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Tax shield and the value of listed non-finance entities in Nigeria

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Abstract
This research examined the influence which tax shield could have on the value of listed firms in Nigeria. Tax shield in this study was measured using debt tax shield and non-debt tax shield; whereas, firm value had Tobin's Q ratio as its proxy. The study covered a 10 year period (2012 -2021) and secondary data were obtained from the published financial statements of 62 companies. All data were sourced through the Machameratios' database. Pursuant of the study's objective, hypotheses were advanced and tested with the robust regression method. In addition, relevant descriptive and diagnostics tests were conducted. The finding from the analytical procedure shows that while debt tax shield could not exert significant influence on firm value (Tobin's Q ratio), the non-debt tax shield apparently exhibited a position and significant relationship with firm value. We therefore recommend that organizations should strategically fund capital projects and expansion plans by leveraging on a greater proportion of debt. Also, the Nigerian government should further strategize on improving the ease of doing business in the country by building on its previous efforts and offer more tax incentives using non-debt tax shield procedures, which are popular in nations like China.

Keywords: Profitability, Debt tax shield, non-debt tax shield, tax aggressiveness, Nigeria, Non-finance firms, firm value

1. Introduction
Globalization and technological advancements have fundamentally changed the business and financial landscape for corporations. In addition to striving to achieve the predetermined profit levels of their individual entities, organizational managers now devise means and strategies aimed at achieving the overarching goal of wealth maximization and value enhancement, particularly in the interests of identifiable stakeholders.

In recent years, the focus of management has drastically shifted from barely reaching profit targets to maximizing and/or enhancing the organization's overall wealth. This has served as a major driving force behind management teams' strong investment in ideas and initiatives that have the potentials of fully satisfying stakeholders' interests while simultaneously optimizing the advantages and wealth that accrue to investors and shareholders across a range of categories. On the premise of the aforementioned, organizations have come to view tax aggressiveness as one feasible avenue for investment that could guarantee notable boost in income through a careful strategy of lowering tax obligations while adhering to legal and regulatory obligations concerning corporate taxes (Yahaya & Yusuf, 2020; Jeroh, 2023) [29, 17]. Notably, with increased concerns on tax aggressiveness as a concept, several researches have been conducted to either unveil the determinants of tax aggressiveness (Blaufus & Zinowsky, 2013; Pratama, 2018) [4, 24], or to examine the influence of the concept on indices like capital structure of firms, choice of debt level, performance, bankruptcy risk, corporate social responsibility etc. (see Gao, 2016; Kliestik, Michalkova & Kovacova, 2018; Olbert, 2019; Lei, 2020; Rahayu, 2020; Susilawaty, 2021) [9, 18, 18, 23, 19, 25, 27].

It should at this juncture be noted however, that the volume of researches on tax aggressiveness has gradually increased research interests on the concept of tax shield in recent years. This is because tax shield has been a veritable strategy of tax aggressiveness which firms have leveraged on for years. Samuel, Akpan, Nsentip and Ukpe (2023) [26] maintained that tax shield is a decrease in taxable income that can be obtained by an individual or organization by claiming certain deductions, such as amortization, depreciation, medical costs, mortgage interest, and charitable contributions. These deductions either postpone income taxes to later years or lower a taxpayer's taxable income for a specific time period. It is thought that tax shield is just as significant as how much debt is kept.

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In fact, it has been argued that companies would rather take on more debt than pay higher taxes.

Nevertheless, researches have shown that the benefit of leveraging on tax shield as a tax aggressive tool is reinforced by the static trade-off theory, which states that the more taxes a company pays, the more debt it will have in its capital structure (Samuel *et al*., 2023) [26]. It follows therefore that companies with larger debt tax shields are probably going to use more debt; whereas, companies with larger non-debt tax shields are probably going to use less debt. The tax shield is therefore a crucial policy tool that can be utilized to lessen the loss of company tax income resulting from lower statutory corporation tax rates, especially in light of the current global trend of either lowering corporate tax rates or the creation of incentives by government.

Importantly, while researches on tax aggressiveness and by extension tax shield has increased over time, much of the concerns of previous studies have been on ascertaining the major drivers/determinants of tax aggressiveness and its proxies which includes tax shield. Also, there are studies specifically on tax shield but their concerns were basically on the effect which tax shield may have on bankruptcy risk, capital structure, social responsibility, performance, with few concerns on how tax shield as a concept affects firm value. Interestingly, Samuel *et al*. (2023) [26] who examined the relationship between tax shield and firm value in the Nigerian context focused on manufacturing firms only. Generalizing the outcome of such a study to all non-finance firms may be misleading. This therefore forms the thrust for this current study as it creates a gap which requires further research efforts.

Given the above, this study aims at ascertaining the influence of tax shield on the value of listed non-finance firms in Nigeria.

2. Conceptual Review and Hypotheses Development
2.1 Concept of Firm Value
The assets owned, maintained, and controlled by a company sums up to what constitutes its worth or value. Firm value is important since it establishes the wealth of business owners. Generally speaking, "firm value" refers to an economic measure that encompasses a company's entire market value. It is an exhaustive inventory of all claims made against the assets of a corporation by equity holders and secured and unsecured creditors alike. Financial literature states that a company's value is equal to the total of its debt and stock market values (Nwaobia, Kwarbai & Ajibade, 2015) [21]. High firm value is therefore a signal that a company is profitable and efficiently maximizes the owners' wealth. A company's worth or value indicates how prosperous its owners and investors are.

Firm value is one metric used to assess companies' performances. Investors carefully assess businesses and their prospects based on the firm value, which is associated with the stock price. According to Bhabra (2007) [3], firm value is the amount that a wealthy buyer paid when a business was put up for sale. Additionally, he asserted that firm value is understood to be the public's unbiased assessment of a company's value and its future course.

It is therefore clear that investors would evaluate a company's performance level based on its firm value, which is generally correlated with its stock price. One popular measure of a company's value is its price to book ratio. At a high price-to-book ratio, the going concern notion is realized and shareholder wealth is generated. Also, Modigliani and Miller (1961) [20] aver that a company's value can be determined by its asset earnings power so that when a company attains favourable asset earnings power, such a company is able to grow her business operations and yield high profits that will sustain reasonable asset turnover. Previous research claims (Jeroh, 2020) [15-16] suggest that the whole worth of enterprises can be described by several concepts, including accounting-based metrics (such as price to book value, price to earnings ratio, return on equity, and return on asset, intrinsic value, fair value), and market based metrics (tobin's Q ratio).

Tobin's Q (also known as the Q-ratio) which is calculated as (total assets plus market value of common shares minus book value of common shares minus deferred tax) divided by total assets, has often been utilized in research that concentrated on market-based indicators. Jeroh (2020) [15-16] asserts that the Q-ratio accurately measures a company's exposure to risk without distorting the results of other proxies or valuation metrics.

As a measure of firm value, Tobin's Q shows how successfully, management may have handled the company's assets. It is believed that a company's ability to use resources efficiently could be compared to its operational efficiency. This will incentivize companies to offer premium products and services at fair rates in order to grow their profit margins in a sustainable manner. Throughout the current investigation, the Tobins'Q valuation approach will be used as the proxy for firm's overall value.

2.2 Debt Tax Shield (DTS)
Debt tax shield is achieved when a company's capital structure reflects a higher proportion of debt than equity. Put otherwise, debt tax shield results when there is a significant bias towards debt in the financing structure as opposed to equity. However, the amount of taxable profit that the company declares is impacted in some way by this type of business financing. Many countries' company tax regulations permit interest to be paid or subtracted before profit is determined. This suggests that companies with high debt levels will pay higher interest rates, hence reducing the amount of profits subject to taxation. As a result, the debt-to-equity ratio is established under the thin capitalization rule whose requirements in the opinion of the International Monetary Fund typically operate by limiting the amount of debt that can result in deductible interest expenditures for the purposes of determining taxable profit. Researches (Graham & Tucker, 2006) [10] have therefore suggested that based on the thin capitalization requirement there should be a maximum amount of internal debt that could be tax deductible for a given level of equity

Nevertheless, from the practical point of view, it is true that a deliberate debt-focused structure may require companies to pay exorbitant interest expenses; yet tax laws generally allow interest expenses to be subtracted from income, which could lower the company's taxable income. Consequently, a company's tax burden will be reduced by utilizing the debt-tax shield strategy. Succinctly, employing more debt than equity has significant implications on taxes, thus companies that raise lots of debts would see tax breaks on interest payments rather than dividends. This is the case because tax-free interest is charged before the borrowing company's profit is calculated. This increases the allure of debt

financing for related companies wishing to transfer funds to evade paying taxes. The choice between debt and equity financing has been discussed in light of the influence of debt expenses in an environment where businesses choose their optimal debt levels by assessing the advantages and disadvantages of doing so (Frank & Goyal, 2009) [8]. The tax benefits that come from the interest being deductible are one of the main benefits of using debt financing. It is in view of the above that this study examines the linkage between debt tax shield and the value of firms and hypothesizes thus:

H_{O1}: Debt tax shield does not exert significant positive influence on the value of listed non-finance firms in Nigeria.

2.3 Non-Debt Tax Shield (NTDS)
De Angelo and Masulis (1980) [5] hypothesized that taxes such as loan interest may be offset by depreciation, investment tax credits, and deferred tax losses. It can also minimize cash outflows and diminish the need for financing so that companies can cut their capital expenditures. Such non-debt with a tax credit component is referred to as a "non-debt tax shield". The concept that debt is pushed out by different alternatives or non-debt tax shelters could also help to explain the underleverage issue.

Debt is impacted by the non-debt tax shield differently that is why several nations have used it as a tax incentive, and it can solve the problem of a debt tax shield. For example, the Chinese government has long encouraged enterprises to spend more on research and development (R&D) in an attempt to spur them to take on innovative projects. Given this, the Chinese government unveiled several tax incentive programs built around the non-debt tax shield technique. The "Enterprise Income Tax Deduction Method" (2000), the "Notice of the Enterprise Income Tax Preferential Policies on the Enterprise Technological Innovation" (2006), and the "The Management Method of Enterprise Research and Development Expenses before Tax Deduction (Trial)"

(2008) are reportedly the most notable of these policies, (Gao, 2016) [9]. It is possible that the adoption of these preferred regulations increased managers' incentives to choose non-debt tax shields in China. Moreover, since there are no similar policies in Nigeria, it appears that the situation may apparently be different.

Generally speaking, investment tax credits and loss carryovers are two prominent types of non-debt tax shields. For a variety of reasons, businesses may prefer alternative tax shelters over debt and have significant incentives to permanently delay or avoid paying taxes, usually in a covert manner. Numerous non-debt tax shelters that might not be too costly for businesses exist; and in most instances, they do not place limitations on the business through loan covenants, which would probably incur high transaction costs.

Believably, Nigerian firms now frequently leverage on the provisions in accounting standards that allows them to lower their respective tax obligations without affecting the income statement, or negating the provisions of the accounting standards. In fact, in the Nigerian context, debt tax shields are now significantly more profitable per naira invested especially with the introduction of thin capitalization requirements.

With the above in mind, this current study examines the influence of non-debt tax shield on the value of firms and hypothesizes as follows:

H_{O2}: Non-debt tax shield does not exert significant positive influence on the value of listed non-finance firms in Nigeria.

2.4 Conceptual Framework
We created a conceptual model that explains the link between two measures of tax shield firm value as determined by Tobins' Q while investigating the link between tax shield and firm value by drawing empirical insight from listed enterprises in Nigeria. The conceptual model for this investigation is depicted in Fig. 1.
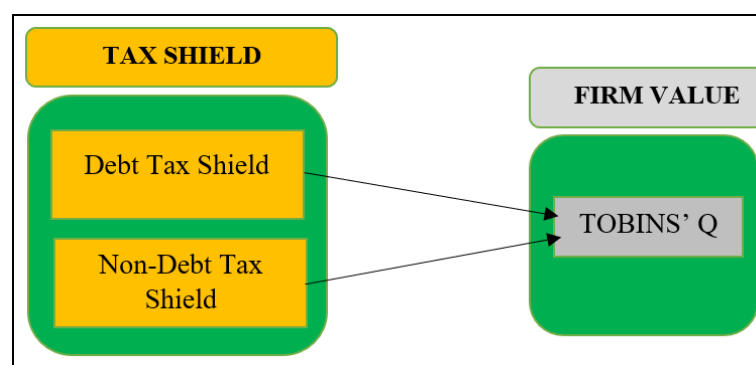
Source: Researchers, 2023

Fig 1: Conceptual Model of the Study

3. Methods
This research is anchored on the *ex-post-facto* design and relied on secondary data from 62 sampled non finance firms whose stocks are publicly available for trading the floor of Nigeria's Exchange (NGX). The study's coverage is 10 years spanning from 2012 to 2021.

Based on the conceptual model and the specified hypotheses, we adopted the robust regression estimate alongside relevant descriptive and diagnostic estimations to analyze the data collated from the financial statements of the

sampled companies.

3.1 Model Specification
In the course of this study, models were developed in accordance with the already specified hypotheses and also in line with previous models of prior researches on tax aggressiveness in Nigeria (Jeroh, 2023; Ajube & Jeroh, 2023) [1]. The model takes the form of a multiple regression equation specified thus:

y = f(x₁, x₂, x₃, x₄, x₅) Eq.1

$y = f(x_1, x_2, x_3, x_4, x_5)$ Eq.1

Generally speaking, the fundamental regression model that is computed using equation 1 is provided as:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + U_{it} \text{ Eq.2}$$

Where:
Y = Dependent variable
it = Firm and time dimension of the unit of analysis (That is firm i in year t)

$X_1, X_{2...} X_5$ = Independent variables
U_t = random error term, defined for the ith firm
$\beta_0, \beta_1, ... \beta_5$ = estimated coefficient (1 = 1, 2, 3,.....k)

Given the above, the following model was designed to guide the testing of the hypotheses by statistically expressing the relationship between the response and predictor variables of this study:

$$TOBQ_{it} = f(DTS, NDTS) \ Eq.3a$$

$$TOBQ_{it} = \beta_0 + \beta_1 DTS_{it} + \beta_2 NDTSt + \varepsilon_t \ Eq.3b$$

Table 1: Definition of Variables

Variables	Proxy	Symbols	Measurement
Firm Value	Tobin's Q	TOBQ	Market capitalization plus total liabilities less cash-flow divided by total assets
Tax Shield	Debt Tax Shield	DTS	Finance cost divided by total assets
	Non-Debt Tax Shield	NDTS	Depreciation and amortisation divided by total assets

Source: Authors' Compilation (2023).

Where
$\beta_{1...} \beta_2$ = Regressors
$_{it}$ = Firms at time t.
ε = Error Term (variables not captured in the model)

4. Results and Discussion of Findings
4.1 Preliminary Tests
Prior to presenting the major regression, the following exploratory tests were taken into account:

Table 2: Descriptive Statistics

Variables	Observations	Ave	Std. Dev.	Min. Value	Max. Value
TOBQ	620	1.4716	1.3678	-0.508	11.2986
DTS	620	2.9314	3.1209	0	19.6337
NDTS	620	3.6600	2.5374	0	14.9381

Source: Authors' Compilation, 2023.

The outcome of the summary statistics unveiled in Table 2 presents an average value of TOBQ of 1.4716 with an estimated standard deviation of 1.3678. The low standard deviation is a good signal depicting low dispersion of the individual firm specific data set from the overall mean value. This is an indication that the data collated for TOBQ meets the normal distribution condition for regression analysis. Similarly, DTS and NDTS had average values of 2.9314 and 3.6600 respectively, with corresponding standard deviations of 3.1209 and 2.5374. As mentioned earlier, low standard deviations are good signals depicting low dispersion of the collated data for each firm when compared to the overall mean value.

Furthermore, the minimum value of 0 for DTS and NDTS means that there are years where companies did not explore the option of tax shields possibly it may not be part of their strategy or it appears unfavourable to them. In any case, given the nature of the results in Table 2, it is obvious that the data collated for all three variables meets the requirement of normality of data since no adverse figure or suspected case of the presence of outliers was reported. With this, we proceed to conduct the correlation analysis and the outcome is presented in Table 3.

Table 3: Outcome of Correlation Analysis

Variables	TOBQ	DTS	NDTS
TOBQ	1.0000		
DTS	0.0047	1.0000	
NDTS	0.1127	-0.0121	1.0000

Source: Authors' Compilation, 2023.

Observably, the coefficients between TOBQ and DTS is

0.0047 while that of TOBQ and NDTS is 0.1127 indicating that the data for DTS and NDTS are positively correlated with TOBQ. The implication of obtaining positive correlation is that and increase in either DTS a=or NDTS will lead to higher values for TOBQ. Also from the table, it is evident that the coefficient between the explanatory variables (DTS and NDTS) is -0.0121. Note that negative coefficients connote inverse association between identifiable variables (Jeroh & Okoye, 2015). Nevertheless, one would notice also that the coefficient of DTS and NDTS, though negative, is relatively below the threshold of 0.7 or 0.8 which according to prior studies is an indication that there are no signs of the presence of multicollinearity (Jeroh, 2018; Ukolobi & Jeroh, 2020; Jeroh, 2020a; Ebiaghan, Jeroh & Ideh, 2021; Akobundu, Oboreh & Jeroh, 2021; Izukwe & Jeroh, 2022; Ogieh & Jeroh, 2023; Jeroh, 2023) [14, 28, 15-16, 6, 2, 22, 17]. This fact was further confirmed by the tolerance value obtained from the multicollinearity test conducted in this study (see Table 4).

Table 4: Multicolinearity Test

Variables	DTS	NDTS	Mean VIF
VIF	1.00	1.00	1.00
1/VIF	0.999853	0.999853	

Source: Authors' Compilation, 2023.

From the result of the multicollinearity test presented in Table 4, the mean VIF obtained was 1.00 which according to Jeroh (2016, 2020a) [15-16] and Ezinando and Jeroh (2017), is below the maximum threshold of 10. The implication is that the regressors are free from concerns of

multicollinearity; thereby justifying the argument that the specified model of the study is fit.

Table 5: Outcome of the Heteroscedasticity Test

Breusch Pagan Cook/Weisberg Test		
HO: Constant Variance		
Variables: fitted values of TOBQ		
Chi2(1)	5.15	
Prob>Chi2	0.0232	0.999853

Source: Authors' Compilation, 2023.

From Table 5, it is evident that the fitted values obtained from the test of heteroscedasticity could not confirm the absence of heteroscedasticity. With a Chi(2) value of 5.15 and a P-value of 0.0232, it means that a 5% significance level the hypothesis of constant variance cannot be rejected. This means that the data set are not homoscedastic. With this outcome, the ordinary least square regression outcome will not be reliable, hence, the test of hypotheses will therefore be based on the test result from the robust regression analysis.

4.2 Regression Estimate

Table 6: Result of the Robust Regression Estimate

Variables	Firm Value (TOBQ)		Obs = 620	
	Coefficient	Standard Err.	t-statistics	p>| t	
DTS	-0.0057263	.0059722	-0.96	0.338
NDTS	0.0281988	.0073456	3.84	0.000
_cons	0.944331	.0372492	25.35	0.000
F		(2, 617)		7.87
Prob > F				0.0004

Source: Authors' Compilation, 2023.

Table 6 which presents the result of the robust regression analysis unveils the coefficients for DTS and NDTS as -0.0057263 and 0.0281988 respectively. Observably, the standard error for each variable is very low thus confirming that the models are over 99% reliable. With the result of the t-statistics, it is obvious that DTS with a t_{stat} of -0.96 (corresponding p-value = 0.338) does not have significant influence on firm value. Again, the relationship is negative, although not significant. With this result the hypothesis that debt tax shield does not exert significant positive influence on the value of listed non-finance firms in Nigeria could not be rejected. This finding does not corroborate the position of Frank and Goyal (2009) [8] who maintained that debt tax shield culminated into tax savings for companies.

Furthermore, it can be observed that NDTS recorded a t_{stat} of 3.84 (corresponding p-value = 0.000). This is an indication that apart from exhibiting a positive relationship with TOBQ (coefficient = 0.0281988), NDTS has the capacity of significantly influencing TOBQ. Thus, the hypothesis that non-debt tax shield does not exert significant positive influence on the value of listed non-finance firms in Nigeria is rejected. Our argument therefore is that non-debt tax shield exerts significant positive influence on the value of listed non-finance firms in Nigeria. This finding corroborates the position of Gao (2016) [9] and justifies why the Chinese government had announced several tax incentive programs based on the non-debt tax shield technique.

5. Concluding Remarks and Recommendations

Businesses are traditionally understood to be commercial or industrial entities that intentionally engage in economic activity. It is important to remember that a company's overall performance and worth are largely determined by how it is governed, controlled, and managed, and that this ultimately affects the market values of its debt and stock. Therefore, a high firm value indicates that the company has been effective in optimizing shareholders' wealth, meaning that a company's value is a reflection of how prosperous its investors and shareholders are. It is interesting to note that, despite the fact that most research has focused on examining the factors that influence tax aggressiveness and employing a variety of metrics to assess the idea, our analysis of the relevant literature appropriately revealed that there is no clear correlation between tax shield—a measure of tax aggressiveness—and the total value of Nigerian firms. This necessitates a thorough examination of the assumed relationship between tax shield measures and firm value, hence, the study. Nonetheless, outcome from the test of hypotheses demonstrated that, in Nigeria, the value of listed firms is not significantly increased by the use of debt tax shields, whereas, the value of listed firms is significantly increased by the use of non-debt tax shields. On this note we recommend that:

- To optimize shareholder wealth and improve total company value, organizations ought to strategically fund capital projects and expansion plans by leveraging on a greater proportion of debt in financing such capital projects.
- To optimize the associated benefits of non-debt tax shield, the Nigerian government should further strategize on improving the ease of doing business in the country. In this light, the government should build on its previous efforts by offering more tax incentives using non-debt tax shield procedures, which are popular in nations like China.

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