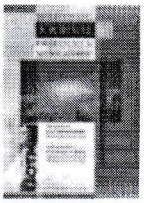
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Capital Structure and Financial Health: Evidence from Deposit Money Banks in Nigeria

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Abstract

Financial sector plays a crucial role in the growth and development of the Nigerian economy but a constant focus of regulatory activities has been on the system of capitalization. The relationship between equity and debt ratio has been identified as a common cause of imbalance in the capital structure. The population of the study comprised of the 15 quoted commercial banks. The study employed secondary data obtained from audited financial reports of 15 quoted deposit money banks in Nigeria as rated by Fitch 2017. Data collected from annual reports of quoted commercial banks were analyzed using Fixed Effect, Random Effect, and Panel regression model. Findings revealed that debt-equity ratio (DER) has significant negative impact on financial health of commercial banks in Nigeria at 5% level of significant. Also, debt-asset ratio has significant negative impact on financial health of commercial banks in Nigeria. Based on the findings of this study, the study recommends that financial managers should try to finance their activities from retain earnings rather than relying heavily on debt capital in their capital structure. Financial manager should also make an effort to attain an optimal level of capital structure and endeavor to uphold it as much as possible.

Key words: *Capital Structure, Debt Equity Ratio, Debt Asset Ratio, Financial Health.*

Introduction

The banking sector plays a crucial role in the growth and development of the Nigerian economy but a constant focus of regulatory activities has been on the system capitalization. This is to ensure its safety and

soundness. In particular lopsided financial ill health of deposit money banks in Nigeria. The relationship between equity and debt ratio has been identified as a common cause of imbalance in the capital structure.

According to Saad (2013) one of the crucial issue confronting managers today is how to choose the combination of debt and equity to achieve optimum capital structure that would minimize costs and maximize return to the bank shareholders. Capital structure decision is fundamental for any business organization including banks because of the need to maximize return to the various stakeholders and also because of the fact that such decision has great impact on the bank`s ability to deal with competitive environment (Awunyo & Badu, 2012).

Sadiq (2017) posits that capital is the lifeblood of any business organization. In fact, it serves as catalyst in establishing and promoting business firms. It plays a very resuscitative role especially in a country like Nigeria. Lesson from banking history revealed that most deposit money banks collapsed as a result of inadequacy, mismanagement or lack of capital. Therefore, financing decision is one of the crucial areas as they are concerned with the determination of the best financing mix and combination of debts and equity for deposit money banks. Bank performance measurement according to European Central Bank (2010) can be categorized into three major classes among which are traditional, economic and market based measures. The traditional measures are similar to those used by other firms which include return on assets (ROA) which is the net income for the year divided by the total assets. The other measure is return on equity which (ROE) which is the internal performance measure of shareholder`s value and this is the most famous measure of financial performance. The Economic measures of performance aim at assessing the economic results generated by the bank from its economic assets.

Financial ill health of deposit money bank had been identified as the outcome of distress, illiquidity, lopsided capital structure and poor management. The most crucial among these challenges is the capital base which has informed the Central Bank of Nigeria to reel out various policies to ensure that adequate capital is maintained by deposit money banks knowing what this has to do with banks profitability and ultimately banks value. In complying with the CBN`s directives, deposit money banks raise additional capital through issue of shares and borrowing, but the bone of contention is how to choose the combination of debt and equity to achieve optimum capital structure that would minimize costs and maximize return of the shareholders.

Stemming from the problem statement established above, the following research hypotheses were raised in null form:

H_{o1}: There is no significant relationship between debt-equity and financial health of quoted deposit money banks in Nigeria.
H_{o2}: Debt-asset ratio has no significant effect on financial health of quoted deposit money banks in Nigeria.

Literature Review

Conceptual Review

Capital structure is an important financial decision of a business organization apart from investment decisions. It is important since it involves a huge amount of money and has long term implications on the firms (Ahmad & Abdullahi, 2012). According to Hassan (2014) capital structure is the combination of a firm`s long term debt, specific short term debt, common equity, preferred equity and retain earnings which are used to finance its overall operations and growth. Capital structure in a financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities (Saad, 2017).

Debt Equity Ratio relates the amount of a firm`s debt financing to the amount of equity financing. Actually this measure of leverage ratio is the quantitative measures of the proportion of the total debt to residual owner`s equity (Nwude, 2003). Thus, it is an indicator of company`s financial structure and whether the company is more reliant on borrowing (debt) or shareholders capital (equity) to fund assets and activities. Debt Equity Ratio = Shareholders Fund/Total Debt

Total Debt Ratio measures the amount of a firm`s total assets that is financed with external debt. This measure encompasses all short term liabilities and long term liabilities. Nwude (2003) opined that this measures the firm`s assets that are financed by debt. As the total debt ratio increases, firm`s fixed interest charges also increases and the cash flow generated by the firm may not be sufficient to meet the interest payment.

There are three widely known measures of financial health cited by Ndifo & Ubana (2014). The three indicators are Net Interest Margin, Return on Asset and Return on Equity. There are divergent views among scholars on the superiority of one indicator over the other as a good measure of profitability in banks. Similarly, anyone or a combination of the indicators can be used to measure financial health in banks depending on the objective of the user or analyst.

Obesesan, (2015) classified financial health as; Return on equity (ROE); this relates to the return made by a firm for its shareholders with the finance made available to the firm by the shareholders. In other words, it indicates the management success or failure at maximizing the return to shareholders based on their investment in the firm (Alexander & Nobes, 2001). ROE is achieved by the bank by dividing net income (net profit after tax) by equity, as follows: Return on equity (ROE) = (Net income/ Total Equity) × 100.Return on assets (ROA); This ratio measures the profitability achieved by the bank by investing its assets in various activities, and is calculated,by dividing net income (net profit after tax) on total assets, as follows: Return on assets (ROA) = (Net income/ Total Assets) × 100.

This study is anchored on two theories which are Trade off Theory of capital structure and Pecking Order Theory. Trade off Theory of capital structure was propounded by Myers (2001), asserts that a firm`s choice of its debt-equity ratio is a trade-off between its interest tax shields and the cost of financial distress. Trade off theory also suggests that firms in the same industry should have similar or identical debt ratios in order to maximize tax savings. The tax benefit among other factors makes the after tax cost of debt lower and hence the weighted average cost of capital will also be lower. Brigham and Gapenski (1996) argue that an optimal capital structure can be obtained if there is tax benefit which is equal to the bankruptcy cost. It can be concluded that, there is an optimal capital structure where the weighted average cost of capital is at its minimum.

Pecking Order Theory was postulated by Donaldson (1961), the theory suggests that when a firm is looking for ways to finance its long term investments, it has well defined order of preference with respect to the sources of finance it uses. It states that a firm`s first preference should be the minimization of internal funds (retain earnings), followed by debt and then external equity. The theory also argues that the more profitable the firms become, the lesser they borrow because they would have sufficient internal finance to undertake their investment projects. He further argues that it is when the internal finance is inadequate that a firm should source for external finance and most preferably bank borrowings or corporate bonds.

Kleff and Webber (2004) examined the determinants of capital structure of Garman banks during the period of 1992-2001. The study revealed that capitalized banks try to maintain their regulatory buffer capital due to potential regulatory costs. They observed that changes in portfolio risk have a positive and significant impact on changes in the capital ratio for savings banks. They further noticed that banks increase capital and decrease

portfolio risk to rebuild their capital buffer. Kleff and Webber provided evidence that bank`s profitability has positive and significant impact on the target capital ratio for savings and cooperative banks.

Ahmad (2010) examined the influence of capital structure on firm performance of Malaysian firm listed as consumers and industrials sectors in Malaysian equity market from 2005 to 2010. The study used return on equity and return on asset to measure firm performance and to measure capital structure with long term debt, short term debt and total debt. The results revealed that each debt level has significant negative relationship with ROE, while ROA has significant positive relationship only with STD and TD. Simon and Afolabi (2011) assessed the relationship between firm performance and debt financing. The study employed panel data regression model on the sampled data collected. The findings revealed that there is a negative relationship between firm`s performance and debt financing due to high borrowing cost.

Salim and Yadav (2012) examined the relationship between capital structure and firm performance. The investigation was performed using panel data procedure for a sample of 237 Malaysian listed companies on the Bursa Malaysian stock exchange during 1995-2011. The results revealed that there is significant positive relationship between capital structure and firm performance. Chandrasekharan (2012) conducted a study using 87 firms out of the population of 216 firms listed on the Nigerian stock exchange for a period of five years (2007-2011) from static tradeoff, agency and pecking order theory point of view. He employed panel multiple regression analysis and the study revealed that for the Nigerian listed firms; firm size, growth and age are significant with the debt ratio of the firm, whereas, profitability and tangibility were not. Muhoro (2013) examined the effect of capital structure decisions on financial performance of construction and allied firms listed at NSE from 2003-2012. The population of the study comprises five listed construction and allied companies. The relationship was established using multiple linear regression models. The findings revealed that there is a positive relationship between total debt, long term debt, short term debt, size, sales growth and return on equity.

Muhammad (2013) examined the relationship between capital structure and profitability of pharmaceutical companies in Iran. Secondary data was collected from top 30 Iranian pharmaceutical companies for the period of 2001 to 2010. Data was analyzed using ordinary least square model. The results showed that there is significant negative relationship between profitability and capital structure and Iranian pharmaceutical companies. Ndifon and Ubana (2014) assessed the impact of capital adequacy on the financial performance of deposit money banks in Nigeria. The data for the study was obtained from audited financial statement of sampled banks and analyzed using panel regression. The finding revealed that capital adequacy had significant positive impact on the financial performance of deposit money banks in Nigeria. Yabs (2015) examined capital structure and financial performance of Kenyan real estate firms. The focus of the study was on a sample size of 28 real estate firms for a period of five years. Multiple regression analysis was used to analyze the data and findings from the study revealed a negative effect of capital structure on financial performance of real estate firms in Kenyan.

Mathewos (2016) studied the impact of capital structure on the financial performance of commercial banks in Ethiopia. The study used secondary data collected from audited financial report \s of sampled banks. Data was analyzed with the aid of multiple regression model. The results of the study revealed that financial performance which is measured by ROA has significant effect on the financial performance of commercial banks in Ethiopia. Yakubu (2016) assessed the impact of capital structure on the profitability of deposit money banks in Nigeria. The study applying autoregressive distributed lag model on a sample of 13 deposit money banks from 2005 to 2014. The findings revealed that about 83 percent of the total assets employed by deposit money banks are not financed by owners, confirming that banks are highly levered institutions in Nigeria. Banafa (2015) conducted a study on manufacturing sector in Kenya focusing on capital structure

effects on profitability. Convenience sampling was adopted in the study and the revealed that capital structure has a significant negative effect on firm performance.

Anarfo (2015) examined the relationship between capital structure and bank performance in Sub-Sahara Africa. The study employed the used of panel regression techniques. The performance variables used in the study were return on asset (ROA), return on equity (ROE) and net income. The results revealed that capital structure does not determine bank performance but it is rather performance that determines bank capital structure.

Ihenetu (2016) evaluates the impact of capital structure on financial performance of selected deposit money banks in Nigeria. Four banks were selected and their audited financial statement was analyzed using ordinary least square. The results show that highly geared capital structure increases financial performance than lowly geared capital structure. Madiha and Muhammed (2016) examined the impact of capital structure on financial performance of banks listed on Karachi Stock Exchange. The study used secondary data of sampled banks from 2009 to 2013. The results revealed that capital structure are negatively related with the financial performance of sampled banks. Olarewaju and Akande (2017) examined the determinants of capital adequacy in Nigerian quoted deposit money banks. The study used Secondary data obtained from the sampled banks for the year 2005-2014 and analyze with the use of panel regression model. The study revealed that equity to total assets, debt to total assets and bank size are not statistically significant in determining the level of capital adequacy among the deposit money banks in Nigeria.

Bailliu (2018) investigates the link between capital structure and financial health of deposit money banks in over 40 developing countries during 2000-2018 using the GMM estimation technique. The study found evidence that debt to equity ratio and debt to asset ratio have significant positive impact on the financial health of the selected deposit money banks among the 40 countries. Ozcan (2018) estimated the effect of financial structure on bank profitability in Jordan. The estimation had an R-squared of 0.9216 and an adjusted R-squared of 0.90504 and a probability (F-statistics of 0.000). Debt to equity ratio was positive (0.08) and statistically significant in Arab developing countries. In addition debt to asset ratio was also statistically significant with coefficient of 0.15. The study found that financial structure significantly influenced bank profitability. Arulvel (2019) examined capital structure and financial performance: A study of listed trading companies in SRILANKA. The study employed co-integration test and ECM econometric approach and multiple regressions. The study found that capital structure has a statistical significant impact on the financial performance of listed trading companies in SRILANKA. Alexandra and Stefan (2019) assessed the impact of capital structure on risk and firm performance: Evidence from the Bucharest Stock Exchange Listed Companies. The study applied multivariate fixed effects regressions, as well as dynamic panel data estimations (two step system generalized method of moments, GMM) on a panel comprising the companies listed on the Bucharest Stock Exchange. The results showed that leverage is positively correlated with the size of the company and the share price volatility. On the other hand, the debt structure has a different impact on corporate performance, whether this calculated on accounting measures or seen as market share price evolution.

Methodology

The study used ex-post-facto research design method. The population of the study comprised of 15 quoted deposit money banks in Nigeria. All the total population of the study was considered as sample size as recommended by Krejcie and Morgan (1970) that when the total population of the study is less than thirty (30), all the population should be considered as sample size. The set of panel data estimates was used to test the impact of capital structure on financial performance of quoted deposit money banks on the Nigerian Stock Exchange for a period of ten years (2007-2016). Data collected from annual reports of quoted deposit money banks were analyzed using Fixed Effect, Random Effect, Panel regression model.

The model for this study was formulated to establish the impact of capital structure on the financial health of quoted deposit money banks in Nigeria. A model by Kumar (2015) was adopted for the purpose of this study. The models were specified as follows.

FH = f(CS)

FH= Financial Health (Dependent Variable)

CS = Capital Structure (Independent Variable)

FH = Financial Health (ROE and ROA)

CS = Debt-equity ratio (DER) and debt asset ratio (DAR).

Whereas:

Model 1:

$ROE_{it} = \alpha + \beta_1 DER_{it} + \beta_2 DAR_{it} + \mu_{it}$..... (1)

Model 2:

$ROA_{it} = \alpha + \beta_1 DER_{it} + \beta_2 DAR_{it} + \mu_{it}$..... (2)

Whereas:

ROE = Net Income /Shareholders funds

ROA = Net Income/Total Asset

α = Intercept

$\beta_1 - \beta_2$ = Parameters of Estimate,

$\mu_{it} = \varepsilon_{it} + \lambda_i$

ε_{it} = stochastic error term

λ_i = cross-sectionals individual difference (Composite Error)

A priori expectation is that β_1 and $\beta_2 < 0$

Decision rule; null hypothesis should be rejected if the prob (p-value) is < 5% significance level, otherwise it should be accepted.

Results and Discussion

Table 1: *Capital Structure and Return on Equity*

Variables	Coefficients	Std. Error	t-statistics	Prob
Constant	0.5863	0.0143	4.0700	0.0000
DER	-0.1928	-0.1079	-3.7900	0.0224
DAR	-0.1051	-0.0279	-3.7600	0.0004

Effect of Specification			
Cross-section Fixed (Dummy Variables)			
R-squared	0.7943	Mean dependent Var	0.0222
Adjusted R-squared	0.7314	S.D. dependent Var	0.0364
S.E of Regression	0.0188	Akaike Info Criter	-5.0017
Sum Squared resid	0.0153	Schwarz Criterion	-4.8063
Log Likelihood	125.04	Hannan-Quinn Criter	-4.9201
F-Statistics	33.009	Durbin-watson Stat	1.9884
Prob(F-statistics)	0.0005		

Source: Author`s Computations, 2020

Table 1 shows the impact of capital structure on the financial performance of quoted deposit money banks in Nigeria with the use of panel regression analysis. The results obtained from the ordinary least square model indicates that the overall coefficient of determination R-squared (R^2) shows that the equation has a good fit with 79% variations in bank performance in terms of return on equity is being explained by the explanatory variables while the adjusted R square stood at 73% to correct the tendency that R squared is likely to exaggerate the fitness of the model as more explanatory variables are being added. F-statistics of 33.009 is statistically significant, judging by its P-value (which is 0.0005). Durbin Watson statistic of 1.9884 is still within 1.6 to 2.4 which implies that errors in the model are not serially correlated.

Table 2: *Capital Structure and Return on Asset*

Variables	Coefficients	Std. Error	t-statistics	Prob
Constant	0.0191	0.0681	2.802	0.005
DER	-0.1327	-0.1296	-1.0201	0.020
DAR	-0.4388	-0.0208	-2.1100	0.035

Effect of Specification			
Cross-section Fixed (Dummy Variables)			
R-squared	0.7111	Mean dependent Var	0.0222
Adjusted R-squared	0.6795	S.D. dependent Var	0.0364
S.E of Regression	0.0865	Akaike Info Criter	0.0851
Sum Squared resid	1.9900	Schwarz Criter	0.6173
Log Likelihood	163.74	Hannan-Quinn Criter	0.9084
F-Statistics	16.268	Durbin-watson Stat	1.8053
Prob(F-statistics)	0.0004		

Source: Author`s Computations, 2020

Discussion of Findings

Table 2 shows the linear relationship between liquidity management and bank performance measured by return on asset (ROA) with the use of panel regression analysis. The results obtained from the static model indicates that the overall coefficient of determination R-squared (R^2) shows that the equation has a good fit with 71.1 variations in ROA is being explained by the explanatory variables while the adjusted R square stood at 67% to correct the tendency that R squared is likely to exaggerate the fitness of the model as more explanatory variables are being added. F-statistics of 6.2686 is statistically significant, judging by its P-value (which is 0.0004). Durbin Watson statistic of 1.9884 is still within 1.6 to 2.4 which implies that errors in the model are not serially correlated.

$H0_1$: There is no significant relationship between debt-equity and financial health of quoted deposit money banks in Nigeria. In terms of the signs and magnitude of the coefficients which signify the impact of capital structure on return on equity of quoted deposit money banks in Nigeria, it can be seen that total debt to equity ratio (DER) concurs with *a priori* expectation with negative sign, this means that a unit change in DER will lead to 0.1928 decline in the financial performance of quoted deposit money banks measured by return on equity, while variable debt to total asset (DAR) also concur with *a priori* expectation with negative sign, this means that a unit change in DAR will lead to will lead to 0.1051 decrease in the financial health of quoted deposit money banks in terms of return on equity. Overall, the result of the F-stat (33.009) with prob (F-stat) 0.0005 at 5% level of significant reveals that capital structure have significant effect on financial health of quoted deposit money banks in terms of return on equity. This result is consistent with the prior studies such as Kleff and Webber (2004), Ahmad (2010), Afolabi (2011), and Salim and Yadav (2012) found that capital structure have significant impact on the financial performance of banks in terms of return on equity. However, the finding is in contrast with the results of Olarewaju and Akande (2016), Madiha and Muhammed (2016) and Ihenetu (2016) found insignificant impact of capital structure on the financial performance of quoted deposit money banks in Nigeria in terms of return on equity. In line with the prediction of Trade off Theory of capital structure, the finding of this study also shows the effectiveness of optimal capital structure in enhancing the financial health of quoted deposit money banks in Nigeria.

$H0_2$: Debt-asset ratio has no significant effect on financial health of quoted deposit money banks in Nigeria. In terms of the signs and magnitude of the coefficients which signify the impact of capital structure on return on asset of quoted deposit money banks in Nigeria, it can be seen that total debt to equity ratio (DER) concurs with *a priori* expectation with negative sign, this means that a unit change in DER will lead to 0.1327 decline in the financial performance of quoted deposit money banks measured by return on equity, while variable debt to total asset (DAR) also concur with *a priori* expectation with negative sign, this means that a unit change in DAR will lead to will lead to 0.4388 decrease in the financial performance of quoted deposit money banks in terms of return on equity. Overall, the result of the F-stat (33.009) with prob (F-stat) 0.0005 at 5% level of significant reveals that capital structure have significant impact on financial performance of banks in terms of return on asset. This result is consistent with the prior studies such as Chadrasekharan (2012), Muhoro (2013), Yabs (2015) and Mallewos (2016) found a significant impact of capital structure on the financial performance of quoted deposit money banks in Nigeria in terms of return on asset. Anarfa (2015) and Banafa (2015) found insignificant impact of capital structure on the financial performance of quoted deposit money banks in Nigeria. However, pecking order theory assumptions lend credence to these findings. This is because the theory is of the opinion that firms should not use their retain earnings to finance long term project while ignoring other short term projects in order to improve banks performance.

Conclusion and Recommendations

Based on the above findings, the study concludes that debt-equity ratio (DER) has significant negative effect on the financial health of quoted deposit money banks in Nigeria at 5% level of significant (coefficient -0.1327 and prob 0.020). Also, debt-asset ratio has significant negative effect on the financial health of quoted deposit money banks in Nigeria at 5% level of significant (coefficient, -0.4388 and prob 0.035). The study therefore, recommends that financial managers should try to finance their activities from both internal finance (retain earnings) and external finance (equity) rather than relying heavily on debt capital in their capital structure. Financial manager should also make an effort to attain an optimal level of capital structure and endeavor to uphold it as much as possible to enhance bank performance.

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