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CAPITAL STRUCTURE AND PROFITABILITY OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract
Bank management and providers of funds are of the view that capital structure is of supreme importance, the use of a wrong mix of capital structure could seriously affect the performance and subsistence of such a bank. Consequently, this research examines the impact of capital structure on the net interest margin of deposit money banks in Nigeria. Panel data analysis was employed, analysing the fixed effect and random effect models. The population of the study is 14 listed banks at the NSE. The sample is the six systemically important banks in Nigeria and covered the period of 2012 to 2020. Findings shows that Long Term Debt to Total Asset and Total Debt to Total Asset are statistically significant determinants of the net interest margin in Nigerian deposit money banks while Total Equity to Total Asset, Total Asset, Risk and Income Tax Expenses to Earnings before Taxes are not statistically significant determinant deposit money banks' net interest margin in Nigeria. Therefore, it is concluded that the net interest margin of deposit money banks in Nigeria is statistically significantly determined by long term debt and equity. As such, the study recommended that deposit money banks in Nigeria should take into cognizance, the leverage level incurred in the capital structure as it significantly determines bank's net interest margin.

Keywords: *Capital Structure, Net Interest Margin, Profitability, Deposit Money Bank*

Introduction

Investors has higher interest in the banking sector simply because banks are interested in profitability and liquidity, while banks' liability are more of short-term. Deposits are payable on demand, with scarce fixed costs and little operating leverage compare to other participants in other sectors of the economy. Therefore, bank management and providers of funds is of the view that capital structure is of supreme importance because the use of a wrong mix of capital structure could seriously affect the performance and subsistence of such a bank. Banking sector channel the tide of funds for productive drives and are also expected to reimburse the excess sector from the profits of the banks (Mutairi & Naser, 2015).

Decision around the mixture of the several sources of funds that corporations can use to fund its operations and investments involves what is known as capital structure. Capital structure is

concerned about financing sources available to corporations to fund their operations. These include retained earnings, equity (share) sales, bonds, bank loans, accounts payable (creditors), line of credit, among others (Rossi, Schwaiger & Winkler, 2009) and perhaps additional interest-bearing debts.

Raising funds on Nigerian capital market has continuously remained an issue because the capital market is tilted towards equity sources of finance with its attendant higher cost of capital and serious financing constraint on corporations (Kolawole, Ijaiya, Sanni & Aina, 2019). It is detected that investors tend to pull out their share investment which led to declining stock prices in particular bank stocks (Abubakar, Jagongo, Almadi & Muktar, 2014).

Asset Management Corporation of Nigeria (AMCON) in year 2011 also injected ₦679 billion to recapitalise Nigerian Banks yet some banks are operating on negative shareholder's funds. The upward trend of non-performing loans compounded the heightened unemployment in Nigeria which, together resulted in depreciated currency and tight financial conditions. Following the special examination, eight Nigerian commercial banks wrote off N279.6 billion loans in 2017 equivalent to 66% of their total capital. As result of the forgoing discussions, the research question that begs for answer is, what is the impact of capital structure on the net interest margin of deposit money banks in Nigeria. Therefore. the objective of this study is to investigate the impact of capital structure on net interest margin of Nigerian deposit money banks.

Several studies such as Kumar (2015); Muraleetharan (2013) and Onoja and Ovayioza (2015) examined the effect of capital structure on the performance of banks concentrated on long term sources of financing while ignoring the short-term sources of financing. This study intends to improve on the discourse by looking to improve on previous studies by considering the net interest margin variable, because interest form the major source of revenue for deposit money banks.

The identified neglected area by the previous studies is very important and hence constitute the research gaps which this current study duly considered. The result of this study is important to policy makers for policy guide, financial managers in banks would be able to know the way out of their dilemma in which investments policy to pursue.

This study focusses on the six systemically important banks in Nigeria, the study covered the period from 2012 to 2020. The choice of 2012 beset the ₦679 billion which was expended by the Asset Management Corporation of Nigeria (AMCON) to recapitalise Nigerian Banks in August, 2011 while as at the time the study was carried out, the 2021 annual report of the selected banks is yet to be released.

Data on salient variables selected for this study are activities such as Total Debt to Total Assets (TDTA), Long Term Debt to Total Assets (LTDA), Total Equity to Total asset (TETA) and net interest margin proxy by Risk and Income Tax Expenses to Earnings before Tax (ITE). The study employed panel data regression technique. Panel data technique is appropriate for the study because panel data estimation yields more robust results than time-series estimation.

The remainder of the study include section two which deals with review of literature while the methodology is captured in section three. The fourth section explains the results and findings and fifth section provides the summary, conclusion and recommendations.

Literature Review

The mixture of internal and external fund sources employed by corporations in financing business operations is capital structure (Amara, 2014). Corporations' capital structure is derived from diverse sources and typically stated in the financial position statement (Modugu, 2013). Vu Thi and Huang (2003) stated corporation has three diverse ways, namely; internal (equity/retained earnings), external (debt capital, borrowing money via debt instruments) as the sources of capital to finance their business operations. Sources of funding makes up capital structure of corporation and as well displays the ownership of corporation. Net interest margin is well-thought-out as a useful tool for trailing profitability of bank investment and lending over a specific period of time. It indicates the spread of interest rate between loans and deposits and in addition, the transaction costs and taxes that are borne directly by borrowers and savers respectively. According to Hijazeen (2017) ratio of net interest income to average earning assets of banks is known as net interest margin.

Theoretically, trade-off theory hypothesizes what makes a company to borrow up to a certain margin tax-deductibility of interest payment. Where interest tax shield present value is made up for by the value loss as a result of agency cost arising from risky debt issued and the cost of likely liquidation or reorganization. Based on Miller (1977) hypothesis, the proposition of optimal capital structure of corporation, is a function of the tradeoff among current tax shield advantage from debt and higher cost of bankruptcy as a result of the higher degree of indebtedness. This is based on the assumption that corporations will balance the financial distress costs against the interest tax shields marginal present values.

In same vein, the trade-off model indicates that ideal capital structure exists by creating certain level of debt and progressively stirring towards the target level. Corporation's optimal capital structure comprises tradeoff between the effect of personal tax and corporate tax, agency cost and bankruptcy cost. Tax and agency-based theories are part of the trade-off theory (Cheng & Tzeng, 2010; Harris & Raviv, 1991 Jensen & Meckling, 1976). It is worthy to note that advantage of taxation is vital for regulated, big and dividend paying corporations, that corporations with perhaps, higher corporate tax rate with large tax incentive using debt (Desai & Hines Jr, 1999; Graham & Harvey, 2001).

Myers (1984) opined that corporation reveals matching the cost of interest tax shield against various bankruptcy cost to avoid financial awkwardness. Though, there exists divergence opinions on how appreciated the tax shield are, if any, the cost of financial awkwardness remains substantial. Therefore, corporations are likely to substitute debt for equity or equity for debt pending the maximization of the value of the firm.

Empirically, from the international perspective, Ramli, Latan, Solovida (2019) examined capital structure determinant and financial performance of firm in Malaysia and Indonesia, using PLS-SEM. The variables used in the study are asset structure, growth opportunity, liquidity, non-debt tax shield, firm leverage and rate of interest. Finding provides evidence of capital structure

negatively affecting performance of firm. Le and Phan (2017) evaluated capital structure and firm performance from the perspective of developing country. The listed variables used in the study are book leverage, market leverage, Firm characteristics: growth, investment, liquidity, risk, dividend, ROA, ROE, Tobin Q and cash flow. Using, panel data analysis, the study shows the existence of negative impact of capital structure on firm performance.

Tifow and Sayilir (2015) examined capital structure and firm performance during the periods of 2008 and 2013, comprising of 130 manufacturing firms listed on Borsa Istanbul using panel data analysis. The study revealed a negative significant relationship between leverage and performance of the firms. Basnet (2015) study capital structure determinants (profitability, assets tangibility, size, collateral, business risk dividends, GDP growth) and inflation of commercial banks in Nepal. Using multiple regressions, findings indicate internal factors were significant determinant of capital structure. Dao and Ta (2020) conducted meta-analysis of capital structure and firm performance using 340 studies chosen from 2004 to 2019 with data range from 1998 to 2017. The descriptive and quantitative analysis conducted shows that corporate performance is negatively related to capital decisions.

Studies on sub-Saharan Africa includes Ebaid (2009) which indicted that capital structure mix has little or no impact on firm performance in Egypt, while Omollo, Muturi and Wanjare (2018) examined the effects of debt structures on firm financial performance of listed companies at the Nairobi Securities Exchange and found negative and statistically significant of debt structure on returns on assets. An investigation of the firm level determinants of capital structure of 62 Egyptian publicly traded non-financial firms over the time period from 2003 to 2016 shows that Trade-Off and Pecking Order Theories best describe the choice of capital structure (Sakr & Bedeir, 2019).

Studies done on Nigerian firms includes Yakubu and Olowe (2019) studied impact of capital structure on selected quoted firms' financial performance in Nigeria. Return on equity, short term debt, long term debt and debt/equity were the variables adopted, in the study while analyses were done using the Ordinary Least Square (OLS). Findings discloses the existence of positive and significant impact of short- and long-term debt and ratio of debt/equity on financial performance.

Oladeji, Ikpefan and Olokoyo (2015) carried out an empirical study on petroleum industry's capital structure and firms' performance in Nigeria. The variables adopted in the study are firm size, tax, past period return on asset, and ratio of total debt to total asset, while the study was conducted using panel data analysis. The study found the existence of negative relationship between leverage and firm performance, positive relationship between the explanatory variables (firm size, tax and lagged return on asset) and firm performance. The tests of the long run and short run dynamic of debt on firm‘s performance, using the panel cointegration model, fully modified ordinary least square and error correction model indicates the existence of long run relationship between debt and firm performance (Ibrahim & Nageri, 2020).

Most studies mainly conduct regression analysis or generalized method of moments (GMM) and similar analysis using panel data, this study contribution to the body of literature is by the use of

net interest margin as a measure of profitability which only applies to banking financial institution.

3. Methodology and Model Specification

This section consists of model specification, sources of data, method of data analysis, data description and apriori-expectation. The panel data analysis was employed using the fixed and random effect models. The selection between the fixed effect and random effect models depends on the objective of the analysis, and problems concerning the exogeneity of the explanatory variables.

The model used to achieve the objective was adapted from the study of Ajibola, Wisdom and Qudus (2018) which was modified and specified as:

$$NIM = f(LTDA, TDTA, TETA, TA, RSK, ITE) \quad 3.1$$

Thus, the model is written in linear form as:

$$NIM = \beta_0 + \beta_1 LTDA_{it} + \beta_2 TDTA_{it} + \beta_3 TETA_{it} + \beta_4 TA_{it} + \beta_5 RSK_{it} + \beta_6 ITE_{it} \quad 3.2$$

Econometrically, it can be written thus:

$$NIM = \beta_0 + \beta_1 LTDA_{it} + \beta_2 TDTA_{it} + \beta_3 TETA_{it} + \beta_4 TA_{it} + \beta_5 RSK_{it} + \beta_6 ITE_{it} + \mu_{it} \quad 3.3$$

Where:
NIM= Net Interest Margin
LTDA= Long-term debt / Total assets
TDTA= Total debt / Total assets,
TA= Natural log of Total assets, and
RSK= Risk
TETA = Total Equity/Total Assets
TA= Natural logarithm to total assets,
ITE = Income tax expense/Earnings before taxes

A-priori Expectation

Mathematically, it can be written as: β_1, β_2 and $\beta_3 > 0$
It is expected that there will be a positive impact of capital structure on net interest margin of deposit money banks in Nigeria.

The data for this study is secondary in nature implying that the secondary data was obtained from Central Bank Statistical Bulletin and financial statement of the selected deposit money banks.

Method of Data Analysis

The panel data analysis was employed using the fixed and random effect models. The selection between the fixed effect and random effect models depends on the objective of the analysis, and problems concerning the exogeneity of the explanatory variables. The population of the study is the 14 listed banks at NSE. The study was based on the six systemically important banks in Nigeria and covered the period of 2012 to 2020.

Results and Discussion

This section presents the analysis and results and the interpretation.

Table 1: ***Correlation matrix for multicollinearity test***

Variables	LTDA	TDTA	TETA	TA	RSK	ITE
LTDA	1					
TDTA	-0.05	1				
TETA	0.29	-0.14	1			
TA	0.02	-0.16	0.10	1		
RSK	0.02	-0.10	0.04	0.46	1	
ITE	0.04	-0.31	-0.11	0.51	0.44	1

Source: Author's computation 2021 using STATA 14.2

Multicolinearity is a foremost problem in multiple regression models because it leads to bias estimates of parameters and thus renders the regression estimates spurious. Pair-wise correlation test was conducted to examine the existence of multicolinearity.

Table 1 shows that none of the correlation is shown to be strong and constitute serious problem of multicolinearity. The independent variables' correlation coefficients are less than 5%, indicating none existence of multicolinearity.

Table 2: ***Results of fixed and random effect regressions for Net Interest Margin***

VARIABLES	(1) fixed effect model for NIM	(2) random effect model for NIM
Long Term Debt to Total Asset (LTDA)	**-0.00069*** **	**-0.00064*** **
	(0.000026)	(0.000030)
Total Debt to Total Asset (TDTA)	**0.069***	**0.081*** **
	(0.037)	(0.017)
Risk (RSK)	0.023	**0.051***
	(0.030)	(0.029)
Total Equity to Total Asset (TETA)	-0.0026	0.0028
	(0.19)	(0.19)
Total Asset (TA)	-0.0011	-0.016
	(0.047)	(0.055)
Income Tax Expense (ITE)	0.18	0.19
	(0.17)	(0.19)
Constant	-0.57*	-0.72
	(0.29)	(0.47)
Observations	70	70
R-squared	0.196	
Number of cid	14	14

Robust standard errors in parentheses ***, ** and * denote 1%, 5% and 10% level of significance respectively

Source: Author's computation 2020 using STATA 14.2

Table 2 presents the regression estimates for fixed effect and random effect models. The dependent variable is net interest margin while the independent variables are Long-term debt / Total assets, Total debt / Total assets, Risk, Total Equity/Total Assets, Natural logarithm to total assets, income tax expense/Earnings before taxes. Column 1 and 2 contains the fixed effect model and the random effect model respectively.

However, the result in table 4.2 shows that Long Term Debt to Total Asset (LTDA) and Total Debt to Total Asset (TDTA) are the only statistically significant determinants of the net interest margin in Nigerian deposit money banks as shown by the p-value of less than 5%. Thus, the variables have significant impact on net income margin of commercial banks in Nigeria.

The estimates of the coefficients show that one-unit increase in LDA will lead to about 0.00069 units increase in net income margin. On the other hand, a unit increase in Total Debt to Total Asset will bring about 0.069 units decrease in net income margin respectively. Since the independent variables are representing capital structure, the result thus indicates that capital structure significantly affects net income margin of deposit money banks in Nigeria.

Table 3: ***Result of Hausman test for all the models***

	Hausman test	
	Chi-Statistics	**P-value**
Test Summary	3.61	0.7295

Source: Author's computation 2020 using STATA 14.2

The chi-square statistics of the Hausman tests for the model is 3.61 while the P-values is 0.7295. Since the P-values are greater than 5% level of significance, the null hypotheses are not rejected and the results of the random effect models are preferable for the model. In short, this implies that the policy inferences of the study should be based on the result of the random effect models.

Conclusion and Recommendations

This study examined the impact of capital structure on net interest margin of deposit money banks in Nigeria, employed panel regression of fixed and random effect to establish the extent of capital structure variation on Net Interest Margin of deposit money banks in Nigeria. The study revealed that long run relationship existed between capital structure and Net Interest Margin of deposit money banks in Nigeria. It was also revealed that, Long term-Total Assets (LTDA), Total Assets and equity were relevant to profit after tax and net interest margin of deposit money banks in Nigeria.

In conclusion, based on the empirical findings of the study, the study concluded that capital structure has impacts on net interest margin of deposit money banks in Nigeria. In other words, net interest margin of deposit money banks in Nigeria was statistically significantly determined by long term debt and equity.

Therefore, From the findings of this study, it was recommended that deposit money banks in Nigeria should take into cognizance the amount of leverage incurred because it is a significant determinant of their net interest margin. Furthermore, financial managers of banks in Nigeria should try to finance from retained earnings rather than relying heavily on debt capital in their capital structure and use debt as a last option as supported by the pecking order theory.

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