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Effect of Capital Structure on Financial Performance of Oil and Gas Companies Quoted on the Nigerian Stock Exchange

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Abstract:
This study aims to find the impression of capital structure on financial performance of oil and gas companies quoted on the Nigerian Stock Exchange (NSE). The primary objective is to find the connection between debt to total assets on return on assets and total debt to total equity on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange. Secondary data were carefully sourced from the financial statement/annual reports of the oil and gas companies quoted on the Nigerian Stock Exchange. The data span from 2005 to 2018. E-views 10.0 software was used to analyse the data collected. Findings from data analysed show that total debt to total assets has no significant effect on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange and that total debt to total equity has a significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange. Accordingly, the study concluded that financial performance is independent of capital structure as companies prefer internal financing before resorting to any form of external funds because internal funds incur no flotation costs and require no additional disclosure of proprietary financial information that could lead to more severe market discipline and a possible loss of competitive advantage. It recommends that firm's management should establish a debt-equity mix capable of improving return on assets notwithstanding the measurement of capital structure measure adopted and that oil and gas companies should fund their operations with more of equity capital as it significantly influence shareholders' wealth.

Keywords: Capital Structure, equity, debt, share floatation

1. Introduction

In Nigeria, deposit money banks have great preference to surrendering to loan request of oil and gas companies compared to entrepreneurs in the general commerce and other sectors of the economy which they perceived as very fragile and risky. The level of competition and technological innovation in the oil industry in recent time has made capital structure decision an important aspect of management and a pre-requisite for firm's survival. Inept capital structure decisions to finance a firm's operations may be avenues for a firm to face liquidation, fall into financial distress or eventually be declared bankrupt (Omukaga, 2017).There have been a lot of discussion on the nexus between capital structure and firm's financial performance subsequent to the inventive study of Modigliani and Miller in 1958. They argue that the value of a firm has nothing to do with capital structure but firms real assets. Modigliani and Miller posit that in the absence of taxes, bankruptcy costs and assuming that the market is efficient and information is asymmetric, the source of finance whether debt or equity is irrelevant as far as the worth of a firm is concerned (Omukaga, 2017).The assumptions of the Modigliani and Miller were vehemently criticized on the ground that based on real-life business environment coupled with macroeconomic uncertainty, such assumptions cannot hold. Aftermaththe pioneering work of Modigliani and Miller, many capital structure theories were developed such as trade of theory by Myers in 1984 which argues that the optimum capital structure exists; pecking order theory by Myers and Majluf in 1984 which indicated managers have much preference using internal funds; and the agency cost theory of 1976 by Jensen and Meckling which indicated principle-agent problem can be reduced by raising debt level and so on (Basit&Irwan, 2017).

Capital structure which is the independent variable was disaggregated into total debt to total assets, total debt to total equity and long term debt to total assets. The debt to assets determines how much debt (a sum of long term and current portion of debt) a firm has on its balance sheet relative to total assets; total debt to total equity details the relative

proportion of shareholders' equity and debt used to finance a company's assets, whereas long term debt to total assets discloses the debt of the firm when compared with its total assets. The independent variable: financial performance of the oil and gas companies was define in terms of return on assets, return on equity, net profit margin and gross revenue. Return on assets showcases how well a company manages its assets to make earnings; return on assets shows the ability of a company's ability to channel available funds to competing profit-making ventures; net profit margin provides information on the percentage of profit that sales are able to generate, while gross revenue determines the total revenue of a firm before any deduction or allowances, as for rent, cost of goods sold, taxes, etc. are made. Subsequent to Echekoba and Ananwude (2016),firms' assets can differ along diverse lines as they are related to their operating activity (inventories or fixed assets), to their liquidity needs (cash and deposits), or represent financial assets connected to their transactions (trade receivables) or owned as a form of investment (shares). A firm can alter its financial structure by a small amount more or less uninterruptedly on the basis that the reported values of several structural components may be especially fluid from time to time: short term liabilities, long term liabilities, and even retained earnings (Echekoba & Ananwude, 2016). For instance, in short term, a firm can intentionally increase leverage by taking out loans or issuing bonds. It can immediately decrease leverage and increase equity by issuing and selling new shares of stock.

1.1. *Statement of the Problem*

In developed and emerging economies, studies have been undertaken in attempt to ascertaining the nexus between capital structure and financial performance of firms. The Central Bank of Nigeria (CBN) statistical bulletin reports that the total credits extended to the oil and gas sector in 2016 was estimated to worth ₦12,796 billion which is the highest in sectoral analysis of deposit money banks loans and advances, a growth of about 31.81% as against ₦8,726 billion in 2015. Despite the huge credit oil and gas companies received from deposit money banks, they are yet the highest sector indebted to the banking sector. As at 31st February, 2018, oil and gas sector indebtedness to deposit money banks in Nigeria reached ₦3,58 trillion. With this scenario in a lay man thinking, one would wonder why deposit money banks have great preference in lending to this oil and gas companies at the detriment of the real sectors of the economy. This apart, this research work was motivated by two issues arising from theoretical and empirical literature reviewed. Firstly, there is no agreement in theoretical literature on the exact nature of relationship between capital structure and financial performance of firms. The earliest capital structure theory (Irrelevance Theory of Capital structure) by Modigliani and Miller states that financial performance is not dependent on capital structure; trade-off theory envisaged the existence of an optimum capital structure; pecking order theory unveiling the preference of internal fund to debt by managers; and the agency cost theory suggesting that problem of principle – agent would reduce to the barest minimum consequent to increase in debt level.

Secondly, empirical results on the nexus between capital structure and firms' financial performance are mixed. In other words, there is no agreement by scholars on the effect of capital structure on financial performance of oil and gas companies in Nigeria. The empirical findings of Oladeji, Ikpefan and Olokoyo (2015), David and Olorunfemi (2010), Bashiru and Bukar (2016) and Echekoba and Ananwude (2016) reveal that capital structure has negative relationship with financial performance, whereas the study by Javadi, Alimoradi and Ashtiani (2017) covering all the Organization of Petroleum Exporting Countries (OPEC) which Nigeria is part of unveils a positive relationship between capital structure and financial performance. This warranted this research work to introduce growth in gross revenue as a measure of financial performance. That notwithstanding, the inconsistencies in empirical finding in this subject area calls for more research in Nigeria where crude oil sale accounts for over 90% revenue of the Federal Government.

1.2. *Objectives of the Study*

The general objective of this study is to examine the effect of capital structure on financial performance of oil and gas companies quoted on the Nigerian Stock Exchange (NSE). The specific objectives are stated as follows:
- To examine the effect of total debt to total assets on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange.
- To evaluate the effect of total debt to total equity on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange.

1.3. *Research Hypotheses*

The following hypotheses which were stated in the null format will be tested in the course of this study:
- Total debt to total assets has no significant effect on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange.
- Total debt to total equity has no significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange.

1.4. *Review of Related Literature*

1.4.1. Conceptual Review

Capital structure is the combination of debt and equity employed by companies in financing its business operations. According to Ravindra and Rao (2014), capital structure refers to the mix of long-term sources of funds, such as debentures, long-term debt, preference share capital and equity share capital including reserves and surpluses (i.e. retained earnings).Shalini and Mohua (2017) see capital structure as the mix of different securities known as debt equity ratio in a corporate firm, and capital structure decisions are considered to be one of the most crucial decisions of a

company as it has a direct bearing on the success or failure of the company. Capital structure implies propositional bearing on firm's financial performance of decision making units including debt as major part, magnify financial performance while equity enhances solvency although it is comparatively costly (Liaqat, Saddique, Bagh, Khan, Naseer&Khan, 2017). Capital structure decision is critical to the survival of any firm because without proper decision on finance, an organization will not realize it objective of profit making and satisfying the various stakeholders. It is therefore imperative for financial managers of firms to determine the proportion of equity capital and debt capital (capital structure) to obtain the debt financing mix that is, an optimal capital structure (David &Olorunfemi, 2010).Echekoba (2017) while acknowledging Gerhardinger (2015) identified four major proxies for capital structure, and these are discussed as follows:

1.4.1.1. Total Liabilities to Total Assets

The liabilities to assets ratio is a solvency ratio that examines how much of a firm's assets are made of liabilities. A liabilities to assets ratio of 20% means that 20% of the firms are liabilities. A high liabilities to assets ratio can be negative; this indicates the shareholder equity is low and potential solvency issues. Rapidly expanding firms often have higher liabilities to assets ratio (quick expansion of debt and assets). Firms in signs of financial distress will often also have high liabilities to assets ratios. A firm facing declining revenues and poor long-term prospects of growth will be impacted on retained equity (Gerhardinger, 2015). Firms with low liabilities to assets ratios indicate a company with little to no liabilities. With some notable exceptions, this is normally a good sign of financial health for the firm.

1.4.1.2. Total Debt to Total Assets

The debt to assets ratio is a leverage ratio used to determine how much debt (a sum of long term and current portion of debt) a firm has on its balance sheet relative to total assets. This ratio examines the percent of the firm that is financed by debt. If a firm's debt to assets ratio was 60 percent, this would mean that the firm is backed 60 percent by long term and current portion debt. Most firm's carry some form of debt on its books. All things being equal, a higher debt to assets ratio is riskier for equity investors; debt holders often have seniority over firm assets during bankruptcy (Well, 2007). A ratio of 1 (unlikely) would indicate a company is 100% backed by debt, whereas a ratio of 0 means the company is carrying no debt on its books. High debt to assets ratios will also mean that the company will be forced to make more interest payments on its debt before net earnings are calculated.

1.4.1.3. Total Assets to Total Equity

Assets to Shareholder Equity is a measurement of financial leverage. It shows the ratio between the total assets of the firm to the amount on which equity holders have a claim. A ratio above two means that the firm funds more assets by issuing debt than by equity, which could be a more risky investment. A low ratio could be seen as more conservative (Pushner, 1995). The assets to shareholder equity moves in conjunction with the debt to equity ratio.

1.4.1.4. Total Debt to Total Equity

Leverage ratio indicating the relative proportion of shareholders' equity and debt used to finance a company's assets. A low debt to equity ratio indicates lower risk, because debt holders have less claims on the company's assets. A debt to equity ratio of five means that debt holders have a five times more claim on assets than equity holders. A high debt to equity ratio usually means that a firm has been aggressive in financing growth with debt and often results in volatile earnings (Ojo, 2012).

1.4.2. Financial Performance

The term performance cannot be put into a tight framework of definition. It is indistinct phenomenon and it can be interpreted and measured in different ways. Different users from their own point of views can evaluate from various angles. A financial analyst will judge the performance from profitability and growth point of view. An economic planner will be concerned with the equal distribution of gains and wealth bedsides efficient utilization of resources. A welfare economist will be concerned with the equal distribution of gains and wealth bedsides efficient utilization. From the national viewpoint the various indicators of performance can be employment generation, research and development, health education and economic development etc. Moreover different parties view performance differently. The shareholders are interested in profitability where as their management is interested in the growth of the company. So, both of dimension viz. profitability and growth should be considered while analysing performance of a company. Some researchers have used profitability and growth as measurement of performance. Financial performance refers to the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. The measurements of financial performance of oil and gas companies as applied in this study a briefly discussed a follows:

1.4.2.1. Return on Assets

This refers to net income divided by total assets and gives an idea of the company's earnings via utilization of available assets. Return on assets showcase how well a company manages its assets to make earnings. A company with consistent return on assets is considered by investors as sound and liquid. Higher the return on assets is a suggestion that a company's is adequately and efficiently utilizing its assets.

1.4.2.2. Return on Equity

This is defined as net income divided by total equity capital and shows the ability of a company's ability to channel available funds to competing profit-making ventures. Return on equity can be considered as the price, or the cost of attracting funds from owners of the company. If the company becomes more efficient in getting funds from owners and transforming them into profitable investments, the higher the return on equity/wealth of shareholders.

1.4.3. Relationship between Capital Structure and Return on Assets

Based on agency cost theory, agency problem can reduce through raising company debt level.High debt level encourage manager to work for company interest. Equity is another important element of capital structure; equity finance does not require fixed repayment and interest. So, raising equity finance will bring a positive impact on firm performance. According to Modigliani and Miller (1963) relevant theory, debt provide huge tax shield effect and it able to reduce cost of capital. Hence, raising debt to equity ratio able to reduce cost of capital and led the manager able to produce more efficiency return on assets.

1.4.4. Relationship between Capital Structure and Return on Equity

Based on trade-off theory, debt able to raise firm performance through the tax shield effect (Myers, 1984). Besides that, it also indicated high profitability firm will be able to take more tax advantage by increases borrowing without risking financial distress. Large external equity holders can mitigate agency conflicts because of they have strong incentives to monitor manager and ensure resource are allocate appreciate. High debt to equity means a high debt or low equity. High debt encourages firm manager work for company interest and hence has a positive effect on firm performance

1.5. Theoretical Framework

This theory is hinged on theSignalling theory.Klimenok (2014) who cited Ross (1977), stated that due to the presence of asymmetric information, the management of the company aware of the true distribution of its income in time, while foreign investors it is not known. In turn, the management of organizations trying to make the placement of shares only when the share price of the company are in the process of escalation, or at a high level, in anticipation of the subsequent decline. If the firm has a high growth potential in the future, the management of which is aware of the prospects of the company, will not carry out the placement of shares currently at current prices, because he knows that prices will rise in the future that will allow for a better share issue. Foreign investors are aware of this fact and agree tobuy shares of a company invests only with discounted prices, making the issue of securities more expensive and less demand in relation to debt financing. Thus, the issue of shares carries a negative signal to investors, while the high level of debt is perceived by investors as a signal of good quality firm. Negative signal accompanying the issuance of shares may cause a problem of under-investment, as a company with a good investment opportunity, might not attract the necessary funding for the amount by placing shares. To avoid this problem, companies need to maintain a reserve borrowing capacity, subject to the availability of attractive investment opportunities could use cheaper borrowings.

1.6. Empirical Review

Liaqat, Saddique, Bagh, Khan, Naseer and Khan (2017) investigated the impact of capital structure on financial performance of fuel and energy sector of Pakistan taking into account secondary data from 2006-2014. Empirical results of renowned econometric model multiple regression revealed that there is a significant negative impact of capital structure on ROA and ROE of firms in fuel & energy sector of Pakistan, while EPS is least driven by capital structure parameters, only the size has significant positive bearing on EPS.Oladeji, Ikpefan and Olokoyo (2015) analysed the impact of capital structure on firm performance in Nigeria from 2003 to 2012. Using data from six petroleum companies in Nigeria namely: Chevron Plc, Conoil Plc, Eterna Oil plc, Mobil Oil Plc, Oando Plc and Total Nigeria Plc. The study carried out a panel data analysis by using fixed effect estimation. The study found that a negative relationship exists between leverage and firm performance and the study established that a positive a relationship exists between three of the explanatory variables (firm's size, tax and lagged return of asset) and firm performance.

Echekoba and Ananwude (2016) determined the influence of financial structure on profitability with special reference to oil and gas firms in Nigeria. Ten (10) out of the fourteen (14) listed oil and gas firms in Nigerian Stock Exchange were selected. The financial data from 1993 to 2013 were collected from Nigerian Stock Exchange factbook. Variation in profitability albeit return on assets, return on equity, profit before tax and earnings per share were regressed on debt-equity amalgam and tax using the pooled ordinary least square, fixed effect and random effect models. After the estimation, results revealed that financial structure has negative influence on profitability of oil and gas firms measured by return on assets, return on equity, profit before tax and earnings per share.Raheel and Shah (2015) identified the relationship between the financial leverage and Firms profitability of Oil and Gas marketing companies of Pakistan listed on Karachi Stock Exchange (KSE). The study was identified 5 companies listed on the KSE for the period starting from year 2007 to 2012. The Degree of Operating Leverages (DOL), Degree of Financial Leverage (DFL) & Degree of Combined Leverage (DCL) are the independent variables and Earning per Share (EPS) is the dependent variable for this study. The present study used the correlation coefficient and linear regression to measure the variables. The findings revealed that there is no significant relationship of DOL, DFL and DCL with EPS. Thus, fixed operating expenses and the financing mix decisions of the firm are not significantly impact the earning capacity of the listed companies in KSE.

Foo, Jamal, Karim and Ulum (2015) examined the relationship between capital structure and corporate performance of public listed oil and gas companies in Malaysia. For this, unbalanced panel data sets of 12 oil and gas companies were tested using panel data regression technique over the period of 2003-2013. Capital structure, the

independent variable is measured by three proxies namely short-term to total debt (STDTA), long-term to total debt (LTDTA) and total debt to total asset (TTDTA). While corporate performance is measured by the company's return on equity (ROE), return on asset (ROA) and gross margin (GM). The finding showed that capital structure is negatively related to firm's return on equity, suggesting that an increase in the firm's debt level would negatively affect its shareholders return. The effect of firm's debt level with ROA and GM on the other hand, shows no impact and appears to be insignificant.David and Olorunfemi (2010) looked at the impact of capital structure on corporate performance in the Nigerian Petroleum Industry. The study employed panel data analysis by using Fixed-effect estimation, Random-effect estimation and Maximum likelihood estimation. It was found out that there was positive relationship between earnings per share and leverage ratio on one hand and positive relationship between dividend per share and leverage ratio on the other hand.

Hossain and Nguyen (2016) determined the impact of financial leverage on firm performance by analysing stock and operating performances of top ten Canadian oil and gas companies for a ten year period (2004-2013). They found that leverage has a strong negative relationship with performance, for all three periods in concern, that is the pre-crisis (2004-2006), crisis (2007-2009), and post-crisis recovery (2010-2013) periods. These results hold both in univariate and cross-sectional set up even after controlling for firm specific variables. In an effort to answer the question on whether Retained Earnings is determined by capital structure in the oil and gas sector in Nigeria, Akparhuer, Eze and Unah (2015) used secondary data covering the period, 2002-2011. The analysis was carried out using simple statistical tools like Correlation Co-efficient (r), F-test (ANOVA), Co-efficient of Determination (R2), and Regression Analysis. The study revealed that Retained Earnings is strongly and positively determined by borrowing or debt; that Share Capital positively determines Retained Earnings; and that Retained Earnings had significant relationship with debt and share capital over the period of study.

Baah-Acquah, Freeman and Ellis (2017) evaluated the impact of capital structure on the profitability of Oil Marketing Companies (OMC's). With regards to the firm's capital structure, the study employed short-term debt to total capital, long-term debt to total capital and total debt to total capital in comparison with return on assets (ROA), return on equity (ROE) and net profit margin (NPM). The study employed secondary data and the data was analysed using multiple regressions. The result revealed that short term debt to total capital, long term debt to total capital, total debt to total capital, firm size, and sales growth, have varying and mixed relationships with profitability in terms of return on asset, and return on equity of the Oil Marketing Companies (OMC's).Basit and Irwan (2017) assessed the impact of capital structure on firm performance of Malaysia listed industrial product company. Convenience sampling technique was using in this research to select 50 industrial product companies listed in Bursa Malaysia main exchange market based on available of 2011 to 2015 annual report. The independent variables used in this research are debt to equity ratio, total debt ratio and total equity ratio. Return on asset (ROA), return on equity (ROE) and earning per share (EPS) are used as dependent variable to measure firm performance. Descriptive statistics and multiple regression are used in this research to analyses the data. This research found industrial product company are heavily rely on equity finance in their capital structure. Besides that, the regression result found debt to equity has negative impact on ROA, total debt ratio and total equity ratio has insignificant impact on ROA. Debt to equity has negative impact on ROE, total debt has positive impact on ROE and total equity has insignificant impact on ROE. Besides that, debt to equity has negative impact on ROE, total debt has positive impact on ROE and total equity has insignificant impact on ROE. Finally, debt to equity has a negative significant impact on EPS, total debt ratio has positive significant impact on EPS and total debt has insignificant impact on EPS.

Kalyani and Mathur (2017) ascertained the impact of capital structure on overall profitability of a firm. The Corporate financial performance, which is represented by dependent variables ROA (Return on Assets) and Net Profit Ratio, is taken into consideration and the effect of independent variables which are Sales of a firm, Total Assets of a firm, Debt Service Capacity, Dividend Pay-Outs, Degree of Financial Leverage, Degree of Operating Leverage of the firms belonging to the Oil and Natural Gas Industry of India were chosen for study. A sample of seven firms listed in NSE and BSE were selected and the financial data of these companies during the period 2005 and 2015 was used for this study. The Judgement Sampling which is non-random sampling technique was chosen for sample selection in this study. The correlations and regression analyses were used to estimate the functions relating to profitability measured by Return on Assets and Net Profit Ratio with measures of capital structure. The study witness that Log sales, degree of operating leverage and growth of asset are significant variables in determining the profitability when dependent variables are ROA and log assets, degree of financial leverage, Log sales, degree of operating leverage and growth of asset have significant relationship with net profit ratio of the select firms from Oil and Natural Gas Industry of India. Ali (2017) analysed the influence of capital structure on the stock return in the context of oil and gas segment of Pakistan. Ten oil and gas companies operating in Pakistan on the basis of market capitalization over the period of 2005 to 2014 were selected. In order to inspect the impact of debt to equity and financial leverage on stock outcomes, the Correlation and regression models are used to test the results. This study has determined that the variation in capital structure does affect the stock return of oil and gas companies in Pakistan. Furthermore, Debt to equity ratio and financial leverage positively affect stock return. The Financial leverage and debt to equity positively affected the stock return.

Ali, Zia and Razi (2012) studied the impact of capital structure on the profitability of petroleum sector of Pakistan, while controlling the size of the company. A total of 12 companies were selected randomly for the study and take ten years data from 2001 to 2010. Regression analysis was conducted. The results showed that there is a significant and positive impact of capital structure on the profitability of the petroleum sector; this study has potential for replication in other industries like cement, textile and pharmaceutical. In overall analysis, capital structure has the significant analysis but the individual analysis of every company has not significant because every company has their own capital structure. Overall Profitability depend on the capital structure. Karani (2015) investigated the effect of capital structure decisions on the

financial performance of firms in the Energy and petroleum sectors listed in the NSE. The study used a descriptive survey design. Energy and petroleum firms listed in the NSE formed the population of this study and was considered as a representative of other firms in Kenya. The study population consisted of five firms listed in the NSE. Secondary data on capital structure decisions on financial performance of firms listed under energy and petroleum sector at the Nairobi securities exchange were collected for the study period of 2004 to 2014. The findings indicate that the independent variables Debt ratio, Liquidity and firm size had an effect on the financial performance of the firms in the Energy and petroleum sector.

Aziidah (2017) examined the effect of financial leverage on financial performance of Kenyan Energy and Petroleum firms listed on the NSE. The study analysed the effect of financial leverage on profitability and liquidity management. A descriptive research design was used. Data was collected from the annual financial statements of the Kenyan Energy and Petroleum firms listed on the Nairobi Securities Exchange for a five year period, from 2012-2016.Correlation and regression analysis were used to establish the effect of financial leverage on the financial performance of the select firms. Profitability (ROA), dividend payout ratio (DPR) and liquidity management (QR) were used as proxies for financial performance while debt to equity ratio was used a measure of financial leverage. The results of the study found that there was a strong negative relationship between profitability and financial leverage, as those firms that relied more on debt had lower profits while those relied more on equity had higher profits.Kirmi (2017) explored the relationship between capital Structure and profitability of listed energy and petroleum companies in Kenya by establishing the relationship between long-term and short-term debts with profitability and its effects. Descriptive and causal research designs were used. The study target population was four energy and petroleum companies listed in NSE that operates in Kenya. Secondary data used for data analysis was obtained from the company's financial statements for a period of five years from 2012 to 2016. Data analysis was done using inferential statistics using SPSS. The study established a strong positive relationship between short term debt and ROA and an average negative relationship between Long term debts and ROA and a weak positive relationship between total debt and ROA. Both the short term and long term debts were found to have no significant effect on ROA at 5% level of significance.

Akhtar, Javed, Maryam and Sadia (2012) looked into the relationship between the financial leverage and the financial performance of the fuel and energy sector in Pakistan. The paper also examines the generalization that firms with higher profitability may choose high leverage by using various statistical tools. The findings of the study show a positive relationship between the financial leverage and the financial performance of the companies. The results of the study confirm that the firms having higher profitability may improve their financial performance by having high levels of financial leverage. Most of the technical literature shows that there is a positive relationship between financial leverage and firm growth hence, Javadi, Alimoradib and Ashtiani (2017) examined whether such relationship exists among oil and gas companies within the Organization of the Petroleum Exporting Countries (OPEC).Data were collected from the selected members of the OPEC. The collected data was then analyzed using the Arellano and Bond (1991) GMM method and Sargan test. The results showed a significant and positive relationship between financial leverage and firm growth which is in line with the technical literature.

Oke and Obalade (2015) investigated the determinants of capital structure in Nigerian oil industry in a bid to test the validity or otherwise of the Optimal Capital Structure theory's arguments. Six of the ten listed firms whose reports were regularly published over the period 2005-2012 were selected for the study. They are Oando, Mobil, Total, Mrsoil, Conoil and Eternal. Pooled OLS, Fixed and Random Effect Model were employed for analytical purpose while T-test, F-test and Durbin Watson test were carried out for reliability. From the findings of the study, it was shown that the profitability, age, size but tangibility are significant in determining the capital structure of Nigerian oil firms. The study provides a confirmation of Static Trade-off Theory which holds that highly profitable firms uses more debt because there is a little risk of bankruptcy and the tax shield is substantial. Kumar and Kaushal (2017) examined empirically the impact of capital structure on profitability of the Indian companies listed on Nifty Energy Index of National Stock Exchange of India during a ten-year period (2006-2015). The exogenous variables explained 67.5 % change in ROA but the exogenous variables explained only 19.3 % variation in ROE. Out of seven exogenous variables selected, only four exogenous variables, i.e. debt to equity, Long-term debt to capitalization and firm's size in respect of assets and sales had a statistically significant association with ROA. The Long-term debt to capitalization had a statistically significant inverse effect on return on assets indicating that a unit rise in it will lead to -1.9363 units decrease in ROA. Such a negative link between Long-term debt to capitalization and ROA is an indication of increased financial risk of these firms. The negative ROA also indicates that the firms' creditors are not monitoring them efficiently and there are some problems with the firms' corporate governance.

Tailab (2014) analysed the effect of capital structure on financial performance. Two main sets of variables were used: For profitability, return on assets (ROA) as the ratio of net income to total assets, and return on equity (ROE) as the ratio of net income to total shareholders' equity were adopted as a proxy for financial performance; and to indicate capital structure, short-term debt, long-term debt, total debt, debt to equity ratio, and firm's size were used. A sample of 30 Energy American firms for a period of nine years from 2005 – 2013 was considered. Secondary data were collected from financial statements which were taken from Mergent online. The data were analysed by using Smart PLS (Partial Least Square) version 3. Multiple regressions indicated that 10% of ROE and 34% of ROA were predicted by the independent variables. Findings also presented that the total debt has a significant negative impact on ROE and ROA, while size in terms of sales has significantly negative effect only on ROE of the American firms.Bashiru and Bukar (2016) determined the impact of capital structure on financial performance of listed firms in Nigerian Oil and Gas industry. The study adopted an ex-post facto research design and utilized panel data collected from annual reports and accounts of the sampled firms for the periods of 2005 to 2014. The Data was first analysed using descriptive statistics to provide summary statistics of the variables. Subsequently a panel data regression technique was used to assess the extent of the effect of the independent

variables on the dependent variables. It was found that capital structure proxied by STD, LTD and TD has negative and significant relationship with financial performance (ROA and EPS) of listed petroleum marketing companies in Nigeria.

Bui (2017) investigated the effects of debt ratios on the firm performance through employing a data of 99 financial statements of 18 British Gas and Oil companies from 2009 to 2014. There were two dependent variables used in this research including ROA (return on assets), ROE (return on equity), while three independent variables were STD (short term debt to total asset), LTD (long term debt to total asset), TD (total debt to total asset). Besides, the author also used one control variable which is GROWTH (growth of assets). The result revealed that there were strong negative impacts of financial leverage measured by LTD and TD on performances of ROA and ROE, while STD had insignificant effects on ROA and ROE of these firms.Tahmoorespour, Ali-Abbar and Randjbaran (2015) explored the relationship between capital structure and stock returns of firms in the following eight countries in the Asia Pacific regionfor a period of 22 years from 1990 to 2012. The methodology was Panel Regression. The results indicate that the effect of capital structure depends on the nature of industry as well as market. In Australia, China, and Korea, return of companies in the Basic Material industry have negative relationship with debt to common equity. Long term debt to common equity positively affects the return of firms in Australia and Korea in the Basic Material industry.

2. Research Methodology

This study will adopt an ex-post facto panel research design because the study revolves around selected oil and gas companies quoted on the Nigerian Stock Exchange. This is because the data are available in the financial statement/annual reports of these companies. Any alteration by the researcher would be easily detected owing to the fact that these annual reports are made for public consumption and no individual has monopoly over it use.The nature of data were secondary and carefully sourced from the financial statement/annual reports of the oil and gas companies quoted on the Nigerian Stock Exchange. The data span from 2005 to 2018, that is, a period of fourteen years. The data were on annual parameter as stated in the financial statement/annual reports of these companies.

Nine oil and gas companies (9) were purposively selected. The reason for the choice of the nine (9) companies was based on the fact that their financial statement/annual reports within the period studied are available. These nine (9) companies are Capital Oil Plc, Con Oil Plc, Eterna Oil Plc, Forte Oil Plc, Japaul Oil and Maritime Service Plc, Mobil Oil Nigeria, Oando Plc and Total Nigeria Plc. This constitutes 95% of oil and gas companies quoted on the Nigerian Stock Exchange (NSE).

2.1. Model Specification

The effect of capital structure on financial performance of oil and gas companies was estimated by adopting a modified model of Echekoba and Ananwude (2016) on a similar study in the oil and gas sector of the Nigerian economy. The original model of Echekoba and Ananwude (2016) is stated as:

$$LogFP_t = a_0 + a_1 LogDEA_t + a_2 LogTAX_t + U_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.1$$

Where FP_t dispels the vector of the four endogenous variables given by $FP_t = [roa, roe, pbt, eps]$, a_0 is vector of intercept term, $a_1 - a_2$ is the coefficients of the independent variables, U_t is the error term. roa = return on assets, roe = return on equity, pbt = profit before tax, and eps = earnings per share, dea = debt equity ratio, and tax = tax.

The modified functional models of this study while disaggregating capital structure and financial performance are stated as:

$$ROA = TDTA + TAX + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.2$$
$$ROE = TDTE + TAX + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.3$$

Introducing log in an attempt to balance the two sides of the equation to allow for easy inferences from regression output, Equ 3.2 – 3.5 were re-casted as follows:

Model 1

$$ROA_t = \beta_0 + \beta_1 TDTA_t + \beta_2 TAX_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.6$$

Model 2

$$ROE_t = \beta_0 + \beta_1 TDTE_t + \beta_2 TAX_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.3.7$$

Where:
ROA = return on assets
ROE = return on equity
TDTA = total debt to total assets
TDTE = total debt to total equity
TAX = tax

$\beta_0 \alpha_0$ is a constant term, ε is the error term and $t\bar{t}$ is the time trend normally introduce in any regression model as requirements for estimating a regression model.

2.2. Method of Data Presentation and Analysis

A panel data estimation in three sets: fixed effects model, random effects model and the pooled estimation will be used by virtue of the panel Ordinary Least Square (OLS) technique. The first estimation will be carried out via the pooled data but this has some weakness which will be addressed by either fixed effect or random effect estimation. The suitability of either fixed effect or random effect estimation will be ascertained by conducting a Hausman's test. The rule guiding this test is that if the Chi-square statistics is significant at 5% level of significance, then the fixed effect is appropriate. However, if the Chi-square statistics is insignificant at 5% level of significance, the random effect becomes suitable.

2.2.1. Panel Unit Root Test

To avoid spurious regression result and ensure that the data are free from stationarity defect linked to most time series data, the panel unit root test will be conducted. The unit root test will be determined with Levin, Lin and Chu (LLC) Testand Breitungpanel unit root tests. The null hypothesis of the LLC test is that the variable is stationary. The null hypothesis of stationarity is accepted only when the p-value is less than 0.05. On the other hand, the Breitungpanel unit root test method differs from LLC in two distinct ways. First, only the autoregressive portion (and not the exogenous components) is removed when constructing the standardized proxies. Second, the proxies are transformed.

2.2.2. Granger Causality Test

The effect of capital structure on financial performance of oil and gas companies in Nigeria will be ascertained using the granger causality test. This statistical tool will also be used to test the hypothesis develop in the study and answer the research question as well. When financial performance helps in the prediction of capital structure, then capital structure is said to be granger caused by financial performance. Alternatively, capital structure is said to be granger caused by financial performance when the coefficients on the lagged of financial performance are statistically significant.

2.2.3. Co-integration

The co-integration relationship between capital structure and financial performance will be assessed by Kao panel Co-integration and Johansen Fisher panel co-integration techniques. The Kao panel Co-integration test is an Engle-Granger based co-integration for panel data. Kao (1999) noted that the null hypothesis of no co-integration for panel data exists in two tests. The first is a Dickey-Fuller types test while the other is an argumented Dickey-Fuller type test. The Johansen Fisher panel co-integration seeks to identify the number of co-integrating relationships that exist among these variables. It identifies the number of stationary long-run relationships that exist among the set of integrated variables. It offers two tests, the trace test and the eigenvalue test, with a view to identifying the number of co-integrating relationships.

2.2.4. Statistical Criteria

The result of the analysis will be interpreted on the basis of the three global statistics criteria namely, Adjusted R-Squared, F-Statistic and Durbin Watson test of autocorrelation.

2.2.5. Coefficient of Determination (R^2)

It measures the proportion of the total variation in the dependent variable that is jointly explained by the linear influence of the explanatory variable. The value of R^2 lies between zero and one, i.e., $0<R^2<1$ with values close to 1 indicating a good degree of fit.

2.2.6. F* Statistic

The F-statistic is used to test whether or not there is a significant relationship between the dependent and independent variable in the regression equation. If the probability at which the F- values significant is less than the chosen level of significance, then we accept that there is a significant relationship between the dependent and independent variables in the regression equation.

2.2.7. Durbin Watson Statistic

The Durbin-Watson test for autocorrelation compare the calculated d* value from the regression residuals with the dL and du in the Durbin Watson tables and with their transforms (4-dL) and (4-du). The result of the serial correlation LM test helps to detect autocorrelation where the Durbin Watson test of autocorrelation fails.

2.3. Presentation of Data

This section presents the average data of the variables obtained from the annual reports selected oil and gas companies quoted on Nigerian Stock Exchange as computed by E-views 10.0 software (based Mean Plus SD Bound). Table 2 presents the average data for return on assets, return on equity, net profit margin, log of gross revenue, total debt to total assets, total debt to total equity, long term debt to total assets and log of tax of the nine (9)selected oil and gas companies from 2005 to 2018.

Year	Return on Assets (%)	Return on Equity (%)	Total Debt/Total Assets(%)	Total Debt/Total Equity (%)	Long Term Debt/Total Assets(%)	Log of Tax
2005	0.00058	-1.15000	0.00111	4.70000	0.35000	4.94000
2006	0.00029	0.49000	0.00074	1.30000	0.39000	5.03000
2007	0.06165	0.32000	0.00111	0.90000	0.17000	6.06000
2008	0.00058	0.32000	0.00074	1.60000	0.19000	1.04000
2009	0.00029	0.28000	0.00037	0.80000	0.23000	1.11000
2010	0.00086	0.22000	0.00148	1.00000	0.24000	1.70000
2011	0.00086	-0.10000	0.00111	1.80000	0.37000	2.08000
2012	0.00058	0.28000	0.08074	2.30000	0.45000	1.53000
2013	0.00086	0.16000	0.00185	1.50000	0.30000	1.34000
2014	0.00115	0.15000	0.00148	2.50000	0.38000	9.84000
2015	0.00086	0.15000	0.00074	5.20000	0.40000	8.55000
2016	0.00144	0.51000	0.00111	2.60000	1.61000	1.96000
2017	0.00086	0.50000	0.00148	2.80000	1.19000	1.38000
2018	0.00130	0.60000	0.00151	2.70000	1.25000	1.54000

Table 1: Return on Assets, Return on Equity, Total Debt to Total Assets, Total Debt to
Total Asset, Long Term Debt to Total Assets and Tax from 2005-2018
Source: Nigerian Stock Exchange (NSE) Factbooks and Firms' Annual Reports, 2005 To 2018; and
Output Data from E-Views 10.0 Version

The firms' mean return on assets was 0.00058% in 2005, which had risen by 0.49% by the end of 2010to settle at 0.00086%. The return on assets depreciated from 0.00086% in 2011 to 0.00058% in 2012. From 2005 to 2017 as shown in Table 1. It gradually rose from 0.00058% in 2005 to 0.000130% in 2018 amidst some variation.
The panel OLS relationship estimation was performed in pooled OLS, fixed and random effect approach. The interpretation of the findings was based on the adjusted R-square, Durbin Watson value, f-statistic as well as the relative statistics of the variables.

2.3.1. Return on Assets and Total Debt to Total Assets
        The Hausman specification test in Table 2below unveils the suitability of the random effect estimation which reveals that total debt to total assetsand tax have negative but insignificant relationship with return on assets. Return on assets will worth 501.85% when total debt to total debt and tax are held constant. A percentage increase in total debt to total assets and tax lead to reduction in return on assets by the tune of 0.0057% and 1.05% respectively. The f-statistic of 0.0039 with p-value (0.99) depicts that total debt to total assets and tax did not significantly discussed the variation in return on assets. Judging from the coefficient of the adjusted R-square, -1.76% variation in return on assets was attributed to joint influence of total debt to total assets and tax. The Durbin Watson value of 2.1 reveals no autocorrelation in the estimated model.

Variables	Pooled OLS		Fixed Effect		Random Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	509.8239	0.3800	395.3191	0.4991	501.8516	0.4164
TDTA	-0.006685	0.9265	0.000358	0.9962	-0.005750	0.9369
TAX	-2.38E-05	0.9286	6.80E-05	0.8047	-1.05E-05	0.9685
R-squared	0.000147		0.117929		0.000070	
Adjusted R-squared	-0.017550		-0.004338		-0.017628	
S.E. of regression	5182.225		5148.474		5134.658	
Sum squared resid	3.03E+09		2.68E+09		2.98E+09	
Log likelihood	-1155.224		-1147.954			
F-statistic	0.008306		0.964518		0.003941	
Prob(F-statistic)	0.991729		0.494571		0.996066	
Durbin-Watson stat	2.188947		2.164967		2.185322	
Hausman Specification Test						
	Chi-Sq. Statistic		1.249135			
	P-value		0.53550			

Table 2: Return on Assets and Total Debt to Total Assets
Source: Computer output data using E-views 10.0

2.3.2. Return on Equity and Total Debt to Total Equity
        From the Hausman test in Table 3 below, the random effect estimation is favoured as the p-value of the Chi-square is insignificant at 5% level. There is a significant negative relationship between return on equity and total debt to total

equity, while a positive but insignificant relationship was observe for return on equity and tax. Keeping total debt to total equity and tax constant, return on equity would amount to 41.97%. A unit rise in total debt to total equity result in 13.41% depreciation in return on equity, while a percentage increase in tax will appreciate return on equity by 360%. The adjusted R-square shows that 25.74% changes in return on equity was as a result of variations in Keeping total debt to total equity and tax, and this is highly significant as exhibited by the p-value of the f-statistic (0.00 < 0.05). This is to say that total debt to total equity and tax significantly explained the changes in return on equity within the period studied. The Durbin Watson value of 1.24 is low however, this study relied on the result of the serial correlation LM test in Table 4 which reveals that there is no element of autocorrelation in the model.

Variables	Pooled OLS		Fixed Effect		Random Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.418610	0.0016	0.423955	0.0016	0.419660	0.0030
TDTE	-0.134419	0.0000	-0.132500	0.0000	-0.134074	0.0000
TAX	3.75E-08	0.4966	2.94E-08	0.6066	3.60E-08	0.5155
R-squared	0.270363		0.352167		0.270338	
Adjusted R-squared	0.257450		0.262368		0.257424	
S.E. of regression	1.072760		1.069201		1.060852	
Sum squared resid	130.0419		115.4622		127.1709	
Log likelihood	-171.2243		-164.3274			
F-statistic	20.93582		3.921741		20.93311	
Prob(F-statistic)	0.000000		0.000025		0.000000	
Durbin-Watson stat	1.242001		1.232725		1.240412	
Hausman Specification Test						
	Chi-Sq. Statistic		0.257648			
	P-value		0.87910			

Table 3: Return on Equity and Total Debt to Total Equity
Source: Computer output data using E-views 10.0

2.3.3. Granger Causality Test

To determine the effect of capital structure indices of financial performance indicators of oil and gas companies quoted on the Nigerian Stock Exchange, the panel granger causality test was employed. Table 4 discloses that there is a unidirectional causal relationship between total debt to total equity and return on equity. This is implies that total debt to total equity has significant effect on return on equity owing to the flow of causality from total debt to total equity to return on equity at 5% level of significance. Total debt to total assets, total debt to total equity, long term debt to total assets and tax were found to have no significant effect on return on assets, net profit margin and growth in gross revenue of oil and gas companies. With this result, it is adduced that financial performance of oil and gas companies are independent of capital structure with the exception of the shareholders' wealth.

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
TDTA does not Granger Cause ROA	99	0.01032	0.9897	No Causality
ROA does not Granger Cause TDTA		0.01030	0.9897	No Causality
TAX does not Granger Cause ROA	96	0.20626	0.8140	No Causality
ROA does not Granger Cause TAX		0.69647	0.5010	No Causality
TDTE does not Granger Cause ROE	99	5.32703	0.0064	Causality
ROE does not Granger Cause TDTE		0.16062	0.8518	No Causality
TAX does not Granger Cause ROE	96	0.12473	0.8829	No Causality
ROE does not Granger Cause TAX		0.06780	0.9345	No Causality

Table 4: Granger Causality Result
Source: Computer analysis using E-views 10.0

2.4. Test of Hypotheses

2.4.1 Hypothesis One
- H_0: Total debt to total assets has no significant effect on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange.
- H_1: Total debt to total assets has significant effect on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange.

Estimated Model	f-statistic	P-value	Decision
ROA → TDTA + TAX			
TDTA	0.01032	0.9897	Accept H_0 and Reject H_1
TAX	0.20626	0.8140	

Table 5: Test of Hypothesis One
Source: Granger Causality Output in Table 4

Table 5 unveils that the p-value (0.9897) of the f-statistic (0.01032) for Total debt to total assetsis insignificant at 5% level of significance (0.9897 > 0.05). This suggests that causality does not flow from total debt to total assets to return on assets. In effect, the null hypothesis that total debt to total assets has no significant effect on return on assets of oil and gas companies quoted on the Nigerian Stock Exchange is accepted.

2.4.2. Hypothesis Two
- H_0: Total debt to total equity has no significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange.
- H_1: Total debt to total equity has significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange.

Estimated Model	f-statistic	P-value	Decision
ROE → TDTE + TAX			
TDTE	5.32703	0.0064	RejectH_0 and AcceptH_1
TAX	0.12473	0.8829	

Table 6: Test of Hypothesis Two
Source: Granger Causality Output in Table 4

As can be seen in Table 6, there is a causal relationship between total debt to total equity and return on equity. The p-value (0.0064) of the f-statistic (5.32703) for total debt to total equityis significant at 5% level of significance (0.0064 < 0.05). This implies that total debt to total equity has significant effect on return on equity. In the light of this, the null hypothesis that total debt to total equity has no significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange is rejected, while the alternate hypothesis that total debt to total equity has significant effect on return on equity of oil and gas companies quoted on the Nigerian Stock Exchange is accepted.

3. Discussion of Findings
The result of the long run relationship shows the existence of a co-integration relationship between return on assets and total debt to total assets; and return on equity and total debt to total equity. This implies that capital structure is only related with return on assets and return on equity of oil and gas companies quoted on the Nigerian Stock Exchange in the long run. This is in line with the perking order theory of capital structure, which is negatively related with financial performance. This result supports the works of Echekoba and Ananwude (2016), Oladeji, Ikpefan and Olokoyo (2015), Basit and Irwan (2017), Karani (2015), Bashiru and Bukar (2016) and Bui (2017) whom have found capital structure to be negatively related with financial performance. Again, it provides evidence that the wealth of shareholders' is significantly determined by the amount of fund invested/contributed in the business by shareholders.

4. Conclusion
Capital structure plays a critical role in financial performance of firms, hence capital structure decision remain one of the mainstream in firms management practice capable of affecting firms performance positively or negatively. This study determined how financial performance of oil and gas companies is influenced by capital structure decision. Accordingly, the study concluded that financial performance is independent of capital structure as companies prefer internal financing before resorting to any form of external funds because internal funds incur no flotation costs and require no additional disclosure of proprietary financial information that could lead to more severe market discipline and a possible loss of competitive advantage.

5. Recommendations
Based on the result of the analysis, the following recommendations are put forward for consideration and implementation by companies' management:
- Firm's management should establish a debt-equity mix capable of improving return on assets notwithstanding the measurement of capital structure measure adopted. Internal financing should constitute the larger fraction of working capital.
- Oil and gas companies should fund their operations with more of equity capital as it significantly influence shareholders' wealth. This could be from sale of firm's share to the public or right offering.

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