CAPITAL STRUCTURE AND FIRMS VALUE IN NIGERIA: DOES INDUSTRY HETEROGENEITY HOLD?

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Abstract

This study was conducted to investigate the role of industry as a mediator on the capital structure-firm value nexus among listed Oil/Gas firms and Banking firms in the Nigeria Exchange Limited. Panel data spanning 21yrs (2000-2020) was subjected to empirical analysis. Capital structure was measured using leverage ratio, equity ratio and interest expense while market based measure was used to measure firm value (Tobin's Q). The panel least square was used for data analysis along with other preliminary tests. Competition and technology were used as measures for industry factors while an industry dummy was used to capture industry differences. Findings showed that leverage and equity had a significant positive relationship with firm's value while interest expense had a negative but significant relationship with firm value. Finally, leverage was found to change with the different industries and positively impacted firm's value. However, the findings showed that competition and technology did not change with industry thus proving that these factors (technology & competition) are not significant in explaining possible changes in the capital structure of sampled firms. The study concluded that capital structure has a positive significance on firm's value while industry differences have a significant impact on this relationship. The study recommended that firm's should ensure that the proportion of leverage to equity do not grow to unsustainable levels to avoid the result of diminishing effect on firms value.

Keywords: Capital Structure, Firm's Value, Nigeria Exchange Limited, Industry Factors, Competition

JEL Classification: G32, L25, L16, L1

1. INTRODUCTION

Finding the best mix of financing resources that will maximize return without affecting shareholder interest is known as capital structure decisions (Fatoki, Wafula & Waweru, 2021). A firm's capital structure is germane in ascertaining the long-run survival and sustainability of firms. The capital structure refers to a company's overall sources of funding, which can range from retained earnings to stock and debt financing. Due to its significance in corporate performance, capital structure has been regarded as one of the most essential decision in firm finance policy (Segun, Olusegun, Akindutire & Thomas, 2021). Mutua and Atheru (2020) noted that capital structure is a framework that describes how equity and leverage are used to finance a company's activities in order to maximize shareholder returns given a certain amount of risk. The amount of debt and equity utilized to finance the firm's assets is significant since it will influence corporate financing decisions. Ganiyu, Adelopo, Rodionova and Samuel (2019) noted that capital structure, according to agency cost theory can influence firm's value positively or negatively.

The finance literature is filled with hot debates as to how firm's value responds to capital structure of firms. Plethora of studies has showed various relationships between capital structure and firm value (Ajibola, Wisdom & Qudus, 2018; Akingunola, Olawale & Olaniyan, 2018) with some studies finding a positive/negative relationship while others found no relationship whatsoever. The debate on how firms financing mix (capital structure) impact on firm's value nexus can only be brought to bay by investigating the influence of industry heterogeneity on the linkage between capital structure and firm's value. Brigham and Houston (2007) assert that the operations of firms in a particular industry differ from that of another. For example, firms operating under different industries have different fixed cost and this is expected to shape their capital structure. According to Li and Islam (2019), factors like competition, technology growth opportunities and operating strategies can influence the financing need of these firms and by extension their capital structure. Not until recently, only few studies have empirically investigated the nexus between capital structure and firm value between industries. Recent studies like that carried out by Al-slehat (2020), Ishari (2016), Jeleel and Olayiwola (2017) and Igbal (2018) have investigated the impact of capital structure on specific industries. Result findings have shown varying results viz a viz negative, positive and in some case no relationship. Some of these studies have also found one source of financing to outperform the other and all these give credence to industry specific attributes.

However, the study of Li and Islam (2019) have examined how industry specific factors affect capital structure decision although the study was limited to the Australian market. This gives room for more empirical investigations to examine how the capital structure - firm's value nexus differs between industries based on industry specific factors. Thus, this study intends to examine the role of industry heterogeneity in moderating the relationship between capital structure and firms

values among Oil/Gas sector and Banking industry firms listed on the Nigeria Exchange Limited.

Hence, the rest of the paper is structured as: section 2 is literature review, section 3 is data and methods, section 4 is results and discussion of finding and section 5 is conclusion and recommendations.

2. LITERATURE REVIEW

2.1. CONCEPT OF FIRM VALUE

According to Lawal (2014), firm value is the net worth of a firm at a given period of time. In the event of a takeover or merger, the firm's value is what is considered and not its performance, since the former shows the current net worth of the Firm. Susanti and Restina (2018) view firm's value to be the perception of investors about firms that are often associated with stock. Hoque, Hossain and Hossain (2014) assert that firm value and investor's confidence have a positive relationship, implying that as firm value increases investor overall confidence is increased. Emeakponuzo (2014) defined firm value to be an indicator that portrays how the firm is performing in the market. Kaplan and Norton (1996) see firm value to be the sum of all the security holders, debt holders, preferred shareholders and majority interest.

2.2. CONCEPT OF CAPITAL STRUCTURE

The mix of debt and equity use to finance firms operations are known as the capital structure. It is defined as the sum of a company's liabilities, equity, and obligations, as well as how they are, arranged, and designed to shape the firm's value. In this sense, debt refers to the borrowing of funds to supplement the firm's activities. Debt can either be short termed or long termed depending on the particular finance need of the firm. On the other hand, equity refers to the issuance of shares to investors in exchange for financial assistance (Segun, Olusegun, Akindutire & Thomas, 2021). Examples of long term debt are bonds, preference shares and debentures while examples of short term debt are bank loans and other money market instruments.

Since capital structure has been perceived to influence firm's value, firms must then decide the equity-debt mix that maximizes firm's value. The selection of optimal capital structure is an important strategic financial decision for every finance manager. A capital structure that reduces cost and maximizes firm's value is what has been termed an "optimal capital structure." An optimal capital structure can be said to have been achieved when the weighted average cost of capital (WACC) is at its minimum (Udobi-Owoloja, Gbajumo-Sheriff, Umoru, Babatunde & Illimezekhe, 2020). Capital structure optimality has to do with finding the right balance between debt and equity. An equilibrium where the cost of debt is at minimum and benefit of equity is at maximum has been considered as an optimal structure.

2.3. INDUSTRY SPECIFIC FACTORS AND CAPITAL STRUCTURE-FIRM VALUE NEXUS

The kind of capital structure adopted by firms has been modelled to be a function of some industry specific factors to include competition, growth opportunities, technology, capital, risk, and operating cost (Vetavu, 2015; Kumar, Colombage & Rao, 2015; Bradley, Jarrell and Kim, 1984). According to Scott and Martin (1975), financial needs of firms vary across industries, and the study found differing degree of financial leverage between mining and aerospace industries.

Factors peculiar to an industry may help to capture the variance in the financing mix among firms in different industries. Mackay and Philips (2005) assert that the difference in capital structures can be attributed to the use of different level of technology and risk adopted by the firm. Similarly, Miao (2005) found that companies that operate in industries with high growth in technology, high solvency and fixed cost used lesser debt. According to Li and Islam (2019), factors peculiar to industries can significantly utter the capital structure of firms. Economic characteristics and competitive dynamics can influence the operating strategies of firms (Wahlen, et al, 2011). Logically, we can also note that firms in industries with incentive competition are associated with low profitability, therefore, less leveraged. In addition, it is also logical that firms that operate in industries having high growth in technology will have a very low fixed cost and by extension low leverage. However, industries with low growth opportunities (industries with matured firms) will have a positive relationship with leverage.

2.4. EMPIRICAL REVIEW

Many studies has investigated the influence of capital structure decision on firm's value/performance. For example, Mackay and Phillips (2005) examined the importance of industry to firm-level financial and real decisions for the period spanning 1981-2000. The study employed the multiple regression analytical technique to capture the relationship between variables. Findings revealed that industry effect had a significant influence on the firm's financing decision. Additionally, the position of the firm in the industry also affected it financing mix while leverage was higher in concentrated industries.

Degryse, Goeij and Kappert (2012) investigated how the capital structure of small firms responds to firm and industry characteristics for the period 2003-2005 using data from Dutch firms. Findings showed that matured firms retained earnings which reduced their debt level. However, smaller firms had higher leverage because financing gap. Findings also showed that industry effect (internal & external) is significant in explaining the capital structure of small firms. Ogbulu and Emeni (2012) investigated how capital structure determines firm's value in the Nigeria with 2007 as the base year. The OLS method was employed to carry out analysis and result indicated that equity capital was not significant in explaining firm's value. On

the contrary, long term debt was found to be fundamental in explaining changes in firm value during the period of study.

Birru (2016) used Ethiopia data which spanned 2011 – 2015 to investigate the relationship between capital structure and financial performance using Multiple Regression technique. The findings show that the relationship between capital structure and financial performance was negative although some other measures were found to be positive. Abdul-Rahman and Ahmad (2016) explored the link between capital structure and firms performance in the Nigerian cement industry. The multiple regression technique was used and findings showed that capital structure has a significant impact on financial performance measures (ROW & ROA). Ajibola, Wisdom, and Qudus (2018), examined how financial performance responds to changes in capital structure using panel regression technique. Findings showed a positive significant impact of capital structure (long -term debt to total debt) on financial performance (ROE) while the relationship between short-term debt and ROA was observed to be insignificant (LTD, STD, and TD). Oyedokun (2018) studied how capital structure affects the financial performance of Nigerian manufacturing enterprises from 2009 to 2016. The instruments of analysis were descriptive statistics and regression. The study discovered that capital structure had both statistically significant and non-significant effects on performance metrics.

The relationship between capital structure and firms performance of non-financial firms in Nigeria was investigated by Akingunola, Olawale, and Olaniyan (2018). The study spanned the period 2011–2015. The Pooled, fixed effect, and random effect models were employed to analyze the panel dataset. Findings showed that when ROA was used as the dependent variable, some capital structure measure (short term debt/total asset and long term debt/total asset) was negative while long term debt/total asset and short-term debt/total asset was positive with ROE as the dependent variable.

Li and Islam (2019) demonstrated the importance of firm-specific and industry-specific factors in the leverage decision of Australian firms using the ordinary least square method using data spanning 1999-2012. Findings showed that firm level factors varied between industries. Further findings showed that industry factors had an indirect and direct link with firm's capital structure. Almahadin and Oround (2019) explored the nexus between firm's value and firms financing mix as well as ascertaining the moderating role of profitability. The study was conducted in the Jordanian Stock exchange for the period 2013-2017. The study employed the use of fixed effect model under the OLS framework. Result findings indicated that the relationship between debt ratio and ROA was negative and significant. The interaction between profitability and debt ratio was also found to significantly influence firm's value.

Nguyen et al (2020) examined the impact of capital structure on firm's value in Vietnam for the period 2014-2018. The study employed the use of multiple regressions to capture the relationship between variables. The findings indicated that

capital structure has a positive significant relationship with firm value during the period of study. Tajudeen, Obafemi, and Oluseye (2021) investigated the impact of capital structure on business performance using data from selected listed pharmaceutical companies in Nigeria from 2009 to 2017. The study used panel regression analysis, and findings showed that only firm size was significant and negatively related to pharmaceutical enterprises' performance using return on asset, according to the fixed effect results in the two models.

Olaoye et al (2021) investigated the capital structure and corporate performance of Nigeria's publicly traded pharmaceutical businesses. The study was conducted over a six-year period (2012-2017) and was evaluated using descriptive analysis, and the panel least square techniques along with the fixed and random effect models. Findings showed that Short-term debt has an insignificant positive effect on return on equity, long-term debt had a negative and significant effect, and firm size had an insignificant negative effect on return on equity. According to the findings, substantial amounts of debt have serious implications on the value of pharmaceutical firms operating in Nigeria.

Premise on prior studies reviewed, we observe that only few studies have attempted to investigate the role of industry as a mediator between the relationship of capital structure and firm value. However, no known empirical work has been done in the context of the Nigeria firms. Hence, this paper investigates the role of industry on the linkage between capital structure and firms value.

2.5. THEORETICAL CONSIDERATIONS

Various theories has been promulgated to support or refute the *raison d'être* of capital structure of firms. Notable among these theories is the irrelevance of capital structure promulgated by Modigliani and Miller (1958). The theory asserts that capital structure has no impact on firm's value under certain assumptions. These assumptions include the absence of taxes, presence of information symmetry, no transaction or bankruptcy cost. According to the theory, the weighted cost of capital (WACC) is unchanged given changes in capital structure. Hence, the value of the firm is determined not by the capital structure but by the efficient use of firm's assets and free cash flow discounted with related rate of return. However, this theory does not meet real life conditions and has prompted other theories aiming to ascertain the relevance of capital structure to firm's value.

Myers and Majluf (1984) promulgated the pecking order theory which happens to be another notable theory explaining the relevance of capital structure. According to the theory, firms rank their finance sources in order of cost. For example, firms prefer to use internal source of finance because it is less costly before sourcing for external funds. However, firms will prefer to take up more leverage and will resort to equity as the last resort given its high cost of servicing. The pecking order theory is slightly related to the trade-off theory in that the pecking order theory (POT) and the trade-off theory (TOT) believe that firms operate at their optimal

leverage. However, the TOT differs in that it focuses on the trade-off between debt benefits (tax shield) and its cost (bankruptcy). Hence, as firms increase their debt to benefit from tax shield, the risk of bankruptcy increases and this prompts shareholders to increase their risk premium given they are taking more risk. Therefore, the WACC increases and the value of the firm begin to decline should the firm take up more debt. This study is thus anchored on the TOT given that the level of debt and equity used by a firm depends on certain factors internal and external to the firm which can affect its optimal capital structure. This study considers competition and technology as factors that are external to firms operating in a particular industry. Therefore, following the TOT we expect that a proper mix of leverage and equity will impact on firm's financial performance.

3. DATA AND METHODS

Longitudinal research design would be adopted by this study. This study would use historic time series data of capital structure variables and other variables for a period of 21years (2000-2020). The samples of this study are firms listed in the oil/gas sector and the banking sector of the Nigeria Exchange Limited. All thirteen (13) firms listed in the oil/gas were taken as the sample while 11 banks were randomly selected from the thirteen (13) listed banks using lottery method.

3.1. MODEL SPECIFICATION

This study investigates the role of industry heterogeneity in explaining the linkage between capital structure and firm value. To this end, this paper adapts the model of Li and Islam (2019) whose study investigated the role of firm and industry specific factors as determinants of capital structure. Their model was given as:

$$\text{Leverage}_{it} = \alpha + \beta_1 MB_{it-1} + \beta_2\ TANG_{it-1} + \beta_3\ PROFIT_{it-1} + \beta_4\ SIZE_{it-1} + \text{Industry effect} + \text{Year Effect} + \varepsilon_i \quad (1)$$

Where MB (Market Breadth), TANG (Asset tangibility), PROFIT (profitability) and SIZE (firm size) are all firm specific factors after controlling for industry and year effect. However, our study modifies equation one to include leverage, equity and interest expense along with other perceived industry factors. Our model is thus given as:

$$TQ = f(LEV, EQTY, INEXP, COMP, TECH) \quad (2)$$

Re-specifying equation 2 into its econometric form we have;

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \varepsilon_{it} \quad (3)$$

We re-specify equation (3) to account for industry factors and we obtain:

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_4 COMP_{it} + \delta_5 TECH_{it} + \varepsilon_{it} \quad (4)$$

We therefore include an industry dummy to capture the effect of industry heterogeneity on the relationship between capital structure and firm value and we re-specify equation (4) as:

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_5 Industry_{it} + \varepsilon_{it} \quad (5)$$

Equation (5) is modified to include variables of capital structure plus interaction with industry dummy. The coefficient of the interaction term estimates the differences in the effects of capital structure on firm value given the interaction of industry and various capital structure components.

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_5 (Industry * LEV_{it}) + \varepsilon_{it} \quad (6)$$

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_5 (Industry * EQTY_{it}) + \varepsilon_{it} \quad (7)$$

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_5 (Industry * COMP_{it}) + \varepsilon_{it} \quad (8)$$

$$TQ_{it} = \alpha_{0it} + \delta_1 LEV_{it} + \delta_2 EQTY_{it} + \delta_3 INEXP_{it} + \delta_5 (Industry * TECH_{it}) + \varepsilon_{it} \quad (9)$$

From the static trade-off theory, leverage and equity are expected to have a positive relationship with firm value. Interest expense is expected to be double signed judging from the fact that increased interest expense can imply lower tax obligations given that interest is tax deductible, hence higher value for the firm. However, higher interest rate will imply that the value of debt has risen which will increase the equity premium of the firm, hence lower value. Suffice it to say that following the dynamic trade-off theory, capital structure is expected to change given difference in industry and other related industry factors.

3.2. DESCRIPTION OF VARIABLES

- **Firm Value:** Firm value can be defined as the measure of a company's total market value. It is the amount to which investors. Firm value is the sum of its entire total asset. This study measures firm value using market based approach. The Tobin's Q indicator of firm value is used in this study.
- **Leverage (LEV):** This is the use of debt to carryout investment. Firms that are highly indebted are known as highly leveraged firms. This study measures leverage as long term debt/total asset
- **Equity Ratio (EQTY):** This is used to measure the amount of equity used to finance a firms assets. This study measures equity ratio as the ratio of shareholders fund (equity) to total asset
- **Interest Expense (INEXP):** Interest expense is the total amount of interest paid to service debt. This study measures interest on debt as the natural log of total interest paid on debt.

- **Competition (COMP):** Competition **in this** study is used to refer to the extent to which certain firms in the industry dominate the entire market. A highly competitive market (where few firms dominates the market) can be termed to be monopolistic. In this study we proxy competition by using concentration ratio.
- **Technology (TECH):** This is used to refer to the sophistication of technology used in the industry. Firms with high physical technology incur high fixed cost and this can impact on capital structure and firm value. This study measures technology using capital-labour ratio.

3.3. METHOD OF DATA ANALYSIS

Prior to estimation of the specified models, various statistical tests would be applied to our study variables to ensure they are fit for analysis. Such tests include descriptive statistics, correlation, panel based unit root (Levin, Lin & Chu, Im, Pesaran & Shin) and co-integration test (Pedroni) would be used for this study. The panel least square is used to capture the nexus between capital structure and firm value. This technique is suitable for our study as it is able to avoid multicollinearity problems which are peculiar to time series analysis. The Hausmans test would be used to test for appropriate models that best suit our study i.e random model versus fixed effect models.

4. RESULTS AND DISCUSSION

4.1. DESCRIPTIVE STATISTICS

Table 1. *Descriptive Statistics*

Variables	Mean	Std.Dev	Skewness	Kurtosis	P.value
TQ	1.15	0.80	5.74	45.38	0.00
LEV	0.89	0.61	7.58	78.2	0.00
EQTY	0.17	0.25	-3.28	22.10	0.00
INEXP	6.97	1.14	-1.70	6.40	0.00
COMP	0.63	0.07	0.47	1.57	0.00
TECH	38.66	30.32	1.64	6.96	0.00

Source: Authors computation (2022)

The background characteristics of the dataset are presented in table 1. Findings showed that the average market value of the firms sampled is 1.15 with a standard deviation of 0.80. Leverage is observed to average at 0.89 indicating that the firms on an average were highly levered. The standard deviation is a little high showing that there was minimal deviation of leverage across the samples. Equity ratio is observed to be averaged at 0.17 indicating that 17% of shareholders fund was used to finance its asset. Equity ratio is found to be lower than debt usage. This confirms the pecking order theory that asserts that companies will prefer to employ cheaper source of financing before using more expensive ones. Interest expense is observed to b high also and this stems from the high debt level of sampled firms.

Competition is averaged at 0.63 indicating that on the average both industries were less competitive given that the market is highly concentrated. Technology (capital-labour ratio) is averaged at 38.66 with a very high standard deviation. This implies that the firms have high variability in terms of technology usage. On distribution, findings showed that most of the series are positively skewed (TQ, LEV, COMP, TECH) indicating that they are heavily tailed to the right. Other series (EQTY, INEXP) were found to be tailed to the left indicating values lower than the series mean. Findings from table 1 showed that the series are all platykurtic in behaviour which evidence a peaked curve. However, all series are found to not to be normally distributed as they failed the test of normality as indicated by the Jarque Berra.

4.2. PANEL UNIT ROOT

Table 2. *Panel Unit Root Test*

Variables	**Levin, Lin and Chu Test (assuming common unit root process)**					**Im, Pesaran and Shin (assuming individual unit root process)**				
	Levels		**1st Diff**			**Levels**		**1st Diff**		
	Stat	**Prob**	**Stat**	**Prob**	**Order**	**Stat**	**Prob**	**Stat**	**Prob**	**Order**
COMP	-4.44	0.00	-2.70	0.00	I(0)	-0.12	0.44	-5.06	0.00	I(1)
EQTY	-1.69	0.04	-4.83	0.00	I(0)	-1.25	0.10	-3.67	0.00	I(1)
INEXP	-11.07	0.00	-5.45	0.00	I(0)	-3.44	0.00	-2.78	0.00	I(0)
LEV	-122.27	0.00	-151.72	0.00	I(0)	-21.65	0.00	-28.29	0.00	I(0)
TECH	-37.85	0.00	-28.68	0.00	I(0)	-4.65	0.00	-5.59	0.00	I(0)
TQ	194.8	0.00	128.18	0.00	I(0)	-27.8	0.00	-34.28	0.00	I(0)

Source: Authors computation (2022)

Findings from table 2 show the stationarity of variables at levels and first difference. Two assumptions were used in testing the presence of unit root. The first assumption is a common unit root process while the second is based on the assumption of individual unit root process. Findings show that all series are stationary at levels given the assumption of a common unit root process. However, the finding is quite mixed when we assume individual unit root process. We find that some are stationary at levels and others after first difference. We proceed to estimate their long run form since all the series are stationary even after first difference.

4.3. PANEL CO-INTEGRATION

Table 3. *Panel Co-Integration*

Pedroni cointegration test ****common AR coefficients (within dimensions)***				
	Statistics	**p-value**	**Weighted statistics**	**p-value**
Panel v	-0.76	0.77	-3.68	0.99
Panel rho	5.07	1.00	5.11	1.00
Panel PP	-9.31	0.00**	-3.52	0.00**

Panel ADF	-2.40	0.00**	-2.26	0.01*
**individual AR coefficients (between dimensions)*				
Group rho	6.98	1.00		
Group PP	-6.67	0.00**		
Group ADF	-1.27	0.10		

Source: Authors computation (2022). ****** and * connote significance at the 1% and 5% level of significance.

Table 3 presents the two variants of panel co-integration; the presence of co-integration implies an existence of long run relationships between the variables. The null hypotheses of no co-integration are tested at the 5% level of significance. The Pedroni test supports the existence of co-integration among variables. Similar trend is found when we assume between dimensions (individual autoregressive coefficient), the results indicated the evidence of co-integration as indicated by the statistical significance of both the PP and Group ADF statistics.

4.4. REGRESSION ANALYSIS

Different models are estimated to capture the impact of capital structure on firms value by controlling for industry effect. Findings from table 4 show that the coefficient of leverage is positive (1.07) and significant (0.00). This shows that shocks in leverage will trigger deviations in TQ by 1.07. The co-efficient of leverage is observed to be dominantly positive and significant all through the models estimated. EQTY is also observed to be dominantly positive (0.02) in all models although its significance is observed to vary. This also shows that a shock in EQTY will cause a positive response from TQ by the strength of its co-efficient *ceteris paribus*. However, INEXP is observed to be predominantly negative given all models estimated and is found to be significant in all models except model 6. COMP is observed to have a positive co-efficient (0.37) although not significant (0.61). This indicates that COMP is not significant in explaining changes in firms TQ. On the other hand, TECH is found to be negative (-0.00) and not significant (0.52). This suggests that firms with TECH limits firms TQ. However, the magnitude of impact is observed to be minimal showing that such effect is very small.

Table 4. *Regression Summary (TQ as dependent variable)*

Variables	**Model 1 (REM)**	**Model 2 (REM)**	**Model 3 (REM)**	**Model 4 (FEM)**	**Model 5 (REM)**	**Model 6 (REM)**	**Model 7 (REM)**
Leverage	1.07 (0.00)**	1.06 (0.00)**	1.07 (0.00)**	1.01 (0.00)**	1.06 (0.00)**	1.07 (0.00)**	1.07 (0.00)**
Equity	0.02 (0.83)	0.02 (0.84)	0.02 (0.84)	0.39 (0.00)**	0.30 (0.09)	0.02 (0.83)	0.02 (0.84)
Interest expense	-0.125 (0.00)**	-0.10 (0.03)*	-0.10 (0.05)*	-0.23 (0.00)**	-0.15 (0.00)**	-0.10 (0.06)	-0.12 (0.00)**
Competition		0.37 (0.61)					
Technology		-0.00 (0.52)					

Industry effect			0.12 (0.44)				
Industry*LEV				0.88 (0.00)**			
Industry*EQTY					-0.52 (0.03)*		
Industry*COMP						0.17 (0.41)	
Industry*TECH							-0.001 (0.52)
Constant	1.05 (0.00)**	0.71 (0.31)	0.84 (0.05)*	1.5 (0.00)**	1.27 (0.00)**	0.82 (0.05)*	1.09 (0.00)**
R-Sq	0.70	0.70	0.70	0.80	0.70	0.70	0.70
F-Stat	192.5 (0.00)	114.4 (0.00)	143(0.00)	36.3(0.00)	148.17(0.00)	144(0.00)	144(0.00)
D.Watson	1.46	1.46	1.47	1.63	1.49	1.47	1.46
Hausman Test	Chi^2 = 0.86(0.83)	Chi^2 = 4.6(0.45)	Chi^2 = 2.7(0.42)	Chi^2 = 14.9(0.00)	Chi^2 = 1.8(0.76)	Chi^2 = 2.7(0.59)	Chi^2 = 0.80(0.93)

Source: authors computation (2022). P-values are in parentheses () while ** and * signifies significance at the 1% level and 5% level

The study includes industry dummy to capture the effect of industry difference in the relationship between capital structure and firms value. Findings from table 4 show that there was no significant impact of industry difference on firms value although the relationship is positive. However, when industry dummy is interacted with LEV we observe that it is positive (0.88) and significant (0.00). This indicates that firms LEV changes with respect to industries they belong. The magnitude of impact is also observed to be very high. We also observe that when this interaction was included in the equation (industry*LEV), the coefficient of R-Square jumped (0.80>0.70) which indicates that industry effect accounts for changes in leverage in firms. We also observe that on introduction of the interaction term (industry*LEV), the co-efficient of EQTY increased significantly and became statistically significant. Further analysis reveals that the interaction of industry and equity ratio (industry*EQTY) is negative and significant. A unit change in the interaction term will cause a negative impact on firm value. However, result also showed that the interaction between industry and competition (industry*COMP) and technology (industry*TECH) is not significant.

On diagnostics, findings show that all the models have a high R-square which denotes that the explanatory variables accounts for high variability in the dependent variable. The F –stat are found to be very high which indicates that the models are significant overall. The D.Watson test showed that the models have negative autocorrelation, however the findings are found to be robust and incisive.

4.5. SHORT AND LONG – RUN HETEROGENEOUS PANEL BASED ANALYSIS

The pooled Mean Estimator (Panel ARDL) is conducted to enhance the robustness of our findings. This particular method is chosen because of its ability to address endogeneity issues and providing a heterogeneous short-term parameters by allowing the short term parameters to vary although the long-run is constrained to be identical.

Findings showed that in the long run, all variables except EQTY are significant. Specifically, leverage is observed to be positive and significant which confirms previous findings obtained in the panel least square (PLS). EQTY is equally found to be negative and not significant, thus indicating that EQTY has no significant effect on firm's value. Interest expense is observed to be negative and significant which confirms the findings obtained from the PLS. These findings buttress the fact that our result is robust to the econometric techniques used. It is also observed that COMP is positive in the long run. However, the variable TECH was dropped from the model because of its high collinear relationship with COMP which produced singular matrix problems.

Table 5. *Pooled Mean Group (PMG)*

Method: ARDL **Model Selection Criteria: AIC** **Model Selected: ARDL 1,1,1,1**			
	Coeff	**t-stat**	**P-value**
Long Run Equation			
INEXP	-0.06	-4.72	0.00**
EQTY	-0.08	-0.64	0.51
LEV	1.57	17.61	0.00**
COMP	0.47	2.91	0.00**
Short Run Equation			
COINTEQ01	-0.19	-2.20	0.00**
D(INEXP)	-0.11	-0.94	0.32
D(EQTY)	-0.14	-0.28	0.77
D(LEV)	0.21	0.54	0.55
D(COMP)	-1.91	-1.48	0.14

Source: Authors computation (2022) P-values are in parentheses () while ** and * signifies significance at the 1% level and 5% level

The short run estimate showed that 19% of past deviations are corrected in the current period. The error correction term is negative and significant which indicates that the variables equilibrate after minor deviation from short run shock. However, all variables are observed to possess their long run properties although they are observed to be insignificant.

4.6. DISCUSSION

The findings from table 4 show that leverage has a predominant impact on firm's value. The use of debt increases the tax shield of the firm which reduces tax

liability. Being that leverage is cheap source of financing, firms that use debt are more likely to increase their profitability level. This finding follows the pecking order theory that predicts a positive relationship between leverage and profitability. The finding of this study follows the submission of Lawal (2014), Hoque, Hossain and Hossain (2014) whose studies found a positive relationship between leverage and firms value. Secondly, equity ratio was observed to be positive although it was found to be significant only with the introduction of industry dummy. This shows that while equity has the ability to increase firms value, it is not significant as firms usually shy away from the use of equity given it is costly than the use of debt. This again follows the pecking order theory which predicts that debt is usually chosen over equity. Interest expense is observed to be negative and significant all through the models estimated. This shows that higher interest payment negatively impacts firm's value. Although theoretically, interest expense ought to increase firms value through tax deductibility, high interest payment will denote increasing debt level which will raise equity premium. Therefore, as predicted by the trade-off theory, the use of debt will only add value to the firm when the benefit of using debts is greater than the cost. Hence, when firms push across their desired leverage there is bound to be a demising return in firm's value.

Findings also showed that industry has a significant impact in mediating the relationship between firms value and capital structure. As observed from table 4, the R-Square of model 4 improved and the two capital structure components (debt & equity) were significant. The findings of the study demonstrate that leverage and equity changes in respect to industry which shows that firms operating in different industries will most often have different capital structure. However, technology and competition which were used to proxy industry variables were observed not to be significant with firm's value. Findings thus showed that the level of competition and technology did not change with the various industries. This thus implies that competition and technology are not significant industry factors as they are not significant enough to cause changes in firm's capital structure. This finding follows the dynamic TOT that asserts that the capital structure of firms is not static but changes given different factors operating in the firm and industry level. Although this study did not focus on the adjustment of firms to their desired leverage, this study was able to confirm that capital structure changes given industry heterogeneity. This study also confirms the findings of Li and Islam (2019), Mackay and Phillips (2005) whose studies found that industry heterogeneity has a significant role in the capital structure of firms.

5. CONCLUSION AND RECOMMENDATIONS

This study was conducted to investigate the role of industry heterogeneity on the relationship between capital structure and firm's value in Nigeria. To this effect, firms listed in two different industries were sampled so as to demonstrate whether or not capital structure changes in a given firm industries. The oil/gas and banking industry were randomly selected for the study and time series spanning

2000-2020 were used for empirical analysis. From findings of the study, this study confirms the pecking order theory that firms prefer debt to equity source of financing and at the same time confirms the dynamic trade-off theory that capital structure of firm's changes given industry heterogeneity. Specifically, this study concludes that capital structure is positively related with firm's value and industry differences have a significant impact on this relationship. Premise on findings, this study recommends that firm's should ensure that the proportion of leverage to equity do not grow to unsustainable levels to avoid the result of diminishing effect on firms value. Secondly, competitions should be lessened by breaking monopolistic behaviour of dominants firms.

REFERENCES

Ajibola, A., Wisdom, O., & Qudus, O. L. (2018). Capital Structure and Financial Performance of Listed Manufacturing Firms in Nigeria. *Journal of Research in International Business and Management*, 5(1), 81-89

Akingunola, R. O., Olawale, L. S., &Olaniyan, J. D. (2018). Capital Structure Decision and Firm Performance: Evidence from Non-Financial Firms in Nigeria. *Acta Universitatis Danubius*. Œconomica, 13(6).

Almahadin, H., & Oround, Y. (2019). Capital Structure-Firm Value Nexus: The Moderating Role of Profitability. *Finance, Political and Economics*, 11(2), 375-386.

Al-Slehat, Z. (2020). The Impact of Financial Leverage, Size and Asset Structure on Firm's Value. Evidence from Industrial Sector, Jordan. *International Business Research*, 13(1), 109-120.

Birru, M. W. (2016). The Impact of Capital Structure on Financial Performance of Commercial Banks in Ethiopia. *Global Journal of Management and Business Research.*

Degryse, H., Goeij, P., & Kappert, P. (2012). The Impact of Firm and Industry Characteristics on Small Firms' Capital Structure. *Small Business Economics*, 38, 431-447.

El-Maude, J. G., Abdul-Rahman, A., & Ahmad, M. M. (2016). Capital Structure and Firm Performance in the Nigerian cement industry. *Archives of Business Research*, 4(6), 30-44.

Emeakponuzo, D.E. (2014). Non-Financial Performance Measures and Firm Value in Nigeria: What is the link? *British Journal of Economics, Management and Trade*, 4(6), 947-966.

Fatoki, O. I., Wafula, F., & Waweru, G. (2021).Effect of Financial Performance on Capital Structure of Listed Manufacturing Companies in Kenya. **Financial Reviews**, 2(1), 21-31

Ganiyu, Y. O., Adelopo, I., Rodionova, Y., & Samuel, O. L. (2019). Capital Structure and Firm Performance in Nigeria. *African Journal of Economic Review*, 7(1), 31-56.

Hoque, J., Hossain, A., & Hossain, K. (2014). Impact of Capital Structure Policy on Value of the Firm – A Study on some Selected Corporate Manufacturing Firms under Dhaka Stock Exchange. *ECOFORUM*, 3(2), 77-84.

Igbal, U. (2018). Impact of Financial Leverage on Firms Performance. *SEISENSE Journal of Management*, 1(2), 71-78.

Ishari, M. P. (2016). The Impact of Financial Leverage on Firms Value. *International Journal of Advancement in Engineering Technology, Management and Applied Science*, 3(7), 100-104.

Jeleel, A., & Olayiwola, B. (2017). Effect of Leverage in Firms Performance in Nigeria: A Case of Listed Chemicals and Paint Firms in Nigeria. *IOSR Journal of Economics and Finance*, 7(2), 10-20.

Kaplan, R., & Norton, D. (1996). *The Balanced Scorecard: Translating Strategy into Action*. Boston Ma: Harvard Business School Press.

Lawal, A. (2014). Capital Structure and the Value of the Firm: Evidence from the Nigeria Banking Industry. *Journal of Accounting and Management*, 4(1), 31-41.

Li, L., & Islam, S. (2019). Firm and Industry Specific Determinants of Capital Structure: Evidence from the Australian Market. *International Review of Economics and Finance*, 59, 425-437.

Mackay, P., Phillips, G. (2005). How Does Industry Affect Firm Financial Structure? *Review of Financial Studies*, 18(4), 1432-1466.

Miao J.J. (2005). Optimal Capital Structure and Industry Dynamics. *Journal of Finance*, 60(6), 2621-2659

Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory Of Investment. *The American Economic Review*, 48(3), 261-297.

Mutua, L. M., &Atheru, G. K. (2020). Capital Structure and Financial Performance of Companies Listed under Manufacturing and Allied Sector at Nairobi Securities Exchange in Kenya. *Journal of Finance and Accounting*, 4(1), 24-38.

Myers, S. C., &Majluf, N. S. (1984). Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have. *Journal of Financial Economics*, 13(2), 187-221.

Nguyen, T., Nguyen, H., Nguyen, L., Thanh, N., & Le, T. (2020). The Relationship between Capital Structure and Firm Value: Cases of Listed Companies in the Food and Beverages Industry in Vietnam. *Academy of Accounting and Financial Studies Journal*, 24(1), 16-24.

Ogbulu, M., Okanta, S., & Turakpe, M. (2018). Capital Structure and Corporate Financial Performance: Evidence from Nigerian Cements Companies. *Archives of Business Research*, 6(3), 233-244.

Olaoye, C. O., Ayeni-Agbaje, A. R., Alabadan, D. N., & Adedeji, A. Q. (2021). Capital Structure and Corporate Performance of Listed Pharmaceutical Companies in Nigeria. KIU Interdisciplinary. *Journal of Humanities and Social Sciences*, 2(1), 440-443.

Oyedokun, G. E. (2018). Capital Structure and Firm Financial Performance. *International Accounting and Taxation Research Group*, Faculty of Management Sciences. ISSN: 2635-2966

Salamba, J. J. (2015). Impact of Capital Structure on Performance of SMEs in Tanzania: A case of SMEs in Dodoma municipality (Doctoral dissertation, Mzumbe University).

Segun, I. B., Olusegun, I. F., Akindutire, Y. T., & Thomas, O. A. (2021). Capital Structure and Financial Performance: Evidence from Listed Firms in the Oil and Gas Sector in Nigeria. *Econometricia*, 23(2), 13-19.

Susanti , N., & Restiana, N. (2018). What is the Best Factor to Determining Firm Value? *Journal Keyangan dan Perbankan*, 22(2), 301-309.

Tajudeen, K. F., Obafemi, D. S., & Oluseye, M. J. (2021). Influence of Capital Structure on Firms Performance in Nigeria (Evidence from the Pharmaceutical Industry). *Finance and Economics*, 4(3), 21-32

Udobi-Owoloja, P. I., Gbajumo-Sheriff, M. A., Umoru, B., Babatunde, S. A., & Ilimezekhe, D. (2020). Capital Structure and Firm's Profitability: Evidence From Listed Consumer Goods Sector in Nigeria. *Journal of Accounting, Business and Finance Research*, 9(2), 50-56.

Vătavu, S. (2015). The Impact of Capital Structure on Financial Performance in Romanian Listed Companies. *Procedia Economics and Finance*, 32, 1314 – 1322.

Wahlen, J.M., Baginski, S.P. & Bradshaw, M.T. (2011), *Financial Reporting, Financial Statement Analysis and Valuation* (7th Edition), Thomson South-Western