

Impact of Liquidity Management on Return on Equity of Selected Deposit Money Banks in Nigeria (2004 - 2017)

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Abstract: The study investigated liquidity management and return on equity of selected deposit money banks in Nigeria from 2004 to 2017. Data obtained for the study were obtained from secondary source while eleven (11) deposit money banks were selected for the study.

Data gathered were analyzed using ordinary least square (OLS) to examine the magnitude and significance of the relationship and the research variables.

Result of the regression analysis shows that both current ratio (CU) and operating cashflow (OCR) have positive effect on return on equity of selected deposit money banks in Nigeria. While both debt ratio (DBR) and loan deposit ratio (LDR) have negative effect. It can therefore be concluded that liquidity management has insignificant effect on return of equity of deposit money banks in Nigeria.

The study therefore recommends stringent penalty for any bank who fails to meet minimum liquidity ratio sets by the regulatory authorities.

Keywords: Liquidity management, return on equity, current ratio, operating cashflow, deposit money banks.

I. INTRODUCTION

Liquidity and profitability are twin elements necessary for the survival and growth of deposit money banks in any part of the world. Importance of liquidity management as it affects corporate profitability in banking business cannot be over emphasised.

Liquidity in the commercial bank represents the ability to pay its obligations by the contractor at the time of maturity which includes lending and investment commitments, withdrawals, deposits, and accrued liabilities (Amengor, 2010). Liquidity also means the ability to finance the increase in assets and meet liabilities when they due fall without any unexpected losses, and so the efficient management of liquidity in the bank help to make sure that the bank is able to meet the incurred cash, which are usually uncertain and subject to external factors and to the behaviour of other agents (Muhammad & Muhammad, 2017). Liquidity should neither be excessive nor inadequate. Excessive liquidity means bank has idle funds. This will reduce profitability. On the other side, where liquidity is inadequate, this will interrupt business

operations. This means that proper balance between liquidity and profitability should be maintained by any bank for efficient operation of the business.

It has been stated that the corporate objective of a deposit money bank (DMO) should be profitability. Banking like every other business is in an economic institution whose long-term survival rests on its ability to achieve long-term profits. Oluitain (2004) stated that profit is the difference between the cost of deposits and other costs and the income from credit advances and other investments. This presupposes that a bank must ensure proper management of its assets and liabilities, both in composition and utilization. In this way, the highest return is ushered in for all stakeholders in the business. Profitability is the “corner stone of business/bank”. Profit is the excess of income over cost at the end of an annual planning cycle but long-term growth in the return on shareholders’ investment or assets employed in relation to the risk and uncertainty attaching to the nature of such investment or assets.

One important issue of note is that in the pursuit of profit maximization objectives, banks must endeavour to balance credit extension push and liquidity management in such a way that bank safety is not jeopardized (Oluitain, 2004). According to Wirnkar (2010), the results from past studies suggest that bank failure is essentially a function of liquidity, market and credit risk, which can all be influence by individual bank characteristics and the macroeconomic environment. Liquidity ratio is essentially a prudential requirement which does not add to bank’s cost of fund. Liquidity ratio is the proportion of banks’ total deposit to be kept in specified liquid assets to enable those meet depositors’ cash withdrawal and ensure confidence in the banking system (Nnanna, 2004). One of the topmost aims of any bank is the enhancement of its financial performance. Profitability as a measure of financial performance is most commonly measured by accounting ratios like price earnings per share (EPS), return on equity (ROE) to mention but few. Profitability is affected by liquidity and liquidity is related to the management of current assets and current liabilities of a banking institutions.

It is based on the discussion above that this study examined the relationship between liquidity and return on equity of selected deposit money banks (DMBs) in Nigeria from 2004 to 2017.

II. LITERATURE REVIEW

This study reviews literature on the relationship between liquidity management and profitability of deposit money banks conceptually, theoretically and empirically.

2.1 Conceptual Review

2.1.1 Concept of Liquidity

Bank liquidity refers to the ability of the bank to ensure the availability of funds to meet financial commitments or maturing obligations at a reasonable price at all times (Olagunju, Adeyanju & Olabode, 2011). They stated further that survival of commercial banks depends greatly on how liquid they are since illiquidity being a sign of imminent distress can easily erode the confidence of the public in the banking sector and results to deposit.

Liquidity management refers to the planning and control necessary to ensure that bank maintains enough liquid assets either as an obligation to the customers of the bank so as to meet some obligations incidental to survival of the bank or as a measure to adhere to the monetary policies of the Central Bank. For a deposit money bank to plan for or manage its liquidity position, it first manages its money position by complying with the legal requirement. Management of money position is essential if a bank must avoid excess or deficiencies of required primary reserves. Reserves are statutory requirements stipulated by the Central Bank specifying the cash reserves equal to certain fraction of the banks' deposits or loans and advances which deposit money bank must maintain.

The main measure of liquidity are:

- i. Current ratio
- ii. Quick ratio
- iii. Liquid ratio
- iv. Cash flow coverage
- v. Loan to deposit ratio

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Measures the ability to meet debts when due

$$\text{Quick ratio} = \frac{\text{Current assets-stock (inventory)}}{\text{Current liabilities}}$$

Measures the ability to meet debts when due without selling stock (inventory)

$$\text{Liquid ratio} = \frac{\text{Cash items}}{\text{Current liabilities}}$$

Measures ability to meet debts when due based on cash items only. A bank would be solvent if it has capacity to repay its debts as and when due.

$$\text{Cash flow coverage} = \frac{\text{Profit} - \text{depreciation}}{\text{Dividend} + \text{debt retirements}}$$

Measures the adequacy of cash flows from operation to cover maturing obligations. Bank loans are repaid from cash flow generated from operations.

Loan to Deposit Ratio

According to Edem (2017), loan to deposit ratio measured as total loans relative to the total liabilities (deposits). There exist an inverse relationship, a higher ratio means less liquidity position which may affect lending while a lower ratio signifies good liquidity position which enables bank to lend and invest. Loan to deposit ratio measure of liquidity has been criticised for ignoring quality and maturity of bank assets and for treating bank assets as having equal degree of liquidity and maturity. Loan to deposit ratio is used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period (Olanrewaju and Oluwafeyisayo, 2015).

Loan Deposit Ratio

$$= \frac{\text{Total loans and advances}}{\text{Total deposits}}$$

$$\text{ROCE is calculated as} = \frac{\text{Profit Before Tax}}{\text{Capital Employed}}$$

(Olowe, 2017)

$$\text{Capital employed} = \text{capital} + \text{reserves.}$$

2.1.2 Return on Equity

Return on Equity is a financial ratio that shows the user the percentage of return a company has during a time period, often a fiscal year, in relation to the company's shareholders equity. This financial ratio reveals how the company has converted the shareholders equity into profit (Sturesson & Kalum, 2017). Put in a different way, return on equity (ROE) reveals how well a company uses investment funds to generate earnings growth.

Olowe (2017) stated that ROE ratio is calculated thus:

$$\text{ROE} = \frac{\text{profit after tax}}{\text{Ordinary shareholders' funds}} \times 100$$

$$\text{Shareholders' funds} = \text{Ordinary share capital} + \text{reserves}$$

According to Arbuckle (2016) ROE allows a company to benchmark the performance of companies against each other. Different industries have different equity requirements because some require large capital investments while others require minimal cash injections before turning a profit.

Mohn (2017) presented disadvantage of ROE. He stated ROE is to indicate how efficiently a company uses the capital it receives from its owners to generate investment return to those shareholders, because net income can be manipulated in many different ways, ROE is not a reliable indicator of efficiency when used on its own.

2.2 Theoretical Framework

2.2.1 Commercial Loan Theory

The commercial loan theory holds that banks should lend only on “short-term self liquidating commercial paper”. The theory was designed to finance trade. It was in line with what is called working capital loans or inventory today. Commercial loan theory otherwise known as the real bills doctrine stated that loan should be based on “real” goods as opposed to loans for speculative or purely financial purpose. Commercial loan theory is appropriate for traders who need finance and for the short period of time.

2.2.2 Shiftability Theory

The shiftability theory propounded by Mouton in 1918. This theory is an extension of the commercial loan theory. The theory is based on the proposition that the assets of the bank could either be sold to other lenders or investors or shifted to the Central Bank. A bank could satisfy its liquidity requirements if it held loans and securities that could be sold in the secondary market prior to maturity. The ability to sell government securities and eligible paper effectively substituted for illiquid, longer-term loans with infrequent principal payments. Waldo (1923) stated that shiftability theory is based on the following assumptions:

- Banks should keep themselves in condition to meet the demands of depositors
- Short-term loans based upon commercial transactions will mature and provide funds with which to meet the demands of depositors.

2.2.3 The Anticipated Income Theory

Anticipated income theory was propounded by H.V. Prochnow in 1945. The theory states that bank can manage its liquidity through: granted loans; when due in a timely manner; reduce the possibility of delays in repayment at the maturity time. The theory further stated that bank’s organizational management can estimate and plan its liquidity based on their forecasted income of the borrower and this makes the banks to grant medium as well as long-term loans. The repayment of such loans are associated with the borrowers income which are being expected to be paid gradually. Through this process, banks will be assured of high liquidity when cash expectations are high.

The major critique of the anticipated income theory was that there were no clues as to the future income of the borrowers.

2.2.4 Liability Management Theory

According to this theory, banks can meet their liquidity requirements by bidding in the market for additional funds to meet loan demand and deposit withdrawals. When in need of immediate available funds, banks can simply borrow through commercial paper and Euro dollars. The liability management theory became increasingly popular as banks gained the ability to pay market interest rates on larger liabilities. Banks use both assets and liabilities to meet liquidity needs. Available liquidity sources are identified and compared to expected needs by a bank’s asset and liability committee management considers all potential deposit outflows and inflows when deciding how to allocate assets and finance operations.

2.2.5 Interest Rates Theory

Under market based approach to economic management, interest rates are one of the complement tools adopted for the regulation of the liquidity in the system interest rates help in the efficient mobilization of deposits and in the optimal allocation as credit to deficit units in the economy. The Central Bank would usually influence interest rate changes through its intervention at the discount window especially through the minimum Rediscount Rate (Chizea, 2001).

2.3 Empirical Review

A number of researchers have examined the impact liquidity management on the profitability in deposit money banks. Their results are as follows:

Ibe (2013) examined impact of liquidity management on the profitability of banks in Nigeria. Three banks were randomly selected to represent the entire banking industry. The study employed Elliot Rothenberg Stock (ERS) stationary test model. The result showed that liquidity management is indeed crucial problem in the Nigerian banking industry.

Moein, Najebzadeh & Pour (2013) investigated the relationship between modern liquidity indices and stock return in companies listed on Tehran Stock Exchange. Results indicated that there was a positive and significant relationship between comprehensive liquidity index and stock return while there was no significant relationship between the index of cash conversion cycle as well as net liquidity balance and stock returns.

Almazari (2014) investigated the internal factors that have effect on profitability in Saudi and Jordanian banks. The study established that there is a positive correlation between profitability measured by return on assets of Saudi and Jordanian banks with some liquidity indicators and there was a negative correlation with other liquidity indicators between profitability measured by return assets of Saudi and Jordanian banks.

Musembi, Ali and Kingi (2016) in their study found that liquidity level had a positive effect on return on assets for listed commercial banks but the effect was not significant.

The study also found that capital adequacy had a significant positive effect on return on assets for commercial bank listed on the Nairobi Securities Exchange. It was found that for commercial banks listed on the Nairobi Stock Exchange, asset quality had a significant positive effect on return on assets.

Muhammad and Muhammad (2017) investigated effect of liquidity management on profitability in the Pakistani commercial banks from 2004-2013 using three banks as case study. Empirical result showed that increase in the current ratio and the investment ratio of the available funds have positive effects on the profitability, while there is a negative effect of the capital ratio and the liquid assets ratio on the profitability of the Pakistani commercial banks.

III. METHODOLOGY

The main objective of this study was to evaluate the relationship between liquidity and return on equity of selected deposit money bank from 2004 to 2017. The study adopted *ex-post facto* research design as it analyzed past trends.

The study was based on secondary data that were collected from the annual published financial statement of the eleven selected deposit money banks and other relevant publications of Central Bank of Nigeria (CBN) and Nigerian Deposit Insurance Corporation (NDIC). These data are regarded as valid as they have been verified by various regulatory authorities.

Panel data regression techniques of ordinary least square (OLS) were employed to analyze the data. The panel data model is normally estimated with either the fixed effect model or random effect model to know the error component model.

Model specification

The model to capture impact of liquidity on return on equity of selected deposit money banks in Nigeria are stated below:

$$ROE = f(CUR, DER, LDR, OCR)$$

Where:

ROE = Return on equity of selected banks

CUR = Current ratio of selected banks

DER = Debt ratio of selected banks

LDR = Loans deposit ratio of selected banks

OCR = Operating cashflow

Mathematically:

$$ROE = \beta_0 + \beta_1 CUR + \beta_2 DER + \beta_3 LDR + \beta_4 OCR + \mu$$

IV. METHOD OF DATA ANALYSIS.

Data gathered were subjected to descriptive and inferential statistics. Descriptive statistics involve the use of frequencies, mean, standard deviation, minimum and maximum. While inferential statistics was used to measure the relationship between variables.

Table 1 Descriptive Statistics

Variables	Mean	Std Deviation	Minimum	Maximum
ROE	4.892	42.164	-394.32	110.7
CUR	1.384	0.252	0.828	2.916
LDR	0.599	0.194	0.139	1.064
OCR	4.799	42.097	-197.125	224.69
DBR	85.703	6.145	71.41	123.29

Source: Authors' computation 2019

Observation: 154

Table 1 above shows the summary of all the variables obtained from the sampled banks for the period under study. The mean value has 4.892, 1.384, 0.599, 4.799 and 85.703 for ROE, CUR, LDR, OCR and DBR respectively. ROE has minimum value of -394.32 indicating that some banks have loss during the period under review, While CUR, LDR, OCR, and DBR have minimum value of 0.828, 0.139, -197.125 and 71.41 maximum value of ROE, CUR, LDR, OCR and DBR are 110.7, 2.916, 1.064, 224.69 and 123.29 respectively.

V. EMPERICAL RESULT

The empirical result is analyzed to allow for easy of analysis, interpretation and discussion with a view to establish the relationship between the dependent and independent variables.

Table 2 Regression Analysis

Effect of liquidity on return on equity of selected deposit money banks in Nigeria.

Variable	Coefficient	Std Error	t-Stat	Prob.
Constant	104.70	58.07	1.80	0.10
CUR	22.58	16.07	1.41	0.19
DBR	-1.51	0.94	-1.61	0.14
LDR	-2.49	8.75	-0.29	0.78
OCR	0.06	0.03	1.71	0.12
R-squared	0.07			
Adjusted R-squared	0.04			
F-Statistic	0.95			
Prob.(F-Stat)	0.47			
Diagnostic Tests	Statistics			
Hausman test	1.00			0.91
Multiplier test	2.46			0.12
Heteroskedasticity test	229.74			0.00***
Wooldridge test for autocorrelation	15.03			0.00***

Dependent Variable: ROE; Obs.: 154

*, **, ***significant at 10%, 5%, 1%

Source: Researcher's Study, 2018

Interpretation of diagnostic tests

The result of the diagnostic tests in Table 2 showed the appropriateness of the regression estimate. Specifically,

probability value of the hausman test stood at 0.91 which is higher than 10% level of significance, this implies that the null hypothesis to estimate random effect was accepted; as such the model tested for the appropriateness of random effect using the Breusch and Pagan Lagrangian multiplier test. The probability value of Breusch and Pagan Lagrangian multiplier test of 0.12 shows a random effect is not appropriate for this model. Thus, the model was estimated using pooled Ordinary Least Square (OLS) regression.

In addition, the Breusch-pagan heteroscedasticity test showed a p-value of 0.000, implying that the null hypothesis of constant variance was rejected and there is presence of heteroscedasticity. As such, if predictions are based on their regression estimates it will be bias and inconsistent. However, the Wooldridge test for autocorrelation has a probability value of 0.00 which implies that there is presence of first-order autocorrelation. This indicates that the residuals are correlated over time. Thus, due to the presence heteroskedasticity and first-order autocorrelation this model was estimated using the cluster option for pooled OLS Estimator.

Model 2

$$ROE_{\mu} = 104.70 + 22.58CUR_{\mu} - 1.51DBR_{\mu} - 2.49LDR_{\mu} + 0.06OCR_{\mu}$$

Interpretation

The result of the regression analysis in Table 2 shows the effect of Liquidity management measured by Current Ratio (CUR), Debt Ratio (DBR), Loan to Deposit Ratio (LDR), and Operating Cash flow (OCR) on return on equity (ROE) of selected deposit money banks in Nigeria. The regression estimates revealed that both CUR and OCR have positive effects on ROE, while DBR and LDR have negative effects. This indicated by the signs of the coefficient, that is:

$\beta_5 = 22.58 > 0$, $\beta_6 = -1.51 < 0$, $\beta_7 = -2.49 < 0$, $\beta_8 = 0.06 > 0$. This result is consistent with a *priori* expectations as it was expected that liquidity risk measures of CUR and OCR have positives effect on ROA while DBR and LDR have negative effects on ROA. However, the probability values of the t-statistics for all independent variables were higher than 10% level of significance, which shows that these effects are statistically insignificant.

Additionally, the R-squared showed that about 4% variations in ROE can be attributed to CUR, DBR, LDR, and OCR, while the remaining 96% variations in ROE are caused by other factors not included in this model. Hence, the coefficient of determination shows that the model has a weak explanatory power. This is confirmed by the probability value of the f-statistic at 0.47 which is higher than 10% level of significance. This shows that the regression result is statistically insignificant.

Therefore, Liquidity management has an insignificant effect on the Return on Equity (ROE) in the selected deposit money banks in Nigeria.

VI. DISCUSSION OF FINDINGS

The result of the regression analysis of the model shows that both CUR and OCR have positive effects on ROE, while DBR and LDR have negative effects. This is indicated by the signs of the coefficient, that is: $\beta_5 = 22.58 > 0$, $\beta_6 = -1.51 < 0$, $\beta_7 = -2.49 < 0$, $\beta_8 = 0.06 > 0$. This result is consistent with a *priori* expectations as it was expected that liquidity management measures of CUR and OCR has positive effects on ROA while DBR and LDR has negative effects on ROA. However, the probability values of the t-statistics for all independent variables were higher than 10% level of significance, which shows that these effects are statistically insignificant. The probability value of the f-statistic stood at probability value stood at 0.47 which is higher than 10% level of significance. This shows that the regression result is statistically insignificant. Thus, Liquidity risk has an insignificant effect on the Return on Equity (ROE) in the selected deposit money banks in Nigeria.

This result does not align with the findings of Arabahmadi and Arabahmadi (2013), Musah (2017), Nirajini and Priya (2013), that liquidity management has a significant effect on ROE. The findings of this study shows that all measures of liquidity risk of current ratio, loan to deposit ratio, and operating cash flow ratio have insignificant effect on ROE, this is in line with the findings of Abdullah and Jahan (2014).

VII. CONCLUSION

The study investigated relationship between liquidity management and return on equity of selected deposit money banks in Nigeria. Result of the regression analysis shows that both CUR and OCR have positive effects on ROE while DBR and LDR have negative effects. It can therefore be concluded that liquidity management has an insignificant effect on return on equity (ROE) in the selected deposit money banks in Nigeria but liquidity management variables are useful in determining financial performance of deposit money banks in Nigeria. Furthermore, while CUR and OCR have improved banks financial performance, DBR and LDR have led to a reduction in the financial performance of deposit money banks in Nigeria.

VIII. RECOMMENDATIONS

Based on the findings and conclusion of the study, the following recommendations are made:

1. Rating bodies should desist from rating banks using profitability indices as this has compelled many deposit money banks to employ accounting window dressing and other dubious means in padding up account which do not translate to liquidity in banks.
2. Liquidity risk management controls should be put in place that will improve banks return on equity.
3. Banks regulatory authorities should put stringent penalty on liquidity risk management whereby any bank that fails to meet the minimum liquidity ratio prescribe by the authority will be sanctioned.

4. Recruitment policy of banks must take account of the need for specialist in Accounting, Banking and finance with good knowledge in money market. In addition to their recruitment, they should be well trained in treasury operations.
5. Profit must always be the corporate objective of any deposit money banks and it must be determined realistically. In addition, profit objective should be supported with the multiple goals for evaluation and corporate performance
6. Discount Houses in Nigeria should play key roles in liquidity management in the financial system. Discount Houses should be in a position to effectively underwrite government securities thereby relieving the Central Bank from such activity.
7. Discount Houses should be busy developing innovative products that will foster financial intermediation and facilitate interbank dealing in treasury securities through an efficient system of repurchase agreements, making transactions transparent and deepening the money market.
8. They should also promote trading in financial instruments originating from the private sector, which will equally deepen the money market

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LIST OF DEPOSIT MONEY BANKS USED FOR THE STUDY

- 1) First Bank of Nigeria PLC
- 2) Zenith Bank of Nigeria PLC
- 3) Guaranty Trust Bank PLC
- 4) United Bank of Africa (UBA) PLC
- 5) Access Bank PLC
- 6) First City Monument Bank PLC
- 7) Diamond Bank PLC
- 8) Fidelity Bank PLC
- 9) Ecobank PLC
- 10) WEMA Bank PLC
- 11) Unity Bank PLC