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CORPORATE DEBT POLICY AND FIRM VALUE: NEW EVIDENCE FROM NIGERIA

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ABSTRACT

This study adopts the panel data framework to investigate the relationship between corporate debt policy and the market value of quoted firms in Nigeria using secondary data from the published accounts of sixty (60) companies selected from all the sectors of the economy covering the period from 1990 to 2016. Specifically, the paper examines the effects of short-term debt, long-term debt, debt to equity ratio and total debt stock on market value per share using all the three methods of panel data approach of research methodology namely pooled regression, random effects and fixed effects being supported by likelihood ratio and Huasman tests to justify the selection of an appropriate model. Furthermore we conducted pair wise panel causality tests to establish if there is a reverse effect on debt policy variables from market value per share of the companies. Contrary to the irrelevance theory, there is evidence from the fixed effects results that market value per share has a negative relationship with short-term debt, long-term debt and debt to equity ratio while it has a positive relationship with total debt stock. However, while the effect of short-term debt, long-term debt, total debt stock is highly statistically significant, that of debt to equity ratio is statistically insignificant. The joint influence of the independent variables highly significantly explains as much as sixty one percent (61 %) of the variations in market value per share. Therefore, our conclusion is that a strategic reduction in both short-term and long-term debts is needed to maximize shareholders' wealth in Nigeria.

KEYWORDS: *Corporate Debt Policy, Firm Value, Fixed Effects*

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INTRODUCTION

One of the key principles of sound financial management is to develop a debt policy which would entail establishing parameters for issuing debt and managing the debt portfolio of an organisation. The whole essence of it is to provide guidance that would ensure that debt is issued prudently and cost effective which ultimately leads to sound debt position that preserves the financial stability of the firm. But Modigliani and Miller (1958) assume that markets are perfect and integrated, drawing conclusion that the costs of different forms of capital and invariably the value of a firm are not determined by decisions on how debt and equity are structured to fund a business. This is an indication that market value is calculated using the earning power and risk of the underlying assets of the company independent of the way it finances investments. Thus, rather than financial leverage, the firm's investment decisions have strong implications for its value in the stock market. This however, generated some controversy in view of the position of the authors which seems not have any practical relevance.

However, the argument received considerable criticisms for lacking practical relevance based on the restrictive assumptions which are also acknowledged by the authors themselves. It is in realization of this that Modigliani and Miller (1963) modified their earlier model by including corporate tax which, according to them, has practical relevance. Because interest paid on long-term debt is tax deductible, it provides incentives for the use of debt capital, and the more a firm uses debt, the more its profitability increases. So a levered firm tends to be more profitable than unlevered firm and this reflects on the value of the firm. Thus, firms that are levered have higher market value than firms that use only equity.

From the empirical perspective, the number of studies that have focused on the relationship between capital structure and firm value both in developed and developing countries is also considerable. However, there are conflicting results. Some studies have found empirical support for the irrelevance theory despite its limitations, while others have found evidence supporting the view that capital structure matters. Also, among the latter studies, there also is mixed evidence on the direction of the impact of capital structure on firm value. While some found studies found evidence of positive impact, others found evidence of negative impact.

In Nigeria, the story is not different. However, what appears to be a major gap in the literature is the little consideration of the impact of firm-specific effects such as organizational culture, policies and strategies that are directly unobserved on the relationship between capital structure and firm value. Most of the previous Nigerian studies fail to control these unobserved factors that potentially have impact on firm value both directly and through their interactions with capital structure variables. Hence, this study intends to fill this gap.

The study, therefore, seeks to examine the relationship between corporate debt policy and firm value in Nigeria from 1990 to 2016 under the panel data framework. In particular, the study examines the effects of short-term debts, long-term debts, debt to equity ratio and total debt stock on market value per share for 60 quoted companies selected from 12 sectors in Nigeria. The study also examines whether the unobserved firm-specific effects such as management policies, organizational culture and strategies affect firm market value, and whether these unobserved effects are correlated with capital structure variables.

The rest of the study has the following structure: Section 2 contains literature review. Section 3 describes the data, methods and models used in the empirical analysis. Section 4 contains the empirical analysis and results while in section 5 the results are discussed with conclusion of the study.

REVIEW OF RELEVANT LITERATURE

Modiglianni and Miller (1963) provide the theoretical framework that links debt policy and market value of firm. The authors maintain that the firm can maximize its value through the judicious use of leverage thereby contradicting their earlier proposition that led to the irrelevance theory. Consequently, several alternative theories emerged demonstrating in various ways how the relationship between capital structure and firm value exists. Prominent among them are the trade off theory, the pecking order theory and the agency costs theory all providing explanation for the relevancy of capital structure in the funding of a business.

Pandey (2005) describes the trade off theory as providing a nexus between the effect on profits under debt financing and cost of bankruptcy. Apparently, the cost of capital decreases as the proportion of debt increases until the marginal benefit of further increases in debt declines with increases in debt as the marginal cost of bankruptcy increases. At this point, a trade off emerges which optimizes the overall value of the firm which becomes a suitable benchmark for choosing how much of debt and equity the company desires.

The pecking order theory first appeared in the work of Donaldson (1961) in an attempt to measure the debt capacity of a company to institutionalize sound debt policy but was later popularized by Myers and Majluf (1984). It ranks the sources of funding according to their level of risk and proposes the use of retained earnings as the first resort and new equity as the last resort. Therefore, as reported by Miller (1977) and Pandey (2004) the theory predicts a negative relationship between debt-equity ratio and firm value contrary to the irrelevance theory. Myers (1984) provides further insights on the selection process of a good financing mix using data from a cross section of US non-financial companies. Among the findings are that sixty two percent (62 %) of all expenditure is financed by retained earnings and the bulk of external financing came from borrowing with a maximum of six percent (6 %) left for new stock issues. This is consistent with Hillier et al (2008) showing the application of the pecking order theory by selected firms in four developed economies in the way they raised capital for their businesses between1970 to 1994.

The basis of agency theory as articulated by Jensen (1986) is that managers' interests are not aligned with those of business owners. Just as the trade off theory deals with financing issues, the agency theory underlines debt as a controlling mechanism because the owners are not comfortable injecting more funds in the business as they perceive free cash for managers. As organizations use debt increasingly, the attention of managers ultimately is more required and therefore would result to increase in monitoring costs which is likely to reduce cost of equity. However, when share prices increase, there are capital gains to the shareholders and it would affect the capitalization rate. For instance, if a company devalues an investment fund the price drops and this will reduce the cost of capital. So a fall in share price would lead to loss by an investor while the company pays for possible gain an investor would earn (Shawn et al, 2011).

According to Loncan and Calderia (2013), firm value is optimized at the point where the present value of the marginal benefits of tax shields from debt is equal to the present value of the marginal costs of financial distress. This supports totally the arguments contained in the static trade off theory. The functional relationship between capital structure and firm value is given by:

$$FV = f(L) \quad (1)$$

Where FV is firm value and L is leverage as proxy for capital structure.

Given the above functional expression, they specified the fixed effects model to test firm value with given set of data for capital structure variables shown below:

$$Y_t = \alpha_i + \beta_1 X_{it} + \ldots . \beta_2 W_{it} + e_{it} \quad (2)$$

Where Y is the dependent variable for firm I in time t

Alpha (α) is the firm varying linear coefficient (constant)

Beta (β) is the angular coefficients

X and W are the (independent) explanatory variables and e is epsilon being the residual.

On the basis of these factors they developed profit efficiency equation derived by equity capital ratio to test the agency cost hypothesis and the effects of efficiency risks. There were fairly contending results showing signals of risk averse behaviour among investors and stock returns volatility. This could be traced to leverage. But then there were sufficient cash balances which may serve as shield for future cash constraints should there be higher investments that would be able to check distress. On the contrary too much cash may also cause market discounts since opportunity costs

are likely to arise. Other implications are that increased agency costs portray heavy cash at the disposal of managers and perhaps inefficient pay out policies. Therefore it can be concluded that firms are likely to attain optimality in their capital structure by maintaining a balanced position between both benefits from debt use and the associated costs as well as a neutral point where shareholders and creditors are indifferent about their costs.

Andras,et al (2014) revisit the well-established puzzle that leverage is negatively correlated with measures of profitability. In contrast, at times when firms are close to their optimal level of leverage, the cross-sectional correlation between profitability and leverage is positive. At other times, it is negative. These results are consistent with dynamic trade – off models by Miller (1977). They confirm that the results are not driven by factors such as investment opportunities, market timing strategies, payout or reversion of leverage policies.

This was further expanded by Andras, Rettl and Whited (2014) in their attempt to revisit the well-established puzzle by Myers (1984) and in the process introduced the dynamic trade – off concept having established that leverage is negatively correlated with measures of profitability. They calibrated models to navigate optimal level of leverage with results of cross-sectional correlation between profitability and leverage. The results were showing positive at some instances and negative at other times.

Yu-Shu and Chu-Yang (2010) also confirm that the relationship between leverage and firm value is significant but identified a definite level beyond which a further increase in debt financing does not improve proportional firm value. This gives empirical support to the trade off theory providing a basis for tax shields to continuously knock off debt financing costs until a point where increasing agency costs and distress/bankruptcy costs begin to emerge and grow to cover the shields.

The studies by Miller (1977) and Myers (1984) brought out some issues on the incidence of tax upon which Modiglianni and Miller (1963) built their argument to support leverage. The cost of corporate and personal taxes borne by shareholders are likely to offset the tax shields because both capital gains and dividends attract taxes from which the incidence earlier avoided from company income tax would now be subjected to bear. This will undermine the extensive application of the trade off theory because such shields justify the use of debt.

Tetman and Wessels (1988) observed that firms with sufficient assets to secure debts are likely to have more debt in their capital structure. But then debt increases have the tendency to cause increases in the value of equity subject to better corporate governance and management proficiency in the effective utilization of such debts. In line with financial theory, volatility correlates positively with leverage and this provides a basis to argue that higher capital structure (higher leverage) results in higher risk (volatility). The study opened another chapter of the debate that capital structure should be considered with other factors rather than just leverage. The measures of capital structure articulated by the authors are long term debt, short term debt and convertible debt denominated by market value of shares. In their findings, firms with low debts are not likely to have high costs and this explains the relationship between leverage and enterprise value in a linear fashion.

Kannadhasan, et al (2016) adapted a research model using data from the Indian Pharmaceutical industry to moderate the relationship between financial leverage as an explanatory variable and both corporate performance and shareholders returns as dependent variables. The study provided empirical evidence to prove that financial leverage is significantly related to shareholders return but when corporate performance is applied, the relationship becomes insignificant.

In Nigeria, Chechet and Olayiwola (2014) adopted panel data estimation to show that profitability is significantly related to debt ratio in a non linear fashion using a sample of seventy (70) listed companies in the Nigerian Stock Exchange from the year 2000 to 2009. Similarly Nwude, et al (2016) also obtained annual data from forty three (43) companies listed in the Nigeria stock exchange and adopted the panel data methodology to analyze the relationship between debt structure and firm performance covering a period of 12 years from 2001 to 2012. The results are similar with the studies mentioned above showing that all the variables of capital structure such as long-term debt ratio, short-term debt ratio and total debt ratio have significant negative relationship with firm performance.

Salawu (2007) also utilized panel data pertaining to fifty non financial quoted firms in the Nigeria Stock Exchange with a view to statistically estimating the effect of leverage on firm performance. With a study period covering five years from 1990 to 2004, static tests were conducted and panel data specifications used to arrive at results showing that leverage is negatively correlated with profitability. The study also provides evidence that Nigerian quoted companies apply more short term debt than long term debt with a statistical mean value of about sixty (60) percent. This prompted the author's recommendation that firms should adopt appropriate measures to lengthen the maturity structure of corporate debt as well as deal with the phenomenon of collateral which influences all bank borrowing in Nigeria.

Nduka, Achugb and Ucheahara (2016) investigates the effect financing mix could have on corporate performance in Nigeria. They adopted the ordinary least square method to analyze secondary data obtained from twenty seven firms listed on the Nigerian Stock Exchange for a period of research covering seventeen years beginning from 1996 and 2013. They constructed a multiple regression model with debt ratios, return on assets and return on equity based on the panel data generated. From the results, a firm's capital structure represented by debt to equity ratio has a significantly negative impact on both return on assets and return on equity being proxies of firm performance. These findings prompted the authors to recommend among others that firms should identify other relevant factors that influence corporate performance other than debt. Such factors as corporate governance, quality of management, size of the firm, tangibility, growth etc. It is also necessary that firms understand their conditions, analyze their debt capacities, look at the need to maintain comparability with other firms in the same industry before making the final decision regarding their capital structure.

Toby (2010) used Earnings Per Share (EPS), Dividends Per Share (DPS), Asset growth, turnover, net profit and shareholders fund as proxies for Corporate Performance to study the effect financial, operating and even combined leverage could have on them. The results showed that only turnover and profitability have statistically significant inverse correlation with leverage.

METHODOLOGY

Data and Sample

According to Brooks (2008), a data set is panel if it consists of both time series and cross-sectional elements. So it is a kind of longitudinal data consisting of repeated observations on variables for large numbers with cross-sections in stacked form like individuals, organizations, industries or countries while the time series observations can be hourly, daily, weekly, monthly, quarterly and yearly. If N represents the cross-sectional units and T represents the time series observations, then, there are a total of $N \times T$ observations for the panel data. With the combination of both time series and cross-sectional dimensions, it provides a rich dataset sufficient for asymptotic benefits as well as a better framework for modeling cross-sectional heterogeneity than the cross-sectional data type.

It is our view that observations on 60 companies for twenty seven years period fit the definition of panel data as emphasized previously. It is also our view that a sample size of 1,620 is sufficient to obtain consistent, unbiased and reliable results that will truly represent the population. Yearly time series observations for the 60 selected companies are used. The variables are market value per share, long-term debt, short-term debt. The data on the study variables are obtained through secondary sources. Specifically, the data are collected and computed from annual reports and accounts of the selected companies for different years submitted at the Nigerian Stock Exchange obtained at the Port Harcourt office.

Methods of Data Analysis

The panel data framework is employed. The advantage of the panel framework is that it gives more data points and thus, more degree of freedom. It also controls for the influence of unobserved firm-specific effects such as management policies, organizational culture and strategies, while examining the main study relationships. Accordingly, the three traditional panel data methods are used to analyze the relationship between capital structure and firm market value. The methods are pooled regression, fixed effects and random effects methods. The performances of these methods are compared to determine the best method for our panel data. In the light of this, the Likelihood ratio test and the Hausman specification test are employed. While the former compares the estimates of the pooled method with those of the fixed effects, the latter compares the random effects estimates with those of the fixed effects. The empirical inference is usually based on the estimates of the best performing method.

Model Specification

The functional model for the relationship between debt policy and firm value is given by:

$$MV = f(STD, LTD, TDS, DER) \quad (3)$$

where;

MV = Firm market value per share or share price

STD = Firm short-term debt

LTD = Firm long-term debt

TDS = Firm total debt stock

DER = Firm total debt to equity ratio

The econometric parameterization of this model is given by:

$$MVS_{it} = \alpha + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 TDS_{it} + \beta_4 DER_{it} + v_i + \varepsilon_{it} \quad (4)$$

Where α is the regression constant, v_i represents the unobserved firm-specific factors and ε_{it} is the disturbance term. The parameters $\beta_1, \beta_2, \beta_3$ and β_4 are the regression slopes which are also constant cross-sectionally. If v_i is found to be statistically insignificant, then our empirical model is a pooled regression specification. On the contrary, if v_i is statistically significant, then the model is either a fixed effects specification or a random effects specification depending on whether there is correlation between v_i and the betas. If such correlation exists, then the model is a fixed effects specification. Otherwise, the model is random effects specification. There is therefore, good reason to consider the two hypotheses associated with the conventional panel data methodology; (1) the unobserved firm-specific variables are jointly not different from zero and (2) the unobserved firm-specific factors are uncorrelated with the observed variables.

Furthermore, causality test is carried out to determine whether there is a causal relationship between corporate debt portfolio and firm value using the following general linear bivariate model within the context of panel data.

$$MVS_{it} = \alpha + \sum_{k=1}^{K} \beta_k MVS_{it-k} + \sum_{k=1}^{K} \delta_k TDER_{it-k} + \gamma_i + \varepsilon_{it} \quad (5)$$

$$TDER_{it} = \alpha + \sum_{k=1}^{K} \theta_k TDER_{it-k} + \sum_{k=1}^{K} \phi_k MV_{it-k} + \gamma_i + \varepsilon_{it} \quad (6)$$

where $TDER$ is the ratio of total debt to equity, k is the highest number of lags while other parameters are as defined previously. The ratio of total debt to total equity is used since our interest is only on causality between debt policy and firm market value. If the lag coefficients on $TDER\delta_k$, are jointly significant, other things being equal, then we can reject the null hypothesis that $TDER$ does not Granger cause MV and conclude that there is unidirectional causality running from debt policy to firm market value. On the other hand, if the lags of the lag coefficients on MV ϕ_k, are jointly significant, other things being equal, then we can reject the null hypothesis that MV does not Granger cause $TDER$ and conclude there is unidirectional causality running from firm market value to debt policy. Further, if both δ_k and ϕ_k are significant, then we conclude that there is feedback or bidirectional causal relationship between debt policy and firm value. However, if δ_k and ϕ_k are not significant, we can say that both debt policy and firm market value are independently related.

EMPIRICAL RESULTS

Table 1 shows the pooled descriptive statistics for the study variables.

Table 1 shows the pooled market share per share averaged ₦19.17, reaching an all-time high of ₦1,200 and a record low of ₦0.00 over the period under study. This indicates that market per share is very low and there are more companies whose market value per share is below the average. Based on their mean, the Nigerian quoted companies use more long term debt than short term debt. On the other hand, debt to equity ratio averaged 112.50 over the same period which means there are also more companies with lower ratio. All variables have a positively skewed distribution($S > 0$), The large kurtosis coefficient associated with each variable suggests that all data have a distribution that is more peaked than the normal distribution. Thus, data extremes are present in our panel dataset. Therefore there is need for log-transformation of the data for quality and reliable empirical results.

Table 2 shows the panel estimation results and goodness of fit statistics for the relationship between debt policy and market value per share. Table 3 shows the Likelihood ratio and Hausman tests for panel model selection. Whereas the Likelihood ratio test formally compares the fixed effects estimates with those of the pooled regression under the null hypothesis that the pooled regression model is the preferred model, the Hausman specification test formally compares the fixed effects estimates with those of random effects under the null hypothesis that the random effects model is the preferred model.

Table 2 shows we can see that the estimated coefficients for LSTD and LTDS are largely similar for the three models in terms of their signs and significance while the estimated coefficients for LLTD and LDER are similar for only fixed effects and random effects models. The coefficient on LTDS is 0.2727 (p-value = 0.0000), 0.3893 (p-value = 0.0000) and 0.3755 (p-value = 0.0000) for pooled regression, fixed effects and random effects models respectively, indicating that total debt stock and firm market value are positively and significantly related. However, the coefficient on LLTD is 0.0357 (p-value = 0.3514), -0.1042 (p-value = 0.0007) and -0.0914 (p-value = 0.0026) respectively for pooled regression, fixed

effects and random effects models. This indicates that while the pooled regression model estimated a positive and insignificant relationship between long term debt and firm market value, both fixed effects and random effects models estimated negative and highly significant relationship. The coefficient on LSTD is -0.1723 (p-value = 0.0000), -0.0942 (p-value = 0.0010) and -0.1058 (p-value = 0.0002) for pooled regression, fixed effects and random effects models respectively, indicating that short term debts and firm market value are negatively and highly significantly related. Similarly, the coefficient on LDER is 0.0547 (p-value = 0.0214), -0.0178 (p-value = 0.3929) and -0.0112 (p-value = 0.5856), indicating that while the pooled regression model estimated a positive and significant relationship between debt to equity ratio and firm market value, both fixed effects and random effects models estimated negative and insignificant relationship.

In terms of model fitting, although, the F-statistic (p-value = 0.0000) is highly significant for all models, we can see that the fixed effects model has a much better goodness of fit than both pooled regression and random effects models as indicated by the Adjusted R-squared. Specifically, the Adjusted R-squared is 0.6122 for the fixed effects model, and 0.0991 and 0.0887 for pooled and random effects models respectively. This shows that the proportion of the observed variation in firm market value that is due to factors related to firm leverage is approximately 61 %, 9 % and 8 % for fixed effects, pooled regression, and random effects model respectively. Similarly, although, the Durbin-Watson statistic is much less than 2 in all cases, its value is highest for fixed effects model (DW = 0.593), followed by random effects model (DW = 0.563) and then by pooled regression model (DW = 0.249). Thus, the fixed effects model provides the best fit for the relationships being studied.

Table 3 shows we can see that both Likelihood ratio and Hausman specification tests are significant. However, while the Chi-square statistic for Likelihood ratio test is significant (p-value = 0.0000) at less 1 % level, the Chi-square statistic for Hausman test is significant at approximately 5 % (p-value = 0.0500) level. Thus, we strongly reject the null hypothesis that the pooled model is the preferred specification and conclude that the firm-specific factors are relevant. In addition, we reject the null hypothesis of random effects model at approximately 5 % level of significance and conclude that the firm-specific effects are correlated with the explanatory (leverage) variables.

From the fixed effects results, we can see that market value per share has a negative relationship with short-term, long-term debts and debt to equity ratio while it has a positive relationship with total debt stock. This implies that controlling for the unobserved firm-specific effects, firm value would decrease (increase) following an increase (decrease) in short-term debt, long-term debt and debt to equity ratio but would increase (decrease) following an increase (decrease) in total debt stock. Thus, firm value moves in opposite direction with short term debt, long-term debt and debt-equity ratio but moves in the same direction with total debt stock. However, while the impact of short-term debt, long-term debt, total debt stock is highly statistically significant, the impact of debt to equity ratio is statistically insignificant. The joint influence of all the variables highly significantly explains as much as 61 % of the variations in market value per share. Thus, our firm value model is well fitted to our panel data. Therefore, contrary to MM's argument, our results indicate evidence that capital structure is a strong determinant of firm value in Nigeria.

The results of the Pairwise Granger Causality tests are presented in tables 4 to 6. As stated in section 3, this test helps to determine whether the variables of interest in all our empirical model are causally related to firm market value. All tests are based on 5 % level of significance.

Table 4 shows the pair wise Granger causality test results for long term debt and firm market value. The causality from long term debt to firm market value is tested under the null hypothesis that LLTD does not Granger Cause LMVS. A rejection of this null (that is, if the p-value is less than 0.05) would imply evidence of a unidirectional causality from long term debt to firm market value. On the other hand, the reverse causality is tested under the null that LMVS does not Granger cause LLTD. A rejection of this null would imply evidence of a unidirectional causality from firm market value to long term debt. However, if both null hypotheses are rejected, then there is evidence of a feedback causality between firm market value and long-term debts. On the contrary, if both hypotheses are not rejected, then there is no causality between the two variables. We include one lag of each variable in each test equation.

Table 4 shows we can see that the associated probability of the F-statistic (p-value > 0.05, 0.1) is quite high in both cases, suggesting that the test is insignificant at all conventional levels. Thus, both null hypotheses are not rejected. This implies that the relationship between long-term debt and firm market value is not causal.

Table 5 shows the pairwise Granger causality test results for short-term debts and firm market value. The causality from short-term debts to firm market value is tested under the null hypothesis that LSTD does not Granger Cause LMVS. A rejection of this null would imply evidence of a unidirectional causality from short-term debts to firm market value. On the other hand, the reverse causality is tested under the null that LMVS does not Granger cause LSTD. A rejection of this null would imply evidence of a unidirectional causality from firm market value to short-term debts. However, if both null hypotheses are rejected, then there is evidence of a feedback causality between firm market value and short-term debts. On the contrary, if both hypotheses are not rejected, then there is no causality between the two variables. We include one lag of each variable in each test equation.

Table 5 shows we can see that the associated probability of the F-statistic (p-value > 0.05) is substantially greater than 0.05 in both cases, signifying that the test is insignificant at all conventional levels. Therefore, both null hypotheses are not rejected. Thus, like the case of long-term debt, the relationship between short-term debt and firm market value is not a causal one.

Table 6 shows the pair wise Granger causality test results for debt-equity ratio and firm market value. The causality from debt-equity ratio to firm market value is tested under the null hypothesis that LDER does not Granger Cause LMVS. A rejection of this null would imply evidence of a unidirectional causality from debt-equity ratio to firm market value. On the other hand, the reverse causality is tested under the null that LMVS does not Granger cause LDER. A rejection of this null would imply evidence of a unidirectional causality from firm market value to debt-equity ratio. However, if both null hypotheses are rejected, then there is evidence of feedback causality between firm market value and debt-equity ratio. On the contrary, if both hypotheses are not rejected, then there is no causality between the two variables. We include one lag of each variable in each test equation.

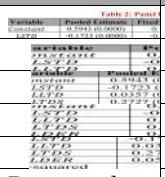
Table 6 shows we can see that the associated probability of the F-statistic (p-value <0.05) is less than 5 % in both cases, which means that the test is significant at 5 % level. Thus, both null hypotheses are rejected. This implies evidence that there is a feedback or bidirectional causal relationship between debt to equity ratio and firm market value.

Table 1: Pooled Descriptive Statistics

Variable	Mean	Std Dev	Maximum	Minimum	Skewness	Kurtosis
MVS	19.17	64.30	1200.00	0.00	10.42	147.15
Debt-equity ratio	112.54	1541.840	53250	-55	29.45	963.09
Short term debt	10114.56	63135.66	1199462	-179	12.71	197.93
Long term debt	25519.67	754703.14	28701724	-48701	37.81	1437.49

Source: SSPS output

Table 2: Panel Estimation Results

Variable	Pooled Estimate	Fixed Effects Estimate	Random Effects Estimate
	0.5943 (0.0000)	0.1610 (0.2623)	0.1564 (0.4526)
	-0.1723 (0.0000)	-0.0942 (0.0010)	-0.1058 (0.0002)
	0.0357 (0.3514)	-0.1042 (0.0007)	-0.0914 (0.0026)
	0.2727 (0.0000)	0.3893 (0.0000)	0.3755 (0.0000)
	0.0547 (0.0214)	-0.0178 (0.3929)	-0.0112 (0.5856)
R-squared	0.1019	0.6304	0.0914
Adj. R-squared	0.0991	0.6122	0.0887
F-statistic	37.3674(0.0000)	34.6451 (0.0000)	33.1475 (0.0000)
Durbin-Watson	0.2498	0.5932	0.5639

Source: E Views output; Bracket ( ) contains *p*-values

Table 3: Model Selection Tests

Test	Chi-Square Statistic	*p*-value
Likelihood Ratio test	1173.95	0.0000
Hausman Test	9.487	0.0500

Source: E Views output

Table 4: Causality Test between Firm Market Value and Long-Term Debts

Null Hypothesis	F-Statistic	Probability
LLTD does not Granger Cause LMVS	1.49597	0.2215
LMVS does not Granger Cause LLTD	0.41562	0.5192

Source: E Views output

Table 5: Causality Test between Firm Market Value and Short-Term Debts

Null Hypothesis	F-Statistic	Probability
LSTD does not Granger Cause LMVS	0.27142	0.6025
LMVS does not Granger Cause LSTD	2.39848	0.1217

Source: E Views output

Table 6: Causality Test between Firm Market Value and Debt-Equity Ratio

Null Hypothesis	F-Statistic	Probability
LDER does not Granger Cause LMVS	4.12976	0.0423
LMVS does not Granger Cause LDER	4.46766	0.0347

Source: E Views output

DISCUSSION AND CONCLUSIONS

The study seeks to examine the relationship between debt policy and firm value in Nigeria from 1990 to 2016 under the panel data framework. In particular, it examines the effects of short-term debts, long-term debts, debt to equity ratio and total debt stock on market value per share for 60 quoted companies selected from all the sectors of the capital market in Nigeria. The study also examines whether the unobserved firm-specific effects such as management policies, organizational culture and strategies affect firm market value, and whether these unobserved effects are correlated with the explanatory variables.

First, there is evidence that the unobserved firm-specific effects; management policies, organizational culture and strategies, have strong impact on firm market value. There is also evidence that these unobserved effects are correlated with capital structure variables. The conclusion, therefore, is that fixed effects model is the best description of the observed firm-level Nigerian data. Second, there is evidence from the fixed effects results that market value per share has a negative relationship with short-term, long-term debts and debt to equity ratio while it has a positive relationship with total debt stock. This implies that controlling for the unobserved firm-specific effects, firm value would decrease (increase) following an increase (decrease) in short-term debt, long-term debt and debt to equity ratio but would increase (decrease) following an increase (decrease) in total debt stock. Thus, firm value moves in opposite direction with short term debt, long-term debt and debt-equity ratio but moves in the same direction with total debt stock. However, while the impact of short-term debt, long-term debt, total debt stock is highly statistically significant, the impact of debt to equity ratio is statistically insignificant. The joint influence of the capital structure variables highly significantly explains as much as 61 % of the variations in market value per share. Thus, our firm value model is well fitted to our panel data.

The studies by Nduka et al (2016) that consider term structure of debt also have this evidence. However, Antwi, Mills and Zhao (2012) found evidence from Ghana that long-term-debt is far stronger than other leverage variables in determining the market value of a firm. Among the factors that explain this effect, the systematic depreciation of the assets of the companies seems more pronounced. When firms use more long term debt especially in emerging markets where such debts are usually collateralized by fixed assets, there is the tendency to affect the value of firms through double shields provided. First from the tax exemptions about the interest of the loans and secondly from the non debt shields owing to the accounting credits allocated to the assets as depreciation charges. This becomes a very good incentive for managers to increase the use of debt.

Total debt stock is found to have had a strong explanatory power on market value of shares on the basis of the empirical analysis. With a direction of relationship as positive, it is suggestive that an increase in the value of total debt is likely to result in a corresponding increase in the market value of shares. This is consistent with the findings by Demirgunes (2017) and Lawal (2014) suggesting that leverage significantly improves the value of firms with an indication that quoted companies effectively utilize debt instruments in Turkey and Nigeria. These findings provide empirical evidence to confirm that the use of debt with a positive effect on the value of firms. So there is sufficient evidence to prove that changes in the market value of quoted firms can be traced to the use of debt.

A clear synopsis of previous studies with the variables shows that term structure of debts does not have any influence on the relationship between capital structure and the value of firms. This suggests that both short and long term debt regress very similarly to affect the value of quoted firms. However, a factor that is consistent among the overall findings in respect of previous studies with evidence from emerging markets is that firms use short term debt more than long term debt. This is not unconnected with the peculiar circumstances and the effects such could create on the economic activities in Nigeria and other emerging markets. Apparently, there is dearth of strong institutions in these countries and very low patronage in the capital markets which are the only channels for the transmission of financial assets and instruments of long term maturity.

Debt-equity ratio has a negative insignificant effect on the market value of firms but the causality test shows a strong influence from market value of firms to debt to equity ratio. Debt ratios are usually consistent with the stability or volatility of the capital market. When an economy has a downturn, market value of debt ratios increase at much higher rate

than their book value. This is an indication of reaction to fluctuations in the market. This is evident from the persistently and consistently negative relationship they have with all types of debt ratios in all periods and under all estimation methods as it is seen from Barclay and Smith (1996) and Pandey (2001). It is simply an indication that firms use more debt as they grow and as their size increase, but as profits improve they reduce debt.

It is important to explain that debt equity ratio establishes a relationship between long term debts and shareholders fund. It measures the relative proportion of debt and equity in financing the assets of the firm. The two components are (i) Long term Debts characterized by term loans, debentures or bonds and (ii) Shareholders' funds such as shares, preference shares, reserves and net operating surplus after adjusting for fictitious assets and preliminary expenses where they occur. So it is a good indicator of sound debt policy in an organization with a tendency that when it moves in the same direction with cost of capital it becomes apparent that the company has adequate checks and proper debt control measures.

It is convincing that there is some level of consistency among the results of previous studies with evidence from countries which cut across all stages of development. We have Miller (1977) and Myers (1984) being studies using data in developed countries while Pandey (2004) and Demirgunes (2017) provide evidence from emerging markets. Then we have a number of studies that have evidence from Nigeria such as Salawu (2007), Chechet and Olayiwola (2014) and Nwude, et al (2016). It is also important to note that these studies used a number of proxies to establish a significant negative relationship between capital structure and firm value. They include short-term debt, long-term debt, total debt and debt equity ratio as capital structure variables while return on asset and return on equity are used as proxies for firm value.

On the whole, our results indicate evidence that debt policy is a strong determinant of firm value in Nigeria and this is contrary to the irrelevance theory. Therefore, our conclusion is that a strategic reduction in both short-term and long-term debts is needed to maximize shareholders' wealth in Nigeria.

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