Effect of Capital Structure, Liquidity on Performance: Evidence from Deposit Money Banks in Nigeria

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Abstract

This study examined the effect of capital structure and liquidity on the performance of deposit money banks (DMB's) in Nigeria using 10 quoted DMB's in Nigeria from the year 2009 to 2019. The dependent variables are return on asset (ROA) and return on equity (ROE) while the independent variables are short term debt (STD), long term debt (LTD), debt equity ratio (D/E), current ratio (CA) and quick cash ratio (CASH). STD, LTD and D/E are proxies for capital structure while CA and CASH as proxies for liquidity. The study also controls for asset tangibility and firm size. The data were analyzed using the panel estimator based on the pooled effect model, fixed effect model and random effect model.The results revealed that debt equity ratio has significant negative effect on return on asset and return on equity. Short term debt and long-term debt have negative effect on return on asset but has positive effect on return on equity. The findings also revealed that current ratio and quick cash ratio has negative effect on return on asset but have positive effect on return on equity. Tangibility of asset has positive significant effect on return on asset but negative effect on return on equity. Firm size has positive effect on both return on asset and return on equity.Based on the findings, the study recommends that business managers should keep debt equity ratio at the point that is optimal, any excess increase in debt will have negative impact on profitability. Business managers tend to find a meeting point for debt structure that will favourably affect both equity provider and the business at large. Banks should invest the excess liquidity on value increasing activities to drive profitability. Policy marker should install more policies to carter for the excess liquidity.

Keywords: Short Term Debt, Long Term Debt, Debt-Equity, Current ratio, Quick Ratio, Cash. Profitability

1. Introduction

The Banking system is one of the most regulated in the financial sector and financial sector is the most regulated in any economy. One of the major reasons for this is to protect the depositor and investors funds. Despite operating in a highly regulated environment, wrong decision taken by management will negatively affect the performance of the bank. Bank performance has been a point of discussion in literature for decades with many findings emphasizing the factors the affect performance. Such factors include capital structure decision and liquidity management. Capital structure denotes the source of finance, usually a combination of the loan and equity capital, and other financing facilities through which a firm is financed. The discussion around capital structure has been an interesting one in literature where many researchers attempted to delineate the connection between capital structure and the performance of firms. Liquidity is the lifeblood of a firm which represents the ability of a firm having cash to meet immediate and short-term obligation, or portfolio of assets that can be quickly converted to cash in meeting those obligations. In the banking sector, liquidity is regulated by the apex bank in any economy is this served as the minimum cash that a bank must keep meeting its daily and short time cash needs including withdrawals from savings and short time deposit accounts.

In the current era of globalization, people in the business world increasingly compete, innovate and strategies to be able to achieve the goals to be achieved by the company. The banking industry has several challenges that must be faced in terms of tightening liquidity, improving capital structure, competition in the climate of net interest margins, developing fee-based income, distortion, cost efficiency, and digitalization. Profitability and maximization wealth are the benchmark for investors to assess the success of a company (Reschiwati, Syahdina, & Handayani, 2020).

The decision of how a firm will be financed is subjected to both the managers of the firms and fund suppliers. If financing is done by employing an incorrect combination of debt and equity, a negative effect is seen in the performance and even endurance of a firm. Thus, in order to maximise the firm value and profitability, managers need to carefully consider the capital structure decision, which is a complex task, as the use of leverage varies from one firm to another. The optimum capital structure is obtained when the market value per share is at a maximum or the average cost of capital is a minimum (Ezenwakwelu, 2018). The target capital structure of a firm should aim at minimizing the cost of capital and maximizing the market value of the firm. Some firms do not plan their capital structure and it develops as a result of the financing decision taken by the financial manager without any formal planning. Each firm may prosper in the short run but ultimately they may face considerable difficulties in raising funds to finance their activities. With unplanned capital structure, these

companies may fail to economize the use of their funds. Consequently, it is being increasingly realized that a company should plan its capital structure to maximize the use of the funds and to be able to adapt more easily to the changing conditions (Pandey, 1999).

However, from the depicted background above, liquidity decision addresses short term performance consistently while capital structure address both short term and long-term performance consistently. Efforts to anticipate these conditions, the company's financial managers must be careful in determining the capital structure and liquidity of the company, with the careful planning in determining the capital structure is expected to increase corporate value and superior in the face of business competition while liquidity management will allow them to always provide fund to meet quick and immediate needs that than affect the business operations.

However, although many researchers have theories, concludes and continuing discussions on capital structure and performance. This paper would like to contribute to the relationship of capital Structure, Liquidity, and financial performances of banks. In particular, the paper would like to clarify the mechanism of applying capital structure theories to banks in general and whether they have the correlation or not in Nigeria. Previous papers analyzed the relationship between the capital structure and the financial performance of particular countries including Nigeria. However, almost all the studies need further insights on the mechanism of banks and the applicability of capital structure theory and liquidity.

2. Theoretical Frameworks

Capital structure has been a major issue in financial economics ever since Modigliani and Miller showed in 1958 that given frictionless markets, homogeneous expectations; capital structure decision of the firm is irrelevant. Modigliani and Miller (M & M) (1958) wrote a paper on the irrelevance of capital structure that inspired researchers to debate on this subject. This debate is still continuing. However, with the passage of time, new dimensions have been added to the question of relevance or irrelevance of capital structure. MM declared that in a world of frictionless

capital markets, there would be no optimal financial structure (Schwartz & Aronson, 1967). This theory later became known as the "Theory of Irrelevance". In MM's over-simplified world, no capital structure mix is better than another. MM's Proposition-II attempted to answer the question of why there was an increased rate of return when the debt ratio was increased. It stated that the increased expected rate of return generated by debt financing is exactly offset by the risk incurred, regardless of the financing mix chosen. The relationship of the capital structure decisions with the firm performance was highlighted by a number of theories mainly, the agency theory, information asymmetry theory, signaling theory and the tradeoff theory.

The most important among them is the agency problem that exists because ownership (shareholders) and control (management) of firms lies with different people for most of the firms. And for that reason, managers are not motivated to apply maximum efforts and are more interested in personal gains or policies that suit their own interests and thus results in the loss of value for the firm and harm shareholder's interests. Therefore, debt finance act as a controlling tool to restrict the opportunistic behavior for personal gain by managers. It reduces the free cash flows with the firm by paying fixed interest payments and forces managers to avoid negative investments and work in the interest of shareholders (Jensen and Meckling, 1976). In their pioneering work, Jensen and Meckling (1976) argue that the choice of capital structure may help mitigate agency costs. They claim that higher use of debt capital may reduce agency costs through the threat of liquidation, which causes personal losses to managers'salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman and Hart 1982, Jensen 1986, Williams 1987). A testable hypothesis that can be drawn from this argument is that increasing the leverage results in lower agency costs and improved firm performance, ceteris paribus.

Conversely, when leverage becomes relatively high, further increases generate significant agency costs such as bankruptcy cost or financial distress resulting in negative impact on performance (Berger and Bonaccorsi di Patti, 2006). Harris and Raviv (1991) argue that the debt instruments in the capital structure provide more power to investors and thereby can discipline management by reducing the discretionary power of the management on free cash flow of the firm. Emanating from this argument, leveraging is considered an appropriate method to mitigate conflicts between shareholders and managers and thereby reduce the agency cost (Jensen and Meckling,1976). The relationship between agency cost and firm performance under agency cost hypothesis has been examined by Berger and Bonaccorsi di Patti (2006). They employ profit efficiency as an indicator of firm performance and estimate a simultaneous-equations model to account for reverse causality from performance to capital structure. They find statistically significant relationship between higher leverage and higher profit efficiency. Their findings are consistent with agency cost hypothesis.

The asymmetric information theory states that the firm's manager (insiders) has more information.about their firm compared to the outside investors. The well-informed managers try to send positive information to the market or will informed investors to increase the firm value. Signaling theory states that managers have incentives to use various tools to send signals to the market about the difference that exist between them and

weaker firms. One of the key tools to send these signals is the use of debt. Employment of debt in capital structure shows that managers have better expectations about the future performance whereas equity sends bad news about the firm performance in the future (Ross, 1977).

Trade-off theory allows bankruptcy cost to exist. It states that there is an advantage to financing with debt (the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade -off when choosing how much debt and equity to use for financing (Modigliani and Miller, 1963).

Pecking Order Theory tries to capture the costs of asymmetric information. It states that companies. prioritize their sources of financing (from internal financing to issuing shares of equity) according to least resistance, preferring to raise equity for financing as a last resort. Internal financing is used first. When that is depleted, debt is issued. When it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, while debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The Pecking Order Theory is popularized by Myers (1984), when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued, and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.

3. Review of Empirical Literature

Prasad (2020) examined the effects of capital structure on financial performance of insurance companies in Nepal using a secondary data from annual report of a sample of 14 insurance companies from 2007/08 – 2015/16. OLS model, random effect model and fixed effect model were used for the analysis of data. The research result concluded that equity to total assets, leverage, and assets tangibility have affects the financial performance in the case of insurance companies in Nepal. Similarly, Timilsina (2020) examines the determinants of capital structure in Nepalese Commercial Banks adopting secondary data from annual report of selected banks for the period 2011/12 to 2017/18. The Pearson's correlation coefficients and regression models were employed for data analysis. The result showed that banks size and assets tangibility were positively correlated with total debt to total assets whereas return on assets, assets growth and liquidity are negatively correlated with total debt to total assets. Also return on assets, bank size, assets tangibility, assets growth and liquidity are negatively correlated with total debt to total equity. It indicates that higher assets growth, return on assets and liquidity lower would be the total debt to total assets and total debt to total equity. Furthermore, the higher the bank size and assets tangibility higher would be the total debt to total assets. However, return on assets, bank size and assets tangibility are the most influencing factors and assets growth, and liquidity are the least influencing factor affecting the capital structure of Nepalese commercial banks.

Reschiwati *et al.* (2019) analyzed the effect of liquidity, profitability, the size of the firm and its value in capital structure using a sample of 15 banking companies listed on the Indonesian Stock Exchange. Eviews 8.0 program was used in analyzing data from 2014-2018 periods. The results of this study indicated that liquidity, profitability, and firm size significantly influence capital structure. Capital structure is not a mediator of the influence of liquidity and profitability on firm value, while the capital structure is a mediator of the effect of firm size on firm value. In another study, Jimena (2019) researched the effects of profitability, liquidity, tangibility, firm size, and asset turnover on capital structure in chemical industry listed on Indonesia stock exchange from 2014 to 2018 using a sample size of 8 chemical companies listed on the Indonesia Stock Exchange. The study adopted the purposive sampling method and multiple regression models in analyzing data. The findings showed that profitability, liquidity, and tangibility had negative effect on capital structure, while the other two variables, firm size, and asset turnover, did not affect capital structure. It was recommended that further research should extend its observation period, variables, and compare the conditions in different countries. Also seen in literature, Dang, Ho, Lam, Tran and Vo (2019) carried out a study on effect of stock liquidity on corporate capital structure decision. The study also analyzes whether this effect varies according to country level institutional environments. The study employed a comprehensive international dataset of19,939 firms across 41 countries over 2000–2010. The result revealed that firms with higher stock market liquidity tend to have lower leverage while countries with strong institutional environments are more likely to have a weaker (negative) relationship between stock market liquidity and leverage.

Juwita (2018) examined the effect of capital structure, liquidity, and growth on corporate performance of small capitalization companies listed on Indonesia stock exchange within the period 2011-2016, using the explanatory method of research design. The study employed multiple regression analysis and Hypothesis with SPSS program for analysis of available data. It was concluded that the capital structure, liquidity, and growth have a significant effect on the corporate performance that included small capitalization on Indonesia Stock

Exchange within the understudy period either partially or simultaneously. Lina and Saleh (2018) investigated the effect of liquidity and firm size on profitability and the role of capital structure in Jordan using a stratified sample of 30 industrial companies for the period of 2014 – 2016. The study used a secondary data from the financial report of the selected firms. The results showed the following results: liquidity and firm size are jointly significant independent variables to influence the listed Jordanian manufacturing firms' profitability and through the role played by the capital structure in the relationship between liquidity, firm size, and capital structure; this is what made a difference and value added. Burksaitiene and Draugele (2018) examined the impact of capital structure on liquidity management. The study made use of quantitative analysis of 10 Baltic companies where 400 observations were obtained. Multiple regression analysis was employed to examine the data from 2012 – 2016. Results indicated that the more equity is used in capital structure of the company, the lesser is the liquidity risk in this company, while the more debt capital is used, higher is the risk. Also, strong negative relationship can be seen between Current ratio and Quick ratio.

In Nigeria, Obilikwu (2018) investigated the Impact of Capital, Concentration, Size and Liquidity on Banking Industry Performance in Nigeria using data from 1980 to 2010 sourced from Central Bank of Nigeria for the assessment. The data were analyzed using Vector error correction model. Findings revealed that contrary to the expectation of the consolidation policy, concentration, bank-size and liquidity negatively impacted the industry and only capital adequacy exerted positive impact on the performance. It was recommended that the CBN should constantly ensure that banks maintained regulated capital adequacy ratio. The industry should not further be concentrated; banks should be categorized into different sizes and be allowed to choose any category they can efficiently manage depending on their capacity, experience, and mode of operation. Also, Ezenwakwelu (2018) researched the effect of capital structure on commercial banks performance in Nigeria for the period 2012 to 2016 using secondary data sourced from Audited Accounts and Reports of selected Commercial Banks and CBN Statistical Bulletins and Annual Reports. The study used Ex post facto research design. The main findings were that capital structure has no significant effect on return on equity, return on assets and earnings per share of commercial banks in Nigeria. However, commercial bank size had a significant effect on earnings per share. It was therefore concluded that the capital structure of commercial banks in Nigeria has no effect on their performance. It was recommended that the management of commercial banks should adopt the right strategy to attract adequate long-term funds and government should improve the depth and liquidity of capital market to enable it meet the demand for long term funds. The management of commercial banks should ensure that there is a right mix of debt and equity at all times through regular review of their financing mix. In another study, Nwosa (2018) examined the Impact of Financial Development on Capital Structure of Firms in Nigeria. The study employed panel ordinary least square technique in analyzing data, with a sample size of 10 manufacturing firms on the Nigerian Stock Exchange, for the period 2002 to 2015. The result showed that the ratio of stock market capitalization to gross domestic product (a measure of stock market development) had positive and insignificant effect on firms' capital structure while the ratio of credit to the private sector to gross domestic product (a measure of banking sector development) had positive and significant effect on firms' capital structure. In conclusion, financial development contributes to the growth of capital structure of firms in Nigeria.

In Bangladesh, Siddik, Kabiraj and Joghee (2017) investigated the impacts of capital structure on banks performance in a developing economy like Bangladesh. The study examined panel data of 22 banks for the period of 2005–2014 using ordinary least square analysis. The result showed that there are significant negative impacts of capital structure on the performance banks in Bangladesh. It was concluded that banks in Bangladesh adopt the concentration of the bank management and policies that reduce reliance on debt to achieve the optimal level of capital structure. While in Thailand, Dai (2017) examined the relationship between capital structure and financial performance of banks in Thailand. The study employed random effect model and robustness check to examine quarterly data from 1997 – 2016. The result showed that capital structure is significant and negatively correlated with profitability which implies that pecking order theory is valid in data set used while credit risk and liquidity risk significantly decrease the financial performance. It was suggested that governments and banks should focus on controlling the credit process to reduce the non-performing loans.

Mathewos (2016) examined the impact of capital structure on financial performance of commercial banks in Ethiopia within the period from 2011 to 2015 using secondary data collected from financial statements of the commercial banks. The study analyzed data using multiple regression models. The results indicated that financial performance, which was measured by two accounting-based measures of financial performance (i.e., return on equity (ROE) and return on assets (ROA), is significantly and negatively associated with capital structure proxies such as DER, SIZE and TANG whereas DR have negative impact. It was recommended that the commercial banks of Ethiopia should focus on the proportion of debt used by the bank, the manner of utilizing the resources while expanding the banks and the amount of investment on fixed asset. Yasir *et al*. (2016) investigated the effect of liquidity and capital structure on Financial Performance in banking sector using 10 banks as a sample out of 64 banks in Pakistan. The study analyzed data using correlation and step wise regression. The result found that liquidity and capital structure affect the performance positively in banking

sector. Mais Sha'ban *et al.* (2016) examined the determinants of bank capital structure in Europe inclusive of the global financial crisis and the euro sovereign debt crisis. The findings showed that equity capital was negatively associated with size and positively related to profits, market-to-book ratios, and dividends. Also, market risk significantly increases banks' equity capital, which confirmed the regulatory view that riskier banks are forced to hold higher equity, while asset quality measured by non-performing loans does not seem to significantly affect banks' capital structure decisions. Kudzai and Athenia (2016) investigated the relationship between capital structure and profitability using banks in South Africa as a point of study. The study employed multiple linear regressions in analyzing time series data for the period 2002 to 2013. There was a strong relationship between the ROA (profitability measure) and the bank specific determinants of capital structure. The relationship exhibits sensitivity to macro-economic shocks (such as recessions), in the case of credit risk and capital but is persistent for the other determinants of capital structure. Zeb *et al.* (2016) studied the effect of liquidity and capital structure on financial performance in cement sector. The study used data from the period 2014 – 2018 and was analyzed using statistical approach. The results showed that all capital structure variables had negative relationship with firm financial performance of these selected cement sector firms. It was also indicated that liquidity proxies, i.e., quick ratio and current ratio have significant positive impact on the financial performance of these cement sector firms. It was recommended that these firms' manager should take care of its capital structure proxies as it negatively impacting its financial performance and also improve its mechanism of liquidity.

In another study, Ghasemi and Razak (2016) investigated the Impact of Liquidity on the Capital Structure in Malaysia using a sample of 300 listed companies in the main market. Data from 2005 to 2013 fiscal years were analyzed using pooled ordinary least square analysis. The results showed that all the measures of liquidity have significant impacts on all the proxies of leverage i.e Quick ratio has a positive effect on leverage, while Current ratio is negatively related to leverage. Moreover, short-term debt is more influenced by liquidity compared to long-term debt. While Mutegi (2016) examined the effects of capital structure on the financial performance of firms listed at the Nairobi Securities Exchange. The study analyzed data from 2011 – 2015 using Statistical Package for Social sciences (SPSS). The findings obtained showed that capital structure has an inverse influence on the financial performance of firms listed at NSE. The findings pointed out that, financial performance decreases with the increase in the debt ratio in the capital structure, which supports the need for capital injection instead of borrowing because debt financing results in costs such as interest rates which exceed the benefits of debt financing. It was recommended that firms should decrease the amount of the financial leverage in their capital structure in order to enhance the financial performance and create huge value to its shareholders.

Thomas *et al.* (2014) researched the effect of profitability, firm size and liquidity on capital structure adopting panel data from financial statements of 34 firms listed in Narobi Securities Exchange for a period from 2006 to 2012 excluding commercial banks. Pearson Correlation and multiple regression models were used for data analysis. The result indicated that profitability and liquidity were negatively and significantly related to capital structure. However, firm size was positively correlated and not significant on capital structure. It was recommended that companies undertake profitability and liquidity decision whenever funds have to be raised to finance investments. Gharaibeh (2014) investigated the relationship between capital structure, liquidity, and stock returns. The study used data from the financial statements of (15) industrial firms listed on Amman Stock Exchange for the period 2009 to 2012. The result showed that there was a weak and significant relation between stock returns and liquidity, while the relationship with capital structure was also weak but insignificant. It was concluded that non-profit indicators were less valued in equity investment decisions during this period which seemed surprising since these indicators represent a bankruptcy risk. Khaled and Zaher (2014) researched the effect of capital structure on the performance of Islamic banks in Jordan. The study used multiple regression model in analyzing data from the annual statements of Islamic bank for the period (1998-2012). The results of study found a positive impact for equity ratio, total assets and ratio of financing to total assets on performance. And the concentration ration "Index Hervndal" had negative impact on performance, and there is no impact to the Ratio of liquid Assets of Total asset on the performance of Islamic banks in Jordan. Lei and Song (2013) studied the relationship between liquidity creation and bank capital structure in China. Findings showed that bank capital is negatively related to liquidity creation, which supports the financial fragility-crowding out hypothesis. In contrast, foreign banks in China have a weaker relationship between liquidity creation and bank capital, which is consistent with the risk absorption hypothesis and findings in prior studies.

Sebastian (2012) examined the effect of bank capital structure and liquidity on profitability in the Nigerian banking system. The study used data from the period 1980-2006 and was analyzed using descriptive statistics and the auto-regressive distributed lag (ADL) model. The result showed a positive influence of cash reserve ratio, liquidity ratio and corporate income tax; and a negative influence of bank credits to the domestic economy, savings deposit rate, gross national savings, balances with the central bank, inflation rate and foreign private investments, on banking system profits. It was recommended that a drastic reduction in balances with central bank, liquidity ratio and cash reserve ratio profiles by the monetary authorities to enable banks create adequate

credits and release more money into circulation for effective financial intermediation to occur. Sibilkov (2009) examined the effect of asset liquidity on capital structure using data from a broad sample of U.S. public companies. The data were analyzed using the static panel estimator. The result revealed that, leverage is positively related to asset liquidity while asset liquidity and secured debt are positively related, whereas the relation between asset liquidity and unsecured debt is curvilinear. The results are consistent with the view that the costs of financial distress and inefficient liquidation are economically important and that they affect capital structure decisions. In addition, the results are consistent with the hypothesis that the costs of managerial discretion increase with asset liquidity. Amidu and Hinson (2006) examined the relationship between credit risk, capital structure and lending decisions of banks in Ghana. The study employed panel regression analysis to examine available data. Findings showed that less than 1% of Ghanaian banks are exposed to credit risk, and that more than 86% of their assets are financed by debts. The banks' average lending rate is around 28%. It also indicated that capital structure (equity to total assets) of banks is positively related to banks' credit risk, profitability and risk and negatively related to banks' size, liquid assets, and lending.

4. Methodology

The nature of this research demands the use of quantitative research design including ex-post facto. The population of this study encompasses all Deposit Money Banks listed on the Nigerian Stock Exchange (NSE) market, a sample of 11 quoted DMB's were purposively selected for this study. Data were extracted from audited annual reports and accounts of listed banks on the Nigerian Stock Exchange, which spanned between 2009 and 2019.

In order to capture the impact of capital structure and liquidity on firm performance, we specify a model conforming to the agency theory; as previously specified by Berger and di Patti (2006) as well as Margaritis and Psillaki (2007, 2010). It assumed that managers have zero shareholding in the firm. Otherwise, managers will have no incentives to take a low value projects, as they maximize their own wealth. Besides, we assume that managers want to avoid firm liquidation and prefer not to pay dividends to shareholders.

The literature suggests many ways of measuring performance of the firm. Hammes and Chen (2004) used ROA as a measure of firm performance since the basic accounting ratios are claimed to be improper indicators of firm performance.

Concomitantly, Ward and Price (2006), adopted return on equity as an appropriate measure of performance, since it reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet. A business that has a high return on equity is more likely to be one that is capable of generating cash internally. For the most part, the higher a company's return on equity compared to its industry, the better.

Hence, we specified the following Models;

$$ROA_{it} = \alpha_0 + \alpha_{1it}STD/TA + \alpha_{2it}LTD/TA + \alpha_{3it}D/E + \alpha_{4it}CR + \alpha_{5it}QR + \alpha_{6it}SIZE + \mu_{it} \dots \quad 3.1$$

$$ROE_{it} = \alpha_0 + \alpha_{1it}STD/TA + \alpha_{2it}LTD/TA + \alpha_{3it}D/E + \alpha_{4it}CR + \alpha_{5it}QR + \alpha_{6it}SIZE + \mu_{it} \dots \quad 3.2$$

α_0 is the constant, and α_1, α_2, α_3, α_4, α_5, α_6 are regression coefficients, while μ_{it} is the error term

4.1 Description and Measurement of Variables

Table 1 below shows the variables, their descriptions as well as their measurement as used in this study.

Table 1: Dependent and Independent Variables Description and Measurement

Variable Type	Symbol	Description/ Measurement
Dependent Variable		
Return on Equity	ROE	The ratio of profit after tax to total equity.
Return on Asset	ROA	The ratio of profit after tax to total assets.
Independent Variables		
Short term debt	STD/TA	The ratio of short-term debt to total asset.
Long term debt	LTD/TA	The ratio of long-term debt to total asset.
Debt Equity	D/E	The ratio of debt to equity.
Current Ratio	CA	The ratio of current asset to current liabilities
Quick Cash Ratio	CASH	The ratio of cash and cash equivalent to current liabilities
Bank Size	SIZE	Natural logarithms of total asset.

5. Results and Discussion

Table 2 below depicted the descriptive statistics as used in this study. ROA and ROE are the dependent variables. The maximum ROA of the sampled firm in years under this study is 35% with minimum of -9%. The average ROA is 2% while median value is 1% with standard deviation of 4%. ROE has higher value than ROA among the sampled firms in the years under this study. The maximum ROE is 109% with minimum of -394%. Average

ROE is 5% and median of 10% while the standard deviation is 45%.

The proxies for capital structure are short term debt (STD), long term debt (LTD) and debt equity ratio (D/E) all numbers deflated by total asset while the proxies for liquidity are current ratio (CA) and quick cash ratio (Cash) all number deflated by current liabilities. Both capital structure and liquidity are the explanatory variables.

Table 2: Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	0.02	0.01	0.35	-0.09	0.04
ROE	0.05	0.10	1.09	-3.94	0.45
STD_TA	0.89	0.60	22.21	0.19	2.23
LTD_TA	-0.08	0.25	0.99	-25.80	2.68
D_E	7.91	5.94	191.21	-6.86	18.14
CA_CL	2.27	1.61	4.88	0.00	1.37
CASH_CL	0.09	0.00	0.57	0.00	0.13
TANG	0.04	0.03	1.00	0.00	0.09
SIZE	6.08	6.12	6.80	4.60	0.42

Source: *Authors Compilation*

STD average is 89% while LTD average is -8% D/E average is 791%. This revealed the high-level liabilities carries by banks in Nigeria. Most of the liabilities are coming from depositor funds and which is while STD is about 89% of total asset. The level debt (liabilities) among deposit money banks in Nigeria is high with maximum STD of 2221%, LTD 99% and D/E 19121%.

CA average is 2.27 while CASH average is 9%. The median value of CA is 1.61 while that of CASH is 0.00. this revealed that the deposit money thanks in Nigeria keeps excess liquidity. But the quick ratio is low among many of the banks under this study. The maximum CA is 488% while maximum CASH is 57%. The minimum liquidity kept by banks in Nigeria is 0%.

Table 3 below reveal the test of association among the variables used in this study. ROA has positive relationship with short term debt (STD), quick cash ratio (CASH) and tangibility of asset (TANG) but negative relationship with long-term debt (LTD), Debt equity ratio (D/E), current ratio (CA) and firm size (SIZE).

Table 3: Correlation Matrix

Variables	ROA	ROE	STD_TA	LTD_TA	D_E	CA_CL	CASH_CL	TANG	SIZE
ROA	1.00								
ROE	0.21								
STD_TA	0.78	0.02							
LTD_TA	-0.78	-0.03	-0.58						
D_E	-0.17	-0.86	-0.09	0.09					
CA_CL	-0.28	-0.17	-0.35	0.34	0.19				
CASH_CL	0.14	0.12	0.21	-0.21	-0.1	-0.56			
TANG	0.78	-0.03	0.89	-0.89	-0.03	-0.13	0.06		
SIZE	-0.19	0.22	-0.43	0.43	-0.13	-0.23	0.06	-0.37	1

Source: *Authors Compilation*

Similarly, ROE has positive relationship with short term debt (STD), quick cash ratio (CASH) and firm size (SIZE) but negative relationship with long-term debt (LTD), Debt equity ratio (D/E), current ratio (CA) and tangibility of asset (TANG).

Table 4 below depicted the panel estimates which was based on pooled effect model (OLS), fixed effect model (FEM) and random effect model (REM) where the dependent variable is ROA.

Table 4: Panel A

	OLS	FEM	REM
C	-0.1019***	-0.1350***	-0.1159***
	[0.0577]	[0.0751]	[0.0582]
	-1.7653	*-1.7977*	*-1.9926*
STD_TA	0.0369	0.0720	0.0604
	[0.0348]	[0.0451]	[0.0335]
	1.0606	*1.5961*	*1.8006*
LTD_TA	0.0250	0.0538	0.0444
	[0.0291]	[0.0378]	[0.0279]
	0.8610	*1.4249*	*1.5861*
D_E	-0.0002***	-0.0002**	-0.0002**
	[0.0001]	[0.0001]	[0.0001]
	-1.7673	*-2.0179*	*-1.9919*
CA_CL	-0.0005	-0.0005	-0.0007
	[0.0025]	[0.0082]	[0.0028]
	-0.1925	*-0.5583*	*-0.2342*
CASH_CL	-0.0019	-0.0057	-0.0029
	[0.0211]	[0.0202]	[0.0196]
	-0.0911	*-0.2830*	*-0.1495*
TANG	0.2086*	0.2061*	0.2089*
	[0.0595]	[0.0626]	[0.0582]
	3.5078	*3.2910*	*3.5875*
SIZE	0.0140**	0.0163	0.0132
	[0.0068]	[0.0153]	[0.0074]
	2.0459	*1.0641*	*1.8002*
R-Squared	68%	76%	70%
Adjusted R-Squared	66%	72%	68%
F-Statistic	31.01	18.10	34.24
Prob (F-Stat)	0.000	0.000	0.000

The number in parenthesis is the standard error while italic is the t-statistics. *Coefficient significant @ 1%, ** significant at 5%, ***significant at 10%.

It results revealed that only debt equity ratio is only explanatory variable that has significant negative effect on bank financial performance in the three models. The mean that the capital structure of a bank has significant effect on performance of bank. This is inline with the findings of Timilsina (2020) and Mathewos (2016) which also revealed that debt equity ratio has negative relationship with financial performance. Theoretically, Jensen and Meckling (1976) argue that when leverage becomes relatively high, further increases generate significant agency costs such as bankruptcy cost or financial distress resulting in negative impact on performance. Also, the trade off hypothesis explained advantage of financing with debt (the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). While Modigliani and Miller, (1963) argue on marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that therefore has negative effect of performance.

Furthermore, the result revealed that both short term debt and long-term debt has positive effect on bank profitability but not significant. On the liquidity metrics, both current ratio and quick ratio has insignificant negative effect of bank performance in Nigeria. On the control variables, asset tangibility has significant positive effect on asset while firm size also has positive effect on performance of banks in Nigeria.

Table 5 below also depicted the panel estimates which was based on pooled effect model (OLS), fixed effect model (FEM) and random effect model (REM) where the dependent variable is ROE.

Table 5: PANEL B

	OLS	FEM	REM
C	0.0599	-0.6897	-0.5350
	[0.5657]	[0.7037]	[0.5787]
	0.1059	*-0.9801*	*-0.9245*
STD_TA	-0.5833***	-0.1934	-0.4001
	[0.3414]	[0.4229]	[0.3252]
	-1.7088	*-0.4574*	*-0.1231*
LTD_TA	-0.4959***	-0.1781	-0.3487
	[0.2850]	[0.3544]	[0.2715]
	-1.7402	*-0.5025*	*-1.2840*
D_E	-0.0206*	-0.0218*	-0.0215*
	[0.0012]	[0.0011]	[0.0011]
	-16.654	*-19.5417*	*-19.4058*
CA_CL	0.0031	0.0771	0.1187
	[0.0247]	[0.0764]	[0.1861]
	0.1267	*1.0091*	*0.6378*
CASH_CL	0.1106	0.1438	0.1187
	[0.2070]	[0.1891]	[0.1861]
	0.5341	*0.7604*	*0.6378*
TANG	-0.4021	-0.2957	-0.3287
	[0.5825]	[0.5869]	[0.5642]
	-0.6903	*-0.5038*	*-0.5825*
SIZE	0.1040	0.144	0.1690
	[0.0671]	[0.1438]	[0.0776]
	1.5504	*1.0250*	*2.1777*
R-Squared	76%	83%	79%
Adjusted R-Squared	74%	80%	78%
F-Statistic	45.77	28.77	55.75
Prob (F-Stat)	0.000	0.000	0.000

The number in parenthesis is the standard error while italic is the t-statistics. *Coefficient significant @ 1%, ** significant at 5%, ***significant at 10%.

Across the three model, similar to panel A, only debt equity ratio has significant negative effect on bank performance in Nigeria. While other capital structure metrics such as short-term debt and long term debt only have negative significant effect on profitability in the pooled effect model only.

However, it was revealed that current and quick cash ratio has positive effect of bank profitability in Nigeria. This is in line with the study of Sebastian (2012) which showed a positive influence of cash reserve ratio, liquidity ratio on profitability. Sibilkov (2009) also revealed that leverage is positively related to asset liquidity while asset liquidity and secured debt are positively related.

6. Conclusion

This study examined the effect of capital structure and liquidity on the performance of deposit money banks (DMB's) in Nigeria using 10 quoted DMB's in Nigeria from the year 2009 to 2019. The secondary data were sourced from the annual reports and accounts of the selected banks. The dependent variables are return on asset (ROA) and return on equity (ROE) while the independent variables are short term debt (STD), long term debt (LTD), debt equity ratio (D/E), current ratio (CA) and quick cash ratio (CASH). STD, LTD and D/E are proxies for capital structure while CA and CASH as proxies for liquidity. The study also controls for asset tangibility and firm size.

The data were analyzed using the panel estimator based on the pooled effect model, fixed effect model and random effect model. The results revealed that debt equity ratio has significant negative effect on return on asset and return on equity. Short term debt and long-term debt have negative effect on return on asset but has positive effect on return on equity.

The findings also revealed that current ratio and quick cash ratio has negative effect on return on asset but have positive effect on return on equity. Tangibility of asset has positive significant effect on return on asset but negative effect on return on equity. Firm size has positive effect on both return on asset and return on equity.

Based on the findings, the study recommends that business managers should keep debt equity ratio at the point that it is optimal, any excess increase in debt will have negative impact on profitability. The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases. Also, both short

debt term and long-term debt tends to favour equity provider but has negative effect on total asset profitability. Thus, business manager tend to find a meeting point for debt structure that will favourably affect both equity provider and the business at large.

It has been proven by the descriptive statistics that Nigerian DMB's keeps excess liquidity which does not benefit the total business, although it beneficial to the equity holder because more cash will be available to share as dividend. However, this excess liquidity has negative effect on the total business profitability. Thus, it is recommended that banks should invest the excess liquidity on value increasing activities to drive profitability. Policy marker should install more policies to carter for the excess liquidity.

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