

FIRM CHARACTERISTICS AND CAPITAL STRUCTURE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

This study examines the effect of firms' characteristics on capital structure of 10 listed deposit money banks in Nigeria for the period 2006-2016. The dependent variable for the study, leverage is measured as debt ratio i.e. the ratio of total noncurrent liabilities to total assets while the independent variable consists of firms' size, liquidity, profitability and board size. The study employed the General Least square (G.L.S) random effect robust regression model to test the hypothesis. The results of the regression revealed that firms size influences leverage negatively and it is significant, while and board size influences leverage negatively but it is insignificant; profitability influences leverage negatively in a insignificant manner; The study found that firm size, profitability and board size are not determinants of leverage while liquidity on the other hand was found to be a determinant of leverage. The study recommended that the liquidity of listed deposit money banks be taken into consideration before financing its operations with leverage.

Keywords: Firm Characteristics, Leverage, Profitability, Liquidity, Board Size

1.0 Introduction

Capital structure is one of the fundamental aspects of corporate finance. Capital structure of a firm is vital to its success, not solely for its relevance to the firms' survival but it is also important for competitive advantage. Today many businesses, especially the banking industry is faced with the issue of finance, how to finance their operations to enable them get maximum return on shareholders' wealth. Some businesses which include among others the banking industry finance their activities through debt (long term debt and short term debt) and equity. On this note therefore, capital structure refers to the proportion of relative amount of debt and equity used to finance business operations. The mix of capital structure that will be used to finance a firm is arrived at after a close look at its characteristics such as firms size, profitability, liquidity, Board size, growth opportunities, dividend, business risk, non-debt tax shield. In other words, firms' characteristics

plays an important role in determining the success and amount of leverage.

The choice of capital structure to be adopted by firm is one of the tough challenges that firms face given their characteristics such as firm size, age, profitability, liquidity, growth opportunities, and dividend amongst others. Akinyomi, (2013) asserts that the determinants of capital structure still remain one of the most significant unsettled issues in the field of corporate finance. This is because there are divergent views on the effect of firms' characteristics on capital structure of firms also referred to as the determinants of capital structure as shown in the theoretical and empirical literature reviewed. As a result of this, the results of prior studies on the determinants of capital structure have been inconclusive, controversial and open to further studies in different and multiple sectors of the Nigerian economy (Akinlo, (2011), Akinyomi, (2013), &

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Adaramola 2015). Therefore, this study is motivated by the need to ascertain the validity of the findings on the effect of firms' characteristics on capital structure of deposit money banks in Nigeria.

The main objective of this study is to examine the effect of firms' characteristics on the capital structure of listed deposit money banks in Nigeria. Specifically, the study; examines the effect of firm size, liquidity, profitability, and board size on leverage. In other to achieve the objectives of this study, this study hypothesizes that the explanatory variables have no significant effect on leverage. This study would enable banks to know the factor that determines their capital structure decisions and taking into account these factors would enhance the value of the banks by optimizing the capital structure mix. The remaining part of this Paper is organized as follows: section two consists of literature review which will include briefly the conceptual issues, theoretical and empirical reviews, section three consists of the methodology; section four consists of results and discussion, conclusion while section five consists of recommendation.

2.0 Literature Review

This section discusses the conceptual issues, theoretical review, and empirical reviews on firms characteristics and capital structure

2.1 Conceptual Issues

The concepts in the study are as seen from the objectives of the study. We have defined and explained their meaning as used in this study.

Firm characteristics

A firm can be referred to as business organization established primarily for the production of goods, rendering services for profit making and consumers satisfaction. Firm includes corporations, Limited Liability Company, partnership. The ability of a firm to establish business relationships is a major precondition for survival and expansion. On this

note therefore firm characteristics can be seen as important determinants that provide firms with access to various types of resources, information, market access and innovation and opportunities. In light of this, firm characteristics are key determinant, strategic factors, attribute identified that may affect firms superior performance including firm size, liquidity, profitability and board size. They are guidelines, measures, benchmarks for developing successful policy and business strategies. In other words, Mohammed (2005) explained that, firm characteristics seem to play a critical role in determining the overall performance and capital structure of the firm. Findings of a study carried out by Wiklund and Shepherd (2005) indicates that firms that are able to align firm attributes with the characteristics of the environment outperform other firms. Dean, Bülent and Christopher (2000) documented that firm characteristics are essential determinants of firm performance (capital structure) and success. Firms characteristics relates to the firm specific features or factors that distinguishes it from similar firms. For the purpose of this study, the following firms characteristics will be discussed briefly it includes firm's size, profitability, liquidity, and Board size.

Firm size

Various studies as indicated by the literature reviewed have been conducted in connection with the influence of the size of a company on the capital structure with the indicator leverage. Handoko (2016) opines that there are various reasons that can explain it one is that large companies have bankruptcy costs per dollar of lower asset values and lower procurement costs for the use of debt securities compared with small companies. In another dimension, the tradeoff theory posits that mature firms are able to issue debt at lower cost due to their reputation in the financial market these explains why larger firms' often take on more debt than smaller firms.

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In contrast to this, the pecking order theory opines that larger firms are more transparent and thus experience lower information asymmetry costs thus they are more inclined to issue more equity.

Liquidity

This refers to the ability of firms to meet short term financial obligation. Adaramola (2015), Posits that liquidity is seen as the blood flowing through the living system of any organization and the banking industry is not an exception. Following various studies as reviewed in the empirical literature who studied the link between liquidity and capital structure, while some find positive effect (Akinlo, 2011), others found a negative relationship for example (sheikh & Wang, 2011). The trade of theory is of the view that liquid firms possess more equity and trade with less debt.

Profitability

Profitability refers to a large extent the positive performance of a firm in relation to her business activities. In other words it is the picture of performance of management in managing the company. The size of a firm's profitability according to Handoko (2016) can be explained by various kinds such as operating income, net income, the rate of return on owners' equity. The pecking order theory suggests a negative relationship between profitability and leverage because firms tend to use internally generated funds before resorting to external. But on the contrary, the tradeoff theory is of the view that profitable firms are less likely to go bankrupt, and can therefore sustain more debt thereby capturing more tax advantages.

Board Size

Board size refers to the number of executive and non- executive that makes up the board of directors. Few literature reviewed suggests that no consensus is found about the relationship between the board size and capital structure (leverage). On one-hand researchers found

negative relation between the above two board size and capital structure (Mehran, 1992, Abor, 2005) as cited by (Saeed, Munir, Iodhi, Raiz, and Iqbal, 2014) and others have shown positive relationship (Jensen, 1996). Najjar and Hussainey, (2009) have reported no association. This study has used Natural log of the number of board members as a measure of board size.

Capital structure

Leverage can be defined in different ways depending on the researcher point of view. Thus Gharaibeh (2015) defined leverage as debt ratio i.e. the ratio of non current liability to total asset. The implication of this definition is that firms use non current liability to total asset to finance its operations. In another dimension, Acaravci(2015) in his study defined leverage as debt to equity i.e. the ratio of long term debt to total equity. Leverage reflects a firms' method of financing. It measures the relative amount of debt to equity, or relative amount of debt to asset spending by the firm to finance its operation. In another view, Abwahab and Ramli (2014) opines that it helps the investors to identify the riskiness of a firm where a high level of leverage is considered a high risk. In particular, firms rely on high leverage for future development. There are different approaches to measure leverage it includes total non-current asset to total assets, total non-current debt to equity and interest cover. Leverage is evaluated to show the capability of firm to pay its fixed interest commitments. This study measured leverage as total non-current asset to total asset.

2.2 Theoretical Review

A number of theories have been advanced in explaining the capital structure of firms and its determinants which include for the purpose of this study firms size, liquidity, profitability, and board size.

Modigliani and Miller (1958) posit that in the perfect capital market, the capital structure does not affect a firm's value rather, according to them the assets profitability is responsible for

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changing firm value. The study is mainly based on the assumption of capital market in which the cost of bankruptcy, transaction costs, information asymmetry and taxes are not present. This proposition gave rise to a second proposition in another study carried out by them in 1963 which is based on the assumption of perfect capital market where taxation was taken under consideration. Based on the study, they proposed that the firms should employ as much debt as possible. In their words companies have an advantage in using debt rather than using internal capital as they can benefit from debt tax shield which allows firms to pay lower tax when using debt capital instead of using only their equity. The theory concludes that the more the use of debt the more a firm's value is created.

Trade off theory considers optimal capital structure based on balance between advantage and disadvantage of debt financing. In other words, the target capital structure is considered as a gearing ratio where benefits of debt compensate with financial distress cost arising from marginal debt. So, according to trade off theory, firms have own optimal capital structure that maximizes its value. Based on this theory, profitable, highly liquid firms should have higher amount of debt since a profitable company generates more available cash for management.

The Pecking order theory is based on information asymmetry between firms' management and investors which mean managers have special knowledge regarding firm's performance activity than investors. This theory does not hold optimal capital structure and proposed firms should finance with internal (retained earnings) over external fund (equity) and debt over equity whenever external financing is required. Accordingly, Profitable and highly liquid firms will have lower amount of debt since they have more available cash which can be used as internal source of fund for satisfying firm's financial requirements, also firms that are larger in size should have lower amount of debt. From the foregoing, and based

on the objectives of this study, this study adopts the trade off and pecking order theory.

2.3 Empirical Review

Several studies as reviewed below have been carried out on firms' characteristics and capital structure some of the studies refer to it as the determinants of capital structure thus;

Oyesola, (2007) examined empirical analysis of the capital structure of selected quoted companies in Nigeria for the period 1990-2004. The analysis was performed using panel data pertaining to 50 non-financial firms. The pooled ordinary least square model, fixed effect model and random effect model were used in the analysis. Findings show that for all firms, leverage is negatively correlated with firm's size, profitability, and growth opportunities. Also, the study revealed a positive coefficient between leverage and dividend. This finding is a bit obsolete as it may not reflect current economic reality.

Sheikh, and Wang, (2011) explored the factors that affects capital structure of manufacturing firms in Pakistani firms. The study set out to examine whether the capital structure models derived from advanced developed economies provide persuasive explanations for capital structure decisions in the selected Pakistani firms. The study was conducted using panel data procedures for a sample of 160 firms listed on the Karachi stock exchange during 2003-2007 periods. The regression results revealed that firm's size has a positive relationship with leverage, a negative relationship is seen between leverage and liquidity, leverage and profitability. In same vein, there was no significant relationship identified between the leverage and growth opportunities. The study concludes that capital structure models derived from advanced economies does provide some help in understanding the financing behavior of firms in Pakistan. This result might not reflect the current issues given the fact that the time scope from

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2007 to date is significant enough to influence the findings.

Akinlo, (2011) examined the determinants of capital structure in Nigeria using panel data. Secondary data were obtained from 66 firms listed on the Nigerian stock exchange during the period 1999-2007. The study analyzed six potential determinants of capital structure namely size, liquidity, profitability, growth. The results of the regression analysis, revealed a positive relationship exists between leverage i.e. debt ratio and each of firm size and liquidity. However there exist a negative relationship between debt ratio (dependent variable) and each of profitability, and growth opportunities. The findings of this study may not be applicable today in same firms as there are significant changes in the economic, social and technological environment from the time this study was conducted. More so, this study is restricted to the random selection of firms in the stock exchange hence giving no room for comparison between sectors of the Nigerian economy.

Pahuja and Sahi, (2012) examined the factors affecting capital structure decision; Empirical evidence from selected Indian firms. The study sampled 30 companies constituting Bombay stock exchange's sensitivity index for the period 2008 – 2010. The result of the both correlation and regression analysis found that firm's size affects leverage measured by debt to equity negatively, liquidity affects leverage positively, profitability affects leverage negatively and finally growth opportunities affects leverage positively.

Ogbulu, and Emeni, (2012) examined the determinants of corporate capital structure in Nigeria using a cross sectional survey data. Secondary data were obtained from 110 firms listed on the Nigerian stock exchange fact book 2008. The data were analyzed using ordinary least square (OLS) correlation method to analyze the regression model. The results of the analysis found that size has a positive and significant impact on capital structure while age

has a negative and significant impact. Profitability and growth opportunities of the firms on the other hand do not have any significant impact on the capital structure of firms in Nigeria. This study is quite limited in its scope.

Ahmadimousaab, Anuar, Sofian, and Jahanzeb, (2013) examined capital structure decisions and determinants; an empirical study in Iran. The study sampled 123 companies listed on Tehran stock exchange for the period 2001 – 2010. The results of the multiply regression found that firms size influences debt ratio positively, profitability influence debt ratio negatively and it is significant, growth on the other hand influences debt ratio negatively. Also, Akinyomi, and Olagunju, (2013) examined the determinants of capital structure in Nigeria using the descriptive research design. Secondary data were obtained from the annual accounts of 24 randomly selected manufacturing firms for the period of ten years covering 2003-2012. The data were analyzed using correlation coefficient and regression analysis. The study found that leverage (debt ratio) a measure of capital structure has a negative relationship with firm size and tax on one hand and a positive relationship with profitability and growth on the other hand. However only with firm size that significant relationship is established. This study is subject to further research to validate its claim but should be done in a wider scope and in a specified sector of the economy to enable comparison of results between sectors in Nigeria.

Saeed, Munir, Lodhi, Raiz, and Iqbal, (2014) examined the capital structure and its determinants; empirical evidence from Pakistan's pharmaceutical firms. The study used data from 2004 – 2011 obtained from the balance sheet analysis published by the central bank of Pakistan. The fixed effect model was used in analyzing the regression model based on the analysis the study found that firm size is positively and significantly affects leverage (debt ratio), liquidity indicated a negative effect

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on leverage, in same vain, and there exist a negative effect of profitability on leverage and finally a negative effect of growth opportunities and leverage and finally board size is negatively associated with debt level (leverage).

Khan, Jan, and Khan, (2015) examined the determinants of capital structure; an empirical study of cement sector of Pakistan. The study sampled 20 firms and data was obtained from cement sector of Pakistan for the period 2006 – 2011. The results of the ordinary least square regression model found that firm size is negatively associated with the firms' leverage, profitability affects firms leverage negatively and finally growth opportunities affects leverage positively.

Adaramola, and Olarewaju, (2015) examined the major determinants of capital structure of 8 composite insurance companies quoted on the Nigerian stock exchange covering the period of 7 years were panel data regression technique was employed to analyze data. The study found that, firm's size, affects leverage positively, liquidity affects leverage negatively, profitability affects leverage (debt ratio) positively and growth opportunities affects leverage (debt ratio) negatively. This study should be looked into by future researchers thereby expanding the scope and ensuring that the findings are validated.

Cuong, and Thang, (2015) examined the firm characteristics that affects capital structure of seafood processing companies in south central coast of Vietnam. The study used panel data regression model for its analysis. Secondary data were obtained from 90 unlisted seafood processing enterprises in south central region and 22 listed seafood processing enterprises in the other region of Vietnam during the period 2005-2011. The firm characteristics were analyzed as determinants of capital structure according to different explanatory theories. The study found that there is a negative relationship between the debt ratio of firms and their liquidity, their profitability, their growth opportunities. This finding is subject to

validation in other parts of the world in same sector or a different sector entirely to enable comparison.

Gharaibeh, (2015) examined the determinants of capital structure of a firm. The study was examined using panel data comprised of 49 industrial and service firms listed in the Kuwait stock exchange for a period of 6 years (2009-2013). The data was analyzed using multiple regression model represented by the ordinary least square. The study found that firm's size, liquidity, profitability and growth opportunities, and industry type have statistically significant relationship with firms leverage (debt ratio) also, it was found that dividend is not a determinant of capital structure i.e. it is not statistically significant to leverage.

Accordingly, the findings of the study reveal that firms' size, liquidity, profitability, and growth opportunities are determinants of capital structure of firms listed in Kuwait stock exchange.

From the foregoing it is evident that this study was carried out in Vietnam, India, Kuwait, Pakistan, Iran, Indonesia, turkey and other parts of the world in various sectors of their economy. In Nigeria, as highlighted above, the study was carried out in insurance sector, manufacturing sector, non-financial sector, and a random selection of companies listed on the Nigerian stock exchange. The sector where few studies on the effects of firm characteristics on capital structure to the best of the researcher's knowledge is the banking industry thus this study intends to bridge this gap by carrying out this research on listed deposit money banks in Nigeria.

3.0 Methodology

This study employs the descriptive research design. This is because the study aims at the description of the scenario of firm characteristics and capital structure of deposit money banks using their historical data. This is in line with Akinyomi and Olagungu (2013) . The

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population of this study comprises the 15 deposit money bank quoted on the Nigerian Stock Exchange as at 31st December 2016 for the period of 11 years i.e. from 2006-2016. The sample size consists of 10 banks of the 15 deposit money banks quoted on the Nigerian stock exchange. Purposive or judgmental sampling technique was used by selecting the top best banks in Nigeria in relation to the ranking of “the banker” by the financial times group of London 2016 (the top 1000 banks in the world) where each banks capital base was used as a measure for ranking, the top ten banks were **Zenith bank, Eco bank, First bank, Guarantee trust bank, Access bank, Diamond bank, Unity bank for Africa, Fidelity bank, union bank, Skye bank.** Based on the availability of data for measurement purposes Eco bank and Skye bank were filtered out and replaced by **Sterling bank** and **Wemabank.**

The sample size is believed to be appropriate for this study because the sample of 10 banks of the 15 listed banks is over 50% of the entire population and thus a representative of the population (Ogbulu & Emeni, 2012). In examining the effect of firm characteristics on capital structure of listed deposit money banks in Nigeria, this study made use of panel data because it involves both cross sectional and time series data. Moreover, this study uses the correlation coefficient and multiple regression technique through the use of STATA 13 to analyze the relationship and effect of firms’ characteristics on capital structure of listed banks in Nigeria.

The regression model is appropriate for this study because this study involves more than one independent variable. This is in line with the study of Pahuja and Sahi (2012), Gharaibeh (2015), Abbasi and Delghandi (2016).

To test the hypothesis this study provides that a probability value of 5% implies the study rejects the null hypothesis similarly a probability value other than 5% and is insignificant indicate that the study fails to reject the null hypothesis

3.1 Measurement of Variables and Model specification

This study examined 4 independent variables on capital structure represented by leverage of listed deposit money banks in Nigeria. The variables were selected based on empirical studies reviewed, theoretical propositions, and availability of data for measurement purposes. Against this background, this study examined whether firm size, profitability, liquidity, and board size has any significant relationship and effect on capital structure decisions of listed deposit money banks in Nigeria. On this note therefore, the independent variables highlighted above are measured as follows;

Table 1: Explanatory variables

Variables	Measurement	Source
Leverage (dependent variable)	Total non current debt / total assets Natural log of total asset	Oyesola(2007),Akinlo(2011), khrwishandkhrwest(2010)
Firm size	Total loans and advances/total deposits	Adaramolaolarewaju(2015)
Liquidity	ROA i.e. EBT/Total asset	Hossain and Ali (2012)
Profitability	Total number of board of director	Khan, Jan and khan(2015)

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Board size	Saeed, Munir, Lodhi, Raiz, and Iqbal, (2014)
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Source; compiled by researcher

The model for this study is adopted from the study of Hossain and Yakub (2012) titled the impact of firms' specific factors on capital structure decision and it is modified to suit this study.

The model is as follows;

$$LEV_{it} = \alpha + \beta_1 SIZ_{it} + \beta_2 LIQ_{it} + \beta_3 PROF_{it} + \beta_4 B.SIZ_{it} + e$$

Where;

i represents the 10 banks in the sample

α is the constant,

e represents the error term

LEV represents debt ratio

SIZ represents firms' Size

PROF represents Profitability

LIQ represents Liquidity

B.SIZ represents Board size.

t ; represents the time period involved

β represents the parameter of explanatory variable.

4.0 Results and Discussions

This section presents and discusses results obtained from the data analysis of sampled quoted deposit money banks in Nigeria.

Table 2 : Descriptive statistics of variables

variables	observations	Mean	Standard deviation	Minimum	maximum
Leverage	110	0.094	0.090	0	0.61
Firm size	110	11.189	1.660	5.99	12.59
Liquidity	110	0.605	0.177	0	0.99
profitability	110	0.014	0.026	-0.11	0.14
board size	110	13.981	3.239	6	20

Source; extracted from STATA 13 output result 2018.

Table 1 shows the mean, standard, minimum and maximum values of leverage and firm specific variables from the sampled banks. The result of dependent variable which is the leverage shows that on average (i.e. the mean) deposit money banks in Nigeria are financing 9.4% of total asset with non-current debt and 90.60% equity. The maximum debt financing used by any company in any year is 61% while the minimum level of debt ratio is 0. The

average firm size is 11.189%, with the deviation of the use of total asset of 0.090(9%) between banks. The maximum firm size for banks in any year is 12.59% while the minimum value is 5.99%. Liquidity ratio indicates that on average banks use total loans and advances 60.5% times of total deposit which varies at 17.7% between banks. The maximum liquidity for any bank in the period is 99% while there's no minimum value. The average value of profitability is

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1.43% for any bank which varies at 2.74%. The maximum profitability for a bank in any year is 14% while the minimum is a loss -11%. The average board size of any bank under consideration in any year according to the results

is 13.98% which varies between banks at 3.29%. The maximum board size is 20% while the minimum board size of banks in the period is 6%.

Table 3: Correlation matrix sig at 5%

	Leverage	Firm size	Liquidity	profitability	Board size
Leverage	1.000				
Firm size	-0.2996*	1.0000			
	0.0015				
Liquidity	0.3924*	-0.2762*	1.0000		
	0.0000	0.0035			
Profitability	-0.1503	0.0745	-0.0555	1.0000	
	0.1171	0.4392	0.5646		1.0000
Board size	-0.2713*	0.0128	-0.0224*	0.0795	
	0.0041	0.8941	0.0185	0.4091	

Source; extracted from STATA 13 output result.

Table 3 shows that firm size and profitability has a negative relationship with leverage which is significant. This result is consistent with the studies of Akinyomi and Olagunju (2013) Sheikh and Wang (2011). The result is inconsistent with the work of Gharabeih (2015). On the other hand, there exist a positive and negative relationship between liquidity, board size with leverage respectively and it is significance. This result is consistent with the research of (Sheikh and Wang (2011), & Gharabeih, 2015).The negative relationship

between firm's size and profitability with leverage implies that well established and profitable firms seem to employ less debt because they are more diversified with lower expectation of financial distress and bankruptcy cost (Wahab&Ramil, 2014). Hence they are more likely to use internal financing rather than external financing as stated in pecking order theory. Similarly, the positive relationship of liquidity with leverage implies that liquidity of the banks is a determining factor of the capital structure.

Table 4: Diagnostic and robustness test

Tests	F Statistics	PP- Value	Tolerance	VIF
Hetest	25.39	0.0000		
Hausman	5.65	0.2270		
Multicollinearity; liquidity			0.874	1.14
firm size			0.917	1.09
profitability			0.987	1.01
board size			0.942	1.06

Source; extracted from STATA13 output 2018

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Table 4 shows the result of Breusch-paga/cook-weisberg test for Heteroskedasticity, Hausman specification test and multicollinearity test. The result suggests that the chi-square value of 25.39 with p- value of 0.000 which is significant at 0.05 indicates presence of heteroskedasticity. Therefore, the conduct of fixed and random effect model was necessary. The result obtained from the Hausman specification test on the other hand shows that the p value is greater than 0.05 at an insignificant level of 0.2270 suggesting that the random effect model is appropriate for the

study in relation to the fixed effect model. However the table also shows that the Variance Inflation Factor (VIF) and the tolerance values were consistently lower than 4 indicating absence of multicollinearity. Furthermore, the study conducted shapiro-wilk and Shapiro-francia test for normality i.e. the normal distribution of the data(appendix 2). Result shows that the probability value of 0.0000 is significant indicating the abnormality of the data which led to robusting the error by conducting the random effect general least square regression model.

Table 5: Summary of regression result (Random effect GLS regression robust)

variables	Coefficient	Z	P-value
Constant	0.1967	2.42	0.015
Firm size	-0.0109	-2.28	0.023
liquidity	0.1380	2.65	0.008
profitability	-0.0837	-0.23	0.818
board size	-0.0044	-0.97	0.331
Adj R ²			
Within			19.38%
Between			37.56%
Overall			23.71%
Wald chi2(5)			52.59
Prob> chi			0.0000

Source; extracted from STATA 13 output 2018.

From the results, presented in table 4 above the functional relationship between the dependent

and independent variables is presented below thus:

$$LEV_{it} = \alpha + -0.0109FSIZ_{it} + 0.1380 LIQ_{it} + -.0837PROF_{it} + -.0044B.SIZ_{it}$$

The results reveal R² within value of 19.37 meaning that only 19.37% of the variation in leverage can be explained by the degree of firm size, liquidity, profitability and board size while the remaining 80.63 are caused by other factors not captured in the model. The wald chi2(5) of 52.59% significant at 0.0000 signifies that the model is fit for this study.

significance similarly a p-value other than 5% and insignificant implies that the fails to reject the null hypothesis. The regression results shows that the beta coefficient of - .0109(0.1%) and a p-value of 0.023 is significant at 1% level of significance therefore, the null hypothesis is rejected thus, firms, size affects leverage negatively and it is significant. This implies that for every 1% increase in firms' size(log of total assets) it will lead to a 0.01% decrease in leverage of listed deposit money banks in Nigeria. The negative influence of firm size on leverage supports the pecking order theory that large firms tend to borrow less

To identify the effect of firms characteristics on capital structure (leverage) the probability value (p-value) was used as a criteria to help test the proposed hypothesis. A p-value of less than or equal to 5% significant level implies that the null hypothesis is rejected 5% level of

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since such firms have already reached their maturity stage. As a result of this, it is easier to obtain loans to be able to have sufficient funding to support their next project. Empirical studies in support of this include Akinyomi and Olagunju (2013), Khan, Jan and Khan (2015), Oyesola (2007).

The regression results showed that the beta coefficient of 0.1380(13.80%) and a p-value of 0.008 is significant at 1% level of significance therefore the null hypothesis is rejected thus, liquidity has a positive and significant effect on leverage. This implies that for every 1% increase in liquidity, leverage of the banks also increases by 13.80%. The liquidity position of the banks is found to have a significance and positive influence on debt ratio of the banks with the level of significance at 1% significance and a p- value of 0.008%. This implies that liquidity of the firm is a determining factor of capital structure (leverage) of the listed deposit money banks in Nigeria this result is consistent with the findings of Cuong and Thang (2015), Pahuja and Sahil (2012) And it is inconsistent with the studies of Cuong and Thang (2015), Saeed et al (2014), Adaramola and Olarewaju (2015). The implication of this finding is in line with the tradeoff theory which suggest that higher liquidity ratio can support a relatively higher debt ratio due to greater ability of a firm to satisfy short term contractual obligation on time.

The regression results shows that the beta coefficient of -0.0837 and a p-value of 0.818 is insignificant therefore the study fails to reject the null hypothesis. Thus, profitability has a negative and insignificant effect on leverage of listed deposit money banks in Nigeria. This implies that when profit increases by 1% it will lead to a 8.37% decrease in the leverage of listed deposit money banks in Nigeria. Negative coefficient of profitability implies that 81.8% increase in the ratio of EBIT to Total assets causes the ratio of total non-current debt to total assets to decrease by 8.37%. The negative

relation between profitability and leverage is consistent with the pecking order theory which states that profitability of banks listed on the N.S.E use internal funds at first to finance its assets before seeking debts. Thus profitable firms would tend to use lower debts in their capital structure. This finding is consistent with the findings of Saeed et al (2014), Ahmadi-mousaabad et al (2013), Khan, Jan, and Khan (2015). It is also inconsistent with the findings of Akinyomi and Olagunju (2013).

The regression results showed that the beta coefficient of -0.0044 and a p-value of 0.331 is insignificant therefore the study fails to reject the null hypothesis thus board size affects leverage of listed deposit money banks negatively and it is insignificant. This implies that for every 1% increase in board size, it will lead to a 0.04% decrease in leverage. The result implies that larger board can put pressure on the management of the banks to employ less debt and thus increase the banks performance. This finding is consistent with the study of Saeed et al (2014).

5 Conclusion and recommendation

Based on the findings of this study, the study concludes that firms' size significantly influences leverage in Deposit Money Banks in Nigeria. Liquidity showed a positive and statistically significant influence on leverage, Profitability on the other hand is negatively and statistically insignificant influencing leverage Board size was found to influence the leverage negatively and it is statistically insignificant. From the forgoing, firms' size, profitability, and board size are not determinants of capital structure while liquidity is a determinant of capital structure based on results. Deposit money banks in Nigeria should ensure that their liquidity be taken into consideration before sourcing its operations with leverage as this study's result shows that liquidity influences the amount of leverage positively indicating that a 1% increase in liquidity leads to a 1% increase in leverage.

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Appendix A

Study data

BANL	PANEL	YEAR	LEV	FSZ	LIQ	PROF	BSZ
ACCESS	1	2006	0.14	11.24	0.49	0.00	12.00
	1	2007	0.2	11.61	0.53	0.01	12.00
	1	2008	0.41	12.02	0.73	0.02	14.00
	1	2009	0.05	11.81	0.88	0.04	14.00
	1	2010	0.06	11.86	0.99	0.02	14.00
	1	2011	0.06	11.98	0.94	0.01	14.00
	1	2012	0.03	12.18	0.55	0.02	14.00
	1	2013	0.03	12.23	0.61	0.02	15.00
	1	2014	0.07	12.30	0.77	0.02	16.00

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DIAMOND	1	2015	0.16	9.38	0.80	0.03	15.00
	1	2016	0.21	9.54	0.82	0.02	15.00
	2	2006	0.04	11.35	0.54	0.02	14.00
	2	2007	0.03	11.49	0.46	0.02	14.00
	2	2008	0.03	11.78	0.57	0.02	14.00
	2	2009	0.04	11.81	0.65	0.01	14.00
	2	2010	0.05	11.74	0.78	0.01	14.00
	2	2011	0.08	11.86	0.55	-0.03	16.00
	2	2012	0.06	12.07	0.64	0.02	16.00
	2	2013	0.05	12.13	0.54	0.02	20.00
FIDELITY	2	2014	0.06	12.24	0.55	0.01	13.00
	2	2015	0.11	9.19	0.63	0.03	13.00
	2	2016	0.17	9.22	0.77	0.00	11.00
	3	2006	0.08	11.08	0.59	0.03	14.00
	3	2007	0.05	11.34	0.41	0.02	13.00
	3	2008	0.03	11.73	0.62	0.02	13.00
	3	2009	0.03	11.70	0.60	0.00	13.00
	3	2010	0.02	11.68	0.48	0.01	19.00
	3	2011	0.02	11.87	0.50	0.01	17.00
	3	2012	0.03	11.96	0.48	0.02	16.00
FIRST	3	2013	0.03	12.03	0.53	0.01	16.00
	3	2014	0.1	12.07	0.68	0.01	14.00
	3	2015	0.14	6.09	0.75	0.01	15.00
	3	2016	0.24	6.11	0.90	0.00	14.00
	4	2006	0.06	11.73	0.51	0.03	20.00
	4	2007	0.09	11.88	0.38	0.02	15.00
	4	2008	0.03	12.07	0.66	0.03	15.00
	4	2009	0.02	12.25	0.82	0.00	16.00
	4	2010	0.06	12.29	0.76	0.01	16.00
	4	2011	0.04	12.46	0.64	0.01	6.00
GTB	4	2012	0.02	12.50	0.64	0.02	6.00
	4	2013	0.03	12.59	0.60	0.02	7.00
	4	2014	0.11	12.54	0.72	0.02	20.00
	4	2015	0.08	6.52	0.65	0.00	20.00
	4	2016	0.08	6.67	0.71	0.00	12.00
	5	2006	0.03	11.48	0.41	0.03	14.00
	5	2007	0.12	11.68	0.40	0.03	11.00
	5	2008	0.08	11.86	0.83	0.03	11.00
	5	2009	0.09	12.03	0.89	0.03	14.00
	5	2010	0.05	12.07	0.84	0.03	14.00
	5	2011	0.15	12.18	0.73	0.03	14.00
	5	2012	0.1	12.21	0.74	0.05	14.00
	5	2013	0.12	12.28	0.75	0.04	14.00

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STERLING	5	2014	0.12	12.33	0.91	0.04	14.00	
	5	2015	0.15	9.35	0.88	0.04	15.00	
	5	2016	0.16	9.41	0.84	0.05	12.00	
	6	2006	0.05	11.30	0.00	0.01	12.00	
	6	2007	0	11.52	0.50	0.00	12.00	
	6	2008	0.03	11.31	0.40	0.02	12.00	
	6	2009	0.07	11.41	0.60	-0.03	12.00	
	6	2010	0.1	11.70	0.55	0.02	12.00	
	6	2011	0.09	11.76	0.44	0.01	11.00	
	6	2012	0.05	11.85	0.51	0.01	11.00	
	6	2013	0.05	11.92	0.58	0.01	13.00	
	6	2014	0.05	11.97	0.58	0.01	13.00	
	6	2015	0.08	8.90	0.57	0.01	13.00	
UBA	6	2016	0.16	8.91	0.76	0.00	15.00	
	7	2006	0.04	11.93	0.15	0.01	14.00	
	7	2007	0.03	12.04	0.37	0.02	20.00	
	7	2008	0.05	12.18	0.35	0.03	20.00	
	7	2009	0.01	12.15	0.53	0.01	19.00	
	7	2010	0.06	12.16	0.54	0.00	19.00	
	7	2011	0.08	12.22	0.46	0.00	18.00	
	7	2012	0.06	12.29	0.40	0.02	18.00	
	7	2013	0.02	12.35	0.43	0.02	19.00	
	7	2014	0.05	12.37	0.49	0.02	15.00	
	7	2015	0.09	6.34	0.51	0.02	15.00	
	7	2016	0.16	6.40	0.64	0.02	19.00	
	UNION	8	2006	0.26	11.71	0.49	0.02	17.00
8		2007	0.13	11.79	0.39	0.02	20.00	
8		2008	0.08	11.96	0.42	0.03	20.00	
8		2009	0.17	12.04	0.63	-0.06	20.00	
8		2010	0.18	11.93	0.42	0.14	14.00	
8		2011	0.03	11.92	0.39	-0.09	14.00	
8		2012	0.04	11.95	0.31	0.01	14.00	
8		2013	0.05	11.95	0.48	0.01	17.00	
8		2014	0.08	11.96	0.64	0.02	19.00	
8		2015	0.08	5.99	0.60	0.01	17.00	
8		2016	0.25	9.06	0.96	0.01	10.00	
WEMA		9	2006	0.11	11.08	0.88	-0.05	11.00
		9	2007	0.08	11.22	0.73	0.02	7.00
	9	2008	0.38	11.05	0.88	-0.11	7.00	
	9	2009	0.61	11.15	0.99	-0.01	7.00	
	9	2010	0.25	11.31	0.58	0.08	7.00	
	9	2011	0.26	11.34	0.53	-0.02	10.00	
	9	2012	0.23	11.39	0.48	-0.02	11.00	

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ZENITH	9	2013	0.17	11.52	0.47	0.00	11.00
	9	2014	0.15	11.58	0.59	0.01	13.00
	9	2015	0.13	8.59	0.65	0.00	12.00
	9	2016	0.12	8.62	0.70	0.00	12.00
	10	2006	0.02	11.85	0.52	0.02	12.00
	10	2007	0.02	11.95	0.39	0.02	14.00
	10	2008	0.02	12.23	0.37	0.03	14.00
	10	2009	0.02	12.20	0.64	0.01	13.00
	10	2010	0.02	12.25	0.54	0.02	13.00
	10	2011	0.01	12.34	0.54	0.02	13.00
	10	2012	0.01	12.39	0.51	0.04	13.00
	10	2013	0.02	12.46	0.55	0.03	11.00
	10	2014	0.06	12.53	0.71	0.03	12.00
	10	2015	0.08	8.90	0.79	0.01	11.00
	10	2016	0.24	6.63	0.83	0.03	12.00

FIRM CHARACTERISTICS AND CAPITAL STRUCTURE OF LISTED DEPOSIT MONEY
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Appendix B

Regression result

Panel data setup

```

----- (R)
/___/ /___/ /___/ /___/ /___/
___/ /___/ /___/ /___/ /___/ 13.0 Copyright 1985-2013 StataCorp LP
Statistics/Data Analysis StataCorp
MP - Parallel Edition 4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)

```

```

3-user 8-core Stata network perpetual license:
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```

Notes:

```

1. (/v# option or -set maxvar-) 5000 maximum variables

. *(7 variables, 110 observations pasted into data editor)

. xtset panel year
panel variable: panel (strongly balanced)
time variable: year, 2006 to 2016
delta: 1 unit

.
. xtdescribe

panel: 1, 2, ..., 10 n = 10
year: 2006, 2007, ..., 2016 T = 11
Delta(year) = 1 unit
Span(year) = 11 periods
(panel*year uniquely identifies each observation)

```

```

Distribution of T_i: min 5% 25% 50% 75% 95% max
                    11 11 11 11 11 11 11

```

Freq.	Percent	Cum.	Pattern
10	100.00	100.00	111111111111
10	100.00		XXXXXXXXXXXX

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Descriptive statistics and correlation matrix

. su lev fsz liq prof bsz

Variable	Obs	Mean	Std. Dev.	Min	Max
lev	110	.0949091	.0908042	0	.61
fsz	110	11.18991	1.660359	5.99	12.59
liq	110	.6054545	.1773331	0	.99
prof	110	.0141818	.0266607	-.11	.14
bsz	110	13.98182	3.239611	6	20

. pwcorr lev fsz liq prof bsz, star (0.05)sig

	lev	fsz	liq	prof	bsz
lev	1.0000				
fsz	-0.2996*	1.0000			
	0.0015				
liq	0.3924*	-0.2762*	1.0000		
	0.0000	0.0035			
prof	-0.1503	0.0745	-0.0555	1.0000	
	0.1171	0.4392	0.5646		
bsz	-0.2713*	0.0128	-0.2242*	0.0795	1.0000
	0.0041	0.8941	0.0185	0.4091	

Shapiro wilk test for normality

. swilk lev fsz liq prof bsz

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
lev	110	0.76275	21.216	6.812	0.00000
fsz	110	0.67788	28.806	7.494	0.00000
liq	110	0.97688	2.068	1.620	0.05261
prof	110	0.79702	18.151	6.464	0.00000
bsz	110	0.96428	3.194	2.590	0.00481

FIRM CHARACTERISTICS AND CAPITAL STRUCTURE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA.

Shapiro francia test for normality

```
. sfrancia lev fsz liq prof bsz
```

Shapiro-Francia W' test for normal data

Variable	Obs	W'	V'	z	Prob>z
lev	110	0.75801	23.825	6.306	0.00001
fsz	110	0.67910	31.594	6.867	0.00001
liq	110	0.97692	2.273	1.633	0.05128
prof	110	0.77913	21.746	6.124	0.00001
bsz	110	0.97033	2.921	2.132	0.01650

Ordinary least square regression model

```
. reg lev fsz liq prof bsz
```

Source	SS	df	MS	Number of obs =	110
Model	.218921533	4	.054730383	F(4, 105) =	8.45
Residual	.679827562	105	.006474548	Prob > F =	0.0000
Total	.898749096	109	.008245405	R-squared =	0.2436
				Adj R-squared =	0.2148
				Root MSE =	.08046

lev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
fsz	-.0115313	.0048467	-2.38	0.019	-.0211415 -.0019212
liq	.1455776	.0464693	3.13	0.002	.0534375 .2377177
prof	-.3513691	.2908423	-1.21	0.230	-.9280557 .2253176
bsz	-.005513	.0024509	-2.25	0.027	-.0103727 -.0006532
_cons	.2178672	.0802383	2.72	0.008	.0587696 .3769649

Heteroskedasticity and multicollinearity test

```
. hettest
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lev

chi2(1) = 25.39

Prob > chi2 = 0.0000

```
. vif
```

Variable	VIF	1/VIF
liq	1.14	0.874722
fsz	1.09	0.917242
bsz	1.06	0.942168
prof	1.01	0.987927
Mean VIF	1.08	

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Fixed and random effect regression model

```
. xtreg lev fsz liq prof bsz, fe
```

```
Fixed-effects (within) regression      Number of obs   =      110
Group variable: panel                  Number of groups =       10

R-sq:  within = 0.1952                  Obs per group:  min =       11
        between = 0.3429                  avg =          11.0
        overall = 0.2287                  max =          11

                                         F(4,96)         =       5.82
corr(u_i, Xb) = 0.1362                  Prob > F        =     0.0003
```

lev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
fsz	-.01072	.0044714	-2.40	0.018	-.0195956	-.0018444
liq	.1355105	.0497016	2.73	0.008	.0368536	.2341675
prof	.0208147	.2850156	0.07	0.942	-.5449368	.5865661
bsz	-.0036706	.0027989	-1.31	0.193	-.0092263	.0018851
_cons	.1838457	.0800067	2.30	0.024	.0250336	.3426578
sigma_u	.0460691					
sigma_e	.07122586					
rho	.29495739	(fraction of variance due to u_i)				

```
F test that all u_i=0:      F(9, 96) =      4.22          Prob > F = 0.0001
```

```
. est store fixed
```

```
. xtreg lev fsz liq prof bsz, re
```

```
Random-effects GLS regression      Number of obs   =      110
Group variable: panel              Number of groups =       10

R-sq:  within = 0.1938                  Obs per group:  min =       11
        between = 0.3756                  avg =          11.0
        overall = 0.2371                  max =          11

                                         Wald chi2(4)    =     27.28
corr(u_i, X) = 0 (assumed)          Prob > chi2     =     0.0000
```

lev	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
fsz	-.0109457	.0044248	-2.47	0.013	-.0196182	-.0022732
liq	.1380928	.0471332	2.93	0.003	.0457134	.2304722
prof	-.0837705	.277626	-0.30	0.763	-.6279074	.4603663
bsz	-.0044168	.0025971	-1.70	0.089	-.0095069	.0006734
_cons	.1967237	.0784354	2.51	0.012	.0429932	.3504543
sigma_u	.03861239					
sigma_e	.07122586					
rho	.22713396	(fraction of variance due to u_i)				

```
. est store random
```

Hausman specification test and the random effects generalized least square regression model

