest margin) have not significant impact on both 2 measures of bank liquidity.

Keywords: Liquidity, Panel, GLS BankJEL Classification

INTRODUCTION

Basel III (2008) highlighted the importance of holding liquid assets and recommended that bank should increase the liquidity level to meet their financial obligations and covers the risk emerged during periods of crisis so as incur losses (El Chaarani (2019)).

Also a bank with good liquidity will generate prestige and trust form customers; thereby promoting its business activities such as saving capital; lending and other activities (Gambacorta; Mistrulli (2004)). Lack of liquidity reduces the ability of banks to meet their obligations and otherwise excess liquidity may be the cause of reduced profits for banks. (Morina and Qarri (2021)).

Theoretically, the factors that affect the liquidity of banks can be internal and external. Internal factors are those factors which are related with internal efficiency and managerial decisions and as such are considered to be the profitability of banks, capital adequacy, bank size, asset quality and lending growth. While external or macroeconomic factors are variables that are not under the control of the bank but reflect the legal and economic environment in which banks operate. Such factors that may affect the liquidity of these institutions are inflation rate, economic growth, interest rate and exchange rate.

In this article we attempt to identify the factors determining bank liquidity in Tunisia over. We use a methodology of 3 sections. In first section we will make the literature review; the second section is devoted to empirical study. Finally we will make a conclusion.

1 - LITERATURE REVIEW

There are several articles that studying the factors of bank liquidity. Agarwal (2019) investigated the factors that determine liquidity of Indian banks and compare the determinants in case of public and private sector banks. Using panel data empirical analysis is carried out on the commercial banks of India for the period (2005...2017). The results show determinants of liquidity vary for both banking groups. Public sector banks; with an increase in size; increases the amount of liquid assets adequately to manage liquidity risk. However private sector banks relying more on financial market with their increasing size hold less liquidity.

Gjorgji and Goran (2020) investigated the determinants of bank liquidity in Macedonia. They used the dynamic panel analysis based on generalized method of moments (GMM) methodology on a data set of overall banking sector operating in Macedonia in the period from (2007...2017) . The study showed that profitability is one of the most important positive effect on lagged value of liquidity; non-performing loans

; Central bank interest rate but to a somewhat lower extent. On the other hand; only the size of the bank insignificantly increased associated with bank liquidity.

Ben Moussa (2015) used a sample of 18 banks in Tunisia in for 2000- 2010period. We estimated two measures of liquidity (liquid assets / total assets; total loans / total deposits). Through the method of static panel and method of panel dynamic, we found that (financial performance, capital / total assets, operating costs/ total assets, growth rate of GDP, inflation rate, delayed liquidity) have significant impact on bank liquidity while (size, total loans / total assets, financial costs/ total credits, total deposits / total assets) does not have a significant impact on bank liquidity .

The capital adequacy; GDP growth rate are not statically significant factors of Macedonian bank liquidity

. Besides **Al Qudah (2020)** explored the impact of macroeconomic factors and bank specific variables on the liquidity of 13 Jordanian commercial banks for the period (2011...2018). The random effect model shows that macroeconomic variables have a significant impact on Jordanian commercial banks liquidity since inflation has a positive impact while GDP has negative impact on bank liquidity.

On the other hand among the bank specific variables capital adequacy and deposit growth have a positive impact on bank liquidity while NPL and size have a negative significant impact on Jordanian bank liquidity but ROA has a negative significant impact on LIQ.

Bhati and al (2019) examined the long term effect of various regulatory bank specific and macroeconomic factors on the determinants of liquidity in Indian banks. The results of the analysis show concentrating relationship between the independent variables and the dependent variables measured by liquidity ratio. More specifically ; the most important liquidity ratio of L1 (liquid assets / total assets) showed significant relationship with macroeconomic variables (foreign exchange reserves ; exchange rate ; consumer price index ; gross domestic product)

L1 also showed a significant relationship with bank specific variables of capital to total assets and bank size. **Morina and Qarri (2021)** studied the determinants of bank liquidity in Kosovo for the period (2012...2019). They concluded that between the main factors that can affect the liquidity position of commercial banks; non-performing loans; loans; capital adequacy and credit interest rate have the grand and most important impact on the liquidity banking position.

Shah and al (2018) investigated the factors affecting liquidity of banks operating in Pakistan for the period (2007...2016). The findings reveals that the internal factors such as capital adequacy; cost of funds and bank size are statistically significant but differently related to the liquid assets; and (total loans / total deposits) respectively. The study finds that external factors such as GDP is statistically significant but affect liquidity of banks differently.

Unemployment another external factor also impact liquidity of banks very differently but it is statistically significantly in the first measure of liquidity and statistically insignificant in the second measure of bank's liquidity.

Further the results revealed that profitability is significant related to liquidity while the

relationship between deposit and bank liquidity is negative and statistically significant.

Roman and Sargu (2015) analysed a significant issue that needs to be tackled when promoting financial stability, more exactly the determinants of the liquidity risk of a sample of banks operating in a series of CEE countries (Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania), reviewing at the same time the progresses made in certain key areas and the remaining challenges. We considered bank specific factors over the period 2004-2011 and examined them employing an OLS regression analysis. The results of our research highlighted the negative impact that the depreciation of the loans portfolio had on the overall liquidity of the analyzed banks.

El Chaarani (2019) examined the determinants of bank liquidity in the Middle East region. They used a sample of 183 banks from 8 different countries during a period of 3 years (2014, 2015, 2016). The research employed loans to assets and loan to deposits as proxies to measure the bank liquidity level.

The bank specific factors included asset quality; performance level; capitalization ratio and bank size. The main factors are economic growth; unemployment rates and inflation rate.

The additional analysis reveals the significant impact of economic growth; asset quality; capital level and bank size or liquidity in the banking sector. **Nguyen and Vo (2019)** studied the determinants of the liquidity of 17 commercial listed on the Vietnam stock exchange. The results show that total asset size, return on assets; credit growth are positively associated with bank liquidity of listed banks.

Whereas the bank size; return on assets have a negative impact on the liquidity of commercial banks. Also **Zaghdoudi and Hakimi (2017)** studied a sample of 10 Tunisian banks during the period (1980...2015). The economic results based on panel data analysis; show that the liquidity risk of Tunisian banks depend on bank's internal factors. (Primary given to the activity of bank granting, level of capitalization and size). Factors related to the whole banking industry (structure of banking market) and international environment (international finance crisis).

Concerning macroeconomic factors; their impact are different. Contrary to economic growth while has a positive and significant effect; inflation impact negatively but not significantly the liquidity risk of Tunisian banks.

Using a panel data set of 45 banks operating in Malaysia dual banking system over the period (2001...2017). They investigated whether and how the liquidity creation of Islamic banks is determined differently from that of the conventional commercial banks

Alhomaidi and al (2019) examined the liquidity (LQD) determinants of Indian listed commercial banks. The study has applied both GMM and pooled, fixed and random effect models to a panel of 37 commercial banks listed on the Bombay Stock Exchange (BSE) in India for the period from 2008 to 2017. The banks' LQD was taken as a dependent variable which functioned against both bank-specific and macroeconomic determinants.

The results indicated that among the bank-specific factors, bank size, capital adequacy ratio, deposits ratio, operation efficiency ratio, and return on assets ratio are found to have a significant positive impact on LQD, while assets quality ratio, assets management ratio, return on equity ratio, and net interest margin ratio are found to have a significant negative impact on LQD. With respect to macroeconomic factors, the results indicated that interest rate and exchange rate are found to have a significant effect on LQD. The Reserve Bank of India (RBI) should give benchmarks for the above mentioned ratios to achieve smooth LQD of commercial banks in India. The study recommended that bankers should consider assets

quality in such a way that improves banks' performance.

Bista and Basent (2020) examined the determinants of bank liquidity of the commercial banks in Nepal based on 12 years long term series data base from (2004...2015); employing the econometric model. As a result, the bank liquidity of the commercial bank has fluctuations and instable trend line indicating the risk of liquidity. Similarly; deposit; capital adequacy; remittance and bank size are determinants of liquidity of the commercial banks out of which deposit is prelevant increase bank liquidity and capital adequacy is a key to decrease it. In long term capital adequacy; bank size and government expenditure increase bank liquidity of commercial banks but deposit decreases it.

Yitayaw (2021) investigated the bank-specific and macroeconomic determinants of commercial banks' liquidity in Ethiopia using secondary unbalanced panel data. The empirical analysis is carried out through the use of the generalized method of moments (GMM) estimation of dynamic panel data from 15 commercial banks from 2009–2019. The model result shows that lagged value of liquidity and deposit had a positive and statistically significant effect on commercial banks' liquidity. On the other hand, capital adequacy, bank size, interest rate margin, and gross domestic product had a negative and statistically significant effect on the commercial bank's liquidity.

The study suggested that commercial banks in Ethiopia shall be more concerned about deposit mobilization to maintain a sufficient liquidity buffer and improve liquidity performance.

Mashamba (2022) examines the liquidity dynamics of banks in emerging market economies. Using annual data of 91 commercial banks from 11 countries, the study established that banks in emerging markets have target liquidity ratios they pursue and partially adjust due to market frictions. Overall, risk aversion and prudence play a significant role in explaining the liquidity dynamics by banks in emerging market economies.

3- EMPIRICAL STUDY

3-1 Methodology

We will use a sample of 11 banks (Attijari bank ; Amen bank ; ATB ; BIAT ; BT ; BTEI ; BH , STB, BNA,UIB; UBCI) included in financial market of Tunisia for the period (2005..2020) . We make a methodology of panel static (estimation by GLS (generalised least squares)).

The temporal and individual dimension of our sample allows us to use the approach of panel data which offers great potential analysis by tracking individual behavior over time. Panel data have also the advantage of increasing the sample size, this leads to increase the number of degree of freedom and reduce the problem of collinearity between explanatory variables improving hence results estimates. (Zaghdoudi and Hakimi (2017)).

Generalized least squares (GLS) is a technique for estimating the unknown parameters in a linear regression model when there is a certain degree of correlation between described by Alexander Aitken in 1936.

3-2 Specification of models

We estimated 2 models:

- (1) $ALA_{i,t} = b_0 + b_1 ROA_{i,t} + b_2 ROE_{i,t} + b_3 NIM_{i,t} + b_4 Size_{i,t} + b_5 TLA_{i,t} + b_6 CAP_{i,t} + b_7 CE_{i,t} + b_8 CFC_{i,t} + b_9 Tdeposits_{i,t} + b_{10} TPBI_{i,t} + b_{11} TINFi_{i,t} + E_{i,t}$
- (2) $CD_{i,t} = b_0 + b_1 ROA_{i,t} + b_2 ROE_{i,t} + b_3 NIM_{i,t} + b_4 Size_{i,t} + b_5 TLA_{i,t} + b_6 CAP_{i,t}$

$$+b7 \text{CEAi,t} +b8 \text{CFCi,t} +b9 \text{Tdepositi,t} +b10 \text{TPIBi,t} +b11 \text{TINFi,t} +\text{Ei,t} \text{B0} = \text{constant}$$

B1, b2.....b11: Parameters to be estimated
i= bank; t= time

Ei,t = Error term

Table 1: specification of variables

| Variable | Name | Measure |
|----------|---------------------|------------------------------------|
| ALA | Liquid assets | Liquid assets / total assets |
| ROA | Return on assets | Net income / total assets |
| ROE | Return on equity | Net income / total equity |
| NIM | Net interest margin | Net interest income / total equity |
| CD | Liquidity | Total loans / total deposits |
| Size | Bank size | Logarithm of total assets |
| CAP | Capital | Total capital / total assets |
| CEA | Operating costs | Operating costs / total assets |
| CFC | Financial credits | Financial expenses / total credits |
| Tdeposit | Part of deposits | Total deposits / total assets |
| TPIB | Economic growth | GDP Growth |
| TINF | Rate of inflation | Growth of inflation |

We will estimate the following hypothesis:

H 1: Return on assets has a significant impact on bank liquidity
H2: Return on equity has a significant impact on bank liquidity
H3: Net interest margin has a significant impact on bank liquidity

H4: (Total credits / total assets) has a significant impact on bank liquidity
H5: Size has a significant impact on bank liquidity

H6: capital has a significant impact on bank liquidity
H7: Deposits has a significant impact on bank liquidity

H8: (Operating costs / total assets) has a significant impact on bank liquidity

H9: (Financial expenses / total credits) has a significant impact on bank liquidity
H10: Economic growth has a significant impact on bank liquidity

H11: Inflation has a significant impact on bank liquidity

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|-----------|--------------|--------|--------------------|----------|---------|
| ALA | 176 | 0.0285 | 0.0225 | 0.0028 | 0.10426 |
| CD | 176 | 1.193 | 0.7042 | 0.047 | 8.40950 |
| TLA | 176 | 0.775 | 0.1142 | 0.12 | 0.9817 |
| ROA | 176 | 0.012 | 0.0094 | 0.000881 | 0.0975 |
| ROE | 176 | 0.111 | 0.0631 | 0.0029 | 0.2976 |
| NIM | 176 | 0.026 | 0.0132 | 0.0083 | 0.16391 |
| Size | 176 | 15.35 | 0.92 | 12.52 | 18.29 |
| CAP | 176 | 0.1051 | 0.0632 | 0.0086 | 0.48 |
| CEA | 176 | 0.032 | 0.026 | 0.000237 | 0.35 |
| CFC | 176 | 0.038 | 0.0153 | 0.01849 | 0.1689 |
| T deposit | 176 | 0.7657 | 0.1181 | 0.099 | 0.956 |
| TPIB | 176 | 0.022 | 0.0361 | -0.1051 | 0.064 |
| TINF | 176 | 0.061 | 0.0167 | 0.0340 | 0.08543 |

-ALA (Mean = 0.0285). The liquid assets represent on average 2.85% of total assets. The standard deviation is not high. CD (mean = 1.193). Total credits represent on average 1.193 of total deposits. The standard deviation is high. There is big difference between banks in term of part of credits to deposits.

Also TLA (mean = 0.775). Total loans represent on average 77.5% of total assets. The standard deviation is not high. There is no big difference between banks in term of credits. ROA (mean = 0.012). Net income represent on average 1.2% of total assets. The standard deviation is low. There is no big difference between banks in term of ROA.

Besides ROE (mean = 0.111). The net income represent on average 11.1% of total equity. The standard deviation is not high. Also NIM (mean = 0.026). Net interest margin represent 2.6% of total assets. The standard deviation between banks is low. The net interest margin is not very different between the banks of sample.

Size (mean = 15.35). The most of banks are medium size.

CAP (mean = 0.1051). The equity represent on average 10.51% of total assets.

CEA (mean = 0.032). The operating costs represent on average 3.2% of total assets. The standard deviation is low. There is no big difference of CEA between banks of sample.

CFC (mean = 0.038). The financial expenses represent on average 3.8% of total credits. The standard deviation is low. There is no big difference of CFC between banks of sample.

Tdeposit (mean = 0.7657). Total deposits represent on average 76.57% of total assets.

T PIB (mean = 0.022). The average economic growth is 2.2% in the period (2005...2020) in Tunisia. There is negative economic growth in 2022 because of negative effect of COVID19.

TINF (mean = 0.061). The average inflation is 6.1% in the period (2005...2020) in Tunisia

Table 3: Multicollinearity test

| | ALA | CD | TLA | ROA | ROE | NIM | Size | CAP |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|
| ALA | 1.000 | | | | | | | |
| CD | 0.0730 | 1.000 | | | | | | |
| TLA | -0.0844 | -0.1949 | 1.000 | | | | | |
| ROA | -0.1684 | 0.1631 | 0.1191 | 1.000 | | | | |
| ROE | -0.2150 | -0.1616 | -0.1176 | 0.3921 | 1.000 | | | |
| NIM | 0.0158 | 0.0833 | 0.2478 | 0.1073 | 0.0834 | 1.000 | | |
| Size | 0.0973 | -0.2745 | 0.1577 | 0.0857 | 0.3635 | 0.255 | 1.000 | |
| CAP | -0.0775 | 0.6962 | 0.1346 | 0.2912 | -0.1852 | 0.0615 | -0.3575 | 1.000 |
| CEA | 0.2036 | 0.0159 | -0.0661 | -0.0267 | 0.075 | -0.0641 | 0.1237 | -0.0076 |
| CFC | -0.0378 | -0.0258 | -0.0117 | -0.0076 | -0.047 | -0.1476 | 0.1384 | -0.0227 |
| Tdeposit | -0.2385 | -0.5547 | 0.0531 | 0.0169 | 0.3814 | -0.0711 | 0.4336 | -0.6191 |
| TPIB | 0.0604 | 0.0589 | -0.1125 | 0.0679 | -0.0117 | -0.0250 | -0.2505 | 0.0123 |
| TINF | -0.1198 | -0.0893 | 0.3496 | -0.0374 | 0.2111 | 0.043 | 0.4291 | -0.1064 |

Table 4: suite of correlation between variables

| | CEA | CFC | Tdeposit | TPIB | TINF |
|----------|---------|---------|----------|---------|-------|
| CEA | 1.000 | | | | |
| CFC | 0.3142 | 1.000 | | | |
| Tdeposit | -0.1459 | -0.1598 | 1.000 | | |
| TPIB | -0.1394 | -0.2233 | -0.0303 | 1.000 | |
| TINF | 0.1031 | 0.1271 | 0.1602 | -0.5512 | 1.000 |

All the coefficients are inferior to 0.80. There is no problem of multicollinearity

VIF

| Variable | VIF | 1/VIF |
|------------------|-------------|---------------|
| T deposit | 2.20 | 0.4542 |
| CAP | 2.13 | 0.4689 |
| TINF | 1.90 | 0.5260 |
| Size | 1.67 | 0.5992 |
| ROE | 1.56 | 0.6422 |
| TPIB | 1.53 | 0.6519 |
| ROA | 1.43 | 0.6720 |
| TLA | 1.31 | 0.762 |
| CFC | 1.27 | 0.788 |
| CEA | 1.17 | 0.825 |
| NIM | 1.12 | 0.8902 |

Variance inflation factor (VIF) is a measure of the amount of multicollinearity in a set of multiple regression variables. Mathematically, the VIF for a regression model variable is equal to the ratio of the overall model variance to the variance of a model that includes only that single independent variable.

This ratio is calculated for each independent variable. A high VIF indicates that the associated independent variable is highly collinear with the other variables in the model.

VIF inferior to 5. There is no problem of multicollinearity. Table 5: Results of estimation of model (1)

| ALA | Coefficient | Z | Z<P |
|-----------------|-----------------|--------------|--------------------|
| ROA | -0.121 | -0.65 | 0.512 |
| ROE | -0.053 | -1.87 | 0.062 |
| NIM | -0.0072 | -0.06 | 0.950 |
| Size | 0.0086 | 4.30 | 0.000 (***) |
| CAP | -0.104 | -3.13 | 0.002 |
| CEA | 0.134 | 2.26 | 0.024 (***) |
| CFC | -0.298 | -2.83 | 0.005 (***) |
| Tdeposit | -0.0948 | -5.24 | 0.000 (***) |
| TLA | -0.00043 | -0.03 | 0.976 |
| TPIB | 0.011 | 0.24 | 0.811 |
| TINF | -0.23 | -1.96 | 0.050 (**) |
| Constant | 0.0088 | 0.29 | 0.775 |

-There is a negative relationship between ROA and ALA (if ROA increase by 1%; ALA decrease by 0.121%). The increase of return on assets has a negative impact on assets liquid. This relationship is not statistically significant. This result is similar to result found by (Morina; Qarri (2021), Mustapha (2020)) but contrary to result found by Al Homaidi and al (2019), Gjorgi and Goran (2020)).

-There is a negative relationship between ROE and ALA (if ROE increase by 1%; ALA decrease by 0.053%). The increase of return on equity has a negative impact on asset liquid. This relationship is not statistically significant. This result is contrary to result found by Agawal (2019)). Profitability and liquidity are 2 conflicting objectives for banks ; where bank shareholders and investors would like to gain profit from their investment which is realized by the role of bank transferring funds gained from lenders to borrowers in the form of credits facilities. (Mahmoud Yousef (2018)).

-There is a negative relationship between NIM and ALA (if NIM increase by 1%; ALA

decrease by 0.0072%). The increase of net interest margin has a negative impact on asset liquid. This relationship is not statistically significant.

-There is a positive relationship between Size and ALA (if Size increase by 1%; ALA increase by 0.0086%). The increase of size has a positive impact on asset liquid. This relationship is statistically significant at 1%.

This result is similar to result found by (Al Homaidi and al (2019); Mashamba (2022), Tran and al (2019)), Chagwiza (2014); Malik and Rafique (2013).

-There is a negative relationship between CAP and ALA (if CAP increase by 1%: ALA will decrease by 0.104%). The increase of capital has a negative impact on asset liquid. This relationship is statistically significant at 1%. This result is similar to result found by (Bista; Basnet (2020), Agawal (2019)) but contrary to result found by (Gjorgi and Goran (2020)).

Two competing theories attempt to explain the relationship between bank capital and liquidity; namely financial fragility and risk absorption theory. It has been found that the availability of higher capital increases bank's risk absorbing capacity (Berger; Bowan (2017) and liquidity creation capability (Distinguin and al (2019)).

Al Homaidi and al (2019), Singh and Sharma (2016); vodova (2011) found that bank capital has a positive impact on bank liquidity through its ability to absorb risk.

-There is a positive relationship between CEA and ALA (if CEA increase by 1%; ALA will increase by 13.4%). The increase of operating costs have a positive impact on asset liquid. This relationship is statistically significant at 1%

Besides there is a negative relationship between CFC and ALA (if CFC increase by 1%; ALA will decrease by 29.8%). The increase of financial expenses have a negative impact on asset liquid. This relationship is statistically significant at 1%.

-There is a negative relationship between Tdeposit and ALA (if Tdeposit increase by 1%, ALA decrease by 0.0948%). The increase of deposit has a negative impact on asset liquid. This relationship is statistically significant at 1%.

This result is similar to result found by (Bista and Basnet (2020); Shaha and al (2013); Teshome (2017)). Deposits highly affecting the position of the bank liquidity as the demand for liquidity may arrive at an inconvenient time and force the sale of illiquid assets.

--There is a negative relationship between TLA and ALA (if TLA increase by 1%; ALA will increase by 0.00043%). The increase of total credit by total assets have a negative impact on asset liquid.

Also there is a positive relationship between TPIB and ALA (if TPIB increase by 1%; ALA will increase by 0.011%). The increase of economic growth have a positive impact on asset liquid. This relationship is not statistically significant.

Banks tend to hold more liquidity reserves during recession periods due to loans risks. Conversely in periods of economic growth with higher interest rates; banks reduce liquidity serves to increase lending.

Fola (2015); Buda; Desquilbert (2008) reported that economic growth is positively related to liquidity; while situations of Valla; al (2006); Vodova (2011,2012) find a negative relationship between this 2 variables.

-There is a negative relationship between TINF and ALA (if TINF increase by 1%; ALA will decrease by 0.23%). The increase of inflation has a negative impact on asset liquid. This result is similar to found by (Bista and Basnet (2020)) but contrary to result found by (Mustapha (2020)). This relationship is statistically significant at 5%.

Perry (1992) found that effect of inflation on bank liquidity depend about the near future

inflation. If inflation is expected to rise; banks will adjust interest rates to increase interest income faster than the rate of interest expenses.

Table 2: Results of estimation model 2 (by generalised least square)

| CD | Coefficient | Z | Z<P |
|-----------|-------------|-------|------------|
| ROA | -1.59 | -0.34 | 0.733 |
| ROE | 0.229 | 0.32 | 0.749 |
| NIM | -0.2074 | -0.07 | 0.943 |
| Size | 0.0165 | 0.33 | 0.743 |
| CAP | 6.20 | 7.19 | 0.000(***) |
| CEA | 0.268 | 0.18 | 0.857 |
| CFC | -1.223 | -0.46 | 0.645 |
| T deposit | -1.43 | -3.16 | 0.002(***) |
| TLA | 0.8943 | 2.46 | 0.014(**) |
| TPIB | 0.9364 | 0.75 | 0.452 |
| TINF | -1.185 | -0.40 | 0.691 |
| Constant | 0.8031 | 1.03 | 0.301 |

-There is a negative relationship between CD and ROA (if ROA increase by 1%; CD will decrease by 1.59%). The impact of return on assets is negative on (loans / deposits). This relationship is not statistically significant.

-There is a positive relationship between CD and ROE (if ROE increase by 1%, CD will increase by 0.229%). The impact of return on equity is positive on (loans / deposits). This relationship is not statistically significant.

-There is a negative relationship between NIM and CD (if NIM increase by 1%, CD will decrease by 0.2074%). The impact of net interest margin is positive on (loans / deposits). This relationship is not statistically significant.

-There is a positive relationship between Size and CD (if Size increase by 1%, CD will increase by 0.0165%). The impact of size on (loans / deposits) is positive. This relationship is not statistically significant.

. This result is contrary to result found by (Zaghdoudi and Khamis (2017)).

-There is a positive relationship between CAP and CD (if CAP increase by 1%; CD will increase by 6.20%). The impact of CAP on CD is positive. This relationship is statistically significant at 1%. This result is similar to result found by Zaghdoudi and Khamis (2017)).

-There is a positive relationship between CD and CEA (if CEA increase by 1%; CD will increase by 0.268%). The increase of operating costs has a positive impact on (loans / deposits). This relationship is not statistically significant.

Besides there is a negative relationship between CFC and CD (if CEA increase by 1%; CFC will decrease by 1.223%). The increase of financial expenses has a negative impact on CEA. This relationship is not statistically significant.

-There is a negative relationship between T deposit and CD (if T deposit increase by 1%; CD will decrease by 1.43%). The increase of deposits has a negative impact on (loans / deposits).

This relationship is statistically significant at 1%. Also There is a positive relationship between TLA and CD (if TLA increase by 1%; CD will increase by 0.8943%). The increase of credits has positive impact on (loans / deposits). This relationship is statistically significant at 1%.

-There is a positive relationship between TPIB and CD (if TPIB increase by 1%; CD will

increase by 0.9364%). The increase of economic growth has a positive impact on (loans / deposits). This relationship is not statistically significant. Also there is a negative relationship between TINF and CD (if TINF increase by 1%, CD will decrease by 1.185%).

CONCLUSION

Bank liquidity refers to the latter meaning but also depends on the former. A bank is liquid if it can repay borrowers when due, meet deposit withdrawals, and satisfy draws on lines of credit that it has extended without paying inordinately in funding markets or selling assets at fire-sale prices. Moreover, because banks provide funding to each other, liquidity problems at one bank can quickly spillover to other banks.

In this article we attempt to identify the factors affecting bank liquidity in Tunisia over the period (2005...2020). We employ a panel static (estimation by generalized least square). We found that the main factors of bank liquidity are (size; capital; deposits; inflation). The return on equity; net interest margin; economic growth have no significant impact on bank liquidity.

References

- 1) **Agarwal .P (2019)** “ Bank specific determinants of liquidity of public and private sector banks “ International Journal of Recent technology and engineering ; vol 8 , issue 3, september 2019, p6774-6779
- 2) **AL Homaidi .E ; M.I. Tabash ; N.H.Farhan ; F.A. Almaqtari (2019)** “ The determinants of liquidity of Indian listed commercial banks : A panel data approach “ Cogent Economic and Finance ; vol 7 , issue 1 ,
- 3) **Al Qudah.A.M (2020)** “Macroeconomic and bank specific variables and the liquidity of Jordanian commercial banks “ Journal of Asian Finance ; economics and business , vol 7, n°12, p85-93
- 4) **Ben Moussa .M.A (2015)** “ The determinants of bank liquidity : case of Tunisia “ International Journal of Economics and Financial issues ; vol 5 , n°1, p 249-259
- 5) **Berger .A.N; C.H.S.Bowman (2017)** “ Bank liquidity creation ; monetary policy and financial crises “ Journal of Financial stability ; vol 30; p 139-155
- 6) **Bista. R.B ; P .Basent (2020)** « Determinants of bank liquidity in Nepal “ Quantitative Economics and management studies ; vol 1 , n°6, p390-398
- 7) **Bunda .I ; J.B.Desquilbet (2008)** “ The bank liquidity smile across exchange rate regimes “ International Economic Journal ; vol 22 ; issue 3; p 361-386
- 8) **Chagwiza .W (2014)** “ Zimbabwean commercial banks liquidity and its determinants “ International Journal of Empirical Finance ; vol 2 , issue 2 ; p52-64
- 9) **El Chaarani. H (2019)** “ Determinants of bank liquidity in the middle east region “ International Review of management and marketing ; vol 9 , number 2, p64-75
- 10) **Fola .B (2015)** “Factors affecting liquidity of selected commercial banks in Ethiopia “
- 11) **Gambacorta.L , Mistrulli.P.E (2004)** “ Does bank capital affect lending behavior “ Journal of Financial Intermediation ; 13, p436-457
- 12) **Gjorgii.G , H.Goran (2019)** “ Determinants of bank liquidity and its relationship with profitability “ Asian Journal of Economics and empirical research ; vol 6 , n°1, p85-92
- 13) **Mahmood .H , S.Khalid , A .Waheed ; M.Arif (2019)** “Impact of macro specific factors and bank specific factors on bank liquidity using FMOLS approach “ Emerging Science Journal ; vol 3 , n°3, June ; p168-178
- 14) **Malik .M.F ; A.Rafique (2013)** « Commercial bank liquidity in Pakistan : Firm specific and macroeconomic factors “ Romanian Economic Journal ; vol 16 ; issue 48 ; p139-154

- 15) **Mashamba .T (2022)** “ Liquidity dynamics of banks in emerging market economies “ Journal of Central banking theory and practices ; vol 11; p179-206
- 16) **Morina.D ; A .Qarri (2021)** “ Factors that affect liquidity of commercial banks in Kosovo” European Journal of sustainable development ; 10,p229-238 Perry .P (1992) “Do banks gain or lose from inflation” Journal of Retail banking; 14, (2), p25-30
- 17) **Roman .A , A .C .Sargan (2015)** « The impact of bank specific factors on the commercial banks liquidity : Empirical evidence from CEE countries “ Procedia Economics and Finance , 20, p571-579
- 18) **Shah.S.Q , Khan .I , Shah .S.A ; Tahir .M (2018)** “ Factors affecting liquidity of banks : Empirical evidence from the banking sector of Pakistan “ Colombo business journal ; 9 ; n°1, p1-18
- 19) **Singh .A ; A.K .Sharma (2016)** “ An empirical analysis of macroeconomic and bank specific factors affecting liquidity of Indian banks “ Future business Journal ; vol 2 , issue 1 , p40-53
- 20) **Tran. TT.Tu; Y.T.Nguyen , T.H Nguyen , L.Tran (2019)** “ The determinants of liquidity risk of commercial banks in Vietnam “ Banks and banks systems ; vol 14, issue 1 , p94-110
- 21) **Vodova (2011)** “ Determinants of commercial bank liquidity in the Czech Republic “
- 22) **Yitayaw .M.K (2021)** “ Firm specific and macroeconomic determinants of commercial bank liquidity in Ethiopia : Panel data approach “ Cogent Business and Management ; p 1-18
- 23) **Zaghdoudi .K ; A .Hakimi (2017)** “ The determinants of liquidity risk : Evidence from Tunisian banks “ Journal of applied finance and banking ; vol 7 , issue 2,p71-81