

Liquidity Management and Bank's Performance in Nigeria

Osuji Casmir Chinemerem (Ph.D)
Department of Accounting, Banking and Finance
Faculty of Management Sciences
Delta State University, Asaba Campus

ABSTRACT

This study examined the impact of liquidity management on deposit money banks' performance in Nigeria. The study spanned from 2000-2016 which is 17 years study. Time series data were used and gotten from annual reports of the banks under study. The study applied E-view 7.0 version and the estimation technique applied are ordinary least square (OLS), diagnostic test, serial correlation test, stability test, granger causality and co integration test. The result revealed that all the independent variables except debt ratio have significant impact on returns on equity of deposit money banks in Nigeria because their p-values are all less than 5% significant level except the p-value of debt ratio which is greater than 5% significant level. The model has high explanatory and predictive power as suggested by the R-squared and adjusted R-squared respectively. The study recommended that there is need for banks to engage competent and qualified personnel. The right personnel will ensure that the right decisions are made especially with the optimal level of cash instead of keeping excessive liquidity as a provision for unexpected withdrawal demands of the customers. The study contributed to knowledge by serving as an eye opener to those variables that have the most significant impact on liquidity management in deposit money banks in Nigeria. Also a good understanding of the impact of liquidity management will foster sound decisions which will enhance the performance of deposit money banks in Nigeria.

Keywords: Liquidity management, Net working capital, Quick ratio, Deposit money banks performance.

1.0 Introduction

In every system, there are major components that are essential for the survival of the system. This is also applicable to the financial system. The banking system had contributed significantly to the effectiveness of the entire financial system as they offer an efficient institutional mechanism through which resources can be mobilized and directed from less essential uses to more productive investments, (Wilner, 2015).

Liquidity management in banks has posed several challenges during the distress era of 1980s and 1990s and persisted to the re-capitalization phase in 2005 when banks were mandated to have an increased capital base from N2 billion to an astronomical N25 billion (Agbada and Osuji, 2013). The challenge is to select or identify the optimum point or the level at which a deposit money bank can maintain its assets in order to optimize these two objectives since each of the liquidity has a different effect on the level of profitability.

This research seeks to investigate excess liquidity and the problem of establishing the proportion of the deposits that will be demanded by the depositors at any particular time. All these problems are what the study intends to consider, find solutions and make recommendations where necessary.

2.1 Theoretical Review

2.1.1 Asset Theory

The theory of asset management states that banks must seek high returns, reduce risk and make adequate provisions by holding liquid assets. Banks must lend to borrowers who are willing to pay high interest and

unlikely to default on their loans, and raise liquidity required without bearing huge costs. Banks are not only funded by assets but they are largely financed by collateralised borrowing which cannot be relied on during financial distress (Brunnermeier and Pedersen, 2013). This refers to loans that provide the lender with a priority claim on specific asset and a general claim on the debtors' other assets. The amounts of liquid assets to be held depend on the bank's apparent need for liquidity and deposits flow, financial market conditions and monetary policy directions. The concept of asset management has some shortcomings. It focuses on asset side of the balance sheet which makes the theory grossly deficient in the active money markets. The bank and the rate of changes in purchased funding are dependent on the market (Nwankwo, 2012). It also fails to consider that high returns are associated with high risks. According to Dietrich and Wanzenried, (2012) achieving high returns while holding a large portion of liquid assets at a low risk can be difficult as liquid assets are costly and have the tendency of reducing profits. In addition, the assets have to be attractive and easily marketable. Failure to do so has been proven to lead to bankruptcy or the need for an emergency loan. Cash asset is presumed to have no unique role in the process of acquisition and disposal of financial assets but the easiness of exchange for cash balance.

The easiness is defined as ratio of stock of cash balances to meeting financial obligations on maturity. The closer assets to maturity, the greater in general are the possibilities of realizing them before maturity without risk of significant capital loss. The more liquid a bank is in this sense the greater is its capability to meet its obligations as they fall due. Higher ratio implies better performance, while lower ratio is an indicator of threat to the bank and would tend to inhibit bank performance.

Financial assets such as treasury bills have low risk: the risk of loss of value due to changes in interest rate policies is always very low since they are held in short term bases.

Financial assets can be categorised into: running assets, reserve assets along with other liquid assets which are mostly short-term claim e.g. treasury bills and investment assets including long-term claims e.g. bonds; money (cash), stock and bonds; and assets 'held for trading' held to maturity investment', 'loans and receivables' and 'available for sale' for treatment purposes (Hicks, 1967). Keney's (1937) explained the three motives of holding financial assets to include the transactional, precautionary and speculative motives.

The economics and finance literature in support of Keney's assertion analyse four possible reasons for firms to hold liquid assets: the transaction motive (Miller and Orr, 2006); the precautionary motive (Oppler, Pinkowitz, Stulz, and Williamson, 2016); the agency motive Michael, 1986); and the tax motive (Foley, Titman, and Twite, 2007).

2.1.2 Trade-Off Theory of Liquidity

This theory has had a great effect on holding liquid assets. According to the Tradeoff theory, banks target an optimal level of liquidity to balance the benefit and cost of holding cash. The cost of holding cash includes low rate of return due to liquidity premium and tax disadvantage. The benefits of holding cash are saving of

transaction costs to raise funds in which assets are liquidated to make payments and using of liquid assets to finance its activities and investment where other sources of funding are not available or very expensive (Abuzar, 2014). Trade off model explains that, firms with high leverage attracts high cost of servicing the debt thereby affecting its profitability and it becomes difficult for them to raise funds through other sources. Holding cash on that point is not only maintained by the smaller firm but also larger firms. So firm size does not matter when the question of bankruptcy interrupt the capital structure decision.

2.2 Empirical Review

In attempt to strike a balance between the quantum of liquidity and returns, and scholars have made various efforts to provide a solution to the problem regarding the level of liquidity to hold. An optimal liquidity hypothesis holds that market responses to liquidity changing events are conditioned by the observed changing levels of the firm's liquidity. There are many liquidity enhancing events or situations that impact on the firm's value: debt/equity issues, sales of assets and loans from interbank markets. The choice of any of these variables affects the level of liquidity.

Therefore, dilemma in liquidity management is to achieve desired tradeoff between liquidity and profitability. Liquidity status is very important for investors and managers as it helps to evaluate a firm's future, estimate investment risk and return and stock price.

Some scholars believe that liquidity is more important because firms with low profitability or even without profitability can serve economy more than companies without liquidity.

Edem, (2017) carried out a study on liquidity management and performance of deposit money banks in Nigeria. The proxies used were returns on equity as the dependent variable, while liquidity ratio, loan to total deposit ratio, cash reserve ratio were as independent variables. 24 banks were surveyed which constitute the entire deposit money banking industry in Nigeria between 1986 and 2011. Secondary data were collected and analysed using SPSS. The study used descriptive, correlations and inferential statistics.

The study by Kehinde (2013) critically examined the relationship between credit management, liquidity position and profitability of selected banks in Nigeria using annual data banks over the period of 2006 and 2010. The results from ordinary least squares estimate found that liquidity has significant positive effect on Return on Asset (ROA).

3.1 Methods

This study chose the ordinary least square (OLS) and diagnostic test regression estimation technique through econometric views (E-views) 7.0 statistical model. Brooks (2010) opined that E-View is encouraged and justified for such time series regression analysis because of wider scope and sufficient observation.

3.7 Model Specification

Mathematically, the model is presented as:

$$Y = F(X_1, X_2, X_3, X_4, X_5)$$

$$ROE = f(CR, QR, NWC, CHR, DBTR) \dots\dots\dots(1)$$

Thus, the econometric model is:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + U_t \dots\dots\dots (2)$$

Where:

Y = Dependent variable

a₀ = Intercept Term

a₁- a₅ = The coefficient/slope of the independent variables

x₁- x₅ = Independent variables

U_t = Error term or stochastic term

The functional form of the model is represented as:

$$ROE = a_0 + a_1CR + a_2QR + a_3NWC + a_4 CHR + a_5 DBTR + U_t \dots\dots\dots (3)$$

Where:

ROE = Returns on Equity

CR = Current Ratio

QR = Quick Ratio

NWC = Net Working Capital

CHR = Cash Ratio

DBTR = Debt Ratio

In the case of log transformation for econometric problem, we rewrite the equation as:

$$\ln ROE = a_0 + a_1 \ln CR + a_2 \ln QR + a_3 \ln NWC + a_4 \ln CHR + a_5 \ln DBTR + U_t \dots\dots (4)$$

Apriori Expectations

$$CR > 0$$

The expectation of the result is proposed as current ratio (CR) will have positive impact on returns on equity of deposit money banks in Nigeria.

QR>0

The expectation of the result is proposed as quick ratio (QR) will have positive impact on returns on equity of deposit money banks in Nigeria.

NWC>0

The expectation of the result is proposed as net-working capital (NWC) will have positive impact on returns on equity of deposit money banks in Nigeria.

CNR>0

The expectation of the result is proposed as cash ratio (CE1R) will have positive impact on returns on equity of deposit money banks in Nigeria.

DBTR<0

The expectation of the result is proposed as debt ratio (DBTR) will have negative impact on returns on equity of deposit money banks in Nigeria.

4.0 Results and Discussion

Ordinary Least Square (OLS) ‘fable 4.2.11: Ordinary Least Square (OLS) Result

Dependent Variable: ROE
 Method: Least Squares
 Date: 12/03/17 Time: 19:10
 Sample: 2000 2016
 Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6505.219	27762.42	0.234317	0.8190
CR	-43232.02	3492.372	-12.37899	0.0000
QR	50263.58	4813.544	10.44212	0.0000
NWC	0.228953	0.010682	21.43308	0.0000
CHR	26829.54	8329.411	3.221060	0.0081
DBTR	-3031.087	134731.5	-0.022497	0.9825

R-squared	0.985148	Mean dependent var	84314.20
Adjusted R-squared	0.978397	S.D. dependent var	159570.5
S.E. of regression	23453.77	Akaike info criterion	23.23401
Sum squared resid	6.05E+09	Schwarz criterion	23.52809
_log likelihood	-191.4891	Hannan-Quinn criter.	23.26325
F-statistic	145.9256	Durbin-Watson stat	2.029630
Prob(F-statistic)	0.000000		

Estimation Command:
 OLS ROE C CR QR NWC CHR DBTR

Estimation Equation:
 $ROE = C(1) + C(2)*CR + C(3)*QR + C(4)*NWC + C(5)*CHR + C(6)*DBTR$

Substituted Coefficients:
 $ROE = 6505.21934178 - 43232.0233029*CR + 50263.5835283*QR + 0.228952501817*NWC + 26829.5357346*CHR - 3031.08707974*DBTR$

Source: E-view 7.0

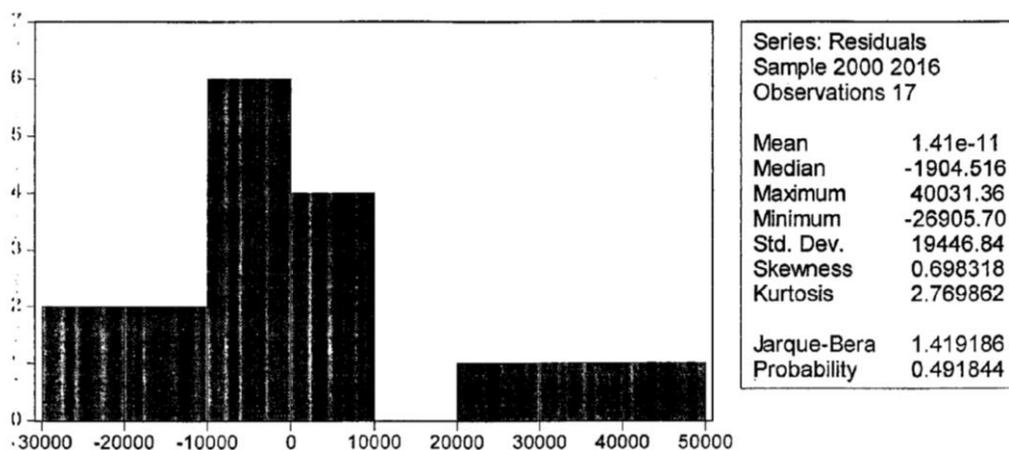
Table 4.2.11 shows the result for ordinary least square. Current ratio (CR) is negative in the

coefficient column which connotes that a unit increase in current ratio can lead to 43232 decrease in returns on equity of deposit money banks in Nigeria. Quick ratio (QR) is positive in the coefficient column and signifies that a unit increase in quick ratio can lead to 50263 increase in returns on equity of deposit money banks in Nigeria. Net-working capital (NWC) and cash ratio are positive also a unit increase can lead to 22% and 26829 increase in returns on equity of deposit money banks respectively. Debt ratio (DBTR) is negative and a unit increase can lead to 303 decrease in returns on equity of DMB ' s in Nigeria.

All the independent variables have significant impact on returns on equity of DMB's except debt ratio.

4.2 Diagnostic Test

Table 4.2.12 Normality test



Source: E-view 7.0

The series distribution is normal as the p-value associated with JB- JarqueBera 0.491 which is greater than the critical value of 0.05.

4.3 Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.031749	Prob. F(2,9)	0.1870
Obs*R-squared	5.287976	Prob. Chi-Square(2)	0.0711

Source: E-view 7.0

The p-value of the f-statistics is 0.187 which is greater than the critical value of 5%, we conclude by accepting H0 that there is no presence of serial correlation.

4.4 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

S-statistic	0.781474	Prob. F (5,11)	0.5835
Obs*R-squared	4.455870	Prob. Chi-Square (5)	0.4858
Scaled explained SS	5.617444	Prob. Chi-Square (5)	0.3452

The p-value of the observed R-squared is 0.485 which is greater than the critical value of 5%, meaning that we accept null hypothesis that the residuals are not heteroscedastic in nature.

4.5 Stability Test

Ramsey RESET Test

Equation: UNTITLED

Specification: ROE CCR QR NWC CHR DBTR

Omitted Variables: Squares of fitted values

	Value	Df	Probability
S-statistic	0.873681	10	0.4028
E-statistic	0.763319	(1,10)	0.4028
Likelihood ratio	1.250501	1	0.2635

Source: E-view 7.0

The p-value of the f-stat of ramsey reset test is 0.402 which is greater than critical value of 5%, we conclude by accepting HO that the series are in functional form and it is structurally stable.

4.6 Unit Root Test

Table 4.2.16 Unit root test for ROE

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.444.660	0.0006
Test critical values:		
	1% level	-3.920350
	5% level	-3.065585
	10% level	-2.673459

Source: E-view 7.0

The Augmented Dicker Fuller test (ADF) at level 1(0) for ROE is $-5.444 > -3.065$ at 0.05 level of significance, this shows no unit root and that the series is stationary.

4.7 Unit root test for CR

Table 4.2.16 Unit root test for ROE

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-10.96815	0.0000
Test critical values:		
	1% level	-3.959148
	5% level	-3.081002
	10% level	-2.681330

Mackinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

And may not be accurate for a sample size of 15

Source: E-view 7.0

The Augmented Dicker Fuller test (ADF) at first difference 1(1) for current ratio (CR) is $-0.958 > -3.081$ at 0.05 level of significance, this shows no unit root and that the series is stationary.

4.8 Unit root test for QR

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.792904	0.0025
Test critical values:		
	1% level	4.004425

5% level	-3.098896
10% level	-2.690439

Source: E-view 7.0

The Augmented Dicker Fuller test (ADF) at first difference 1(1) for quick ratio (QR) is $-4.792 > -3.098$ at 0.05 level of significance, this shows no unit root and that the series is stationary.

4.9 Unit root test for NWC

The Augmented Dicker Fuller test (ADF) at second difference 1(2) for quick ratio (QR) is $-.924 > -3.098$ at 0.05 level of significance, this shows no unit root and that the series is stationary.

4.10 Unit root test for CHR

Null Hypothesis: D (CHR,2) has a unit root

Exogenous: Constant

Lag Length: 3 (Automatic-based on SIC, maxlag=3)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.613729	0.4433
Test critical values:	1% level	-4.200056	
	5% level	-3.175352	
	10% level	-2.728985	

Source: E-view 7.0

The Augmented Dicker Fuller test (ADF) at second difference 1(2) for cash ratio (QR) is $-1.613 < -3.175$ at 0.05 level of significance, this shows unit root and that the series is not stationary.

4.11 Unit root test for DBTR

Null Hypothesis: D (CHR,2) has a unit root

Exogenous: Constant

Lag Length: 3 (Automatic-based on SIC, maxlag=3)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.619514	0.0010
Test critical values:	1% level	-4.121990	
	5% level	-3.144920	
	10% level	-2.713751	

Source: E-view 7.0

The Augmented Dicker Fuller test (ADF) at first difference 1(1) for debt ratio (DBTR) is $-3.619 > -3.144$ at 0.05 level of significance, this shows no unit root and that the series is stationary.

4.12 Granger Casualty test

Diagnostic Check	F-stat	Prob.	Conclusion
CR and ROE	2.73461	0.11299	CR does not granger cause ROE
ROE and CR	0.00405	0.9960	ROE does not granger cause CR
QR and ROE	1.46568	0.2766	QR does not granger cause ROE
ROE and QR	0.27355	0.7662	ROE does not granger cause QR
NWC and ROE	1.72415	0.2273	NWC does not granger cause ROE
ROE and NWC	0.05798	0.9440	ROE does not granger cause NWC
CHR and ROE	1.37212	0.2975	CHR des not granger cause ROE
ROE and CHR	0.65946	0.5382	ROE does not granger cause CHR
DEBTR and ROE	0.34412	0.7169	DEBTR des not granger cause ROE
ROE and DEBTR	0.95300	0.4180	ROE does not granger cause DEBTR

Prob. Value < 0.05, Sig. at 5% for granger causality test, vice versa.

Source: Author's Computation using E-view 7.0 (2017)

4.13 Johansen co integration

Date: 12/03/17 Time: 18:37

Sample (adjusted): 2001 2016

Included observations: 16 after adjustments

Trend assumption: Linear deterministic trend\

Series: ROE CR QR NWC CHR DBTR

Lags interval (in first differences):

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	005 Critical Value	Prob.**
None*	0.992170	183.6215	95.75366	0.0000
At most 1*	0.960643	106.0241	69.81889	0.0000
At most 2*	0.791283	54.26303	47.85613	0.0111
At most 3	0.666618	29.19458	29.79707	0.0586
At most 4	0.411106	11.61914	15.49471	0.1761
At most 5	0.178553	3.147003	3.841466	0.0761

Trace test indicates 3 cointegratingegn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Source: E-view 7.0

5.1 Conclusion

The study is in conformity with the works of Edem, (2017), Ibe (2013), Agbada and Osuji (2013) and Kehinde (2013). The study concluded on the following:

- i. The Ordinary least square test concluded that holistically all the independent variables (current ratio, quick ratio, net-working capital, cash ratio and debt ratio) have significant impact on the performance of deposit money banks in Nigeria, we reject the null hypothesis H_0 .
- ii. The diagnostic test suggested we accept H_0 that the series distribution is normal, which is desirable. For serial correlation test, we accept H_0 that the residuals are not serially correlated and it connotes that each of the observation are independent of one another. In Heteroskedasticity test we accept the null hypothesis H_0 that the residuals are homoscedastic which signify that they are of equal variance and desirable.
- iii. For unit root test, all the variables were stationary except for cash ratio.
- iv. Granger causality test shows that there exist a uni-directional relationship among all the variables.

5.2 Recommendations

Based on the critical evaluation of the above findings, I hereby make the following recommendations with the sincere conviction that they will help to reduce if not totally

eradicate the problems associated with liquidity management and profitability in deposit money banks in Nigeria:

1. There is need for banks to engage competent and qualified personnel. The right personnel will ensure that the right decisions are made especially with the optimal level of cash and to keep.
2. Deposit money banks need to be more aggressive in the area of profit enhancement. Aggressive approach to investing idle cash, should be paid attention to because of the need for proper investment analysis, which has the benefit of sieving out unprofitable investments and even avoiding unnecessary taking of risk.
3. Bank officials should be trained in the areas of liquidity management and liquidity changing conditions should not be handled with levity.
4. High quality liquidity assets buffer sufficient to hedge sudden liquidity outflows should be maintained and there should be regular review of prudential guidelines for efficiency.
5. Banks should adopt optimum liquidity model for maximum return on equity, survival, stability, growth and development of banking system in Nigeria

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