THE IMPACT OF TAXES ON THE BORROWING BEHAVIOUR OF NIGERIAN QUOTED FIRMS

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Abstract

An underexplored research in modern finance theory borders on the issue of taxes and corporate debt policy. Financial theory should be able to explain why large, profitable and heavy tax paying firms do not fully exploit the potential tax savings generated by debt. At best, partial explanations exist for debt conservative behavior. This study delves into the role of taxes on corporate borrowing in Nigeria. The population of study comprises all non-financial corporations quoted on the Nigerian Stock Exchange (NSE) for the period 1999-2014 out of which 50 companies that met the minimum data criteria were utilized. Using a combination of panel data least squares regression, the Modigliani- Miller tax benefit formula, the Miller equilibrium and the Graham simulation technique, the research documents the following findings. First, the factors that exert positive influence on corporate borrowing include firm age, financing deficit, asset intangibility and expected inflation while those factors that exert negative influence on capital structure include asset tangibility, growth, size, volatility of earnings, profitability, liquidity, dividend-paying status and uniqueness of industry. Second, the marginal tax rate exerts a negative impact on corporate debt ratios and there is weak evidence that tax considerations are crucial in capital structure choice – a position that challenges the trade-off theory. The results were, at best, mixed with respect to the portability of pecking order, target adjustment, agency and market conditions models. Asymmetric information rationalizes the aggressive debt posture of smaller, less profitable, less liquid firms with more risky intangible assets and low dividend-payers. The study recommends the use of non-debt tax shelters for corporate tax planning, government simplification of tax administration.

Keywords: Capital structure, marginal tax rate, corporate and personal taxes, firm-specific characteristics, pecking order, trade-off.

Introduction

Corporate Finance has taken a thrashing lately. It is not just the financial services industry that has lost its fervour with the public at large, as Zingales (2015) has stated, but the empirical validity of standard theories of finance that appear to be challenged by recent research (Bolton, 2016). An important gap that exists in modern finance theory is the role of taxes on corporate debt policy. Financial theory should be able to explain why large, profitable and heavy tax paying firms do not fully exploit the potential tax savings generated by debt. At best, empirical work provides partial explanations for this debt conservative behavior such as avoidance of debt overhang or underinvestment problem (Myers, 1977), pecking order financing (Myers & Majluf, 1984) and free cash flow considerations (Jensen, 1986). Despite an avalanche of empirical research, indicating that tax benefits are among the factors that affect financing choices (Graham, 2000, Graham &Harvey, 2001, van Binsbergen, Graham & Yang, 2010, Korteweg, 2010, Doidge & Dyck, 2015, Morais, *et al*, 2020, Paseda & Adedeji, 2020, Deng, *et al*, 2020, and Kalcheva, *et al*, 2020, Attaoui, *et al*, 2021, Jin, 2021, Whited & Zhao, 2021), there is no unanimity on which factors are most important for corporate debt policy or how they contribute to firm value.

Given this state of empirical capital structure research, one can conclude that further research is required to explain the role of taxes on corporate debt policy. Thus, the rationale for continuous work in this area.

Myers (1977:147) observes "… an important gap in modern finance theory" and specifically the inability of the theory to fully explain why "tax savings generated by debt do not lead firms to borrow as much as possible". Myers (1977), following the Miller and Modigliani (1961) valuation model, analyses the two components of firm value, namely, the present value of (earnings generated by) assets-in-place and the present value of growth opportunities and provides implications for corporate debt policy. He concludes with a partial theory of corporate borrowing decision where the optimal debt is "inversely related to the value of growth opportunities or that part of the market value of the firm that is contingent on discretionary future expenditure by the firm" (Myers, 1977:170). More than two decades later, Graham (2000:1901) began with the questions "Do the tax benefits of debt affect corporate financing decisions? How much do they add to firm value?" and found that "Growth firms that produce unique products use debt conservatively" but "surprisingly, large, profitable, liquid firms also use debt sparingly…" This poses an even greater challenge to existing theories and intensifies the debt conservatism puzzle in the capital structure literature. Graham (2000) quickly concludes that "there are many unanswered questions as to why some firms appear to be under-levered. This area is fertile

ground for future research" (Graham, 2000:1935). Graham and Tucker (2006) attempt to explain the debt conservatism puzzle through the investigation of the role of off-balance sheet tax shelters. They find that firms that use tax shelters use less debt on average than non-shelter firms. Their results are consistent with the view that tax shelters act as nondebt tax shields which substitute for the use of interest tax deductions obtainable from debt financing (DeAngelo & Masulis, 1980). Perhaps a *precautionary demand for liquidity* is a rationale for the debt conservatism of financially constrained firms but the low leverage and tax impact persists (Cohn, Titman & Twite, 2020; Demirguc-Kunt, Peria & Tressel, 2020).

In addition, many empirical papers on capital structure tests have focused on developed markets where capital market frictions may differ, in nature, from the imperfections in the developing capital markets. A central concern of scholars has been the examination of how specific market frictions - such as taxes, transaction costs, information asymmetries, bankruptcy costs and so on - alter the central predictions of Modigliani & Miller (1958). Specifically, the presence of tax- induced frictions in developing countries suggests that emerging markets also provide an excellent laboratory for capital structure tests that incorporate the impact of market frictions.

There have been some research efforts on the Nigerian corporate environment such as Adelegan (2009), Amah (2014), Amah and Ezike (2013), Paseda and Olowe (2018), Paseda and Obademi (2020), Paseda and Adedeji (2020) on debt conservatism, investment policy, debt maturity and tax frictions. As profound and robust as the observation of actual debt ratios of Nigerian corporations being less than the theoretical optimal levels, and the robust econometric analysis of financial leverage impact on corporate valuation, the papers exclude salient issues on the tax benefit functions of different corporations in Nigeria or how taxes contribute to value.

There is doubtless some truth in each of these postulates, but they do not add up to a rigorous, complete and conclusive explanation of corporate debt policy. This study seeks to add a developing country perspective to the tax-impact on capital structure debate and thus fill an important gap in the corporate finance literature.

Moreover, many scholars emphasize that the future direction of capital structure research should seek to quantify the impact of taxes on corporate valuation and financing decisions (e.g., Fama, 2011, An, 2012, Korteweg 2010, Doidge & Dyck, 2015).

It is also well known that the Nigerian tax environment is fraught with many imperfections leading to

tax revenue leakages for the Government (Modebe, Okoro, Okoyeuzu & Uche, 2014). A clear manifestation of inefficiencies with the tax system is the abysmally low tax-to-GDP ratio in Nigeria relative to proximate economies. Taxes are the main source of revenue for most governments. Tax revenue as a share of GDP provides a quick overview of the fiscal obligations and incentives facing the private sector across countries. Low ratios of 'tax revenue to GDP' may reflect weak administration and large-scale tax avoidance or evasion. Firms can evade taxes without any real risk of detection or punishment. Shleifer and Vishny, for instance, point out that where public pressure on corruption or the enforcement ability of government is relatively weak – as is the case in many developing countries – this is in fact a fitting assumption. Low ratios may also reflect a sizeable parallel economy with unrecorded and undisclosed incomes. The presence of incentives for companies to exploit loopholes in existing tax laws and enforcement practices should make this line of capital structure research an exciting one in an emerging market (Soyode, 1978; Adelegan & Ariyo, 2008; Adelegan, 2009). Fan, Titman and Twite (2012) find that a country's legal and tax system and corruption, among other factors, explain a significant portion of the variation in leverage and debt maturity ratios. This point was re-echoed in Cohn, *et al.* (2020).

This research adds to the studies on capital structure and taxes thereby enriching the interplay between theory and empirical tests. As Myers (2001) puts it, there is no universal theory of capital structure and there is no reason to expect one. Several extant capital structure models, such as the tradeoff, pecking order, target- adjustment, market timing and agency models, have been tested using data from developed markets. The portability of those models in emerging markets is a matter of empirical tests so that if those theories do not hold, their implications too may be irrelevant to economists and corporate finance types in emerging market domain.

The purpose of this study is to evaluate the role of taxes on the borrowing behavior of Nigerian quoted firms. The central result of this paper is that the marginal tax rate exerts a negative impact on corporate debt ratios. Further, when a comparative R^2 analysis that excludes the marginal tax rate variable is done in a regression framework, then the degree of explained variation of the tax rate is negligible. Thus, corporate taxes have no impact on the capital structure of Nigerian quoted firms. In other words, corporate taxes are insignificant in firms' borrowing behaviour. The results pose a challenge for trade-off models of capital structure that emphasize role of debt. This study is an offshoot of Paseda (2016), and similar to Paseda (2020) which documents the information in the tax benefit curves of Nigerian

quoted firms, Paseda (2021) which considers the impact of some firm attributes on corporate debt policy, Paseda and Olowe (2018) which studies the debt maturity structure, Paseda and Obademi (2020) which investigates the impact of macroeconomic variables on firms' capital structure, and finally, Paseda and Adedeji (2020) which evaluates the economic forces driving zero-leverage phenomenon.

The rest of this paper is organized as follows: Section 1 reviews prior work on the tax and non-tax explanations of corporate debt policy. Section 2 considers the methodology including data description, sample construction and definition of variables. Section 3 discusses the empirical results of the impact of taxes on borrowing. Section 4 presents robustness checks and the final section concludes the paper.

1.0 Literature Review and Theoretical Framework

The modern theory of capital structure began with the celebrated papers of Modigliani & Miller (MM 1958, 1963). They developed a framework for addressing the question of how a firm's financial choices, such as its use of debt rather than equity financing, affect its cost of capital and consequently its investment behaviour (Paseda, 2006). The MM (1958) paper's central result is that, in a setting with complete and perfect capital markets, a firm's total market value is invariant to its borrowing behaviour. This powerful result demonstrated by their arbitrage proof sparked a major revolution in finance. In other words, MM pointed the direction that corporate finance theories must follow by showing under what conditions capital structure is irrelevant. Since then, many researchers have followed the path they mapped. The following six decades witnessed the thorough development of the perfect market theory in finance applications and its spread throughout economics. The diminishing returns associated with the maturing of this research have led finance scholars to concentrate increasingly on relaxing various perfect market assumptions, with growing attention to taxes, bankruptcy effects, agency costs and information effects. This study reviews tax-based explanations for the departure from the central MM results.

The Foundations – Tax Explanation of Debt Policy

Modigliani and Miller (1958, 1963) wrote the seminal paper on cost of capital, corporate valuation and capital structure and concluded with the famous irrelevance propositions. In spite of the restrictive nature of these assumptions, empirical evidence has found that relaxing many of them does not really change the major conclusions of the model of firm behaviour that was provided by Modigliani and Miller.

MM's (1963) tax-corrected view suggests that firms would adopt a *target debt ratio* so as not to violate debt limits imposed by lenders. In addition, the existence of personal taxes and costs of financial distress

have been cited in the finance literature as possible offsetting measures to the interest tax shield advantage of corporate debt (Miller, 1977; Brealey, Myers & Allen, 2020).

With the perspective provided by asset pricing models of Sharpe (1964), Lintner (1965), Mossin (1966), which were unavailable to MM, it became clear that their propositions do not require their "risk classes" assumption. Fama (1978) provides a capstone. Fama (1978) argues that the MM propositions hold in any asset pricing model that shares the basic MM assumptions (perfect capital market, including no taxes, no transaction costs, and no information asymmetries or agency problems), as long as (i) investors and firms have equal access to the capital market (so investors can undo the financing decisions of firms), or (ii) there are perfect substitutes for the securities issued by any firm (with perfect substitute defined by whatever happens to be the right asset pricing model).

Consequent on the 'tax corrected' version of the MM hypothesis, the gain from leverage, G is the difference between the value of the levered and unlevered firm, which is the product of the corporate tax rate and the market value of debt. Miller (1977) modifies this result by introducing personal as well as corporate taxes into the model, in an attempt to bring it closer to the real world. The basis for the argument is that the firm's objective is no longer to minimize the *corporate* tax bill but to minimize the present value of *all* taxes paid on corporate income. "All taxes" include personal taxes paid by bondholders and stockholders. Under this stated assumption, the value of a levered firm can be expressed as:

$$V_L = V_u + \frac{[1-(1-t_c)(1-t_{pe})]}{(1-t_{pD})} D \qquad (1)$$

Where V_u represents value of an unlevered firm of equivalent risk, t_c represents corporate tax, t_{PD} represents the personal tax rate on bond income and $D = INT\ (1-t_{PD})/kd$, the market value of debt. Consequently, with the introduction of personal taxes, the gain from leverage is the second term in equation (1). It is important to emphasize that where both debt and equity income are taxed at the same effective personal rate (i.e., where $t_{pe} = t_{PD}$), the gain from leverage equals the product of the corporate tax rate and the market value of debt (hence, the impact of personal taxes can be ignored).

Further, equation (1) implies that the gain from leverage vanishes when:

$$(1-t_{PD}) = (1-t_c)\ (1-t_{pe}) \qquad (2)$$

When personal tax rate on stock is nil, then gain from leverage becomes

$$G = \frac{1-(1-\tau_c)}{(1-\tau_{pD})} D \quad (3)$$

Miller's argument has important implications for capital structure. First, the gain to leverage may be much smaller than previously thought. Consequently, optimal capital structure may be explained by a tradeoff between a small gain to leverage and relatively small costs such as expected bankruptcy costs. Second, the observed market equilibrium interest rate is seen to be a before – tax rate that is "grossed up" so that most or all of the interest rate tax shield is lost. Finally, Miller's theory implies there is an equilibrium amount of aggregate debt outstanding in the economy that is determined by relative corporate and personal tax rates.

Thus, MM's and Miller's models can be summarized as follows. Under MM's model, the existence of corporate taxes provides a strong incentive to borrow implying an optimum debt ratio of approximately 100%. They ignore personal taxes. Miller's model considers both the corporate as well as the personal taxes. It concludes that the advantage of corporate leverage is reduced by the personal tax loss (resulting from higher personal tax rate on bond income relative to personal tax rate on common stock income). The important implication of the model is that there is no optimum capital structure for a single firm, although for the macro-economy, there exists equilibrium amount of aggregate debt. From a single firm's point of view, therefore, the capital structure does not matter. Miller's perpetual tax shield formula has served as one of the major references for those evaluating whether taxes can explain observed financing patterns. This formula is a cornerstone of the *static trade-off theory*, which posits that firms weigh the tax benefits of debt against the costs associated with financial distress and bankruptcy in order to find the optimal capital structure. This model has provided intuition and guidance for much of the empirical literature on corporate capital structure, which has uncovered several patterns in the data that are inconsistent with the static trade-off theory (Hennessy & Whited, 2005; Brealey, Myers & Allen,

2020).

Graham (2000), for instance, finds that, "paradoxically, large, liquid, profitable firms with low expected distress costs use debt conservatively." By debt 'conservatism', Graham means that firms fail to issue sufficient debt to drive their expected marginal corporate tax rate down to that consistent with a zero/low net benefit to debt based on the Miller formula. Also, Baker (2009) and Baker & Wurgler (2002) reject the trade-off theory on different grounds stating, "the trade-off theory predicts that temporary fluctuations in the market to book ratio or any other variable should have temporary effects." Based on finding a negative relationship between leverage and an "external finance weighted average market to book ratio," they conclude that "capital structure is the cumulative outcome of attempts to time the equity market."

The limitations in Miller's model are instructive. First, it implies that tax exempt persons/institutions will invest only in debt securities and 'high-tax bracket' investors in equities. In practice, investors hold portfolio of debt and equity securities. Second, the personal tax rate on equity income is not zero. As long as t_{pe} is positive, more investors can be induced to hold debt securities. Third, investors in high-tax brackets can be induced to invest in debt securities indirectly. They can invest in those institutions wherefrom income is tax exempt. These institutions, in turn, can invest in the corporate bonds.

DeAngelo and Masulis (1980) extend Miller's work by analyzing the effect of tax shields other than interest payments on debt, e.g., non-cash charges such as *accounting depreciation*, *oil depletion allowances, and investment tax credits.* They are able to demonstrate the existence of an optimal (nonzero) corporate use of debt while still maintaining the assumption of zero bankruptcy (and zero agency) costs (Paseda, 2006).

DeAngelo and Masulis (1980) demonstrate that each firm has a unique interior optimum capital structure

in market equilibrium in a world characterized by (i) the equity-biased personal tax code and (ii) corporate tax shield substitutes for debt and/or positive default costs. From their expanded model, they derive the following testable hypotheses:

H_1: The leverage decision is relevant to the individual firm in the sense that a pure change in debt (holding investment constant) will have a valuation impact.

H_2: In equilibrium, relative market prices will imply a net (corporate and personal) tax advantage to corporate debt financing.

H_3: *Ceteris paribus*, decreases in allowable investment related tax shields (e.g., depreciation deductions or investment tax credits) due to changes in the corporate tax code or due to changes in inflation which reduce the real value of tax shields will increase the amount of debt that firms employ. In cross-sectional analysis, firms with lower investment related tax shields (holding before-tax earnings constant) will employ greater debt in their capital structures.

H_4: *Ceteris paribus*, decreases in firms' marginal bankruptcy costs will increase the use of leverage. Cross-sectionally, firms subject to greater marginal bankruptcy costs will employ less debt.

H_5: *Ceteris paribus*, as the corporate tax rate is raised, firms will substitute debt for equity financing. Cross-sectionally, firms subject to lower corporate tax rates will employ less debt in their capital structures (holding earnings constant).

The novel idea that investment tax credits and depreciation expenses do serve as tax shield substitutes for interest expenses has a deal of theoretical appeal. The DeAngelo and Masulis model predicts that firms will select a debt level that is inversely related to the level of available tax shield substitutes. Graham and Tucker (2006), utilizing a sample of 44 tax shelter cases to investigate tax shelter activity, present strong evidence in support of this argument. They find that firms use less debt when they engage in alternative tax sheltering.

In summary, in the DeAngelo-Masulis (1980) model, the tax shield benefit of debt kicks in only after other sources of tax shield benefits are exhausted, i.e., depreciation, losses and investment tax credit. These non-debt tax shields (NDTS) serve as substitutes to debt as in the hypothesis H_3 above. This substitution hypothesis presents a theoretical framework in which leverage is a decreasing function of non-debt tax shields. In other words, the tax shield benefit of debt is moderated by the presence of non-debt tax shield benefits. A positive relationship between debt ratios and non-debt tax shields (NDTS) has been interpreted as an instrumental variable for the debt collateral, i.e., higher NDTS signal higher collateral value of assets.

Non-tax Explanations for Corporate Debt Policy.

1. **Expected Costs of Financial Distress** (or Expected Bankruptcy Costs): Leverage is hypothesized to be a declining function of the expected costs of financial distress (Brealey, Myers & Allen, 2020).

2. **Investment Opportunities**: As leverage reduces financial flexibility and increases the possibility that positive net present value projects may be bypassed when there is debt overhang, corporate borrowing should have an inverse relationship with growth or investment opportunities. The weaknesses of the P/E ratio as a measure of growth (Akintola-Bello 2001) makes it less preferred to market-to-book ratio or Tobin q. The trade-off model shares the same (inverse leverage-growth relation) prediction with a complex pecking order theorem. However, a simple pecking order predicts a positive leverage-growth options relation.

3. **Financial Flexibility**: Restrictive covenants are common in most debt contracts. Thus, the greater the need for financial flexibility, the greater the need for debt conservatism.

4. **Information Asymmetry**: This theory suggests that firms should raise finance through securities that are least prone to information asymmetric problems. Thus, the pecking order financing emerges and suggests retained earnings as the most preferred form of financing. When internal equity is not sufficient to cater for investment needs and external financing is required, then debt is first on the pecking order of external financing. Equity is issued as a last resort.

5 Size: It has been well recognized that bigger firms are less prone to possibility of financial distress perhaps because they are well diversified relative to small firms. In addition, bankruptcy costs are higher

for smaller firms. Thus, debt has been hypothesized as an increasing function of size according to trade-off model. Pecking order predicts otherwise. Because size can be regarded as a proxy for information asymmetry between firm insiders and the capital markets, large firms are more closely monitored by a large number of analysts and should be capable of issuing informationally more sensitive equity.

6. Asset Tangibility (Collateral): Alleviating the classical bondholder-shareholder conflicts (e.g. Jensen and Meckling, 1976), with more tangible assets, the creditors have an improved guarantee of repayment. Hence, the trade-off theory predicts positive relation between leverage and tangibility. On the other hand, managers of highly levered firms will be less able to consume excessive perquisites, since bondholders more closely monitor such firms (e.g. Grossman and Hart, 1982). In general, monitoring costs will be higher for firms with less collateralizable assets, that is, firms with less tangible assets may voluntarily choose higher debt levels to limit consumption of perquisites. This implies a negative relationship between leverage and tangibility (Cerqueiro, Ongena, & Roszbach, 2016).

7. Managerial Entrenchment and Private Benefits: Indeed, managerial entrenchment leads to conservative borrowing**.** Thus, the greater the tendency for managerial entrenchment and consumption of private benefits, the higher the need for debt to provide a disciplinary measure on managers to pursue efficiency over glamorous corporate lifestyle.

8. Cash Flows and Liquidity (Profitability): Profitability interacts with financing decisions. Pecking order hypothesizes an inverse relation between leverage and profitability (liquidity) because more profitable, mature firms do not need to borrow to cater for their capital expenditures. However, the trade-off model hypothesizes that more profitable firms will seek to maximize their tax benefits through increased leverage.

9 Product Market and Industry Effects: The leverage behavior of firms within an industry may exert significant influence on the choice and magnitude of borrowing by firms. Some studies report peer effects in financing decisions. In addition, the riskiness of the firm's products may exert a downward pressure on corporate appetite for debt.

Estimating the Tax Costs and Benefits of Corporate Debt

The tax benefit of corporate debt is the tax savings that result from deducting interest from taxable corporate earnings. By deducting a single naira of interest, a firm reduces its tax liability by τ_c, the marginal corporate tax rate. (Note that τ_c captures both state and federal taxes!) The annual tax benefit of interest deductions is the product of τ_c and the naira amount of interest, *rdD*, where *rd* is the interest

rate on debt, *D*. To capitalize the benefit from current and future interest deductions, the classic approach {Modigliani & Miller (1963)} assumes that tax shields are as risky as the debt that generates them and therefore discounts tax benefits with *rd*. If debt is perpetual and interest tax shields can always be used fully, the capitalized tax benefit of debt simplifies to τ_{cD}.

Miller (1977) points out that the classic approach ignores personal taxes. Although interest payments help firms avoid corporate income tax, interest income is taxed at the personal level at a rate τ_{PD}. Payments to equity holders are taxed at the corporate level (at rate τ_c) and again at the personal level (at the personal equity tax rate τ_{pE}). Therefore, the net benefit of directing a naira to investors as interest, rather than equity, is

$$(1-\tau_{PD}) - (1- \tau c)(1-\tau p_E) \quad (4)$$

The above Equation can be rewritten as τ_c minus the "personal tax penalty", $\tau_{PD} - (1-\tau_c)\tau_{pE}$.

$$\tau c- [\tau_{PD} - (1-\tau c)\tau p_E] \quad (5)$$

If debt is riskless and tax shields are as risky as the underlying debt, then the after-personal-tax bond rate is used to discount tax benefits in the presence of personal taxes. If the debt is also perpetual, the capitalized tax benefit of debt is:

$$G = \frac{[(1-\tau PD) - (1- \tau c)(1-\tau pE)]rdD}{(1-\tau PD)rd} \quad (6)$$

This Equation (6) is slightly different from the Miller's formula in Equation (1). A Miller's equilibrium implies that the above expression equals zero. Graham's (2000) data assumptions imply that the personal tax penalty partially offsets the corporate tax advantage to debt on average, not fully offsets it as it would for every firm in a Miller equilibrium.

Thus far, τ_c has been presented as a constant. There are two important reasons why τ_c can vary across firms and through time. First, firms do not pay taxes in all states of nature. Therefore, τ_c should be measured as a weighted average, considering the probabilities that a firm does and does not pay taxes. Moreover, to reflect the carry forward and carryback provisions of the tax code, this averaging needs to account for the probability that taxes are paid in both the current and future periods. This logic is consistent with an economic interpretation of the marginal tax rate, defined as the present value tax obligation from earning an extra amount of taxable income today {Scholes, Wolfson, *et al* (2015)}. To

reflect the interaction between U.S. tax laws and historical and future tax payments, Graham (2000) estimates corporate marginal tax rates with simulation methods. These tax rates vary with the firm-specific effects of tax-loss carrybacks and carry forwards, investment tax credits, the alternative minimum tax, non-debt tax shields, the progressive statutory tax schedule, and earnings uncertainty.

The second reason that τ can vary is that the effective tax rate is a function of debt and nondebt tax shields. As a firm increases its interest or other deductions, it becomes less likely that the firm will pay taxes in any given state of nature, which lowers the expected benefit from an incremental deduction. At the extreme, if a firm entirely shields its earnings in current and future periods, its marginal tax rate is zero, as is the benefit from additional deductions. This implies that each naira of interest should be valued with a tax rate that is a function of the given level of tax shields. As explained next, τc defines the tax benefit function, and therefore the fact that τc is a decreasing function of interest expense affects the estimate of the tax benefits of debt in important ways.

Graham (2000) estimates the tax benefits of debt as the area under the tax benefit function. To estimate a benefit function, first calculate a tax rate assuming that a firm does not have any interest deductions. This first tax rate is referred to as $MTR_{it}0\%$ for Firm *i* in Year *t* and is the marginal tax rate that would apply if the firm's tax liability were based on before-financing income (EBIT, which incorporates zero percent of actual interest expense). Next, calculate the tax rate, $MTR_{it}20\%$ that would apply if the firm hypothetically had 20 percent of its actual interest deductions. He also estimates marginal tax rates based on interest deductions equal to 40, 60, 80, 100, 120, 160, 200, 300, 400, 500, 600, 700, and 800 percent of actual interest expense. (All else is held constant as interest deductions vary, including investment policy. Non-debt tax shields are deducted before interest.) By "connecting the dots," he links the sequence of tax rates to map out a tax benefit curve that is a function of the level of interest deductions. To derive a net (of personal tax effects) benefit function, he connects a sequence of tax benefits that results from running τ through Equation. An interest deduction benefit function can be flat for initial interest deductions but eventually becomes negatively sloped because marginal tax rates fall as additional interest is deducted.

The benefit functions are forward-looking because the value of a dollar of current-period interest can be affected, via the carryback and carry forward rules, by the distribution of taxable income in future years. In addition, future interest deductions can compete with and affect the value of current tax shields. I assume that firms hold the interest coverage ratio constant at the Year-*t* value when they are profitable

but maintain the Year-*t* interest level in unprofitable states. For example, assume that income is N500 in Year *t* and interest deductions are N100. If income is forecast to rise to N600 in *t* +1, Graham's assumption implies that interest deductions rise to N120.Alternatively, if income decreases to N400, interest falls to N80. If income is forecast as negative in *t* + 1, interest remains constant at N100 (implicitly assuming that the firm does not have sufficient cash to retire debt in unprofitable states). Likewise, if the firm's income is forecast to be N400 in *t* + 1 and then negative in *t* + 2, Year-*t* + 2 interest deductions are assumed to be N80. Graham acknowledges some flaws with his tax benefit function methodology. Interesting theoretical analysis and empirical evidence on the impact of taxes on financing decisions are also provided in Hanlon and Heitzman (2010), van Binsbergen, Graham and Yang (2010), Korteweg (2010), Desai and Jin (2011), Edwards and Shevlin (2011), An (2012), Klassen and Mescall (2012), Doidge and Dyck (2015), Barclay and Smith(2020) among other papers.

2.0 Data and Methodology

After an extensive literature review and prior work done by the researcher (Paseda, 2016), this research is structured to the use of *secondary data*. The use of secondary data provides a systematic and empirical solution to research problems, by using data which are already in existence. Data validation is a second-order concern. For instance, the examination of audited financial statements of the selected firms provides a basis for subjecting the theoretical hypotheses to reliable and robust empirical tests. Data for the study were obtained from both public and private sources. Official sources such as the Nigerian Stock Exchange (NSE) and Central Bank of Nigeria (CBN) publications were veritable sources of data for this research. The data relating to market conditions were obtained from the daily official list of the Stock Exchange. Macroeconomic data were obtained from the CBN Statistical Bulletins and Annual Reports and Accounts (various years). The final selection was in favour of companies with the highest data availability.

The population for this study is the number of quoted companies in Nigeria, whose equities are listed on the Nigerian Stock Exchange (NSE) for the period 1999-2014. The number of such listed (quoted) equities was 221 as at December 2014. Equities are listed under 20 broad industry sectors.

Basically, this study targets all quoted companies on the Nigerian Stock Exchange. However, some adjustments are necessary to derive our sample. First, the sample excludes financial services sector

because they are subject to specific rules (e.g. Banks and Other Financial Institutions Act (BOFIA, 1991)) and special high-leverage nature of financing is severely affected by exogenous factors (Miller, 1995). Therefore, following empirical pattern (such as Rajan & Zingales, 1995), I focus exclusively on non-financial corporations. Second, I could not collect the necessary data for many of the smaller firms on the NSE. This adjustment leaves us with a balanced panel of 50 firms over the 1999-2014 period. The year 1999 was chosen as a start year to coincide with the release of the Investment and Securities Act (ISA) 1999 under the then new democratic regime in Nigeria. However, the sample for this study was biased towards a survivalist approach, because given the study period of 1999-2014, some companies' financial results were missing. There is stratification of sample in terms of companies selected for the study as displayed in Table 1 below.

Table 1: DISTRIBUTION OF SAMPLE OF STUDY

S/N	SECTOR	POPULATION	SAMPLE	SAMPLING RATIO (%)
1	Agriculture	6	4	66
2	Aviation/Airline	2	1	50
3	Automobile & Tyre	3	2	66
4	Breweries	7	3	43
5	Building Materials	7	3	43
6	Chemical and Paints	9	4	44
7	Computer	6	1	17
8	Conglomerate	8	4	50
9	Construction/Real	6	3	50
10	Engineering	3	1	33
11	Food and Beverages	18	6	33
12	Health Care	12	5	42
13	Hotels and Tourism	4	1	25
14	Industrial/Domestic	10	4	40
15	Oil and Gas	9	5	56
16	Packaging	8	0	0
17	Publishing	4	2	50

18	Road Transport	1	1	100
19	Textiles	3	0	0
	TOTAL	126	50	40

Source: *Underlying Data from the Nigerian Stock Exchange Factbooks (Various Years).*

The researcher is of the opinion that the sample is a representative data and there is no reason to believe that sample selection biases affected the results.

Estimation Procedures

Panel data regression techniques are utilized for the study.

Model Specification

Following empirical approaches therefore,

MODEL I: Tax Impact Investigation: The implicit model can be expressed thus:

$D_{it}=f(MTR_{it},NDTS_{it},TANG_{it},GROW_{it},SIZE_{it},VOL_{it},PROF_{it},RD_{it},UNQ_{it,}QUICK_{it},DIV_{it},DEF_{it})$ (7)

Where D_{it} represents the leverage measure for firm *i* at time *t*.

Explicitly, with **X** as vector of explanatory variables,

$$D_{it} = \beta_0 + \beta_x \mathbf{X}_{it} + \varepsilon \quad (8)$$

H_{01}: β's = 0; alternatively, H_{11}: β's≠ 0.

H_{02}: $\beta_{MTR} = 0$; H_{12}: $\beta_{MTR} \neq 0$. Trade off theory especially predicts $0 < \beta_{MTR} < 1$.

MTR_{it} stands for the marginal tax rate of firm *i* at time *t* MTR is defined as taxes paid divided by earnings before tax as in Barakat & Rao (2013). All other variables are as defined in Model I.

To capture tax effect, Equation (8) regresses the leverage measure against the marginal tax rate and other conventional set of factors. For all the variables, except expected inflation, the subscripts *it* can be interpreted that each exogenous factor is for firm *i* at time *t*. The independent variables could be taken contemporaneously or lagged one period. Both methods are acceptable in empirical corporate finance.

Debt ratio defined as "the ratio of total liabilities to total liabilities plus equity" is the chosen leverage measure for this study. This measure is equivalent to the "total liabilities to assets ratio" being advocated in Welch (2015). Three measures of debt ratio are employed namely: Book Leverage, Market leverage capturing only financial liabilities ($ML1_t$) and Market leverage capturing all liabilities in the balance sheet ($ML2_t$). $ML1_t$ is the financial leverage ratio while $ML2_t$ is the total leverage ratio. All the chosen leverage measures are stock-based methods. Because of space constraint, all the explanatory variables are defined in Table 2. The regression parameters (β's) are stated in column five of Table 2.

NDTS represents non-debt tax shield inspired by DeAngelo and Masulis (1980).

TANG represents the tangibility of the firm's assets, a collateral measure of debt capacity.

GROWTH is measured by the market-to-book value of the firm's stock, a measure of growth opportunities of the firm. An alternative measure is the *Q* ratio measured as the market-to-book value of the firm's assets. *SIZE* represented by the natural log of sales (LNS). LNS is a common proxy for firm size. *VOL* is the volatility of earnings, a measure of business risk. [Risk may also be measured by the volatility of stock returns or stock prices as in Frank and Goyal (2009), Olowe (2009a, 2011), Bharath, Pasquariello and Wu (2009) or of firm's assets as in Choi and Richardson (2016)].

PROF represents profitability, measured by the Return on Assets (ROA).

R&D means research and development expenditure (scaled by total assets), a proxy for uniqueness of assets and also intangibility of assets. *UNQ* for asset uniqueness. A business risk proxy for the industry.

DEF is a measure of financing deficit, i.e., requirement for external finance because retained earnings are insufficient to cater for planned capital expenditures.

The financing deficit term is an added factor as inspired by Frank and Goyal (2009) and utilized in many studies to test the pecking order theory.

QUICK represents the quick or acid test ratio. A stricter measure of liquidity relative to the current ratio.

DIV represents dividend payout ratio. *Dividend-paying status* of firms is a critical factor that underscores the degree of information asymmetry between insiders and outside financiers. It also captures agency effects in financing decisions. Used in Barakat and Rao (2013) to underscore the relative importance of dividend income vis-à-vis interest income.

E_t represents expected inflation, the only macroeconomic factor to be included in the model. Frank & Goyal (2009) provide strong evidence in support of a positive relationship between leverage and expected inflation. The **null hypothesis** is that the β's are not significantly different from zero, i.e., H_{01}: β's = 0; alternatively, H_{11}: β's≠ 0. In other words, firm-specific characteristics do not exert significant impact on corporate debt ratios.

Definition of Variables

Table 2: Determinants of Capital Structure and their Expected Signs and Magnitudes

S/N	Explanatory Variable	Definition	Indication	Expected Sign	Expected Magnitude
1	MTR	Marginal tax rate, Tax expense divided by Earnings before tax as in Barakat and Rao (2013).	Effect of debt tax shield	+	$0 < \beta_{MTR} < 1$
2	NDTS	Non-debt tax shield, following DeAngelo and Masulis (1980), (Depreciation+ Investment tax credit)/ Total assets less current liabilities	Substitute for the debt tax Shield	-	$-1 < \beta_{NDTS} < 0$
3	TANG	Tangible assets defined as PPE divided by total assets less current liabilities.	Collateral, a measure of debt capacity.	+/-	$-1 < \beta_{TANG} < 1$
4	GROWTH	Growth opportunities, measured by the ratio of market-to-book value of the firm or market to book value of equity.	Growth	-	$-1 < \beta_{GROW} < 0$
5	SIZE	Size defined as the natural logarithm of Sales (LNS)	Size effect	+	$0 < \beta_{SIZE} < \infty$
6	VOL	Volatility of earnings defined as the standard deviation of EBIT scaled by Total Assets less current liabilities	Business Risk	-	$-1 < \beta_{VOL} < 0$
7	PROF	Defined by ROCE or ROA = Earnings before Interest and Taxes/ Total Assets less current liabilities	Profitability	+/-	$-1 < \beta_{PROF} \leq 1$

8	QUICK	A stricter measure of liquidity relative to current ratio. Quick ratio is defined as Current assets less inventory divided by current liabilities	Liquidity	+/-	$-1 < \beta_{QUICK} \leq 1$
9	R&D	Research & Development plus other intangible assets / (Total Assets – Current Liabilities)	Asset Uniqueness or intangibility	-	$-1 < \beta_{RD} < 0$
10	DEF	Financing deficit = change in total assets+ dividends - profit after tax OR net decrease in cash and cash equivalents scaled by (Total assets less current liabilities).	Adverse selection in external financing	+	$0 < \beta_{DEF} \leq 1$ OR $\beta_{DEF} = \beta_{PO} = 1$
11	DIV	Dividend payout ratio defined as Dividends divided by Profit after tax (PAT) or Dividend per share (DPS) divided by Earnings per share (EPS). This variable was utilized in Barakat and Rao (2013)	1) Asymmetric information. Low payout firms will prefer debt over equity financing. 2) Effect of personal taxes – relative advantage of dividend to interest income	-	$-1 < \beta_{DIV} < 0$
12	**E**	Expected inflation proxied by the treasury bill rate	Impact of macroeconomic	+	$0 < \beta_{INF} < 1$
13	AGE	Ln (Number of years since incorporation).	Impact of the firm's age on financing decisions.	+	$0 < \beta_{AGE} < 1$
14	$(D_{it}^{*} - D_{it-1})$	Target adjustment in debt ratios, measured as target debt ratio minus lagged debt ratio.	Target behavior in financing. $\beta_{TA} > 0$ – target behavior holds	+	$0 < \beta_{TA} < 1$
		debt ratio can be proxied by historical average or industry median leverage where available.	$\beta_{TA} < 1$ - +ve adjustment costs. Chang & Dasgupta (2009).		
15	UNQ	Uniqueness dummy (for distress risk) that takes the value of one for firms producing computers, semiconductors, chemicals and allied, aircraft, space vehicles and other sensitive industries, and zero otherwise.	Asset uniqueness/ Industry uniqueness.	-	$-1 < \beta_{UNQ} < 0$
16	RSI	Measured as bought in materials and services divided by Depreciation.	Relationship-specific investments with suppliers and customers	-	$-1 < \beta_{RSI} < 0$

17	UER	Unemployment rate. Unemployment risk is a substantial concern for workers. Workers' concerns about becoming unemployed reduce their labour supply and affect firms' policies on layoffs and wage setting (Agrawal & Matsa, 2013; Owualah, 2015).	A control variable: Unemployment Risk, measuring impact of employees' exposure to unemployment on capital structure. Agrawal & Matsa (2013) find that labour market frictions affect corporate financing decisions	-	$-1 < \beta_{UER} < 0$

Source: Adapted from Paseda (2016)

3. Empirical Results

This section presents the empirical analysis and results of the study. Again, the research aim is to investigate the impact of taxes on the capital structure decisions of Nigerian quoted firms. Beginning from the summary statistics in Table 3, the nature of the variables are described. The regression results follow in different Tables 4-8 and Table 13.

TABLE 3: SUMMARY STATISTICS OF VARIABLES USED IN THE STUDY

VAR	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
BLT	0.6870	0.6053	9.2630	-0.3396	0.5595	8.1587	100.46	16255616.00
ML1T	0.2729	0.1902	0.9959	0.0000	0.2605	0.8387	2.64	4903.77
ML2T	0.4656	0.4284	0.9970	0.0525	0.2558	0.3316	1.97	2495.79
DMS	0.7545	0.8092	1.0453	0.0000	0.2120	-1.3618	4.90	18328.52
MTR	0.2855	0.3016	13.3333	-16.3462	1.0649	2.0583	153.92	37944563.00
NDTS	0.1179	0.0771	1.3270	-0.9339	0.1547	2.3142	18.39	429669.30
TANG	0.6241	0.6350	3.0970	-4.5480	0.5432	-2.8335	30.96	1355217.00
GROW	1.6307	1.7763	96.4290	-1090.00	40.2090	-25.2730	681.22	770000000
SIZE	15.2322	15.4420	20.2930	0.0000	2.9717	-2.5688	13.60	231119.40
VOL	0.5036	0.1062	16.4410	-2.2449	2.1285	6.3166	42.23	2826856.00
PROF	0.2133	0.2147	4.7059	-8.3240	0.6764	-4.2574	60.14	5556220.00
QUICK	0.6925	0.6279	2.9950	0.0000	0.4181	1.7562	7.85	59735.46
RD	0.0225	0.0000	0.8929	0.0000	0.0971	6.3678	47.35	3544312.00
UNQ	0.6195	1.0000	1.0000	0.0000	0.4855	-0.4924	1.24	6756.17
DEF	0.2103	0.1331	14.2350	-4.3168	0.8064	7.4961	132.76	28402908.00
DIV	0.4150	0.3723	7.0833	0.0000	0.4746	4.5288	55.21	4674762.00
EINF	0.1119	0.1177	0.1888	0.0400	0.0401	0.0681	2.21	1075.42

AGE	3.7149	3.7612	4.5109	0.3367	0.4040	-1.8264	11.37	138787.60
DDTA	0.0031	-0.0011	1.7132	-4.6197	0.3464	-4.2622	56.51	4887965.00

SOURCE: Author's Computation from Microsoft Excel.

TABLE 4: LEVERAGE REGRESSIONS

DEP. VAR.	**BLT**			**ML1T**			**ML2T**		
EXP.VAR	COEFF.	STD.ERR	t-STAT	COEFF.	STD.ERROR	t-STAT	COEFF.	STD.ERROR	t-STAT
C	0.4873	0.008258	59.01681	0.789403	0.010381	76.04495	0.487334	0.008258	59.01681
BLT(-1), ML1T(-1), ML2T(-1)	0.7496	0.000405	1852.684	0.735424	0.000558	1317.096	0.749564	0.000405	1852.684
MTR	-0.0007	0.000130	-5.706789	-0.004102	0.000149	-27.61393	-0.000743	0.000130	-5.706789
NDTS	0.1114	0.000568	196.0501	0.050328	0.000889	56.61995	0.111402	0.000568	196.0501
TANG	-0.0274	0.000175	-156.4958	-0.019523	0.000202	-96.75458	-0.027389	0.000175	-156.4958
GROW	-1.93E-05	1.23E-05	-1.560318	-5.04E-05	1.25E-05	-4.038616	-1.93E-05	1.23E-05	-1.560318
SIZE	-0.0038	4.05E-05	-93.95959	-0.011532	7.82E-05	-147.5077	-0.003806	4.05E-05	-93.95959
VOL	0.0002	6.95E-05	3.202441	-0.007034	7.77E-05	-90.49038	0.000223	6.95E-05	3.202441
PROF	-0.0172	0.000227	-75.90996	-0.007896	0.000150	-52.61294	-0.017206	0.000227	-75.90996
QUICK	-0.0403	0.000229	-176.0211	-0.049549	0.000204	-243.3950	-0.040295	0.000229	-176.0211
RD	0.0872	0.001142	76.35822	0.134748	0.001303	103.3826	0.087203	0.001142	76.35822
UNQ	0.0151	0.000149	101.4586	-0.005559	0.000194	-28.70477	0.015089	0.000149	101.4586
DEF	-0.0093	0.000137	-67.69795	-0.011206	0.000278	-40.31463	-0.009253	0.000137	-67.69795
DIV	-0.0407	0.000181	-224.9471	-0.036335	0.000232	-156.8584	-0.040677	0.000181	-224.9471
EINF	0.6453	0.010643	60.63348	0.908912	0.016686	54.47209	0.645301	0.010643	60.63348
AGE	0.0098	0.000176	55.62885	0.010347	0.000255	40.64010	0.009789	0.000176	55.62885
DDTA	0.0168	0.000354	47.49500	-0.009761	0.000360	-27.10674	0.016825	0.000354	47.49500
ADJ. R^2	0.9998			0.999206			0.999770		
ADJ. R^2 (UNWEIGHTED)	0.3154			0.676300			0.71998		
S.E. of Reg	0.4479			0.144244			0.132063		
F- Stat	819052			1792697.			6190619.		
Prob (F-Statistic)	0.0000			0.000000			0.000000		
Durbin-Watson.	2.0784			1.94244			1.9725		

Source: Author's analysis. **Significant at 1% and 5%

From the summary statistics in Table 3 above, several facts can be deduced as statistical features of the

variables utilized for the study. First, the relationship between the three measures of leverage is revealing of the relative weights of financial to non-financial debt in corporate balance sheets. For instance, the relative ***means*** of market leverage measure I which captures only financial liabilities relative to book leverage is suggestive that over 60 percent of corporate liabilities are non-financial. In order words, book leverage ratios are often 2.55 times as high as market-based leverage ratio I (ML1). The magnitude of book leverage over market leverage is most pronounced in firms and industries where the book equity is depressed or even negative ((e.g., agriculture, automobile and breweries (2005-2007)) The relative ratio of Market leverage I to Market Leverage II suggests a lower percentage of non-financial liabilities at 43 percent. The conventional reason for higher book-based leverage measure relative to market-based leverage measure is that the book values of equity might, on average, be less than the market values of equity. This notion does not hold in Nigeria because for many of the sample firms, their market equity were less than the book equity for most of the study period. The relative ratios of the leverage ***median*** statistics reveal that non-financial liabilities could in fact be representing 69 percent of corporate liabilities when ML1 and BL are compared. However, the comparison between ML1 and ML2 median values moderates the proportion of non-financial liabilities to total corporate liabilities to 56 percent. Thus, before any rigorous analysis, it is clear that non-financial liabilities are significant sources of financing for modern corporations in Nigeria. Further, the comparison between minimum and maximum values of leverage indicates that there is wide heterogeneity in how Nigerian listed firms are financed while some firms did not utilize financial debt for some or nearly through the study period, given the zero minimum value. The heterogeneity is also buttressed by the **standard deviation** of book leverage. Specifically, the size factor plays a role in the relative mix of financial and non-financial obligations. Large firms tend to have relatively more of their total liabilities in financial obligations than small firms. Moreover, large firms tend to have relatively less of their total debt in short-term obligations than small firms. Small firms rely disproportionately more on trade credit and delay (or lag) in meeting obligations to employees and other non-financial stakeholders.

Firm characteristics can be ranked in this order in terms of their mean values namely: Size, firm age, growth opportunities, liquidity as measured by acid-test or quick ratio, asset tangibility, uniqueness, volatility, dividend payout policy (in terms of high versus low payout), profitability, financing deficit, non-debt tax shield, and Research and Development (R&D). Among the firm factors, the R&D showed the least dispersion around the mean as can be observed from its standard deviation.

TABLE 5: PECKING ORDER AND TARGET ADJUSTMENT MODELS.

DEP. VAR	BLT			BLT-BLT(-1)		
EXP. VAR	COEFF.	STD.ERROR	t-STAT	COEFF.	STD.ERROR	t-STAT
C	0.665594	5.05E-05	13178.13	-0.000998	1.50E-05	-66.59759
DEF	0.108643	0.000174	623.0703			
DDTA				0.431939	0.000258	1673.313
ADJUSTED R^2(WEIGHTED)	0.906591			0.985933		
S.E. of Regression	0.552416			0.553104		
F- Statistic	388216.6			2799977.		
Prob (F-Statistic)	0.000000			0.000000		
MEAN DEP	9.796782			- 0.019323		
Durbin-Watson Stat.	1.115056			2.572372		

Source: Paseda (2016).

Table 5 above presents the simple test of the pecking order and target adjustment models with explanatory variables of financing deficit (DEF) and target adjustment in debt ratios (DDTA) respectively. Given positive DEF and DDTA coefficients of 0.1086 and 0.4319 respectively which are both significant at 1% level, the pecking order and target adjustment models cannot be rejected in the Nigerian market.

Table 6: Regression Results of the Impact of Firm Characteristics on Book Leverage (BL) Ratio.
Dependent Variable: Book Leverage

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.876872	0.001206	726.9440	0.0000
BLT(-1)	0.407608	0.000372	1096.007	0.0000
NDTS	0.026711	0.001442	18.52950	0.0000
TANG	-0.115164	0.000238	-484.0764	0.0000
GROW	-1.26E-05	1.05E-05	-1.205408	0.2281
SIZE	-0.047144	5.64E-05	-836.3237	0.0000

VOL	-0.046709	6.46E-05	-722.5965	0.0000
PROF	-0.028882	0.000345	-83.80961	0.0000
QUICK	-0.208931	0.000245	-853.1059	0.0000
RD	0.146785	0.001284	114.3394	0.0000
UNQ	-0.119176	0.000218	-547.2867	0.0000
DEF	0.061986	0.000392	158.3106	0.0000
DIV	-0.060888	0.000315	-193.5494	0.0000
EINF	0.200743	0.001893	106.0477	0.0000
AGE	0.148642	0.000283	525.9575	0.0000
	Weighted Statistics			
Adjusted R-squared	0.998433	S.D. dependent var		53.92684
S.E. of regression	0.461677	Sum squared resid		8511.954
F-statistic	1818397.	Durbin-Watson stat		2.064550
Prob(F-statistic)	0.000000			

**Significant at 1% and 5%

From the above results in Table 6, all the variables, except growth, are significant at 1 percent significance level. Debt usage is a declining function of tangibility (TANG), growth opportunities (GROW), size (SIZE), volatility of earnings (VOL), profitability (PROF), liquidity (QUICK), uniqueness of industry (UNQ) and dividend payout ratio (DIV). Book leverage increases with non-debt tax shields (NDTS), asset intangibility (RD), financing deficit, age and expected inflation (EINF). The signs and magnitude of the coefficients are more consistent with the pecking order theory than the trade-off theory of financing in terms of the number of coefficients tally with theoretical prediction. More specifically, the (negative) signs of the coefficients of profitability, liquidity, tangibility, size and financing deficit are consistent with the *pecking order* while the *trade-off* predicts otherwise. The positive relationship between leverage and non-debt tax shields is inconsistent with the debt substitution hypothesis of DeAngelo-Masulis (1980) framework. Rather, the positive relation might be indicative of the collateral value of assets. The availability of alternative tax shelters does not reduce the tax-incentives to borrow. The inverse relationships between leverage and tangibility as well as leverage and size are consistent with *agency effects* wherein smaller firms with less tangible assets voluntarily choose higher

debt levels to limit consumption of perquisites. In addition, the expected inflation as a proxy of macroeconomic conditions has a positive relation with leverage. Expectations of decline in the purchasing power of the naira exerts upward pressure on corporate borrowing behaviour, thus aggressive debt usage by firms would be consistent with the wealth-redistribution effect of inflation. At inflationary periods, the time value of money reduces the value of liabilities *ceteris paribus*, that is, borrowers gain while lenders lose. However, it is clear that the coefficient of multiple determination (R^2), which is the statistical measure of the *goodness of fit* of the regression, is abysmally low at 30 percent. The Durbin-Watson test for serial correlation of variables is, however, satisfactory at 2.06. The inclusion of the lag of the dependent variable helps to overcome the problem of autocorrelation. Given low R^2, the model requires modification to period-weighted regression in order to produce meaningful analysis of capital structure choice by Nigerian firms.

Table 7: Determinants of Capital Structure- Market Leverage 1 Regression I
Market Leverage 1 is defined as the market value of financial liabilities divided by the sum of the market values of both financial liabilities and equity.
Dependent Variable: ML1T. Method: Pooled Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.148090	0.009493	15.60071	0.0000
ML1T(-1)	0.729715	0.003217	226.8397	0.0000
NDTS	0.043586	0.005017	8.687021	0.0000
TANG	-0.014812	0.001508	-9.823051	0.0000
GROW	-3.90E-05	1.89E-05	-2.057894	0.0396
SIZE	-0.009677	0.000461	-20.98867	0.0000
VOL	-0.003685	0.000555	-6.633788	0.0000
PROF	-0.007643	0.001152	-6.632157	0.0000
QUICK	-0.045548	0.001944	-23.43052	0.0000
RD	0.133656	0.008074	16.55330	0.0000
UNQ	0.006171	0.001877	3.287893	0.0010
DEF	-0.010882	0.000980	-11.10641	0.0000
DIV	-0.041997	0.001736	-24.18540	0.0000
EINF	0.137145	0.019454	7.049744	0.0000

AGE	0.029778	0.002106	14.14188	0.0000
R-squared	0.664573	Mean dependent var		0.273663
Adjusted R-squared	0.664456	S.D. dependent var		0.260540
S.E. of regression	0.150921	Akaike info criterion		-0.943749
Sum squared resid	909.6023	Schwarz criterion		-0.940521
Log likelihood	18866.38	Hannan-Quinn criter. -0.942727		
F-statistic	5651.596	Durbin-Watson stat 1.929436		
Prob(F-statistic)	0.000000			

**Significant at 1% and 5%

Table 8: Market Leverage 1 Regression I

Dependent Variable: ML1T

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.142599	0.000988	144.2911	0.0000
ML1T(-1)	0.739901	0.000415	1783.654	0.0000
NDTS	0.044202	0.000629	70.32025	0.0000
TANG	-0.015393	0.000132	-116.4674	0.0000
GROW	-1.95E-05	6.88E-06	-2.838769	0.0045
SIZE	-0.009033	4.91E-05	-184.0978	0.0000
VOL	-0.003110	8.60E-05	-36.16081	0.0000
PROF	-0.008848	0.000196	-45.24902	0.0000
QUICK	-0.044933	0.000107	-418.6882	0.0000
RD	0.131144	0.002921	44.89437	0.0000
UNQ	0.006240	0.000165	37.75969	0.0000
DEF	-0.012463	0.000149	-83.83216	0.0000
DIV	-0.040086	0.000196	-204.1230	0.0000
EINF	0.117515	0.001158	101.4630	0.0000
AGE	0.028328	0.000171	165.2988	0.0000
	Weighted Statistics			
R-squared	0.999794	Mean dependent var		10.35635
Adjusted R-squared	0.999794	S.D. dependent var		241.3654
S.E. of regression	0.149224	Sum squared resid		889.2645

F-statistic	13864289	Durbin-Watson stat	1.494301
Prob(F-statistic)	0.000000		
	Unweighted Statistics		
R-squared	0.664432	Mean dependent var	0.273663
Sum squared resid	909.9846	Durbin-Watson stat	1.948980

**Significant at 1% and 5%

Tables 7 and 8 show that all the variables are significant at 1% except growth which is significant at 5% in Table 7. Market debt ratio is a declining function of eight explanatory variables namely: tangibility, growth options, size, volatility, profitability, liquidity, financing deficit and dividend payout policy while it increases with non-debt tax shield, asset intangibility (R&D and other intangibles), uniqueness, expected inflation and age. The inverse relationships between leverage and tangibility as well as leverage and size are consistent with *agency effects* wherein smaller firms with less tangible assets voluntarily choose higher debt levels to limit consumption of perquisites. From Table 4, when the leverage measure is changed from book leverage to market leverage, the $\mathbf{R^2}$ improved from 30 percent to 66% implying that the cross-sectional and time-series variations in corporate borrowing behaviour are better explained by firm-specific and industry factors when leverage is measured using market values. The direct relation with age and expected inflation can be interpreted thus

i) Older firms borrow more than their younger counterparts. The business reputation built over time reduces ex ante costs or probability of financial distress, thereby increasing debt capacity consistent with the trade-off model.

ii) Inflation has a possible wealth redistribution effect. Credit arrangements un-adjusted for time value of money or inflation exert pressure on the value of receivables (assets) on lenders' balance sheets. Therefore, creditors suffer the inflation effect while debtors gain holding inflation premium in debt pricing constant. In other words, inflation transfers wealth from creditors to borrowers.

Both R^2 and Durbin-Watson tests are satisfactory.

The Impact of Taxes

Impact of Corporate Income Taxes (MTR) – Leverage Regression

From Table 4, the marginal tax rate variable is negative and statistically significant. Leverage declines with the marginal tax rate. Moreover, the R^2 remained unchanged which may be indicative of the absence of tax effect on the capital structure decisions of firms. The result contradicts the trade-off model of capital structure which suggests that firms seeking to maximize the value of interest tax shield would borrow more when the tax rate increases, ceteris paribus.

A possible explanation for this inverse leverage-MTR relation is the concept of tax exhaustion. The tax benefit is a function of firm profitability. This brings us to the concept of tax benefit tables. There are three applicable models in tax benefit computation namely: Modigliani-Miller (1963) model, the Miller (1977) model and the Graham (2000) methodology. All three models can be shown to yield equivalent results on tax benefits of debt.

TABLE 9: The Tax Benefit Table – Modigliani and Miller (1963) Model

YEAR	MTR (AVERAGE SAMPLE FIRMS)	DEBT MARKET CAPITALIZATION (N'M)	EQUITY MARKET CAPITALIZATION (N'M)	VALUE OF FIRMS (N'M)	INTEREST TAX SHIELD (N'M)	IMPLIED TAX-TO-VALUE RATIO
1999	0.23	466,716.6	294,500.0	761,216.56	109,676.43	0.14
2000	0.25	585,250.7	466,100.0	1,051,350.70	143,637.51	0.14
2001	0.24	836,861.8	648,400.0	1,485,261.82	200,647.07	0.14
2002	0.28	1,003,186.3	748,700.0	1,751,886.33	279,322.67	0.16
2003	0.29	1,186,404.9	1,325,700.0	2,512,104.87	339,820.80	0.14
2004	0.26	1,533,682.2	1,926,500.0	3,460,182.23	401,607.06	0.12
2005	0.30	2,083,934.6	2,523,500.0	4,607,434.63	616,192.58	0.13
2006	0.28	2,533,362.9	4,227,134.2	6,760,497.05	716,868.14	0.11
2007	0.25	4,142,273.7	10,180,293.0	14,322,566.68	1,026,372.58	0.07
2008	0.28	7,846,893.0	6,957,453.5	14,804,346.51	2,160,072.46	0.15
2009	0.26	9,728,789.9	4,989,390.0	14,718,179.87	2,576,026.64	0.18
2010	0.69	10,481,779.9	7,913,752.2	18,395,532.10	7,203,721.56	0.39
2011	0.66	12,277,777.8	6,532,580.0	18,810,357.83	8,067,133.73	0.43
2012	0.14	16,060,624.3	8,974,448.5	25,035,072.79	2,259,885.26	0.09
2013	0.44	17,175,630.5	13,226,000.0	30,401,630.46	7,481,704.63	0.25
2014	0.20	17,292,517.3	11,477,661.2	28,770,178.47	3,404,561.96	0.12

Source: Author's computations based on data from official sources such as CBN and NSE.

TABLE 10: The Tax Benefit Schedule – Miller's Model Utilizing Nigerian Data

YEAR	MTR (AVERAGE SAMPLE FIRMS)	DEBT MARKET CAPITAL(N'M)	EQUITY MARKET CAPITALIZATION (N'M)	VALUE OF FIRMS (N'M)	PV INTERES T TAX	PERSONAL TAX PENALTY [TPD-(1-TC)TE]* DEBT	NET GAIN FROM LEVERAGE (N'M)
1999	0.23	466716.56	294500.00	761216.56	109676.43	10967.64	98,708.79
2000	0.25	585250.70	466100.00	1051350.70	143637.51	14363.75	129,273.76
2001	0.24	836861.82	648400.00	1485261.82	200647.07	20064.71	180,582.36
2002	0.28	1003186.33	748700.00	1751886.33	279322.67	27932.27	251,390.40
2003	0.29	1186404.87	1325700.00	2512104.87	339820.80	33982.08	305,838.72
2004	0.26	1533682.23	1926500.00	3460182.23	401607.06	40160.71	361,446.35
2005	0.30	2083934.63	2523500.00	4607434.63	616192.58	61619.26	554,573.32
2006	0.28	2533362.86	4227134.19	6760497.05	716868.14	71686.81	645,181.33
2007	0.25	4142273.69	10180292.98	14322566.68	1026372.58	102637.26	923,735.32
2008	0.28	7846893.01	6957453.50	14804346.51	2160072.46	216007.25	1,944,065.21
2009	0.26	9728789.87	4989390.00	14718179.87	2576026.64	257602.66	2,318,423.98
2010	0.69	10481779.88	7913752.22	18395532.10	7203721.56	720372.16	6,483,349.41
2011	0.66	12277777.83	6532580.00	18810357.83	8067133.73	806713.37	7,260,420.36
2012	0.14	16060624.27	8974448.52	25035072.79	2259885.26	225988.53	2,033,896.73
2013	0.44	17175630.46	13226000.00	30401630.46	7481704.63	748170.46	6,733,534.17
2014	0.20	17292517.30	11477661.17	28770178.47	3404561.96	340456.20	3,064,105.77

Source: Author's computations based on data from official sources such as Central Bank of Nigeria (CBN) and Nigerian Stock Exchange (NSE) Publications (Various Years).

The Tax Benefit Schedules – Graham (2000) Methodology

TABLE 11: Schedule of Marginal Tax Rates per Sample Firm Based on Different Percentages of Actual Interest Deductions for the Period (1999-2014)

YEAR	MTR 0%	MTR 20%	MTR 40%	MTR 60%	MTR 80%	MTR 100%	MTR 160%	MTR 200%	MTR 300%	MTR 400%	MTR 500%	MTR 600%	MTR 700%	MTR 800%
1999	0.51	0.46	0.40	0.35	0.29	0.23	0.07	-0.04	-0.32	-0.60	-0.88	-1.15	-1.43	-1.71
2000	0.28	0.28	0.27	0.26	0.25	0.25	0.22	0.21	0.17	0.13	0.10	0.06	0.02	-0.01
2001	0.41	0.37	0.34	0.31	0.27	0.24	0.14	0.07	-0.09	-0.26	-0.42	-0.59	-0.76	-0.92
2002	2.92	2.39	1.86	1.34	0.81	0.28	-1.31	-2.36	-5.01	-7.65	-10.29	-12.94	-15.58	-18.22
2003	0.91	0.79	0.66	0.54	0.41	0.29	-0.09	-0.34	-0.96	-1.59	-2.21	-2.83	-3.46	-4.08
2004	0.37	0.35	0.33	0.31	0.28	0.26	0.20	0.15	0.04	-0.07	-0.17	-0.28	-0.39	-0.50
2005	0.43	0.40	0.37	0.35	0.32	0.30	0.22	0.16	0.03	-0.10	-0.23	-0.37	-0.50	-0.63
2006	0.32	0.31	0.30	0.30	0.29	0.28	0.26	0.25	0.22	0.18	0.15	0.12	0.09	0.05
2007	0.35	0.33	0.31	0.29	0.27	0.25	0.18	0.14	0.04	-0.07	-0.18	-0.28	-0.39	-0.49
2008	0.43	0.40	0.37	0.34	0.31	0.28	0.18	0.12	-0.04	-0.19	-0.35	-0.51	-0.66	-0.82
2009	0.54	0.49	0.43	0.38	0.32	0.26	0.10	-0.01	-0.29	-0.56	-0.84	-1.12	-1.39	-1.67
2010	1.02	0.96	0.89	0.82	0.75	0.69	0.49	0.35	0.02	-0.32	-0.66	-0.99	-1.33	-1.66
2011	1.52	1.35	1.18	1.00	0.83	0.66	0.14	-0.21	-1.07	-1.93	-2.80	-3.66	-4.52	-5.39
2012	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.12	0.12
2013	1.82	1.57	1.31	1.06	0.80	0.54	-0.22	-0.73	-2.01	-3.28	-4.56	-5.84	-7.11	-8.39
2014	0.59	0.51	0.43	0.35	0.28	0.20	-0.04	-0.20	-0.59	-0.98	-1.37	-1.77	-2.16	-2.55

Source: Author's Computation. Please note that the simulation extends to 800% of actual interest deductions.

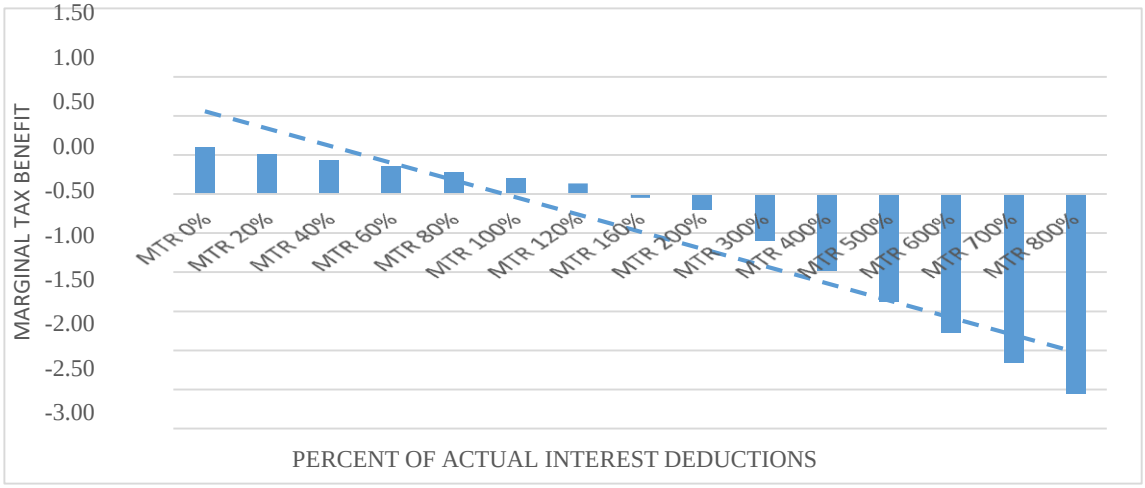

FIGURE 1: GROSS BENEFIT CURVE PER FIRM (2014)

Interpretation of the Gross Benefit Curve:

Gross benefits equal the area under each firm's gross benefit curve (up to the point of actual interest expense), aggregated across firms. Gross benefits measure the reduction in corporate and state tax liabilities occurring because interest expense is tax deductible. Net benefits would equal gross benefits minus the personal tax penalty. That is, net benefits are reduced to account for the fact that firms must pay a higher risk-adjusted return on debt than on equity, to compensate them for their relative personal tax disadvantage. The *Total* and *Per Firm* columns express the annual tax benefits of debt. The *Percent of Firm Value* columns express the capitalized tax benefit of debt aggregated across firms, expressed as a percentage of aggregate firm value. The *Zero Benefit* is the amount of interest for which the marginal tax benefit of debt equals zero, expressed as a proportion of actual interest expense. *Kink* is the amount of interest where the marginal benefit function becomes downward sloping, expressed as a proportion of actual interest expense. Assuming there are 12000 firm-level observations for the simulated marginal tax rates up to 100% of actual interest deductions, then the aggregate tax benefit schedule should approximate that presented below.

TABLE 12: The Aggregate Tax Benefits of Debt in Nigeria- Graham Methodology

YEAR	GROSS BENEFITS (N'M)	GROSS BENEFIT PER FIRM	PERCENT OF FIRM VALUE CAPITALIZED	NET BENEFITS (N'M)	NET BENEFIT PER FIRM (N'M)	PERCENT OF FIRM VALUE CAPITALIZED	ZERO BENEFIT	KINK	N (2000*6)
1999	109676.43	9.14	0.14	98708.79	8.23	0.13	1.85	0.20	12000
2000	143637.51	11.97	0.14	129273.76	10.77	0.12	7.67	0.40	12000
2001	200647.07	16.72	0.14	180582.36	15.05	0.12	2.44	0.80	12000
2002	279322.67	23.28	0.16	251390.40	20.95	0.14	1.11	0.20	12000
2003	339820.80	28.32	0.14	305838.72	25.49	0.12	1.46	0.40	12000
2004	401607.06	33.47	0.12	361446.35	30.12	0.10	3.36	0.40	12000
2005	616192.58	51.35	0.13	554573.32	46.21	0.12	3.23	0.80	12000
2006	716868.14	59.74	0.11	645181.33	53.77	0.10	9.20	0.80	12000
2007	1026372.58	85.53	0.07	923735.32	76.98	0.06	3.36	0.80	12000
2008	2160072.46	180.01	0.15	1944065.21	162.01	0.13	2.75	0.70	12000
2009	2576026.64	214.67	0.18	2318423.98	193.20	0.16	1.96	0.60	12000
2010	7203721.56	600.31	0.39	6483349.41	540.28	0.35	3.06	2.07	12000
2011	8067133.73	672.26	0.43	7260420.36	605.04	0.39	1.76	1.30	12000
2012	2259885.26	188.32	0.09	2033896.73	169.49	0.08	24.00	16.00	12000
2013	7481704.63	623.48	0.25	6733534.17	561.13	0.22	1.43	0.85	12000
2014	3404561.96	283.71	0.12	3064105.77	255.34	0.11	1.50	0.81	12000

Source: Author's Computation.

4. **Robustness Checks on Empirical Results**

To confirm that the impact of the chosen firm-specific characteristics on corporate borrowing behavior in Nigeria is not a fluke or sensitive to omission of critical variables, an attempt is made

here to include other possible determinants of leverage such as measures of non-financial stakeholders, supply-side and/or macroeconomic variables. The included control variables are unemployment rate (UER); unionization ratio (UNR); staff cost (STC); relationship-specific investments (RSI); rating dummy (RAT) as a measure of debt market access [Akintola-Bello, (2004)]; credit to private sector (CPS) as a measure of financial intermediation; monetary policy regime or rate (MPR) to underscore monetary policy tightness or easing]; term spread (TS); equity market capitalization (EMC); All-Share index (ASI); government borrowing to GDP (GB) to ascertain possibility of *crowding out* of private-sector borrowing [Badoer & James (2016)]; and growth in GDP.

The empirical results are presented in Table 13 below.

Table 13: Impact of Control Variables on Market Leverage (Regression Result).
Dependent Variable: ML1T
Method: Pooled EGLS (Period weights)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.789403	0.010381	76.04495	0.0000
ML1T(-1)	0.735424	0.000558	1317.096	0.0000
MTR	-0.004102	0.000149	-27.61393	0.0000
NDTS	0.050328	0.000889	56.61995	0.0000
TANG	-0.019523	0.000202	-96.75458	0.0000
GROW	-5.04E-05	1.25E-05	-4.038616	0.0001
SIZE	-0.011532	7.82E-05	-147.5077	0.0000
VOL	-0.007034	7.77E-05	-90.49038	0.0000
PROF	-0.007896	0.000150	-52.61294	0.0000
QUICK	-0.049549	0.000204	-243.3950	0.0000
RD	0.134748	0.001303	103.3826	0.0000
UNQ	-0.005559	0.000194	-28.70477	0.0000
DEF	-0.011206	0.000278	-40.31463	0.0000
DIV	-0.036335	0.000232	-156.8584	0.0000
EINF	0.908912	0.016686	54.47209	0.0000
AGE	0.010347	0.000255	40.64010	0.0000
DDTA	-0.009761	0.000360	-27.10674	0.0000
RSI	1.33E-05	2.17E-06	6.146782	0.0000
UNR	-0.000461	4.32E-05	-10.67148	0.0000
STC	-0.000947	3.33E-05	-28.47900	0.0000
RAT	0.039759	0.000210	189.3406	0.0000
UER	0.579796	0.003113	186.2444	0.0000
CPS	-0.249751	0.004172	-59.86636	0.0000
EMC	-0.313962	0.005101	-61.55188	0.0000
MPR	0.437006	0.005185	84.29090	0.0000
TS	-0.865900	0.013025	-66.48101	0.0000
ASI	-0.051647	0.000320	-161.2258	0.0000
GB	0.308509	0.004981	61.93734	0.0000

GDPG	-0.117332	0.004461	-26.30136	0.0000
	Weighted Statistics			
Adjusted R-squared	0.999206	S.D. dependent	11.87435	
S.E. of regression	0.144244	Sum squared	829.5678	
F-statistic	1792697.	Durbin-Watson	1.942444	
Prob(F-statistic)	0.000000			
**Significant at 1%				

The relevant dependent variable is the market leverage ratio which captures financial liabilities. All the non-financial stakeholder variables and supply-side factors are significant at 1 percent. However, the joint significance of these other sets of control variables do not undermine the several and joint impact of the firm-specific factors on leverage given the marginal divergence in R^2 when other control variables are added to the firm-specific factors.

5. **Summary and Conclusion**

The panel data regressions reveal the weakness of the marginal tax factor in the choice of corporate capital structures in Nigeria. Different financial models of estimating the tax benefits of debt were utilized namely, the Modigliani-Miller (1963) approach, the Miller's equilibrium and the Graham's (2000) methodology. The Kink is a measure of debt conservatism whereby a less-than- one kink implies that firms are using debt aggressively. A greater than one kink means debt conservatism. Most large, liquid and profitable firms are significantly less levered relative to their theoretical debt capacity. In terms of the magnitude of tax benefits, the greatest within the sample period occurred in 2011 at gross (net) benefits of 43 percent (39 percent). The least tax benefit occurred in 2007 at gross (net) benefit of 7 percent (6 percent). Personal tax disadvantage on debt merely partially offsets the corporate tax shield benefit rather than fully offset the latter as in the original Miller equilibrium. In terms of the interaction of taxes with pecking order and the trade- off models, the study finds that taxes are not a first order consideration in the choice of debt ratios. Financing deficit rationalizes debt ratios on average. There is no empirical support for the use of debt to minimize corporate tax bill or beef up corporate value. In addition, there is support for the existence of target debt ratios in Nigerian corporate environment. Debt ratios are not merely affected by random influences. Thus, if managers claim to have target debt ratios, the empirical evidence here validates such claims and, in fact, reveals that the typical sample firm adjusts to its target within a period of 2 years and four months. Dynamic models of capital structure choice that, for instance, incorporate lagged values of the debt ratios of firms perform better. The dynamic models

can incorporate aspects of the competing theories of capital structure as attempted in this study.

In Nigeria, corporate borrowing is explained better by asymmetric information than by tax-induced frictions in the financial system. This is revealed by the signs of the relations between leverage and conventional factors such as asset tangibility, earnings volatility, dividend payout ratio, liquidity, profitability, size and industry uniqueness. The debt levels that this study's model generates are lower than those predicted in trade-off models but in line with the ones observed in Nigerian corporate sector. The pecking order view suggests that the adverse selection costs of equity are large enough to render other costs and benefits of debt second order. This study contradicts the evidence in Whited & Zhao (2021) which argue that tax efficiency rationalizes potential increase in value of Chinese firms (51%-69%) through re-allocation of finance from equity to debt.

Non-debt tax shelters play a fairly minor role in capital structure choice. The study could not establish any inverse relation between leverage and non-debt tax shields (such as depreciation, amortization, investment allowances, tax-loss carry forwards and backwards, etc.). This research has documented the minor role played by non-debt tax shelters in the capital structure of Nigerian firms. Non-debt tax shields underscore the collateral value of the assets of corporations rather than acting as debt tax-shield substitutes. As far as is known, the study is also the first to attempt an estimation of the tax benefits of debt in Nigeria using the Graham simulation of different percentages of actual interest deductions in order to ascertain debt conservatism or aggressiveness (Kink) and quantifying the margin with which debt can be increased until the marginal tax benefit vanishes (Zero Benefit).

How do taxes impact on capital structure adjustment? The target adjustment hypothesis suggests that firms systematically adjusts debt ratios to maximize tax benefits and minimize adjustment costs. There is some support for this view in Nigeria from the empirical results of this study. The average sample firm adjusts to its target debt ratio within a period of seventy weeks. Based on the positive target adjustment coefficient of 0.432, the average firm in the sample adjusts to its target (period-specific) debt ratio within two years and four months. Alternatively, the leverage half-life is roughly one year and two months (or 1.20 years). This result poses challenge for theories that insist on stability of actual debt ratios.

Since typically financially constrained firms borrow more than their financially buoyant counterparts, leasing contracts can be utilized by these firms to preserve borrowing capacity. This research has not examined separately the impact of leasing in capital structure choice because for most of the companies

that had leasing contracts in this study, the arrangement was facilitated by banks and thus lumped together with financial liabilities. In addition, to minimize the pressure of firm's debt capacity, collateral-constrained firms should utilize leasing.

To some extent, there are agency effects on corporate debt policy as debt preference by small and less profitable firms implies that managers creditably issue debt to pursue efficiency over glamour. Thus, debt is a useful self-disciplinary tool for managers of small firms. Managers of large, profitable and liquid firms can exploit the tax advantages of debt along with its disciplinary role to boost corporate value. Target adjustment rationalizes capital structure instability despite positive adjustment costs. The speed of adjustment (SOA) is less than three years for the typical firm. Market timing behaviour is most visible during bullish period in the stock market. The evidence in support of trade-off model is weak.

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