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CAPITAL STRUCTURE AND FIRMS PERFORMANCE IN OIL AND GAS AND MANUFACTURING COMPANIES IN EMERGING AND DEVELOPED COUNTRIES

EYONG, JOSEPH UBI
Department of Banking and Finance
Faculty of Management Sciences
University of Port Harcourt
Choba, Port Harcourt

And

EMEKA OKRERKE (PhD)
Department of Banking and Finance
Faculty of Management Sciences
University of Port Harcourt
Choba, Port Harcourt

Abstract

This research work examined capital structure and firm performance in oil and gas sector as well as manufacturing sector in emerging and developed economies. The study conceptualized developing economies using the Nigerian case study while the developed economies are conceptualized using the United Kingdom. The study employed a quarterly data sourced from the stock exchange market between the periods 2004 to 2019 under the panel frame work. We measure capital structure using long and short term debts along with total equity while firm performance was assessed using returns on asset. The study randomly selected 7 oil and gas sector and 20 manufacturing firm. The Study employed panel unit root test, Koa panel co-integration, panel regression and panel granger causality test. From the estimation, findings reveal that equity financing and long -term debt been one of the components of capital structure seems to exhibit a positive correlation on performance of oil and gas sector in Nigeria while short term debt exhibited negative and insignificant correlation on performance of oil and gas firm in Nigeria. In the developed country however, all the proxies for capital structure exhibited positive and appreciable relationship on firm performance for both oil and gas and manufacturing sector.

Introduction

Background to the Study

Firms' main objective is to always maximize profits and minimize cost at the same time. These objectives are always taken into consideration when they search for resources to finance their investments. Therefore, we can say that financial managers in a bid to maintain the firm's competitiveness make decision regarding the capital structure. According to Plung and Mishra (2016) for firms to survive and meet with challenges in today's market, management of firms

have to decide on related or unrelated diversification. If related diversification is the option, then good returns would be availed which would minimize risk but if unrelated diversification is selected option it may have negating impact on firm's value. These diversification procedure or technique aid firms in expanding business operations and get optimal profit.

Firms could use internal finance (Equity) or external finance (Debt) when sourcing for finance. Most companies mix (Equity and Debt) to form the capital structure.

Variables descriptions explain every parameter involved in the model like **it** is assessed by earnings prior to tax and interest divided by asset. Return on asset shows general performance of firm and entire earnings of the firms which supposed to shareholder and debt holders. Return of asset was utilized to assess performance of firm.

Long –term debt is generally referred to as company's loan and other liabilities that will not become due within one year of balance sheet date.

Short-term debts are also called current liabilities. It is a firm's financial obligation that is expected to be paid off within a year. Equity is the difference between what a business is worth (Assets) minus what the business owes on it (Debts). This is the total quantum of debt owned by a firm. This is conceptualized in billions.

Modigliani and Miller are among first scholars to present definition of capital structure which firms utilize equity for operation of company. Jensen and Mackling after Modigliani and Miller propounded agency cost theory which reflect and display existing conflict between business handlers and business-owners and also existing conflict between business-owners and debtors.

The main goal of this paper is to investigate capital structure and performance of firms in oil and gas and manufacturing sectors in emerging and developed economy from 2009 to 2019.

Statement of the Problem

Nigeria being an oil producing country and also with a lot of manufacturing companies, made it extremely importance to look into how financing decisions are made and how these decisions affect firm's performance. It is generally believed that firms could use internal financing or external financing or a mix of the two since it is key in controlling the company's operation. Various researchers have employed different estimation tools to envisage the essence of capital structure in company's operation not much has come out with appropriate results suitable to sustain the emerging economy such authors among others include Adekunle (2010), Dada and Ghazali (2012) and Iorpev and Kwanum (2012).

Therefore, this work will use sophisticated econometric tools to analyses the performance of capital structure and firm performance in oil and gas and manufacturing sector in an emerging and developed economy: such tools among others include but not limited to multiple regression analysis, co-integration techniques, unit root etc.

Objective of the Study

The main objective of this paper is to empirically investigate possible connections and impact of capital structure on performance of companies in oil and gas and manufacturing sector in emerging and developed economy. The study specifically seeks:

i. To examine the nexus between long term debt and returns on asset of oil/gas and industrial sector in emerging economies
ii. To investigate the link between short term debt and returns on asset of oil/gas and industrial sector in emerging economies
iii. To access the relationship between total equity and returns on asset of oil/gas and industrial sector in emerging economies
iv. To examine the relationship between total debt and returns on assets on oil and gas and industrial sector in emerging economies.

Research Questions

i. To what extent does long term debt enhance returns on asset of oil/gas and industrial sector in emerging economies?
ii. Does short term debt determine returns on asset of oil/gas and industrial sector in emerging economies?
iii. What is the extent of relationship between total equity and returns on asset of oil/gas and industrial sector in emerging economies?
iv. To what extent does total debt influence returns on assets of oil/gas and industrial sector in emerging economies.

Statement of Hypotheses

Based on the research questions formulated above, we formulate our research hypothesis in its null form thus:

Ho_1: Significant relationship does not exist between long term debt and returns on asset of oil/gas and industrial sector in emerging economies

Ho_2: There is no significant link between short term debt and returns on asset of oil/gas and industrial sector in emerging economies

Ho_3: Total equity does not significantly influence returns on asset of oil/gas and industrial sector in emerging economies

H_{o4}: Significant relationship does exist between total debt and returns on assets of oil/gas and industrial sector in emerging economies

Significance of the Study

The results from this study cannot be over emphasized as it is of great importance to shareholders, agents, investors, researchers, financial analysts and members of the academia who have vested interest in understanding the impact of capital structure on firm performance in oil and gas and manufacturing sector in emerging and developed economy as it will expose the mind of readers since we are in a world that continuously evolves. The country at large will also benefit from this work as the term been studied if not properly tackled will lead to companies failing which will lead to loss of jobs (unemployment issues) and in the long run the country mighty be in disarray.

Scope and Limitation of the study

This study focuses on oil and gas and manufacturing sectors in the emerging and developed economy. It covers such performance metrics as ROA and profit margin as against capital structure which is proxy by Long-term Debts, Short-term Debt and total Equity for the

period 2004 to 2019 with a particular reference to central bank of Nigeria (CBN). Oil and gas and manufacturing sector are our focus for study.

The rest of this paper is organized into three sections. The first section contains the introduction of the study, the second has the theoretical and empirical review and the third considers the methodology.

Theoretical Framework

The term capital structure has been defined by so many scholars and even the academia and they all boil down to the same meaning (i.e they have one and the same meaning). There are few theories which form standpoint for capital structure.

Modigliani and Miller Theory (1958 – 1963)

Modigliani and Miller in a seminar on capital structure took into consideration certain assumptions like perfect capital market, homogenous expectations, no taxes and no transaction expense. The capital structure insignificance theory was equally propounded by which they maintain that possible connections between capital structure and capital expense is not relevant which imply that when debt is raised, it does not have impacts on cost of capital.

MM further introduced new work which maintains that capital expense has impact on capital structure and in long run impacts on value of such firm with tax assumption being considered. He stated and maintained that borrowing give tax benefit because interest are deducted from tax and is give tax shield and will minimize cost of debt and performance of firm will be maximized.

Agency cost Theory

Agency cost theory propounded by Jensen and Mackling's discusses on conflicting interest that exists between business-owners and business-handlers which points out their disparity in goals and also disparity in tolerance to risk. The conflict that is paramount to shareholders is that agents (managers) should not invest free money in unbeneficial projects.

Berle and Means (1932) who were first proponents of agency cost theory concept submits that continual dilution on equity ownership in large corporations, will result in equity and control been separated which will give managers opportunity to pursue their personal goals instead of those of the shareholders. Wangi et al (2014) asserts that debt financing is to restrict the tendency of the professional manager towards opportunistic behaviour for personal gain.

Trade-off Theory

This is considered as extension of MM theory and posits that for firm to attain or sustain optimal capital structure, there must exist appreciable trade-off among some influence of firms and taxes, agency expense and bankruptcy expense etc. this concept supposed that firms selected debts level to achieve certain balance among benefits from interest tax shield with expense associated to future monetary distress or with present monetary inflexibility.

Traditional theory of Capital Structure

This theory is hinged on usually supposition and belief that debt capital is less expensive than equity capital therefore firms seeking or opting to increase its value with borrowing would have to do that to realistic level. The underpinning assumption is that expense on debt stays

unchanged until an appreciable level is attained then it would increase and finally fall immediately external monetary source is introduced.

The theory affirms that value or worth of firm will never be the same at different capital structure level

The Pecking order Theory

This theory is arising due to Asymmetric information. It maintains that firms have two key means for funding their monetary needs which are either internal also called equity or internal also called debt. The theory claims that firms will prefer to use equity funding like excess money assets or retained money than external funding. If internal funding is insufficient to fund projects, firms may or may not source external funding but if they do, to minimize additional expense of asymmetric information, managers would choose between different debt sources. First firms would prefer suitable debt leverage and then issue preferred stock etc.

Conceptual Framework

Capital structure is perceived as means through which firms fund its operations and advancement through utilization of several funding various. The company's ability to carry out supposed needs of their business-owners is linked with capital structure (San and Heng 2011).

Nigerian business industry has existed from colonial times till date. These industries transformed over these years with some characteristic like ownership features of firms, companies size, market structure and nature of product. Hence it becomes crucial or necessary for Nigeria based firms and firms beyond to fund their operations and grow if they must play principal part in creating value added and income in form of earning or profit.

Monetary measures includes Return on investment, residual earning, earnings per share, return on asset, dividend yield, price earnings yield, price earnings ratio, growth in sales, market capitalization as was reported by Babosa and Louri (2005).

In January/February 2004 the media and Nigeria senate committee on petroleum issue were awash by logged ahead between CBN and NNPC over alleged 10billion naira incompatible account which is was not yet paid into CBN account by NNPC. This kind of monetary features, recklessness and situation is defies traditional theory. Therefore in firms where there are no painstaking utilization of fund particularly the petroleum firms, borrowed funds may not positively impact on such firm's performance due to wastage, corruption and misappropriation. We could therefore conclude that leverage negatively impact on firm's performance. The performance of Nigeria based manufacturing sector was enhanced because funds were utilized painstakingly as mentioned by Ikpefen and Enahuro (2007). Nigeria brewery as case study.

Review of Related Literatures

Tolulopea Ikpefen and Olokoyo (2015) investigated capital structures impact on performance of some Nigeria based firms from 2003 to 2013 using panel data analysis, fixed impact estimations and data from six petroleum firms operating within Nigeria, they uncovered that negative association exists between performance of these firms and leverage whereas positive relationship was uncovered between the other three explanatory proxies. They then inferred that management of these firms should depend more on equity funding when financing their ventures.

Seetanah, et al (2014) examined capital structure impact on performance of firms based in Mauritian which are named their official market, they employed static and dynamic panel data in identifying firm's performance determinants and their outcome revealed that the main performance determinants of firms comprised of capital structure, companies size, business risk and exchange rate.

Berger and Bonaccorsi (2006) examined dual relationship which existed between firms performance and leverage using banking industry based in U.S and the assessors employed were profit efficiency to assess agency expense and they uncovered that higher leverage is linked to sound firm performance which corresponds to agency expense theory.

Adekunle (2010) investigated capital structure impact on monetary performance of firm using OLS on thirty non-monetary firms named in NSE from 2001 to 2007 and he noticed that capital structure of these firms is embedded in or more of debt ratio.

Yinusa et al (2019) employed dynamic panel procedure on panel data for over hundred listed non-monetary firms operating in Nigeria and equally utilized double stepped generalized technique of moments estimation procedure which showed persistence nature of dependent variable employed. And their result indicated that an appreciable connection existed between capital structure and performance of firm performance when debt funding is appreciably and discreetly utilized.

Chadha and Sharma (2016) examined impact of capital structure of monetary leverage on monetary prowess of firm using 422 named firms in Indian manufacturing sector for 10 years period that ranged from 2003 to 2004 and 2012 -2013. They utilized ratio analysis along with panel data and finally uncovered that monetary leverage do not impact on monetary prowess of firms when ROA is used as parameter but that negating and appreciable connection exists when ROE was utilized as monetary performance parameter.

Ogebe, Ogebe and Alewi (2014) researched on capital structure impact on performance of firms based in Nigeria from year 2000 to 2010 by firms classifying firms in highly and lowly geared companies. They employed static panel analysis and fixed impact regression estimation and uncovered that leverage is notable determinant of performance of firm and significant and negating connection was noticed between performance and leverage.

Dada and Ghazali (2016) examined capital structure and performance of Nigeria based firms using 100 non-monetary firms that are named in NSE from 2010 to 2014. Panel data technique was utilized in analyzing their data while Tobin's Q and ROE were utilized. They uncovered that assets turnover positively and appreciably associate with Tobin's Q while risk showed negating and appreciable connection with Tobin Q.

Ali et al (2012) examined capital structures impact on profit capability of petroleum firms in Pakistan using regression analysis on some randomly picked firms within time period of 10years. And they discovered that there were appreciable and positive effect on profit capability of these firms by capital structure whereas individual analysis showed that it is not appreciable because every firm had their personal capital structure.

Abbedi and Abu-Rub (2012) researched on impact which capital structure has on performance of Palestinian based monetary institutions using MRM analysis on data sourced from eight listed banks on PSE and they uncovered that positive linkage exists between market efficiency leverage.

David and Oloronfemi (2010) examined capital structure impact on business performance in firms based in Nigeria using panel data and they uncovered that positive linkage exists between EPS and leverage ratio and between DPS and leverage ratio.

Salawu (2007) investigated empirical analysis on capital structure for some selected named firms in Nigeria from 1990 to 2004 using panel data analysis and they noticed that leverage negatively associate with profit capability and that collateral influence every bank borrowing procedure in Nigeria both in short and long term bases.

Vatavu (2015) inspected on possible impact of capital structure on monetary performance for over 196 firms named in Bucharest stock exchange within time period of 2003 to 2010 using cross section regression.

Salim & Yadav (2012) inspected capital structure of some firms operating in Malaysian using panel data technique on over 230 Malaysian named firms within time period of 1995 to 2011.

Saputre, Azem and Anggraeni (2015) researched on impact of capital structure on performance of forms in monetary sector and named in Indonesia stock exchange within time period of 2009 to 2019 using panel data procedure and their result revealed that capital structure negatively impacted on performance of firms assessed using ROA and that these monetary sectors firm employ high leverage in funding their operations.

Lorpev and Kwanum (2012) examined possible connection between capital structure and performance of manufacturing firm named in NSE from 2005 to 2009 using MRA and proxy for performance of firm were ROA and profit margin while capital structure proxy selected were long-term debts/total asset, short-term debts/total asset and total debt/ equity. They uncovered that short-term debts/total assets showed insignificant negating relation with ROA and profit margin and therefore inferred that capital structure is never main performance determinant.

Nassar (2016) inspected capital structures impact on monetary performance of industrial companies operating in Turkey using over 13o industrial firms named on ISE using MRA and indicators like ROA, ROE and EPS as well as debt ratio. They discovered that negative and appreciable relationship existed between performance of these firms and capital structure.
Iavorskyi (2013) inspected possible impacts of capital structure on performance of firms using 16 Ukraine based firms within time period of 2001 to 2010. And they uncovered that negating connection between leverage and performance prowess of these firms which is inconsistent with free money flow and trade-off theories.

Hassan et al (2014) researched on possible impacts of capital structure on performance prowess of Bangladesh based firms which are named in BSE from 2007 to 2012 using pooling data regression technique and they uncovered that positive and appreciable connection existed between EPS and short-term debt and equally that negating and appreciable linkage exists on long-term debt; and finally inferred that capital structure negatively impacts on performance of firms which align with pecking order theory.

Methodology

Research Design

Because of the nature of this research work, quasi experiment research design was used because the element of the research design is not largely within the control of the researcher.

Consequently, the study design conforms to basic econometrics. In the cause of the study, we adopted and modified the empirical model used in Guajarati (2006).

Population of the study

The sample size is 7 (seven) oil and gas companies and (ten) manufacturing companies from emerging and developed economy between the periods 2004 to 2018. The data sources include company annual statement, OPEC and World Bank. Similarly, because of the nature of this study we limit our analysis to Nigerian oil and manufacturing firms. Nigeria is part of the emerging market family of countries as it recently joined the BRICS nations. We limit our analysis to firms this country and used their result for systematic generalization after controlling for organizational culture as fixed effect factor.

Model Specification

Given the above underpinning theories and empirical review above, we build and specify capital structure and firm's performance in oil and gas and manufacturing sector in the emerging and developed economy using multiple regression analysis to express the relationship between variables used in the study. We model the variables as follows:

$$ROA_{it} = \beta_0 + \gamma_i + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 TE_{it} + e_{it}$$

Where:
ROA = Return on Asset
LTD = Long-term Debt
STD = Short-Term Debt
TE = Total equity
e_{it} = Error Term

Estimating tools for Analysis

Panel Unit Root Tests

One of the econometric problems in empirical analysis is non-stationarity of time series data. Spurious regression and inconsistent results are likely to be obtained if we run a regression in the level form while the variables in the model are non-stationary and therefore inference based on such data are likely to be meaningless. Due to this economic problem, the variables in the models will be subjected to panel unit roots using the Fisher unit root tests.

The fisher unit root test, is based on the null hypothesis that each individual time series contains a unit root against the alternative that each time series is stationary. It can be mathematically model thus:

$\Delta Y_t = \propto_o + \sum \propto_1 Y_{t-1} + \sigma_1 \Delta Y_{t-1} + \mu_1$

I=1

Where, ΔY_t is the different at first instance.

Kao Co-integration

This model is developed by Engle and Granger to estimate the long run equilibrium relationship among two or more variables.

Yt = μ + yt-1 + ∑t

Δxt = kx-1 i=1 t1Δxt-1 + μ_0 + μde + ∑

Panel Least Square

We estimated a panel Least Square to enable us ascertain the short run dynamics of the time series under investigation. To ensure that our estimate exhibit the best linear unbiased result, we further introduces the random and fixed effect estimate as this will enable us make comparison between the panel regression, random effect and the fixed effect estimate thus choosing the most appropriate model. It must be noted that the essence of random effect is to solve the problem of ignoring some specific effect which would have led to bias result in the panel regression. Hence, an individual specific intercept is introduce into the model which is assumed to be random while the fixed effect gives the best consistence estimates but the individual specific parameters will be ignored.

The decision rule state that if the Breusch Pagan LM test is greater and 5% alpha level, it means that the variance across entities are not zero which suggest that the pooled ordinary least square is appropriate hence, we reject null hypothesis and if otherwise, we do not reject. Finally, the Hausman test will be used in choosing the most appropriate model between the random effect and the fixed effect. The null hypothesis states that the random effect is preferred while the alternative hypothesis is that the fixed effect is at least as consistent and preferred (Momodu and Monogbe 2018)

Panel Granger Causality Test

This model explains the cause –effect link between the variables; it was developed by an English man called Granger. The essence of granger causality test is to ascertain the cause and effect of each variable on the others.

Data Estimation and Analysis

Unit Root Test for Stationarity

In econometrics, the assumption of stationarity of variables is crucial for the properties of the OLS estimators. The test for stationary is the underpinning for cointegration to be conducted. Granger (1969) expressed that most time series variables are non-stationary hence using non-stationary variable in model has the tendency towards to spurious regression. We, therefore, summarize the result presented below in table 4.2, which shows that at various levels of significance (1%, 5% and 10%), the variables were stationary, in point of fact, all the variables are integrated of order zero, I(0), hence, all the variables in this study are stationary.

Table 1a: Augmented Dickey- Fuller (ADF) Unit Root Test of Stationarity Results for Model of Manufacturing Firms

Test	**Variables**	**Levels**		**Differences**		**Order of Integration**
		t- statistic	Critical	t- statistic	Critical	
ADF	ROA	-6.807115	-3.447963			I(1)
	LTD	-7.131372	-3.448012			I(1)
	STD	-8.828649	-3.447866			I(1)
	TD	-18.98720	-3.447914			I(1)
	TA	-6.668889	-3.447866			I(1)
	EQ	-7.894351	-3.447914			I(1)

***Note**: * Implies significance at 1%*

***Source:** Author's E-Views 10 Computation based on data from Nigerian Stock Exchange*

Table 1b: Augmented Dickey- Fuller (ADF) Unit Root Test of Stationarity Results for Model of Oil & Gas Firms

Test	Variables	Levels		Differences		Order of Integration
		t- statistic	Critical	t- statistic	Critical	
ADF	ROA	-5.647760	-3.447963			I(1)
	LTD	-5.216245	-3.448363			I(1)
	STD	-5.427936	-3.448012			I(1)
	TD	-5.159085	-3.448062			I(1)
	EQ	-4.977354	-3.448012			I(1)

***Note**: * Implies significance at 1%*

***Source:** Author's E-Views 10 Computation based on data from Nigerian Stock Exchange*

Analysis of Empirical Results

$$ROA_{it} = \beta_0 + \gamma_i + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 TE_{it} + e_{it}$$

Where ROA = return on assets, LTD=long term debt, STD = short term debt and TE = total equity. Further, β_0 = intercept term, β_1, β_2 and β_3 are betas that capture the effects of debt-equity ratio, debt-capital employed ratio and equity-capital employed ratio respectively. Also, γ_i is the model heterogeneity parameter, which captures the effects of unobserved firm-specific factors such as organization's culture and management style? The subscript, i, indicates the cross-sectional dimension of the panel data while the subscript,t indicates the time series dimension.

There are three panel data methods; pooled regression, fixed effects and random effects, that can equally estimate the above model. The differences in these methods lie in the role of the heterogeneity parameter, γ_i. If γ_i is assumed to play no important role in our model (i.e. $\gamma_i = 0$), then, the pooled regression method would provide the most plausible estimates of the relationship between capital structure variables and return and assets. On the other hand, if we assume that γ_i has direct influence onROA_{it} ($\gamma_i \neq 0$), and also correlates with LTD, STD andTE, then, the fixed effects method would provide the most plausible results. However, if γ_i is assumed not to correlate with LTD, STD andTE, then the random effects method would give the best results. All these imply that specification tests would be used to determine which method is best for our panel dataset. To this end, we would employ both Likelihood ratio and Hausman tests.

Pooled Descriptive Statistics

Table 1 shows some summary statistics that describes the basic characteristics of the data. As we can see that the mean of return on assets (ROA) is -9.40%, indicating that the selected quoted firms, on average, recorded losses between 2009 and 2018. The standard deviation of 108.61 shows that ROA recorded very high variability over the same period. The skewness and Kurtosis coefficients of -5.20 and 40.24 show that the distribution of ROA across the firms is negatively skewed and leptokurtic. This implies that firms whose ROA is lower than the average are more than those whose ROA is higher than the average, and that some firms' ROA are much higher than others. Thus, there are outliers in the ROA series. Similarly, debt/equity ratio (LTD), debt to capital employed (STD) and equity to capital employed (TE) averaged 1.04, 0.32 and 0.83 respectively with relatively low variability. Further, while DE ($S = -0.73$) and DCE ($S = -5.39$) both have a negatively skewed distribution, ECE

($S = 4.89$) has a positively skewed distribution. All distributions are leptokurtic($K > 3$), indicating the presence of outliers. Thus, to minimize the effects of these outliers, the empirical estimation would be based on the logarithm of the variables. Overall, none of the study variables has normal distribution as indicated by the Jarque-Bera statistics with almost zero p-value, which clearly rejects the normal distribution assumption in all cases.

Variable	Mean	Std. Dev.	Skewness (S)	Kurtosis (K)	Jarque-Bera	p-value
ROA	-9.40	108.61	-5.20	40.24	4362.07	0.0000
DE	1.04	1.69	-0.73	3.99	9.23	0.0098
DCE	0.32	2.47	-5.39	38.68	4053.18	0.0000
ECE	0.83	0.43	4.89	34.53	3180.77	0.0000

Table 1: Descriptive Statistics

Empirical Analysis

Table 2 shows the estimation results for the three panel data models. Panel A shows the estimated beta coefficients while Panel B shows the goodness of fit statistics.

Variable	Pooled Regression	Fixed Effects	Random Effects
Panel A: Beta Estimates			
Constant (β_0)	1.5897 (0.0000)	2.1177 (0.0000)	1.7315 (0.0000)
LTD (β_1)	0.7836 (0.4385)	-0.4748 (0.6407)	0.4895 (0.5968)
STD (β_2)	-0.8966 (0.3452)	-0.0368 (0.9667)	-0.6296 (0.4635)
TE (β_3)	-0.3431 (0.7932)	-0.2842 (0.8268)	-0.2535 (0.8338)
Panel B: Goodness of Fit Statistics			
R^2	0.0986	0.3580	0.0432
$\bar{R}^2$	0.0411	0.2357	-0.0178
F-ratio	1.7150 (0.1767)	2.9281 (0.0108)	0.7080 (0.5520)
Durbin-Watson	1.1148	1.2843	1.1680

Table 2: Panel Data Results; brackets contain p-values

From Panel a of Table 2, we can see that all the beta estimates are associated with a p-value that is higher than the conventional levels in all cases, hence, debt to equity ratio, debt to capital employed ratio and equity to capital employed ratio, none has a significant effect on return assets. However, for the direction of their relationships, we can see that while β_2 and β_3 both have a negative sign for all models, the sign of β_1 is mixed. This indicates that ROA is negatively related to both LTD and TE, while its relationship with DE depends on which of the three models is a plausible description of the relationships being studied.

From Panel B of Table 2, we can see that the $\bar{R}^2$ is 0.0411, 0.2357 and -0.0178 for pooled regression, fixed effects and random effects models respectively. This implies that the proportion of the variance of ROA that is due to the joint influence of LTD, STD and TE is

relatively high for the fixed effects model but very low and even negative for pooled regression and random effects models. Further, while the F-ratio for both the pooled regression (p-value = 0.1767) and random effects (p-value = 0.5520) models is insignificant, that of the fixed effects model (p-value = 0.0108) is significant at 5% level. Also, the Durbin-Watson statistic for the fixed effects model (DW = 1.2843) is higher than that of the pooled regression (DW = 1.1148) and random effects models (DW = 1.1680). All these suggest that fixed effects model provides much better estimates of connections between capital structure variables and ROA.

Table 3 shows the model selection tests for the plausible panel data model. First, the Likelihood ratio test compares the pooled regression model with the fixed effects model under the null hypothesis that the former is a better description of the study relationships. As Table 3 shows, the test statistic is associated with a p-value of 0.0040, indicating that the test is highly significant. Thus, the null hypothesis that the pooled regression model is a better description of the relationship being studied is strongly rejected. Second, the Hausman test compares the random effects model with the fixed effect model under null hypothesis that former is a better description of the study relationships. As Table 3 shows, the associated p-value of the test statistic is 0.0239, indicating that the test is significant at 5% level. Thus, the null hypothesis that the random effects model is better than the fixed effects model is rejected. These results, therefore, provide sufficient evidence that the fixed effects model is most plausible description of relationship between capital structure variables and ROA of these selected firms in Nigeria.

Test	**Test statistic**	**p-value**
Likelihood Ratio	17.3068	0.0040
Hausman	9.4500	0.0239

Table 3: Model Specification Tests

Table 4 shows the estimated fixed effects which represent the unobserved firm-specific factors that affect the return on assets directly and also correlates with the capital structure variables. As this Table shows, we can see that all the companies have positive fixed effects, except Union Dicon whose unobserved coefficient is negative. This implies that for most of the selected firms, the unobserved factors such as organization's culture, management style etc. have positive and highly significant effects on return on assets. However, the effect of these latent factors is highest for Nestle, followed by Guinness and then Unilever.

Heterogeneity	**COMPANY**	**Effect**
γ_1	Japul	28.12864
γ_2	Eterna	17.30270
γ_3	Conoil	-98.88792
γ_4	Oando	11.81986
γ_5	Capital oil	18.01400
γ_6	MRS	8.539325
γ_7	NAOC	15.08340

Table 4: Estimated fixed effects

In this section, we analyzed the estimated Ordinary Least Squares (OLS) model; hence, it is presented in the table 4.2 below;

Table 4.2a: Short Run Estimated Result showing the relationship between Capital structure measures and Return on Assets of Manufacturing firms in Nigeria

Variable	Coefficient	t-Statistic	Prob.
C	11.26025	10.36190	0.0000
LTD	3.12E-07	1.492974	0.1363
STD	2.50E-07	1.397899	0.1630
TD	-8.02E-10	-1.140998	0.2546
TA	-2.08E-07	-1.170603	0.2425
ET	1.94E-07	1.087942	0.2773
R-squared	0.62857		
Adjusted R-squared	0.61523		
F-statistic	2.14144		
Prob(F-statistic)	0.0060004		
Durbin-Watson stat	1.63110		

Source: Author's computation from EViews 10 Computation

Table 4.2b: Short Run Estimated Result showing the relationship between Capital structure measures and Return on Assets of Oil and Gas firms in Nigeria

Variable	Coefficient	t-Statistic	Prob.
C	4.698032	20.98064	0.0000
LTD	2.66E-08	1.387318	0.1662
STD	-1.74E-08	-1.580477	0.0149
TD	1.05E-08	1.140204	0.2550
EQ	-4.47E-08	-2.335687	0.0201
R-squared	0.726066		
Adjusted R-squared	0.701530		
F-statistic	2.422117		
Prob(F-statistic)	0.004798		
Durbin-Watson stat	1.71689		

Source: Author's computation from E-Views 10 Computation

Discussion of Findings

The summary statistic shown in table 4.2 is highly impressive, as it shows a coefficient of determination with a significant evidence of uncorrelated error term. Also, the overall regression was significant at 5% for estimated model of oil and gas firms.

The Influence of Capital Structure Measures on firm's Performance in manufacturing firms in Emerging and Developed Economy

In order to ascertain the impact of capital structure on firm's performance of ROA of Manufacturing firms in emerging and developed economy, we consider the role of capital structure measures of long-term debt, short-term debt, total debt, total assets and equity on ROA of manufacturing firms. The examined firms include: Berger Paints Plc., Flour Mills Plc., DN Meyer Paints Plc., CAP Plc., Dangote Cement Plc., Lafarge WAPCO Plc., and May & Baker Plc.

The estimated regression coefficient shows that long term debt of manufacturing firms (LTD) shows a positive coefficient, which indicates that the amount of debt a manufacturing firm obtains with maturity exceeding one year, the higher its performance (profitability). It is noteworthy that manufacturing firms in emerging and developed economies takes on debt to obtain immediate capital. This result supports that long-term debt is veritable source for obtaining funds to finance manufacturing business operations in emerging and developed economies. This also suggests that increasing the amount of long term debt tends to impact positively on the rate of return on investment of manufacturing firms.

Also, this research revealed positive relationship between short term debt and performance of manufacturing firms as measured by Return on Assets. This relationship showed positive beta coefficient, this suggest that debts with less than one-year maturity tends to have positive relationship with ROA of manufacturing firms. This implies that a rise in debts to manufacturing sector will lead to increase in return on assets as a measure for firm performance. The examined condition of total debt to manufacturing firms cumulatively showed a negative sign on return on asset Whereas, total asset of manufacturing firms exerts a negative relationship with return on assets. By total assets, we mean the assets owned by corporate entity that has economic value whose benefits can be derived in the future.

However, assets are classified into liquid assets and illiquid assets. Thus, the negative sign exhibited in the model depends on the level of liquidity of the assets. Equity of these manufacturing firms however showed a positive influence on return on assets of manufacturing firms. This also insinuates that a more shareholder's equity tends to enhance the financial performance of manufacturing firms of an economy especially in a developing economy.

The Influence of Capital Structure Measures on firm's Performance in Oil and Gas firms in Emerging and Developed Economy

Secondly, this study sought to investigate the nature of influence of capital structure measures on financial performance of oil and gas firms in emerging and developed economies. Therefore, the study considered the nature of stimulus of capital structure measures of long-term debt, short-term debt, total debt, and equity on return on assets of selected quoted oil and gas firms. The examined firms include Oando Plc., MRS, Conoil, Forte Oil, Total Plc., Mobil, Eternal Oil, Capital Oil, RAK Unity and JA Paul Oil & Maritime Plc.

The estimated regression coefficient shows that long term debt of oil and gas firms (LTD) reveals a positive coefficient, which suggests that the amount of debt quoted oil and gas firm obtains with maturity exceeding one year, the higher its performance (profitability). It is evident that oil and gas firms in emerging and developed economies take on debt to obtain immediate capital. This result supports that long term debt is veritable source for obtaining funds to finance oil and gas business operations in emerging and developed economies. This also suggests that increasing the amount of long term debt tends to impact positively on the rate of return on investment of oil and gas firms.

On the contrary, the study showed a negative relationship between short term debt and performance of oil and gas firms as measured by Return on Assets. This relationship showed a negative beta coefficient, this suggest that debts with less than one-year maturity tends to have a negative relationship with return on assets of oil and gas firms. This implies that a rise in short-term debts to manufacturing sector will lead to decrease in return on assets as a measure

for firm performance. Furthermore, the examined condition of total debt to quoted oil and gas firms cumulatively showed a positive sign on return on asset. Contrary to the estimated model for manufacturing firms, equity of this oil and gas firms however showed a positive and significant influence on return on assets of oil and gas firms. This also insinuates that a more shareholder's equity is a remarkable form of capital that enhances the financial performance of oil and gas firms in emerging and developed economies.

Test for Perfect Multicollinearity

This is a test for exact collinearity. It focuses to detect whether the explanatory variables are highly correlated. The outcome from multicollinearity test is offered underneath:

Test for Multicollinearity

Table 4.3: Multicollinearity Test

	LTD	STD	TD	EQ
LTD	1.000000	0.917428	0.953047	0.860224
STD	0.917428	1.000000	0.957042	0.865151
TD	0.953047	0.957042	1.000000	0.905502
EQ	0.860224	0.865151	0.905502	1.000000

Source: Author's computation from EViews 10

From the above table 4.3, apart from the diagonal, the pairwise correlation coefficient between variables are not unity, which implies they are less than one, this infers that the explanatory variables have no perfect relationship.

ARDL Bounds Tests for Cointegration

Table 4.4: Bounds Test Critical Table for Cointegration Analysis

Critical value	**Lower Bound Value**	**Upper Bound Value**
1%	3.15	4.43
5%	2.55	3.68
10%	2.26	3.34

Source: *Pesaran et al. (2001)*

Table 4.5a: ARDL Bounds Test for Cointegration Analysis of Capital Structure in Manufacturing Firms

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	25.14812	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	369		Finite Sample: n=80	

		10%	2.303	3.154
		5%	2.55	3.606
		1%	3.351	4.587

Source: Author's computation from EViews 10

Table 4.5b: ARDL Bounds Test for Cointegration Analysis of Capital Structure in Oil and Gas Firms

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	23.90008	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Actual Sample Size	366		Finite Sample: n=80	
		10%	2.303	3.22
		5%	2.688	3.698
		1%	3.602	4.787

Source: Author's computation from EViews 10

Given a computed F statistics Value of 25.14812 and 23.90008 respectively for estimated capital structure equations for manufacturing and oil & gas firms, the results of the bounds co-integration test therefore establish that the null hypothesis against its alternative is rejected at the various significance level. The computed *F*-statistic for the respective equations are greater than the lower and upper critical bound values at 1%, 2.5%, 5% and 10% respectively, thus indicating the existence of a steady-state long-run relationship among the variables. This suggest that the various selected variables have a long run relationship with financial performance of manufacturing and oil & gas firms in emerging and developing firms.

Tests of Hypotheses

The study formulated two hypotheses;

Hypothesis One:

The relationship between Capital structure and performance of Manufacturing firms in emerging and developed economies.

H_{o1}: No significant relationship was noticed between capital structure variables (Long-term Debts, Short-term Debts, Total Debts, Total Assets, Equity) and ROA of manufacturing firms.

Decision Rule/Criterion:

Reject null hypothesis (H_{o1}), if t-computed is larger than the critical t-value at 0.05 level of significance, otherwise, we do not reject.

This hypothesis intends to ascertain possible relationship between capital structure and performance of selected firms over certain time period. From estimated linear specification

model, the relationship is statistically insignificant as model gives a ρ<0.05 at 5% significance level, thus null hypothesis is discarded while alternate hypothesis is accepted.

Hypothesis Two:

The relationship between Capital structure and performance of Oil & Gas firms in emerging and developed economies.

H_{o2}: No significant relationship between capital structure variables (Long-term Debts, Short-term Debts, Total Debts, Total Assets, Equity) and ROA of oil and gas firms.

Decision Rule/Criterion:

Reject null hypothesis (H_{o2}), if t-computed is larger than the critical t-value at 0.05 level of significance, otherwise, we do not reject.

This hypothesis intends to ascertain relationship between capital structure and performance of certain oil and gas firms over certain time period. From estimated linear specification model, relationship is statistically insignificant as model gives a ρ<0.05 at 5% significance level, thus null hypothesis is discarded while alternate hypothesis is accepted.

Discussion Conclusion and Recommendation

Discussion

This research work examined capital structure and firm performance in oil and gas sector as well as manufacturing sector in emerging and developed economies. The study conceptualized developing economies using the Nigerian case study while the developed economies is conceptualized using the United Kingdom. The study employed a quarterly data sourced from the stock exchange market between the periods 2009 to 2018 under the panel frame work. We measure capital structure using long term debt, short term debt and total equity while firm performance is measured using returns on asset. The study randomly selects 7 oil and gas sector and 10 manufacturing firm. The Study employed panel unit root test, Koa panel co-integration, panel regression and panel granger causality test. Finding shows that the pool regression estimate is the most appropriate model.

This decision is made following the recommendation of the Breusch LM test which is used in determining the most appropriate model. Hence, our hypotheses were tested using the pooled regression estimate. From the estimation, findings reveals that equity financing and long term debt been one of the component of capital structure seems to exhibit a positive correlation on performance of oil and gas sector in Nigeria while short term debt exhibited a negative and insignificant correlation on performance of oil and gas sector in Nigeria. Conversely, all the proxy for capital structure in the manufacturing sector fail the test of hypothesis as they all exhibited a P-value greater than 0.05 level of significant. In the developed country however, all the proxies for capital structure exhibited a positive and significant relationship on firm performance for oil and gas as well as manufacturing sector.

Conclusion

Having examined the effect of capital structure and firm performance in oil and gas sector as well as manufacturing sector using panel data between the periods 2009 to 2019, Study concludes that capital structure proxies in united kingdom is a better match to predict firm performance in the oil and gas sector as well as manufacturing sector while, capital

structure proxies in the Nigerian context does not significantly promote firm performance in Nigeria.

Recommendation

Therefore, this study recommended that it is important that oil and gas sector as well as manufacturing sector should intensify their efforts to rely on internally generated funds to finance their operational activities (pecking order theory). Even where external debt would be used, the oil and gas sector as well as manufacturing sector should search for low interest-bearing loans so that the tax shield benefit of the loan will exceed the financial distress associated with it.

Furthermore, the Government of Nigerian should liaise with the stakeholders in the manufacturing sector in order to develop bond market to enables the firm raise long-term debt so as to avoid overreliance of short-term debt which is associated with high cost.

Finally, a reduction in firm debt ratios will enable them avoid some of the negative tendencies that is associated with increasing financial leverage such as bankruptcy cost and financial distress.

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Appendices

Pooled Regression Results

Dependent Variable: LROA
Method: Panel Least Squares
Date: 08/06/19 Time: 06:52
Sample: 2009 2018
Periods included: 10
Cross-sections included: 6
Total panel (unbalanced) observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.589728	0.262141	6.064396	0.0000
LTD	-0.343183	1.301937	-0.263594	0.7932
STD	0.783676	1.002850	0.781449	0.4385
TE	-0.896612	0.940338	-0.953499	0.3452

R-squared	0.098668	Mean dependent var	2.032422
Adjusted R-squared	0.041136	S.D. dependent var	0.932463
S.E. of regression	0.913083	Akaike info criterion	2.731205
Sum squared resid	39.18487	Schwarz criterion	2.882721
Log likelihood	-65.64573	Hannan-Quinn criter.	2.789104
F-statistic	1.715008	Durbin-Watson stat	1.114865
Prob(F-statistic)	0.176736		

Fixed Effects Results

Dependent Variable: LROA
Method: Panel Least Squares
Date: 08/06/19 Time: 06:43
Sample: 2009 2018
Periods included: 10
Cross-sections included: 6
Total panel (unbalanced) observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.117718	0.292226	7.246838	0.0000
LTD	-0.284242	1.290767	-0.220212	0.8268

STD	-0.474855	1.009980	-0.470162	0.6407
TE	-0.036834	0.876228	-0.042037	0.9667

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.358042	Mean dependent var	2.032422
Adjusted R-squared	0.235764	S.D. dependent var	0.932463
S.E. of regression	0.815165	Akaike info criterion	2.587932
Sum squared resid	27.90874	Schwarz criterion	2.928843
Log likelihood	-56.99228	Hannan-Quinn criter.	2.718204
F-statistic	2.928102	Durbin-Watson stat	1.284316
Prob(F-statistic)	0.010832		

Likelihood Ratio Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.393901	(5,42)	0.0115
Cross-section Chi-square	17.306894	5	0.0040

Cross-section fixed effects test equation:
Dependent Variable: LROA
Method: Panel Least Squares
Date: 08/06/19 Time: 06:50
Sample: 2009 2018
Periods included: 10
Cross-sections included: 6
Total panel (unbalanced) observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.589728	0.262141	6.064396	0.0000
LTD	-0.343183	1.301937	-0.263594	0.7932
STD	0.783676	1.002850	0.781449	0.4385
TE	-0.896612	0.940338	-0.953499	0.3452

R-squared	0.098668	Mean dependent var	2.032422
Adjusted R-squared	0.041136	S.D. dependent var	0.932463

S.E. of regression	0.913083	Akaike info criterion	2.731205
Sum squared resid	39.18487	Schwarz criterion	2.882721
Log likelihood	-65.64573	Hannan-Quinn criter.	2.789104
F-statistic	1.715008	Durbin-Watson stat	1.114865
Prob(F-statistic)	0.176736		

Random Effects Results
Dependent Variable: LROA
Method: Panel EGLS (Cross-section random effects)
Date: 08/06/19 Time: 06:21
Sample: 2009 2018
Periods included: 10
Cross-sections included: 6
Total panel (unbalanced) observations: 51
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.731545	0.270402	6.403591	0.0000
LTD	-0.253584	1.201820	-0.211000	0.8338
STD	0.489573	0.919067	0.532686	0.5968
TE	-0.629662	0.851954	-0.739079	0.4635

Effects Specification	S.D.	Rho
Cross-section random	0.241009	0.0804
Idiosyncratic random	0.815165	0.9196

Weighted Statistics

R-squared	0.043239	Mean dependent var	1.525131
Adjusted R-squared	-0.017830	S.D. dependent var	0.855219
S.E. of regression	0.869275	Sum squared resid	35.51502
F-statistic	0.708031	Durbin-Watson stat	1.168041
Prob(F-statistic)	0.552050		

Unweighted Statistics

R-squared	0.085775	Mean dependent var	2.032422
Sum squared resid	39.74537	Durbin-Watson stat	1.043719

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.450054	3	0.0239

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
STD	-0.284242	-0.253584	0.221709	0.9481
LTD	-0.474855	0.489573	0.175376	0.0213
TE	-0.036834	-0.629662	0.041949	0.0038

Cross-section random effects test equation:
Dependent Variable: LROA
Method: Panel Least Squares
Date: 08/06/19 Time: 06:39
Sample: 2009 2018
Periods included: 10
Cross-sections included: 6
Total panel (unbalanced) observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.117718	0.292226	7.246838	0.0000
LTD	-0.284242	1.290767	-0.220212	0.8268
STD	-0.474855	1.009980	-0.470162	0.6407
TE	-0.036834	0.876228	-0.042037	0.9667

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.358042	Mean dependent var	2.032422
Adjusted R-squared	0.235764	S.D. dependent var	0.932463
S.E. of regression	0.815165	Akaike info criterion	2.587932
Sum squared resid	27.90874	Schwarz criterion	2.928843
Log likelihood	-56.99228	Hannan-Quinn criter.	2.718204
F-statistic	2.928102	Durbin-Watson stat	1.284316
Prob(F-statistic)	0.010832		