EFFECT OF FINANCIAL LEVERAGE ON FINANCIAL PERFORMANCE OF LISTED COMPANIES IN NIGERIA

BY

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Abstract
The study investigated the effect of financial leverage on performance of listed companies in Nigeria for the period 2009-2018. Debt-equity ratio (DER), debt ratio (DR) and interest cover (IC) were adopted as proxies for financial leverage while return on assets, return on equity and return on investment were adopted as proxies of performance. Data for the study was sourced from annual reports of selected companies. To analyze the data collected, the study used the Ordinary Least Squares (OLS) panel regression technique. Findings revealed that debt-equity ratio had negative and significant effect on return on assets and an insignificant effect on return on equity and interest cover. A negative and insignificant relationship was also established between return on equity, return on investment and debt-equity ratio and interest cover. However, a positive and significant relationship was established between debt ratio and return on asset and return on investment but was insignificant for return on equity. The study recommended, among others, that financial managers can introduce debt in the financing of their operations to enjoy the benefits that debt financing offers with it potentials of improving firm financial performance. However finance managers should be mindful of excessive debt when raising capital for their business as a high debt-equity ratio undermines the performance of listed companies in Nigeria.

Key words: Leverage, Interest cover, debt-equity ratio, financial leverage, financial performance

Introduction
The dilemma of the most appropriate finance mix to adopt in order to achieve optimal performance in corporate organizations has been the crux of the challenge faced by financial managers. Financial managers have adopted various capital structures as a means of resolving this dilemma. Two major sources of finance are available to corporate organizations namely debt and equity. However, the practicality of how best to mix these sources of finance in order to enhance firms’ performance has remained unresolved. Debt-equity mix of a company can take any of the following forms. Firstly, it could be 100% equity and 0% debt. Secondly, it could be 100% debt and 0% equity and thirdly, it could be X% equity and Y% debt (Olokoyo, 2013). Where a firm adopts the first option, such a firm is described as been unleveraged and prefers to rely solely on equity funding. Hence is not likely to enjoy any advantage associated with debt financing such as tax shield. The second option describes a firm that is highly leveraged. The third option posits a combination of the two available sources of finance at varying proportion. In the third option, every advantage inherent in both
equity financing and debt financing will be enjoyed by such companies (Mustafa & Osama, 2007). Abubakar (2017) asserts that financial leverage represents the major claims to a company’s assets. This is against the backdrop that financial leverage decisions has the tendency of pushing a company to loss in the value derived from its assets especially in the event that the company is unable to service the debt at the appropriate time. On the other hand, financial leverage decisions could lead to a gain in the value derived from a company’s assets if the company is able to service its debt at the appropriate time. Therefore, financial managers who are able to identify the optimal financial leverage to be adopted in company’s capital structure are rewarded through the maximization of their companies’ revenue (Pandey, 2015). Hence, the objective of financial management in structuring a firm’s capital components is to maximize the shareholders” wealth, as a measure of performance. Based on the above the problem of this study is to ascertain the effect of financial leverage on performance of firms in Nigeria. Specifically the objectives are to:

1. Ascertain the effect of debt equity ratio, debt ratio and interest cover on return on assets of listed companies in Nigeria.
2. Determine the effect of debt equity ratio, debt ratio and interest cover on return on equity of listed companies in Nigeria
3. Examine the effect of debt equity ratio, debt ratio and interest coverage ratio on return on investment of listed companies in Nigeria.

The following hypotheses are also drawn up in line with the above objectives

1. Debt-equity ratio, debt ratio and interest cover does not have significant effect on return on assets of listed companies in Nigeria.
2. Debt-equity ratio, debt ratio and interest cover does not have significant effect on return on equity of listed companies in Nigeria.
3. Debt- equity ratio, debt ratio and Interest coverage ratio does not have significant effect on return on investment of listed companies in Nigeria.

Literature Review
Theoretical Literature Review
The Pecking Order Theory
Myers (1984) in postulating the pecking order theory explains that when firms carry out investments they settle for that with the least cost to its operation. The major assumption of this theory is that a firm tends to utilize its internal financing sources (as retained earnings or excess liquid assets) over external finance. If internal funds are not enough to finance investment opportunities, firms may or may not acquire external financing, and if they do, they will choose among the different external finance sources in such a way as to minimize additional costs of asymmetric information (Gweyi and Karanga, 2014). The Myers and Majluf model predicts that managers will follow a pecking order, using up internal funds first, then using up risky debt, and finally resorting to equity. In the absence of investment opportunities, firms retain profits and build up financial slack to avoid having to raise external finance in the future. This theory recognizes the role of managers in taking the decision on which financing option should be adopted by the firm. Thus, within the pecking order theory
the managerial ability of managers in taking key decisions on financing is recognized. The right decision made by managers will see to increased performance of the company while a wrong decision undermines the performance of the company.

Pecking order theory argued that firms having high profits tend to attain low debt profile because when firms are more profitable their first priority is to generate financing through retained earnings because they maximize the value of the existing shareholders. If retained earnings are not sufficient, the firms can then go for debt and if further financing is required they issue new equity. The retained earnings is preferred because it almost has no cost, but if the external resources are used for financing like issuance of new shares it may take very high costs. The pecking order theory is as a result of information asymmetries existing between insiders of the firm and outsiders (Rahman & Arifuzzaman, 2014). The theory makes managers to adopt their financing policy to minimize associated costs. Thus preferring internal financing to external financing and very risky debt to equity.

The Static Trade-off Theory
The static trade-off theory is a financial theory based on the work of economists Modigliani and Miller in the 1950s. They proposed that in perfect markets, the capital structure a company uses doesn't matter because the market value of a firm is determined by its earning power and the risk of its underlying assets. According to Modigliani and Miller, value is independent of the method of financing used and a company's investments. This proposition says that the capital structure is irrelevant to the value of a firm. The value of two identical firms would remain the same, and value would not be affected by the choice of finance adopted to finance the assets. The value of a firm is dependent on the expected future earnings. With a static trade-off theory, since a company's debt payments are tax-deductible and there is less risk involved in taking out debt over equity, debt financing is initially cheaper than equity financing. This means a company can lower its weighted average cost of capital through a capital structure with debt over equity. However, increasing the amount of debt also increases the risk to a company, somewhat offsetting the decrease in the WACC. Therefore, static trade-off theory identifies a mix of debt and equity where the decreasing WACC offsets the increasing financial risk to a company.

Empirical Literature Review
Umer and Muhammad (2018) carried out an investigation into the impact of financial leverage on firm performance in Pakistan. The study covered the period 2011 to 2015. Return on assets and return on equity were used as proxies for performance and they were adopted as the dependent variables while debt-equity ratio, solvency ratio and proprietary ratio were adopted as proxies for financial leverage and the independent variables. Descriptive statistic, correlation analysis and regression analysis were used in analyzing the data collected in the study. Findings showed that debt-equity ratio had positive and significant impact on firm performance (proxied by return on assets) while proprietary ratio had negative and insignificant impact on firm performance (using return on assets as proxy for performance). In the case of return on equity, the study showed that debt-equity ratio also had positive and significant impact on firm
performance. In addition, the study showed that proprietary ratio had positive and significant impact on firm performance.

Ahmed, Awais and Kashif (2018) examined the relationship between financial leverage and firm’s performance in Pakistan. Return on assets, return on equity and Tobin’s Q were adopted as proxies for firm’s performance and the dependent variables while debt-to-capital ratio, debt-to-equity ratio, interest cover and sales growth were adopted as proxies for financial leverage and independent variables. Panel data analysis was employed in analyzing the data collected in the study. Evidences from the return on assets model showed that debt-to-capital ratio and debt-equity ratio had negative and significant effect on firm’s performance while interest cover and sales growth had significant positive and insignificantly positive effects on firm’s performance, respectively. From the return on equity model, the study showed that debt-to-capital and sales growth had positive and insignificant effect on firm’s performance in Pakistan while debt-equity ratio had negative and significant effect on firm’s performance; and interest cover had positive and significant effect on firm’s performance in Pakistan. Finally, in the Tobin’s Q model, the study showed that debt-to-capital ratio and sales growth had negative and significant effect on firm’s performance while debt-equity ratio had negative and insignificant effect on firm’s performance; and interest cover had positive and insignificant effect on firm’s performance in Pakistan.

Krishna and Kumar (2018) examined the nexus between financial leverage and firm performance in India. Return on assets and return on equity was used as proxies for firm performance and dependent variable while short term debt ratio, long term debt ratio and total debt ratio were adopted as proxies for financial leverage and independent variables. Correlation matrix was employed as analytical tool. Findings showed that short term debt ratio and long term debt ratio had positive and insignificant relationship with return on assets of firms while total debt ratio had positive and significant relationship with return on assets of firms in India. In the return on equity model, the study showed that total debt ratio and long term debt ratio had positive and significant relationship with return on equity while short term debt ratio had positive and insignificant relationship with return on equity of firms in India.

Jeleel and Olayiwola (2017) analyzed the effect of leverage on firm performance in Nigeria. The study covered the period 2000-2009 and data were collected from three (3) chemical and paints firms operating in Nigeria. Return on assets was used as proxy for firm performance and the dependent variable while debt ratio, equity ratio and assets tangibility were used as proxies for leverage and they served as independent variables. Regression analysis was carried out on data collected from the three firms. Findings showed that equity ratio had positive and significant effect on firm performance in Nigeria while tangibility had negative and insignificant effect on firm performance. The study further showed that debt ratio had negative and insignificant effect on firm performance in Nigeria.
Nwanna and Ivie (2017) assessed the effect of financial leverage on firm’s performance in Nigeria between the period 2006 to 2015 relying on data collected from Nigerian banking sector. Debt ratio, debt-equity ratio and interest cover were adopted as proxies for financial leverage and independent variables while size of the banks and efficiency of banks were adopted as proxies for financial performance and dependent variable. Regression analysis was employed as analytical tools. Findings showed that debt ratio, debt-equity ratio and interest cover had negative and insignificant effect on size of banks in Nigeria while debt-equity ratio had positive and significant effect on efficiency of the banks in Nigeria. It was further revealed that debt ratio had negative and insignificant effect on efficiency of the banks in Nigeria while interest cover had positive and insignificant effect on efficiency of the banks in Nigeria.

Ashraf, Ahmad and Mehmood (2017) investigated the impact of financial leverage on firm performance in fuel and energy sector in Pakistan. The study made use of 10 public listed fuel and energy companies on the Karachi Stock Exchange. Return on assets, return on equity, earnings per share, net profit margin and return on capital employed were used as proxies for firm performance the dependent variables while debt ratio, debt-equity ratio, equity ratio were used as proxies for financial leverage and the independent variables. Regression analysis was employed in the analysis of the data collected for the study. Findings showed that debt ratio and equity ratio had positive and insignificant impact on return on assets while debt-equity ratio had negative and significant impact on return on assets. On the other hand, the study showed that debt ratio had positive and insignificant impact on return on equity while debt-equity ratio had negative and significant impact on return on equity. However, the study showed that equity ratio had negative and insignificant impact on return on equity. For net profit margin as a proxy for financial performance, the study showed that debt ratio, debt-equity ratio and equity ratio had positive and insignificant impact on firm performance. In the earnings per share model, the study showed that both debt ratio and equity ratio had negative and insignificant impact on firm performance while debt-equity ratio had positive and significant impact on firm performance. Finally, the study showed that debt-equity ratio and equity ratio had positive and insignificant impact on return on capital employed while debt ratio had negative and significant impact on return on capital employed in fuel and energy companies in Pakistan.

**Conceptual Framework**

**Dependent and Independent variables**

Having discussed the theoretical framework on which our study is based, we now look at the dependent and independent variables of the study. The dependent variable which is used in this study is the financial performance of listed companies in Nigeria. The financial performance is measured using three indicators namely Return on Assets (%), Return on Equity (%), Return on Investment (%). Financial leverage is the independent variable which is measured by using Debt-Equity ratio, Debt Ratio and Interest cover. The relationship between dependent and independent variable is explained by the following equation:

\[ \text{Financial performance} = a + b (\text{financial leverage}) + \mu \]
Conceptualization

Independent Variables

Financial Leverage

Performance

<table>
<thead>
<tr>
<th>Debt-Equity Ratio</th>
<th>RETURN ON ASSET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Ratio</td>
<td>RETURN ON EQUITY</td>
</tr>
<tr>
<td>Interest Cover</td>
<td>RETURN ON INVESTMENT</td>
</tr>
</tbody>
</table>

Methodology

Research Design

Two basic approaches were used, the descriptive and analytical design were adopted. The descriptive design uses ratios to highlight the effect of financial leverage on financial performance; while the analytical design used a mathematical OLS (Regression analysis) model in determining the nature and significance of the effect of financial leverage on financial performance of listed firms in Nigeria.

Target Population

The target population for the study is the 186 listed firms on the Nigerian Stock Exchange as at 2018 subdivided into 11 subsectors.

Sample size

Based on the researcher’s judgement a purposive sample of five firms was selected from the oil and gas and manufacturing subsectors which represents two important subsectors of the Nigerian economy. The period covered by the study spanned 2009-2018.

Model Specification

\[
\begin{align*}
\text{ROA}_{it} &= \beta_0 + \beta_1 \text{DER}_{it} + \beta_2 \text{DR}_{it} + \beta_3 \text{IC}_{it} + \mu_{it} \quad \ldots \ldots \ldots \ldots \ldots \ldots (1) \\
\text{ROE}_{it} &= \beta_0 + \beta_1 \text{DER}_{it} + \beta_2 \text{DR}_{it} + \beta_3 \text{IC}_{it} + \mu_{it} \quad \ldots \ldots \ldots \ldots \ldots \ldots (2) \\
\text{ROI}_{it} &= \beta_0 + \beta_1 \text{DER}_{it} + \beta_2 \text{DR}_{it} + \beta_3 \text{IC}_{it} + \mu_{it} \quad \ldots \ldots \ldots \ldots \ldots \ldots (3)
\end{align*}
\]

Where;

\( \beta_0 = \text{constant term} \)
\( \beta_1, \beta_2 \text{ and } \beta_3 = \text{coefficient parameters of the explanatory variables} \)
\( \mu = \text{stochastic error term} \)

By a priori \( \beta_0 > 0, \beta_1 < 0, \beta_2 < 0 \text{ and } \beta_3 < 0 \)

Data Analysis and Discussion

This section presents the results of the data analysis. Secondary data in the form of published financial reports of five listed firms on the Nigerian Stock Exchange were
gathered. This data was then converted to the desired form and entered into Stata version 12. Data analysis was then conducted to generate descriptive and panel data output. These results are as shown in the proceeding sections.

**Descriptive Statistics**

In table 1 descriptive analysis of financial leverage and financial performance indicators is shown. The maximum value of ROA is 0.2613 while minimum value is 0.0069 with standard deviation of 0.0613. The maximum value of ROE is 0.6088, the minimum value stood at 0.0115 and an average value of 0.2177. ROI maximum value stood at 0.4003, minimum at 0.0069 with a standard deviation of 0.0966. Debt equity ratio maximum stood at 5.730 with a minimum value of 0.3325 while the average value stood at 1.6436. The debt ratio and interest cover maximum stood at 0.9706 and 166.62 respectively while the minimum values obtained were 0.2495 and 0.0954 respectively.

**Table 1: Descriptive Statistics of the Variables**

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
<th>ROI</th>
<th>DER</th>
<th>DR</th>
<th>IC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.0826213</td>
<td>0.2177566</td>
<td>0.0999291</td>
<td>1.643693</td>
<td>0.5307919</td>
<td>14.978871</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.2613635</td>
<td>0.6088614</td>
<td>0.4003434</td>
<td>5.730459</td>
<td>0.9706503</td>
<td>166.3242</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0069319</td>
<td>0.0115411</td>
<td>0.0069319</td>
<td>0.332573</td>
<td>0.2495407</td>
<td>0.0954103</td>
</tr>
<tr>
<td>SD</td>
<td>0.0613625</td>
<td>0.1633152</td>
<td>0.0966223</td>
<td>1.239068</td>
<td>0.1790399</td>
<td>27.49488</td>
</tr>
</tbody>
</table>

Source: Author’s computation (2021) from E-views 10 software package

**Regression Result**

**Table 2 Fixed Effect Result for ROA model**

Dependent Variable: ROA

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std Error</th>
<th>t-Statistic</th>
<th>Probability__</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.36539</td>
<td>0.035545</td>
<td>1.027986</td>
<td>0.3114</td>
</tr>
<tr>
<td>DER</td>
<td>-3.09E-08</td>
<td>1.58E-08</td>
<td>-1.952668</td>
<td>0.0594</td>
</tr>
<tr>
<td>DR</td>
<td>0.182187</td>
<td>0.085095</td>
<td>2.140991</td>
<td>0.0398</td>
</tr>
<tr>
<td>IC</td>
<td>-2.24E-09</td>
<td>3.26E-09</td>
<td>-0.686905</td>
<td>0.4969</td>
</tr>
</tbody>
</table>

R-squared | 0.6079  
Adj R² | 0.4178  
F-Statistic | 3.198226  
Prob(F-Stat) | 0.002311  
DW | 1.5240  

Source: Author’s computation (2021)

The result in table 2 shows a negative relationship between debt-equity ratio and return on assets in Nigeria. This result conforms to economic a priori expectation because it is expected that a high debt-equity ratio exposes firms to high risks which could undermine the performance of firms. From the result in this study, one percent increase in debt-equity ratio led to 3.09 percent decrease in return on assets of listed companies.
in Nigeria. The computed t-statistic for debt-equity ratio (1.95) in absolute terms was greater than the tabulated (critical) t-statistic (1.671) at five percent level of significance. As a confirmation, the probability value of DER (0.0594) was less than the test significant level (i.e. P < 0.05). Hence, the researcher concluded that debt-equity ratio (DER) had a significant effect on return on assets of listed companies in Nigeria.

Second, the result showed that debt ratio has a positive and significant relationship with return on assets of listed companies in Nigeria. From the result in the ROA model, one percent increase in debt ratio led to 18.21 percent increase in return on assets of listed companies in Nigeria. The computed t-statistic for debt ratio (2.14) was greater than the tabulated (critical) t-statistic (1.671) at five percent level of significance. The probability value of DR (0.0039) is lesser than the test significant level (i.e. P > 0.05). Hence, the researcher concluded that debt ratio (DR) had a significant effect on return on assets of listed companies in Nigeria.

Third, the result showed that interest coverage ratio has a negative relationship with return on assets of listed companies in Nigeria. From the result in the ROA model, one percent increase in interest coverage ratio led to 2.24 percent decrease in return on assets of listed companies in Nigeria. The computed t-statistic for interest coverage ratio (0.686) was less than the tabulated (critical) t-statistic (1.671) at five percent level of significance. The probability value of IC (0.4969) was greater than the test significant level (i.e. P < 0.05). Hence, the researcher concluded that interest coverage ratio (IC) has no significant effect on return on assets of listed companies in Nigeria. The coefficient of determination (R-squared) of 0.61 showed that 61 percent variations in the return on assets of listed companies in Nigeria are due to changes in debt-equity ratio, debt ratio and interest coverage ratio in Nigeria. Therefore, the 39 percent of the variations in the return on assets of listed companies in Nigeria are due to other factors not included in the model. The computed F-value (3.198) was greater than the critical (tabulated) F-value (2.76) at five percent level of significance. As a confirmation, the probability (F-statistic) which was 0.002311 indicated that the model was statistically significant. The Durbin-Watson statistic (1.52) lied within the acceptance region being approximately 2 and less than 4 (2 ≤ DW < 4), indicating an absence of serial correlation in the result.

<table>
<thead>
<tr>
<th>Table 3 Fixed Effect Result for ROE model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: ROE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>DER</td>
</tr>
<tr>
<td>DR</td>
</tr>
<tr>
<td>IC</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>Adj R²</td>
</tr>
<tr>
<td>F-Statistic</td>
</tr>
<tr>
<td>Prob(F-Stat)</td>
</tr>
<tr>
<td>DW</td>
</tr>
</tbody>
</table>

Source: Author’s computation (2021)
Table 3 shows the result of the effect of financial leverage on the return on equity of listed firms in Nigeria. The debt-equity ratio and interest cover indicates a negative but insignificant relationship with return on equity of the firms under review. The implication of this is that as debt-equity ratio and interest cover increases the firm experiences a decline in return on equity by (4.92% and 1.09%) respectively. However, the debt ratio gives a positive indication even though insignificant. On the whole the F-stat with a probability less that 0.05 significant level confirms the level of fit for the model for prediction. The R-square also explains to a great extent (65%) that the variation in the dependent variable can be explained by the independent variable used in the model.

Table 4 Fixed Effect Result for ROI model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std Error</th>
<th>t-Statistic</th>
<th>Probability__</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.10373</td>
<td>0.044254</td>
<td>0.234407</td>
<td>0.8161</td>
</tr>
<tr>
<td>DER</td>
<td>-2.38E-08</td>
<td>1.97E-08</td>
<td>-1.204513</td>
<td>0.2370</td>
</tr>
<tr>
<td>DR</td>
<td>0.262955</td>
<td>0.105946</td>
<td>2.481984</td>
<td>0.0183</td>
</tr>
<tr>
<td>IC</td>
<td>-5.18E-09</td>
<td>4.06E-09</td>
<td>-1.277171</td>
<td>0.2105</td>
</tr>
</tbody>
</table>

| R-squared | 0.7548       |
| Adj R²    | 0.6361       |
| F-Statistic | 6.352185 |
| Prob(F-Stat) | 0.000004 |
| DW        | 1.47         |

Source: Author’s computation (2021)

Table 4 shows the result of the effect of financial leverage on the return on investment of listed firms in Nigeria. The debt-equity ratio and interest cover in this case also indicates a negative but insignificant relationship with return on investment of the firms under review. The implication of this is that as debt-equity ratio and interest cover increases the firm experiences a decline in return on equity by (2.38% and 5.18%) respectively. On the contrary, the debt ratio gives a positive and significant relationship with return on investment. The F-stat with a probability less that 0.05 significant level confirms the level of fit for the model for prediction. The R-square also explains to a great extent (75%) that the variation in the dependent variable can be explained by the independent variable used in the model. The durbin Watson rule testing for autocorrelation seemed to be overcome as the statistic tends towards 2 being the rule of thumb.

Conclusion

The main purpose of this study was to determine the effect of financial leverage on financial performance by employing a sample of listed firms in Nigeria for the period 2009-2018. The study employed debt-equity ratio (DER), debt ratio (DR) and Interest cover (IC) as measures of financial leverage. Financial performance measures used were return on assets (ROA), return on equity (ROE) and return on investment (ROI). To arrive at a conclusion, three models were formed and tested by the use of regression analysis utilizing panel data. Fixed effect model and descriptive statistics were used in the study.
Findings of the study showed that ROA is significantly but inversely related with debt equity ratio but positively and significantly related with debt ratio with no significant relationship between it and interest cover. For ROE no significant relationship was established between financial leverage and financial performance. While for ROI a significant and positive relationship was established between return on investment and the debt ratio and a negative but insignificant relationship between debt equity ratio, interest cover and return on investment was established. The result confirms that firms that introduce a little amount of debt into their capital structure tend to perform better than firms that do not. However finance managers should be mindful of excessive debt when raising capital for their business as a high debt-equity ratio undermines the performance of listed companies in Nigeria.

References


