The Factors Affecting Bank Deposit: Case of Tunisia

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ABSTRACT: *Deposit is important in the banking industry. The objective of bank is increase the amount of despot to utilize it in producing credits and meet their financial obligations. The purpose of this research is to determine the factors affecting bank deposits in Tunisia. we used a panel static for a sample of 11 banks in Tunisia for the period (2005…2022). We found that (ROA; NIM; Size, capital; credit; GDP, inflation) have a positive effect on deposit but (ROE; operating costs; asset liquids) have a negative effect on deposits.*

KEY WORDS: Bank, deposits, panel, ROA, capital
JEL classification: E 21, K 223

INTRODUCTION

The principal function of bank is to collect the funds from depositors to distribute it in form of credits (financial intermediation). It is interesting to understand the factors affecting the bank deposits.Thus deposits are a vital source of funds for banking operations and are regarded as the essential source for commercial banks in meeting the need of banking system financial resources (Selvaraj; Kumar (2015) , Namzai and Salehi (2010)). Deposit mobilization is important to banks as oxygen to human. Banks and other financial institutions may fail to meet their business objectives if they do not have enough deposits (Viswandhan and al (2015)). According to Keyne's theory of money needs; there are 3 main motivation for people to hold money: trading ; hedge ; investing .

Friedman (1957) argues that the best way to understand savings and consumption behavior is to consider how individuals properly plan to spend their wealth in life. The permanent income hypothesis predicts that a higher future income will reduce present savings.

Modiligani and Brumberg (1954) proposed a life cycle hypothesis that emphasized that the main driver of savings in accumulation for retirement. The higher liquidity buffer as measured by the ratio of liquid assets / deposits) tends to favor demand for deposits. Harald and Heiko

(2008) argued that bank liquidity situation also plays an important role in determining bank deposit growth.

Therefore the deposits are linked to many factors and considerations (both internal and external to bank) . In this article we attempt to found the factors influencing bank deposits in Tunisia . We will have adopted a methodology of three section. The first section is devoted to literature review. In the second section we will developed an empirical study. finally, we will make a conclusion

LITERATURE REVIEW

There are several studies that determine the factors affecting bank deposits .

Abduh and al (2011) explained the impact of the financial crisis on deposits in bank over the period (2000…2010) using the method of a vector error correction model . They found that neither the interest rate nor the rate of production growth impact the growth of deposits.

Ngula and Baligna (2012) used the method of MCO to evaluate the impact of macroeconomic factors on bank deposits in Ghana for the period (1980….2010). The findings of the study highlight that monetary mass ; exchange rate and inflation influence significantly the bank deposit . The interest rate don't have influence on mobilization of bank deposits . Boadi ; al (2015) used MCO and found that liberalization of interest rate and GDP growth are 2 significant factors for increasing the bank deposits .

Yakubu and Abokor (2020) examined the key factors determining bank deposits growth in Turkey for the period (2000….2016) . The study analysis the autoregressive distributed lag approach to investigate the effect of bank level and macroeconomic factors on deposit growth . The results reveal that bank stability ; banking sector efficiency ; broad money supply ; economic growth and inflation are significant determinants of deposits growth in the long run . The findings further show that in the short run ; only branch expansion and broad money supply are relevant for bank deposit mobilization.

Banke and Yitayaw (2020) examined the bank specific and macroeconomic determinants of deposit mobilization in Ethiopian banking sector using balanced panel data of 14 commercial banks from (2011….2020) . The model result that demonstrated that (loan/ deposits) , capital adequacy ; economic growth ; inflation ; population growth and political stability have a negative and significant effect on commercial bank deposit mobilization . On the other hand bank profitability has a positive and statistically significant impact on commercial deposit mobilization .

Besides Winarto and Herlina (2020) have studied the banks listed on the Indonesian stock exchange during the period (2013….2019). The results of this research showed that income ; interest rate ; debt securities and company size have effects on customer deposits .

Also Thao and Thanh (2021) investigated the macroeconomic and bank specific factors that determine bank deposits in Vietnam . A fixed and random effect model was performed on data set of 40 banks from (2006…2019) . Based on panel data analysis ; it is suggested that bank specific factors such as bank size ; bad loan ; profitability ; GDP ; inflation have notable effect on bank deposits .

Malkina (2019) investigated the determinants of private savings in the form of bank deposits : a case study of region of Russian federation

The study adopted cobb douglas type of regression with fixed time effect and logistic type regression based on panel data of 80 Russian region from (2014…2016). Their estimation allowed us to reveal the dependence of private deposits in Russin region at the level of real personal income and its structure ; the personal income inequality ; the demographic structure of the population ; the state of the labor market ; the level of accumulated wealth ; the rate of urbanization ; the level of development of the financial system in the region . Fundings reveal that mandatory payments ; labour market ; rate of pensioners and unemployment rate have positive relationship with bank deposits with income integrity and family structure exhibit negative impact on bank deposits .

Lekrezi (2022) aims to identify the factors that influence the level of deposits at commercial banks in Albania between (2009….2020).The results indicated that the coefficient of capital adequacy and remittances are negative and significant . The coefficient of ROA is positive and significant . GDP growth rate had a negative but not statistically significant . Arisanya (2021) examined the main factors determine the growth of commercial bank deposits in Sirilanka for the period ((1999…2017)The research uses micro and macro level data collected purposive random basis . The autoregressive distributed lag approach used to determine the significant micro and macro factors of bank deposit growth . The results that bank studiness ; the productivity of the banking sector ; the large supply of capital ; economic growth and inflation are important long term determinants of deposit growth . The findings additionally shows that for bank deposit mobilization ; only branch expansion and large money supply are important in the short term .

Besides Morina and Osmani (2019) analyzed the impact of macroeconomic factors on the level of deposits in the banking sector in western Balkan countries . The interest rate plays a key role in banking system because it determines the benefits of the difference between the interest rate on loans and the interest rate on deposits . However ; exposure to risk is often because banks provide long term loans fixed by short term deposits and this involves the selected interest rate risk .

Asayesh and al (2017) indicated that exchange rate ; national income per capital ; ATMs have a significant impact on amount of bank deposits . Saleh and al (2023) studied the impact of macroeconomic factors on Jordanian bank deposits in the context of the COVID 19. The annual data are collected between (1980…2020) . The novel autorgessive distributed lag (ARDL)

model is suggested to valuate the link between bank deposits and macroeconomic factors . The findings of Granger Causality test indicate there is a one way causal link between deposits and macroeconomic factors .

Nadezhda and al (2019) studied the external factors influence on the commercial bank deposit policy formation . The empirical results proved the fact that deposits policy of the commercial banks registered in the republic of Moldavia is influenced by such external environment factors as gross domestic product and average accured wage growth rate .

Besides Ferrouhi (2017) studied the determinants of bank deposits in Morocco from the period (2003….2014) using panel date regression . Thus we used deposits in Moroccan banks as dependent variables and 12 explanatory variables (bank size ; bank capital to assets ratio ; external funding to total liabilities ratio ; equity to assets ratio ; unemployment rate ; inflation rate ; growth rate of gross domestic product ; foreign direct investment and financial crisis . Results obtained show that deposits are positively correlated with bank size ; with both internal and external funding with interest rate on deposits and with unemployment rate .

Ngayen (2022) investigated the influence of institutional quality on bank deposit growth based on bank specific and macroeconomic variables in European transition economies.Generalized method of moments (GMM) is applied to analyze the panel date which is collected from the global financial development and world development indicators of world bank over the period (2000…2017).The results show that institutional quality strengthen the positive effect of deposits mobilization on bank deposit growth . Specifically ; rule of law is found to have a positive correlation with bank deposit .In addition ; macroeconomic factors including broad money supply and economic growth GDP also significant factors in bank deposit growth . Moreover bank specific factors comprising bank efficiency and bank branch expansion do not influence bank deposit growth.

MATERIALS AND METHODS

We used a sample of 11 banks in Tunisia for the period (2005…2022)

A-Model

Deposit i,t = a0+ b1 ROAi,t + b2 ROE i,t + b3 NIMi,t +b4 Sizei,t +b5 CAPi,t +b6 CEAi,t + b7 TLAi,t + b8 CD i,t +b9 ALAi,t + b10 TPIBi,t +b11 TINFi,t + Ei,t

i= bank   ; t= time

Deposit= Total deposits/ total assets

A0= constant

ROA = return on assets = net return / total assets

It is the ratio used to measure the company's efficiency in using its assets to generate profits (Bhalla (2006)).

It reflects the management ability to utilize the bank's financial and real investment resources to generate profit (Hassan and Bashir (2003)

ROE = net return / total equity

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

Size = log of total assets

CAP= total equity / total assets

Bank capital plays an important role in maintaining the security of banks and the security of the banking system in general (Mohd and al (2013)) to prevent unexpected losses that banks may face

CEA = operating costs / total assets

TLA = total credits / total assets

CD = total credits / total deposits

A measure of bank liquidity which reflects the proportion of customer deposit that have been given out in the form of loans (Gebre T (2019) ; Yitayaw (2021))

It refers to a bank 's ability to exante its commitments to any time including repaying customer deposit or making a payment on the coherent order (Vodova (2016))

ALA = assets liquides/ total assets

TPIB= economic growth

It is the market value of all goods and services product in a country over 1 year and one of the primary indicators used to measure economic performance (Azolibe (2011))

INF = rate of inflation

It is described a s a general and sustained rise in prices of goods and services in the economy

We test the following hypothesis

H1: ROA has a positive effect on bank deposits

H2: ROE has a negative effect on bank deposits

H3: NIM has a positive effect on bank deposits

H4: Size has a positive effect on bank deposits

H5: Capital has a positive effect on bank deposits

H6: Operating costs has a negative effect on bank deposits

H7: TLA has a positive effect on bank deposits

H8: CD has a negative effect on bank deposits

H9: ALA has a positive effect on bank deposits

H10: GDP has a positive effect on bank deposits

H11: Inflation has a negative effect on bank deposits

B- Analysis Descriptive statistics

Table 1: Descriptive statistics

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Tdeposit	198	0.7918	0.1293	0.099	0.9674
ALA	198	0.0345	0.0227	0.0028	0.0065
ROA	198	0.014	0.0096	0.0088	0.0983
ROE	198	0.1356	0.0728	0.0029	0.3251
NIM	198	0.028	0.0157	0.0083	0.18475
Size	198	17.26	0.94	12.51	19.54
CAP	198	0.1251	0.0815	0.0086	0.5321
CEA	198	0.045	0.029	0.00023	0.37
TPIB	198	0.015	0.0561	-0.1051	0.065
TINF	198	0.0063	0.0175	0.034	0.08641

-ALA (mean = 0.0345) . The asset liquid represent 3.45% on average of total assets . The standard deviation is low . There is a small difference between banks in term of asset liquids

-TLA (mean =0.783) . The total loans represent 78.3% on average of total assets . The standard deviation is high . There is a big difference between banks in term of credits .

-ROA (mean =0.014) . The net return represent 1.4% of total assets . The standard deviation is very low . There is a small difference between banks in term of return on assets .

-ROE (mean = 0.1356) . The net return represent 13.56% of total assets . The standard deviation is high . There is a big difference between banks in term of return on equity

-NIM (mean = 0.028) . The net interest margin represent 2.8% of total assets . The standard deviation is low . There is a small difference between banks in term of NIM

-Size (mean = 17.26) . The standard deviation is high . There is a big difference between banks in term of size .

-Cap (mean = 0.1251) . The capital represent 12.51% on average of total assets . There is a big difference between banks in term of capital .

-CEA (mean = 0.045) . The operating costs represent 4.5% on average of total assets . There is a low difference between banks in term of operating costs .

-CFC (mean = 0.042) . The financial expenses represent 4.2% on average of total credit . Tthere is a low difference between banks in term of CFC

-T deposit (mean = 0.7918) . The total deposit represent 79.18% on average of total assets . There is a big difference between banks in term of deposits

-TPIB (mean =0.015) . The economic growth was 1.5% on average in the period (2005…2022). There is a big difference between years because the Tunisian revolution and the sanitary problem of Coronna

-TINF (mean = 0.063) . The rate of inflation is 6.3% on average . There is a big problem between years in term of inflation .

C-Multionlinearity test

Table 2: Multicolinearity between variables

	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	0.119	1.000				
ROE	-0.2150	-0.1616	-0.1176	0.3921	1.000			
NIM	0.0158	0.0833	0.2478	0.1073	0.3921	1.000		
Size	0.0973	-0.2745	0.1577	0.0857	0.1073	0.0834	1.000	
CAP	-0.0775	0.6962	0.1346	0.2912	0.0857	0.3635		1.000
CEA	0.2036	0.0159	-0.066	-0.0267	0.075	-0.1852		
Tdeposit	-0.2385	-0.5547	0.0531	0.0169	0.381	-0.074	0.4346	-0.1691
TPIB	0.0604	0.0589	-0.1125	0.9679	-0.0117	-0.0250	-0.25	0.0123
TINF	-0.1198	-0.1198	0.3496	-0.0374	0.211	0.043	0.42	-0.1064

Table 3: Suite of correlation between variables

	CEA	Tdeposit	TPIB	TINF
CEA	1.000			
Tdeposit	-0.1459	1.000		
TPIB	-0.13940	-0.0303	1.000	
TINF	0.1031	0.1602	-0.5512	1.000

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Table 4: VIF

Variable	VIF	1/VIF
Tdeposit	2.25	0.44
CAP	2.34	0.42
TINF	1.93	0.518
Size	1.68	0.59
ROE	1.39	0.6289
TPIB	1.54	0.6498
ROA	1.46	0.6849
TLA	1.32	0.75
CEA	1.18	0.84740
NIM	1.14	0.8771

Variance inflation factor (VIF) is a measure of the amount of multicollinearity test in a set of multiple regression variables . Mathematically the VIF for a regression variable is equal to the ratio of the or all model variance to the variance of model that includes only that simple independent variable. This ratio is calculating for each independent variable

A high VIF indicates that associate independent variable is highly collinear with other variables in the model

VIF inferior to 5 No problem of multicollinearity

C- Hausman test

It is useful to choice between fixed effect model and random effect model.

Fixed effect model is the statistical model in which the model parameters are fixed. In a panel data where longitudinal observations is for the same subject; fixed effects represent the subject or specify means. In the panel data analysis; the term fixed effect estimator; also known as the within estimator; it is used to refer to an estimator for the coefficients in the regression model including those fixed effects (on time invariant intercept of each subject)

The assumption that if p value is inferior to 0.05   all coefficients of the model are not equal to zero.

Random effect model it is also called a variance component model. It is the statistical model where the parameters are random. It is a kind of hierarchical linear model which assumes the data being analysed are drawn from a hierarchy of different populations whose different relate to that of hierarchy. (**Makanile and Pastory (2022**)).

In our case p value = 0.3258 we choose a random effect model.

RESULTS

Table 5: Estimations of model

T deposit	Coefficient	Z	Z < p
ROA	0.4782	0.63	0.742
ROE	-0.0819	-0.54	0.835
NIM	1.9273***	4.75	0.0053
Size	1.4581***	4.26	0.0034
CAP	2.024	4.08	0.0029
CEA	-0.1935	-0.73	0.624
TLA	0.2586**	2.29	0.049
CD	0.0629**	2.18	0.0546
ALA	-0.1774**	2.25	0.05271
TPIB	0.2815***	5.34	0.05173
TINF	-3.27	1.84	0.000

(****) significant at 1%

(**) significant at 5%

(*) significant at 10%

5-Discussions

-There is a positive relationship between Tdeposit and ROA (if ROA increase by 1% ; T deposit increase by 0.4782%) . The increase of return on assets has a positive impact on bank deposits .This result is similar to result found by Thao and Tanh (2020), Cekrezi(2022)

Also there is a negative relationship between Tdeposit and ROE (if ROE increase by 1% ; T deposit decrease by 0.0819%) . The increase of return on equity have a negative effect on bank deposits .

There is a positive relationship between T deposit and NIM (if NIM increase by 1% ; T deposit increase by 1.92%) . The increase of net interest margin has a positive impact on bank deposits

There is a positive relationship between T deposit and Size (if Size increase by 1% ; T deposit increase by 1.45%) . The increase of size has a positive impact on bank deposits.This result is similar to result found by Femi and al (2021)).

There is a positive relationship between T deposit and CAP (if CAP increase by 1% ; T deposit increase by 2.024%) . The increase of capital has a positive impact on bank deposits. This result is contrary to result found by Cekrezi (2022).

There is a negative relationship between T deposit and CEA (if CEA increase by 1% T deposit decrease by 0.1935%) . The increase of operating costs has a negative impact on bank deposits

There is a positive relationship between T deposit and TLA (if TLA increase by 1% T deposit increase by 0.2586%) . The increase of credits has a positive impact on bank deposits .

There is a positive relationship between T deposit and CD (if CD increase by 1% Tdeposit increase by 0.0629%) . The increase of credits by deposits have a positive impact on bank deposits .

There is a negative relationship between ALA and T deposit (if ALA increase by 1% T deposit will increase by 0.1774%) . The increase of asset liquids have a negative impact on bank deposits . This result is contrary to result found by Thao and Tanh (2021)

There is a positive relationship between TPIB and T deposit (if TPIB increase by 1% Tdepsoit increase by 0.2815%). The increase of economic growth have a positive impact on bank deposits . This result is similar to result found by (Thao and Tanh (2021, Ariyasena(2021), Saleh and al (2023),Femi and al (2021), Morina and Osmani (2019)).This result is contrary to result found by Yakubu and Abokor (2020)

There is a negative relationship between TPIB and TINF (if TINF increase by 1% T deposit decrease by 3.27%) . The increase of inflation has a negative impact on bank deposits . This result is similar to result found by Thao and Tanh (2021), Morina and Osmani (2019).This result is contrary to result found by Yakubu and Abokor (2020), Abdelzaher (2023).

Inflation affects bank deposits in 2 ways . First it reduces the purchasing power of money and thus leads to high living costs . This means that house holds can hardly buty with disposable income and therefore may have little or no deposit in a bank . Second institution where perinflatin occurs ; cash or bank saving are worthless (Azolibe (2019))because the purchasing power of money is so much less than the sudden and excessive runaway price increases in the economy .

CONCLUSION

Deposits are a vital source of funds for banking operations and are regarded as the essential source for commercial banks in meeting the need of banking system financial resources (Selvaraj ; Kumar (2015) ; Namazi and Salehi (2010)). Deposit mobilization is an important to banks as oxygen to human. The survival of the banking industry was heavily reliant on deposit growth (Alemu (2021).

It is interesting to understand the factors affecting bank deposits. That's way the aim of the our article is to analyze the factors influencing bank deposits in Tunisia . We used a sample of 11 banks quoted for the period (2005…2022) . By a applying a method of panel static we found that (ROA , NIM ; Size ; CAP , TLA ; CD ; TPIB) have a positive effect on bank deposit but (ROE ; CEA ; ALA , TINF) have a negative effect on bank deposits .

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