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# IMPACT OF TAX SHIELDING AND FIRM SIZE ON PROFITABILITY: IMPLICATIONS FOR POLICY LEGISLATION AND MANAGEMENT

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## ABSTRACT

**This study examined the effects of tax shielding dynamics using firm size as a moderator on profitability in the Nigerian non-financial sector. The study made use ofsecondary data from 53 listed non-financial firms from the Nigerian Exchange Group between 2012 and 2021. The data were tested using STATA 14 statistical software. The result of the test reveals a chi-square statistic of 0.28 and a corresponding p-value of 0.9634 which suggests that the independent variables are not statistically significant. Specifically, our findings reveal that there is no significant linear relationship between DEBTTAXand ROE, that NONDEBTTAX indicates a negative relationship withROE and that there is no significant linear relationship between FIRM SIZE and ROE. The study therefore recommends a re-evaluation of tax policy which involves re-assessing the effectiveness of tax incentives or exemptions aimed at encouraging debt financing and a review tax rates, tax exemptions, and tax deductions applicable to nondebt taxes. It also recommends that policymakers could implement targeted policies to support the growth and development of SMEs in the non-financial sector. Furthermore, managers should prioritize tax planning and compliance efforts to minimize the impact of tax liabilities on profitability and focus on optimizing resource allocation and operational efficiency to enhance profitability.**

## KEYWORDS

**Debt tax, non-debt tax shield, Firm size, profitability, Return on Equity.**
JEL Classification: H2, H25, H26.

## 1.0 Introduction

Management of firms, by virtue of their duties and responsibilities, are vested with the duty ofgood care, due diligence and exercise professionalism and ethicsin determining the applicable accounting methods to adopt in the preparation of their financial reports; the quality of these financial statements is also incumbent on the capability of the managers who are charged with these responsibilities based on expertise, financial knowledge, industry knowledge, their relationship with the owners of the company (principals) and their management and financial accounting prowess. When the interest of managers and owners differ, their differences, as it has been seen in some cases, affects the quality of financial statements' preparation process and quality (Ilaboya&Aronmwan, 2023). These differences sometimes, are caused or as a result of earnings management or manipulation by a company's management in order to get the desired results that conforms with a particular interest (Ebiaghan, Jeroh, & Ideh, 2021). Earnings management, therefore, can be described as an attempt to modify or alter financial reports and information by increasing revenue transactions and decreasing expenses or any other unethical accounting procedures with the objective of satisfying the principal or agents' desires(Isenmila&Afensimi, 2020; Orits-Ebiaghan&Ebiaghan, 2023).

Tax shield can be referred to as the reduction in income taxes as a result of taking an allowable deduction from taxable income (Sinebe, 2021a); this can be divided further into debt tax and non-debt tax shield. Debt tax shield refers to the use of debt to reduce tax liability and it is one of the means by which a firm can use its capital structure to finance operations (Jeroh, &Edesiri, 2015; Nnubia& Okolo, 2018) which also include, but not limited to ordinary share capital and preference share capital. Non-debt tax shield on the other hand, involves the use of alternatives such as capital allowance, losses carried forward, etc. in order to reduce tax liability (Akan, Sinebe &Bereprebofa, 2023).It has also been noted that these tax shield strategies (reporting losses even when they are profitable, moving revenues to items with favorable tax rates, their subsidiaries making purchases at a high mark-up price, taking loans, etc.) adopted by various companies have led to calls for companies to meet up their financial obligations by paying up their required and respective share oftaxes(Dennis& Michael, 2021; Jeroh, Okolo & Sinebe, 2022).

There have been varioussuggestions as to the impact of tax shield on earnings management, studies such as Dragota and Tatu, (2011);Jeroh, 2020); Kovacova, Krajcik, Michalkova and Blazek, (2022) and Obi, Amadi, Okafor andUnuabonah, (2020) their findings showed that tax shield impacts on the practice of earnings management positively. Contrarily, the study of Rialdy and Fahmi, (2023)concluded that tax shield has a negative relationship with earnings management.In light of the above assertions, this study seeks to examine the effects of firm size as a moderator between tax shield and profitability (a proxy for Return of Equity) in Nigerian non-financial sector.

## 2.0 Conceptual Review

### 2.1 Tax Shield

Tax shield refers to any deductions, credits or other methods that may be adopted to minimise taxable income of corporations, hence decreasing that amount of tax owing by a person or organisation. These shields are methods or characteristics in the tax regulations that enables taxpayers to reduce their taxable income and so, pay less in taxes (Sinebe, 2020b). These tax shields may be useful for companies as they can lower the total cost of running company and make it easier to create a profit and can also be helpful to individuals who are looking to lessen their tax burden (Sinebe & Henry, 2023). Different companies have various reasons for introducing tax shield, whichmay include, reducing tax liability (where firms utilize deductible expenses such as depreciation, interest payments and operating losses), enhancing cashflow (by reducing the amount of cash that needs to be

allocated for tax payment and reinvesting into the business or distributed to shareholders as dividends), improving profitability, enhancing their competitive advantages etcMarvis, Ideh, & Emeka, 2021).

Tax shield and profitability have a complicated relationship among non-financial firms in Nigeria. Sinebe (2023) noted, while discussing the influence of firm size on firm's revenue, that this relationship may be influenced by variables such as the amount of the company's debt, the tax legislation in Nigeria, and the size of the organisation. Abanum and Ebiaghan, (2022) posited thatlarger firms have been known to have the ability to utilize the advantages of tax shields more effectively, as they have greater access to debt financing and are often able to negotiate more favourable tax rates for their uses, however, smaller firms may find that in doing these same negotiations, the costs associated with tax shields outweigh the benefits (Sinebe, 2021b; Sinebe &Akpomiemie, 2023). Emudainohwoand Okolo, (2022) elucidated that tax shield may assist firms to minimise the amount of tax paid by a corporation, it may also affect their profitability. Greater tax shields frequently correlate to improved profitability, as the firm is able to keep more of its revenues for reinvestment or distribution to shareholders.

In addition to these, larger firms may have more complex financial structures that allow them to more effectively utilize tax shield strategies, such as transfer pricing or "tax haven" strategies. The effects of tax shield and profitability on non-financial firms in Nigeria can be varied and complex. Some potential effects of tax shield policies include; increased cash flow (by reducing the amount of tax paid, tax shield can increase a company's cash flow, which can be used for investing, paying off debt, or returning value to shareholders) and reduced taxable income (by reducing taxable income, tax shield can help a company to avoid paying higher taxes, which can improve profitability).

Sinebe and Emudainohwo, (2023) evaluated the relationship between tax preparation and firm's value. The study sampled forty-four non-financial firms listed on the Nigeria Exchange Group over the period 2011 to 2020 and the variables data extracted were subjected to panel multiple regressions analysis. The findings of the study suggests that income effective tax and cash effective tax has insignificant adverse impact on firm value for the period examined and that, management should examine their tax savings activities in order to improve their firms' value.

Samuel, Akpan, Nsentip and Ukpe, (2023) studied the impact of tax shields on the stock values of particular Nigerian industrial companies between 2012 and 2021 with variables as loan tax shield, depreciation tax shield, and charitable contribution tax shield, whereas the dependent variable was company value, which was proxied by Tobin's Q. The analysis's findings indicate that the market value of a subset of Nigerian manufacturing enterprises is significantly impacted by the debt, depreciation, and charitable contribution tax shields. The findings indicate that tax shielding may be employed to maximise the value of Nigerian manufacturing companies. They suggested, among other things, that management of manufacturing companies think about taking on more debt financing, invest more in non-current assets, and use charitable donations as a way to improve the company's reputation and keep the right amount of tax shield in place, all of which will benefit shareholders and potential investors.

**2.2 Tax Shield and Profitability**

Michalkova, Stehel, Nica and Durana (2021) asserted that companies are more predisposed to increasing the value of debt being used in their organization with the aim of manipulating their tax liability and revenue, as such, it is important for organizations to weigh up the use of debt tax shield

as opposed to non-debt tax shield. This is further highlighted by the capital structure theory which explains the advantage of the tax deductible where the use of debt is employed. According to the theory, there are two major ways taxes impact the composition of the capital structure; one is the tax-deductible on interest on debt while the other is its influence on decisions made by the company's shareholders as well as their inclinations to hold the securities of the company (Owolabi & Inyang, 2020).

In Velez – Pareja, (2016) opinion, tax shield is seen as a strategy of reducing tax liabilities by taking allowable deductions from taxable income, such as research and developments, charitable donations, or interests on debt or deductions from taxable purchases. Dennis, et al, (2021) also defined tax shield as the reduction in taxable income for an individual or corporation achieved through claiming allowable deductions. These reductions cut down on the amount of tax payable by individuals or organizations for a given year or defer it to future years. In summary, tax savings through deductible expenses refer to the deductions of taxable income by subtracting certain expenses that are allowed by tax laws and by deducting these expenses from their gross income, to this end, individuals and businesses can also lower their taxable income, resulting in related tax liability and increased savings.

Profitability is also an important performance metric for non-financial firms, as it provides a measure of the company's ability to generate income and maintain financial stability. A high level of profitability can lead to greater access to capital, improved investor confidence, and increased competitiveness in the marketplace (Susilawaty, 2021; Gregory & Okolo, 2023). However, the relationship between profitability and other factors, such as tax shield, can be complex and can vary depending on the size of the firm. These effects of Profitability on tax shield include; increased access to capital (Profitable companies are often seen as being more attractive to investors, which can increase their ability to raise capital through equity or debt financing), improved efficiency (profitable companies may be better able to invest in new technologies, processes, or products, which can improve efficiency and competitiveness) and higher valuations (profitable companies are often valued more highly by the market, which can increase their stock price and make it easier to raise capital) (Sinebe, et al. 2023).

**2.3 Debt Tax shield**

A debt tax shield is a type of tax shield that is created when a business takes on debt to finance its operations, the interest paid on the debt is then tax-deductible, which reduces the business's taxable income. This, in turn, reduces the amount of taxes the business has to pay, creating a "shield" against taxes. Debt tax shields (DTS) are most commonly used by businesses that have a high level of debt, such as real estate developers or manufacturers and can be a valuable tool for reducing the overall cost of doing business, but they also carry some risks, such as the possibility of defaulting on the debt (Sinebe, et al, 2023). There is an important implication for a firm's optimal capital structure if the debt tax shield applies to the firm's tax expense, because the debt tax shield decreases the after-tax cost of debt. According to the Modigliani and Miller's (1958) theory on the use of debt by companies, it is their opinion that when a firm makes use of more debt in its capital structure as opposed to equity, it tends to have an effect on the value of the firm. This implies that debt cannot generate profits for companies due to the interest tax credits that are associated with it. Consequently, this reduction in tax liability resulting from debt charges is generally known as a debt tax shield.

Susilawaty, (2021) examined how the capital structure of advertising and printing media companies listed on the Indonesia Stock Exchange is affected by the debt and non-debt tax shields using thirteen companies covering the years 2017–2019. The study employed the Descriptive statistics, multiple linear regression testing of the panel data model, hypothesis testing (t-test and F-test), and coefficient testing. The study's findings suggest that capital structure is impacted by both non-debt and partially debt tax shields and debt tax shield and the non-debt tax shield. It therefore suggests that these ratios be taken into consideration by decision-makers as a tool for formulating corporate tax policy. This study seeks to examine how debt tax affects a company's capital structure and risk profile.

***Ho$_1$**: firm size has no significant moderating effect on debt tax shield of listed non-financial Nigerian firms.*

**2.4 Non-Debt Tax Shield**

A non-debt tax shield is a tax-saving technique that does not involve taking on any new debt. Instead, it involves using certain accounting methods or strategies to reduce the amount of taxes owed. Non-debt tax shields are often used in combination with debt tax shields to maximize the amount of taxes that can be saved (Sundvik, 2017). For example, businesses can use accelerated depreciation methods to claim a higher deduction for the cost of their assets, or they can take advantage of tax credits for certain activities or investments and can be especially useful for businesses that have limited access to debt financing or that are concerned about the risks associated with taking one (Jeroh, 2020).Non-debt tax shield (NDTS) has been thought to consist of items such as capital allowance, depreciation, tax credits and losses carried forward, also, besides it can reduce an organization's cash reserve as well as reduce the organization's need for finances needed for capital investments with the aim of reducing their tax liability (Sinebe, 2021).

Gregova, Smrcka, Michalkova and Svabova, (2021) suggests that corporate financing affects a company's worth as well as its flexibility and competitiveness by optimising the capital structure, it is however observed that earnings management also affects leverage, and greatly reduce information asymmetry between stakeholders. Using panel data model to ascertain the impact of earnings management and the tax shield from 2014 to 2017, with a sample of 10627 businesses from the V4 nations. The models conclude that with businesses conducted Pecking order theory; the most often utilised liability is short-term trade credit. That the non-debt tax shield has a negative correlation with debt, while the interest tax shield has minimal bearing on the choice between debt and equity. This study aims to examine the relationship between non-debt tax and earnings management.

***Ho$_2$**: firm size has no significant moderating effect on non-debt tax shield of listed non-financial Nigerian firms.*

**2.5 Theoretical framework**

Capital structure theory by Modigliani et al, (1958) is a branch of financial theory that studies the relationship between a company's capital structure (the mix of debt and equity used to finance its operations) and its value. The theory suggests ways to source for money that can be used and the best strategy to be adapted while also advising on how to go about in the firm's assets or investment on projects. Selecting between debt and equity is a big challenge. There are several different theories that fall under the umbrella of capital structure theory, including the trade-off theory, the pecking order theory, and the market timing theory. These theories all seek to explain why companies choose to finance themselves in certain ways, and what impact this has on their overall value. In general, capital

structure theory suggests that companies must find a balance between the benefits and costs of debt and equity, and make decisions based on factors such as taxes (Akingunola, Olawale & Olaniyan, 2018; Sinebe&Edirin, 2023).

## 3.0 Research Methodology

This study adopted apanel research design to test hypotheses with a study population of 53non-financial companies quoted in the Nigeria Exchange Group. This study covered a period of ten years ranging from 2012 to 2021 (10 years). The Descriptive statistics was used to describe the data in relation to its mean, minimum data, maximum data and standard deviation, while the correlation analysis was run to ascertain the level of relationship among the chosen variables.

### 3.1 Model Specification

The model for this study is stated in econometric form as:

$ROE = f(DEBTTAX, NONDEBTAX, FSIZE)$ . . . . . (i)

$ROE_{it} = \alpha+\beta_1 DEBTAX_{it} + \beta_2 NONDEBTAX_{it} + \beta_3 FSIZE_{it} + \varepsilon_{it}$ . . (ii)

Where;

ROE = Return on Equity: (measured as profit after tax divided by total equity %)

DEBTTAX= debt tax shield (measured as interest expenses divided by total asset)

NONDEBTAX= non-debt tax shield (measured as depreciation and amortization divided by total asset)

FSIZE = Control Variable (measured as natural log of total asset)

i= Cross section; and

t = Firm Time;

$a_0$= intercept;

$\beta_1\beta_2\beta_3$ = coefficients;

$\mu_{it}$ = Error term

## 4.0 Analysis and discussion of results

### 4.1 Descriptive statistics

**Table 1: Summary of Descriptive statistics**

| Stats | ROE | DEBTTAX | NONDEBTAX | FSIZE |
|---|---|---|---|---|
| Mean | -8.629433 | 3.292212 | 3.482779 | 7.035686 |
| Min | -1964.35 | 0 | 0 | 5.2394 |
| Max | 905.42 | 48.39 | 37.81 | 9.2409 |
| P50 | 7.83 | 2.23 | 2.8 | 6.9379 |
| Sd | 167.1503 | 4.232427 | 3.009983 | .7992718 |
| N | 529 | 529 | 529 | 529 |

**Source: Regression Output, 2024.**

The Return on Equity (ROE) data shows a significant level of variability within the dataset, with an average value of -8.63%. The Debt-to-Tax Ratio (DEBTTAX) and Non-Debt Tax Shield (NONDEBTAX) also show variability, with some companies displaying extremely low or high ratios. The Firm Size (FSIZE) data shows variation, with a mean of 7.04 and a median of 6.9379. The Return on Equity (ROE) demonstrates significant fluctuation, ranging from highly negative to highly positive returns. The Debt-to-Tax Ratio and Non-Debt Tax Shield also exhibit variability, with certain companies displaying extremely low or high ratios. The dataset also shows variation in Firm Size

(FSIZE), encompassing both small and large firms. These statistics suggest that the Return on Equity, Debt-to-Tax ratio, Non-Debt Tax Shield, and Firm Size all exhibit significant variability across the sample.

### 4.2 Correlation Analysis

**Table 2: Summary of Correlation analysis**

| | ROE | DEBTTAX | NONDEBTAX | FSIZE |
|---|---|---|---|---|
| ROE | 1.0000 | | | |
| DEBTTAX | -0.0005 | 1.0000 | | |
| NONDEBTAX | -0.0187 | 0.0630 | 1.0000 | |
| FSIZE | -0.0113 | 0.0013 | -0.0655 | 1.0000 |

**Source: Regression Output, 2024**.

The correlation table in Table 2 shows the relationships between four variables: Return on Equity (ROE), Debt-to-Tax Ratio (DEBTTAX), Non-Debt Tax Shield (NONDEBTAX), and Firm Size (FSIZE). The correlation coefficient of 1 indicates a strong positive connection between ROE and itself. However, the correlation coefficient of -0.0005 suggests no substantial link between ROE and DEBTTAX, suggesting no direct correlation. A minor negative correlation is observed between ROE and NONDEBTAX, suggesting a slight tendency for ROE to decline when NONDEBTAX grows, but the association is weak.A weak negative link is observed between ROE and FSIZE, indicating a modest inclination for ROE to decline as firm size increases. However, the correlation between the two variables is quite weak. The correlation coefficient of -0.0005 indicates no link between DEBTTAX and ROE, while a modest positive correlation is observed between DEBTTAX and NONDEBTAX. A minimal positive link is found between DEBTTAX and FSIZE, indicating a slight inclination for DEBTTAX to rise as Firm Size grows.NONDEBTAX exhibits a weak positive correlation with DEBTTAX and no correlation with itself. A weak negative correlation is also observed between NONDEBTAX and FSIZE, indicating a slight inclination for NONDEBTAX to decrease as Firm Size increases. FSIZE shows a weak negative correlation with ROE, a very weak positive correlation with DEBTTAX, and a perfect positive correlation with itself.

### 4.3 Result for Multicollinearity Test

**Table 3: VIF Test Result**

| Variable | VIF | 1/VIF |
|---|---|---|
| NONDEBTTAX | 1.01 | 0.991735 |
| FSIZE | 1.00 | 0.995684 |
| DEBTTAX | 1.00 | 0.996002 |
| Mean VIF | 1.01 | |

**Source: Regression Output, 2024.**

The VIF (Variance Inflation Factor) quantifies the extent of multicollinearity, which arises when there is a high correlation among the independent variables in a regression model. When the VIF values are close to 1, it indicates that there is little multicollinearity. This means that the variable is not substantially correlated with other independent variables in the model. Usually, VIF values greater than 5 or 10 are seen as evidence of multicollinearity, with higher values indicating stronger correlations across independent variables. The VIF values for all independent variables (NonDebTx, FSIZE, and DEBTTAX) are extremely close to 1, indicating little multicollinearity. This boosts the reliability of the regression coefficients and the overall model interpretation.

### 4.4 Breusch and Pagan Lagrangian Multiplier test

**Table 4: Other Diagnostic Tests**

| **Breusch and Pagan Lagrangian Multiplier test for random effect** | |
|---|---|
| **Decision rule** | If p-value is statistically significant, then reject Ho and accept HA |
| Result | chi2(1) = 0.13; Prob>chi2= 0.3575 |
| | Hausman Test |
| **Decision rule** | If p-value is statistically significant, then reject Ho and accept HA |
| Result | chi2(3) = 0.72; Prob>chi2= 0.8695 |

**Source: Regression Output, 2024.**

Table 4 displays the output results of the Breusch and Pagan Lagrangian multiplier test for random effects (RE). This test is employed to ascertain the presence of heteroskedasticity in the random effects component of a panel data model. The chi-square statistic for the test is 0.13, and the probability (Prob > chibar2) value is 0.3575. This outcome suggests that there is no indication of heteroskedasticity in the Random Effects (RE) component of the panel data model, with chi-square 0.72 and the probability (p-value) is 0.8695, which improves the reliability of the panel data analysis.

### 4.5 Hypotheses Testing

**Table 5: Summary of Random Effect Result**

| ROE | Coefficient | Standard Err. | Z-Statistics | P>\| z \| |
|---|---|---|---|---|
| DEBTTAX | -0.0001878 | 1.732469 | -0.00 | 1.000 |
| NONDEBTTAX | -1.15545 | 2.43228 | -0.48 | 0.635 |
| FSIZE | -2.41838 | 9.131691 | -0.26 | 0.791 |
| _cons | 12.3907 | 66.00476 | 0.19 | 0.851 |
| N | | | | 529 |
| Wald chi2 (3) | | | | 0.28 |
| Prob > chi2 | | | | 0.9634 |

**Source: Regression Output, 2024.**

The Summary of Random Effect Result indicates that the coefficient for DEBTTAX is very small (-0.0001878) and not statistically significant ($p > 0.05$). This suggests that there is no significant linear relationship between DEBTTAX and the dependent variable (roe). Also, with the coefficient for NONDEBTTAX is -1.15545, indicating a negative relationship with the dependent variable (ROE), however, this coefficient is not statistically significant ($p > 0.05$), suggesting that the relationship may not be reliable.The coefficient for FSIZE is -2.41838, but it is not statistically significant ($p > 0.05$). This implies that there is no significant linear relationship between firm size and roe.Furthermore, the constant term (intercept) is 12.3907, but it is not statistically significant ($p > 0.05$), this indicates that when all independent variables are zero, the expected value of roe is not significantly different from zero.We can safely say therefore, that based on the coefficients and their statistical significance, this model does not provide strong evidence of a significant linear relationship between roe (Return on Equity) and the independent variables (DEBTTAX, NONDEBTTAX, FSIZE). The low R-squared values further suggest that the model does not explain much of the variance in ROE. Additionally, the high p-value of 0.9634 the Wald chi-square test result of 0.28 indicates that the model as a whole is not statistically significant.

### 4.6 Summary of findings

The findings of the study suggests that;

(i) there is no significant linear relationship between DEBTTAX and the dependent variable (ROE).
(ii) NONDEBTTAX indicates a negative relationship with the dependent variable (ROE).
(iii) there is no significant linear relationship between firm size and roe.

## 5.0 Conclusion and Recommendation

Conclusively, since firm size did not show a significant moderating effect in our analysis, further studies should consider exploring alternative moderating variables that may influence the relationship between tax shields and profitability bearing factors such as industry dynamics, market competition, or regulatory environment and could also include exploring the impact of macroeconomic factors, conducting longitudinal studies, or examining the effects of tax reforms on profitability over time.

**a. Policy Recommendations:**

i. Tax Policy Re-evaluation: Given that there was no significant linear relationship between DEBTTAX and ROE, policymakers may need to re-evaluate existing tax policies in relation to debt taxation in the non-financial sector. This could involve assessing the effectiveness of tax incentives or exemptions aimed at encouraging debt financing and their impact on firm profitability while reviewing tax rates, tax exemptions, and tax deductions applicable to nondebt taxes which will create a more conducive business environment for non-financial sector firms.
ii. Support for Small and Medium-sized Enterprises (SMEs): since firm size did not significantly influence ROE, policymakers could implement targeted policies to support the growth and development of SMEs in the non-financial sector. This may include providing access to finance, facilitating skill development, and streamlining regulatory processes to enhance the competitiveness of small and medium-sized firms.

**b. Managerial Recommendations:**

i. Tax Planning and Compliance: Managers should prioritize tax planning and compliance efforts to minimize the impact of tax liabilities on profitability. This could include leveraging available tax incentives, optimizing tax structures, and ensuring compliance with relevant tax regulations to maximize tax efficiency while remaining compliant with legal requirements.
ii. Strategic Resource Allocation: In light of the non-significant relationship between firm size and ROE, managers should focus on optimizing resource allocation and operational efficiency to enhance profitability. This may involve prioritizing investments in high-return projects, reallocating resources to areas with the highest growth potential, and adopting cost-saving measures to improve overall financial performance.

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