THE INFLUENCE OF MARKET TO BOOK VALUE OF EQUITY ON CAPITAL STRUCTURE CHOICE IN NIGERIA

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Abstract: The main objective of this study is to examine the influence of market to book value of equity on capital structure choice of firms in Nigeria with the specific aim to confirming if it exhibits any form of reverse causality between financial performance and capital structure choice. The causal research design was adopted while a total of 87 samples was included in the study. Using the General Method of Moment (GMM) estimation technique, the estimated results of the effects of the explanatory variable is statistically significant at all levels of Capital Structure as represented by Total debt ratio, Debt to Equity ratio and Long-term debt to total assets ratio. Based on the significance of these results it was concluded that both the efficiency risk and franchise value hypotheses of the reverse causality hypothesis are observable in the capital structure choice of the non- financial firms in the NSE.

I.   INTRODUCTION

In the recent past, some authors have been investigating the nexus between financial performance and capital structure. (1), incorporated the reverse causation between performance and capital structure in econometric modeling and to the best of the author's knowledge, only few studies stand out as they directly test this theoretical relationship (2)(3)(4). (4) tested the efficiency-risk and franchise value hypotheses on the U.S banking industry and found that, in the U.S banking industry, none of these hypotheses dominated themselves, implying, efficiency presents only an infinitesimal effect on leverage. On the other hand, (3)(2) tested the same hypotheses on firms in New Zealand and France respectively. Their findings are also consistent with findings from U. S which also revealed that, both the efficiency-risk and franchise value hypotheses operate in France and New Zealand firms.

Market value represents the external assessment and expectation of firms' future performance. Therefore, the outcome of a good financial performance by a firm do not only affect the sources of financing, growth and survival, but also has a powerful influence on the larger economy because of its utmost importance to both the shareholders (in form of returns on their investment), managers of firms (in form of compensation), creditors (firms' ability to repay) and government (tax purposes). A dwindling financial performance may seriously affect access to both internal and external financing as well as growth and survival of firm. Subsequently a reasonable level of financial performance is a critical decision area for any company which is not only important because of the need to maximize returns to numerous organizational constituencies, but also because of the impact such decisions may have on a company's ability to deal with its competitive environment (5).

In addition, (4) (2) consider two additional hypotheses (efficiency risk and franchise value) as reflected in the reverse causality theory explaining how firm efficiency, influences the choice of capital structure. The efficiency risk hypothesis predicts a positive relation between efficiency and leverage, as more efficient firms choose lower equity ratios due to lower expected cost of bankruptcy and financial distress (4). In contrast, the franchise-value hypothesis predicts a negative effect of efficiency on leverage. The rationale for that is that the economic rents coming from higher efficiency are safer from the threat of liquidation if the debt-to-equity ratio is lower
(6)

Decades after independence, the Nigerian financial system was repressed, as evidenced by ceilings on interest rates and credit expansion, selective credit policies, high reserve requirements, and restriction on entry into the banking industry (7). This situation subdued the functioning of the financial system and especially, constrained its ability to muster savings and facilitate productive investment. However, in 1986 the Federal Government of Nigeria (FGN) embraced the Structural Adjustment Programme (SAP) with the aim of rectifying the prevailing macro-economic and structural imbalances in the economy, to restructure and diversify the productive base, lessen dominance of unproductive investment and to achieve fiscal and balance of payment viability. As anticipated,

the capital market was a major aspect of the programme when it was introduced. The programme which includes liberalization of the capital market being one of its conditionalities has led to various reforms especially between the late 1980s and early 1990s with the major reforms being the enthronement of market forces as the major price determinants in the market rather than the Securities and Exchange Commission which is the apex regulatory body in the market, the full or partial privatization and commercialization of about 111 public owned enterprises which the NSE plays key role during the offer for sale of their shares (8)(9)(10) and establishment of the Second-Tier Securities Market in 1986.

II. LITERATURE REVIEW

Market value to the Book value ratio (MBV) assesses the market value of the firm from investor's perspective relative to a share's book value. The market-to-book ratio has been one of the major sources from which the costly external financing theory draws inspiration to interpret capital structure decisions. According to this theory, firms with higher market-to-book ratios are more likely to issue equity because a higher market-to-book ratio signals a lower cost of external equity financing (11) (12). The choice of this variable is appropriate since the major objective of this study is to determine the effect of financial performance on capital structure choice of firms listed in NSE

According to (13), market to book value ratio is a valuation ratio that is used by investment advisors, fund managers and investors to compare a company's market value (market capitalization) to its book value (shareholders' equity). The market to book value ratio is expressed as a multiple (how many times a company's share is trading per share compared to the company's book value per share) is an indication of how much shareholders are paying for the net assets of a company.

The market-to-book ratio is used as a proxy for investment opportunities. Firms with high market-to-book ratios tend to grow quickly. This variable often appears in underinvestment as emphasized by (14)and (15), highly leveraged firms tend to pass up promising projects. Thus, firms with high market-to-book ratios tend to lower leverage. The market timing hypothesis also indicates a negative sign because firms with high market-to-book ratios have an incentive to take advantage of high/low equity prices to issue/repurchase equities. On the other hand, the default probability theory by Merton (1974) implies a positive sign since a higher market-to-book ratio shows a higher expected growth rate of firm value.

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That negative relation between the market-to-book ratio and leverage ratio is one of the most widely documented empirical regularities in the capital structure literature (21)(17)(22). For instance, in a study carried out by (23), trying to understand the roles of the market-to-book ratio and profitability in corporate financing decisions in which they focused on scenarios where two theories (costly external financing theory and trade-off theory) have drastically different or even opposite predictions about these variables. In each case, they find strong evidence in support of the costly external financing theory but inconsistent with the trade-off theory. They conclude that firms with higher market-to- book ratios are more likely to issue equity not because they intend to downwardly adjust their target leverage ratios, but because they face lower external financing costs. Similarly, firms with higher profitability are more likely to issue debt, not because they intend to move toward their target leverage ratios, but because they face lower debt financing costs.

(24) in their study examined the relationship between market-to-book equity ratio and leverage of firms listed on National Stock Exchange of India (NSE). Using a data gathered from a sample of 139 firms, pooled OLS was used as estimation technique. Their paper discovered a negative relationship between market-to-book equity ratio and leverage of Indian firms. Among Indian sectors only market-to-book equity ratio of FMCG, Consumer durables, Automobile and IT had significant and negative relationship with leverage and while the relationship for remaining sectors included in the analysis was insignificant.

(25) suggested that stock prices play a significant role in determining a firm's leverage. Probability of equity issue for firms with huge stock price increases is more and firms with stock price decline retire debt. This observation is consistent with the idea that stock price increases are generally associated with improved growth opportunities, which would lower a firm's optimal debt ratio. (26) presented evidence suggests that the optimal capital structure can be influenced by growth. (27) investigated the determinants of leverage ratio for companies located in France, Germany and England. The results suggest that the leverage ratio is inversely related to market-to-book equity ratio. (28)(29)found that financial deficits (the amount of capital raised externally) do not have effect on changes

in debt ratios for firms with high market to book ratios. (30) found result consistent with the hypothesis that high market-to-book firms have good growth opportunities and, therefore, have low target debt ratio.

On the contrary with most of the literature, (23) argued that most related studies take this negative relation as given and debate about its economic interpretation. They believe firms with higher market-to-book ratios face lower debt financing costs and borrow more and emphasis that the relationship between the market-to-book ratio and leverage ratio is not monotonic but positive for most firms and that the previously documented negative relation is driven by a subset of firms with high market-to-book ratios. (31) found that the leverage declines with an increase in growth opportunities. According to (32) market-to-book equity ratio has a negative relationship with market leverage of firm but this result is not reliable for book leverage.

III.   MATERIALS AND METHOD

This research work covers a period of 15 years from 1999 to 2015 while the data employed were gotten from the financial reports of sampled firms and Nigeria Stock Exchange. The dependent variable is capital structure as measured by total debt to total assets ratio, total debt to total equity ratio and long-term debt to total assets ratio while the independent variable is financial performance as proxied by market to book value of equity. The gathered was estimated using the General Method of Moments (GMM) to capture the dynamism and their reverse causal relationship as postulated by the reverse causality hypothesis.

The general empirical model used in this study was defined as follows:

Capital Structure (TDR, DER, LTD) = f (MBV)Financial Performance …… 3.1
This Equation was transformed to a GMM model as shown in equation 3.2
$CS_{it} = \alpha CS_{it-1} + \beta_i MBV_{it-1+} \varepsilon_{it}$…………………………………………….... 3.2
i   =   1 2 3 …………. n firms
t   =   time 1999 - 2015
Where: CS is Capital structure as measured by Total debt ratio (TDR), Debt to equity ratio (DER) and Long-term debt ratio (LTD) while MBV is Market to book Value of Equity. α is the constant and β_i is the parameter estimates of the explanatory variables while ε_{it} is the error term.

The estimated models are:
Model 1
$TDR_{it} = \alpha TDR_{it-1} + \beta_i MBV_{it-1+} \varepsilon_{it}$
Model 2
$DER_{it} = \alpha DER_{it-1} + \beta_i MBV_{it-1+} \varepsilon_{it}$
Model 3
$LTD_{it} = \alpha LTD_{it-1} + \beta_i MBV_{it-1+} \varepsilon_{it}$

IV.   RESULT AND DISCUSSIONS

Contrary with most of the literature, (23) discovered that firms with higher market-to-book ratios face lower debt financing costs and borrow more. Therefore, to determine the effect of financial performance on capital structure, the null hypothesis tested was that market to book value of equity has no significant effect on capital structure as depicted by total, short and long-term leverages. The outcome of the dynamic panel regression analyses is laid out in Table 4.11.

Table1: Two- step dynamic GMM estimated results of Market to Book Value of Equity (performance) on Capital Structure

Explanatory variables	Dependent Variables TDR, DER and LTD		
	Model1	Model2	Model3
CS_{it-1}	0.044710	0.442791	0.865221
	(0.000)	(0.000)	(0.000)
MBV_{it-1}	0.988330	-11.32370	-0.010416
	(0.000)**	(0.000)**	(0.000)**
Observation	1305	1305	1305
Companies	87	87	87
Periods included	15	15	15
Instrument rank	10	57	10
Arellano and Bond AR (2)	0.217	0.319	0.385
Hansen Test p value	0.690	0.768	0.264

Models 1, 2 & 3 Total debt to Total assets, Total debt to Total Equity & Long-term debt to Total assets leverage models

*, **, *** indicate significant at 1%, 5% and 10% respectively.

The estimated result presented in Table 1 between first lag of Market to Book value of equity and total leverage ratio (total debt to total asset) produced a coefficient of 0.988330 and corresponding P value of 0.000. This result indicates that a statistically significant positive relationship exists between MBV and total leverage ratio. For the estimated model1 the Arellano and Bond (AR2) test of second order autocorrelation shows a value of 0.217 which is greater than 0.05 thereby indicating that there exists no problem of second order autocorrelation, meaning the model was correctly specified. The Hansen test of instrument validity at first differencing shows a probability value of 0.690. For the fact that the probability value of the Hansen test was not less than 0.1. this suggests that the instruments used in the estimated model are valid instruments. The estimated model indicates that the number of instrument are less than the number of groups thereby satisfied the rule of the thumb that the number of instrument should be less or equal to the number of groups.

Similarly, the effect of financial performance in the context of MBV on capital structure as measured by leverage (debt to equity ratio) was assessed. The estimated result in model 2 indicate a statistically significant negative relationship between firm performance (MBV) and capital structure (DER). The estimated result produced a coefficient of -11.32370 (P value of 0.000). The Arellano and Bond tests of autocorrelation shows (AR2) a value of 0.329. This autocorrelation value is greater than 0.005. This indicates that there is no problem of second order autocorrelation and the model is correctly specified. The Hansen test of instrument validity at first difference shows probability value that is not less than 0.1 which is 0.768. This suggests that the instruments used in the estimated models are valid instruments. The estimated model indicates that the number of instruments ranked at 57 is less than the number of groups (87) thereby satisfied the rule of the thumb that the number of instrument should be less or equal to the number of groups.

In addition, the effect of financial performance in the context of MBV on capital structure proxied by long term debt was determined. As estimated by model 3 in Table 1, the result shows that a statistically significant negative relationship exists between firm financial performance (MBV) and capital structure (long term leverage) with a coefficient value of -0.010416 (P value of 0.000). The Arellano and Bond tests of autocorrelation show (AR2) value of 0.385. This autocorrelation value is greater than 0.05. This indicates that there is no problem of second order autocorrelation and the model is correctly specified. The Hansen test of instrument validity at first difference shows a probability value of 0.264 which is greater than 0.1 suggesting that the instruments used in the estimated models are valid instruments. The estimated model indicates that the number of instruments is less than the number of groups thereby satisfied the rule of the thumb that the number of instrument should be less or equal to the number of groups.

The implication of the positive significant relationship found between firm performance (MBV) and capital structure (total debt ratio) is that the capital structure choice of firms in Nigeria respond positively to financial success of the firms to achieve optimal usage of debt in place of equity. That is, firms in Nigeria are having lower market to book value of equity which may make them to favour more debt. This is in congruent with the findings of (19)(16) that companies with high market-to-book ratios had significantly lower leverage than companies with low market-to-book ratios. Moreover, the statistically significant negative relationship recorded between MBV and capital structure at the level of debt to equity ratio and long-term leverage is in line with the findings of (24) in India. This indicate a preference for equity rather than debt among the sampled firms in Nigeria.

In conclusion, the effects deduced from total debt ratio supported the theoretical position of the reverse causality hypothesis as postulated by the efficiency risk hypothesis that efficient firms are more likely to favour more debt in their capital structure than equity as confirmed by (33) in Taiwanese textile industry however, the position of the debt to equity ratio and long-term leverage is consistence with the franchise value hypothesis which suggested that more efficient firms will prefer the application of more equity into the capital structure rather than debt in tandem with the findings of (34) among firms on the Nairobi Stock Exchange. This implies that the past financial performance of firms in Nigeria is reflected in their choice of capital structure combination. The study therefore rejects the null hypothesis and accepts alternative hypothesis based on the estimated results that there is statistically significant relationship between firm performance as measured by MBV and capital structure as measure TDR, DER and LTD of firms in the Nigeria Stock Exchange.

Estimation Equation:
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$CS_{it} = \alpha CS_{it-1} + \beta_1 MBV_{it-1} + \varepsilon_{it}$

Substituted Coefficients:

Model 1 $CS_1 = 0.044710 CS_{1t-1} + 0.988330 MBV_{it-1}$

Model 2 $CS_2 = 0.442791 CS_{2t-1} - 11.32370\ MBV_{it-1}$

Model 3 $CS_3 = 0.865221CS_{3t-1} - 0.010416MBV_{it-1}$

V. CONCLUSIONS

As a departure from using accounting ratio, market to book value of equity is a market based valuation ratio that has to do with organization timing the market to know when to issue more equity or repurchase equity and when to incur debt or not in their capital structure. The findings from the analysis shows that a positive and statistically significant relationship exists between market to book value of equity and capital structure as measured by total leverages while a negative result was recorded against debt equity ratio and long-term leverage. The deduction here is that Nigerian firms when they are experiencing high market to book ratio will favour debt in terms of total leverage while the preference will shift to sell their shares in the market when the need arises rather that looking out rightly for debt to catch up with their capital structure needs. This development is a strong indication that the Nigerian firms are operating based on the franchise value hypothesis when it comes to debt equity ratio and long-term leverage and efficiency risk when it relates to total leverage as in some other economies of the world.

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E = market value of the firm's equity (market cap) D = market value of the firm's debt V = total value of capital (equity plus debt) E/V = percentage of capital that is equity D/V = percentage of capital that is debt Re = cost of equity (required rate of return) Rd = cost of debt (yield to maturity on existing debt) T = tax rate. Capital structures can vary significantly by industry. Cyclical industries like miningMining Asset Valuation TechniquesThe main mining valuation methods in the industry include price to net asset value P/NAV, price to cash flow P/CF, total acquisition cost TAC & EV/Resources. The economy of Nigeria is a middle-income, mixed economy and emerging market, with expanding manufacturing, financial, service, communications, technology and entertainment sectors. It is ranked as the 27th-largest economy in the world in terms of nominal GDP, and the 24th-largest in terms of purchasing power parity. Nigeria has the largest economy in Africa; its re-emergent manufacturing sector became the largest on the continent in 2013, and it produces a large proportion of goods and services for Understanding book value and market value is helpful in determining a stock's valuation and how the market views a company's growth prospects. Additionally, the book value is also available as shareholders' equity on the balance sheet. For example, technology leader Microsoft Corp.'s (MSFT) balance sheet for the fiscal year ending June 2019 reports total assets of $286.6 billion and total liabilities of $184.2 billion. It leads to a book value of ($286.6 billion - $184.2 billion) $102.4 billion. This is the same figure reported as shareholder's equity. One must note that if the company has a component of minority interest, that value must be further reduced to arrive at the correct book value.