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Liquidity Management and Deposit Money Banks' Performance in Nigeria

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Abstract:

The primary purpose of this research is to assess the performance of Nigerian Deposit Money Banks (DMBs) in terms of liquidity management. A panel data collected from the financial reports of fifteen listed DMBs Nigeria for the ten years timeframe (2009-2018) was used for this study. Normality test has been conducted using Jacque-bera test of normality. Current ratio, cash ratio, quick ratio, capital adequacy ratio and interest coverage ratio have been used as an indicator of liquidity management and returns on asset, returns on equity and earnings per share have been used as proxies for performance. With the help of Hausman test and random effect of panel least square, t test has been used for data analysis with 5% level of significance. Both positive and negative impacts of liquidity management have been observed on the performance of DMBs in Nigeria. The study concludes that liquidity management affect the performance of DMBs in Nigeria and therefore recommends that the regulators should set up board of professionals to oversee liquidity management amongst DMBs in the country, on a regular basis in order to avoid liquidity problem that may ruin the banks.

Keywords: Liquidity management, deposit money banks, returns on assets, returns on equity

1. Introduction

For economic development, Commercial Banks, also known as Deposit Money Banks (DMBs) play a significant role. As per Idowu *et al.* (2017), it acts a mechanism for militarization of resources through different channels such that productive investment can be obtained. Proficient financial intermediation helps a bank to manage contradictory goals of liquidity and profitability. Liquidity is the capability of a bank to disburse its short-term obligations to its depositors and creditors. Current ratio, Acid-test/Quick ratio, Cash ratio and Net working capital ratio are some of the popular Liquidity ratio. These are used to ascertain how liquid a bank is and its potentials in meeting maturing short term obligations. Liquidity and banks' performance have become an interesting topic in modern-day finance. The issue of liquidity in DMBs has called for serious attention in Nigeria, part of which led to the take-over of Skye Bank Plc by the Central Bank of Nigeria (CBN) in 2018. The forensic audit report from the bank revealed that it required urgent recapitalisation as it could no longer continue to live on borrowed times with indefinite liquidity support from the Central Bank (CBN, 2018).

Adequate liquidity serves as vehicle for profitable operations specially to sustain confidence of depositors in meeting short run obligations. It is essential in order to avoid forced sale of assets by a bank, at unfavourable market conditions and at heavy loss. In addition, adequate liquidity guides against involuntary or non-voluntary borrowing from the regulatory authorities. When there are serious liquidity crises, a bank is placed at the mercy of the Central Bank, and hence the control of its destiny may be taken over. Deposit Money Banks as business firms want to maximize profits. These profits are primarily interest incomes on their assets, such as loans and investment, as well as cash. However, most of their liabilities are deposits payable practically on demand. For that reason, managing healthy liquidity level while at the same time maximizing profit becomes central issues in banking. The subjectivity of this area has given rise to different levels of emphasis on liquidity management and deposits money banks performance in Nigeria.

Many scholars see liquidity problem as a problem of weak corporate governance and regulators incompetency. In developing countries like Nigeria, the issues on liquidity among DMBs are regarded as political affairs. Many studies have found different gaps in the study of liquidity in deposits money banks. Over the years, the Nigerian banking sector and/or system has undergone tremendous changes. These changes have their roots in the management of risks in the banking system. Most fundamental problem confronting the Nigerian banking sector is its risk exposure, the inability to manage risks and poor corporate governance structures in the banking system.

2. Literature

According to Adeusi, Akeke, Adebisi & Oladunjoye (2014), liquidity risk, credit risk and operational risk are some of the common types of risks faced by the financial institutions. Risk has been mentioned as an essential part of business without which an organization can't grow. Loss of a bank coming from inability to fulfill financial obligation to various stakeholders such as customers reflected by the liquidity risk. Whereas, delay in case of repayment of loan reflected

through the credit risk (Djan, Stephen, Bawuah, & Halidu, 2015). Pakhchanyan (2016), explained operational risk as the loss coming from insufficient or failed internal systems or from external events. Oru & Odumusor (2019), had highlighted the necessity of using liquidity risk, credit risk and operational risk for the reasons behind challenges faced by DMBs in Nigeria. Rewane (2019), found the merger of Access Bank Plc and Diamond Bank Plc behind the level increment of liquidity. Shafique et al. (2012), explained liquidity, as the capability of a firm to convert its assets into cash, also known as marketability. Hence, it can be easily said that liquidity management is directly related with the effective use of assets (Robinson *et al.*, 2015). "Liquidity is the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses" (Basel Committee). For Sabri (2015), banks' liquidity can be divided into two types: funding (or liability) liquidity risk and market (or asset) liquidity risk. For Oru and Odumusor (2019), liquidity management theory helps to manage firm's lendings to its subsidiaries. It is also known as the real bills doctrine, as it impacts both bank lending and general economic activities (Hosna, Manzura and Juanjuan, 2009). A study had been conducted by Rehman, Khan and Khokar (2015) to find the impact of risk factors on banks' profitability. Ariffin & Kassim (2015), had also found that credit, liquidity, operational and market risks are some of the common types of risks. A different opinion had been found by Berger and Gregory (2014). The significance of financial ratios in determining bank's performance had been highlighted by Salim and Hamd (2015). Ferrouhi (2014), argues that financial crisis also reflected through not only bankruptcies, but also quasi-bankruptcies, nationalizations and a decline of financial performance of large financial institutions.

Khaldun (2014) noted that there is a weak significant relationship between current ratio and the growth of profit of industrial companies in the food and drink sector, listed on the IDX for periods 2010-2012. Felix and James (2018) used return on assets as a measure of profitability in Kenya's bank on an ANOVA analysis to investigate liquidity management. Their study shows that current ratio has positive impact on return on asset. No significant relationship has been found between quick ratio and profitability by Akter and Mahmud (2014). Again, quick ratio and cash ratio are found to be significantly associated with return on assets (Priya and Nimalathasan, 2013; Ruziqa, 2013). Findings of Bagh, Khan, Azad, Saddique, and Khan (2017), goes in line with this. Abata and Migro (2016) examine the nexus of capital adequacy as a measure of liquidity and performance and conclude that capital adequacy can be used to assess the magnitude of factors that predict firm's performance. Obi and Okika (2017) examine capital adequacy impact on firm's performance using Pearson Coefficient of Correlation, Multiple Regression Analysis, Variance Inflation Factors, Multicollinearity, Heteroskedasticity test and Hausman test as method of data analysis. Capital Adequacy and Financial Performance found to be positively associated. Interest coverage ratio has been found as a weak ratio in case of determining effect of liquidity on Jordanian commercial banks profitability from 2015 to 2012. Study of Mushtaq *et al.* (2015) also are in line with this. As per the third Basel Accord, Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), are main two types of ratios (Ferrouhi, 2014). LCR aims to make sure that a bank has an enough level of tangential, high-quality liquid assets to meet its liquidity needs under a drastically severe liquidity anxiety. Whereas, NSFR makes sure that long term assets are funded with at least a least amount of stable liabilities in relation to their liquidity risk profiles (Basel Committee on Banking Supervision, 2010). As per Ramzan & Zafar (2014), conversion of its balance sheet financial assets into liquid funds to meet their obligations is liquidity. Decline of bank loan supply by the US banks had been highlighted by the Brinkmann and Priya (2013) in order to meet the terms with the Basle I requirements. The importance of risk control had been highlighted by the study of Saunders and Schumacher (2000).

Komarkova (2009) also argues that, after 2007 economists and policymakers mainly for banks who concerted on causes and consequences of global surfeit liquidity before the crisis, focused on liquidity of financial institutions.

However, despite the emergence of several decades of academic research, mostly on financial institutions, no agreement or consensus has emerged about the rival theoretical approaches to liquidity management. Series of market and firm characteristics have been suggested as potentially significant in determining firm's liquidity positions. Nevertheless, attempt to examine these contending features and process them has in turn spawned a vast empirical literature, majority of which are from developed economies. Interestingly, as a central motivation for this study, additional insight into the liquidity management debate can be gained by an examination of an emerging market or economy like Nigeria, which, to the best knowledge of the researchers, is currently limited. To this end, this study will attempt to fill the gap in literature by examining the impact of liquidity management on the performance of DMBs in this new dispensation.

3. Methodology

The panel data for this study is from the financial statements of fifteen listed DMBs in Nigeria, over a ten years period. This provides one hundred and fifty observations for the panel model. The following statistical models are developed to measure the impact of the selected independent variables of liquidity management on the performance of DMBs in Nigeria. The model is analyzed through bi-variate correlation and regression analysis. The following statistical model is used for data analysis:

$$ROA = f(CR_1) \dots\dots\dots 1$$

$$ROE = f(CAR_1) \dots\dots\dots 2$$

$$EPS = f(QR_1) \dots\dots\dots 3$$

$$ROA = f(CAQ_1) \dots\dots\dots 4$$

$$EPS = f(IC_1) \dots\dots\dots 5$$

The above function is hereby written in a linear mathematical form as:

$$ROA = \beta_0 + \beta_1 CR_1 + \mu \dots\dots\dots 1$$

$$ROE = \beta_0 + \beta_1 CAR_1 + \mu \dots\dots\dots 2$$

$$EPS = \beta_0 + \beta_1 QR_1 + \mu \dots\dots\dots 3$$

$$ROA = \beta_0 + \beta_1 CAQ_1 + \mu \dots\dots\dots 4$$

$$EPS = \beta_0 + \beta_1 IC_1 + \mu \dots\dots\dots 5$$

Where:

ROA:- Returns on Asset. (This measure bank performance in term of assets).

ROE: Returns on Equity. (This measure bank performance in term of equities).

EPS: Earnings Per Share. (This measure bank performance in term of their earnings).

CR: Current Ratio. (This measure Liquidity).

CAR: Cash Ratio. (This measure Liquidity).

QR: Quick Ratio. (This measure Liquidity).

CAQ: Capital Adequacy Ratio. (This measure Liquidity).

IC: Interest Coverage Ratio. (This measure Liquidity).

β :- Intercept Parameters

μ : - Stochastic Error Term

In econometrics, a-priori expectation assumes that the parameters follow an economic theory. This involves theoretical expectation drawn from economic principles and theories in which the signs of the parameters are determine by defaults. As regards the a-priori expectations of the parameters, the following are expected:

In Equation One : $\beta_1 > 0$

It is expected that Current Ratio is greater than zero and have a positive magnitude

In Equation Two: $\beta_1 > 0$

It is expected that Cash Ratio (CAR) is greater than zero and have a positive magnitude

In Equation Three: $\beta_1 > 0$

It is expected that Quick Ratio (QR) is greater than zero and have a positive magnitude.

In Equation Four: $\beta_1 > 0$

It is expected that Capital Adequacy Ratio (CAQ) is greater than zero and have a positive magnitude

In Equation Five: $\beta_1 > 0$

It is expected that Interest Coverage Ratio (IC) is greater than zero and have a positive magnitude

4. Results and Discussion

A total of one hundred and fifty (150) observations were used for the regression analysis of the variables in the models. The variables are ROA, ROE, EPS, QR, IC, CAR, CAQ and CR. The descriptive statistics were used to find the Jarque-Bera value of each of the variable stated in the model, where the values are being tested against a Chi-square value at 5% level of significance and four degree of freedom, with the assumption of normality.

- H_{01} : There is no significant relationship between current ratio and returns on asset.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.75452	1.452181	9.471632	0.0000
CR	-0.526190	0.062922	-8.362637	0.0000

Table 1: Eview Output for the Bi-Regression Analysis

Table 1 provides empirical results for the test of hypothesis one, where the dependent variable is ROA. The regression co-efficient of the current ratio is -0.526, with a t-value of -8.3626, which is statistically significant at the 5% level ($p = 0.000$). Based on this result, we reject the null hypothesis (H_0) in favour of the alternative and conclude that current ratio has a significant effect on returns on asset. In addition, the negative co-efficient indicates an indirect relationship between current ratio and financial performance of DMBs in Nigeria. Therefore, a major finding of this hypothesis is that current ratio, as a proxy for liquidity management has a significant and indirect effect on the financial performance of DMBs in Nigeria. This finding agrees with Rehman *et al.* (2015) which states that liquidity risk, if proxy with current ratio affect profitability. However, the finding disagrees with the finding of Rewane, (2019) which state that current ratio has the ability to meet its short-term liabilities. The coefficient of determination is 24.1% while the Durbin-Watson statistics show the presence of negative serial correlation of 2.99.

- H_{02} : There is no significant relationship between cash ratio and return on equity.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.487619	5.745625	0.607004	0.5445
CAR	0.462381	0.248952	1.857307	0.0646

Table 2: Eview Output for the bi-regression analysis

Table 2 shows the empirical results for hypothesis two, where the dependent variable is ROE. The regression co-efficient of the cash ratio is 0.462, having a t-value of 1.857, which is not statistically significant at the 5% level ($p = 0.065$).

Based on this result, we must accept the null hypothesis (H_0) and conclude that cash ratio, as a proxy of liquidity management does not have a significant effect on the returns on equity. Furthermore, there exist a direct relationship between cash ratio and returns on equity, as indicated by the positive regression co-efficient of cash ratio. Hence, a major finding of this hypothesis is that cash ratio as a proxy for liquidity management has a direct but insignificant effect on financial performance of DMB's in Nigeria. The finding supports the work of Omar *et al.* (2016) which states that cash ratio has a positive impact on profitability. The coefficient of determination of this study also shows that 63% of liquidity management (proxy by cash ratio) was captured by performance amongst DMBs in Nigeria.

- H_{03} : There is no significant relationship between quick ratio and earnings per share.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.521905	2.002557	4.754874	0.0000
QR	-0.305238	0.086769	-3.517830	0.0005

Table 3: Eview Output for the Bi-Regression Analysis

Table 3 indicates that Earnings Per Share (EPS) is acting as a dependent variable whereas, Quick Ratio (QR) is acting as the independent variable. Statistical significance found for QR at 5% l.o.s with -0.305 as coefficient and -3.518 as t-value. Hence, we can reject the null hypothesis (H_0) by finding that significant relationship between quick ratio and earnings per share of DMBs in Nigeria. Negative sign indicates an indirect relationship. Same findings reflected in the studies of Priya and Nimalathan (2013), Ruziqa (2013) but contradiction found with Akter and Mahmud, (2014); Felix and James (2018), who suggested an insignificant relationship. Total of 56% variance has been explained by independent variables (QR) for dependent variable (EPS). Negative autocorrelation has been indicated by the Durbin-Watson statistics.

- H_{04} : no significant association exists between capital adequacy ratio and returns on asset.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.147381	0.462366	8.969916	0.0000
CAQ	-0.115714	0.020034	-5.775936	0.0000

Table 4: Eview Output for the Bi-Regression Analysis

The dependent and independent variables for hypothesis four are returns on asset (ROA) and capital adequacy ratio (CAQ). The regression co-efficient of the CAQ is -0.116, with a t-value of -5.776, which is statistically significant at the 5% level ($p = 0.000$). Based on this result, we reject the null hypothesis (H_0) in favour of the alternative and conclude that capital adequacy ratio has a significant effect on returns on asset. Furthermore, the negative co-efficient indicates an association which is significant and indirect in nature between capital adequacy ratio and financial performance of DMBs in Nigeria. This finding partly supports that of Obi and Okika (2017), who establish a positive and direct relationship between capital adequacy ratio and financial performance. In practice, it is expected that effective capital adequacy management policy will positively affect financial performance while an ineffective capital adequacy ratio policy will negatively affect financial performance. The result of the coefficient of determination also shows that about 49.59 percent of the total variations in ROA were explained by the independent variable (CAQ) in the model.

- H_{05} : There is no significant relationship between interest coverage and earnings per share

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.285210	0.634851	-9.900288	0.0000
IC	0.282597	0.032648	8.655963	0.0000

Table 5: Eview Output for the Bi-Regression Analysis

Table 5 indicates that Earnings Per Share (EPS) is acting as a dependent variable whereas, Interest Coverage Ratio (IC) is acting as the independent variable. Statistical significance found for QR at 5% l.o.s with 0.283 as coefficient and 8.656 as t-value. Hence, we can reject the null hypothesis (H_0) by finding that significant relationship between interest coverage ratio and earnings per share of DMBs in Nigeria. The direct relationship between interest coverage ratio and earnings per share of the banks has been revealed by positive value of the regression co-efficient. These findings also support finding of Mushtaq *et al.* (2015) but disagrees with that of Alashatti, (2015) who indicates a weak relationship between the two variables.

5. Conclusion and Recommendation

The relevance of liquidity management in the Nigeria banking sector cannot be over-emphasized, as it became more pronounced after the sector's recent re-capitalization. Nigeria is still a developing nation and the banks operating are just a little above their infant stage, thus making liquidity management critical for Deposit Money Banks in the country. This is because merging banks in Nigeria tends to be more liquid than banks operating alone without adequate number of branches. The craving to be highly liquid so as to accommodate new and promising customers makes liquidity management a key component of the bank's continuous survival. Variables liquidity management (current ratio, cash ratio, quick ratio, capital adequacy ratio and interest coverage ratio) and performance (returns on asset, returns on equity and earnings per share) have been selected from the literature and have been made appropriate for the study. Analysis revealed that liquidity management affects the performance of Nigerian Deposit Money Banks. The study recommends

that the apex bank (CBN) and other government's regulatory authorities should set up board of professionals to oversee liquidity management within Deposits Money Banks in the country. Furthermore, this monitoring should be on a regular basis, so as to avoid liquidity problem amongst the banks.

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