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# Financial Debt Strategy and Tax Aggressiveness of Oil and Gas Multinationals in Nigeria: The Controlling Influence of Firm Size

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**ABSTRACT**
This paper examined the effect of debt strategies on tax aggressiveness of Oil and Gas Multinationals in Nigeria. The study emphasized the controlling influence of firm size**.** The study adopted the *ex-post facto* research design. The study sampled ten (10) oil and gas companies in Nigeria listed in the Nigerian exchange group as of December 31, 2023. Data were extracted from the annual reports of the sampled sector spanning from 2014 to 2023. The key variables obtained included effective tax rate (ETR), financial leverage (FLEV) and firm size (FSZ). The findings of the Robust Least Squares regression analysis reveal that both financial leverage (FLEV) and firm size (FSZ) influence effective tax rate (ETR) of oil and gas multinationals significantly. However, financial leverage reduces ETR. This confirmed that high indebtedness reduce their tax. Meanwhile, firms with large asset base (firm size) increases ETR. Consequently, tax regulators are to adjust the regulatory frameworks. This will to reduce tax burdens. Second, the sampled firms are critically evaluates their capitalization. This will make the sampled firms to enjoy tax benefits.
**Keywords**: Corporate Debt Strategy, Tax Aggressiveness, Firm Size, Oil and Gas Multinationals

## 1. INTRODUCTION

Globally, the down-stream and up-stream oil and gas sector has long depended on strategic financial management to determine their going concern. Specifically, tax planning strategies are factored by the firm's debt strategies. Adejumo and Sanyaolu (2020) stressed that, a firm's debt financing reduces the firm's tax liabilities (Akintoye et al., 2020; Appah, 2022).Studies have shown that firm with large asset base whose debt policies are optimal debt structure adopt an aggressive tax planning technique (Bhagiawan & Mukhlasin, 2020; Eche et al., 2024). Further, large firms manage tax are highly tax aggressive (Chytis et al., 2019). However, smaller firms are less tax aggressive (Olaniun et al., 2022; Olarewaju & Olayewola, 2019; & Ogbeide, 2017; Ogundajo & Onakoya, 2016).

Within the Nigerian context, the challenges inherent in the tax system have led to opportunities for firms to aggressively lower their tax obligations. The term "tax aggressiveness" accounts for the strategic reduction of tax liability through legal or near-legal practices, which has garnered significant attention in corporate finance and governance (Enakirerhi, & Ighosewe, 2024). Firms may adopt aggressive tax strategies to lower their tax burdens, increasing profitability and shareholder value. However, tax aggressiveness strategies may result to potential risks such as reputational harm, legal consequences, and strained relationships with tax authorities. Ogbeide and Obaretin (2018) stressed that aggressive tax

practices may also reduce the tax revenue accruable to the government, even though strategies may be financially beneficial to firms as it may improve their performance when it is implemented properly (Ngozi, 2022). However, if oil and gas firms optimize their financial leverage and also reduce their tax burdens, their competitive positioning will be sustained both locally and internationally. Hence, financial leverage and firm size are two critical issues which influence the tax aggressiveness strategies of firms globally. Nevertheless, most tax aggressiveness researches place less attention on the controlling effect of firm size instead focus on other firm-specific issues such as firm age, inventory intensity, sales growth, earnings management, board attributes amongst others (Tanjaya & Nazir, 2021; Sasana et al., 2022); & Hadianto, 2021). Consequently, this study aims to examine how the integration of firm size into the model controls the relationship between debt strategies and tax aggressiveness in oil and gas multinationals. This is with the intention to shed light on the extent financial debt strategy contribute to the tax policies of oil and gas multinationals in Nigeria.

## 2. LITERATURE REVIEW

Financial debt strategies entail the optimal use of debt to finance the operations of firms with the sole intention to improve the firm's potential returns to equity shareholders and at the same time optimize their tax burdens. A company that uses more debt in its capital structure is considered to be more financially leveraged. The main goal of financial leverage is to reduce tax burden through deductions in a firm's interest expense. This rationalization is that higher financial leverage reduces the interest payments on debt since they are tax-deductible. As a result, it reduces effective tax rate (ETR) which in turn reduces the overall tax liabilities. Within the tax aggressiveness context, financial leverage plays a crucial role. Tax aggressiveness involves a company's efforts to reduce its tax liability through strategic planning, and leveraging debt can be one of the methods used (Hidayat, & Muliasar, 2020).

Relevant theories in relation to financial leverage and tax aggressiveness are trade-off theory (TOT), pecking order theory (PDT), and agency theory (AGT). The TOT stressed that highly levered firms are less likely to be tax aggressive since high debt burdens are tax deductible. Meanwhile, the PDT stressed that firms only opt for leverage financing if their internal funds are not adequate. Also, if tax burdens are increased through internal funding, the need for external debt will reduced. Hence, lowered levered firms are highly tax aggressive than highly levered firms since the former seek to preserve their internal source of funding. However, AGT stressed that high leverage may either reduce or increase tax aggressiveness depending on whether debt is considered as either as a mechanism for increasing tax obligations or as a financial discipline measures adopted by management. Hence, the paper hypothesizes that higher financial leverage reduces effective tax rates significantly.

Firm size significantly influences financial performance, especially when strategic tax planning is in place. Larger firms have more resources, which allow them to better implement tax planning practices (Nwaobia et al., 2016). According to Salawu and Adedeji (2017), a large board size enables better management and policy effectiveness, thereby improving financial outcomes. However, there are mixed findings on the relationship between firm size and performance. Studies of Oeta et al. (2019) and Timothy et al. (2020) reported firm size only enhance firm performance marginally. Conversely, Nwaobia et al. (2016) reported that firm size firm performance significantly due to economies of scale associated with larger firms.

Stressing from the lenses of theories, relevant theories in relation to firm size and tax aggressiveness are political cost theory (POT), agency theory (AGT) and resource-based theory (RBT). The POT stressed that large firms in terms of asset base are less likely to have low ETR. The argument is that they are highly prone to face higher political costs and reputational risk such as scrutiny, regulation/penalties than firms with low (Olaniun et al., 2022; Olarewaju & Olayewola, 2019; & Ogbeide, 2017; Ogundajo & Onakoya, 2016). Meanwhile, the AGT stressed that, firms with large asset base are highly tax aggressive than firms with low asset base since the separation between the management and the owner is higher in the case of high firm size than firms with low firm size. Similarly, the RBT align with the AGT, stressing that large firms adopt various tax avoidance strategies than small firms since they have more financial, legal, and strategic resources at their disposal.

## 3. METHODOLOGY

The study adopted the *ex-post facto* research design. This design was appropriate for the analysis given the reliance on secondary data which has existed in retrospect and cannot be manipulated by the researcher. Again, this research design help facilitated the collection of relevant information from the annual reports and financial statements of listed oil and gas firms in Nigeria, as available on the Nigerian Exchange Group and other public financial databases. The population and the sample size consisted of all the ten listed oil and gas companies in Nigeria as of December 31, 2023. The choice of firms was based on data availability and consistency over the review period, ensuring the reliability of the findings.

Data were extracted from the annual reports of the sampled sector spanning from 2014 to 2023. The key variables obtained included ETR, FLEV and FSIZ. The analysis was conducted using the Robust Least Squares (RLS). This analytical technique was selected because of its robustness in handling complex and potentially non-linear relationships among variables. The study adapted the model of Kehinde et al. (2024). The functional form of the adapted model expressed ETR as a function of FLEV and FSIZ. Meanwhile, the econometric form is expressed thus:

$ETR_{it} = \beta 0 + \beta_1 FLEV_{it} + \beta_2 FSIZ_{it} + \varepsilon$……..... (1)

$ETR_{it}$ = Effective tax Rate at time t

$TAS_{it}$ = Tax Savings at time t

$FLEV_{it}$ = Financial Leverage at time t

$FSIZ_{it}$ = Firm Size at time t

**Table 1: Operationalization of Variables**

| S/N | Variable | Proxy | Nature of Variable | Measurement | Apriori Expectation (+/-) |
|---|---|---|---|---|---|
| 1. | Tax Aggressiveness Strategies | Effective tax Rate | Dependent | Proportion of tax expense to profit before tax | Nil |
| 2. | Debt Strategy | Financial Leverage | Independent | Debt divided by Equity | Negative (-) |
| 3. | Firm Structure | Firm Size | Control | Log of Total Asset | Positive (+) |

## 4. Result Estimates and Discussions

This section focused extensively on the result estimation and discussions on the major findings. Here emphasis was placed on the preliminary test and the robust regression estimate. Table 2 presents the summary statistics while Table 3 presents the correlation analysis

**Table 2: Summary Statistics**

| Variables | Mean | Maximum | Minimum | Std. Dev. | Observations |
|---|---|---|---|---|---|
| **ETR** | 10.6576 | 30.3000 | 0.2200 | 6.5419 | **100** |
| **FLEV** | 1.5073 | 2.9181 | 0.1169 | 0.7831 | **100** |
| **FSZ** | 7.7125 | 11.8337 | 0.4000 | 3.2407 | **100** |

As presented in Table 2, ETR has a mean value of 10.6576, with a maximum of 30.3000 and a minimum of 0.2200, and a standard deviation of 6.5419. The substantial gap between the maximum and minimum values indicates a wide variation in the tangible asset base of firms. Regarding FLEV, a mean value of 1.5073 was recorded, with a minimum value of 0.1169 and a maximum value of 2.9181. However, it deviated by 0.7831 suggesting the sampled firms used debt to finance their operations and that such acts reported notable differences. Again, their debt levels correlates with tax aggressiveness strategies.

Lastly, the average FSZ value of 7.7125 was recorded, with minimum value of 0.4000 and maximum value of 11.8337 though deviated by 3.2407. This suggests most of the sampled firms vary considerably in terms of size, supporting the assumption that oil and gas multinationals are heterogeneous entities.

Such variation is important because firm size is expected to influence both capital structure and tax planning behaviour.

**Table 3: Correlation Analysis**

| | ETR | FLEV | FSZ |
|---|---|---|---|
| **ETR** | 1.0000 | | |
| **FLEV** | -0.3321 | 1.000000 | |
| **FSZ** | 0.4269 | -0.0276 | 1.000000 |

The correlation analysis reported that FLEV and ETR are negatively correlated (FLEV>ETR= –0.3321). This indicates highly-levered firms have low ETR. This supports the theoretical expectation that the more debt is used to finance a firm's operations, the lower their tax burden since debt reduces interest expenses. However, FSZ and ETR are positively correlated (FSZ>ETR= of 0.4261). This suggest that larger firms report higher ETR than small firms since the extent of regulatory oversight and compliance requirements are more in larger firms than small-asset based firms. However, none of the regressors reported high correlation. fto validate the claim that the model is free from multi-collinearity problems, multicollinearity test was introduced (Table 4)

**Table 4.: Multicolinearity Tests**

| Variables | VIF | Tolerance Values |
|---|---|---|
| **FLEV** | 1.0543 | 0.9485 |
| **FSZ** | 1.0328 | 0.9682 |
| **Average** | 1.0332 | 0.9680 |

Table 4 reported a FLEV reported a VIF value of 1.0390, with a corresponding TOV of 0.9625 while FSZ has a VIF of 1.3501 and a corresponding TOV (VIF reciprocal) of 0.7407. This suggests that both FLEV and FSZ fall within acceptable thresholds of <10 in the case of VIF and above 0.10 in the case of TOV (VIF reciprocal). Hence, the study reiterates that the model is not faced with multicollinearity issues. Justifiably, the average VIF value of 1.1946, and average TOV of 0.8516 further reaffirmed that the regressors are not strongly linearly related and are suitable for inclusion in the regression model.

**Table 5: Other Diagnostic Tests**

| Test | Test Statistic | p-value | Decision |
|---|---|---|---|
| Ramsey RESET Test | 0.8204 | 0.4140 | Model Well specified |
| Heteroskedasticity Test | 1.2267 | 0.2715 | Homoskedastic |

From Table 5, the Ramsey RESET test yielded a test statistic of 0.8204 with a p-value of 0.4140, which is above the 5% conventional significance value. Hence, the paper validates the assertion that the model is well specified. This further evidences that, the model is credible and that the functional relationships between the variables are captured properly. Also, the Heteroskedasticity test reported a test statistic value of 1.2267<1.96 benchmark value with a p-value of 0.2715<0.05 benchmark value. On this note, the study confirmed that the regression estimates are efficient and that the standard errors are reliable. Overall, these diagnostic tests affirm that the model is robustness, well-specified and that there are no sign of model misspecification.

**Table 6: Robust Least Squares**

Dependent Variable: ETR

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.6911 | 0.1445 | 4.7820 | 0.0000 |
| FLEV | -0.7252 | 0.1386 | -5.2307 | 0.0000 |
| FSIZ | 0.3496 | 0.1288 | 2.7151 | 0.0066 |

| | Robust Statistics | |
|---|---|---|
| $R^2$ =0.601675 | Adj. $R^2$=0.583709 | Rw-squared=0.525398 |
| Adjust Rw-squared= 0.515398 | Prob(Rn-squared)= 0.000000 | Rn-squared statistic =47.21097 |

The RLS model provides valuable insights into the effect of debt strategy (DES) on tax aggressiveness (TAG) The specific debt strategy proxy considered is financial leverage (debt to equity ratio). The study confirmed that higher FLEV reduces ETR significantly since a negative FLEV coefficient value of -0.7252 was recorded and p-value of 0.0000<0.05 was recorded. This confirmed that firms with higher FLEV tend to engage reduce tax aggressive. The reason is that debt is tax deductible. By implication, highly indebted firms report low ETR. However, FSZ was positively influence ETR. A positive coefficient of 0.3496 was recorded and p-value of 0.0066 was recorded. Overall, the high R2 value of 0.6017 suggests that variations in debt strategies and firm size caused 60.17% variation in ETR. Also, the high adjusted R2value of 58.37% further reinforces the model is robust.

## 5. CONCLUSION AND RECOMMENDATIONS

The study reiterates here that, both FLEV and FSIZ influenced ETR significantly. However, both FLEV and FSIZ differ in terms of direction of relationship in that, while FLEV reduces ETR, FSIZ increases ETR. This underscores that, higher FLEV reduces ETR. This confirmed that high indebtedness reduce their tax. Meanwhile, firms with large asset base (firm size) increases ETR. Meanwhile, firms with high asset base reported high ETR. Consequently, tax regulators are to adjust the regulatory frameworks. This will to reduce tax burdens. Second, the sampled firms are critically evaluates their capitalization. This will make the sampled firms to enjoy tax benefits. The study contributed immensely to firm debt policy studies and was able to widen pour understanding on the controlling roles of firm size. Nevertheless, the study is limited in scope as it was only confined to debt policies and controlling effect of firm size. Hence, future researchers are admonished to expand the scope to include how changes in tax planning strategies could influence the firm performance of oil and gas multinationals. Also, the study failed to compare tax aggressiveness strategies among various firms in different industries. Another area of interest future researchers can investigate is on the moderating roles of board attributes in influencing firms' debt strategies and tax planning. Lastly, future researchers may also seek on how to explore the multidimensional effect of tax aggressiveness on various debt management policies.

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