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ASSESSING THE EFFECTS OF TAX SHIELD ON LEVERAGE POLICY OF QUOTED INDUSTRIAL FIRMS IN NIGERIA

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This study examined the effect of tax shield on leverage Policy using a panel data collected from annual financial report of quoted industrial companies in Nigeria for ten year period covering 2007 to 2016. The study was predicated on cross-sectional and ex-post facto research design and the data collected were analyzed using descriptive statistics, correlation analysis and ordinary least square regression. This study found that debt tax shield and profitability have significant positive effect on leverage policy of selected industrial firms at 5% level of significance while non debt tax shield has a positive effect on the leverage policy but at 1% level of significance. In the same vein, firm size was found to have a positive significant effect on leverage policy of selected industrial firms in Nigeria. These findings generally suggests that firms are likely to increase their leverage if there tax shield increase. Based on the findings, the study recommends among others that companies quoted under the industrial sector should use more leverage in financing investment because of the tax shelter enjoyed by the companies.

Keywords: debt tax shield, non debt tax shield, firm size, leverage policy and corporate tax

1.0 INTRODUCTION

Recently, researcher's have turn to examine the impact of taxes on the financing choice of firms, this new interest followed the M-M proposition of irrelevance of capital structure in perfect markets. The Modigliani and Miller (1963) study included interest tax deductions to show that debt in the capital structure could yield large gains in the form of the tax shields. De Angelo and Masulis (1980) further proposed that firms may have deductibles other than debt to reduce their corporate tax burden and therefore, debt and non-debt tax shields could be used as substitutes. Examples of such non-debt tax shields include depreciation, investment tax credits, pension or losses carry forwards. Debt is used as a significant source of value creation and value added in firm. Kaplan (1989) believes that the tax benefits generated by the use of debt are important source of wealth gain in highly leveraged transactions. Kaplan further estimates the median value of the tax benefits associated with management buyouts to be in the range of 21 percent to 143 percent of the premium paid to pre-buyout shareholders. Graham (2000) estimates the value of tax savings of debt, for a typical firm in his sample, to be 20 percent of pretax income annually and the value of the tax shield of debt to be about 10 percent of firm value. The debt tax shield therefore represents a significant component of firm value and hence it is important to calculate the correct value of the tax shield of debt.

A tax shield is the reduction in income taxes that results from taking an allowable deduction from taxable income. A tax shield is the present value of future tax savings attributed to the tax deductibility of a particular expense in a company's income statement. For example, because interest on debt is a tax-deductible expense, taking on debt creates a tax shield. Since a tax shield is a way to save cash flows, it increases the value of the business, and it is an important aspect of business valuation.

Modigliani and Miller (1958) while suggesting a fundamental irrelevance of financial decisions for firm value, refers to company taxation as a reason for preferring debt to equity. Within their framework of perfect capital markets, the value

of a permanently leveraged firm is generated by adding the value of the corporate tax shield of debt to the value of an identical but unleveraged company.

Various studies have investigated the MM prediction that debt tax shield promotes the use of debt versus equity financing. For example, Bradley, Jarrell, and Kim (1984), Long and Malitz (1985), Titman and Wessels (1988), and Fischer, Heinkel, and Zechner (1989) use various forms of debt equity ratios to test whether or not non-debt tax shields, such as depreciation or investment tax credits, reduce the propensity to use debt financing. None of these studies found significant tax shield effects. In contrast, recent studies focus on incremental financing decisions and find cross-sectional evidence that high marginal tax rates promote the use of debt e.g., MacKie-Mason (1990) Trezevant (1992), and Graham (1999).

Despite the importance of the issue, no study has been conducted in the Nigeria context. The few studies done was on the effect of tax on dividend policy in Nigeria, those studies have different findings and therefore difficult to draw policy implication from. For instance, Mathias and Meg (2008), finds negative relationship between tax and dividend policy while Samuel and Inyada (2010) Nnadi and Ose (2012) finds that tax positively affect dividend policy of Nigeria companies. Little is known of studies that have been carried out to ascertain the effects of tax shield on leverage policy of firms in Nigeria. However, this study examined the effects of tax shield on leverage policy using quoted industrial firms in Nigeria. The researchers introduced tax spread as proxy for non debt tax shield contrary to other proxies used in previous studies like Cortez and Susanto (2012), Lim (2012), Chakraborty (2013) and Dang (2013) and Forte et al. (2013).

The main objective of this study was to examine the effects of Tax shield on leverage policy of quoted industrial companies in Nigeria. The study seeks to answer the question, to what extent does tax shield affect leverage policy of quoted industrial companies in Nigeria? The remaining sections of this study were organized as follows. Section 2, examined the various concept and empirical literature. Section 3 deals with the methodology used which include content scope and time frame of ten years. Section 4 deals with analysis and interpretation of result while in section 5 we draw our conclusion and recommendations.

2.0 CONCEPTUAL ISSUES AND REVIEW OF RELATED LITERATURE

Tax shield are subsidy that government gives to those who incur a Tax deductible expenses. All deductible expenses are a source of Tax savings. Tax shield is also seen as the present value of future Tax savings attributable to the Tax deductibility of a particular expense in a company's statement of comprehensive income. A tax shied is the deduction in income taxes that results from taking an allowable deduction from taxable income. From example, interest on debt is a tax-deductible expense; therefore. Taking on debt creates a tax shield. Liu, Zhang and Gao (2015) defined tax shield as the deliberate use of taxable expenses to offset taxable income. The intent of a tax shield is to defer or eliminate a tax liability. Thus, a tax shield is a deduction, credit or other means used to reduce the amount of taxes an individual or business owes to the government. Tax shield are subsidy that government gives to those who incur a tax deductible expenses. All deductible expenses are a source of tax savings. Tax shield is also seen as the present value of future tax savings attributable to the tax deductibility of a particular expense in a company's statement of comprehensive income. Arsov and Naumoski (2016) opined that the earliest recommendations regarding the choice of the optimal leverage ratio were related to the debt tax shield. The tax shield resulting from interest payments should induce increased use of debt. Later, the importance of this proposition has been reduced by the trade-off theory. Although numerous studies have failed to confirm this relationship, Arsov and Naumoski (2016) provide significant support to this hypothesis using the impact of taxes on incremental financing choices. The importance of tax shields critically depends on the level of tax rates. Since the debt tax shield is excluded from free cash flow calculations, the tax deductibility of interest is treated as a decrease in the cost of capital using the after tax weighted average. George (2010) argued that the value of tax shields depends on the marginal tax rate of the firm and the availability of non-debt tax shields and tax credits. One can make the case of a tax shield substitution effect since the availability of non-debt tax shields may crowed out debt tax shields (George, 2010). All interest paid by a corporation to its lenders is tax-deductible, thus generating a tax shield.

Interest tax shield are shelter granted on loan or debt instrument used by an organisation. This preferential tax treatment of interest expense provides an incentive for corporations to rely exclusively on debt financing. This has an important implication for organisation choice of capital structure. With a debt Tax shield, corporate firm faces lower debt servicing costs which implies a higher net operating income.

Non debt Tax shield which includes allowances, research and development, donations, losses brought forward, pension etc are deductions made before arriving at the Taxable income i.e allowance. Non debt Tax shield is a technique under which all allowable deductions are made from Taxable income.

Financial leverage is the degree to which a company uses fixed-income securities such as debt and preferred equity.

The more debt financing a company uses, the higher its financial leverage. A high degree of financial leverage means high interest payments, which negatively affect the company's bottom-line earnings per share. Many diverse empirical measures have been used to show the debt financing (dependent variable) levels within corporations (Frank and Goyal, 2009). They argued that some scholars advocate for book leverage, which is the proportion of corporation debt finance to the total book value of the corporation assets. Other scholars advocate for market leverage, which is the proportion of corporation debt to market value of the corporation. According to Frank and Goyal (2009), the opinions of the researchers on the best measure of debt financing level differ. They argued that supporters of the book leverage approach believe that financial markets swing so much and managers tend to have a notion that market leverage figures may be unreliable as a guide to corporate financial policy.

Since the calculation of book leverage relies on the book value of the corporation, which is an accounting measure (Chen, 2013), managers tend to put more attention on book leverage because debt is better supported by assets in place than it is by growth opportunities. Calculation of the market value of corporations is easier for stock exchange listed corporations; this may make book value leverage popular for studies on unlisted corporations (Brav, 2009). This study used the book value measure of leverage.

2.1.1 THE TAX SHIELD DEBATE. WHY FIRM PREFERS NON DEBT TAX SHIELD

Why do firms prefer non debt tax shields to debt tax shield? Many firms prefers the non debt tax shield because many tax shields are less costly than debt. Debt usually requires costly interest payments. Many non debt tax shields do not require any additional outlays for the firm and have a much larger return on capital invested (Madhuparna, James & Kyle, 2011). Another reason that may be advanced for firm preference of NDTS is the cost associated with debt obligation. Debt obligations are likely to cause high transaction costs for some firms. Madhuparna, et al (2011) believe thatnon debt tax shields often exploit provisions in the accounting rules that allow the firm to reduce taxes without affecting the income statement. If accounting earnings matter, and there is a large literature claiming support for this notion, then these tax shields may be favored over debt tax shields. In this study, we measured non debt tax shield as the difference between provision for taxes on the firm’s income statement and taxes actually paid.

2.1.2 NON DEBT TAX SHIELD AND LEVERAGE POLICY

The transaction cost theory indicates that the transaction cost is derived from the limit rationality of the manager, the uncertainty of the transaction and opportunism. One of the objectives of the enterprise is to minimize the transaction costs and maximize profit. The debt contract is likely to increase the transaction costs of the enterprise because of the high interest of the bank loan. However, the non-debt tax shield does not require companies to pay the high cost, so it could reduce the amount of funds occupied. Therefore, companies have a strong incentive to choose the non-debt tax shield way to delay or reduce the taxes. Hence, the non-debt tax shield may be preferred over the debt tax shield (Beneish 1999; Kasznik 1999). The non-debt tax shield plays a certain substitution effect on the debt tax shield.

There is empirical argument on non-debt tax shields as substitutes for a debt-related tax shield and, therefore, the relationship between non debt tax shields and debt financing should be negative (Lim, 2012). This fact has been confirmed by studies such as Bauer (2004), Deesomsak et al. (2004), Huang and Song (2006), Cortez and Susanto (2012), Lim (2012). Contrary to this finding, studies like Oyesola (2007), Antoniou et al. (2008), Kouki and Said (2012), Chakraborty (2013), Dang (2013) and Antonczyk and Salzmann (2014), found a positive relationship between non-debt tax shields and debt financing. In this study tax spread will be used as proxy for non debt tax shield.

Measurement of Non-debt tax shield: Various studies used different measurement to proxy non debt tax shield, studies like Cortez and Susanto (2012), Lim (2012), Chakraborty (2013) and Dang (2013) used depreciation and amortization charge divided by total assets as the measure of non-debt tax shield variable with the exception of Forte et al. (2013) used the depreciation charge divided by operating profit. In this study, tax spread is used as a proxy for non debt tax shield;

Tax spread is directly measures as the difference between the accounting tax (provision) and the income tax paid, it has the benefit of being a relative more comprehensive measure of NDTS since it can potentially capture the effects of deductions such as accelerated depreciation, stock option deductions, tax-shelters and so on. By capturing the effect of a wider variety of NDTS at the same time, the probability that this measure is correlated with the firm’s investment is greatly reduced compared to measures such as depreciation.

Hypothesis 1: Non debt tax shield has no significant effect on leverage policy of firms in Nigeria.

2.1.3 DEBT TAX SHIELD AND LEVERAGE POLICY

Most corporate organization finance investment mostly from external sources mostly, usually from leverage than equity due to the complex procedure and cost of raising fund through capital market. Also the bias of the Tax system toward equity favours' the use of debt, since interest on debt is typically tax deductible while Dividend payments are not (Barday& Smith 2014). Thus an increase in tax rate will lead to increase in interest tax shield benefits and consequently, induce more debt financing rather than equity financing.

The interest deductibility has current value only if the firm is paying positive taxes. In an uncertain world, the higher are other tax shields, the greater is the probability that the firm will find itself in a non-tax status; hence the lower the expected value of the interest deduction (DeAngelo and Masulis (1980]; Ross (1985]). Debt has tax advantages at the corporate level because interest payments reduce the firm's taxable income while dividends and share repurchases do not. Unless personal taxes negate this advantage, interest 'tax shields' give corporations – that is, shareholders – a powerful incentive to increase leverage.

Hypothesis 2: Debt tax shield has no significant effect on leverage policy of firms in Nigeria.

2.2 The tradeoff theory offers a theoretical explanation for capital structure decisions and an optimum debt ratio for individual companies. This theory indicates that the tax benefit of the deductibility of debt costs at the company level is offset by costs, e.g., insolvency costs that increase with an increasing level of debt (Fama and French, 2002). Although there are no uniform predictions of the size of this tax benefit (tax shield from interest deductibility) in comparison with an opposing increasing cost of debt (especially insolvency costs), from a theoretical perspective, there is little doubt that restricting interest deductibility will make debt financing less favorable. However, Maßbaum and Sureth(2009), who take the Belgian, Italian and German rules as an example, show why corporations receive both debt and equity capital. They analytically find that the financing effects of thin capitalization rules are non uniform and depend significantly on the underlying tax system.

The theory believes that the marginal benefit of increases in debt declines as debt increase while the marginal cost increases so that a firm that is optimizing its overall value will focus on the trade-off when choosing how much equity and debt to use for financing.

Empirical Studies

José and Francisco (2016) explored the role of taxes in explaining companies' financing decisions. They tested whether the corporate tax shields explanation of capital structure was applicable to firms listed on the Spanish stock exchange over the period 2007–2013. They found that taxes are economically and statistically significant determinants of capital structure. Their results suggest that marginal tax rates affect the debt policies of Spanish listed companies and the existence of non-debt tax shields constitutes an alternative to the use of debt as a tax shelter. Consistent with theoretical expectations, there is a stronger relation between debt and taxation in less levered firms.

Sudiyatno and Sari (2013) analyzed the factors that influence the debt policy (leverage) at the manufacturing companies listed on the Indonesia Stock Exchange (IDX). Factors affecting the leverage in their study were non-debt tax shield, asset structure (tangibility), profitability, growth and firm size using purposive sampling method. The analysis technique used was multiple regression analysis. The results showed that tangibility, growth and firm size have a positive and significant impact on leverage. Profitability significantly and negatively related to leverage, while the non-debt tax shield had no significant and negative effect on leverage.

Thomas and Daniel (2013) examined the relationship between tax and leverage. Their result reveals that leverage increases with the company income tax (CIT) rate because the latter determines the value of the debt tax shield. A higher statutory tax rate increases the incentive to use debt finance when interest payments are deductible from the CIT base.

Keen and de Mooij (2012) estimate the tax effect on leverage with a series of panel regressions. They find that a 10 percentage points (pp) increase in the tax rate leads to an increase in leverage of about 1.8 pp in the short run and about 2.7 pp in the long run.

Gu, de Mooij, and Poghosyan (2012) focus instead on multinational banks and whether international tax rate differentials influence the multinationals' capital structure. They find that there are international debt spill-overs from tax differentials in addition to the standard debt bias from local taxation. For the latter effect they find that a 10 pp increase in the CIT rate increases the leverage ratio by 2.5 pp. For the international tax difference they find that a 10 pp decrease in the jurisdiction of a subsidiary leads to a decrease in leverage of about 1.8 pp keeping all other tax rates constant.

Fernandez (2012) believe that the value of tax shields depends upon the nature of the stochastic process of the net

increase of debt, and does not depend upon the nature of the stochastic process of the free cash flow. In a world with no leverage cost the value of tax shields is the tax rate times the debt plus the tax rate times the present value of the net increases of debt.

Kolay, Schallheim and Wells (2011) examined the relationship between non-debt tax shields and debt tax shields by using a novel proxy for NDTS called tax spread and found a positive and significant relationship between Graham's (2000) measure of under-leverage and NDTS inferring that firms have alternatives to debt in order to reduce taxable income.

Lim (2011) examines the impact of tax savings in the light of the static trade –off theory and concludes that Tax shield is a benefit of debt and its interaction with shareholders activism.

Olatundum (2006) studied the effect of taxes and financing decision on firm value in Nigeria using a panel data of 1984 to 2000 collected from manufacturing firms. The data were analysed using OLS the study finds that negative relationship exist between debt Tax shield and firm value.

Akhlaq, Mubashar, Muhammad and Madasar (2013) studied the impact of Tax shield on corporate Dividend Policy using selected quoted companies in Karachi stock exchange (KSE). The study used a panel data of 2005 to 2010 and multiple regression techniques to analyze the relationship between tax shield and corporate dividend policy. The study finds no relationship between Dividend payout and Tax shield, and a positive relationship between dividend policy and firm's profitability.

Ross (1998) studied the relationship between financial leverage and non debt Tax shield.The study finds that a substantial increase in non debt tax shields decreases the expected value of interest tax saving and the incentives to finance by debt will diminish. The study argued that debt financing is crowded out by non debt Tax shield. Thus a negative relationship between leverage and non debt Tax shield could ensue.

In line with this, Graham (1996) study finds a negative relationship between the firm's level of debt and the amount of non debt Tax shield.

3.0 METHODOLOGY

This study was based on cross-sectional and ex-post facto research designs, it investigated the effect of tax shield on leverage financing Policy of selected 15 companies quoted under industrial firms in Nigeria. Panel data covering 2007 to 2016 collected from the annual report of selected industrial companies in Nigeria were used for the analysis. The selected industrial companies are as follows: Academy Press, A.G Leventis, Ashaka Cement, Austin Laz & Co., Beta Glass Co., Cement Co. Of Northern Nigeria(CCNN), Costain West Africa, Cutix Co., Dangote Cement, Julius Berger Nigeria, John Holt, Nigerian Ropes, Red Star Express, Roads Nigeria and Greif Nigeria.

Operationalization of variables

Variables	Measure/Proxy
Leverage (LEV)	Book Value of Leverage = $\frac{\text{Total book of debt}}{\text{Total Assets}}$
NonDebt Tax shield (NDTS)	Tax spread = Accounting tax - Income tax paid,
Debt Tax shield (DTS)	Interest on debt = $\frac{\text{Interest payment x Tax rate}}{\text{PBT}}$
Firm size (SIZE)	Log of Total Assets (Control Variable)
Profitability (PROF)	Profit after tax (Control variable)

Model Specification

The model for this study was adopted from prior studies. Note that firm size and profitability were added as control variables.

LEV = f (DTS, NDTS, FSIZE, PROF) - - - - -1

This can be economically expressed as follows.

$LEV_{it} = \partial_0 + \partial_1 DTS_{it} + \partial_2 NDTS_{it} + \partial_3 FSIZE + \partial_3 PROF + \varepsilon_{it}$ - - 2

Where: LEV=Leverage; DTS =Debt tax shield; NDTS =Non Debt Tax Shield; FSIZE =Firm size and PROF stands for

Profitability.

4. DATA ANALYSIS AND INTERPRETATIONS

In analyzing the data, the study adopted a panel regression to identify the possible effects of Tax shield on the leverage policy. The study conducted some preliminary analysis such as descriptive statistics and correlation matrix. Descriptive statistics was used to explore the nature of the data collected for the study. Table 4.1 provides the summary of the descriptive statistics of the sampled companies.

Table 4.1 Descriptive Statistics

Variables	Mean	Max	Min	JB-Value	JB (P-Value)
LEV	**0.636**	**0.850**	**0.327**	**0.427**	**(0.037)****
DTS	**0.461**	**0.572**	**0.182**	**0.345**	**(0.014)***
NDTS	**0.556**	**0.699**	**0.237**	**0.464**	**(0.046)****
FSIZE	**0.437**	**0.892**	**0.209**	**0.310**	**(0.001)****
PROF	**0.592**	**0.847**	**0.423**	**0.416**	**(0.013)***

Summary of descriptive statistics analyzed using e-view 8.5.
Note: *1% level of significance; **5% level of significances.

Table 4.1 shows the mean (average) for each variable, their maximum values, minimum values, and Jacque –Bera (normality test). The result provides some insight into the nature of the selected quoted companies used for the study. Firstly, it was observed that over the period under review, the sampled companies leverage (0.636). the table also reveals that within the period under review, that the sampled companies enjoys more non debt Tax shield on the average (0.556) than debt Tax shield (0.461). The table 4.1, the Jarque-Bera (JB) which test for normality or existence of outlier shows that all the variables are normally distributed at 5% level of significance accept debt Tax shield which is significant at 1% level. This means that there is no variable with outlier that is likely to distort the conclusion and therefore reliable for drawing generalization.

4.2 CORRELATION MATRIX

In examining the association among the variables, the study employed the person product moment correlation coefficient and the result is presented in table 4.2.

Table 4.2 Pearson Correlation Matrix.

	LEV	DTS	NDTS	FSIZE	PROF
LEV	**1.0000**				
DTS	**0.3460**	**1.0000**			
NDTS	**0.3926**	**0.4164**	**1.0000**		
FSZE	**0.5721**	**0.3812**	**0.312**	**1.0000**	
PROF	**0.4167**	**0.6213**	**0.524**	**0.412**	**1.0000**

Source: Summary of correlation analysis (2017)

The use of correlation matrix is to check for multi-colinearity and to explore the association between each explanatory variable and the dependent variable. The correlation matrix table above shows that there exist a positive association between leverage policy, non debt tax shield, Debt Tax shield firm size and profitability. The association between debt tax shield and non debt tax shield 0.4164

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Regression analysis: Table 4.3: The summary of panel regression analysis of the relationship

	Co-efficient	T-value	P-value
DTS	**2.219**	**1.765**	**0.0074**
NDTS	**14.482**	**3.488**	**0.0037**
FSIZE	**3.651**	**2.710**	**0.0001**
PROF	**5.132**	**1.723**	**0.0351**
R-Sq(adj)	**62.329**		

F-statistics	**12.531**
Durbin Watson	**1.5713**

Source: Summary of regression analysis (2017)

The panel regression analysis result of debt tax shield and leverage policy has positive coefficient value of 2.219, t-value of 1.765 and p-value of 0.0074. The coefficient value of 2.219 indicates the level of influence of debt tax shield. That is to say that increase in debt tax shield will lead to an increase in leverage policy of studied firms by 2.219%. From the table above, debt tax shield has about 2.2 percent influences on leverage policy. The t-value of 1.765 indicates that debt tax shield has a positive effect on leverage policy while the p-value (0.0074) reveals that the effect is significant at 5% level.

The analysis result shows a coefficient value of 14.482, t-value of 3.488 and a p-value of 0.0037. The result shows that non debt tax shield has about 14.5 percent influence on leverage policy. The t-value indicates that non debt tax shield has a positive effect on the leverage policy. By implication, this means that a one percent increase in non debt tax shield lead to about 14.482 increase in leverage policy of selected industrial firms. The p-value of 0.0037 reveals that the effect is statistically significant at 1% level. Firm size also has a significant effect on leverage policy of industrial firms having recorded a positive coefficient value of 3.651 and t-value of 2.71. By implication, this means that a unit increase in the total assets of industrial firms result to about 3.651 increases in its debt financing. In the same vein, we recorded a positive effect between profitability and leverage policy of industrial firms with a positive coefficient value of 5.132 with a t-value of 1.723 and p-value of 0.03 which shows that it is statistically significant at 5% level of significance.

5.0: CONCLUSION AND RECOMMENDATION

The analysis result showed that tax shield influence about 62.32% variation in leverage policy. Thus if more tax shield is granted say about N1 increase, firm will tend to increase their leverage financing by about N62.32. Thus, Industrial companies preference for and use of leverage financing depend is influence by tax shield. The findings are in line with the study of Madhuparna,et al (2013).

We recommend that Industrial firms should use more of leverage in financing it's investment as this will reduce the tax liability and increase shareholders wealth. Managers are encouraged to adopt spending policy that will increase non debt tax shield in other to reduce tax liability.

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