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FINANCIAL LEVERAGE AND FINANCIAL PERFORMANCE OF OIL AND GAS COMPANIES IN NIGERIA

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ABSTRACT

This study was carried out to determine the effect of financial leverage on the financial performance, using secondary data obtained from the annual reports of 7 quoted Oil and Gas firms in Nigeria, and the Nigerian stock exchange (NSE) daily official lists over the period 2005-2016. Descriptive statistics such as mean, median, minimum, maximum, standard deviation, coefficient of variation, skewness and kurtosis were used in data presentation, while random effects panel estimator is applied in determining the effect of financial leverage variables as short-term debt ratio (STDR), long-term debt ratio (LTDR) and total-debt equity ratio (TDER) on the financial performance measured by the return on equity (ROE). The regression results from the random effects model (REM), the best panel estimator in this study as revealed by the F-test and the Hausman test for best model selection, indicate that STDR and LTDR have no significant effect on the financial performance, and TDER has a negative significant effect on the financial performance denoted by ROE. The study concludes that higher financial leverage in the capital structure of quoted Oil & Gas firms in Nigeria deteriorates shareholders wealth measured by ROE. The study recommends that firms in the Oil & Gas sector should substitute at least 90 per cent of debt in the capital structure with equity, through bonus issue, right issue and higher proportion of retained earnings in the capital structure.

Keywords: *financial leverage, financial performance, Nigeria, oil & gas, random effects model, return on equity*

INTRODUCTION

Financial leverage is the extent to which firms employ debt in the capital structure. Increase in the use of debt in a firm's capital structure increases the risk of financial distress and probability of bankruptcy which may arise as a result of default. There are certain benefits and costs associated with using debt financing. On the benefits side, firms can take advantage of tax shields benefits of debt by employing more debt in the capital structure. Interest on debt is tax deductible and the use of debt in the capital structure of firms unlike equity does not lead to dilution of ownership. However, they are certain costs associated with debt financing vis-à-vis fixed interest payments, cost of financial distress and bankruptcy costs arising from inability of firms to meet up their debt obligations as at when due. Firms must therefore, trade-off the tax shields benefits of debts against the financial distress and bankruptcy costs of debt (Abubakar, 2016).

The theory of financial leverage and its effect on the financial performance has been an issue of serious debate in corporate finance literature since the seminal work of Modigliani and Miller (1958). Modigliani and Miller (1958), based on unrealistic assumptions such as existence of perfect markets, which no taxes, absence of transaction and bankruptcy costs, asserted that financial leverage has no effect on the value of a firm. Modigliani and Miller (1963) relaxed a no-tax assumption in Modigliani and Miller (1958), and developed another theory that recognizes the presence of tax. The new theory also generated a lot discussion in the academic world.

Furthermore, there are a lot of empirical studies explaining the effect of financial leverage on the financial performance around the globe, but there is still paucity of empirical research with respect to oil and gas sector generally, and in Nigeria in particular. In Nigeria, to the best of the researcher's knowledge, there are only two empirical studies that examined financial leverage and financial performance of firms in the oil and gas sector by Tolulope, Ikpefan and Olokoyo (2015) and David and Olorunfemi (2010). Reviews of these studies reveal at least seven methodological gaps which are addressed by the present study. *First,* Tolulope *et al.* (2015) measured financial leverage as the ratio of total debt (total liabilities) to total assets. This measure does not indicate whether the company in the near future is exposed to default risk. Similarly, items such as account payables and pension liabilities included in total liabilities influence this ratio as documented by Rajan and Zingales (1995). Rajan and Zingales (1995) further asserted that the ratio fails to take into account the fact that there are some assets that are offset by specific non-debt liabilities. *Second,* there is problem of model specification in Tolulope *et al.* (2015); a 1-year lagged ROA is included as one of the explanatory variables and ROA is regressed on these explanatory variables. The authors did not provide any convincing explanation for doing that, and that in no small measure may biased the result. *Third,* the authors included Chevron Plc (now MRS Plc) in their analysis; that in no doubt has biased the results because MRS Plc did not employ any form of financial leverage in their capital structure from the period 2005- 2009, which incidentally was covered by Tolulope *et al.* (2015) study period of 2003- 2012. *Fourth,* Tolulope *et al.* (2015) did not provide any justification for the choice of Fixed Effects Model (FEM) over Pooled Ordinary Least Squares (POLS) used in analysis and in drawing conclusions.

Fifth, the reliability of the regression model in making valid judgments cannot be guaranteed because F-test a measure of overall significance of a model is missing in the regression results provided by Tolulope *et al.* (2015). *Sixth,* David and Olorunfemi (2010) cover the period 1999- 2005 i.e. the period before the bank recapitalization and

consolidation exercise of 2005. In a study that intends to shed light on how financial leverage affects financial performance, it would be expected that such study should cover the period that banks appear stronger to carry out their major role of financial intermediation. Companies rely mainly on banks for financial leverage. *Seventh*, David and Olorunfemi (2010) sourced data from Nigerian stock exchange (NSE) fact books. The information on fact books are summary of the annual reports and in most cases lack specific information on the financial leverage, which are lumped into total liabilities. This study therefore, addresses these methodological weaknesses by investigating the effect of financial leverage on the financial performance using seven (7) quoted companies from the oil and gas sector of Nigeria for a 12-year period from 2005- 2016.

This paper is organized into five (5) sections. Section one covers this introduction. In section two, review of related literature in the form of conceptual literature, theoretical framework, review of empirical studies and development of hypotheses are discussed. In section three, the methodology is covered. Results and discussion are presented in section four. Section five concludes and provides the recommendations.

LITERATURE REVIEW

This section provides the conceptual clarifications, theoretical framework, review of empirical studies and the development of hypotheses regarding the financial leverage variables and financial performance. The next sub section presents the conceptual clarifications.

CONCEPTUAL CLARIFICATIONS

The key concepts of the study are briefly discussed in this sub section. Specifically, the concepts of financial leverage, its measures, concept of financial performance, together with the justification for the proxies used are provided.

CONCEPT AND MEASURES OF FINANCIAL LEVERAGE

Financial leverage is the mixture of debt and equity in the capital structure of firms. Lumby and Jones (2011) described financial leverage as the ratio of the total market value of a company's debt capital to total market value of its equity. As debt increases, financial leverage increases. A firm can finance its investments by debt and equity, and a firm may also use preference shares. The ratio of the fixed- charge sources of funds, such as debt and preference shares to owners' equity in the capital structure is referred as financial leverage or gearing (Pandey, 2010).

The most commonly used measures of financial leverage according to Bierman (1970), are debt ratio, debt-equity ratio and interest coverage. Debt ratio and debt-equity ratio can be expressed either in terms of book values or market values. The market value to financial leverage is theoretically more appropriate because market values reflect the current attitude of investors. But it is difficult to get reliable information on market values in practice. The market values of securities fluctuate quite frequently. Bowman (1980) revealed that the cross-sectional correlation between book value and market value of debt is very large, so that misspecification due to using book value measures is probably fairly small. Myers (1977) asserted that managers focused on book value leverage ratios because debt is better supported by assets in place than it is by growth opportunities implicit in asset market prices. In support of this, Fama and French (2000) argued that most of the theoretical predictions on financial leverage apply to book value.

Similarly, Thies and Klock (1992) suggested that book ratios better reflect management's target debt ratios. The market value of equity is dependent on a number of factors which are beyond the direct control of a firm. Therefore,

using market values according to Thies & Klock (1992) may not reflect the underlying alterations within the firm. In fact, corporate treasurers often explicitly claim to use book ratios to avoid distortions in their financial planning caused by the volatility of market prices. A similar rationale is often heard from rating agencies (Titman & Wessels, 1988). Chen (2004) also argued that the use of book values helps avoid the limitations of missing information such as the information relating to the proportion of company stocks issued and openly traded on the stock exchange as well as capital gains in arising from a dramatic rise in asset prices. Prominent among all the arguments in favour of book values is the fact that from a more realistic point of view, the market value of debt is not readily available. Based on the foregoing arguments, debt is measured in this study using book values.

There is no difference between the debt ratio and debt-equity ratio in operational terms. The relationship between the two measures will rank companies in the same order. However, debt ratio is more specific as its value will range between zero and one. The value of debt-equity ratio may vary from zero to any large number. The debt-equity ratio, as a measure of financial leverage, is more popular in practice (Bierman, 1970).

In addition, Titman and Wessels (1988), argued that the aggregate measure of total debt ratio could not be used alone because theory of financial leverage have different implications for different type of debt, and the predicted coefficients in the structural model may differ depending on whether debt ratios are measured in terms of book or market values. In lending support to this argument, Bevan and Danbolt (2002), maintained that given the predominance of short-term debt instruments in corporate financial structure, analysis based solely upon long-term debt provide limited insight into the mechanisms which operate in the financial and corporate sectors. Based on the foregoing arguments, this study adopted four measures of financial leverage namely: short-term debt ratio; long-term debt ratio; aggregate measure of total debt ratio; and total debt-equity ratio. Interest coverage ratio which is measured as the ratio of earnings before interest and taxes (EBIT) to interest expense had been excluded from analysis because some of the firms in this study did not employ any form of financial leverage in the capital structure in a particular year, resulting to zero value for interest expense. Interest coverage ratio cannot be computed if interest expense which is the denominator in the formula is zero.

CONCEPT OF FINANCIAL PERFORMANCE

Richard, Devinney, Yip and Johnson (2009) asserted that firm performance has been proposed as a multidimensional construct consisting of many varied areas such as operational effectiveness, corporate reputation and organizational survival. Combs, Crook and Shook (2005), Hoskisson, Hitt, Wan and Yiu (1999) and Hult *et al.* (2008) documented that to evaluate financial performance, organizational researchers generally use either accounting-based measures of profitability such as return on assets (ROA), return on sales (ROS) and return on equity (ROE) or stock market-based measures such as Tobin's Q and market return.

Accounting-based measures are widely regarded as valid indicators of financial performance (Gentry & Shen, 2010). Accounting measures are generally described by researchers as reflections of past or short-term financial performance, while market measures are seen as the reflections of future or long-term financial performance (Hoskisson, Johnson & Moesel, 1994; Keats & Hitt, 1988). However, it has been observed by (Gentry & Shen, 2010) that there is no consensus about the association between past/short-term performance and future/long-term

performance. Based on the foregoing, two accounting measures (ROE & ROA) and one market performance measure (Tobin's Q) are adopted by this study.

THEORETICAL FRAMEWORK

This study adopts the Pecking Order Theory. Donaldson (1961) founded the pecking order theory when he conducted an interview survey of twenty five (25) large United States (U.S) companies, and concluded that the financing pattern of the management of such firms favours strongly the use internal source of funds over external sources, unless internal sources are not readily available. Over at least two decades, Myers (1984) and Myers and Majluf (1984), provided a theoretical justification of Donaldson's (1961) findings. They argued that information plays a significant role on debt-equity choice decision of managers and investors. The authors maintained that managers will hesitate to issue equity if they feel that it is undervalued by the market, and investors too are aware that managers will hesitate to issue new equity when it is underpriced. Thus, both managers and investors react according to information available to them. Following this argument, if managers tend to issue undervalued equity, there will be wealth substitution i.e. the wealth will be transferred to the investors against the benefits and wealth of shareholders. In this situation, internal funds and debt will be favored over equity. Myers (1984) referred to this as the 'Pecking Order Theory' of financing.

The theory states that firms prefer to finance new investment first internally with retained earnings, second with debt, and by issuing new equity as last resort. Hence, financial leverage is negatively associated with financial performance. Pecking Order Theory suggests that there is no well-defined optimal financial leverage, because there two kinds of equity (internal and external), one at the top of the pecking order and one at the bottom.

REVIEW OF EMPIRICAL STUDIES

In this sub section, empirical studies relating to the association between financial leverage and financial performance on the oil and gas sector, as well as other sectors of the economy are reviewed. The review covers studies from Nigeria and other countries around the world.

Tolulope *et al.* (2012) analyzed the impact of capital structure on the performance of 6 quoted firms in the Oil and Gas sector of Nigeria, using Fixed Effects Model (FEM) during a 10-year period spanning from 2003- 2012. The study found among others that financial leverage measured by total debt to total assets (TDTA) has a significant negative effect on the performance represented by return on assets (ROA). David and Olorunfemi (2010), using panel data approach on five (5) companies in the Oil and Gas sector of Nigeria over the period 1999- 2005, reveal that financial leverage measured by debt equity ratio has a significant positive effect on the performance represented by earnings per share (EPS) and dividend per share (DPS). Using Oil and Gas sector in Malaysia, Foo, Abdul Jamal, Abdul Karim and Baharul Ulum (2015) examined the effect of capital structure on the corporate performance of twelve (12) Oil and Gas Companies, using panel regression techniques over the period of 2003- 2013. Capital structure is measured by short-term debt to total assets (STDTA), long-term debt to total assets (LTDTA) and total-debt to total assets (TDTA), while corporate performance is measured using ROE, ROA and gross margin (GM). Results from the Random Effects Model (REM) indicate that all measures of capital structure have significant negative effect on corporate performance proxy by ROE, while all the measures of capital structure have no significant effect on corporate performance measured by ROA and GM.

In a related study, Akhtar, Javed, Maryam and Sadia (2012) investigated the relationship between financial leverage and financial performance using twenty (20) quoted companies from the Fuel and Energy Sector of Pakistan during the period 2000- 2005. Correlation technique was used to measure the association between two (2) financial leverage variables (debt-equity ratio and capital gearing ratio) and ten (10) financial performance measures (ROE; ROA; dividend cover ratio; dividend to equity ratio; net profit margin; EPS before tax; EPS after tax; sales to total asset ratio; EPS before tax growth and sales growth). The findings show that financial leverage has a positive link with all measures of financial performance except ROA and dividend cover ratio during the period of study. Still in Pakistan, Sabir and Malik (2012) analyzed the effect of profitability, tangibility, size and liquidity on capital structure decisions of listed companies in the Oil and Gas Sector during the period 2005- 2010. The multiple regression results reveal that that financial leverage is negatively statistically associated with financial performance.

In another more recent study of Pakistani Fuel and Energy Companies, Ashraf, Ahmad and Mehmood (2017) conducted a study on the impact of financial leverage on firm performance using ten (10) listed firms in the Fuel and Energy Sector. The study utilized descriptive statistics, correlation and regression analyses as the techniques of analyses. The authors measured financial leverage using debt ratio, debt equity ratio and equity ratio, while ROA, ROE, Net Profit Margin (NPM), EPS and Return on Capital Employed (ROCE) as proxies for firm performance. Results of the regression analysis reveal that debt ratio has no significant impact on all the measures of firm performance, while debt equity ratio impacts negatively on firm performance represented by the ROA, ROE and ROCE. The regression results further reveal that debt equity impacts positively on EPS, and has no impact on NPM. However, the results between equity ratio and all measures of firm performance are not reported here because equity is not a measure of financial leverage as used by the authors. Debt alone or a mixture of debt and equity can be used for both financial leverage and capital structure, but equity alone cannot be used an indicator of financial leverage. Additionally, the authors failed to carry out a robustness check on the best performance indicator out of the five (5) measures utilized in their study.

Hossain and Nguyen (2016) examined capital structure and United States (U.S) financial crisis in the Oil and Gas Industry for a ten-year period from 2004 to 2013. Data was collected using secondary source from the financial statements of top oil & gas companies in the U.S based on market capitalization. The population was divided into three (3) namely 30 for the pre-crisis period, 30 for the crisis period and 40 for the post-crisis period, making up a total sample size of 100. The pre-crisis period is defined as the period between 2004 and 2006, the period between 2007- 2009 is the crisis period and 2010- 2013 are tagged as the post-crisis period. Using regression technique, the authors found that financial leverage denoted by debt-equity ratio has a significant negative effect on firm performance indicators as ROE and ROA for each of the 10 year, and that the intensity is more pronounced during the crisis period. In a yet another more recent study in Pakistan, Nazir (2017) determined the impact of financial leverage on the financial performance of twenty (21) quoted firms from the Textile, Automobiles, Sugar, Petroleum and Engineering Sectors of Pakistan from 2012- 2015, using Ordinary Least Squares (OLS) and correlation techniques as the methods of analyses. The results reveal that financial leverage represented by debt to asset ratio has a statistically negative effect on the financial performance measured by ROA. In Ghana, Doku, Adjei, Adjimah and Akuma (2016) investigated the determinant of capital structure of listed oil marketing companies over the period 2005- 2014, using

OLS regression. The findings indicate among others that financial leverage surrogated by total debt to total assets ratio has a statistical negative effect on the financial performance surrogated by ROA.

In Kenya, Mohamed (2016) evaluated the effect of financial leverage on the financial performance of forty-eight (48) non-financial firms listed on the Nairobi Securities Exchange during the period ranging from 2011 to 2015. Secondary data was sourced from the annual reports and financial statements of the quoted firms over the period of study. Financial leverage was measured using the ratio of total debt to total assets and financial performance was measured using ROA. Size and liquidity were taken as control variables, and given the same treatment with the measure of financial leverage. The author utilized descriptive statistics, correlation and multiple regression analyses as the methods of data analyses. The results show that financial leverage has a significant negative effect on the ROA, whereas size and liquidity have positive effect on the financial performance proxy by ROA.

Racheal, Chelichi and Raymond (2017) using secondary data obtained from the annual reports and financial statements of six (6) quoted companies from the Consumer Goods Sector of Nigeria over the period 2009- 2014, evaluated the effect of financial leverage on the financial performance applying paired sample t-test as method of estimation. The use of paired sample t-test to test the effect of financial leverage on the financial performance is strange and not in conformity with the methods used by prior studies in this area. Another major weakness of Racheal *et al.* (2017) was that debt equity ratio the measure of financial leverage was used as dependent variable, while the measures of financial performance (EPS, ROE and ROA) were used as independent variables. Again, this is not consistent with what is applicable in extant literatures. Financial leverage is only used as dependent variable in studies of determinants of financial leverage, and not literatures investigating the effect of financial leverage on the financial performance. However, acknowledging the methodological weaknesses of the study, the authors did not find any significant association between debt equity ratio and EPS, while debt equity ratio has significant and positive effect on ROE and ROA as measures of financial performance. Alghusin (2015) investigated the impact of financial leverage, company's growth, tangibility, firm size on profitability using twenty-five (25) Jordanian Industrial companies listed on the Amman Stock Exchange (ASE) from 1995- 2005. The results reveal among others that financial leverage proxy by the ratio of total debt to total asset is negatively related to financial performance denoted by ROA.

In a panel study of sixty-six (66) non-financial quoted firms in Nigeria, Abubakar (2017) reported non-significant association between measures of financial leverage (STDR, LTDR and TDR) and financial performance denoted by ROE, using random effect model (REM) covering the period 2005- 2014. However, the author found a significant negative link between TDER and ROE. Abubakar (2015) study of eleven (11) Tier 1, Tier II and Tier III quoted deposit money banks in Nigeria discovered significant negative relationship between debt-equity ratio and ROE, and no significant relationship between debt ratio and the financial performance proxy by ROE during period of 2005- 2013, using correlation technique. Yahaya and Andow (2015) examined the association between capital structure and financial performance of six listed conglomerate firms in Nigeria covering the period 2009- 2013, using correlation and regression model. The multiple regression results indicate that the measures of financial leverage such as debt equity ratio, debt to total assets ratio and long-term debt to total assets have no significant effect on the financial performance indicated by ROA.

DEVELOPMENT OF HYPOTHESES

Following the review of empirical studies, this study develops and tests the following hypotheses:

$H_0$1: *Short-term debt ratio (STDR) has no significant effect on the financial performance (ROE).*

$H_0$2: *Long-term debt ratio (LTDR) has no significant effect on the financial performance (ROE).*

$H_0$3: *Total-debt equity ratio (TDER) has no significant effect on the financial performance (ROE).*

METHODOLOGY

This study comprises seven (7) companies that are listed on the Oil and Gas Sector of the Nigerian economy as at the year 2005 and still maintain their listed status as at 31st December, 2016. Eight (8) firms satisfied these requirements but one company (MRS Oil Plc) has been dropped because the company did not employ any form of financial leverage between the period of 2005- 2009, and retaining the company in the analysis will certainly bias the results. The seven (7) Oil and Gas companies used in this study are: Conoil Plc; Eterna Plc; Forte Oil Plc; Japaul Oil and Maritime Services Plc; Mobil Oil Nigeria Plc; Oando Plc and Total Nigeria Plc.

Data gathering is done using annual reports of the selected Oil and Gas companies and the Nigerian Stock Exchange (NSE) daily official lists for the period 2005- 2016. The reports were obtained from the websites of the selected firms; NSE library in Kano; www.demo.streamicm.com; www.nse.com; www.proshareng.com; and www.resoucedata.com. To measure the financial leverage variables, information on balance sheets and notes to financial statements are utilized, while the income statements (profit & loss accounts) and balance sheets are used for computing the Return on Equity (ROE) and the Return on asset (ROA), the proxies for accounting measures of performance. The market performance measure (Tobin's Q) is calculated using the information on the balance sheet and the NSE daily official lists.

The variables of the study are measured using the procedures utilized by Abubakar (2017). Table 1 presents the variables and how they are measured.

Table 1: Variables and Measurement

Variable	Measurement
Short-term debt ratio (STDR) [independent variable]	Short-term debt divided by total capital (total debt plus equity)
Long-term debt ratio (LTDR) [independent variable]	Long-term debt divided by total capital (total debt plus equity)
Total-debt ratio (TDR) [independent variable]	Total debt (long-term & short-term debt) divided by total capital (total debt plus equity)
Total debt-equity ratio (TDER) [independent variable]	Total debt (long-term & short-term debt) divided by equity
Return on equity (ROE) [dependent variable]	Earnings before interest & taxes (EBIT) divided by equity
Return on asset (ROA) [dependent variable]	Earnings before interest & taxes (EBIT) divided by total asset
Tobin's Q (dependent variable)	Sum of book value of total debt and market value of equity, divided by total asset

In this study, the empirical model is specified as:

$$FPERF_{it} = \alpha_0 + \beta_1 STDR_{it} + \beta_2 LTDR_{it} + \beta_3 TDR_{it} + \beta_4 TDER_{it} + C_{it} + \mu_{it} \quad (1)$$

Where: FPERF = financial performance (ROE, ROA & Tobin's Q), α_0 = intercept, β_1 = coefficient of short-term debt ratio, STDR = short-term debt ratio, β_2 = coefficient of long-term debt ratio, LTDR = long-term debt ratio, β_3 = coefficient of total-debt ratio, TDR = total-debt ratio, β_4 = coefficient of total-debt equity ratio, TDER = total-debt equity ratio, subscript i and t refer to each bank i in year t, C = unit-specific error component, μ = the remaining error component.

Thus, the a priori expectation according to the Pecking Order Theory is $\beta_1,\ \beta_2,\ \beta_3, \beta_4 < 0$.

Descriptive statistics and panel regression are used as methods of estimation. Mean; median; maximum value; minimum value; standard deviation; coefficient of variation; skewness and kurtosis are the descriptive statistics used to present the data, while Random Effects Model (REM) is the panel regression estimator applied in assessing the effect of financial leverage on the financial performance of quoted firms in the Oil & Gas Sector of Nigeria. The use of REM followed the results of the F-test and Hausman test for best model selection. Furthermore, a balanced panel of 84 observations including seven (7) oil and gas firms and 12-year period (2005- 2016) are used. The regression was run using the Robust Heteroscedasticity- and Autocorrelation Consistent (HAC) standard errors to tackle the problems of Autocorrelation and Heteroscedasticity. In addition, the correlation results are presented and used to decide whether or not multicollinearity exists among the independent variables.

RESULTS AND DISCUSSION

Here, descriptive, correlation and regression results are presented and analyzed. Descriptive result is used in presenting the data, correlation result is used in taking decision about the existence of multicollinearity in the model and regression results are used in examining the effect of the independent variables on the dependent variable.

DESCRIPTIVE RESULTS

In Table 2, the descriptive results of the seven (7) Oil and Gas firms used in this study are presented. The results indicate that short-term debt ratio (STDR) has a mean value of 0.29, implying that during the period 2005- 2016, approximately 29 per cent of the capital of the firms utilized in this study was financed by short-term debt. The minimum value of STDR is -3.83 while the maximum value is 0.91. The negative sign in the minimum value portrays that at least one firm defaulted during the period of the study. In other words, the firm held negative shareholder equity.

Table 2: Descriptive Results

Variable	Mean	Median	Minimum	Maximum
STDR	0.29	0.35	-3.83	0.91
LTDR	0.10	0.01	0.00	1.82
TDR	0.39	0.41	-3.83	1.85
TDER	1.54	0.67	-2.17	33.85
ROE	0.34	0.40	-4.35	1.82
Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
STDR	0.52	1.77	-6.06	46.51
LTDR	0.23	2.45	5.21	33.70
TDR	0.55	1.41	-5.24	40.29
TDER	3.95	2.57	6.81	51.87
ROE	0.79	2.35	-3.09	15.37

Similarly, the value of long-term debt ratio (LTDR) is 0.10, portraying that only about 10 per cent of the capital of Oil and Gas firms in the study was financed by long-term debt instruments. These connote that firms in the Oil and Gas Sector prefer or have more access to short-term financing to long-term financing during the period of study. These results are consistent with the findings of Abubakar (2016) on quoted companies in the Health Care Sector of Nigeria. Abubakar (2016) asserted that over-reliance on short-term debt exposes the firm to the risk of refinancing, and the preference for short-term over long-term debts is not unconnected with the ease of securing overdraft and other forms of short-term debt instruments.

Additionally, the mean value of total-debt equity ratio (TDER) stood at 1.54. This signifies that Oil and Gas firms employed more debt in their capital structure that equity during the period under review. Specifically, debt is about 1.54 times higher than equity in the capital structure of firms selected for this study. The implication here is that the firms are over-relying on debt; the situation which may expose defaulted firms to the risk of financial distress and bankruptcy costs. The median value of TDER is an indication that more than 50 per cent of the firms employed more equity than debt in their capital structure, as revealed by the ratio of 0.67. The maximum value of TDER suggests that a firm had a debt profile about 34 times higher than equity in the capital structure. Furthermore, the mean value of ROE is 0.34, connoting that ₦1 worth of equity generated about ₦0.34 for equity holders during the period of study. The results provide evidence that shareholders are getting fair return for their investment in the equity of firms in the Oil and Gas Sector.

The descriptive results of the measures of dispersion (standard deviation and coefficient of variation [C.V]) show heterogeneity among the variables of study. The standard deviations of the variables are respectively high than means, and the C. Vs are all greater than 1, this confirm that the variables are dispersed. The skewness and kurtosis also confirm this position. Short-term debt ratio (STDR), TDR and ROE are negatively skewed, while LTDR and TDER are positively skewed. The values of kurtosis for all the variables show that are leptokurtic in nature. To deal with heterogeneity issues, panel data techniques are used.

CORRELATION RESULT

Table 3 shows the degree of association among the independent variables. The relationship between STDR and LTDR is -0.09; the correlation coefficient between STDR and TDR is 090; while the association between STDR and TDER is 0.28.

Table 3: Correlation Matrix

STDR	LTDR	TDR	TDER	
1	-0.09	0.90	0.28	STDR
	1	0.35	-0.00	LTDR
		1	0.26	TDR
			1	TDER

Similarly, the correlation between LTDR and TDR is 0.35; the association between LTDR and TDER is -0.01, and the correlation coefficient between TDR and TDER is 0.26. From the results it can be seen that only correlation between STDR and TDR is up 0.90, this implies that the two variables are highly correlated, meaning that there is multicollinearity in the model. To deal with this problem, one of the two variables has to be dropped, and this case TDR is excluded. This leaves the study with 3 independent variables namely STDR, LTDR and TDER.

REGRESSION RESULTS

Return on Equity (ROE), ROA and Tobin's Q is regressed on the STDR, LTDR and TDR using Pooled Ordinary Least Squares (POLS), Fixed Effects Model (FEM) and Random Effects Model (REM). However, the results of the F-tests for ROA and Tobin's Q are not significant, meaning that the two measures of financial performance are not reliable and cannot be used in this study. This makes ROE is the most robust measure of financial performance in the present study.

Following this, when the ROE is used as dependent variable, the panel estimators (POLS, FEM & REM) are statistically significant at 1 per cent level, suggesting that the 3 panel estimators can be relied upon for analyses and making policy implications. To choose the best among POLS, FEM and REM, F-test and Hausman test are carried out. Table 4 presents the results of the F-test for selecting best model between POLS and FEM.

Table 4: Results of the F- Test for Best Model Selection between POLS and FEM

Model No.	Model Comparison	P-value	Remarks
a and b	POLS-FEM	0.001***	FEM is selected

Significant at 1% (***)
Key: a = POLS, b = FEM
Source: Extracted from the GRETL Output

The null hypothesis is that the seven (7) Oil and Gas firms have common intercept i.e. POLS is better than FEM. The decision rule is that if the test is significant, the FEM is selected. In Table 4, the result of the F-test is significant at 1

per cent level and the FEM is selected. To choose the best between FEM and REM, the Hausman test is used. Table 5 presents the result of the Hausman test. The null hypothesis is that REM is more appropriate than FEM. If the test is statistically significant, FEM is selected.

Table 5: Results of the Hausman Test for Best Model Selection between FEM and REM

Model No.	**Model Comparison**	**P-value**	**Remarks**
b and c	FEM- REM	0.240	FEM is selected

Key: b = FEM, c = REM
Source: Extracted from the GRETL Output

The results of Hausman test in Table 5 is not significant, therefore, REM is preferred to FEM. This makes REM the best panel estimator for this study. Consequently, analysis, conclusions and recommendations are done on the basis of REM. The regression results of the REM are presented in Table 6.

Table 6: Random-effects (GLS), using 84 observations

(Included 7 cross-sectional units, Time-series length = 12, Dependent variable: ROE)

	Coefficient	***Std. Error***	***t-ratio***	***p-value***	
const	0.480817	0.137135	3.5061	0.00075	***
STDR	0.0771529	0.134198	0.5749	0.56696	
LTDR	0.304108	0.301587	1.0084	0.31632	
TDER	-0.127107	0.0176293	-7.2100	<0.00001	***

Mean dependent var	0.337080	S.D. dependent var	0.791637
Sum squared resid	33.23179	S.E. of regression	0.640522
R-squared	0.373158	Adjusted R-squared	0.349651
F(3, 80)	15.87461	P-value(F)	3.45e-08
Schwarz criterion	178.2109	Hannan-Quinn	172.3963

Significant at 1% (***)

Source: Extracted from GRETL Output

The regression results of the REM in Table 6 indicate that STDR has no significant effect on the financial performance proxy by the ROE. The t-ratio for STDR is not significant. This implies that a change in STDR will not have any effect on ROE. Despite the high preference for short-term debt, the ratio does not impact on financial performance surrogated by ROE. This is an indication that high interest rates on debts and the fall in the oil prices in the world market are impediments to improvement in financial performance. Similarly, LTDR has no significant effect on the financial performance of quoted Oil and Gas firms during the period under review. This is additional confirmation that the proportion of debt in the capital structure is not doing any good to shareholders value measured by ROE. These findings provide support to Modigliani and Miller irrelevance theory.

Conversely, the results of the REM regression in Table 6 also indicate that TDER has a significant negative effect on the financial performance represented by the ROE, at 1 per cent level of significance. The regression coefficient of TDER is -0.13, which connotes that a 1 per cent increase in TDER is associated with about 0.13 per cent decrease in the ROE as an indicator of the financial performance. This finding is in support of the postulation of the Pecking Order Theory which predicts that the effect financial leverage on the financial performance should be negative. This is yet additional evidence that the presence of debt in the capital structure of Oil and Gas firms is hurting financial performance. The finding is in consonance with the result of Ashraf *et al.* (2017) and, Hossain and Nguyen (2016) who all reported that TDER is statistically negatively associated with ROE of Oil and Gas firms in Pakistan and United States respectively. Abubakar (2016) however, pointed out that negative sign in the coefficient of TDER is an indication that the mix of debt and equity in the capital structure is non-optimal. An optimal debt-equity ratio should be able to impact positively on the financial performance.

Furthermore, the adjusted R-squared of 0.35, which is significant at 1 per cent level, implies that the leverage variables: STDR, LTDR and TDER are responsible for about 35 per cent changes in the financial performance (ROE), while higher proportion of 65 per cent of the variation in the financial performance is accounted for by other factors other than financial leverage.

CONCLUSIONS AND RECOMMENDATIONS

This study analyzed the effect of financial leverage on the financial performance of seven (7) Oil and Gas companies in Nigeria from the period 2005 to 2016. Data was sourced from the annual reports of the companies and the NSE daily official lists for the period under investigation. Short-term debt ratio (STDR), long-term debt ratio (LTDR) and total-debt equity ratio (TDER) are the financial leverage variables, while return on equity (ROE) was adopted as the financial performance indicator. Mean, minimum, maximum, median, standard deviation, coefficient of variation, skewness and kurtosis are used for descriptive analysis, while following the results of the tests for best model selection, Random Effects Model was applied to analyze the effect of the financial leverage variables on the ROE. The regression results reveal that STDR and LTDR have no significant effect on the ROE, and TDER has a significant negative effect on the financial performance measured by the ROE.

Based on the major findings of the study, the following conclusions are drawn viz: the high presence of debt in the capital structure of Oil and Gas firms in Nigeria is an impediment to the progress and improvement in the financial performance of the sector. High proportion of debt in the capital structure of the firms will result in persistent decline in the shareholders' value denoted by ROE. In other words, higher financial leverage in the capital structure of Oil and Gas firms in Nigeria deteriorates shareholders wealth measured by the ROE

The study also concludes that STDR and LTDR are not important determinant of financial performance in the Oil and Gas sector of Nigeria. This position is confirmed by the non-significant t-values of the two financial leverage proxies.

Financial leverage represented by TDER is an important determinant of financial performance. The t-value of this ratio was found to be negatively significant at 1 per cent. Therefore, decrease in TDER will result in increase in the financial performance.

Although, the financial leverage variables together explained the certain proportion of the variation in the ROE, there are other factors other than financial leverage that strongly determines the financial performance of Oil and Gas firms in Nigeria.

Following the conclusions, the study recommends the following:

First, debt-equity ratio should be reduced. It is found from the study that a 1 per cent reduction in TDER is associated with 0.13 per cent increase in the financial performance. This can be done through reduction in debt and increase in equity. Therefore, firms in the Oil and Gas Sector should substitute at least 90 per cent of debt in the capital structure with equity, through bonus issue, right issue and increase in retained earnings.

Second, regulatory and participatory authorities such as Securities and Exchange Commission and NSE should reduce floatation cost, transaction cost and other costs of issuing additional equity by a reasonable percentage so as to encourage firms to issue more equity.

Third, investment in the Oil and Gas Sector is capital intensive and long-term debt used for capital projects and investment is relatively that lower than short-term debt in this study. This is partly due to poor participation and inefficiency in the Nigerian capital market and partly due to unfavorable terms/ conditions imposed by lending institutions. Companies should substitute 90 per cent of short-term debt in the capital structure with long-term debt. Although, it makes economic sense to rely on external financing over internal financing for capital projects, higher leverage deteriorates shareholders value. Therefore, firms should adopt an appropriate debt-equity mix of 1:9 in their capital structure.

Fourth, Banks and other financial lending institutions should make loan application, processing and disbursements simple and attractive, so as to facilitate easy access to long-term debt by firms. Banks should offer competitive interest/lending rates that will reduce the high cost of debt that is depleting shareholders returns. The Central Bank of Nigeria (CBN) in conjunction with other relevant regulatory authorities such as Debt Management Office (DMO); Nigerian Deposit Insurance Corporation (NDIC); Federal Ministry of Finance among others should facilitate the reduction of interest rate to a single digit.

This study focuses on quoted Oil and Gas firms in Nigeria. Unquoted Oil and Gas firms and firms from other sectors are not utilized here in this study. Therefore, generalizing the results and findings of this study to other firms and other sectors and even countries different from Nigeria, the country of study, should be done with utmost caution. Additionally, financial leverage variables such debt ratio and interest coverage ratio are not utilize in this paper, future research in the Oil and Gas sector should consider adopting these leverage variables. More so, the study found evidence of financial leverage not being the most important determinants of financial performance in the Oil and Gas sector, future empirical works should also consider unraveling other factors aside leverage that influences the financial performance of firms in the Oil and Gas Sector.

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