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Effect of Financial Leverage on the Performance of Nigerian Deposit Money Banks

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Abstract
This study examines the effect of financial leverage on the performance of Nigerian deposit money banks . The study utilizes an ex-post facto research design using panel data regression model covering the study period of ten years spanning from 2013 to 2022. Population of the study is the 22 deposit money banks listed on the Nigeria stock exchange from which a sample of 7 were drawn using purposive sampling technique. The dependent variable of the study is the performance of deposit money banks which is measured by ROA and ROE while the independent variable is the financial leverage measured by debt to asset, debt to equity with a control variable as equity to asset. The finding of the study revealed that debt to asset and equity to asset have significant effect on the ROA while debt to equity has no significant effect on the ROA. The finding further indicated that debt to asset has significant effect on the ROE while debt to equity and equity to asset have no significant effect on the ROE. The finding therefore concludes that debt to asset and equity to asset are the major determinants of financial performance of the Deposit Money Banks. The study recommends therefore that Banks should utilize both debt with minimal cost of capital and equity as major sources of financing their operations.

Keywords: *Equity trading, performance, design, population, purposive*

Introduction

The main issue in finance and macroeconomics that draws special attention is whether financial leverage affects performance of firms. The study of financial leverage is important to both researchers and managers. The major issues faced by finance managers are not only to receive or gather the funds but also their meaningful deployment in order to generate maximum returns for shareholders.

Financial leverage has two primary advantages as it enhances earnings and also may allow an entity to earn a disproportionate amount on its assets and has also favorable tax treatment. Companies expect to increase their income by acquiring new assets, and subsequently generating returns that are higher than the debt they procure. Therefore, that excess income increases shareholder's earnings per share (EPS). The foremost objective of finance manager is to increase and maximize the shareholder's wealth of a firm and the achievement of

the objective is based on the investment decision and financing decision of an entity. One of the best ways in which firm increases its profit is through financial leverage as it uses debt instruments so that the anticipated level of return on the firm's equity would increase.

Concept of financial leverage

Financial leverage is the use of borrowed funds with a contractually determined return to increase the ability of a business to invest and earn an expected higher return but usually at a high risk. It is the ability of an entity to earn very high returns when operating at high capacity utilization of a facility. It also refers to the corporate action in which a company raises more debt in order to boost the return on investment for the equity shareholders. This process of financial leverage is considered to be a success if the company is able to earn a greater return on investment. These terms signifies that a corporate body leverages its financial standing to procure and enhance the earnings of shareholders. In other words, the company utilizes its equity strength to avail debts from creditors. Financial leverage is therefore synonymously called trading on equity because the company gets its loan amount from creditors based on its equity strength. Companies usually borrow funds at favorable terms by taking advantage of their equity.

Financial leverage is a financial process in which debt produces gain for shareholders of a company. Financial leverage happens when a company incurs new debt using loans, bonds or preferred stock. Some companies usually go through this way to boost their earnings per share.

Statement of Problem

Many scholars have discussed issues relating to leverage but not a single literature have ever discussed on the issue of trading on equity which is the term used in the context of finance and it refers to that process where a company takes debt and uses it in the business so as to make profits. The idea behind trading on equity is that rate of profit will be much higher than the cost of debt and this company will be able to make more profits with trading on equity than without it. The biggest advantage of leverage is that it helps in increasing the liquidity available to the company because when company takes loan or debt it receives cash from the lender and that cash can be used by the company for variety of activities like purchasing new machinery or building which will help in increasing the efficiency of the company or company can use the cash for buying other companies which will increase in scale of operations of the company and so on. despite the huge benefits that can be derived from trading on equity, there has been no study that exist in this field of finance. This call for empirical research work to be conducted in this area. Besides, to the best of my knowledge and belief, there has been no research work conducted in this field of finance in Nigeria.

Objective of the study

The major objective of this study is to examine the effect of financial leverage on the financial performance of deposit money banks listed on the Nigeria stock exchange. The specific objectives are:

1. To examine the effect of financial leverage measured as debt to asset, debt to equity and equity to asset on the financial performance, measured as ROA of deposit money banks listed on the Nigeria Stock Exchange.

2. To investigate the effect of financial leverage, measured as debt to asset, debt to equity and equity to asset on the financial performance measured as ROE of deposit money banks listed on the Nigeria Stock Exchange.

Research Questions

1. What is the individual and collective effect of financial leverage measured as debt to asset, debt to equity and equity to asset on the financial performance measured as ROA?
2. What is the individual and collective effect of financial leverage measured as debt to asset, debt to equity and equity to asset on the financial performance measured as ROE?

Research hypothesis

Ho_1: financial leverage measured as debt to asset, debt to equity and equity to asset has no significant effect on the financial performance measured as ROA.

Ho_2: financial leverage measured as debt to asset, debt to equity and equity to asset has no significant effect on the financial performance measured as ROE.

Empirical Review

Raza (2013) examined the effect of financial leverage on the financial performance of Pakistan firms listed on the Karachi stock exchange using panel data analysis for the period 2004 2009. The study presented the descriptive statistics on the selected variables. The result of the study shows negative relation between the performance and financial leverage. The study did not specify the population parameter, sample size and the analytic tool used in the analysis to obtain the result.

Hutten (2017) investigated the influence of financial leverage on firm performance using a sample of all firms listed in the "100 best companies to work for in America" in a four years span (2010 to 2013). The result of the study revealed that financial leverage have no positive effect on firm performance. With the four years study period being scanty for robust statistical result, the study failed to indicate the population parameter and the sample size and how the analysis is done to arrive at the finding.

Salawu (2009) examined the effect of capital structure on profitability of quoted companies in Nigeria using secondary data from 1990 to 2004 collected from the selected annual report and account of 50 non-financial quoted companies, and fact books published by the Nigeria stock exchange the pooled ordinary least square model, fixed effect model and random effect model were used as analysis. The result indicate that profitability present a negative association between the ratio of total debt to total asset and profitability.

Patel (2014) studied the impact of financial leverage on the profitability of Sabar Dairy examining the data of Sabar Dairy for the period of 1985 to 2014. The empirical findings of the result of regression indicate that the overall model is statistically significant.

Mohammad and Ja'afar (2012) examined the relationship between capital structure and profitability of the industrial companies listed on the Amman stock exchange during a six year period (2004 – 2009) sampling 39 companies and applying correlations and multiple regression analysis. The result revealed a significantly negative relationship between debt and profitability, suggesting that profitable firms depends more on equity as their main financing options.

Ahmad, Salman and Shamsi (2015) examined the impact of financial leverage on firm's profitability from cement sector of Pakistan. The study attempted to establish a stochastic relationship between financial leverage and profitability of cement sector operating in Pakistan

incorporating 18 cement manufacturers out of 21 in the study using 6 years annual data from 2005 to 2010 regarding the financial leverage and profitability of the said firms. Sample size for 18 firms for 6 years consist of 108 observations. An ordinary least square model is applied on the data to establish a causal relationship between the variables. The study found that the financial leverage has a statistically significant inverse impact on profitability. The analytic tool and how the variables are measured affects also the findings.

Muhammad, Ahmad and Mehmood (2017) examined the impact of financial leverage on the financial performance in fuel and energy sector in Pakistan using 10 listed public limited firms out of 16 from fuel and energy sector listed at Karachi stock. There is a positive relationship between the financial leverage and the financial performance. Statistical tool and other information relating to the analysis is not present in the study.

Zahoor, Huma, Bader and Muhammad (2015) investigated the effect of financial leverage on the performance of Pakistan firms using ordinary least square technique to detect efficiency of financial leverage of 154 textile firms in Pakistan over the period 2006 to 2011. The regression result indicated that financial leverage has a negative association with return on assets and equity which shows that firms borrow less. The analytic tool is not appropriately examined.

Abdallah (2014) investigated the impact of financial structure, financial leverage and profitability on industrial company's share value applying a sample of Saudi industrial companies. A sample was selected from Saudi industrial companies listed in Saudi stock market amounting to 46 companies. The study used the brochures issued by Saudi capital market for 4 years during the period of 2009 to 2012 using a set of statistical methods to determine the effect of study variables that reflect the operational, financing and investment aspect on company's value as an ultimate goal of increasing shareholder wealth. The study concluded that there is a statistically significant direct relationship between two independent variables; return on equity and the capital structure and the dependent variable represented by stock market price. The four years used in the study is scanty period that may not enable a reliable statistical result.

Theoretical framework

The profit-incentive theory of motivation was propounded and developed by Burrhus Frederick Skinner (BF) in 1904. The theory explains the motivation of firms that operate so as to maximize their profit. The profit motive is a key tenet of rational choice theory, or the theory that economic agents tend to pursue what is in their own best interests. In accordance with this doctrine, businesses seek to benefit themselves and/or their shareholders by maximizing profits. Rather than focusing on more intrinsic forces behind motivation, the incentive theory proposes that people are pulled towards behavior that lead to rewards and pushed away from actions that might lead to negative consequences. Profit incentive is the motivation to earn a return on your investment.

Methodology

The study employs a descriptive research design using panel regression for the period of ten years covering 2010 to 2019 to explore the effect of financial leverage measured as debt to asset, debt to equity and equity to asset on the financial performance measured as ROA and ROE of deposit money banks listed on the Nigeria Stock exchange. The population of the study is the 22 deposit money banks but purposive sampling techniques was used to choose seven banks with consistent data set covering the study period.

The study utilized secondary source of data from audited annual financial statements of the sampled deposit money banks.

The study employed OLS panel regression, fixed effect and random effect regression analysis to examine the effect of the independent variable on the dependent variable.

Model Specification

$$ROA_{it} = \beta_0 + \beta_1 DTA_{it} + \beta_2 DTE_{it} + \beta_3 ETA_{it} + \varepsilon t$$

$$ROE_{it} = \beta_0 + \beta_1 DTA_{it} + \beta_2 DTE_{it} + \beta_3 ETA_{it} + \varepsilon t$$

Results

EFFECT OF FINANCIAL LEVERAGE ON THE FINANCIAL PERFORMANCE (ROA)

Table 1: Descriptive Statistics

	ROA	ROE	DTA	DTE	ETA
Mean	0.031143	0.321857	0.775429	5.390143	0.219429
Median	0.020000	0.125000	0.850000	5.685000	0.150000
Maximum	0.280000	4.030000	2.200000	11.40000	1.000000
Minimum	0.000000	0.000000	0.000000	0.000000	0.010000
Std. Dev.	0.048798	0.784693	0.350125	2.778171	0.229712
Skewness	3.632496	3.803299	-0.072907	-0.154560	2.585928
Kurtosis	16.17400	16.19713	7.111161	2.623947	8.431215
Jarque-Bera	660.1423	676.7386	49.35848	0.691166	164.0514
Probability	0.000000	0.000000	0.000000	0.707808	0.000000
Sum	2.180000	22.53000	54.28000	377.3100	15.36000
Sum Sq. Dev.	0.164309	42.48626	8.458537	532.5583	3.640977
Observations	70	70	70	70	70

Source: Researcher's computation using E-views 9

Table 1: presents Descriptive Statistics of the variables of the study. It describes the Mean, Standard Deviation, minimum and maximum value. The average value of financial performance recorded in the period of the study is 0.031ROA and 0.321ROE and the Maximum reached is 0.280ROA and 4.030ROE. In the case of DTA, the average value stood at 0.775 and the Maximum reached is 2.200. DTE average stood at 5.390 and the Maximum reached is 11.400. In the case of ETA, the average stood at 0.219 and the maximum is 0.010.

Table 2: Covariance Analysis: Ordinary
Date: 12/09/20 Time: 17:16
Sample: 2007 2016
Included observations: 70

Correlation Probability Observations	ROA	DTA	DTE	ETA
ROA	1.000000 ----- 70			
DTA	-0.442559 0.0001 70	1.000000 ----- 70		
DTE	-0.408848 0.0004 70	0.513322 0.0000 70	1.000000 ----- 70	
ETA	0.373962 0.0014 70	0.020311 0.8675 70	-0.238241 0.0470 70	1.000000 ----- 70

Source: Researcher's computation using E-views 9

Table 2: Represents the correlation matrix in relation to the study. The correlation Matrix explains the association between the dependent and independent variables. This clearly depicts negative and positive correlation/association between the explained and the explanatory variables.

Table 3: Dependent Variable: ROA
Method: Panel EGLS (Two-way random effects)
Date: 12/09/20 Time: 20:58
Sample: 2007 2016
Periods included: 10

Cross-sections included: 7
Total panel (balanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068787	0.014519	4.737572	0.0000
DTA	-0.058371	0.016976	-3.438359	0.0010
DTE	-0.001699	0.002176	-0.780797	0.4377
ETA	0.076454	0.022062	3.465367	0.0009

Effects Specification		
	S.D.	Rho
Cross-section random	0.005475	0.0188
Period random	0.012051	0.0910
Idiosyncratic random	0.037696	0.8902

Weighted Statistics

R-squared	0.649784	Mean dependent var	0.022438
Adjusted R-squared	0.320229	S.D. dependent var	0.046547
S.E. of regression	0.038377	Sum squared resid	0.097205
F-statistic	11.83493	Durbin-Watson stat	1.669346
Prob(F-statistic)	0.000003		

Unweighted Statistics

R-squared	0.652628	Mean dependent var	0.031143
Sum squared resid	0.106369	Durbin-Watson stat	1.627621

Source: Researcher's computation using E-views 9

The line of the regression is ROA = 0.068 – 0.058DTA - 0.001DTE + 0.076ETA and this implies that, ROA of deposit money banks decreases significantly with increase in DTA, decrease insignificantly with increase in DTE and increases significantly with increase in ETA The R-Square of 0.652628 indicates that, about 65% of variation in ROA of deposit money banks listed on the Nigeria Stock Exchange can be explained by DTA, DTE and ETA. The remaining 35% can be explained by other variables that are not captured in the regression line (error term). The F-statistics and its probability value of 0.000003, which is less than the t-value of 0.05 depicts the fitness of the model.

Table 4: Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section and period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.735060	3	0.0132
Period random	5.023695	3	0.1701
Cross-section and period random	6.961097	3	0.0731

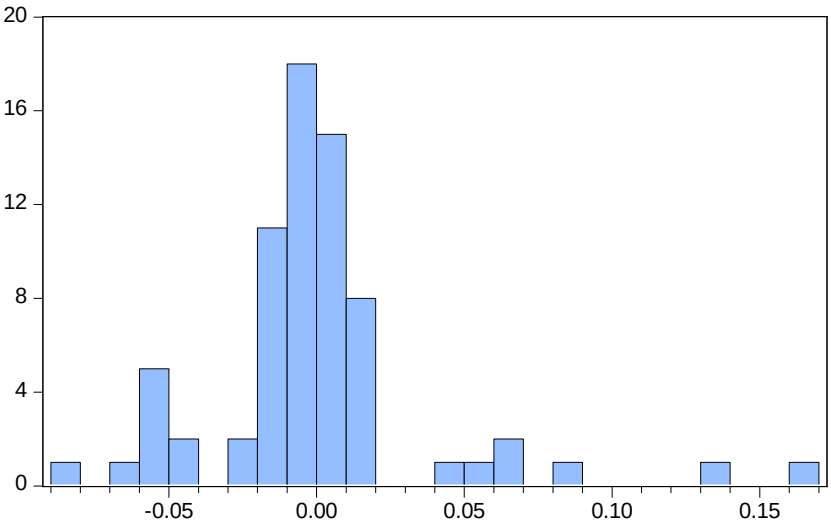
Table 5: Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.368649 (0.5437)	0.001807 (0.9661)	0.370456 (0.5428)
Honda	0.607165 (0.2719)	0.042509 (0.4830)	0.459389 (0.3230)
King-Wu	0.607165 (0.2719)	0.042509 (0.4830)	0.497193 (0.3095)
Standardized Honda	1.090848 (0.1377)	0.307788 (0.3791)	-2.560474 --
Standardized King-Wu	1.090848 (0.1377)	0.307788 (0.3791)	-2.469931 --
Gourierioux, et al.*	--	--	0.370456 (>= 0.10)

*Mixed chi-square asymptotic critical values:
1% 7.289
5% 4.321

10%	2.952

Table 6: Normality Testing



Series: Standardized Residuals
Sample 2007 2016
Observations 70

Mean	3.05e-17
Median	-0.002834
Maximum	0.169129
Minimum	-0.081178
Std. Dev.	0.039263
Skewness	1.655472
Kurtosis	8.760106
Jarque-Bera	128.7451
Probability	0.000000

Table 7: Multicollinearity
Date: 12/10/20 Time: 14:29
Sample: 2007 2016
Included observations: 70

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000211	5.201276	NA
DTA	0.000288	5.726469	1.451006
DTE	4.73E-06	4.926754	1.532628
ETA	0.000487	1.695443	1.117212

Table 8: Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: ROA1
Periods included: 10

Cross-sections included: 7
Total panel observations: 70
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	29.25209	21	0.1081
Pesaran scaled LM	0.193201		0.8468
Pesaran CD	1.419021		0.1559

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Table 9: Covariance Analysis: Ordinary
Date: 12/11/20 Time: 11:51
Sample: 2007 2016
Included observations: 70

Correlation Probability Observations	ROE	DTA	DTE	ETA
ROE	1.000000 ----- 70			
DTA	-0.374773 0.0014 70	1.000000 ----- 70		
DTE	-0.234008 0.0512 70	0.513322 0.0000 70	1.000000 ----- 70	
ETA	-0.187845 0.1194 70	0.020311 0.8675 70	-0.238241 0.0470 70	1.000000 ----- 70

Source: Researcher's computation using E-views 9

Table 10: Dependent Variable: ROE
Method: Panel EGLS (Two-way random effects)
Date: 12/11/20 Time: 11:57
Sample: 2007 2016
Periods included: 10
Cross-sections included: 7
Total panel (balanced) observations: 70
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.898142	0.304763	2.947014	0.0044
DTA	-0.718118	0.257192	-2.792143	0.0068
DTE	0.019234	0.037549	0.512237	0.6102
ETA	-0.561049	0.358305	-1.565842	0.1222

Effects Specification	S.D.	Rho
Cross-section random	0.519082	0.4240
Period random	0.073530	0.0085
Idiosyncratic random	0.600533	0.5675

Weighted Statistics

R-squared	0.664961	Mean dependent var	0.109904
Adjusted R-squared	0.127004	S.D. dependent var	0.631707
S.E. of regression	0.590231	Sum squared resid	22.99256
F-statistic	4.346064	Durbin-Watson stat	1.979598
Prob(F-statistic)	0.007430		

Unweighted Statistics

R-squared	0.650655	Mean dependent var	0.321857
Sum squared resid	36.08548	Durbin-Watson stat	1.281123

The line of the regression is ROE = 0.898 – 0.718DTA + 0.019DTE - 0.561ETA and this implies that, ROE of deposit money banks decreases significantly with increase in DTA, increase insignificantly with increase in DTE and decreases insignificantly with increase in ETA. The R-Square of 0.664961 indicates that, about 66% of variation in ROE of deposit money banks listed on the Nigeria Stock Exchange can be explained by DTA, DTE and ETA. The remaining 34% can be explained by other variables that are not captured in the regression line (error term). The F-statistics and its probability value of 0.007430, which is less than the t-value of 0.05 depicts the fitness of the model.

Table 11: Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section and period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.207900	3	0.7511
Period random	1.710148	3	0.6347
Cross-section and period random	0.745377	3	0.8625

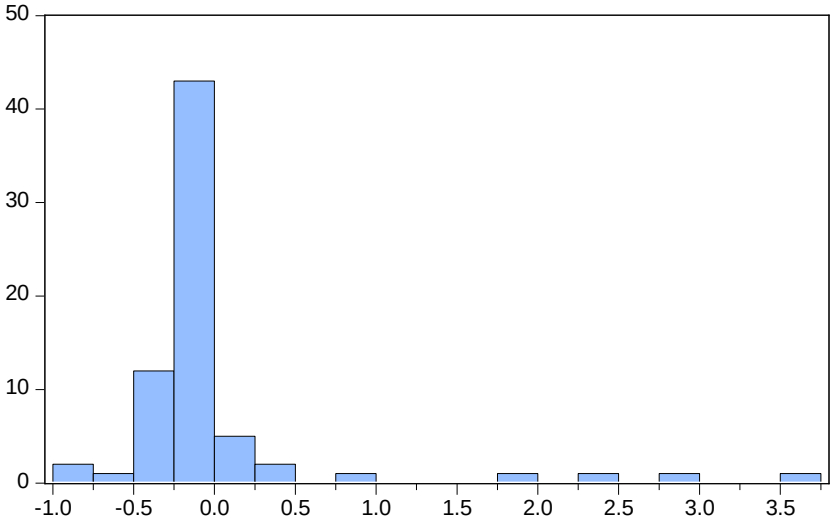
Table 12: Variance Inflation Factors
Date: 12/11/20 Time: 12:05
Sample: 2007 2016
Included observations: 70

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.092881	2.176112	NA
DTA	0.066148	2.297349	1.365479
DTE	0.001410	2.472142	1.512389
ETA	0.128383	1.313687	1.168860

Table 13: Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: ROE1
Periods included: 10
Cross-sections included: 7
Total panel observations: 70
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	13.56953	21	0.8874
Pesaran scaled LM	-2.226670		0.0260
Pesaran CD	0.807929		0.4191

Table 14: Histogram Normality test



Series: Standardized Residuals	
Sample 2007 2016	
Observations 70	
Mean	-3.97e-17
Median	-0.182206
Maximum	3.706811
Minimum	-0.842037
Std. Dev.	0.723172
Skewness	3.525546
Kurtosis	15.88297
Jarque-Bera	629.0923
Probability	0.000000

Discussion of findings

Based on the finding of the study, DTA and ETA have significant effect on the ROA and there is no statistical evidence to suggest that DTE has any significant effect on the ROA. This finding therefore agree with that of the study of Patel (2014), Raza (2013), Salawu (2009), Zahoor et al (2015) but disagree with the study of Abdallah (2014) On the other hand, DTA has significant effect on the ROE while the DTE and ETA have no significant effect on the ROE

Conclusions

Based on the findings of the study it can be concluded that DTA and ETA are the major determining factors of ROA and ROE of the deposit money banks listed on the Nigeria stock exchange.

Recommendations

DTA and ETA indicated significant effect on the financial performance of deposit money banks listed on the Nigeria stock exchange. The study recommends therefore that DMBs should utilize both debt with minimal cost of capital and equity as major sources of financing their operations.

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