



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

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Abstract This study sought to ascertain the effect of Firm Characteristics on Capital Structure of Deposit Money Banks (DMBs) listed on Nigeria Stock Exchange using a sample of fifteen (15) DMBs from 2008-2017. Ex-Post Facto research design was employed while secondary data were collected and subjected to multiple regression and correlation analysis in order to achieve the study objectives. A firm characteristic, which is the independent variables, was measured by size and asset tangibility, while capital structure, which is the dependent variable, was measured by Debt-Capital ratio, Debt-Asset ratio and Debt-Common Equity ratio. Results of this study suggested that Firm Characteristics have a significant negative effect on Debt-Capital ratio; Firm Characteristics have a significant positive effect on Debt-Asset ratio; Firm Characteristics have a non-significant positive effect on Debt-Common Equity ratio. This implies that, the two variables have a strong positive effect on the capital structure of DMBs. Overall; the implications of the findings of this study support both the trade-off theory and the pecking order theory of capital structure. This study recommended that, management of DMBs need to embrace innovation as a way of increasing the efficiency of the assets. Increased efficiency of assets is critical to maximizing the profitability of the firms, which consequently reduces the negative impact arising from the cost of debt (financing costs). Additionally, finance managers are advised to adopt a residual dividend policy while at the same time, emphasizing on cost-effectiveness.

Keywords Tangibility, firm size, Debt-Capital ratio, Debt-Asset ratio, Debt-Common Equity ratio

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1. Introduction

Capital structure refers to the firm's financial framework which consists of the debt and equity used to finance the firm. The ability of companies to carry out their stakeholders' needs is tightly related to capital structure (Vasiliou and Daskalakis, 2009; Alom, 2013). Therefore, this derivation is an important fact that we cannot omit. Capital structure in financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities (Saad, 2010). Dare and Sola (2010) 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. Capital structure is essential on how a firm finances its overall operations and growth by using different sources of funds. Modigliani-Miller (MM) theorem is the broadly accepted capital structure theory because it is the origin theory of capital structure theory which had been used by many researchers. According to MM Theorem, these capital structure theories operate under perfect market. Various assumptions of perfect market such as no taxes, rational investors, perfect competition, absence of bankruptcy costs and efficient market. MM Theorem states that capital structure or finances of a firm is not related to its value in perfect market (Qureshi *et al.*, 2012; Amahalu *et al.*, 2018). In reality, capital structure of a firm is difficult to determine. Financial managers are

difficult to exactly determine the optimal capital structure. A firm has to issue various securities in a countless mixture to come across particular combinations that can maximum its overall value which means optimal capital structure. Optimal capital structure means with a minimum weighted-average cost of capital and thereby maximize the value of firms (Zhao and Wijewardana, 2012).

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 (Ong and The, 2011; Amahalu *et al.*, 2019). 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 managers to analyse about the influencing factors of using debt and their extent of influence over firms. The factors affecting optimal capital structure determination of a firm in developed countries may not be equally applicable to a firm in developing countries like Nigeria. There are some factors yet that have not been considered for analysis that are still important to further use in measuring their effect on capital structure determination in Nigeria and it is require to make a bridge between present study and capital structure theory. So this study investigates capital structure of banking industry of Nigeria as to identifying the relationship between firm size and asset tangibility as independent factors and Debt-to-Capital, Debt-to-Asset, Debt-to-Common Equity and to ascertain its effect thereof.

1.1. Statement of the Problem

The discussion on how firms raise capital with regards to instruments used to finance investment decisions have generated a lot of academic debate amongst scholars of finance in recent past, with scholar's examining plausible reasons why listed firms raise capital through primary listing, secondary listing or issuing debt using different combinations of instruments such as ordinary equity, debt and hybrid securities which includes; preference shares, convertible and warrant debt. Therefore, capital structure decision is imperative for every business organization as it is a challenge to management globally to meet the interest of shareholders in which it relates with firms' value maximization, deal with debt and equity issuance decisions. 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 Amahalu *et al.* (2017); Abiahu and Amahalu (2017); Vijayakumar and Tamizhselvan (2010). In their study, they used different measures of size (sales and total assets) and performance (profit margin and profit on total assets). Majumdar (1997) and Kaguri (2013) found a negative relationship between firm characteristics and capital structure. More specifically, none of the studies reviewed above examined the effect of size and asset tangibility on capital structure (debt-to-capital, debt-to-asset and debt-to-common equity) and more so, as at 2017. This are the research gaps, which this study sought to fill (surrogate gap and period gap). The choice of the two independent variables was guided by the fact that, firm size as measured by asset base and asset tangibility is important drivers of the future performance of any firm. In filling the above research gap, the research sought to answer the question as to whether firm size and asset tangibility influence debt-to-capital ratio, debt-to-asset ratio and also on the debt-to-common equity ratio.

1.2. Objectives of the Study

The main objective of this study is to determine the effect of firm characteristics on capital structure of Deposit Money Banks listed on Nigeria Stock Exchange. The specific objectives of this study are as follows:

- i. To ascertain the effect of Firm Size and Asset Tangibility on Debt-to-Capital ratio of Deposit Money Banks listed on Nigeria.*
- ii. To determine the effect of Firm Size and Asset Tangibility on Debt-to-Asset ratio of Deposit Money Banks listed on Nigeria.*
- iii. To assess the effect of Firm Size and Asset Tangibility on Debt-to-Common Equity ratio of Deposit Money Banks listed on Nigeria.*

1.3. Research Hypotheses

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

Ho₁: Firm Size and Asset Tangibility have no significant effect on Debt-to-Capital ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

Ho₂: Firm Size and Asset Tangibility have no significant effect on Debt-to-Asset ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

Ho₃: Firm Size and Asset Tangibility have no significant effect on Debt-to-Common Equity of Deposit Money Banks listed on Nigeria Stock Exchange.

2. Literature review

2.1. Conceptual Review

2.1.1. 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 (Campello *et al.*, 2010). 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. (Hu, 2011).

2.1.2. Firm Size

Burkart and Ellingsen (2004) 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. Cassar (2004) argued that it may be relatively more costly for smaller firms to resolve information asymmetries with debt providers. Consequently, smaller firms may be offered less debt capital. In addition, transaction costs are typically a function of scale and may be higher for smaller firms. Therefore, it is hypothesized that, there is a positive relationship between size of the bank capital structure.

2.1.3. Asset Tangibility

Asset tangibility should be an important determinant of the capital structure of a firm. Titman and Wessels (1988) in Klein, O'Brien and Peters, (2002) argued that, the degree to which a firm's assets are tangible and generic should result in the firm having a greater liquidation value because it reduces the magnitude of financial loss incurred by financiers should the company default. Pledging the firms' assets as collateral also reduces adverse selection and moral hazard costs. Storey (1994); Berger and Udell (1998) suggested that bank financing will depend on whether lending can be secured by tangible assets.

2.1.4. 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 (Nirajini and Priya (2013). Brockington (1990) described capital structure of a firm as the components of its sources of financing, broadly categorized as equity and debt finance. Also, Brealey and Myers (2003) defined capital structure as the mix of different securities.

2.1.5. Firm Characteristics and Debt-to-Capital

Capital structure refers to the firm's financial framework which consists of the debt and equity used to finance the firm. Policy of capital structure is maintaining balance between risk and return (Abdo and Miri, 2003). 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 Pavelkova and Knápková (2009) posits 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. Yegon *et al.* (2014) 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.

2.1.6. Firm Characteristics and Debt-to-Asset

Most of the empirical studies conducted in developed countries found a positive relationship between tangibility and capital structure, for instance, Titman and Wessels (1988) as cited in Banner (2004), Rajan and Zingales (1995) among others while empirical studies in developing countries found mixed relationship between tangibility and capital structure; for instance, Wiwattanakantang (1999) in Thailand reported a positive relationship between tangibility and capital structure while other studies showed that tangibility is negatively related to capital structure, for instance, Booth *et al.* (2001); Huang and Song (2002).

2.1.7. Firm Characteristics and Debt-to-Common Equity

Firm specific characteristics are of critical importance to organizations, because it affects firm value and stockholder's wealth. Indeed, recent empirical studies (for instance, Chen *et al.*, 2009; Sheikh and Wang, 2011; Ogebe *et al.*, 2013; Olokoyo, 2013; Amahalu *et al.*, 2016) have confirmed that there is a significant relationship between firm characteristics and its capital structure, which implies that firm characteristics affects capital structure and shareholder value.

2.2. Theoretical Framework

2.2.1. 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 costs of debt include higher interest rates and bankruptcy costs, either direct or indirect, and these may occur in a situation of excessive debt (Amahalu *et al.*, 2019). 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.

2.3. Empirical Review

Musharof and Yakub (2014) investigated the impact of firm characteristics on capital structure of banking industry of Bangladesh where includes 47 banks for the period of 2008 to 2012. This research was conducted on the basis of secondary information and for conducting smooth analysis data has been collected from different sources such as annual reports, articles and publications etc. The study tried to find out whether there is any association between firm characteristics and capital structure of banking industry of Bangladesh and which capital structure theory is applicable for banking industry to take financing decision. Capital Adequacy Ratio (CAR), debt to asset, debt to equity and elements of capital structure are also tried to investigate by using mean, standard deviation, variance and regression analysis by using SPSS software. The study selected debt to asset ratio as dependent variable and size, liquidity, tangibility of asset and profitability as independent variables and there are found a negative significant correlation between

debt to asset ratio and tangibility of asset that is why Pecking order theory is more applicable and suitable for taking financing decision compare to Trade off theory and Agency cost theory.

Harc (2015) investigated the relationship between firm size and the capital structure of Croatian small and medium-sized enterprises. Most of previous studies have shown a positive relationship between firm size and leverage. But, several empirical studies found negative relationship between firm size and leverage. This study was conducted on a sample of 500 Croatian SMEs for the period between 2005 and 2010. The data used for the empirical analysis were taken from companies annual reports. The Pearson Correlation Coefficient is applied in order to examine the relationship between firm size and leverage measures. The results of this research indicate negative relationship between firm size and leverage. But, firm size differently affects short-term and long-term leverage. The relationship between firm size and short-term leverage is negative but not statistically significant in all observed years. The relationship between firm size and long-term leverage is positive in all observed years but is not statistically significant, except one year. These results suggests that larger Croatian

SME's are mostly more profitable and use more retained earnings to finance their business. This finding is consistent with the pecking order theory which predicts a negative relationship between firm size and the leverage. Babatunde (2016) investigated empirical evidence on capital structure determinants in Nigeria. This research has been performed using a sample of 50 companies listed on the Nigeria Stock Exchange from 2001 to 2010. The relationship between the short-term and long-term debt and four explanatory variables were observed. The results of the cross-sectional OLS regression revealed that the static trade-off theory and agency cost theory are relevant to Nigerian companies whereas there was a little evidence in support of pecking order theory. The findings of this study confirm that profitability, growth, firm size and tangibility are explanatory variables of capital structure.

Amahalu *et al.* (2017) ascertained the effect of capital adequacy on financial performance with a focus on selected quoted Deposit Money Banks in Nigeria from 2010-2015. This study made use of secondary data obtained from fact books, annual reports and account of the Deposit Money Banks under study. The data were subjected to statistical analysis using Pearson Coefficient of Correlation, Multiple Regression Analysis, Variance Inflation Factors, Multicollinearity, Heteroskedasticity test and Hausman test. The result of this study revealed that there is a positive and significant relationship between capital adequacy and financial performance. It was also empirically verified that Capital Adequacy has a statistically significant effect on Financial Performance on Deposit Money Banks at 5% level of significance. This study recommended that banks should avoid overreliance on debt, as increase in the proportion of debt in the capital structure increases the financial risk and the risk of financial distress and bankruptcy.

Ezechukwu and Amahalu (2017) assessed the extent at which firm characteristics affects financial performance of quoted deposit money banks in Nigeria from 2010-2015. Three hypotheses were formulated in line with objective of the study. Ex-post facto research design and time-series data were adopted and the data for the study were obtained from Fact books, annual reports and account of the quoted banks under study. Pearson coefficient of correlation and ordinary least square (OLS) were applied to test the three hypotheses formulated with aid of STATA 13 statistical software. Findings showed that firm characteristics (proxy by Size) has a positive and statistical significant effect on financial performance (proxy by Return on Asset, Return on Equity and Return on Capital Employed) at 5% significant level. Based on these findings, the study recommends among others that banks should adequately manage how they re-invest their resource so as to prevent any form of mismanagement of resource that can guarantee their existence in business.

3. Methodology of research

3.1. Research Design

The researcher utilised Ex-post Facto research design in conducting the research. Ex-Post Facto seeks to find out the factors that are associated with certain occurrences, conditions, events or behavior by analysing past events or already existing data for possible casual factors (Kothari and Garg 2014).

3.1. Population of Study

The population for this study consist of the sixteen (16) deposit money banks listed on the Nigeria stock Exchange fact book and published in the Nigeria stock Exchange (NSE) website as at 31st December 2017 (Appendix I).

3.2. Sample Size and Sampling Technique

Purposive sampling technique was employed to arrive at fifteen (15) banks that were considered as sample size for this study. The fifteen deposit money banks were purposively selected based on the availability and completeness of data set for the studied period (2008-2017) (Appendix II).

3.3. 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 for the sampled banks.

3.4. Model Specification

Multivariate regression equation was set up to evaluate the hypothesized relationships between the dependent variable and the independent variables in this study. The econometric form of the equation is given as:

$$Y = \beta_0 + \beta_1 X + \epsilon \quad (1)$$

Where:

β_0 = Constant (intercept)

$\beta_1 - \beta_2$ = Coefficients of the independent variable (Firm Characteristics)

Y = Dependent Variable

X = Independent Variable

ϵ = Error term

To test H_1 , H_2 , and H_3 , this study estimated the following regression equation. The equations examined the association between Firm Characteristics and Capital Structure in Nigeria DMB:

$$DCR_{it} = \beta_0 + \beta_1 FSZ_{it} + \beta_2 AT_{it} + \epsilon_{it} \quad \mathbf{Ho_1} \quad (2)$$

$$DAR_{it} = \beta_0 + \beta_1 FSZ_{it} + \beta_2 AT_{it} + \epsilon_{it} \quad \mathbf{Ho_2} \quad (3)$$

$$DER_{it} = \beta_0 + \beta_1 FSZ_{it} + \beta_2 AT_{it} + \epsilon_{it} \quad \mathbf{Ho_3} \quad (4)$$

Legend:

DCR_{it} = Debt-to-Capital Ratio (Dependent Variable) for bank i in period t

DAR_{it} = Debt-to-Asset Ratio (Dependent Variable) for bank i in period t

DER_{it} = Debt-to-Common Equity Ratio (Dependent Variable) for bank i in period t

FSZ = Firm Size (Independent Variable) for bank i in period t

AT = Asset Tangibility (Independent Variable) for bank i in period t

ϵ_{it} = The error term which account for other possible factors that could influence Y_{it} that are not captured in the model.

i : individual banks

t : time periods

Variable Description/Operationalisation of Variables

Variables (code)	Operational Definitions
Dependent Variable (Capital Structure)	
Drivers:	
Debt-to-Capital Ratio (DCR)	Total Debt/Total Capital
Debt-to-Asset Ratio (DAR)	Total Debt/Total Asset
Debt-to-Common Equity Ratio (DER)	Total Debt/Common Equity
Independent Variable (Firm Characteristics)	
Proxies:	
Firm Size (FSZ)	Natural logarithm of total asset
Asset Tangibility	Non-Current Asset/Total Assets

Decision Rule

Accept the alternative hypothesis, if the Prob(F-stat) of the test is less than 0.05. Otherwise reject.

In order to test for multicollinearity the researcher conducted a Pearson Coefficient correlation analysis.

4. Data Presentation and Analysis

Table 1. Pearson Correlation Matrix

	DCR	DAR	DER	FSZ	AT
DCR	1.0000	0.4172	0.4295	0.7382	0.2353
DAR	0.4172	1.0000	0.7603	0.0504	0.3231
DER	0.4295	0.7603	1.0000	0.0444	-0.0143
FSZ	0.7382	0.0504	0.0444	1.0000	0.2469
AT	0.2353	0.3231	-0.0143	0.2469	1.0000

Source: E-Views 9.0 Correlation Output (2019)

4.1. Interpretation on Correlation Matrix

From the findings on the correlation analysis, the study found that there was positive correlation coefficient between DCR and FSZ, AT by correlation factors of 0.74 and 0.24 respectively. A positive correlation coefficient was also found between DAR and FSZ, AT by correlation factors of 0.05 and 0.32 respectively. DER and FSZ was found to have positive correlation with correlation coefficients of 0.04, however, DER and AT was found to have a negative correlation with correlation coefficients of -0.01.

Multicollinearity Test

Multicollinearity occurs if there is a strong relationship between two or more independent variables in a regression model. To test whether the level of multicollinearity in the estimated models could be tolerated, Variance Inflation Factor (VIF) was used. The rule of the thumb is that a value of VIF that is less than 10 means that the level of multicollinearity can be tolerated (Robinson and Schumacker, 2009).

Table 2. Multicollinearity Test

Variance Inflation Factors
 Date: 04/20/19 Time: 10:30
 Sample: 2008 2017
 Included observations: 10

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	199.4996	222.8449	NA
FSZ	1.791520	237.1246	1.064916
AT	30.52105	12.45471	1.064916

Source: E-Views 9.0, Output (2019)

Table 2 above shows that the Variance Inflation Factor (VIF) for all the models estimated ranged within 1.06 showing that the VIF results are between the acceptable ranges of 1 to 10. This shows that the variables did not exhibit multicollinearity and regression analysis could then be carried out.

4.2. Test of Hypotheses

4.2.1 Test of Hypothesis 1

Ho₁: Firm Size and Asset Tangibility have no significant effect on Debt-to-Capital ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

H₁: Firm Size and Asset Tangibility have significant effect on Debt-to-Capital ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

Table 3. Multivariate Regression Analysis between Firm Characteristics and Debt-to-Capital ratio of Deposit Money Banks in Nigeria

Dependent Variable: DCR
 Method: Panel Least Squares
 Date: 04/20/19 Time: 10:23
 Sample: 2008 2017
 Periods included: 10
 Cross-sections included: 15
 Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.38517	5.816347	3.160949	0.0019
FSZ	-1.013317	0.520530	-2.946702	0.0035
AT	-0.028047	0.048675	-2.576215	0.0254
R-squared	0.688219	Mean dependent var		7.100577
Adjusted R-squared	0.525780	S.D. dependent var		7.456093
S.E. of regression	7.409252	Akaike info criterion		6.863133
Sum squared resid	8069.860	Schwarz criterion		6.923346
Log likelihood	-511.7350	Hannan-Quinn criter.		6.887596
F-statistic	9.944967	Durbin-Watson stat		1.010528
Prob(F-statistic)	0.000164			

Source: E-Views 9.0 Regression Output (2019)

Interpretation of Multivariate Regression Result

In table 3, a multiple regression analysis was conducted to test the influence among predictor variables. Adjusted R squared is coefficient of determination which tells us the variation in the dependent

variable due to changes in the independent variable. From the findings in the table 3 above, the value of adjusted R squared was 0.526, an indication that there was variation of 52.6% on the capital structure measure (DCR) due to changes in FSZ and AT. This shows that only 52.6% changes in debt-to capital ratio of deposit money banks could be accounted for by firm characteristic components. The probability of the slope coefficients indicate that; $P(x_1 = -1.013317 < 0.05; x_2 = -0.028047 < 0.05)$. This implies that DCR is negatively related to FSZ and AT, however, significant. The Durbin-Watson Statistic of 1.010528 suggests that the model does contain serial correlation problem. The F-statistic of the DCR regression is equal to 9.944967 and the associated F-statistic probability is equal to 0.000164, so the null hypothesis was rejected and the alternative hypothesis was accepted the hypothesis. As a result, there is linear relationship of DCR to the independent variables (FSZ and AT).

Decision

Since the result of the Prob(F-statistic) of 0.000164 is less than the critical value of 5% significance level, leading to the conclusion that there is a significant negative relationship between firm characteristic components and DCR at 5% significant level, hence, H_1 is accepted.

4.2.2. Test of Hypothesis II

Ho₂: Firm Size and Asset Tangibility have no significant effect on Debt-to-Asset ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

H₂: Firm Size and Asset Tangibility have significant effect on Debt-to-Asset ratio of Deposit Money Banks listed on Nigeria Stock Exchange.

Table 4. Multivariate Regression Analysis between Firm Characteristics and Debt-to-Asset ratio of Deposit Money Banks in Nigeria

Dependent Variable: DAR
 Method: Panel Least Squares
 Date: 04/20/19 Time: 10:32
 Sample: 2008 2017
 Periods included: 10
 Cross-sections included: 15
 Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.524047	0.409236	3.724129	0.0003
FSZ	0.061675	0.036624	3.683995	0.0004
AT	0.000401	0.003425	3.116948	0.0017
R-squared	0.619715	Mean dependent var		0.840569
Adjusted R-squared	0.406377	S.D. dependent var		0.522982
S.E. of regression	0.521312	Akaike info criterion		1.554861
Sum squared resid	39.94962	Schwarz criterion		1.615074
Log likelihood	-113.6146	Hannan-Quinn criter.		1.579324
F-statistic	11.78169	Durbin-Watson stat		1.667310
Prob(F-statistic)	0.000002			

Source: E-Views 9.0 Regression Output (2019)

Interpretation of Regressed Result

Table 4 showed the results of regression model of DAR. The coefficients of FSZ has a t – statistic equal to 3.683995 and a p – value equal to 0.0004; AT has a t – statistic equal to 3.116948 and a p – value equal to 0.0017. This implies that FSZ and AT positively and significantly relate with DAR. The R-squared statistic measures the success of the regression in predicting the values of the dependent variable. The adjusted R-squared of the DAR model is equal to 0.406, which indicates that 40.6% of the variation in DAR is explained by the regression variables. Hence, the explanatory variables included in this regression are good predictors of DAR. The Durbin-Watson value of 1.667310 is an indication of the absence of auto-correlation problem in the model of this study. The value for the F-statistic is 11.78169 with a significant p-value of 0.000002 endorses the validity and stability of the model relevant for this study.

Decision

Based on Prob(F-statistic) value of 0.000002, which is less than the critical significance value of 5%, this invariably means that there is a significant positive relationship between firm characteristic components and DAR of Deposit Money Banks in Nigeria.

4.2.3. Test of Hypothesis III

Ho₃: Firm Size and Asset Tangibility have no significant effect on Debt-to-Common Equity of Deposit Money Banks listed on Nigeria Stock Exchange.

H₃: Firm Size and Asset Tangibility have significant effect on Debt-to-Common Equity of Deposit Money Banks listed on Nigeria Stock Exchange.

Table 5. Multivariate Regression Analysis between Firm Characteristics and Debt-to-Common Equity ratio of Deposit Money Banks in Nigeria

Dependent Variable: DER
 Method: Panel Least Squares
 Date: 04/20/19 Time: 10:33
 Sample: 2008 2017
 Periods included: 10
 Cross-sections included: 15
 Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.175397	2.072084	1.532465	0.1276
FSZ	0.122257	0.185440	0.659281	0.5107
AT	0.004054	0.017341	0.233813	0.8155
R-squared	0.233665	Mean dependent var		4.525049
Adjusted R-squared	0.184891	S.D. dependent var		2.626602
S.E. of regression	2.639560	Akaike info criterion		4.798899
Sum squared resid	1024.189	Schwarz criterion		4.859111
Log likelihood	-356.9174	Hannan-Quinn criter.		4.823361
F-statistic	0.270353	Durbin-Watson stat		1.271001
Prob(F-statistic)	0.763489			

Source: E-Views 9.0 Regression Output (2019)

Interpretation of Regressed Result

Table 5 showed the results of regression model of DER. The coefficients of FSZ has a t – statistic equal to 0.659281 and a p – value equal to 0.5107; AT has a t – statistic equal to 0.233813 and a p – value equal to 0.8155. This implies that FSZ and AT positively and non-significantly relate with DER. The adjusted R-squared of the DER model is equal to 0.185, which indicates that 18.5% of the variation in DER is explained by the regression variables.

The Durbin-Watson value of 1.271001 is an indication of the absence of auto-correlation problem in the model of this study. The value for the F-statistic is 0.270353 with an associated p-value of 0.763489.

Decision

Based on Prob(F-statistic) value of 0.270353, which is less than the critical significance value of 5%, this invariably means that there is a non-significant positive relationship between firm characteristic components and DER of Deposit Money Banks in Nigeria.

5. Findings, Conclusions and Recommendations

5.1. Summary of Findings

- i. Firm Characteristics have a significant negative effect on Debt-to-Capital Ratio of Deposit Money Banks listed on Nigeria Stock Exchange at 5% level of significance.
- ii. Firm Characteristics have a significant positive effect on Debt-to-Asset Ratio of Deposit Money Banks listed on Nigeria Stock Exchange at 5% level of significance.
- iii. Firm Characteristics have a non-significant positive effect on Debt-to-Common Equity Ratio of Deposit Money Banks listed on Nigeria Stock Exchange at 5% level of.

5.2. Conclusions

This study assessed the relationship between firm characteristics and capital structure. This study obtained data from annual reports and account and publications from Nigeria Stock Exchange for Deposit Money Banks that operated during 2008-2017. In addition, the effects of specific firm variables, such as firm size and tangibility of assets, on debt-to-capital ratio, debt-to-asset ratio and debt-to-common equity ratio were assessed. To determine the relationship that exists amongst the variables and the effect thereof, Pearson correlation coefficient and Multivariate regression estimate were employed. This study revealed that firm characteristics have a statistically significant influence on debt-to-capital ratio, debt-to-asset ratio at 5%, but however, have no significant effect on debt-to-common equity ratio of Deposit Money Banks in Nigeria.

5.3. Recommendations

i. In order to reverse the negative effect of firm characteristics on debt-to-capital 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 characteristics 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. To address the non-significant relationship between firm characteristics and debt-to-common equity ratio, deposit money banks should formulate investment policies, which support the implementation of positive cash flow projects using the profits, instead of distributing the profits to the shareholders in form of dividends. In line with such investment policies, the guidelines to their financing actions should emphasize on cost-effectiveness.

Appendix I

Nigeria Stock Exchange

Listed Banks As At 31st December, 2017

A) Population of the Study

- 1) Access Bank Plc
- 2) Diamond Bank Plc
- 3) Eco Bank Plc
- 4) FCMB Bank Plc
- 5) Fidelity Bank Plc
- 6) First Bank Plc
- 7) Guaranty Trust Bank Plc
- 8) Jaiz Bank Plc
- 9) Skye Bank Plc
- 10) Stanbic IBTC Plc
- 11) Sterling Bank Plc
- 12) Union Bank Plc
- 13) United Bank of Africa Plc
- 14) Wema Bank Plc
- 15) Zenith International Plc
- 16) Unity Bank Plc

Appendix II

Nigeria Stock Exchange

Listed Banks As At 31st December, 2017

Sample Size of the Study

- 1) Access Bank Plc
- 2) Diamond Bank Plc
- 3) Eco Bank Plc
- 4) FCMB Bank Plc
- 5) Fidelity Bank Plc
- 6) First Bank Plc
- 7) Guaranty Trust Bank Plc
- 8) Skye Bank Plc
- 9) Stanbic IBTC Plc
- 10) Sterling Bank Plc
- 11) Union Bank Plc
- 12) United Bank of Africa Plc
- 13) Wema Bank Plc
- 14) Zenith International Plc
- 15) Unity Bank Plc

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