Corporate Taxation and the Trade-Off Theory: A Dynamic Fixed Effects Approach

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Abstract: The study focused predominantly on the validity test of the trade-off theory in the Nigerian context. In testing the validity of the test, the study sampled six (6) Deposit Money Banks listed on the Nigerian Stock Exchange from 2011 to 2020. The study used fixed and dynamic approach to examining the trade-off theory. The method adopted was the fixed effect estimator and system generalized methods of moment. Theoretically, the trade-off theory suggests a positive impact of profitability and company size on financial leverage. The study measured financial leverage using ratio of total debt to total asset. The study found strong evidence for validation of the static trade off theory, indicating its practice in Nigeria. Notably, we found a positive and significant relationship between company size and financial leverage. Similarly, profitability has positive and significant effect on financial leverage. It was recommended that DMBs external source their finance if internal means are not sufficient to finance their operations.

Key words: Corporate Taxation, Trade-off Theory, Fixed Effects Approach.

1. Introduction

Trade-off theory affirms that optimal debt ratio is estimated by balancing the benefits (i. e. interest tax shield) and weaknesses (i. e. cost of financial distress) of debt finance. While leverage rises, the marginal tax shield from each currency unit of extra debt plunges. It is due to the high likelihood that the corporations would be exempt from tax payments because of not having positive taxable incomes. Therefore the trade-off theory refuted the irrelevance theory of Modigliani and Miller (1958) that capital structure does not matter for firm value. The theory relaxed the MM (1958) perfect market assumptions that firms do not pay taxes, no transaction costs, symmetric of information among others. The trade–off theory posits that firms behave as if they have optimal debt position they strive to achieve. They tend to trade off the tax advantage of using debt with the agency cost and bankruptcy cost that may arise due to the use of debt in their capital structure.

Firms financing choice vary with time and space therefore their transaction costs and speed of adjustments towards the optimal target as contained in the trade-off theory may also vary with time and space. The theoretical prediction of the trade-off theory is that inverse relationship exists between cost and speed of adjustments towards optimal debt target. Empirical evidences suggest that firms in developed economies incur more costs and adjust relatively slowly in attaining their optimal target position (Fama & French, 2002; Flannery & Rajan, 2005).

However, studies that have used samples of firms from developing economies have found firms to adjust relatively faster with lower costs to achieve their target debt position (Ramjee & Gwartidzo (2012; Haron et al., 2013). Contrary to the faster adjustment speed towards target optimal capital structure reported by most studies in developing economies, Matemilola, Bani-Arifin and Azman-Saini (2011) found South African firms adjust slowly towards optima debt target. Surprisingly, DeMiguel and Dindado (2001) reported that Spanish firms incur low adjustment costs and high speed of adjustments which is similar to what is obtainable in most developing markets. They related that the underdeveloped bond market in Spain makes most firms in Spain that rely on private debt. The use of private debt makes Spanish firms adjustment speed to be very fast and incur cost lower than most developed economies in Western Europe and the United States. The various findings in the capital structure literature suggest that the issue of costs and speed of adjustment of firms towards optimal debt is mixed and inconclusive.

The empirical irregularities and inconclusiveness among the various studies particularly from the perspective of developing and emerging economies and Africa suggest that there is need for further country level test of the portability and plausibility of the trade-off theory in emerging market in Africa (Muktar & Ahmad, 2015). It is against this backdrop that this current paper provides fresh country level evidence from the perspective of firms operating in Nigeria. Nigeria provide an institutional setting characterize with underdeveloped financial system pervaded with information asymmetries that may make cost of debt expensive. It is against the foregoing that this paper examines the plausibility of the trade-off theory in Nigeria context. Apart from the introduction, the paper is divided into four other sections. Section two is the review of literature. Data and methodology of the study is presented in section three. Section four presents the findings of the study while section five centres on the conclusion of the study.

2. Literature Review

The Classical version of the tradeoff theory was provided by Kraus & Litzenberger (1973) and later popularised by Myers (1984) and Frank & Goyal (2005). The tradeoff theory relaxed some of the assumptions of the MM (1958) theory particularly the assumptions of no taxes, no transaction cost, distress cost, agency cost. The trade off theory posited that firms balance the tax benefit of debts with potential bankruptcy costs to achieve an optimal debt level. The theory implies that local tax levels and bankruptcy codes matters to firm when making capital structure decisions (Joeveer, 2006). Firms choose debt level that can maximize their value. This contradicted the view of MM (1963) that firms should employ 100 percent debt in order to maximize value.

The tradeoff theory is regarded as the optimal view of capital structure. Ismail (2006) noted that the optimal view describes financing decisions of firms involves adjusting existing debt and equity levels towards some value maximising target. The tradeoff theory assumed that when firms are selecting between debt and equity they behave as if they have some target levels in mind (Marsh, 1982). The theory stressed the tax advantage of using debt in the capital structure of firms. Debt reduces the tax payable by the firm as the fixed interest on debt is first deducted before the profit is tax thereby reduces the size of profit available for taxation and increase the available profit to the firm. One major strength of the tradeoff theory is the assumptions of the existence of transaction or distress cost and taxes paid by firms which are use to shield the profit of the firms. This serves as advantage of using debt by firm. These

assumptions of the trade-off theory conforms with reality rather than being idealistic as the MM theory that assumed no taxes and no transaction or distress cost. The trade-off theory generally implies that firms capital structure can change across firms and across time and firms would likely incur adjustment cost to achieve the optimal leverage level and the changes towards the optimal debt level may not be instantaneous, it can be very fast or slow depending on certain internal and external factors such as size of the firm, imperfections in the capital market among others.

The theoretical expectation of the trade-off theory is that inverse relationship exists between adjustment costs and speed of adjustment towards the optimal target debt position of firm. (Fama & French, 2002; Flannery & Rajan, 2005; Muktar & Ahmad, 2015).

Trade off theory

According to Modigliani & Miller, (1958) an efficient working capital is achieved when there is a trade-off between liquidity and profitability and the shareholders' value. Efficiency in working capital management seeks to ensure that the investment in working capital components is neither too little nor too high. The former could give rise to illiquidity, stock outs, and lost sales, whereas the latter amounts to waste(Tully, 1994). With regards to profitability, the level of investment in working capital and the financing of this investment, at any particular level of output, involve a risk-return trade-off (Raheman and Nasr, 2007).

Generally, the higher the risk the higher the return will be demanded by management and shareholders in order to finance any investment in working capital (Gitman, 1997).When the working capital requirements are not properly managed and are allocated more than required, It renders the management inefficient and reduces the benefits of short-term investments. On the other hand, if the working capital is too low, the company may miss alot of profitable investment opportunities or suffer short term liquidity crisis, leading to the degradation of company credit, as it cannot respond effectively to temporary capital requirements. There may be various external and internal factors that may induce the firms to strike a balance between meeting unforeseen capital requirements and avoiding inefficient management of capital (Afande, 2015).

Therefore, the study adopted packing order theory and trade-off theory from the efficiency working management perspective to anchor the variables of the study because the theories establish a logical link between the management of corporate liquidity and firm value. Recognizing the tax shield as a determinant of the capital structure was incorporated in the M&M proposition by Modigliani and Miller themselves. Later, it was recognized that benefits of the tax shield are offset to a great extent by the costs of financial distress. However, the tax shield is an observable factor but the costs of financial distress are not. So, to be on the safer side, firms maintain a safety of margin before taking advantage of the tax shield. Hence, benefit from tax shields are offset by costs of financial distress. They entitle this theory to the trade-off theory.

It seems to costs of financial distress and benefits from tax shields are balanced. Therefore, we expect companies with more costs of financial distress have less debt in their capital structure. Trade-off theory suggested the modified M&M proposition.

V (firm) = V + PV (interest tax shields) – PV (costs of financial distress)

Where, V is the value of firm with entire equity

There are some fundamental concepts of the Traditional Trade off Theory. Typically, this theory explains why firms follow a moderate and cautious approach to debt issues, despite benefits of tax shields. There are some testable implications of this model like firms with high risk, firms with abnormally valorous growth opportunities and firms with intangible assets will issueless debt as these have high costs of financial distress. Firms with assets which have secondary market may issue more debt.

Firms with more tax advantage may issue more debt. Mackie-Mason shows tax-paying firms favor debt. Long- term debt is significantly dependent on firm's efficient marginal tax. On the contrary, as Fama and French discovered there is not any net tax benefit in debt and in equilibrium, debt is along bad news about profitability that override interest tax shield or other benefits of debt. They also found inverse relationship between value of firm and debt, even after holding constant earnings, investment and R and D.

There has been evolved a more general theory of trade-off which considers many more factors besides tax and costs of distress for comparing the advantage and the disadvantages of the tax and equity and obtains a trade-off. In this more general theory, there are several arguments as why firms might try to adjust their capital structure.

Some of the advantages of debt are as follows (besides the interest tax shields advantage):

i.   Debt is a valuable device for signaling by firms. It was suggested by Ross that leverage, Increases firm's value, because enhancing leverage is coincide with the market's realization of value.

ii. Agency costs related to equity will be reduced by debt. These agency costs are such as free cash flow problem or also called over investment problem.

iii. Debt reduces the agency cost of management so that it disciplines managers.

Disadvantages of debt are as follows (besides the costs of financial distress /bankruptcy):

i.   Managers acting in shareholders' interest may shift investment to more risky assets and the costs are incurred by the debt holders.

ii. Managers may borrow still more and pay out to the shareholders, hence the debt holders suffer.

iii. Excessive debt leads to the underinvestment problem or 'debt overhang' problem. This means that many good projects may be passed on because more debt cannot be issued at the right time due to the existing debt.

The Traditional Trade-off Theory proposes that all firms have an optimal leverage (debt ratio). This optimal debt ratio is a point where advantages of tax shield gets offset by costs of financial distress. This often leads to 'target adjusted' mean reverting behavior in debt ratios in time. It is important to note that this target is not discoverable but it may be computed from firm's variables such as debt-to-equity, firm's size, growth options and non-debt tax shields etc4. The trade-off theory did not consider the information asymmetry had not been considered in trade-off theory.

This assumption was later relaxed which led to the pecking order theory which was stood on the conflicts between the insiders and the outsiders due to different information at their hands.

Pecking Order Theory

Donaldson (1961) first suggested theory but it received its first rigorous theoretical foundation by Myers and Majluf (1984). Pecking order theory advocates an order in the choice of finance due to different degrees of information asymmetry and related agency costs embodied in distinct sources of finance. As such retained earnings are used first since they constitute the cheapest means of finance, hardly being affected by any information asymmetry. Second, debt is used as there is low information asymmetry due to fixed obligations acting as an effective monitoring device. Finally, external equity is used only as a last resort as it conveys adverse signaling effect as explained by event studies. Hence, pecking order theory is also consistent with shareholder's wealth maximization since it attempts to minimize the cost of raising finance. Myers (1984) and Myers and Majluf (1984) stipulate the pecking order theory as an alternative model to the trade-off theory. The traditional version of the pecking order theory stipulates that the company prefers internal to external financing and debt to equity, when issuing securities and therefore,

does not possess a target debt-to –value ratio. Myers (1984) introduces an extended version of the pecking order theory, where asymmetric information between manager and investors causes costs of the adverse selection and ties the company to the pecking order in financing new projects.

The adverse selection costs stem from markdowns on share prices, when new equity is issued, because investors assumed an overvaluation of the company. On the other hand, the issuance of debt increases the probability of financial distress, which in turn increases the companies cost of capital. Therefore, companies always recur to internal financing for new projects first. If internal resources are not available, the safest securities are issued first, implying the issuance of debt before equity (Getzman et al., 2010). Halov and Heider (2005) emphasize that large companies face smaller costs of adverse selection than small companies do, when the possibility of risky or mispriced debt are not available to the company.

Agency Cost Theory

The most influential model of agency costs, first established by Jensen and Meckling (1976) defines agency costs as the sum of three variables namely, the monitoring expenditures of the principle, the bonding expenditures by the agent, and the residual loss. The first type of agency cost is expenditures by the principal in monitoring the agent. By monitoring costs, economists usually imply not only observing the behavior of the agent, but also efforts on the part of the principal to control the behavior of the agent through budget restrictions, compensation policies, and operating rules.

The second class of agency costs are usually labeled bonding expenditures. By this, economists refer to situations where the principal will pay the agent to expend resources to guarantee that the agent will not take actions that harm the principal. A bonding cost is incurred where the principal pays a premium to the agent to create some pool of resources or a legal obligation from which the principal can be compensated for detrimental actions of the agent. Bonding can serve as a substitute for monitoring costs, and vice versa. A certain bonding expenditure may decrease the marginal expected utility of monitoring expenditures. Moreover, inability to bond might signal a need to invest additional resources in monitoring.

The final class of agency costs is the principal's lost welfare caused by the divergence in his interests from those of his agent. If because of circumstances such as technology, geography, or even personalities involved, an agent cannot be perfectly monitored or bonded, and then we should expect that the interests of the principal and the agent will not be coextensive. This remaining pocket of diverging interests is generally called the "residual loss" associated with agency. Jensen and Meckling (1976) argue that the use of secured debt might reduce the agency costs. Titman and Wessels (1988) point out that the costs associated with the agency relationship between shareholders and debt holders are likely to be higher for companies in growing industries hence a negative relationship between growth and financial leverage is likely.

Empirical Review

Ejem and Ogbonna (2019) in their study using Nigerian data on quoted firms considered one of the influential questions in corporate finance: Does M-M proposition 1 on capital structure and firm's value stand? The researcher fit the three conventional panel data models; pooled regression, fixed effects and random effects models, to panel data, consisting of 10 cross-sectional units that are observed annually for 6 years from 2010 to 2015. The results show that, although, the fixed effects model outperformed the pooled regression model based on likelihood ratio test, the random effects model, which assumes that the unobserved firm-specific factors are uncorrelated with the capital structure variables, however, outperforms the fixed effects model based on the Hausman specific test. Also discovered in their research that both equity and long- term debts have a positive and significant relationship with a firm's market value, with their joint influence explaining approximately 73% of the variation in market value per share.

There is also evidence of a cointegrating relationship in the market value model, thus, both equity and long-term debt have long run relationship with firm market value. Therefore, the researchers concluded that equity and long-term debt are significant explanatory factors for a firm's value in Nigeria. In other words, a judicious mix of equity and debt can enhance a firm's value.

Lawal (2014) examined capital structure and the value of the firm of Nigeria banking industry using ordinary least squares technique and white HAC heteroskedasticity and observed that the debt instrument play significant role in magnifying the value of the Nigeria banking firms, while equity role is partially significant.

Oboh et al. (2012) investigated corporate structure and corporate market value with empirical evidence from Nigeria. The study employed multiple regression estimators and discovered that significant relationship exist between non-financial firm's market values and their debt-equity ratios and a negative relationship between a firm's total-debt/total capital ratio and its market value.

Supa (2012) employed multiple linear panel regression models to examine the factors influencing capital structure decisions so as to maximize the value of a firm, and a dynamic panel regression model using one-step and two-step Arellano and Bond generalized method of moments (GMM) estimation approach to determine the speed of adjustment towards target capital structure, and observed that a positive relationship exist between a firm's debt and its median industry leverage.

Antwi, et al., (2012) had critical look at the capital structure and firm value in Ghana cross sectional analysis. The study used all the 34 companies quoted in the Ghana stock exchange for the year ended December 31, 2010. The result revealed that emerging market like Ghana, EqC market as a component of capital structure is relevant to the value of a firm and long term debt was also found to be the major determinant of a firm's value.

3. Materials and Method

The data employed in this paper are sourced from the annual financial statements of five (5) quoted deposit money banks (DMBs) in Nigeria. Data used for this study span from 2011 to 2020. Due to the nature of the data used, the paper adopted the ex-post facto research design method which allows for examination of cause and effect between the predictor variables and criterion variable, using time series data.

This study deals with dynamic relationship and the use of panel methods like fixed effect and random effect to estimate a model that has the lagged dependent variable as a predictor will make the estimates to be bias. To ensure our estimates are unbiased, the study adopted the system generalized method of moments in examining the dynamic relationship between the dependent and independent variables.

Model Specification

The function model is as follows;

$$y_{it} = f(y_{it-1}, X'_{it}) \ (1)$$

Where;

y_{it} = financial leverage measured using ratio of total debt to total assets;

X'_{it} = vector of dependent variables which include size of the company, profitability and growth rate.

The econometric specification of equation (1) becomes;

$$y_{it} = \alpha_0 + \alpha_1 y_{it-1} + \alpha_2 CS_{it} + \alpha_3 ROA_{it} + \varepsilon_{it} \ (3)$$

Note:

CS_{it} = company size as defined by log of total asset; and

ROA_{it} = profitability as defined by return on asset measured using ratio of earnings before interest and tax to total assets.

4. Results and Discussion

Table 1: Static and Dynamic Results

$Variables$	$Pooled\ OLS$	$Sys - GMM$
y_{t-1}	-	1.5281***
		(0.2565)
roa_{it}	0.0105	0.0323***
	(0.0254)	(0.0059)
cs_{it}	0.0120	0.0033**
	(0.0037)	(0.0016)
$Constant$	0.7232	-0.7305
	(0.0754)	(0.2676)
$Observations$	59	48
R^2	0.24	-
$Adjusted\ R^2$	0.22	-
$Arellano - Bond\ AR(1)$	-	-1.95
$Prob > z$	-	0.049
$Arellano - Bond\ AR(2)$	-	-0.42
$Prob > z$	-	0.672
$Sargan\ Chi^2\ test$	-	4.55
$Prob > Chi^2$	-	0.473

Note: Standard error in parentheses; *, ** and *** denote significant at 10%, 5% and 1% respectively

Source: Author Computation from STATA 15.0

Table 1 provides result of the static and dynamic model. The static model is estimated using the fixed effect estimator, while the dynamic model with the two step system generalized method of moments.

From the result of the static model contained in column 2, we observed an r-squared of 0.24. This means that, 24 percent of the variation in leverage ratio is explained by return on asset and company size. The remaining 76 percent are explained by others determinants of leverage ratio not included in the adopted model, but capture by the stochastic term. In terms of impact, we observed that none of the regressors have significant effect on leverage ratio, though their impacts are positive.

Due to the inclusion of the lagged leverage ratio, the fixed effect estimator cannot be use to estimate the dynamic model that accounts for the effect of time. The generalized method of moments (GMM) was used. The system GMM was used over the fixed effect model. In the dynamic result contained in column 3, previous year's financial leverage has positive and significant effect on current financial leverage. Changes in the previous period's financial leverage causes a change of 1.5281 percent in current period financial leverage. An increase in profitability by one percent will lead to a significant increase in financial leverage by 0.0323 percent. In contrast, as the company size increase by one percent, financial leverage will increase by 0.0033 percent.

The estimated dynamic model is robust as the AR(1) null hypothesis is rejected, while the AR(1) null hypothesis could not be rejected. Valid instruments were used as the Sargan null hypothesis of valid instruments were not rejected.

The findings on company size and how it relates to financial leverage is in line with the trade-off theory. Trade-off theory suggests that company size should matter when deciding on the optimal capital structure. This is because bankruptcy costs constitute a small percentage of the total company value for larger companies and greater percentage of the total company value for smaller companies. As the level of debt increases the chances of bankruptcy, hence small companies should have lower financial leverage. The positive effect of profitability also shows the dominance of trade off theory.

5. Conclusion Recommendation

The study set out to test the validity of the trade-off theory in the Nigerian context. The objectives was to examine how certain bank factors affect the financial leverages of six (6) deposit money banks in Nigeria. The findings of this research contribute towards a better understanding of financing behaviour in Nigerian DMBs companies. The fixed and system generalized method of moments (SYS-GMM) were used in testing if the trade-off theory holds.

If the static trade-off theory holds, significant positive coefficients are expected for profitability and company size. The results of this study provide evidence for validation of the static trade-off theory in Nigerian context. The company size variable has a positive slope and is significant at 5 percent level. This variable confirms to the trade-off theory. This implies that large DMBs will lower profits will have higher debt capacity and will, therefore be able to borrow more and take advantage of any tax deductibility.

Based on this findings the following recommendations were made;

1. Companies should employ debt financing if their internal funds are not enough to finance financial requirements of their companies.

2. The DMBs should employ internal financing mean to avoid unnecessary burden of debts. The use of internal financing should be done with care since it reduces the dividend payout of the companies.

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