
Financial Leverage and Bank Performance: An Empirical Study (2000 – 2019)

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Abstract: *This study extensively investigated effectiveness of financial leverage in Nigerian banks for the period 2000-2019. The study adopted secondary data obtained from annual reports of banks, Central Bank of Nigeria and Nigeria Stock Exchange. Regression analysis, unit roots and diagnostic test were used in the analysis. The data was analyzed using the ordinary least square regression model to estimate the parameter of linear regression model as it minimizes the sum of the square roots. The study revealed that debt to equity ratio has negative but insignificant relationship with profit before tax of the deposit money bank. Before the 2005 recapitalization exercise, onus of leverage was on assets, using more debts to finance assets acquisitions led to fall in the profit of deposit money banks while after 2005, with higher capital base, the banks were secure enough to acquire assets through debts, debt to total asset ratio began to significantly correlate with profitability of the deposit money banks. It recommended that the growth of capital should be used as a buffer for the growth of debt: Increasing debt should be backed-up with proportional increase in the capital accounts in order for the banks to be able to account for shocks associated with volatile leverage. In other words, the level of leverage of a bank should grow in accordance with the size of its capital.*

Keywords: Financial leverage, Performance, Nigerian Banks.

Introduction

Leverage is a key component of a bank's financial policy because it determines the level of internal funding versus external funding and greatly affects the level of a firm's cost. This in turn affects the overall performance of the bank. The capital structure of a bank performs a crucial role in banks' financial performance (Gohar and Rehman, 2016; Abubakar, 2015; Shahid, Akma and Mehmood, 2016). However, like every other organization, banks need capital to finance its investments and daily operations. One crucial issue confronting bank management today is how to choose the combination of debt and equity to achieve optimum capital structure that would minimize costs and maximize return to the owners of the business. Saeed, Gull and Rasheed (2013) stated that optimum capital structure means the minimum weighted average cost of capital that maximizes the value of the organization. Often times, because of the benefits of leverage financing, which includes tax shield, banks resort to the use of leverage in financing their operations.

The decision of financing using either equity or debt funds is termed as financing policy. The use of the debt finance by a firm is known as financial leverage which spans out from the debate of the optimal capital structure and has been up for discussion for several decades (Kenn-Ndubuisi and Nweke, 2019; Ebiringa and Ezeji, 2012). Capital structure describes the sources of funds by which the firm uses to finance the operations and normally given in percentages. Financial managers are facing difficulties in precisely determining the optimal capital structure where there seems to be no consensus or a general yard-stick on the optimal combination of debt and equity in the banks' capital structure and therefore bank management are virtually unaware of the implication of leverage ratios on their performance (Velnamphy and Niresh, 2012; Pandey, 2010, Abubakar, 2015).

However, flawed capital structures were one of the most decisive factors in the string of bank failures witnessed during the global financial crisis (GFC). Even after the recapitalization and reconsolidation exercise in 2005, there was still record of banking crises in 2009 owing to poor financing decisions of the banks. In other words, in the process of borrowing funds to finance operations, banks are exposed to several risks which could prove detrimental to their performance. Increase in the use of debt in a bank's capital structure increases the risk of financial distress and probability of bankruptcy which may arise as a result of default. Excessive leverage influences shareholder preferences and bank management behavior giving rise to so-called leverage agency costs.

Having investigated related empirical works, the researcher observed that among the studies conducted in Nigeria, none has compared the level of leverage before and after the consolidation exercise among money deposit banks. Previous studies on leverage and financial performance of firms have given varied responses on the subject matter (Saeed, Gull & Rasheed, 2013; Moghaddam & Abbaspour, 2017; Murikwa, 2017; Iqbal & Usman, 2018; Idada, Atu and Atu, 2018). Some research indicates positive relationship amid leverage and financial productivity whereas some portray a negative association hence no clear conclusion on the relationship. It is therefore imperative that a recent study be conducted to give clarity as to how financial leverage affects the performance of banks in Nigeria.

Literature Review

Financial leverage is defined as the part of capital structure that is made up of debt. The other part of capital is contributed by the owners (shareholders) of the company and is referred to as equity. Iqbal and Usman (2018) also define financial leverage as the amount of debts or credits that is used by a firm in the purchase of assets, enhancement of operational activities or acquisition of a new firm. Pandey (2008) describes financial leverage as presence of debt in a company's capital composition. According to Dare and Sola (2010) financial leverage involves use of debt and preference shares besides the owner's equity. Andy, Chuck and Alison (2002) defined an unlevered business as one whose ownership composition involves shareholders only while a levered company has debt and ownership equity. Very few firms are all equity firms. Most firms have debt component in their capital structure and are therefore levered firms (Pandey, 2008). The level of gearing/leverage also differs from one firm to another and so is the financial performance. Debt financing has a cost associated with the debt component often incurred by a company in form of interest e.g. loan interest.

Leverage is measured through the use of leverage ratios/gearing ratios. Other than measuring the degree of debt financing, these ratios also measure a firm's financial risks. Huge debts directly reflect the proportionality of the financial risk a firm has (Murikwa, 2017). The three most commonly used leverage ratios are degree of financial leverage, debt ratio and debt-equity ratio. Degree of financial leverage measures how sensitive the operating income changes with the changes in leverage levels (Earnings Before Interest and Tax/Total Debt). Debt ratio shows the proportion of a firm's assets that has been financed by debt (Total liabilities/Total assets). Debt-equity ratio compares the amount financed by debt relative to that financed by owners (Total debt/Equity) (Murikwa, 2017).

This study is anchored on the Pecking order theory of capital structure. This theory helps to explain the effects of leverage on firms' performance through the investors' perceptions. Myers (1984) and Myers and Majluf (1984) developed the Pecking order theory of capital structure. Under Pecking order theory, the firm financing decision initially made by using internal source of fund and if it is not enough, external source of financing is used by the firm. Accordingly the preferences are, first target dividends, then chose debt and lastly focuses on equity (Myers, 1984). This theory indicates the preference of debt to equity in the finance of a firm.

From the foregoing analysis, the focus on the use of debt has been on only the economic gains and benefits of the formation of optimal capital structure. The pecking order theory is geared towards the signaling effect of the use of debt financing. According to the pecking order theory firms prefer financing their operations from internally generated funds, because the use of such funds does not send any negative signal that may lower the stock price of the firm. If external finance is required, firms prefer to issue debt first before considering the issue of equity. This pecking order occurs because issuing debt is less likely to send a negative signal to investors.

Proponents of the pecking order theory suggests that financing project by debt oblige managers to make efficient decisions to regularly repay creditors. Debt may also present advantages compared to equity capital due to the existence of information asymmetries. Managers might have information on the evolution of firm yields or on investment opportunities. The firm, by issuing debt, reveals to external investors its ability to repay the principal and interest on debt and signals its soundness (Ross, 1977; Leland & Pyle, 1977).

The theory of financial leverage and its effects on the financial performance has been an issue of serious controversy in corporate finance literature since the seminar work of Modigliani and Miller in 1958 (Abubakar, 2017). Modigliani and Miller (1958) asserted the irrelevance of equity ratio for firms' value. However, their assumption of perfect markets with no taxes or bankruptcy cost makes the theory unrealistic. According to Jensen (1996) there are three factors that determine a firm's level of leverage. They include; firm size, growth and tangibility of assets

Empirical Review

Idada et al. (2018) examined the impacts of leverage, repayment risk and liquidity on firm financial performance in Nigerian banks. A sample of twelve (12) banks was used for the study. Secondary data were collected from the firm for the period of 2007 to 2016. The study used descriptive statistics, correlation analysis and panel least square to analyze the data for the study. The results show that leverage significantly affects the financial performance of banks, repayment risk has negative and significant effect on the financial performance of banks in Nigeria and liquidity affects the financial performance of banks but not significantly.

Saeed et al. (2013) examined the impact of capital structure on performance of Pakistani banks. The study extends empirical work on capital structure determinants of banks within country over the period of five years from 2007 to 2011 by utilizing data of banks listed at Karachi stock exchange. Correlational and multiple regression models are applied to estimate the relationship between capital structure and banking performance. Performance was measured by return on assets (ROA), return on equity (ROE), earnings per share (EPS) and asset growth (AG). Determinants of capital structure includes long term debt to capital ratio

(LTDTTC), short term debt to capital ratio (STDTC) and total debt to capital ratio (TDTC). The findings revealed that Short term debt to capital (STDTC) has positive association with all variables except firm size (SIZE). Long term debt to capital (LTDTTC) has positive correlation with all measures of firms' performance. TDTC has favorable association with firm size (SIZE) and negative association with assets growth (AG). Outcomes of regression analysis showed a positive significant relationship among return on equity and STDTC, TDTC, SIZE and negative association with LTDTTC and AG. Also, the findings revealed that earnings per share have a strong optimistic connection with all independent and control variables, except long term debt to capital (LTDTTC).

Kenn-Ndubuisi & Nweke (2019) studied the relationship between financial leverage and firm financial performance in Nigeria using 80 non-financial firms quoted on the Nigerian Stock Exchange from 2000 to 2015. The total debt to capital ratio, debt to equity ratio, cost of debt, debt to asset ratio and long-term debt to capital ratios were proxies for financial leverage. Panel data technique in the form of the pooled regression model, fixed effect model, random effect model, and the marginal model had been applied to test hypotheses. The findings of the study revealed earnings per share is significant and negatively related to the debt to equity ratio and the total debt to total asset measures of financial leverage while the return on equity shows an insignificant relationship with the financial leverage measures in Nigeria while the direction of the relationship differs from one variable to the other. It was positive with the total debt to capital ratio and the cost of debt while the total debt to asset ratio, long term debt to capital ratios and the debt to equity ratio was negative.

Moghaddam and Abbaspour (2017) sought to determine the effects of leverage and liquidity ratios on earnings management and capital of banks listed on the Tehran Stock Exchange. In their research, financial information of 14 banks listed on the Tehran Stock Exchange during the period 2010-2015 were studied and multivariate linear regression analysis using panel data were used to analyze the data. The results show that financial and liquidity leverage has significant positive effect on earnings management of banks and therefore increases the degree of financial leverage and by increasing bank liquidity, the possibility of using discretionary accruals and earnings management at banks increase. The results also showed that financial leverage has a significant negative effect on the bank's capital adequacy ratio and with increasing financial leverage bank capital adequacy ratio is reduced.

Ahmed, Awais and Kashif (2018) investigated the optimal level of capital structure that firms can adopt to improve their financial performance given the industry dynamics and economic circumstances of the country. Using Hausman's specification test. Annual data for the period 2005 – 2014 of Karachi Stock Exchange (KSE) 100 index listed securities were collected to analyze the impact of financial leverage on the firms' performance. Return on assets, return on Equity, and TOBIN's Q were the proxies of financial performance analyzed against financial leverage for the KSE 100 index listed firms. The finding of the paper indicates that capital structure, leverage, interest cover and sales growth as most significant variables impacting firms' profitability.

Manacer, Saif-Alyousfi and Ahmad (2019) examined the impact of financial leverage on the Islamic banks' performance in the Gulf Cooperation Council (GCC) countries during the period from 2005-2017. The population of the study included the Islamic banks in the GCC countries. Thirteen-year data of 25 listed Islamic banks in the GCC countries were used. These data were retrieved from the Thomson Reuters DataStream. Their study utilized the fixed effect regression model. The findings show that the financial leverage has significant impact on the performance of the Islamic banks' performance in the GCC region. More specifically, the financial leverage has a positive and significant impact on ROA, ROE, and Tobin's Q of the Islamic banks in the GCC countries, thus indicating that the higher the financial leverage, the higher the performance of the Islamic banks in the GCC region. However, the results of this study do not provide evidence to support the Agency Cost Theory that implies a decrease in the performance when equity ratio is increased. On the other hand, the findings provide evidence to support the Signaling Theory that argues that banks are expected to have a better performance credibly in transmitting this information through the higher capital.

Wabwile, Chitiavi, Alala and Douglas (2014) analyzed and compared the performance amongst tier 1 commercial banks listed on Nairobi Stock Exchange (NSE) (that is banks with an asset base above 100 billion by the year 2011) in relation to their financial leverage. Specific indicators were used to measure and compare variance in their performance were profitability Return on assets (ROA) and Return on capital employed (ROCE), growth of the firm Earnings per share (EPS), Dividend yield (DY) and value of the firm Price book value (PBV). Person correlation analysis and regression analysis were used to test correlation of data, F-test, Durbin-Watson test, adjusted R2, mean and standard error of the data. The findings revealed that there was a negative correlation between debt asset ratio and ROA and ROCE though not significant. The findings also revealed that there was positive correlation between the debt asset ratio and the EPS; though not significant. There was also found to be a negative correlation between debt ratio and the PBV though not significant.

Serwadda (2019) investigated the effects of capital structure components on banks' performance in Ugandan banks for a ten-year period, 2006–2015 with a sample of 20 commercial banks. The study employed four performance indicators of return on equity, return on assets, net interest margin and cost to income ratio to determine bank performance. Panel regression models were used to determine the effects of capital structure on bank performance. Independent variables were sub- divided into capital structure variables namely; long-term debt to total assets, short-term debt to total assets and total debt ratio and then control variables were bank size and tangibility of assets. Results portrayed that there is a positive relationship between capital structure variables (long-

term debts, total debt) and bank performance (net interest margin). There was also a positive relationship between total debt and return on assets as was the case between total debt and returns on equity. However, there is a negative relationship between short-term debt and return on assets. The results also signify a positive relationship between bank size and net interest margin and also between bank size and returns on equity plus return on assets. There was a negative relationship between the tangibility of assets and net interest margin and with return on equity.

Gweyi and Karanja (2014) investigate the effect of financial leverage on financial performance of deposit taking Saccos in Kenya. The sample data was extracted from 40 Savings and Credit Co-operative Societies (Saccos) registered by Sacco Society Regulatory Authority (SASRA) extended from the period 2010 to 2012. The secondary data used for analysis was collected from the financial statements of the various deposit taking Saccos. Two basic approaches descriptive and analytical design were adopted. The results show perfect positive correlation between debt equity ratio with return on equity and profit after tax at 99% confidence interval and a weak positive correlation between debt equity ratio with return on assets and income growth.

Anarfo (2015) examine the relationship between capital structure and bank performance in Sub-Sahara Africa. This study has employed the use of panel data techniques to analyze the relationship between capital structure and bank performance. The performance variables used in the study were return on asset (ROA), Return on equity (ROE) and net interest margin (NIM). The results from Levin-Lin-Chu and Im-pesaran-shin unit root test show that all the variables were stationary in levels. The study found negative relationship between capital structure and bank performance. The results also indicate that capital structure does not determine bank performance but rather it is performance that determines banks' capital structure.

Aragle, Beyene and Shiferaw (2015) investigated the relationship between capital structure and performance of commercial banks in Ethiopia. The investigation was based on panel data (from the year 2000-2012) collected from the annual reports of eight sample commercial banks in the country. Their study established a model to measure the association between capital structure which is proximate by total debt to total asset (TDTA) and total debt to total capital (TDTC) and performance which is measured by return on asset (ROA), return on equity (ROE) and net profit margin (NPM). The results of regression analyses indicated that on average leverage has a positive effect on the financial performance of commercial banks in Ethiopia when performance measured by return on equity. In contrast, the findings revealed that leverage has a significant negative effect on performance of commercial banks in Ethiopia when performance is measured by return on asset and net profit margin.

Iheanyi, Sotonye and Ejiodamen (2016) evaluated the relationship that exist between highly geared capital structure and lowly geared capital structure on performance indices such as return on equity and return on assets. Four (4) banks were used and their audited financial statements analyzed to generate both the dependent and independent variables for twelve years (2002-2013). The statistical tool applied is ordinary least square and the result shows that highly geared capital structure is increases performance of deposit money than lowly geared capital.

Iqbal and Usman (2018) examined the impact of financial leverage on firm performance in Pakistan from 2011 to 2015. The study selected 16 textile composite companies of Pakistan. The researchers used descriptive statistics, correlation analysis and regression model to identify the results. The results show that financial leverage has negative and significant effect on firm ROE and financial leverage has positive and significant effect on firm ROA. Further study indicates that the high interest rate and more amount of debt decreases the value of equity and has negative impact on firm performance. On the other hand, the amount of debt has positive impact on firm ROA. Results show that financial leverage has positive impact on firm performance if the amount of debt does not exceed from the amount of equity.

Methodological Dimension

For the purpose of this study, the researcher employed the ex-post Facto research design. The major feature of this research design is that it describes the nature of the relationship among variables on the basis of past trends or events that have already occurred. The time series data, which was used for the analysis, was sourced from the annual reports of the selected bank (from 2000 to 2019) and the Central Bank of Nigeria (CBN) Statistical Bulletin (2019). Specifically, the profit before tax of the commercial banks was sourced from NSE annual reports while the financial leverage ratios were computed from data obtained from the CBN statistical bulletin (2019).

The variables used in the study can be grouped into two namely the dependent variables and the independent variables. The dependent variable represents bank performance indicators. These are the variables which the researcher seeks to examine and predict. The dependent variables selected for this study include; return on assets, return on equity and profit before tax. The independent variables however, are the variable whose trends are hypothesized to predict the dependent variables to some extent. The independent variables used in this study are the debt to equity ratio, debt to total asset ratio and debt to total capital ratio which are measures of financial leverage.

The study adopts similar models with the study of Iqbal and Usman (2018). In their study, both return on assets (ROA) and return on equity (ROE) were expressed as a function of debt to equity ratio and solvency ratio. However, the present study expresses

profit before tax (PBT) as a function of debt to equity ratio (DER), debt to total asset ratio (DTAR) and debt to total capital ratio (DTCR). The functional relationship between the variables is therefore expressed thus;

$$PBT = f(DER, DTAR, DTCR) \tag{3.1}$$

By ascribing econometric parameters to the functional model, it can be restated in econometric form thus;

$$PBT = \alpha_0 + \alpha_1 DER + \alpha_2 DTAR + \alpha_3 DTCR + \mu t \tag{3.2}$$

α_0 is the intercept or the constant term; which is the value of the left-hand variable irrespective of the right-hand variable. α_1, α_2 and α_3 are the coefficients of the regression. μt is the error term of the regression.

Data Presentation

The secondary data which were used to compute the ratios used in the analysis include the assets, equity and capital as well as profit before tax of the deposit money banks - debt to equity ratio (DER), debt to total asset ratio (DTAR) and debt to total capital ratio (DTCR). Control variables are liquidity ratio (LQR), loan to deposit ratio (LDR) and interest rate (INT) which in one way or the other affect the profitability of the banks. The data were analyzed using the Ordinary Least Square (OLS) and the Breakpoint Least Square (BLS) methods. The stationarity of the data were first confirmed and the results are stated summarily

Table 1: Summary of the Stationarity Test

Variables	ADF Statistic	Critical Value (5%)	Differencing	Order of Integration
PBT	-5.095529	-3.029970	Level	I(0)
DER	-4.224187	-3.029970	Level	I(0)
DTAR	-3.906890	-3.029970	Level	I(0)
DTCR	-4.435410	-3.029970	Level	I(0)
INT	-5.290530	-3.040391	1 st Difference	I(1)
LDR	-3.255964	-3.052169	Level	I(0)
LQR	-4.361257	--3.040391	1 st Difference	I(1)

Source: E-views 10.0 Output, 2020.

The summary above indicates that all the variables are stationary at level except two of the control variables; interest rate and liquidity ratio, which were stationary at first difference. The data were differenced according to their order of integration and used for the BLS and OLS regressions.

Table 2: Ordinary Least Square Regression

Dependent Variable: PBT

Method: Least Squares

Date: 06/29/20 Time: 09:28

Sample: 2000 2019

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-58.69878	73.25351	-0.801310	0.4374
DTAR	28204.44	7511.630	3.754770	0.0024
DTCR	-514.8190	338.3567	-1.521528	0.1521
INT	-16.57271	17.31296	-0.957243	0.3559
LDR	7.882600	7.176476	1.098394	0.2920
LQR	-7.645984	8.840810	-0.864851	0.4028
C	-19688.64	4934.787	-3.989765	0.0015
R-squared	0.702981	Mean dependent var	219.8145	
Adjusted R-squared	0.565895	S.D. dependent var	439.8764	
S.E. of regression	289.8199	Akaike info criterion	14.44561	
Sum squared resid	1091942.	Schwarz criterion	14.79412	
Log likelihood	-137.4561	Hannan-Quinn criter.	14.51365	
F-statistic	5.128031	Durbin-Watson stat	2.046188	
Prob(F-statistic)	0.006592			

Source: *Eviews 10.0 Regression Output 2020*

The result of the OLS regression indicates that DER, DTCR, INT and LQR all have negative relationships with profit performance of the deposit money banks while DTAR and LDR have positive relationships with the profit performance of the deposit money banks in Nigeria. However, the relationship is only significant in the case of DTAR. The probability of the F-statistic (0.006592) indicates that the overall relationship between the leverage variables and profitability of the deposit money banks is significant. The R-squared value of 0.702981 indicates that about 70.3% of the trends in profitability is explained by the variations of the regressors; suggesting a good fit of the regression model.

Reliability of the OLS Estimates

The reliability of the regression estimates are tested using the Harvey's Heteroskedasticity test, the Autocorrelation test, the Durbin-Watson test and the Jarque-Bera (JB) Normality test.

Table 3: Harvey's Heteroskedasticity Test Result

Heteroskedasticity Test: Harvey

F-statistic	0.376749	Prob. F(6,13)	0.8810
Obs*R-squared	2.962542	Prob. Chi-Square(6)	0.8135
Scaled explained SS	0.875456	Prob. Chi-Square(6)	0.9899

Test Equation:

Dependent Variable: LRESID2

Method: Least Squares

Date: 06/29/20 Time: 09:30

Sample: 2000 2019

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.85152	23.53915	0.885823	0.3918
DER	-0.049436	0.349422	-0.141480	0.8897
DTAR	-10.95198	35.83080	-0.305658	0.7647
DTCR	0.387395	1.613976	0.240026	0.8141
INT	-0.079343	0.082584	-0.960765	0.3542
LDR	-0.022388	0.034232	-0.653995	0.5245
LQR	0.004665	0.042171	0.110631	0.9136

R-squared	0.148127	Mean dependent var	10.30926
Adjusted R-squared	-0.245045	S.D. dependent var	1.238962
S.E. of regression	1.382453	Akaike info criterion	3.754813
Sum squared resid	24.84530	Schwarz criterion	4.103320
Log likelihood	-30.54813	Hannan-Quinn criter.	3.822846
F-statistic	0.376749	Durbin-Watson stat	1.811654
Prob(F-statistic)	0.880985		

Source: E-views 10.0 Heteroskedasticity Output, 2020

The F-statistic value (0.376749) is very low and the probability F-statistic (0.8810) is greater than 0.05 therefore the null hypothesis of no heteroskedasticity is accepted. Therefore the regression is free from the problems of heteroskedasticity.

Table 4: Correlogram Test for Autocorrelation

Date: 06/29/20 Time: 08:53

Sample: 2000 2019

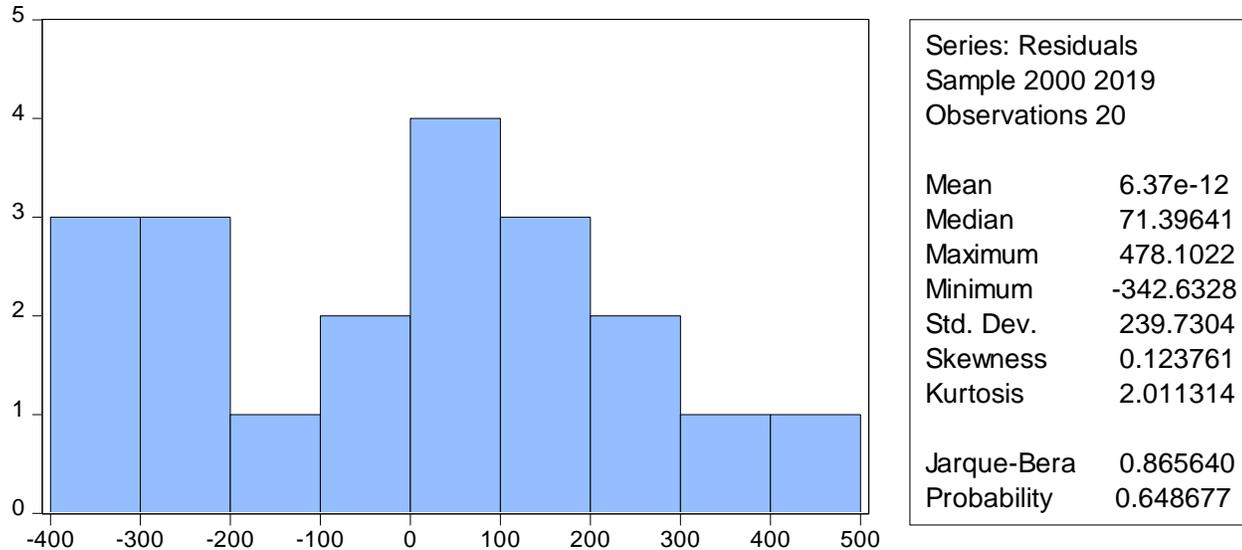
Included observations: 20

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	-0.208	-0.208	1.0015	0.317
		2	0.166	0.128	1.6714	0.434
		3	-0.011	0.049	1.6744	0.643
		4	-0.007	-0.023	1.6758	0.795
		5	-0.032	-0.046	1.7051	0.888
		6	-0.035	-0.047	1.7436	0.942
		7	-0.025	-0.030	1.7651	0.972
		8	0.065	0.073	1.9182	0.983
		9	0.004	0.041	1.9190	0.993
		10	-0.152	-0.179	2.9296	0.983
		11	-0.022	-0.108	2.9542	0.991
		12	-0.053	-0.029	3.1106	0.995

Source: E-views 10.0 Correlogram Output Data, 2020

The Q-statistics are low for all 12 lags and the probability values which are all greater than 0.05 suggest a rejection of the hypothesis of Autocorrelation among the variables. Therefore, the regression is free from autocorrelation problems. The Durbin-Watson statistics obtained from the regression output in table 4 (2.046188) is greater than the upper (1.918) and lower (0.515) limits of the Durbin-Watson table ($n = 20, k = 6$). Therefore, there is no evidence of autocorrelation problems.

Figure 1: Histogram and Summary Statistics of the Residuals



Source: E-views 10.0 Descriptive Output, 2020

The result of the Jarque-Bera statistic (0.865640) is low and the probability JB statistic (0.648677) is greater than 0.05 thus the residuals follow a normal distribution. Therefore, there is no problem of non-normal distribution of the residuals.

Breakpoint Least Square

The breakpoint least square regression was carried out using two breakpoints which are significant dates in the Nigerian banking sector. The selected breakpoints are 2005; which is the year of capital restructuring of the deposit money banks from ₦2billion to ₦25billion, and 2009, the year when ten (10) distressed banks in Nigeria were asked to recapitalize.

Table 5: Breakpoint Least Square Regression

Dependent Variable: PBT
 Method: Least Squares with Breaks
 Date: 06/29/20 Time: 09:39
 Sample: 2000 2019
 Included observations: 20
 Break type: Fixed number of user-specified breaks
 Breaks: 2005, 2009
 Allow heterogeneous error distributions across breaks

Variable	Coefficient	Std. Error	t-Statistic	Prob.
2000 - 2004 -- 5 obs				
DER	17.46899	59.32882	0.294444	0.7803
DTAR	-9740.995	15799.48	-0.616539	0.5645
DTCR	264.9627	343.1060	0.772247	0.4749
C	7081.314	11376.40	0.622457	0.5609
2005 - 2008 -- 4 obs				
DER	-1869.166	343.3864	-5.443332	0.0028
DTAR	69930.33	17715.46	3.947418	0.0109
DTCR	899.5046	1170.098	0.768743	0.4768
C	-48975.73	10964.27	-4.466847	0.0066
2009 - 2019 -- 11 obs				
DER	-214.7075	102.5061	-2.094582	0.0904
DTAR	5649.524	11629.05	0.485811	0.6476
DTCR	761.1084	636.9508	1.194925	0.2857
C	-6271.431	7082.017	-0.885543	0.4164
Non-Breaking Variables				
INT	-7.805871	16.68116	-0.467945	0.6595
LDR	5.146208	6.002980	0.857275	0.4305
LQR	-10.43376	8.799477	-1.185725	0.2890
R-squared	0.959761	Mean dependent var	219.8145	
Adjusted R-squared	0.847092	S.D. dependent var	439.8764	
S.E. of regression	172.0071	Akaike info criterion	13.24665	
Sum squared resid	147932.2	Schwarz criterion	13.99345	
Log likelihood	-117.4665	Hannan-Quinn criter.	13.39244	
F-statistic	8.518388	Durbin-Watson stat	2.685231	
Prob(F-statistic)	0.013609			

Source: E-views 10.0 Breakpoint regression Output Data, 2020

The result reveals that significant change in the relationship between leverage and profitability occurred after 2005. Prior to 2005 DER and DTCR had positive relationship with PBT while DTAR had negative relationship with PBT but none of the relationships are significant. However, from 2005 to 2008, DER had negative relationship with PBT while DTAR and DTCR had positive relationships with PBT. The relationships are significant in the case of DER and DTAR. The relationships did not change after 2009 but the significance of the relationship did – none of them were significant.

Chow Breakpoint Test

Chow Breakpoint test was used to test for significant changes in the relationships during specified periods.

Table 6: Chow Breakpoint Test

Chow Breakpoint Test: 2005 2009

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: DER DTAR DTCR

Equation Sample: 2000 2019

F-statistic	5.303715	Prob. F(6,10)	0.0105
Log likelihood ratio	28.61689	Prob. Chi-Square(6)	0.0001
Wald Statistic	31.82229	Prob. Chi-Square(6)	0.0000

Source: E-views 10.0 Chow Breakpoint Output Data, 2020

The results of the Chow breakpoint test indicate that there were significant breaks at the specified period, 2005 and 2009, as the probability F-statistic is less than 0.05.

Granger Causality Test

The Granger causality was used to examine the direction of cause and effect between financial leverage and performance of the deposit money banks. The result of the Granger Causality tests is shown in table 9.

Table 7: Granger Causality Test

Pairwise Granger Causality Tests

Date: 06/29/20 Time: 11:56

Sample: 2000 2019

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DER does not Granger Cause PBT	18	0.31501	0.7352
PBT does not Granger Cause DER		43.5889	2.E-06
DTAR does not Granger Cause PBT	18	1.65966	0.2281
PBT does not Granger Cause DTAR		8.06731	0.0053
DTCR does not Granger Cause PBT	18	1.55111	0.2488
PBT does not Granger Cause DTCR		19.0668	0.0001

Source: E-views 10.0 Granger Causality Output Data, 2020.

The results of the granger causality test show that in all cases, the causal relationship flows from profit before tax to the financial leverage ratio. Indicating that the level of profit is what influences leverage decisions.

Discussion of the Findings

The findings revealed that over the period reviewed, DER has negative but insignificant relationship with profit before tax of the deposit money bank. This finding implies that increase in debt over equity coincided with poor profit performance of the DMBs in Nigeria. Changes in capital structure prompted by the recapitalization exercises of 2005 and 2009 were huge contributors to this as the relationship between DER and PBT prior to 2005 was positive. The empirical findings of Ahmadu, and Abdulkarim (2019) and Enekwe et al (2014) also revealed similarly that debt to equity ratio has a negative effect on financial performance.

As expected, debt to total asset ratio has positive and significant relationship with the profit after tax of deposit money banks in Nigeria over the period under review. By implication, the higher the debt to total asset ratio is, the greater the profitability of the

bank. This also backs up the assertions of the Pecking Order theory that opines that managers prefer to finance acquisition of assets using debt if internally generated funds are insufficient rather than resorting to equity. According to the Agency theory, increasing equity would lead to decrease in the performance (Manacer et al., 2019). The component of total debt that significantly supports growth of profit is the long-term debt. The study of Gadzo and Asiamah (2018) found significant positive relationship between LTD and ROA and profit rate of banks while STD had positive insignificant relationship with the performance measures. Serwedda (2019) also found a positive relationship between long term debt to total asset ratio and profitability of banks whereas, there was a negative relationship between short-term debt and return on assets.

Debt to capital ratio was found to have a negative but insignificant relationship with profit before tax of the deposit money banks from 2000 to 2019. However, when the timeframe was split based on the breakpoints, the findings revealed that debt to capital ratio had positive relationships before 2005, between 2005 and 2008 and then after 2009 though the relationship was never significant.

The result of the Chow Breakpoints test also revealed that there were significant changes in the relationships during the breakpoints. Therefore, the reforms of the monetary and regulatory authorities during these periods had notable effects on the nature of financial leverage and performance of the deposit money banks in Nigeria. The major reforms made by the regulatory authorities during these breakpoints were majorly surrounding issues of recapitalization. Thus, there is clear evidence from the findings of the study that these reforms did change the way certain leverage ratios were related to profitability. Before the 2005 recapitalization exercise, onus of leverage was on assets. Therefore, using more debts to finance assets acquisitions led to fall in the profit of deposit money banks. However, after 2005, with higher capital base, the banks were secure enough to acquire assets through debts, with higher levels of capital acting as buffer. Then debt to total asset ratio began to significantly correlate with profitability of the deposit money banks.

The negative relationship between debt to equity ratio and profit before tax after the recapitalization in 2005 is an indication that an increase in leverage should be matched with increase in equity. Thus increase in debt equity ratio (which is as a result of increasing debt over equity) started to have negative correlation with profit before tax of the deposit money banks in Nigeria. Some banks however, abused the cushion that increased capital did provide and began to issue loans exceeding their credit ceilings that were estimated to be in excess of ₦700billion (Iwedi, 2017). Sanusi (2009) also noted that the reason for bank failures in 2009 were because of technical insolvency of capital, poor credit-risk management, poor corporate governance and liquidity.

Interestingly, the findings revealed that causal direction flowed from profit before tax to all the leverage ratios indicating that leverage ratios do not determine the level of profitability of the deposit money banks rather, the profit performance of the banks determine the level of leverage employed by the banks in their capital structure.

Conclusion

From the findings of the study, the researchers therefore conclude that financial leverage is a casual determinant of performance of DMBs in Nigeria. Banks performed better; profit-wise in periods with relatively lower debt to equity ratio. Likewise, lower records of profits coincided with higher debt to capital ratio. On the other hand, the more the proportion of assets financed by debt, the more profitable the DMBs will be. The nature of these relationships is subject to recapitalization exercises and other regulatory reforms. It should also be noted that leverage financing decisions are influenced by the profitability of the DMBs and not necessarily the other way around. In other words, profitability ensures that the DMBs are stable enough to handle the risks involved in increased gearing.

Recommendations

On account of the findings of the study, in order to properly manage leverage levels and improve the performance of DMBs, the researchers make the following recommendation.

1. Banks should resort to debt financing, if external finance is required. Increasing equity should be a subsidiary option.
2. To improve the profitability of assets, the banks should apply effective credit management strategies which could involve matching long-term and short-term assets acquisitions with long-term and short-term finance respectively.
3. The growth of capital should be used as a buffer for the growth of debt: Increasing debt should be backed-up with proportional increase in the capital accounts in order for the banks to be able to account for shocks associated with volatile leverage. In other words, the level of leverage of a bank should grow in accordance with the size of its capital.
4. The optimal leverage that culminates into improved overall performance of the deposit money bank should be one that is dependent on the level of profit performance of the bank.

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