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REVIEW ARTICLE

The Impact of Economic Growth on Bank Liquidity: Case of Tunisia

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Abstract

Liquidity is a measure of the cash and other assets banks have available to quickly pay bills and meet short-term business and financial obligation. In this article we studied the impact of economic growth on bank liquidity. By using a sample of 11 banks quoted in Tunisian stock market for the period (2005-2020). We apply a method of general least squares for the regression of variables. We found that economic growth has a positive impact on bank liquidity. That's means that good economic conditions ameliorate the level of bank liquidity. Therefore banks can meet their financial obligations and increase their investments

Keywords: liquidity, banks, economic growth, general least square.

1. Introduction

Liquidity reflects a financial institution's ability to fund assets and meet financial obligations. It is essential to meet customer withdrawals, compensate for balance sheet fluctuations, and provide funds for growth. Bank management must ensure that sufficient funds are available at a reasonable cost to meet potential demands from both funds providers and borrowers. banks create liquidity on the balance sheet when they transform illiquid assets into liquid liabilities. An intuition for this is that banks create liquidity because they hold illiquid items in place of the nonbank public and give the public liquid items.

On the other hand; Economic growth increases state capacity and the supply of public goods. When economies grow, states can tax that revenue and gain the capacity and resources needed to provide the public goods and services that their citizens need, like healthcare, education, social protection and basic public services.

It is interesting to study the relationship between economic growth and bank liquidity. This relationship can help the investors and customers of banks to evaluate the good management of banks and their perspectives of investment. In this article we will study the impact of economic growth on bank liquidity in Tunisia. We will adopt a methodology of three section. We start by literature review ; then we develop an empirical study in the second section ; finally we will make a conclusion .

2. Literature Review

2.1 Bank Liquidity

Liquidity is a measure of the cash and other assets of bank have available to quickly pay bills and meet short term business and financial obligations. Liquidity is fundamental to the well-being of financial institutions particularly banking. It determines the growth and development of banks and it indicates proper functioning of financial market.

Liquidity is of a parmount being –core issue of banking (Carma ; Hodes (2008)). Therefore; viability and efficiently of a bank is greatly influenced by the availability of liquidity in sufficient amount of all times. Banks must meet their due obligations and

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exeante payments on the extent day they are due ; otherwise ; the banks stand the risk of being illiquid (Crockett (2008))

Most of banks hold a portion of assets that can be easily sold to meet liquidity needs , such as meeting customers needs . He explained that this is possible if banks are able to rise enough money and this means that a bank's ability to survive depends heavily on its level of liquidity .

Some literature classified liquidity in a financial system into three main notions, such as central bank liquidity, market liquidity and funding liquidity (see, Nikolaou, 2009). While, some argued in favour of two notions or facets of financial (market) liquidity, i.e. funding liquidity and market liquidity (see ECB, 2002 and ORACLE, 2009). Their argument is based on the belief that the role of Central Bank as provider of liquidity during financial crisis only cushions the effects but does not guarantee success since it cannot tackle the roots of the liquidity risk. Furthermore, Central Bank lacks the ability to clearly differentiate with certainty between illiquid and insolvent banks (Nikolaou, 2009).

Deep and Schaefer (2004), define the liquidity transformation gap as (liquid liabilities – liquid assets)/Total assets and apply it to data on the 200 largest U.S. banks for the period between 1997 and 2001. They consider all loans with maturity of one year or less to be liquid, and they explicitly exclude off-balance sheet activities because of their contingent nature. They find that for the sample of large banks, the LT gap is about 20% of total assets on average. The authors conclude that these banks do not appear to create much liquidity.

Berger and Bouwman (2008), implement four measures of liquidity creation and apply them to data on U.S. banks over the period 1993-2003. They find that bank liquidity creation increased every year and exceeded $2.8 trillion in 2003. Large banks, multibank holding company members, retail banks, and recently merged banks create the most liquidity. Bank liquidity creation is positively correlated with bank value. The researchers also find that the relationship between capital and liquidity creation is positive for large banks and negative for small banks .

2.2 Economic Growth

Economic growth describes an increase in the quantity and quality of the economic goods and services that a society produces and consumers. The 4 main of economic growth are (land; labor; capital and entreneurship). Economic growth measures an increase in real GDP; an increase on the value of national out put ; income and expenditure.

Gross domestic product is the best way to measure economic growth because it takes into account the country's entire economic output.

GDP include all goods and services that business in the country produce for sale. There are a few ways to generate economic growth. The first is an increase in the amount of physical capital goods in the economic.

A second method of producing economic growth is technological improvement. Another way to generate economic growth is to grow the labor factor. The last method is increases in human capital. This means labor become more skilled at their drafts ; raising the productivity through skills training ; the economy moves through different periods of activity. This movement is called the "business cycle." It consists of four phases:

- Expansion – During this phase employment, income, industrial production, and sales all increase, and there is a rising real GDP.
- Peak – This is when an economic expansion hits its ceiling. It is in effect a turning point.
- Contraction – During this phase the elements of an expansion all begin to decrease. It becomes a recession when a significant decline in economic activity spreads across the economy.
- Trough – This is when an economic contraction hits its nadir.

2.3 The Relationship between Economic Growth and Bank Liquidity

They are many articles studied the relationship between economic growth and bank liquidity. Njugyen and Vo (2021) studied a sample of 17 commercial banks listed on the Vitenam stock exchange for the period (2006…2020). They found that GDP influence negatively bank liquidity.

In the context of economic growth; the demand for loans will increase . If commercial banks do not properly expand credit growth; it will negatively affect their liquidity .

Morina; Qarri (2021) studied a sample of banks in Kosovo for the period (2012…2019). They indicate that GDP has not significant impact on bank liquidity.

Bhati and al (2019) studied a sample of Indian banks ; for the period (1996…2016). They found that GDP has a positive effect on bank liquidity .

Shah and al (2018) studied a sample of 23 banks of Pakistan during the period (2007…2016). They found that GDP has statistically significant impact on bank liquidity. Mahmood and al (2019) sued a sample of banks in Pakistan for the period (2000…2017). They found that GDP has a negative impact on bank liquidity.

Trenca and al (2015) studied the macroeconomic determinants of 40 commercial banks in 6 South European countries (Croatia; Greece; Italia ; Portugal; Spain; Cyprus) from (2005…2011).

They found that economic growth as measured by GDP has a negative and statistically significant impact on bank liquidity .

Vodova (2011) confirmed the negative impact of economic growth on bank liquidity in Czech commercial banks from (2001-…2009). Yitayaw (2020) studied 15 commercial banks in Ethiopia from (2009….2019). He found that gross domestic product had a negative and statistically significant on the commercial bank liquidity.

Real gross domestic product is an indicator of the financial health of a country . When the economy is at the boom ; banks become optimistic and upsurge their long term investment and reducing their holding of liquid assets whereas in the period of recession.

The reverse is true (Assfaw (2019)). On the other hand; the theory of bank liquidity and financial fragility stated that when the economy is at the boom ; banks become optimistic and upsurge their long term investment and reducing their holding of liquid assets while in the period of recession the reverse is true.

3. Empirical Study

We will use a sample of 11 banks included in financial market of Tunis for the period (2005…2020)

We make a methodology of panel static (estimation by GLS (generalized least squares)

Generalized Least Squares (GLS) estimation is a generalization of the Ordinary Least Squares (OLS) estimation technique. GLS is especially suitable for fitting linear models on data sets that exhibit heteroskedasticity (i.e., non-constant variance) and/or auto-correlation. Real world data sets often exhibit these characteristics making GLS a very useful alternative to OLS estimation.

3.1 Motivation for the GLS Estimator

When we use the Ordinary Least Squares (OLS) estimation technique for fitting a linear model on a data set, we make two crucial assumptions:

1. The variance of the errors of the regression model is constant i.e., the errors are homoskedastic, and
2. The errors are not correlated with each other or with themselves.

A-Specification of Model

ALA i,t= b0+ b1 ROA i,t +b2 ROEi,t + b3 NIMi,t+b4 Sizei,t +b5 TLAi,t +b6 CAPi,t +b7 CEAi,t

+b8 CFCi,t +b9 Tdepositi,t +b10 TPIBi,t +Ei,t

Bo = constant

B1…..b10 : Paramters to be estimated

I= bank ; t= time

ALA = liquid assets = liquid assets / total assets

ROA = return on assets = net return / total assets

ROE = return on equity = Net income / total equity

NIM = net interest margin = Net interest income / total assets

Size = log of total assets

CAP = equity / total assets

CEA= operating costs / total assets

CFC = Financial expenses / total credits

T deposit = Total deposits / total assets

TPIB = economic growth

TINF = rate of inflation

We will estimate the following hypothesis :

H1: Economic growth has a significant impact on bank liquidity

H2: Economic growth don't have a significant impact on bank liquidity

Table 1. *Descriptive statistics*

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
ALA	176	0.0285	0.0225	0.0028	0.10426
TLA	176	1.193	0.1142	0.12	0.9817

ROA	176	0.775	0.0094	0.000881	0.0975
ROE	176	0.012	0.0631	0.0029	0.2976
NIM	176	0.111	0.0131	0.0063	0.16391
Size	176	0.026	0.92	12.52	18.29
CAP	176	0.53	0.0632	0.0086	0.48
CEA	176	0.1051	0.026	0.000237	0.35
CFC	176	0.032	0.0153	0.01849	0.1689
T deposit	176	0.7657	0.1181	0.099	0.916
TPIB	176	0.022	0.0361	-0.1051	0.064
TINF	176	0.061	0.0163	0.0340	0.0854

Table 2. *Mulicolinarity test*

	ALA	**CD**	**TLA**	**ROA**	**ROE**	**NIM**	**Size**	**CAP**
ALA	1.000							
CD	0.0730	1.000						
TLA	-0.0844	-0.01949	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	-0.3575
CAP	-0.0715	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	0.1277	-0.0076
CFC	-0.0378	-0.0258	-0.0117	-0.0076	-0.047	-0.1476	0.1384	-0.227
T deposit	-0.2358	-0.5547	0.0531	0.0169	0.3814	-0.0117	0.4336	-0.61
TPIB	0.0604	0.0589	-0.1125	0.0679	-0.0117	-0.0250	-0.2505	0.0123
TINF	-0.198	-0.0893	0.3496	-0.0374	0.2111	0.043	0.4291	-0.1064

Table 3. *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	0.031	0.1271	0.1602	-0.5512	1.000

Table 4. *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	1.2	0.89021

Variance inflation factor (VIF) is a measure of the amount of multicolinearity of multiple regression variables. VIF inferior to 5 there is non problem of multicolinearity

Table 5. *Results of estimation of model*

ALA	Coefficient	Z	Z inferior to P
ROA	-0.121	-0.65	0.512
ROE	-0.053	-1.87	0.062
NIM	-0.0072	-0.06	0.95
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***
T deposit	-0.0948	-5.24	0.976
ALA	-0.00043	-0.03	0.811
TPIB	0.011	0.24	0.050
TINF	-0.13	-1.96	0.056
Constant	0.0088	0.29	0.17

There is a negative relationship between ROA and ALA (if ROA increase by 1%; ALA decrease by 0.121%). There is a negative relationship between ROE and ALA (if ROE increase by 1%; ALA decrease by 0.053%).

Profitability and liquidity are 2 conflicting objectives for banks ; where bank shareholders and investors would like to gain profits from their investment which is realized by the role of bank transferring funds gained from lenders to borrowers in the form of credit facilities (Mohammed Youssef (2018)).

There is a negative relationship between NIM and ALA (if NIM increase by 1%; ALA will 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 will 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 (Alhomaidi and al (2019) ; Mashamba (2020)).

There is a negative relationship between CAP and ALA (if CAP increase by 1%; AL A will decrease by 0.1941%). 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) ; Agrawal (2019) ; but contrary to result found by (Gjorgic and Goran (2020))

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 negative relationship between CFC and ALA (if CFC increase by 1%; ALA decrease by 29.8%). The increase of financial expenses has a negative impact on asset liquid. This relationship is statistically significant. There is a negative relationship between T deposit and ALA (if T deposit increase by 1%; ALA will decrease by 0.0948%). There is a negative relationship between TLA and ALA (if TLA increase by 1% ALA decrease by 0.0041%). The increase of total credits by total assets have negative impact on asset liquid.

There is a positive relationship between TPIB and ALA (if TPIB increase by 1%; ALA increase by 0.011%). The increase of economic growth have a positive impact on bank liquidity. (Fola (2015); Bunda ; Desquilbert (2008)) but contrary to result found by El CHaarani (2019)).

During economic growth . business activities develop and thus the demands for loan increase. As a result ; bank will have more opportunities to give loans when they decrease the liquidity assets.

There is a negative relationship between TINF and ALA (if TINF increase by 1% ; ALA will decrease by 0.13%). The increase of inflation has a negative impact on asset liquid . Some authors implied that an

increase of the inflation rate will lower the purchasing power of individuals, who will then need more money to buy the same products. As a result, the demand for loans will increase and thus, bank liquidity will decrease (Trenca et al., 2015; Bhati et al, 2012). Moreover, higher inflation rates deteriorate overall macroeconomic conditions and lower liquidity (Vodova, 2011).

While, other researchers discovered a positive relation. (El-Chaarani, 2019) used WLS regression on 183 banks from Middle east during a period of 3 years and found out that with climbing of inflation, liquidity also increases. Similar findings were discovered by (Singh et al, 2016).

4. Conclusion

Liquidity is a measure of the cash and other assets banks have available to quickly pay bills and meet short-term business and financial obligations. Capital is a measure of the resources banks have to absorb losses.

Liquid assets are cash and assets that can be converted to cash quickly if needed to meet financial obligations. Examples of liquid assets generally include central bank reserves and government bonds. To remain viable, a financial institution must have enough liquid assets to meet withdrawals by depositors and other near-term obligations.

Also ; Economic growth is the increase in the value of an economy's goods and services, which creates more profit for businesses. As a result, stock prices rise. That gives companies capital to invest and hire more employees.

In this article we studied a sample of banks in Tunisia for the period (2005…2020). we found a positive impact of economic growth on bank liquidity .

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