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Effect of Corporate Borrowing on Corporate Taxation in Nigeria

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Abstract. The study investigates the effects of corporate borrowing on corporate taxation on quoted consumer goods companies in Nigeria. Unlike previous studies that did not identify clearly the effect of corporate borrowing on corporate taxation. The present study examine how corporate borrowing and its interactions with short-term borrowing, long-term borrowing and debt equity has impacted on corporate taxation from 2008 to 2015. The study used a sample of 26 consumer goods companies quoted in Nigeria. It excluded financial companies due to their financial characteristics are different from other industrial companies. In analyzing the data, the study adopted panel multiple regression to identify the possible effects of corporate borrowing on the corporate taxation of consumer goods quoted companies while we interpreted fixed effect analysis after using Hausman test. Preliminary analyses were also conducted, such as descriptive statistics and correlation matrix. The result shows that corporate borrowing had a significant and positive influence on quoted companies' corporate taxation. However, when interacted with short-term borrowing and long-term borrowing, it was revealed that corporate borrowing of quoted companies negatively and significantly influence corporate taxation. In case of debt equity interaction with corporate taxation, the study also shows positive and insignificant impact on corporate taxation. The study therefore recommends that firms should have average debt to equity borrowing to save organizations from high risk of debt borrowing to pay less tax that will lead firms to high risk of bankruptcy.

Keywords: Corporate taxation, corporate borrowing, short-term borrowing, long-term borrowing, debt equity

1.0 INTRODUCTION

The design of corporation taxation has long raised difficult questions because of the complex structure of corporate borrowing, costs of borrowing, risks of financial distress and tax incentive involved in debt borrowing to pay less corporate tax.

Corporate borrowing is one of the most studied areas of business decisions, and yet it remains one of the least understood and more difficult to quantify. In this field of research, a large body of work has modelled the interaction between taxation and corporate borrowing decisions, yet little empirical support has been found so far. Although theories of corporate borrowing predict tax effects to be of first-order importance, researchers have found it difficult to identify clear effects of taxation on the choice between debt and equity finance (Myers, 1984).

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Previous empirical research has however faced difficulty in identifying with any precision the variation across companies in the corporate tax rate that they face, and it has typically found rather small effects on corporate borrowing (Graham et al.1998). The Anglo-Saxon research has found little clear evidence of the effects of tax benefits on debt borrowing (see Graham 2003, for a review). Mirrlees et al., (2011) stated the little effects, where they reported potential costs of using excessive debt being the subject of numerous tax proposalHowever, most of these prior studies were done in developed countries as well as in emerging countries and none has been done in Nigerian consumer goods quoted companies to the best of our knowledge.

Myers (1984) found it difficult to identify clearly, effects of debt and equity borrowing on taxation; Graham et al. (1998) stated little clear evidence of the effects of tax benefits on debt or equity borrowing while Mirrlees et al., (2011) stated the little effects, where they reported potential costs of using excessive debt being the subject of numerous tax proposals. Based on previous studies, it becomes difficult to clearly identify the effects of corporate borrowing on corporate taxation. This study therefore intends to fill the gap on the effects of corporate borrowing on corporate taxation using quoted Nigerian consumer goods companies. The main aim of the study is to determine the effects of corporate borrowing on corporate taxation in Nigeria, while the specific objectives are:

1. To determine whether short-term borrowing affects corporate taxation;

2. To ascertain whether long-term borrowing affects corporate taxation; and

3. To find out whether debt to equity affects corporate taxation.

Research Hypotheses

A set of null hypotheses were formulated for the study as follows:

1. There is no significant effect of short-term borrowing on corporate taxation.

2. There is no significant effect of long -term borrowing on corporate taxation.

3. There is no significant effect of debt to equity on corporate taxation.

Scope of the Study

The study covers a list of consumer goods companies quoted in the Nigerian stock exchange from 2008 to 2015. The reason for this selection is the manufacturing nature of the sector as corporate borrowing is a major part of business decision.

The remaining sections of the paper are organised as follows. Section 2 briefly reviews empirical literature on corporate taxation. It discusses its effect on corporate borrowing. The research design is described in Section 3, while Section 4 presents and discusses the empirical findings. Section 5 provides a summary of the results, conclusion and recommendations.

2.0   REVIEW OF RELATED LITERATURE

Conceptual Framework

Modigliani and Miller (1963) were the first to introduce the idea that corporate structure affects capital taxation of firms. As Scholes et. al. (2005) discusses Modigliani and Miller theory, it showed that if the only imperfection of the capital markets is corporate taxation, the deductibility of interest generates a debt tax shield that increases the value of corporations.

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When comparing debt and equity borrowing, Modigliani and Miller explain that borrowing is beneficial to corporations because the cost of debt, interest paid, is non-tax deductible while the cost of equity, dividends is tax deductible.

Graham (1996) also found considerable variation across firms in the potential tax benefit of additional interest deductions, and he used this variation to assess the influence on corporate decisions, finding a significant response. This confirmed the results of earlier empirical research that used cruder measures of tax status as determinants of borrowing; however, observed reaction of borrowing to tax incentives confirms that the tax treatment of debt and equity influences corporate financial decisions.

Graham, Lemmon, and Schallheim (1998) found out a positive effects of debt borrowing using debt levels on tax incentive. They provided evidence that the corporate tax status is endogenous to borrowing decisions, producing a spurious relationship between the debt ratio and the corporate tax rate of a firm; in other words, the estimated effects of debt levels on tax status will be biased because companies that have high levels of debt also have low corporate tax rates. To solve this problem, they proposed a direct measure of the corporate tax rate using taxable income before the interest deduction as a measure of a firm's profits. Using a balance panel from Compustat of 18,193 observations from 1981 to 1992, they found a positive effect of usage of debt on tax rates.

Gordon and Lee (2001) investigated on the debt policies of corporations of all sizes and they found a positive effects of debt levels on after- borrowing tax rates. They create a dataset from the aggregate data on corporations and test for the effects on taxation by comparing the ratios of debt-to-assets of firms in different asset size-classes. Over the 46-year period covered by their data, the corporate tax rates varied significantly, giving them adequate variation both across time and across firms for a difference-in-difference procedure. This procedure compares the changes in the debt-to-assets ratios for small versus large firms with the changes in the relative tax rates they face. They found that the use of debt for the smallest and the largest firms have effect on corporate taxes.

Theoretical Framework

This study is anchored on trade off theory (TO) theory propounded by Kraus and Litzenberger in 1973 which focuses on the benefits and costs of issuing debt (for a survey, see Harris-Raviv, 1991). According to Bontempi et al. (2015) the benefits of trade off theory include: the tax deductibility of interest paid (fiscal factors); the use of debt to indicate high-quality company performance (signalling factors); and the use of debt to reduce the amount of a company's resources that managers are free to waste on unprofitable projects (agency factors). The costs of trade off theory include: the likelihood and cost of inefficient liquidation, and the agency costs due to debtors' propensity towards taking actions that may be detrimental to lenders (failure factors); and the possibility of losing the tax benefit of other (non-debt) tax shields (fiscal factors).

The TO theory debt-ratio determinants are sub-divided into four different groups of regressors; namely, fiscal, failure, agency, and signalling effects. Measurement of the TO fiscal factors (the relative cost of capital and non-debt tax shields) proves more difficult. Theoretically, their effect on corporate taxation is relatively clear: the deductibility of interest charges from taxable income lowers the cost of debt borrowing compared to the cost of equity borrowing, which is not usually granted a similar deduction (Bontempi al et, 2015).

Empirical Review

A large body of work has modelled the interaction between taxation and corporate borrowing decisions, yet little empirical support has been found so far. Although theories of corporate

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borrowing predict tax effects to be of first-order importance, researchers have found it difficult to identify clear effects of taxation on the choice between debt and equity finance (Myers, 1984). Previous empirical research has however faced the difficulty in identifying with any precision the variation across companies in the corporate tax rate that they face, and it has typically found rather small effects on corporate borrowing (Graham et al.1998).

The effect of short-term borrowing on corporate taxation

Contos, (2015) worked on effects of corporate financial policy on taxation and reported that firms with higher depreciable assets have higher long-term debt-to-assets ratios compared to their short-term debt ratios. Firms with higher ratios of cash-to-assets have higher short-term debt-to-assets ratios compared to their long-term debt ratios. All tax coefficients were positive and statistically significant. The effect of short-term debt on taxation was very small. The opposite was true for large firms, where the effect of short-term debt on taxation on was approximately two times the effect on long-term debt. The result shows the effects of short-term and long-term debt on taxation for intermediate firms were approximately the same; that small firms have relatively less long-term debt than intermediate and large firms while large firms have more mature capital structures; they follow debt target level for their long-term borrowing and use short-term borrowing to create tax shields as needed. The result supports evidence of a positive relationship on short-term debt ratios of small, intermediate, and large firms on corporate taxation

Devereux, Maffini, and Xing, (2015) studied capital structure and corporate tax incentives using empirical evidence from UK tax returns. They used information from balance sheets to construct the leverage ratio, defined as the sum of short-term and long-term debt expressed as a proportion of total debt and book equity. They dropped company-year observations where the leverage ratio exceed 100% or are below 0%. Theories of capital structure suggest that the leverage ratio depends on a number of factors. For example, the trade-off theory predicts that larger and more tangible companies are likely to use more debt (for example, Bradley et al., 1984). On the other hand, the pecking-order theory of capital structure suggests a negative correlation between companies' profitability and leverage ratio (for example, Myers and Majluf, 1984 in Devereux et al. 2015). Although they also identify positive and substantial leverage ratio effects on corporation tax in the framework of a static capital structure model, they provide evidence that companies gradually adjust their capital structure in response to changes in their corporate tax rates. The result show that external leverage of both domestic and multinational companies affect corporate tax incentives, and that higher external leverage ratio leads to higher risk of financial distress or bankruptcy.

According BontempiGiannini and Golinelli (2015), on corporate taxation and its reform: the effects of corporate borrowing decisions using two recent tax reforms in Italy since 1996. They reported that firms may modify their leverage position not only in order to readjust to their long–term target, but also because they need short-term external funding. The choice is due to the short-term nature of the sample, which does not allow for a reliable representation of the stochastic process of future profitability. Their result shows that 70% of firms reduce the debt-ratio in the short term to effect corporate tax.

Klapper and Tzioumis (2008) on capital structure and taxation evidence from a transition economy using the corporate tax reform in 2001 in Croatia as a natural experiment. The findings provide significant evidence that capital structure of Croatian firms affected lower taxes, which resulted in increased equity levels and decreased long-term debt levels. Their results also show that smaller and more profitable firms were more likely to reduce their debt levels due to decreasing interest tax deductibility. They recommend using total liabilities to assets, which is a broader measure of borrowing, incorporating non-debt liabilities with tax-relief capacity and short-term debt.

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Rajan and Zingales (1995) focused on what do we know about capital structure, some evidence from international data. They investigated the effects of capital structure choice on corporate taxation by analyzing the borrowing decisions of public firms in the major industrialized countries using the leverage as the ratio of total debt to net assets, where net assets are total assets less accounts payable and other liabilities instead of the ratio of total liabilities to total assets or the ratio of debt (short term and long term) to total assets. Their result shows a positive relationship of short term borrowing on corporate tax, that high profit firms use internal borrowing, while low profit firms use more short-term debt because their internal funds are not adequate, to pay less tax.

Chung (1993) on asset characteristics and corporate debt policy empirically tested cross sectional regularities in financial structure across different industries and firms. The result indicates that the firm with a higher asset diversification and a larger fixed asset ratio tends to use more long-term debt and use less short-term debt. The effect of fixed asset ratio on total debt ratio is inverse, indicating that the effect on short-term debt dominates the effect on long-term debt as it affects corporate taxation.

Song's (2005) work focused on effects of capital structure using Swedish firms based on a panel data set from 1992 to 2000 comprising about 6000 companies to determine the effect of borrowing on taxation. The result shows that there is a significant effect between short-term and long-term debt ratios; while short-term debt ratio has a positive effect on non-debt tax shield. .

The effect of long-term borrowing   on corporate taxation
Brick and Ravid (1985) on the relevance of debt maturity structure suggested tax-based model. The basic assumption of their model was that the leverage decision is made before the debt maturity decision. The model states that after adjusting for the default risk, a firm will preferably make use of long-term debt when the interest rate is expected to slope upward, because long-term debt will reduce the estimated tax expenses. Based on the tax based model, Lewis (1990) on multi-period theory of corporate financial policy under taxation investigated optimal multi-period corporate financial policy. The result shows that the relevance of debt maturity structure follows immediately because there is tax distinction between short and long term debt. Kane, *et al.* (1985), using dynamic model, predict that optimal debt maturity will increase when contracting costs increase, the benefits of tax-shields decrease, and the volatility of firm worth decreases.

Shah, and Khan (2009) worked on empirical investigation of debt maturity structure using Pakistan firms. The result shows that maturity of debt borrowing does have any influence on corporate tax rate. Consistent with the tax-based hypothesis, the coefficient estimated on the variable tax is negative and significant in all models.

DeAngelo and Masulis (1980) investigated optimal capital structure under corporate and personal taxation. They postulate that the marginal corporate savings from an additional unit of debt declines as non-debt tax shields increase. This result show that increased debt likelihood will lead to bankruptcy occurring at higher debt levels. For low leverage levels, the corporate tax shield value is positive since it can be fully employed to reduce the company's overall tax liability. For higher leverage levels, the marginal advantage of debt is negative as a result of the increased probability that the potential tax shield from an extra quantity of leverage will be partially or totally lost through bankruptcy. These arguments all suggest that there should exist a negative effect of debt on non-debt tax shields.

Downs (1993) in his study of corporate leverage and non-debt tax shields, offered evidence on crowding out. He reported that the higher the tax rate, the larger the advantages of using debt, resulting in its supply increasing, finding positive effects of debt borrowing on tax shields. The result shows that debt is used as a source of finance for the firm mainly due

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to its tax advantages. According to Downs (1993), the empirical studies reviewed cleared the evidenced mixed. Chowdhury and Miles (1989) as well as CGM support such a relationship, while Homaifa*et al*.(1994), Hussain (1995), Kim and Sorensen (1986), Lowe *et al*.(1994) and Mackie-Mason (1990) find an indeterminate influence of corporate borrowing on corporate taxation.

Guariglia (1999) on effects of financial constraints on inventory investment, using evidence from South Korea firms. He argued that South Korea has a more advanced financial system; it provides a greater number of external borrowing options for investment projects. The result shows that South Korean firms do use a greater amount of external finance, both equity and long-term debt, than Pakistani firms to pay less tax. In a similar study, Cobham and Subramaniam (1998) touched on corporate borrowing in developing countries. They find out that Indian firms use rather more equity and less retained earnings than their UK counterparts. The result shows a positive effects of corporate borrowing as to long-term debt on corporate tax.

Zarowin (1988), in his study on non-linearitries and nominal contracting effects using depreciation tax shield, detects a negative dependence between non-debt tax shields and common stock returns. He reported that the estimated relationship between tax shields and leverage actually depends critically on the way in which the tax shields are measured, and suggested that non-debt tax shields should be measured as the present value of expected tax depreciation deductions. The result shows a positive effects of long-term borrowing on tax. Kemsley and Nissim (2002) investigated the valuation of book value of debt as debt in current liabilities plus long-term debt on tax shield. This measure of debt excludes operating liabilities, which typically do not generate explicit tax-deductible interest expense. The result shows a positive effects of long-term debt borrowing on tax.

The effect of debt to equity on corporate taxation

Gaver and Gaver (1985) in Contos, (2015) worked on corporate income tax. They tested the hypothesis that there is a systematic relationship between the firm's investment opportunity set and its corporate tax policy decisions. Using longitudinal data from 237 new and 237 established firms, they revealed that growing firms have significantly lower debt-to-equity ratios than established firms, showing positive effects of debt equity on corporate taxation. This is an interesting result that could explain the differences in the debt levels across firms.

Scholes et. al. (2005), on taxes, business strategy and planning approach, discusses Modigliani and Miller theory that showed that if only the imperfection of the capital markets is corporate taxation, the deductibility of interest generates a debt tax shield that increases the value of corporations. Their result shows that when comparing debt and equity borrowing, borrowing is beneficial to corporations because the cost of debt, interest paid, is non-tax deductible while the cost of equity, dividends, is tax deductible. The result is in agreement with the Modigliani and Miller theory.

Devereux Maffini and Xing, (2015) investigated the corporate borrowing and corporate tax incentives using United Kingdom tax returns. They examine how companies' capital structure affects the corporate income tax systemusing a dynamic adjustment model of capital borrowing. Their result shows a positive effect of companies' financial leverage (debt equity) on substantial long-run tax. It also reveals that companies adjust their capital structures (debt equity) gradually in response to changes in the corporate tax rate. Therefore, the external leverage of domestic stand-alone companies and of multinational companies responds strongly to corporate tax incentives.

Mirrlees et al., (2011), working on tax by design, found out that corporation taxes typically permit to deduct interest payments but not the opportunity cost of equity finance. They stated that potential costs of using excessive debt became more apparent in the recent

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financial crisis and equalizing the tax treatment of debt and equity has been the subject of numerous tax proposals. The result however shows that corporations create tax incentives to using debt, rather than equity.

Bordignon*et al* (2001) worked on reforming business taxation using Italy as scope of study. They reported that the reform significantly altered both the relative cost of capital and the tax liabilities of companies. The result shows reduction of the wide gap between costs of debt and equity borrowing and tax, which is one of the major goals of the reform, in order to stimulate the capitalization of Italian firms.

Goswami and Shrikhande (2001), on economic exposure and debt borrowing choice, investigated the choice of multinational corporations borrowing with debt in local and international capital markets, arguing that this is the case for most corporations from different industrialized economies of the world since expansion of productive activities, both in local and foreign countries. The result shows that majority of corporations looking for external borrowing options use debt borrowing rather than equity borrowing to enjoy less corporate tax.

Deesomsak et al., (2004) focused on the effects of capital borrowing on taxation using Asia pacific region. They argue that the liquidation value of the Asian firms increases with the tangibility of assets and decreases the probability of mispricing in the event of bankruptcy. The result shows that corporations with high debt borrowing levels tend to underinvest, or invest below their optimal investment levels, which leads to positive effects of debt on corporate tax. Rajan and Zingales, (1995), on what do we know about capital structure using international data, added that corporations with difficulties in providing collaterals are prone to pay higher interest, or may be forced to issue equity instead of debt borrowing. The result implies a positive effects of corporate debt borrowing on corporate taxation.

Antonczyk and Salzmann (2014) touched on overconfidence and optimism, the effect of national culture of capital structure. The result shows that corporation corporate debt borrowing affect corporate taxation since debt interest payments are typically tax deductible. In a similar study, Jõeveer (2013) considers firm, country and macroeconomic effects of capital borrowing using transition economies. The result shows that higher tax rates will imply greater interest tax shield benefits, and, consequently, induce more debt borrowing rather than equity borrowing. This reasoning is the main theme of the pioneering study by Modigliani and Miller (1963) and Huang and Song (2006) based on Modigliani and Miller study on determinants of capital borrowing using China. Their results show that almost all researchers now believe that debt borrowing decisions of corporations should be significant on corporation taxes. De Jong et al. (2008) investigated the capital borrowing around the world using the roles of firm and country specific determinants. They argued that when the bond market in a given country is highly developed, then issuing and trading these bonds are easier and will lead to higher levels of corporate debt borrowing. In contrast, they also acknowledged that when the stock market is developed, the debt borrowing level of corporations tends to be lower because the broader supply of funds decreases the cost of equity. The result shows positive effects of corporate debt borrowing on corporate taxation. Nyamita et al (2014) undertook a similar study on factors influencing debt-borrowing decisions of corporations. The result shows that debt borrowing decisions within the corporations are influenced by both firm-specific factors and macroeconomic factors such as corporate taxation.

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3.0   METHODOLOGY

Research design

The study is of an ex post facto design. We use secondary data by obtaining financial information covering all listed Consumer Goods companies quoted in the Nigerian Stock Exchange from 2008 to 2015. Data were obtained from the annual reports of the sampled firms and publications of the Nigerian Stock Exchange (NSE).

The selection of the variables (regress and regressor) is primarily guided by the results of previous empirical studies and the available data. The dependent and independent variables are defined so that they are consistent with those previous empirical studies while the uniqueness of the present study lies in its inclusion of all quoted companies on Consumer goods sector in Nigeria as part of its data.

Population of the study

The population of the study is made of all the Nigerian companies that are categorized under consumer goods sector. However, both quoted or not quoted in the Nigeria stock exchange market.

Sample size of the study

The sample sizeis made upof all 26 quoted companies listed under consumer goods sector of Nigeria Stock Exchange. We create an unbalanced panel for 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015 for quoted companies in the Nigeria Stock Exchange in Consumer goods sector.

Estimation procedure

The assumption in panel data regression is that the dependent variable is a linear function of the independent variables with consideration to heterogeneity in the pooled consumer goods companies. This means that pooled regression assumed that there is no difference in the pooled consumer goods companies while panel regression assumed cross-section heterogeneity (cross section fixed effect) and period heterogeneity (time fixed effect).

Model Specification and Measurement of Variables

In specifying our panel regression model for the effects on corporate taxation, our major variables are short term borrowing (SHTERBRO), long term borrowing (LNGTERBRO) and Debt equity (DEBTEQU). Also included in the model are cross-section (Consumer goods companies) and years (2008 – 2015) in the panel regressions.
The panel multiple regression with an error term (μ_i) is expressed in equation

$$CorTax_{it} = f\,(ShTerBro + LngTerBro + DebtEqu)\ldots\ldots\ldots\ldots(1)$$
$$CorTax_{it} = \alpha_i + \beta_1\,ShTerBro_{it} + \beta_2\,LngTerBro_{it} + \beta_3\,DebtEqu_{it} + \mu_{it}\ldots\ldots(2)$$

Where
α_i = constant

Dependent Variable
CorTax = Corporate Taxation; proxy by tax paid published in the annual financial report, it included the firms which have negative income tax expense, and the firms that ended the year with loss as zero tax expense. That is because firms generating taxable loss in one year could

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carry that loss back to offset taxable income in the three previous years. This method is developed by Manzon and Plesko (2002), and used by Desai and Dharmalapa (2006, 2009) and Utkir (2012).

Independent Variables

ShTerBro = Short term borrowing; following Contos, (2015) we measure the influence of short term borrowing through consumer goods listed companies short debt ratio. The ratio states: short-term debt to total assets, which measures short-term debt as a percentage of total assets. Short- term debt is equal to the sum of mortgages, notes, bonds payable in less than one year. The apriori sign is $\beta_1 < 0$

LngTerBro = Long-term borrowing: following Contos (2015) we measure the influence of long term borrowing through consumer goods listed companies long debt ratio. The ratio states: long-term debt to total assets, which measures long-term debt as a percentage of total assets. Long-term debt is equal to the sum of mortgages, notes, bonds payable in one or more. The apriori sign is $\beta_2 < 0$

DebtEqu = Debt equity: following Sayılgan et al (2015). We measured the financial leverage as the ratio of total debt to total equity. TD/TE = Total Debt/Total Equity. When measuring the financial leverage, we used book values instead of market values. The first reason was the data limitations, discussed also in Titman and Wessels (1988) which forced them to measure debt in terms of book values rather than market values. The second reason was the conceptual simplicity and the variables' ability to reflect a firm's total reliance on borrowed funds, which is also brought by Ferri and Jones (1979) who measured the financial leverage as the ratio of total debt to total assets at book value. As stated by Titman and Wessels (1988), with reference to Bowman (1980), the cross sectional correlation between the book value and market value of debt is very high, so the misspecification due to using book value measures is probably fairly small. The apriori sign is $\beta_3 > 0$.

4.0   DATA PRESENTATION AND ANALYSIS

In this study, we investigate the effects of corporate borrowing on corporate taxation in Nigerian quoted consumer goods sector.A sample of 26 quoted consumer goods companies from which 208 observations were made: To ensure adequate observation for statistical testing, we adopted a panel data analysis to identify the possible effects on corporate taxation. We conducted descriptive statistics and correlation matrix. Pooled and panel regression with fixed and random effect panel data regression and the Hausman test were also conducted to select between fixed and random effect models.

Data Description and Analysis

Table 4.1

Descriptive Statistic					
Variables	**Mean**	**Max**	**Min**	**Std. Dev**	**JB (P-Value)**
CorTax	1,796,474.	19,159,968	0.00	3,547,265.	1670.78 (0.00)*
ShTerBro	0.38	3.09	0.00	0.606110	1050.16 (0.00)*
LngTerBro	0.20	0.88	0.00	0.243502	56.82 (0.00)*
DebtEqu	2.83	118.68	0.00	10.48405	76050.50 (0.00)*
No of Cross-section	26				
All data observations	208				

Source: Author (2016)

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NOTE *1% level of significance, ** 5% level of significance and ***10% level of significance

Table 4.1 shows the mean (average) for each of the variable, their maximum values, minimum values, standard deviation and Jarque-Bera (JB) statistics (normality test). The results in Table 4.1 provided some insight into the nature of the consumer goods companies that were used in the study. Firstly, the large difference between the maximum and minimum values of debt equity shows that the consumer goods companies are not dominated by either debt or equity companies. Secondly, it is observed that on the average over the eight year period (2008 – 2015), the sampled consumer quoted companies paid a positive corporate tax of 1,796,474. We also observed that the corporate taxation over the period was 19,159,968 maximum while the minimum stood at 0.00. This shows that quoted consumer goods companies pay corporate tax differently. These wide variations in corporate taxation therefore justify the need for the study, as we expect companies paying high tax to have less debt borrowing. Our sampled companies are heterogeneous due to panel data. The panel analysis accommodates times as well as the heterogeneity effect of the listed companies, which may be random or fixed

Lastly, in Table 4.1, the Jarque-Bera (JB) which tests for normality or the existence of outliers or extreme values among the variables are normally distributed at 1% level of significance. This means that any variables with outlier are not likely to distort our conclusion and are therefore reliable for drawing generalization.

Correlation Analysis

In examining the relationship among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in Table 4.2
Table 4.2

Correlation Matrix				
	ShTerBro	LngTerBro	DebtEqu	CorTax
ShTerBro	1.00			
LngTerBro	-0.23	1.00		
DebtEqu	0.08	0.12	1.00	
CorTax	-0.12	-0.08	-0.04	1.00

Source: Author (2016)

The use of correlation matrix in most regression analysis is to check for multicolinearity and to explore the association between each explanatory variable and the dependent variable. Table 4.2 focuses on the correlation between corporate taxation (CorTax) and corporate borrowing (ShTerBro, LngTerBro and DebtEqu).

The findings from the correction matrix table shows that there is a weak negative association between ShTerBro and LngTerBro (-0.23). This clearly shows that ShTerBro and LngTerBro are different depending on companies' policies to achieve their set goals. In the case of debt equity (DebtEqu, ShTerBro = 0.08, LngTerBro = 0.12) we observed that, debt equity was positively and weakly associated with ShTerBro and LngTerBro. While corporate taxation (CorTax, ShTerBro = -0.12, LngTerBro = -0.08 and DebtEqu = -0.04) are all negatively and weakly associated with ShTerBro, LngTerBro and DebtEqu.

In checking for multicolinearity, we notice that no two explanatory variables were perfectly correlated. This means that there is the absence of multicolinearity problem in our model. Multicollinearity between explanatory variables may result to wrong signs or

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implausible magnitudes, in the estimated model coefficients, and the bias of the standard errors of the coefficients.

Regression Results

However, to examine the impact relationships between the dependent variables corporate taxation and corporate borrowing and to also test our formulated hypotheses, we used a panel data regression analysis since the data had both time series (2008 to 2015) and cross-sectional properties (26 quoted companies). The panel data regression results are presented and discussed below.

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Table 4.3 Panel regression result

	Aprior Sign	CorTax (OLS Pooled)	CorTax (Fixed Effect)	CorTax (Random Effect)
C		2525557 (6.65) [0.00]*	1658066 (11.63) [0.00]*	1677690 (2.31) [0.02]*
SHTERBRO	-	-904469.2 (-2.16) [0.03]*	-64886.98 (-0.32) [0.04]*	-85080.85 (-0.42) [0.67]
LNGTERBRO	-	-1807896. (-1.72) [0.08]*	-759711.8 (-1.57) [0.01]*	700757.7 (1.46) [0.14]
DEBTEQU	+	-6429.86 (-0.27) [0.78]	3867.314 (0.57) [0.56]	3858.985 (0.57) [0.56]
R-Squared		0.03	0.94	0.01
Adj-R-Squared		0.01	0.94	0.00
F-Statistic		2.22(0.08)*	118.06 (0.00)*	1.11 (0.34)
Hausman Test				1.66 (0.64)
N(n)		208(26)	208(26)	208(26)

Source: Author 2016

Note: (1) Parentheses ( ) are t-statistic while bracket [ ] are p-values

      (2) * 1%, ** 5% and *** 10% level of significance

In testing for the cause-effect relationship between the dependent and independent variables in corporate taxation, we reported pooled and panel analysis. This study adopted the three widely used pooled and panel data regression models (fixed effect and panel data estimation techniques). The difference in these models is based on the assumptions made about the explanatory variables and cross sectional error term. The results would be more appealing statistically in the context of difference in our sampled companies.

In Table 4.3, we presented an OLS pooled regression and two panel data estimation techniques (fixed effect and panel data estimator). The three results revealed differences in their coefficients magnitude, signs and number of significant variables. This clearly shows that pooled OLS regression does not reflect the heterogeneity in the sampled companies. This effect is reflected in the two panel data regression results. In selecting from the two panel data models, the Hausman test was conducted and the result shows that we should accept Ho. (adopt fixed effect model and reject random effect model). This means that we adopt, interpret and draw policy recommendations from the fixed effect panel data regression results.

Following the above, we will discuss the fixed effect panel regression result from Table 4.3. In Table 4.3, the R-squared and adjusted R-squared values were (0.94) and (0.94). These indicate that all independent variables jointly explain about 94% of the systematic variations in corporate taxation of our sampled companies over the eight year period (2008 – 2015). The

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above average R-squared value is realistic as it clearly shows corporate taxation and its interaction with interest paid on debt borrowing. The F-statistics (118.06) and its p-value (0.0) show that the corporate taxation fixed effect regression model is generally significant and well specified. The F-statistic also shows that the overall corporate taxation fixed effect regression model is significant at 1% levels.

In addition to the above, the specific empirical finding from each explanatory variable from fixed effect regression model is providedas follows:

Short Term Borrowing (ShTerBro), based on the coefficient of -64886.98 and p-value 0.04, appears to have a negative influence on our sampled quoted companies, corporate taxation and was statistically significant at 5% since it p-value was greater than 0.01. This result, therefore, suggests that we should reject hypothesis one (H_1), which stated that short-term borrowing does not significantly affects corporate taxation. This means that all borrowing (i.e. sum of mortgages, notes, bonds payable) in less than one year paid interest on cost of debt that is exempted from tax, with negative influence on corporate taxation and also conformed to apriori expectation. This finding, like similar those of studies (Bontempi al et. 2015; Song 2005; Klapper&Tzioumis 2008), confirms that firms reduce their borrowing in short term borrowing that affects corporate tax computation.

Long Term Borrowing (LngTerBro), based on the coefficient of -759711.8 and p-value 0.01, appears to have a negative influence on our sampled quoted companies, corporate taxation and was statistically significant at 1% since its p-value was 0.01. This result, therefore, suggests that we should reject hypothesis two (H_2), which stated that long-term borrowing does not significantly affect corporate taxation. This means that all borrowing (i.e. sum of mortgages, notes, bonds payable) in one year and more paid interest on cost of debt is exempted from tax, with negative influence on corporate taxation and also conformed to apriori expectation. This finding, like in similar studies (Brick&Ravid 1985; Kane, *et al.* 1985;Shah, & Khan 2009; DeAngelo&Masulis 1980; Downs 1993), confirms that after adjusting to the default risk, a firm will preferably make use of long-term debt when the interest rate is expected to slope upward, because long-term debt will reduce the estimated tax expenses.

Debt Equity (DebtEqu), based on the coefficient of 3867.3 and p-value 0.56, appears to have a positive influence on our sampled quoted companies, corporate taxation and was statistically insignificant. This result, therefore, suggests that we should accept hypothesis three (H_3), which stated that debt equity does not significantly affect corporate taxation. This means consumer quoted companies have average percentage of equity to debt borrowing. However, companies with high debt to equity has been aggressive in borrowing in its growth, as greater debt borrowing will reduce corporate taxation. With debt to equity positive influence on corporate taxation and also conformed to apriori expectation. This finding, like in such similar studies as Devereux, Maffini, & Xing, 2015,; Mirrlees et al., 2011,; Bordignon*et al.* 2001,; Goswami&Shrikhande, 2001,; Auerbach et al. 2015, confirms that the external borrowing of domestic stand-alone companies and of multinational companies responds strongly to corporate tax incentives. Debt borrowing practices are often associated with high level of risk.

5.0   CONCLUSION AND RECOMMENDATIONS

Results from this study indicate that there is significant effect between corporate borrowing and corporate taxation. This is consistent with the findings of Miller (1977) that pointed out that, if one takes into account the tax status of corporate investors, equity borrowingcan be a

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competitive alternative to debt borrowing. Auerbach et al (2015) suggested that tax payment did provide a useful source of variation in the tax incentive to borrow. Ayers, Cloyd, and Robinson (2001) explain that firms with greater tax incentives will have higher levels of debt. Graham, Lemmon, and Schallheim (1998) found out a positive effect between the tax incentive and debt borrowing using debt levels. They provide evidence that the corporate tax status is endogenous to borrowing decisions, producing a spurious effect between the debt ratio and the corporate tax rate of the firm. In other words, the estimated effects of tax status on the debt levels will be biased because companies that have high levels of debt also have low corporate tax rates

In addition, the study reveals a negative relationship between short-term borrowing and long-term borrowing at 1% level of significance. The results imply that short and long term borrowing effect taxation, because interest on debt borrowing are deducted before taxation, as interest are exempted from taxation. Making firms to pay less taxation. However, debt equity has a positive insignificance related to taxation. It means that the quoted companies under study have average percentage of debt to equity borrowing, because high debt borrowing expose firms to risk of bankruptcy.

Therefore, this study recommends that firms should have average debt to equity borrowing to save organizations from high risk of debt borrowing to pay less tax that will lead firms to high risk of bankruptcy. Furthermore, this study may be improved upon by including more variables to measure corporate taxation including studying the completely quoted companies in Nigeria.

Appendices

Descriptive Statistics				
	ShTerBro	**LngTerBro**	**DebtEqu**	**CorTax**
Mean	0.384907	0.200633	2.834105	1796474.
Median	0.261600	0.095900	0.929600	266421.0
Maximum	3.093300	0.881500	118.6865	19159968
Minimum	0.000000	0.000000	0.000000	0.000000
Std. Dev.	0.606110	0.243502	10.48405	3547265.
Skewness	3.023129	1.265698	9.289531	3.363944
Kurtosis	12.19868	3.386317	94.81436	15.14573
Jarque-Bera	1050.165	56.82908	76050.50	1670.788
Probability	0.000000	0.000000	0.000000	0.000000
Sum	80.06060	41.73170	589.4938	3.74E+08
Sum Sq. Dev.	76.04552	12.27366	22752.45	2.60E+15
Observations	208	208	208	208

Correlation Matrix				
	ShTerBro	LngTerBro	DebtEqu	**CorTax**
SHTERBRO	1.000000	-0.237002	0.082957	**-0.126708**
LNGTERBRO	-0.237002	1.000000	0.127184	**-0.089893**
DEBTEQU	0.082957	0.127184	1.000000	**-0.047608**
CORTAX	-0.126708	-0.089893	-0.047608	**1.000000**

Source: Author (2015)

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Dependent Variable: CORTAX
Method: Panel Least Squares
Date: 12/11/15   Time: 18:48
Sample: 2008 2015
Periods included: 8
Cross-sections included: 26
Total panel (balanced) observations: 208

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2525557.	379331.4	6.657916	0.0000
SHTERBRO	-904469.2	417936.2	-2.164132	0.0316
LNGTERBRO	-1807896.	1045205.	-1.729705	0.0852
DEBTEQU	-6429.861	23665.78	-0.271694	0.7861

R-squared	0.031643	Mean dependent var		1796474.
Adjusted R-squared	0.017402	S.D. dependent var		3547265.
S.E. of regression	3516265.	Akaike info criterion		33.00274
Sum squared resid	2.52E+15	Schwarz criterion		33.06692
Log likelihood	-3428.285	Hannan-Quinn criter.		33.02869
F-statistic	2.222003	Durbin-Watson stat		0.331081
Prob(F-statistic)	0.086735			

Dependent Variable: CORTAX
Method: Panel Least Squares
Date: 12/11/15   Time: 18:51
Sample: 2008 2015
Periods included: 8
Cross-sections included: 26
Total panel (balanced) observations: 208

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1658066.	142517.8	11.63409	0.0000
SHTERBRO	-64886.98	201572.6	-0.321904	0.0479
LNGTERBRO	-759711.8	483649.0	-1.570792	0.0180
DEBTEQU	3867.314	6698.749	0.577319	0.5644

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.948634	Mean dependent var		1796474.
Adjusted R-squared	0.940599	S.D. dependent var		3547265.
S.E. of regression	864551.5	Akaike info criterion		30.30650
Sum squared resid	1.34E+14	Schwarz criterion		30.77183
Log likelihood	-3122.876	Hannan-Quinn criter.		30.49466

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F-statistic	118.0637	Durbin-Watson stat	1.065549
Prob(F-statistic)	0.000000		

Dependent Variable: CORTAX
Method: Panel EGLS (Cross-section random effects)
Date: 12/11/15   Time: 18:52
Sample: 2008 2015
Periods included: 8
Cross-sections included: 26
Total panel (balanced) observations: 208
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1677690.	723770.7	2.317985	0.0214
SHTERBRO	-85080.85	199509.1	-0.426451	0.6702
LNGTERBRO	700757.7	479264.2	1.462153	0.1452
DEBTEQU	3858.985	6689.514	0.576871	0.5647

Effects Specification			
		S.D.	Rho
Cross-section random		3619230.	0.9460
Idiosyncratic random		864551.5	0.0540

Weighted Statistics			
R-squared	0.016179	Mean dependent var	151184.5
Adjusted R-squared	0.001711	S.D. dependent var	862448.0
S.E. of regression	861710.0	Sum squared resid	1.51E+14
F-statistic	1.118234	Durbin-Watson stat	0.969152
Prob(F-statistic)	0.342726		

Unweighted Statistics			
R-squared	-0.009149	Mean dependent var	1796474.
Sum squared resid	2.63E+15	Durbin-Watson stat	0.320138

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.661235	3	0.6456

Cross-section random effects test comparisons:

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Variable	Fixed	Random	Var(Diff.)	Prob.
SHTERBRO	-64886.978442	-85080.846916	827628866.262917	0.4827
LNGTERBRO	759711.774999	700757.690509	4222213019.910889	0.3643
DEBTEQU	3867.313638	3858.985348	123646.681130	0.9811

Cross-section random effects test equation:
Dependent Variable: CORTAX
Method: Panel Least Squares
Date: 12/11/15   Time: 18:54
Sample: 2008 2015
Periods included: 8
Cross-sections included: 26
Total panel (balanced) observations: 208

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1658066.	142517.8	11.63409	0.0000
SHTERBRO	-64886.98	201572.6	-0.321904	0.7479
LNGTERBRO	759711.8	483649.0	1.570792	0.1180
DEBTEQU	3867.314	6698.749	0.577319	0.5644

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.948634	Mean dependent var	1796474.
Adjusted R-squared	0.940599	S.D. dependent var	3547265.
S.E. of regression	864551.5	Akaike info criterion	30.30650
Sum squared resid	1.34E+14	Schwarz criterion	30.77183
Log likelihood	-3122.876	Hannan-Quinn criter.	30.49466
F-statistic	118.0637	Durbin-Watson stat	1.065549
Prob(F-statistic)	0.000000		

Acknowledgments

Biography

OsegbueIfeanyi Francis is a PhD taxation student at Chukwuemeka Odumegwu Ojukwu University, Nigeria. He received his Ordinary National Diploma in accountancy from Federal Polytechnic Nekede in 2003, while B.Sc and M.Sc degrees in accountancy from Chukwuemeka Odumegwu Ojukwu University in 2008 and 2012 respectively. The author

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