International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

Effect of Firm Characteristics on Capital Structure of Deposit Money Banks Listed On Nigeria Stock Exchange

Onyeozili, Chukwuemeka Ziliora[1]; Okoye, Emmanuel Ikechukwu[1]; Amahalu, Nestor Ndubuisi[1]; Obi, Juliet Chinyere[1]

1 Department of Accountancy, Nnamdi Azikiwe University Awka, Anambra State, Nigeria

Submitted: 15-01-2022 Revised: 23-01-2022 Accepted: 25-01-2022

ABSTRACT
This study ascertained the effect of Firm Characteristics on Capital Structure of Deposit Money Banks listed on Nigeria Stock Exchange from 2008-2019. Specifically, this study determined the effect of firm size, firm growth and board size on debt-to-equity. Panel data were used in this study, which were obtained from the annual reports and accounts of thirteen (13) sampled listed commercial banks for the periods 2008-2019. Ex-Post Facto research design was employed. Inferential statistics using Pearson correlation coefficient, Multicollinearity test Ordinary least square regression analysis and Heteroskedasticity test were applied to test the hypotheses of the study. The results showed that firm size and firm growth have a significant positive effect on debt-to-equity ratio while board size has significant negative effect on debt-to-equity ratio at 5% level of significance respectively. The study recommended inter alia that firms should embrace innovation as a way of increasing the efficiency of the assets. Increased efficiency of assets is critical to maximising the profitability of the firms, which consequently reduces the negative impact arising from the cost of debt (financing costs).

Keywords: Firm Size, Firm Growth,Board Size, Debt-to-Equity

I. BACKGROUND OF THE STUDY

A business that is newly born or subsisting requires fund to carry out its activities as no success is achievable in the absence of fund. The needed fund may be for daily running or business expansions. This tells how important or essential fund is in the life of a business. This fund is referred to as capital. Capital therefore refers to the means of funding a business. Capital of firms when sourced, it becomes a burden on enterprises simply because it is other persons' resources which they are to compensate as they deriving maximum benefits from it. It is therefore a symbol of a company's financial abilities. Two major sources are available to firms for raising funds for their activities. These sources may be internal and external. Internal sources are the funds generated from within an enterprise which is mostly retained earnings, while, any funds sourced not from within the earnings of their activities are termed external financing. The external sources may be by increasing the number of shareholders of a business or outright borrowing in form of loan. The issuance of equity is a source of external financing which lead to an increment in the number of owners where its holders are entitled to dividends when surplus is declared and after meeting the mandatory requirements. Capital structure refers to a firm's financial framework which comprises of both debt and equity components. The ability of a firm to undertake their daily activities is closely related to capital structure. Capital structure in financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities. Amahalu, Egolum, Nweze and Obi (2018) posited that capital structure is the debt-equity mix of business finance. It is used to represent the proportionate relationship between debt and equity in corporate firms' finances. Capital structure is a mixture of a company's debts (long-term and short-term), common equity and preferred equity.

Firm characteristics are traits or features specific to a particular firm, which may positively or negatively affect the firm’s performance. Firm

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

characteristics include factors such as the age of the firm, the size of the firm, asset structure (tangibility), profitability, risk and growth, the availability of collateral and business information (Mbonu & Amahalu, 2021a). Nigeria is one of the developing countries with great possibilities and it has an emerging market with a lot of potential possibilities of investment that attracts attention for investors of the world and now it's time for mangers to analyze about the influencing factors of using debt and their extent of influence over firms.

The debt financing structure of a firm may vary by the firm size, firm age, profitability, asset tangibility etc. In other words, firm characteristics play an important role in determining the success and amount of debt financing. The combination of proportion of the financing sources from equity and debt would determine the capital structure of a firm. Firm has to strike for a balance between internal and external financing strategy in order to maximise its wealth. Many factors have been studied by various researchers as the determinants of capital structure of a firm. The results are in a mixture for different studies. Some factors are found to be consistent but other determinants are inconclusive. This is because certain factors are more specific to some of the industries and thus unable to be generalized for all firms. Studies on the effect of firm characteristics on firm performance have generated mixed results ranging from those supporting a positive relationship to those opposing it. A positive relationship between firm characteristics and performance was found by Ezechukwu and Amahalu (2017); Ooko, Ogutu, Munjuri and Kagwe (2020). Wang and Muhammad (2020); Ning (2020) found a negative relationship between firm characteristics and capital structure. While, Wolters (2018); Dioha, Mohammed and Okpanachi (2018) found no significant relationship between firm characteristics and capital structure. So this study investigated capital structure of banking industry of Nigeria as to identifying the relationship between firm size, firm growth and board size as independent factors and Debt-to-Common Equity and to ascertain its effect thereof.

Objectives of the Study

The main objective of this study is to determine the relationship between Firm Characteristics and Capital Structure of Deposit Money Banks listed on Nigerian Stock Exchange.

The specific objectives of this study were:

i. To ascertain the relationship between Firm Size and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

ii. To determine the relationship between Firm Growth and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

iii. To assess the relationship between Board Size and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Research Hypotheses

The null hypotheses that were formed in conducting this study were summarized below:

Ho_1: There is no significant relationship between Firm Size and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Ho_2: There is no significant relationship between Firm Growth and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Ho_3: There is no significant relationship between Board Size and Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

II. CONCEPTUAL REVIEW

Firm Characteristics

Firm characteristics are traits or features specific to the firm, which can affect positively or negatively the performance of the firm. Firm characteristics include factors such as the age of the firm, the size of the firm, asset structure, profitability, risk and growth, the availability of collateral and business information. Firm characteristics are factors that affect the firm directly. These are internally generated within a firm. They include financial and non- financial factors. Financial factors includes: efficiency, liquidity, leverage, firm size and investment among others. Non-financial factors include; Shareholding, labour, age of the firm and board of director characteristics etc (Mbonu, & Amahalu, 2021b).

Firm Size

From the theoretical point of view, the effect of size on capital structure is ambiguous. As Amahalu & Obi (2020b) found that larger firms tend to be more diversified and fail less often, so size (computed as the logarithm of total asset) may be an inverse proxy for the probability of bankruptcy. If so, size should have a positive impact on the supply debt. However, size may also be a proxy for the information outside investors have, which should increase their preference for

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

equity relative to debt. Akdogan (2014) stated that the size of a firm has an important influence on the debt ratios as firms with more real assets tends to have greater access to long-term debt.

Firm Growth

A growth firm is a company growing faster than its peers or the broader economy. Although there are no hard-and-fast rules of defining growth, these firms generally have increased annual revenues by more than the industry average over a sustained period. A firm is not classified as a growth firm if revenues or other financial metrics surge for one quarter and relax in subsequent periods. This progress must be demonstrated over several years to legitimize the quality of growth (Okegbe, Eneh & Amahalu, 2019). Applying pecking order arguments, growing firms place a greater demand on the internally generated funds of the firm. Consequentially, firms with relatively high growth will tend to look outside the firm to finance the growth. Therefore, these firms should look to short-term less secured debt then to longer-term more secured debt for their financing needs. This should lead to firms with relatively higher growth having more leverage (Amahalu & Obi, 2020a).

Board Size

A board of directors (B of D) is a group of individuals, elected to represent shareholders. Principle 2.3 of the Code of Corporate Governance 2018 requires the Board, in determining its number, to consider certain factors such as the appropriate mix of knowledge, skills and experience. There should also be an appropriate mix of Executive, Non-Executive and Independent Non-Executive members such that majority of the Board are Non-Executive Directors. The Code further provides that there should be sufficient number of members that qualify to serve on the committees of the Board and secure quorum at meetings as well as diversity. The Code appears to provide the Board with the flexibility to make decisions regarding its membership and composition. This is a change from the 2016 Code which expressly provided that Board members must not be less than 8 and prohibited the sitting of more than 2 members of the same or extended family on the Board of a company at the same time. It, therefore, appears that these restrictions contained in the 2016 Code are no longer applicable. While there is no set number of members for a board, most range from 3 to 31 members. Some analysts believe the ideal size is seven (Ezechukwu & Amahalu, 2017).

Capital Structure

Capital structure is the way in which an organization is financed with a combination of long term capital (ordinary shares and reserves, preference shares, debentures, bank loans, convertible loan stock and so on) and short term liabilities such as a bank overdraft and trade creditors. Amahalu, Egolum, Nweze and Obi (2018) described capital structure of a firm as the components of its sources of financing, broadly categorized as equity and debt finance. Capital structure as the mix of different securities. Capital structure is described as the mix or combination of its financial resources available for carrying on the business and is a major determinant on how the business operates.

Debt-to-Equity Ratio

The debt-to-equity ratio shows the proportion of equity and debt a company is using to finance its assets and the extent to which shareholder's equity can fulfill obligations to creditors in the event of a business decline (Moez, 2018). A low debt-to-equity ratio indicates a lower amount of financing by debt via lenders versus funding through equity via shareholders. A higher ratio indicates the company is getting more of their financing from borrowing which may pose a risk to the company if debt levels are too high (Folger, 2018). A greater degree to which operations are funded by borrowed money means a greater risk of bankruptcy if business declines. Minimum payments on loans and other debts must still be met even if, due to an economic downturn or competition, a company does not earn enough profit to meet its obligations. For a highly leveraged company, sustained earnings declines could lead to financial distress or bankruptcy (Eneh, Okegbe & Amahalu, 2019).

To calculate debt-to-equity, we divide a company's total liabilities by its total amount of shareholders' equity as shown below.

$$\text{Debt-to-Equity Ratio} = \frac{\text{Total liabilities}}{\text{Total Shareholders' equity}}$$

Firm Characteristics and Capital Structure

Debt in financial structure of a firm can increase earning because of its tax saving and consequently increases stock return, on the other hand, due to interest costs and risk of non-payment of debt financial risk can increase and thus can reduce stock return. Nawaz (2019) posit that when a firm becomes larger, it enjoys economics of scale and its average cost of production is lower and operational activities are more efficient. Amahalu

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

and Ezechukwu (2017) opined that large firms face less difficulty in getting access to credit facilities from financial institutions for investment, have broader pools of qualified human capital, and may achieve greater strategic diversification. Booth, Aivazian, Demirgüc-Kunt and Maksimovic (2017) stated that larger firms have some advantages such as greater possibility of taking advantage of scale of economies which can enable more efficient production, a greater bargaining power over both suppliers and distributors or clients, exploiting experience curve effects and setting prices above the competitive level. Azhar, Abbas, Waheed and Malik (2019) also argued that larger firms are more stable and mature and they can generate greater sales because of the greater production capacity and finally, those firms have the chance of capital cost savings with the economies of scale.

III. THEORETICAL FRAMEWORK

Trade-off Theory

The underpinning theory of this study is Trade-off Theory

The trade-off theory of capital structure is the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. The classical version of the hypothesis goes back to Kraus and Litzenberger (1973) who considered a balance between the dead-weight costs of bankruptcy and the tax saving benefits of debt. Often agency costs are also included in the balance. An important purpose of the theory is to explain the fact that corporations usually are financed partly with debt and partly with equity. It states that there is an advantage to financing with debt, the tax benefits of debt and there is a cost of financing with debt, the costs of financial distress including bankruptcy costs of debt and non-bankruptcy costs (e.g. staff leaving, suppliers demanding disadvantageous payment terms, bondholder/stockholder infighting, etc.). The marginal benefit of further increase 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. The trade-off theory argues that firms choose their optimal level of debt by trading off the benefits of debt financing against its costs. The benefits of debt include tax deductibility of interest expenses and reduction of agency costs of equity derived from excess free cash flows. The cost of debt includes higher interest rates and bankruptcy costs, either direct or indirect, and these may occur in a situation of excessive debt. According to this theory, there is an optimal level of debt which occurs when the marginal benefit equals the marginal cost of an additional unit of debt (Kipkoech & Rono, 2016).

Empirical Review

Ning (2020) explored whether the CEO power and the firm characteristics have effects on the capital structure of Greek firms. The sample included 26521 annual observations from 1993 to 2019. Multivariate regression was employed. Based on the agency theory, the CEOs may adopt sub-optimal capital structure due to the conflicts of interests between the executives and the shareholders. The study found that when controlling the industry effect, the more powerful CEOs, which is measured by the CEO pay slice tend to adopt more debt in the capital structure. And the size of the firm, the liquidity of the firm and the interest coverage ratio of the firm tend to decrease the debt ratio of the firm.

Milad and Bicer (2020) examined the impact of some bank characteristics (age, size, profitability and leverage) on the extent of voluntary disclosure in annual reports of listed banks in Borsa Istanbul. All (13) listed banks represented the sample of the study. The study adopted the deductive approach by developing hypotheses based on the relevant theories and results of prior studies. The study also applied the panel data strategy to analyze the collected data from annual reports across five years (2013-2017). The results indicated that there is a positive relationship between each bank characteristic (age, size, profitability and leverage) and the level of voluntary disclosure.

Cinˇcalová and Hedija (2020) examined the relationship between selected characteristics of firms (firm age, firm size, firm performance, and gender diversity of boards) and the application of a corporate social responsibility concept in the Czech transportation and storage industry from 2011-2018. Using the data from survey, the Albertina database, and the Business Register, and applying the Pearson and Spearman correlation coefficients and regression analysis, it was been found that there is a statistically significant relationship between firm size, firm financial performance, and CSR practice of firms. On the other hand, firm age and gender diversity of boards are not the factors affecting the CSR practice.

IV. METHODOLOGY

Research Design

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

This study utilised Ex-post Facto research design in conducting this research.

Population of Study

The population for this study consisted of fourteen (14) deposit money banks listed on the Nigeria stock Exchange as at 31st December 2019. These banks are as follows; Access Bank Plc; First Bank Plc; FCMB Plc; GTB Plc; Jaiz Bank Plc; Zenith Bank Plc; Sterling Bank Plc; UBA Plc; Fidelity Bank Plc; Stanbic IBTC; Union Bank Plc; Unity Bank Plc; Wema Bank Plc; Eco Bank Plc.

Sample Size and Sampling Technique

Purposive sampling technique was employed in the determination of the sample size. Thirteen (13) deposit money banks were purposively selected based on the availability and completeness of data set for the study period (2008 - 2019). They include: Access Bank Plc; First Bank Plc; FCMB Plc; GTB Plc; Zenith Bank Plc; Sterling Bank Plc; UBA Plc; Fidelity Bank Plc; Stanbic IBTC; Union Bank Plc; Unity Bank Plc; Wema Bank Plc; Eco Bank Plc.

Source of Data

The data used in this study were collected mainly from secondary sources. These data were obtained from annual reports and account, fact books, Nigeria stock exchange publications of the sampled banks and for the study period.

Table 1: Description of Variables

Variables (code)	Operational Definitions
Dependent Variable (Capital Structure)	
Drivers:	
Debt-to-Equity Ratio (DER)	Total Liabilities/Total Equity
Independent Variable (Firm Characteristics)	
Proxies:	
Firm Size (FSZ)	Natural logarithm of total asset
Firm Growth (FGR)	$\frac{\text{Current Year Revenue-Previous Year Revenue}}{\text{Previous Year revenue}} \times 100$ 1
Board Size (BSZ)	Logarithm of total number of directors on board
Control Variables	
Interest Coverage Ratio (ICR)	$\frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}$
Liquidity (LQD)	Currents Assets/Current Liabilities

Model Specification

Following the regression model of Ezechukwu and Amahalu (2017):

$ROCE = \beta_0 + \beta_1 FSZ + \beta_2 AOWNC + \beta_3 FAG + Є$

Where:

ROCE = Return on Capital Employed
FSZ = Firm Size
OWNC = Ownership Concentration
FAG = Firm Age

Thus, Ordinary Least Square regression equation was set up to evaluate the hypothesized relationships between the dependent variable and the independent variables of this study. The econometric form of the equation is given as:

$DER_{it} = \beta_0 + \beta_1 FSZ_{it} + \beta_2 ICR_{it} + \beta_3 LQD_{it} + Є_{it}$ - - - **Ho_1**

$DER_{it} = \beta_0 + \beta_1 FGR_{it} + \beta_2 ICR_{it} + \beta_3 LQD_{it} + Є_{it}$ - - - **Ho_2**

$DER_{it} = \beta_0 + \beta_1 BSZ_{it} + \beta_2 ICR_{it} + \beta_3 LQD_{it} + Є_{it}$ - - - **Ho_3**

Where:

DER_{it} = Debt-to- Equity Ratio (Dependent Variable) for bank í in period t
FSZ = Firm Size (Independent Variable) for bank í in period t
FGR = Firm Growth (Independent Variable) for bank í in period t
BSZ = Board Size (Independent Variable) for bank í in period t
ICR = Interest Coverage Ratio (Control Variable) for bank í in period t
LQD = Liquidity (Control Variable) for bank í in period t

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

ϵ_{it} = The error term which account for other possible factors that could influence Y_{it} that are not captured in the model.
i= firm identifier (13 firms)
β_0= constant term
β_1 β_2 and β_3 = are slope to be estimated for firm i in period t.
t= time variable (2008, 2009, 2010 ... 2019) – (Twelve Years)

Data Presentation and Analysis

Table 2 Pearson Correlation Matrix

	DER	FSZ	FGR	BSZ	ICR	LQD
DER	1.0000					
FSZ	0.0603	1.0000				
FGR	0.5367	-0.0270	1.0000			
BSZ	-0.2267	0.3997	0.2113	1.0000		
ICR	-0.1890	-0.0915	0.0110	-0.0608	1.0000	
LQD	-0.4556	0.0139	-0.4558	-0.0172	-0.0709	1.0000

Source: E-Views Correlation Output, 2021
Table 2 shows that firm size and firm growth are positively and strongly correlated with DER, with respective correlation coefficients of 0.0603 and 0.5367. The result also shows that BSZ, ICR and LQD have inverse correlation with DER. The coefficients for BSZ, ICR and LQD are -0.2267, -0.1890 and -0.4556 respectively.

Table 3: Multicollinearity Test

Variance Inflation Factors
Date: 04/30/21 Time: 12:51
Sample: 2008 2019
Included observations: 12

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	31.74857	237.2498	NA
FSZ	0.271608	248.4838	1.217429
FGR	30.29708	6.448716	1.354645
BSZ	5.306822	16.03385	1.277606
ICR	1.030874	3.665960	1.014592
LQD	3.038128	3.944498	1.281267

Source: E-Views 10.0 Output, 2021

Variance Inflation Factors (VIF) statistics below 10 imply the non-existence of multicollinearty. Table 3 shows that the Centered VIF for FSZ =1.217429; FGR = 1.354645; BSZ = 1.277606; ICR = 1.014592; LQD = 1.281267 are all below 10 which is an indication that there is no multicollinearity problem in the model.

Test of Hypothesis 1

Ho_1: Firm Size has no significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.
H_1: Firm Size has significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Table 4: OLS Regression Analysis testing the effect of Firm Size on DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 12:55
Sample: 2008 2019
Included observations: 12

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.101602	5.974658	5.686500	0.0000
FSZ	0.081080	0.528576	4.153393	0.0002
ICR	-0.804895	1.130749	-3.711824	0.0058
LQD	-2.659804	1.720318	-5.546112	0.0000
R-squared	0.558987	Mean dependent var		3.613333
Adjusted R-squared	0.518892	S.D. dependent var		1.398963
S.E. of regression	1.412116	Akaike info criterion		3.789257
Sum squared resid	15.95257	Schwarz criterion		3.950893
Log likelihood	-18.73554	Hannan-Quinn criter.		3.729414
F-statistic	37.32013	Durbin-Watson stat		1.812676
Prob(F-statistic)	0.000000			

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Regression Result

Table 4 proves that the functional relationship between the dependent and independent variables is:

DER = 4.101602 + 0.081080FSZ - 0.804895ICR - 2.659804LQD

The table revealed that firm size is positively and significantly correlated with the DER of listed deposit money banks in Nigeria. The beta coefficient of the variable is 0.081080 and the p-value is 0.0002 which is significant at 5% level of significance, this indicates that size plays a significant role on the DER of firms. The implication of this finding is that the bigger the size of the firms the higher the DER. Furthermore, the result exhibits evidence of negative significant relationship between interest coverage ratio and DER. The result shows a beta coefficient of -0.804895 with p-value of 0.0058 indicating a statistically significant relationship at 5% significant level. Moreover, liquidity has an inverse and significant effect of DER with a coefficient of -2.659804 and t. value of -5.546112. As evident in table 4.3, the adjusted R^2 is approximately 52%. This means that 52% of the variations in the sampled firms' debt-to-equity ratio can be explained jointly by FSZ, ICR and LQD. The overall regression result with a P-Value = 0.000000 evidenced that firms size exhibits a significant positive effect on DER.

Decision

The regression result with P-value = 0.000000 provides a basis for accepting the alternative hypothesis, which states that firm size has significant positive effect on debt-to-equity ratio of listed deposit money banks in Nigeria at 5% level of significance.

Table 5: Heteroscedasticity Test between Firm Size and DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 13:00
Sample: 2008 2019
Included observations: 12
White-Hinkley (HC1) heteroskedasticity consistent standard errors and Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.101602	4.395172	0.933206	0.3780
FSZ	0.081080	0.404908	0.200243	0.8463
ICR	-0.804895	0.989763	-0.813220	0.4396
LQD	-2.659804	1.640386	-1.621451	0.1436
R-squared	0.258987	Mean dependent var		3.613333

Adjusted R-squared	0.218892	S.D. dependent var	1.398963
S.E. of regression	1.412116	Akaike info criterion	3.789257
Sum squared resid	15.95257	Schwarz criterion	3.950893
Log likelihood	-18.73554	Hannan-Quinn criter.	3.729414
F-statistic	0.932013	Durbin-Watson stat	2.812676
Prob(F-statistic)	0.468691	Wald F-statistic	1.390411
Prob(Wald F-statistic)	0.314417		

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Diagnostic Test

Heteroscedasticity is present if the test statistic has a p-value below an appropriate threshold of 5% (e.g. $p < 0.05$) then the null hypothesis of homoskedasticity is rejected and heteroskedasticity assumed. With a p-value of 0.314417 in table 5, we fail to reject the null hypothesis (that variance of residuals is constant) and therefore infer that their residuals are homoscedastic, thus, the problem of heteroscedsticity is solved.

Test of Hypothesis I1

Ho_2: Firm Growth has no significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

H_2: Firm Growth has significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Table 6: OLS Regression Analysis testing the effect of Firm Growth on DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 13:03
Sample: 2008 2019
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.560905	1.423504	2.501506	0.0369
FGR	7.090627	5.375189	3.319140	0.0083
ICR	-0.788270	1.022341	-2.771044	0.0246
LQD	-1.602085	1.754511	-0.913124	0.3879

R-squared	0.689583	Mean dependent var	3.613333
Adjusted R-squared	0.660677	S.D. dependent var	1.398963
S.E. of regression	1.281654	Akaike info criterion	3.595381
Sum squared resid	13.14109	Schwarz criterion	3.757016
Log likelihood	-17.57228	Hannan-Quinn criter.	3.535538
F-statistic	9.701935	Durbin-Watson stat	1.701737
Prob(F-statistic)	0.000019		

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Regression Result

Table 6 provides results of OLS regression model, estimated using DER.

DER = 3.560905 + 7.090627FGR - 0.788270ICR - 1.602085LQD

The result implies that one unit increase in firm growth will exert a corresponding increase in debt to equity ratio and a corresponding decrease, while, an increase in interest coverage ratio and liquidity will lead to a corresponding decrease in DER. The robust regression result shows that parameter estimate for firm growth is found to have significant positive effect on DER at 5% level of significance. ICR on the other hand, is found to have significant negative effect on DER at 5% level of significance. Similarly, an inverse and non-significant relationship exist liquidity and DER of sample banks in Nigeria. Adjusted R-squared of 0.660677 is an indication that about 66% variation in the debt to equity ratio of listed banks in Nigeria is explained by joint influence of FGR, ICR and LQD. Significant F-value (9.701935) at 5% level of

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

significance is an evidence that the model is very much adequate to explain the relationship between the variables.

Decision

Consequent on the P-value = 0.000019 which is less than the nominal value of 5%. This study upholds that firm growth has a significant positive effect on debt to equity ratio of listed deposit money banks in Nigeria at 5% level of significance.

Test of Hypothesis III

Ho_3: Board Size has no significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

H_3: Board Size has significant effect on Debt-to-Equity ratio of Deposit Money Banks listed on Nigerian Stock Exchange.

Table 7: Heteroscedasticity Test between Firm Growth and DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 13:04
Sample: 2008 2019
Included observations: 12
White-Hinkley (HC1) heteroskedasticity consistent standard errors and Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.560905	1.579900	2.253881	0.0542
FGR	7.090627	5.474622	1.295181	0.2314
ICR	-0.788270	0.904379	-0.871615	0.4088
LQD	-1.602085	2.076589	-0.771499	0.4626

R-squared	0.389583	Mean dependent var	3.613333
Adjusted R-squared	0.260677	S.D. dependent var	1.398963
S.E. of regression	1.281654	Akaike info criterion	3.595381
Sum squared resid	13.14109	Schwarz criterion	3.757016
Log likelihood	-17.57228	Hannan-Quinn criter.	3.535538
F-statistic	1.701935	Durbin-Watson stat	2.701737
Prob(F-statistic)	0.243319	Wald F-statistic	1.870340
Prob(Wald F-statistic)	0.103602		

Source: E-Views 10.0 Regression Output, 2021

Heteroscedasticity is present if the test statistic has a p-value below an appropriate threshold of 5% (e.g. $p < 0.05$) then the null hypothesis of homoskedasticity is rejected and heteroskedasticity assumed. With a p-value of 0.103602 in table 7, we fail to reject the null hypothesis (that variance of residuals is constant) and therefore infer that their residuals are homoscedastic, thus, the problem of heteroscedsticity is solved.

Table 8: OLS Regression Analysis testing the effect of Board Size on DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 13:06
Sample: 2008 2019
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.184170	1.684042	3.672219	0.0063
BSZ	-0.860734	2.182188	-6.852692	0.0000
ICR	-0.877967	1.081830	-4.811558	0.0000

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

LQD	-2.688220	1.649856	-3.629366	0.0069

R-squared	0.748726	Mean dependent var	3.613333
Adjusted R-squared	0.713248	S.D. dependent var	1.398963
S.E. of regression	1.353999	Akaike info criterion	3.705204
Sum squared resid	14.66652	Schwarz criterion	3.866840
Log likelihood	-18.23122	Hannan-Quinn criter.	3.645361
F-statistic	38.47567	Durbin-Watson stat	1.698193
Prob(F-statistic)	0.000000		

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Regression Result

Table 8 proves that the functional relationship between the dependent and independent variables is:

DER = 6.184170 -0.860734BSZ - 0.877967ICR - 2.688220LQD

The table revealed that board size is negatively but however significantly correlated with the DER of listed deposit money banks in Nigeria. The beta coefficient of the variable is -1.860734 and the p-value is 0.0000 which is significant at 5% level of significance, this indicates that board size plays a significant role on the DER of firms. The implication of this finding is that one unit increase in board size will cause debt to equity ratio to reduce by 86%. Similarly, the result exhibits evidence of negative significant relationship between interest coverage ratio, liquidity and DER. The result shows respective beta coefficients of -0.877967; 2.688220 with respective p-values of 0.0000 and 0.0069 for ICR and LQD respectively, indicating a statistically significant relationship at 5% significant level. As evident in table 4.8, the adjusted R^2 is approximately 71%. This means that 71% of the variations in the sampled firms' debt-to-equity ratio can be explained jointly by BSZ, ICR and LQD. The overall regression result with a P-Value = 0.000000 evidenced that board size exhibits a significant negative effect on DER.

Decision

The regression result with P-value = 0.000000 provides a basis for accepting the alternative hypothesis, which states that board size has a significant negative effect on debt-to-equity ratio of listed deposit money banks in Nigeria at 5% level of significance.

Table 9: Heteroscedasticity Test between Board Size and DER

Dependent Variable: DER
Method: Least Squares
Date: 04/30/21 Time: 13:07
Sample: 2008 2019
Included observations: 12
White-Hinkley (HC1) heteroskedasticity consistent standard errors and Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.184170	1.237527	4.997202	0.0011
BSZ	-1.860734	1.708278	-1.089246	0.3078
ICR	-0.877967	0.901138	-0.974287	0.3584
LQD	-2.688220	1.356631	-1.981541	0.0829

R-squared	0.318726	Mean dependent var	3.613333
Adjusted R-squared	0.263248	S.D. dependent var	1.398963
S.E. of regression	1.353999	Akaike info criterion	3.705204
Sum squared resid	14.66652	Schwarz criterion	3.866840
Log likelihood	-18.23122	Hannan-Quinn criter.	3.645361
F-statistic	1.247567	Durbin-Watson stat	2.698193
Prob(F-statistic)	0.355123	Wald F-statistic	1.383204
Prob(Wald F-statistic)	0.145046		

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 1 Jan 2022, pp: 815-827 www.ijaem.net ISSN: 2395-5252

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Diagnostic Test

Heteroscedasticity is present if the test statistic has a p-value below an appropriate threshold of 5% (e.g. $p < 0.05$) then the null hypothesis of homoskedasticity is rejected and heteroskedasticity assumed. With a p-value of 0.145046 in table 9, we fail to reject the null hypothesis (that variance of residuals is constant) and therefore infer that their residuals are homoscedastic, thus, the problem of heteroscedsticity is solved.

Findings, Conclusion and Recommendations

Findings

Based on the analysis of this study, the following findings were deduced:

i. Firm Size has a significant positive effect on Debt to Equity ratio of listed Deposit Money Banks in Nigeria at 5% level of significance.

ii. Firm Growth has a significant positive effect on Debt to Equity ratio of listed Deposit Money Banks in Nigeria at 5% level of significance.

iii. Board Size has a significant negative effect on Debt-to-Equity ratio of listed Deposit Money Banks in Nigeria at 5% level of significance.

V. CONCLUSION

This study assessed the effect of Firm Characteristics on Capital Structure of Deposit Money Banks in Nigeria listed on Nigerian Stock Exchange for a twelve year period covering from 2008-2019. The independent variable (firm characteristics) was proxied by firm size, firm growth and board size while capital structure (dependent variable) was measured with debt to equity. The study obtained data from annual reports and account and publications of the commercial banks that operated during 2008-2019. With the aid of E-Views 10.0, inferential statistics using Pearson correlation coefficient, Ordinary least square regression estimate, Multicollinearity and White Heteroskadasticity tests were employed. This study revealed that firm size and firm growth have a significant positive relationship with DER while a significant negative relationship exist between board size and DER of listed Deposit Money Banks at 5% level of significance.

VI. RECOMMENDATIONS

On the premise of these study findings, the following recommendations were made;

i. Consequent upon the positive relationship between firm size and debt-to-equity ratio, deposit money banks should strive to attain a sound asset base in order to meet, on a timely basis, their responsibilities towards the customers and by extension, improve on their capital base; especially in the long term.

ii. In the light of the positive relationship between firm growth and debt-to-asset ratio, deposit money banks should embrace innovation as a way of increasing the efficiency of the assets. Increased efficiency of assets is critical to maximising the profitability of the firms, which consequently reduces the negative impact arising from the cost of debt (financing costs).

iii. In order to reverse the inverse relationship between board size and debt-to-equity ratio, small and efficient board size is recommended since large boards are wastage of resources and incurrence of avoidable expenses which fleece the company revenues to support lavish life styles of directors.

REFERENCES

[1]. Akdogan, Y.E. (2014). The effect of corporate governance on firm performance: A case of Turkey. International Journal of Critical Accounting, 6(2), 187–210.

[2]. Amahalu, N.N., & Ezechukwu, B.O. (2017). Effect of cash holding on financial performance of selected quoted insurance firms in Nigeria. Journal of Marketing Management and Consumer Behavior, 2 (1), 90-112.

[3]. Amahalu, N.N., & Obi, J.C. (2020a). Effect of financial statement quality on investment decisions of quoted deposit money banks in Nigeria. International Journal of Management Studies and Social Science Research, 2(4), 99-109.

[4]. Amahalu, N.N., & Obi, J.C. (2020b). Effect of audit quality on financial performance of quoted conglomerates in Nigeria. International Journal of Management Studies and Social Science Research, 2(4), 87-98.

[5]. Amahalu, N.N., Abiahu, M.F.C., Nweze, C.L., & Obi, J.C. (2017). Effect of corporate governance on borrowing cost of quoted brewery firms in Nigeria (2010-2015). EPH - International Journal of Business & Management Science, 2(3), 31-57

[6]. Amahalu, N.N., Egolum, U.P., Nweze, C.L., & Obi, J.C. (2018). Capital structure determinants: Empirical evidence from quoted deposit money banks in Nigeria . International Journal of Research in Business, Economics and Management 2(4), 70-85.

[7]. Amahalu, N.N., Egolum, U.P., Nweze, C.L., & Obi, J.C. (2018). Capital structure determinants: Empirical evidence from quoted deposit money banks in Nigeria . International Journal of Research in Business, Economics and Management 2(4), 70-85.

[8]. Amahalu, N.N., Okoye,E.I, Nweze, C.C & Okika, E.O. (2017). Effect of capital adequacy on financial performance of quoted deposit money banks in Nigeria. Proceedings of the 2017 Faculty of Management Sciences, International Conference on African Entrepreneurship and innovation for sustainable development, Nnamdi Azikiwe University, Awka, 26th-29th July, 2017, 841-862.

[9]. Azhar, B., Abbas, N., Waheed, A., & Malik, Q.A. (2019). The impact of ownership structure and corporate governance on investment efficiency: An empirical study from Pakistan Stock Exchange (PSX). Pakistan Administrative Review, 3(2), 84-98.

[10]. Booth, L., Aivazian, V., Demirgüc-Kunt, A., & Maksimovic, V. (2017). Impact of size and age on firm-level performance: Some evidence from India. Review of Industrial Organisation, 12, 231-241.

[11]. Cinˇcalová, S., & Hedija, V. (2020). Firm characteristics and corporate social responsibility: The case of Czech transportation and storage industry. Sustainability, 12(1992), 1-15.

[12]. Dioha, C., Mohammed, N.A., & Okpanachi, J. (2018). Effect of firm characteristics on profitability of listed consumer goods companies in Nigeria. file:///C:/Users/HP/AppData/Local/Temp/1817-1532944428.pdf. Assesed 20/07/2020

[13]. Eneh, O.M., Okegbe, T.O., & Amahalu, N.N. (2019). Determinants of cash holdings: Evidence from agricultural firms listed on Nigeria stock exchange. International Journal of Academic Research in Accounting, Finance and Management Sciences, 9(2), 211–223.

[14]. Ezechukwu, B.O., & Amahalu, N.N. (2017). Effect of firm characteristics on financial performance of quoted deposit money banks in Nigeria. Contemporary Issues in Business Management: A Multidisciplinary Approach, Book of Readings, 1(1), 387-409.

[15]. Mbonu, C.M., & Amahalu, N.N. (2021a). Effect of firm characteristics on capital structure of insurance companies listed on Nigeria stock exchange International Journal of Management Studies and Social Science Research, 3(5), 217-228

[16]. Mbonu, C.M., & Amahalu, N.N. (2021b). Effect of board diversity on borrowing cost of listed conglomerates in Nigeria. American Research Journal of Humanities Social Science (ARJHSS), 04(10), 62-73.

[17]. Milad, I., & Bicer, A. (2020). The impact of firm characteristics on the level of voluntary disclosure. International Journal of Finance & Banking Studies (2147-4486), 9(2), 13-25.

[18]. Moez, D. (2018). Agency costs, corporate governance and the nature of controlling shareholders: Evidence from French Listed Firms. International Journal of Accounting and Financial Reporting, 8(3), 256–277.

[19]. Nawaz, K. (2019). The mediating role of innovation between corporate governance and organizational performance: Moderating role of innovative culture in Pakistan textile sector. Cogent Business & Management. 6, 1–23.

[20]. Ning, X. (2020). Chief executive officer power, firm characteristics and capital structure: Some empirical evidence. Available at SSRN: https://ssrn.com/abstract=3583951 or http://dx.doi.org/10.2139/ssrn.3583951 . . Assessed 11/05/2020.

[21]. Ning, X. (2020). Chief executive officer power, firm characteristics and capital structure: Some empirical evidence. Available at SSRN: https://ssrn.com/abstract=3583951 or http://dx.doi.org/10.2139/ssrn.3583951 . . Assessed 11/05/2020.

[22]. Okegbe, T.O., Eneh, O.M., & Amahalu, N.N. (2019). Effect of firm characteristics on capital structure of deposit money banks listed on Nigeria stock. International Journal

of Academic Research in Accounting, Finance and Management Sciences, 9(2), 198–210.

[23]. Ooko, C., Ogutu, M., Munjuri, M., & Kagwe, J. (2020). The influence of firm characteristics on the relationship between foreign market entry strategies and financial performance of listed multinational firms in Kenya. https://www.ejbmr.org/index.php/ejbmr/article/view/332. Retrieved 09/05/2020

[24]. Wang, P., & Muhammad, R. (2020). Do corporate governance structure and capital structure matter for the performance of the firms? An empirical testing with the contemplation of outliers. Plos One, 15(2), 1-52.

[25]. Wolters, F. (2018). Capital structure of (non-) public listed firms in the last financial crisis: A cross country and cross industry study. Master's Thesis Financial Economics. 1-53.