

## FIRM, INDUSTRY CHARACTERISTICS AND TAX AGGRESSIVENESS IN LISTED MANUFACTURING COMPANIES IN NIGERIA

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### Abstract

*This study examines the influence of firm characteristics on tax aggressiveness in listed manufacturing firms in Nigeria over the period 2014–2024. Using a random-effects panel-data model estimated on 558 firm-year observations drawn from quoted manufacturing companies on the Nigerian Exchange Group, the research investigates how firm financial goals, global operations, tax professionals, firm complexity, industry norms, and firm competition shape the effective tax rate (ETR), the proxy for tax aggressiveness. The model explains approximately 61.78% of the variation in ETR ( $R^2 = 0.6178$ , adjusted  $R^2 = 0.5834$ ), with a highly significant F-statistic ( $F = 9.371$ ,  $p < 0.01$ ). The results show that firm financial goals ( $t = 0.790$ ,  $p = 0.431$ ), firm complexity ( $t = -0.368$ ,  $p = 0.714$ ), and tax professionals ( $t = 0.346$ ,  $p = 0.730$ ) are statistically insignificant, while industry norms are positively and significantly related to ETR ( $t = 2.419$ ,  $p = 0.017$ ), indicating that stronger sector-level compliance norms are associated with lower tax aggressiveness. By contrast, firm competition exhibits a negative and highly significant coefficient ( $t = -4.265$ ,  $p < 0.01$ ), suggesting that more competitive environments are linked to higher tax aggressiveness. The findings refine existing literature by demonstrating that the relationship between firm characteristics and tax aggressiveness is context-dependent and shaped by the interplay of agency-cost incentives and institutional-norms constraints. The study concludes with recommendations for corporate governance, tax-disclosure practices, and public-policy measures aimed at strengthening sector-level compliance frameworks and enforcement capacity in Nigeria's manufacturing sector.*

**Keywords:** tax aggressiveness, firm characteristics, effective tax rate, panel data, Nigeria

### 1.0 Introduction

Nigeria's government is increasingly relying on tax revenue to run the economy, and corporate tax aggressiveness has emerged as one of the most pressing challenges, representing a severe loss of revenue in both advanced and growing economies (Maydew, 2022). In Africa, tax avoidance has been identified as a major impediment to development by depriving governments of the finances needed to deliver public goods and services (Hurwich, 2022). Tax aggressiveness refers to the use of tax-avoidance mechanisms and strategies by taxpayers to reduce their tax burden, often through legal means such as exploiting loopholes, even if some practices border on evasion (Desai & Dharmapala, 2020; Diller & Lorenz, 2022). Although not always illegal, excessive use of such methods leads to the perception and reality of aggressive tax behaviour that benefits the firm and shareholders at the expense of the state (Dada, 2021).

To address the revenue shortfalls and weakened governance capacity associated with tax aggressiveness in countries such as Nigeria, scholars and policymakers have turned to firm

characteristics as a mitigating factor. Firm characteristics are typically examined in relation to financial performance, firm value, corporate social responsibility disclosure, and asset disclosure, with the aim of assessing their contribution to shareholder wealth (Adegbi & Gbegi, 2021). Commonly studied characteristics include firm size, firm age (incorporation or managerial age), industry type, ownership concentration, audit firm size, profitability, financial goals, global operations, tax professionals, firm complexity, industry norms, and competition (Hurwich, 2022; Ezekwesili & Ezejiofor, 2022). Large firms may engage in aggressive tax planning to meet profitability targets, while others may restrain aggressiveness to avoid penalties and reputational damage (Kraft, 2021). Firms operating in global markets are also aware that aggressive tax behaviour can harm their image, prompting more compliant behaviour and indirectly alleviating the problem of government revenue shortfalls (Mansur, Onipe, & Mohammed, 2023; Eze, 2021).

The role and quality of tax professionals further shape the level of tax aggressiveness. Professionals from the “Big Four” audit firms are generally expected to ensure clients’ compliance with tax laws and to discourage overly aggressive tax structures that erode government revenue and public infrastructure (Mansur et al., 2023). However, some tax professionals may lean toward client interests, advising on ways to legally minimise tax liabilities and thereby indirectly supporting tax-aggressive strategies (Eze, 2021). In certain industries, tax compliance is treated as a membership norm, reducing the need for intensive state-led monitoring, education, and audit activities (Antonio & Giliard, 2022). Moreover, competitive pressure among firms can act as a deterrent to tax aggressiveness, as firms may threaten to expose non-compliant competitors to regulators and customers, forcing rivals to moderate their behaviour (Antonio & Giliard, 2022).

Ezekwesili and Ezejiofor (2022) argue that larger and more complex firms attract closer scrutiny from tax authorities precisely because they have both the incentive and the capacity to seek lower effective tax rates. The economic and political power of big firms makes them more prone to tax aggressiveness, yet their visibility also heightens reputational and regulatory risks. Given these dynamics, the nexus between firm characteristics and tax aggressiveness has become a vibrant area of research (Eze, 2020; Trans, 2022).

Despite this growing literature, firm characteristics and tax aggressiveness remain poorly resolved in the Nigerian context, especially when taken together as a holistic bundle. Many existing studies examine only a subset of characteristics—such as profitability, firm size, or ownership structure—rather than integrating firm financial goals, global operations, tax professionals, firm complexity, industry norms, and competition into a unified framework (Mansur et al., 2023; Ezekwesili & Ezejiofor, 2022). Empirical findings are also mixed: some studies report that variables like thin capitalisation, firm size, profitability, leverage, intangible assets, and transfer pricing are significantly associated with corporate tax avoidance (Adegbite & Bojuwon, 2019), while others find that only firm size has a positive effect on tax aggressiveness, or that financial goals and certain global-operation measures have negative or insignificant relationships (Ugbogbo, Omoregie, & Eguavoen, 2019; Mansur et al., 2023; Ezekwesili & Ezejiofor, 2022).

Against this backdrop, the study focuses on listed manufacturing firms in Nigeria over the period 2014–2024. The manufacturing sector’s contribution to Nigeria’s Gross Domestic Product (GDP) has remained substantial, reaching 16.04% in Q4 2023, despite fluctuations over the preceding years (Aghogho, 2024). This research specifically examines the industrial goods, consumer goods, oil and gas, and conglomerate sub-sectors as classified by the Nigeria Exchange Group as at 31 December 2024. The chosen period also coincides with a time of heightened insecurity, economic volatility, and recurrent government complaints about insufficient revenue to tackle social and economic challenges, including banditry, kidnappings, insurgency, and separatist agitations (Iyidiobi, 2021; Salami, 2020). Against the World Bank’s observations (2024) of slowing growth and rising inflation linked to fiscal pressures and policy distortions, this study

interrogates whether firm-level tax aggressiveness meaningfully contributes to the reported revenue shortfalls.

The remainder of the paper is structured as follows. Section 2 presents the theoretical framework and hypotheses. Section 3 outlines the research methodology, including the sample, data sources, and estimation techniques. Section 4 reports the empirical results and discusses their implications, followed by Section 5, which summarises the key findings, offers policy recommendations, and suggests areas for future research.

## 2.0 Literature Review

### 2.1 Conceptual Review

**Tax aggressiveness** refers to the extent to which firms reduce tax liabilities, often by exploiting legal loopholes and tax-planning strategies and is typically measured by proxies such as the effective tax rate (Ndum, 2021). In Nigeria, tax aggressiveness is shaped by macro-fiscal pressures, including heavy reliance on oil revenues, budgetary shortfalls, and the government's push to broaden the tax base, particularly in the non-oil sector (Ezenwafor, 2020).

**Firm characteristics** encompass the internal attributes that shape a company's behaviour and performance, including size, industry, ownership structure, geographic location, financial health, and innovation capacity (Onyeka-Iheme, 2021). In this study, firm characteristics are those measurable attributes that mediate how firms respond to tax-related incentives and constraints.

**Firm financial goals** are the quantifiable objectives used to guide financial performance, such as profitability targets, revenue growth, cost management, and return on investment (Dada, 2021). These goals may incentivise aggressive tax-planning when managers prioritize short-term value creation and earnings targets.

**Global operations** describe the extent to which firms operate across borders, coordinating production, supply chains, and distribution in multiple jurisdictions (Fiakpa, 2021; Tuan, 2021). Cross-border activities create opportunities for profit-shifting, transfer-pricing, and other forms of aggressive tax-planning, especially in weak-enforcement environments.

**Firm complexity** captures the multidimensional intricacy of a firm's structure and operations, arising from size, product diversity, geographic dispersion, and supply-chain sophistication (Oke, 2022; Qasem, 2020). Complex firms may deploy more sophisticated tax-planning arrangements, yet they may also face higher regulatory scrutiny.

**Industry norms** are the accepted standards and practices within a sector, including expectations about tax-compliance, reporting, and ethical conduct (Loo, 2022; Lietz, 2023). Stronger norms can discourage aggressive behaviour by raising reputational and regulatory costs.

**Firm competition** denotes the rivalry among firms in the same market as they seek customers, market share, and profitability (Ogbeide & Obarentin, 2021; Bimo, 2021). Intense competition may incentivise aggressive tax-planning to preserve margins, but may also expose non-compliance to peers and regulators.

**Leverage** reflects the use of debt to finance assets (Noor, 2022; Pratama, 2022) and is included as a control variable, as high leverage may increase the incentive to minimise tax burdens while simultaneously raising the risk of financial distress.

### 2.2 Empirical Review

Amrief and Reza (2019) conducted a research on the effect of Firm financial goals on tax aggressiveness in companies listed in the Botswana Stock Exchange. The objective of this study was to determine the relationship between firm financial goals and tax aggressiveness. The data of 50 manufacturing companies were evaluated for the study. The research design employed for this study was the cross-sectional survey. With the use of the OLS regression, they affirmed that firms with high financial goals, board size and firm size could reduce the tax aggressiveness in

Botswana quoted companies. This implies that every company should be able to meet their goals and objectives in order to attain high performance and reduce tax aggressiveness.

Noe (2021) did research on international corporate attributes and tax aggressiveness. The objectives of the study were to find a relationship between global operations and tax aggressiveness. The data of 28 quoted companies in Helsinki stock exchange was evaluated to ascertain the relationship between corporate attributes and tax aggressiveness. The cross-sectional research design and the census sampling technique was adopted. The multiple regression technique was used, and he stated that companies with bigger global operations increases tax aggressiveness, this was confirmed by the analysis of the data of 30 quoted manufacturing companies in Finland. It was recommended that Global operations of companies should be put into consideration when computing for tax payables.

Maydew (2022) evaluated the effect of firm attributes on Tax Aggressiveness. The cross-sectional research design was adopted, and the Taro Yamane formula was used to determine sample size. The data covering 2011 to 2020 of 20 quoted financial institutions was used to conduct the study in Australia with the aid of multiple regression analysis, they concluded that Tax Professionals has a positive and significant relationship with tax aggressiveness. It was recommended that more tax professionals should be employed into financial institutions in Australia in order to be able to compute for tax payables.

Hsieh (2021) did research on Firm attributes and tax aggressiveness. The objectives of the study were to evaluate the relationship between firm attributes and tax aggressiveness. The descriptive research design was employed, and the census sampling technique was used to determine the size of the study. The data of 80 manufacturing companies quoted in the Madrid stock exchange was analysed, the ordinary least square {OLS} regression technique was adopted to analyse the data, and they found a positive relationship between firm complexity and tax aggressiveness. It was recommended that companies should reduce the complexities of their firms.

According to Oraka and Ezejiefor (2021), firm attributes serve as the cornerstone for corporate success. They investigated firm attributes and tax aggressiveness in Nigeria's oil and gas industry. The study's population consists of the nine (9) Nigerian downstream oil and gas companies that were listed on the Nigerian Exchange Group (NGX) that year (2020). The study employed an ex-post factor research design. The outcome shows that industry norms and ethics are both statistically significant and positively skewed.

Adebisi and Gbegi (2021) investigated how firm characteristics affects the financial results of a few Nigerian listed companies. The annual financial report index for the selected organizations served as the dependent variable, with the industry, company size, financial leverage, and industry competition for firm characteristics serving as stand-ins. Secondary data was used in the study to get the knowledge needed for this analysis. Between 2011 and 2019, a ballot technique and (Basic) random selection processes were used to pick manufacturing and non-manufacturing enterprises from a population of 188 firms in the Nigerian Exchange Group annual report. Regression, correlation, and descriptive statistics were used to examine the acquired data. The study showed a positive coefficient value for both the independent and dependent variables.

### **2.3 Theoretical Review and Hypotheses**

This study draws primarily on agency theory and the institutional-norms perspective to explain how firm characteristics shape tax aggressiveness in listed manufacturing firms in Nigeria. Agency theory, first formalised by Jensen (1976), focuses on the principal/agent relationship that arises when ownership is separated from control. In this framework, shareholders (the principals) entrust managers (the agents) with the management of the firm, but divergent interests may lead to opportunistic behaviour, including tax-aggressive strategies that prioritise private gains over public or regulatory considerations (Mitnick, 2013).

In the context of corporate taxation, Kirchler and Maciejovski (2021) were among several researchers to highlight the agency problems inherent in tax-avoidance decisions, showing how managers may pursue tax minimisation to enhance firm performance or personal rewards, even when such actions increase legal and reputational risk. Lynch (2022) further conceptualised tax avoidance as a tripartite game involving shareholders, insiders (managers), and the state, each pursuing different objectives and creating potential conflicts of interest. From this angle, firm characteristics such as financial goals, ownership structure, global operations, and board composition become key mechanisms through which agency conflicts are either mitigated or exacerbated as proposed by this study.

Agency theory is therefore highly relevant to the relationship between firm characteristics and tax aggressiveness. It suggests that managers may exploit complex structures, cross-border operations, and legal loopholes to reduce tax burdens, especially where governance is weak or oversight is limited. A strong and effective board, however, can align managerial incentives with shareholder and societal interests by ensuring that tax-minimisation strategies remain within ethical and regulatory boundaries, balancing tax aggressiveness with prudent risk management (Mitnick, 2013).

Complementing agency theory is the institutional-norms perspective, which emphasises how external pressures, such as industry standards, regulatory scrutiny, professional expectations, and peer competition—shape corporate tax behaviour (Ezekwesili & Ezejiofor, 2022; Antonio & Giliard, 2022). In this view, firms moderate tax aggressiveness to comply with industry norms, maintain reputational credibility, and avoid sanctions from regulators, auditors, and the public. Tax professionals and audit firms, particularly those affiliated with the “Big Four”, play a norm-enforcing role by discouraging aggressive shelters and promoting transparency (Mansur, Onipe, & Mohammed, 2023; Eze, 2021).

## Hypotheses Development

### Firm financial goals and tax aggressiveness

Firms driven by aggressive profitability targets may be more inclined to pursue tax-aggressive strategies to boost after-tax earnings and shareholder returns (Hurwich, 2022; Kraft, 2021). However, some firms may moderate aggressiveness to avoid penalties and reputational damage, particularly if investors demand transparency. Drawing on mixed prior evidence (Adegbite & Bojuwon, 2019; Ugbogbo et al., 2019; Mansur et al., 2023), the study hypothesises:

*>H<sub>1</sub>: Firm financial goals have a positive relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

### Global operations and tax aggressiveness

Firms with global operations often face greater reputational and regulatory scrutiny, which may discourage overtly aggressive tax planning (Eze, 2021; Ezekwesili & Ezejiofor, 2022). At the same time, cross-border structures can create opportunities for base-shifting and profit reallocation. Given the Nigerian context and prior results (Ezekwesili & Ezejiofor, 2022), the study proposes:

*>H<sub>2</sub>: Global operations have a negative relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

### Tax professionals and tax aggressiveness

Tax professionals, especially those affiliated with reputable audit firms, are expected to ensure compliance with tax laws and discourage aggressive shelters (Mansur et al., 2023). However, some professionals may prioritise client interests and suggest legally permissible tax-minimisation strategies (Eze, 2021). The study therefore hypothesises:

*> H<sub>3</sub>: Higher use or quality of tax professionals has a negative relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

Firm complexity and tax aggressiveness

Larger and more complex firms often have greater capacity to structure tax-efficient arrangements but also attract closer scrutiny from tax authorities (Ezekwesili & Ezejiofor, 2022). Empirical evidence suggests that complexity (often proxied by firm size) can increase tax aggressiveness when firms exploit regulatory gaps. Accordingly:

> *H4: Firm complexity has a positive relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

Industry norms and tax aggressiveness

Industry-level norms and membership expectations can act as self-regulatory mechanisms that discourage aggressive tax behaviour (Antonio & Giliard, 2022). When compliance is treated as a norm, firms reduce their willingness to engage in aggressive practices. Hence:

> *H5: Stronger industry norms have a negative relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

Firm competition and tax aggressiveness

Competition among firms can either amplify or dampen tax aggressiveness. On one hand, rivals may copy aggressive strategies to gain an advantage; on the other, competition may expose non-compliance and trigger reputational or regulatory backlash (Antonio & Giliard, 2022). In the Nigerian manufacturing setting, where peer scrutiny is growing, the study anticipates a disciplining effect:

> *H6: Greater competition among industry peers has a negative relationship with tax aggressiveness in listed manufacturing firms in Nigeria.*

**3.0 Methodology**

The study adopts an ex-post facto (retrospective) research design, consistent with Brigman (2020), which relies on existing data rather than experimental manipulation. The population comprises all quoted manufacturing companies listed on the Nigerian Exchange Group (NGX) as at 31 December 2024. From this population a sample of manufacturing firms is selected based on the availability of annual financial and tax-disclosure data for the 2014–2024 period, yielding a panel of 558 firm-year observations.

Data are drawn from audited financial statements, corporate disclosures, NGX filings, and, where applicable, databases maintained by the Financial Reporting Council of Nigeria. The study builds on the firm-characteristics–tax-aggressiveness framework by adapting and extending the regression model of Capello (2022). The regression model created by Capello (2022) that tested the relationship between firm characteristics and tax aggressiveness was as follows:

$$ETR = \beta_0 + \beta_1FFG_{it} + \beta_2GOP_{it} + \beta_3TXP_{it} + \epsilon_{it} \dots \dots \dots \text{equ.I}$$

The original model is extended to include firm complexity (FMC), industry norm (IDN), and firm competition (FRC), and a leverage (LEV) control variable is added.

The final model is specified as:

$$ETR = \beta_0 + \beta_1FFG_{it} + \beta_2GOP_{it} + \beta_3TXP_{it} + \beta_4FMC_{it} + \beta_5IDN_{it} + \beta_6FRN_{it} + \beta_7LEV_{it} + \epsilon_{it} \dots \dots \dots \text{equ. II}$$

Where:

ETR = Effective Tax Rate, the dependent variable

$\beta_0$  = intercept

FFG = Firm Financial goals

GOP = Global Operations

TXP= Tax Professionals

FMC= Firm Complexity

IDN = Industry Norm

FRC = Firm Competition

LEV = Leverage

$\beta_1 \dots \beta_7$  = coefficients

$\varepsilon$  = Error term,  $i$  = cross sectional of the vector of the variables,  $t$  = time series

Tax aggressiveness is measured by the effective tax rate (ETR), computed as income tax expense divided by profit before tax. Lower ETR values indicate higher aggressiveness. Firm financial goals (FFG) are proxied by profitability indicators such as return on equity and profit margin. Global operations (GOP) are captured by the foreign-sales ratio and dummies for international operations. Tax professionals (TXP) are measured by whether the firm engages “Big Four” tax or audit firms and related tax-related disclosures. Firm complexity (FMC) is approximated by the natural logarithm of total assets and business-segment diversity. Industry norm (IDN) is constructed as the sub-sector-level average of ETR or compliance indicators. Firm competition (FRC) is proxied by industry-concentration or competitor-count indicators. Leverage (LEV) is measured as total debt divided by total assets.

The analysis is conducted using panel-data regression techniques, comparing fixed-effects and random-effects specifications according to the Hausman test. Standard diagnostic checks are performed for multicollinearity (using VIFs), heteroscedasticity, and serial correlation, with robust cluster-robust standard errors applied at the firm level where necessary. Outliers are examined via residual analysis and winsorized at conventional thresholds. Robustness is further assessed through alternative variable specifications and sub-sample analyses by sub-sector (industrial goods, consumer goods, oil and gas, conglomerates).

#### 4.0 Data Analysis, Results and Discussion of Findings

This section presents the correlation analysis, diagnostic checks, and panel-regression results for the relationship between firm characteristics and tax aggressiveness in listed manufacturing firms in Nigeria, over the period 2014–2024. The final sample comprises 558 firm-year observations drawn from quoted manufacturing companies on the Nigerian Exchange Group.

##### 4.1 Correlation and Diagnostic Tests

The correlation matrix (Table 1-appendix) reveals that all explanatory variables are linearly associated with the effective tax rate (ETR), the proxy for tax aggressiveness. Firm financial goals (FFG) are positively and significantly correlated with ETR ( $r = 0.0856$ ,  $p = 0.0426$ ), suggesting that, at the bivariate level, profitability-oriented firms tend to exhibit relatively higher ETRs (i.e., lower aggressiveness). Global operations (GOP) show a weak negative correlation with ETR ( $r = -0.0167$ ,  $p = 0.6939$ ), indicating that internationally oriented firms may marginally increase their ETR without strong statistical support. Tax professionals (TXP) are strongly positively correlated with ETR ( $r = 0.3744$ ,  $p < 0.01$ ), implying that stronger engagement with professional tax advisors is associated with higher effective tax payments. Firm complexity (FMC) is positively correlated with ETR ( $r = 0.3733$ ,  $p < 0.01$ ), while industry norm (IDN) and firm competition (FRC) are negatively correlated ( $r = -0.3105$ ,  $r = -0.2891$ ;  $p < 0.01$ ). Leverage (LEV) is also negatively correlated with ETR ( $r = -0.3966$ ,  $p < 0.01$ ). These patterns motivate the formal panel-regression analysis reported below.

Diagnostic tests confirm that the model is well-specified. The Variance Inflation Factors (VIFs) reported in Table 2 range from 1.0216 to 1.1654 for the centred measures, all below the 10-threshold, indicating that multicollinearity is not a serious concern. The Hausman test yields a p-value of 1.0000, which supports the use of the random-effects specification over fixed effects, as the difference between estimators is not statistically significant. The Breusch–Godfrey LM test

for serial correlation does not reject the null hypothesis of no first-order autocorrelation (F-statistic  $p = 0.0427$ ; OBSR-squared  $p = 0.0411$ ), while the Breusch–Pagan–Godfrey test detects heteroscedasticity ( $p < 0.05$ ). In response, the model is re-estimated under the period-random-effects EGLS framework with robust standard errors (Swamy–Arora estimator), ensuring valid inference in the presence of heteroscedasticity. The results are presented as follows:

Table 2: Variance Inflation Factors  
**Date: 09/10/25 Time: 06:41**  
**Sample: 1 558**  
**Included observations: 558**

Variable	Coefficient Variance	Uncentred VIF	Centred VIF
C	0.001705	30.54110	NA
FFG	1.25E-06	6.095749	1.021583
GOP	5.83E-08	1.264400	1.096123
TXP	0.000120	3.370589	1.102782
FMC	5.37E-07	19.86247	1.108830
IDN	0.000705	2.579394	1.165404
FRC	0.074530	1.021689	1.007976
LEV	0.002001	1.758507	1.062942

**Source: Authors computation (2025) From E-views 10 output.**

The variance inflation factor revealed that there is no problem of multicollinearity as the centred VIF is 1.021583, 1.096123, 1.102782, 1.108830, 1.165404, 1.007976, and 1.062942.

**Table 3: Hausman Test Result**

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	7	1.0000

**Source: Authors computation (2025) From E-views 10 output.**

The Hausman test is used as a test to determine the right model between the fixed and random effects model. Random effects model is appropriate if the Probability value is greater than 5% while fixed effects model is appropriate if the probability value is less than 5%. The probability value here is 1.0000 which is more than 5% thereby we accept the null hypothesis and conclude that the random effects model is appropriate.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.171793	Prob. F(2,548)	0.0427
Obs*R-squared	6.385428	Prob. Chi-Square(2)	0.0411

**E-views 10, 2025**

The table above gives the diagnostic test for autocorrelation in the model. From the result, it could be observed that the Lagrange multiplier (LM) test for higher order autocorrelation is utilized in this study holding to the fact that it tests for high order autocorrelation and is relatively more powerful than the Durbin Watson test. From the hypothesis of zero autocorrelation, the residuals were rejected. This was because the probability (prob. F, chi square) was more than 0.05. The LM test did not therefore reveal the problem of first order serial correlation in the model.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.014391	Prob. F(7,550)	0.0041
Obs*R-squared	20.61670	Prob. Chi-Square(7)	0.0044
Scaled explained SS	25.13637	Prob. Chi-Square(7)	0.0007

E-Views 10, (2025)

In recognition of the fact that the problem of heteroscedasticity is mostly encountered in cross-section data (Johnson & Dinardo, 1997 and Engle, 1982), in this study, the Breusch-Pagan-Godfrey test was performed on the residuals as a precaution. The results showed probabilities which is less than 0.05, which leads us to accept the presence of heteroscedasticity in the residuals.

4.2 Regression Results and Hypothesis Tests

The estimated random-effects and robust-random-effects results are reported in Table 4.

Table 4: Dependent Variable (FRQ)

Method Panel EGLS (Period random effects)

Swamy and Arora estimator of component variances

Independent Variables	Fixed Effects			Random Effects			Robust Random Effects		
	Std. Error	t-Statistic	Prob.	Std. Error	t-Statistic	Prob.	Std. Error	t-Statistic	Prob.
C	0.0348	18.7090	0.0000	0.0348	18.7090	0.0000	0.0182	1.8077	0.0731
FFG	0.0037	10.4601	0.0000	0.0003	10.4601	0.0000	0.0264	0.7902	0.4309
GOP	0.0020	-7.6697	0.0000	0.0020	-7.6697	0.0000	0.1982	4.9266	0.0000
TXP	0.0096	42.7592	0.0000	0.0096	42.7572	0.0000	-0.0307	0.3457	0.7302
FMC	0.0004	40.7154	0.0000	0.0004	40.7154	0.0000	-0.0248	-0.3680	0.7135
IDN	0.1465	3.4778	0.0005	0.1465	3.4778	0.0005	0.0453	2.4186	0.0171
FRC	0.6608	5.1016	0.0000	0.6608	5.1016	0.0000	0.3625	-4.2646	0.0000
LEV	0.0800	13.6293	0.0000	0.0800	13.6293	0.0000	-0.0045	-0.9167	0.3611
R-squared	0.8964			0.8964			0.6178		
Adjusted R-squared	0.8847			0.8951			0.5834		
S.E. of regression	0.03830			0.03660			0.7405		
F-statistic	76.4194			684.1286			9.3709		
Prob(Value)	0.0000			0.0000			0.0000		
Durbin Watson	2.4703			2.4703			1.8805		

Source: Authors computation (2025) From E-views 10 output.

The model explains approximately 61.78% of the variation in ETR ( $R^2 = 0.6178$ ; adjusted  $R^2 = 0.5834$ ), with a highly significant F-statistic of 9.371 ( $p < 0.01$ ) and a Durbin–Watson statistic of 1.8805, indicating that the regression is not spurious.

Firm financial goals (FFG) show a positive but statistically insignificant coefficient ( $t = 0.790$ ;  $p = 0.431$ ), implying that profitability targets do not, on average, systematically reduce tax aggressiveness once other firm-level controls are included. This fails to support  $H_1$ , which expected a positive link between financial goals and tax aggressiveness. The result is consistent with mixed evidence in the Nigerian context: some studies find that profitability reduces aggressiveness (Adegbite & Bojuwon, 2019), while others report weak or negative effects (Hurwich, 2022; Ugbogbo et al., 2019), suggesting that agency-cost incentives may be moderated by governance and enforcement conditions (Jensen, 1976; Mitnick, 2013).

Global operations (GOP) exhibit a positive and statistically significant coefficient ( $t = 4.927$ ;  $p < 0.01$ ), indicating that firms with broader international exposure tend to be more tax-aggressive. This supports the alternative expectation that global operations can facilitate profit-shifting and tax-avoidance strategies, in line with Lynch's (2022) tripartite-game view of corporate tax-avoidance. It contrasts with some earlier work that reports a negative or insignificant effect (Salihu & Sheikh, 2022), highlighting the role of host-country regulatory strength and sector-specific structures in shaping the impact of internationalisation on tax behaviour.

Tax professionals (TXP) yield a positive but insignificant coefficient ( $t = 0.346$ ;  $p = 0.730$ ), suggesting that, while firms may use professional tax advisors, such engagement does not, on average, significantly reduce tax aggressiveness in this sample. This qualifies the view that "Big Four" professionals uniformly discipline tax-avoidance (Mansur, Onipe, & Mohammed, 2023) and aligns with studies showing that tax professionals may also design complex, aggressive-yet-legal structures (Eze, 2021). The result reinforces the ambivalent agency role of tax intermediaries: they can enforce compliance yet also facilitate aggressive planning.

Firm complexity (FMC) is insignificant ( $t = -0.368$ ;  $p = 0.714$ ), despite a negative point estimate. This contradicts much of the Nigerian literature that associates larger and more complex firms with higher tax aggressiveness (Ezekwesili & Ezejiofor, 2022; Eze, 2020), and suggests that, in this manufacturing sample, the disciplining effect of size-related scrutiny may offset the Scope for aggressive planning. The result implies that complexity alone cannot be assumed to drive aggressiveness; the outcome depends on the interplay of firm-level and institutional factors.

Industry norm (IDN) has a positive and significant coefficient ( $t = 2.419$ ;  $p = 0.017$ ), indicating that sub-sectors with stronger compliance norms are associated with higher ETRs and thus lower tax aggressiveness. This supports the institutional-norms perspective, which holds that industry-level standards and peer expectations discipline tax behaviour (Antonio & Giliard, 2022). The result is consistent with sector-level studies that emphasise the role of group-level reputational and regulatory pressure in curbing aggressive planning.

Firm competition (FRC) is negative and highly significant ( $t = -4.265$ ;  $p < 0.01$ ), showing that firms in more competitive environments tend to be more tax-aggressive. This finding aligns with recent work indicating that product-market competition can incentivise cost-minimisation strategies, including aggressive tax planning (Badshah & Igbal, 2022; 25), even as it may also expose non-compliance to public scrutiny. The result contrasts with purely normative expectations that competition should reduce tax aggressiveness, underscoring the dual role of competition as both a disciplining and a normalising force.

Leverage (LEV) shows a negative but modest effect ( $t = -0.917$ ;  $p = 0.361$  in the robust column), suggesting that debt-intensive firms may engage in somewhat more aggressive tax planning, though the effect is not statistically robust. This reflects the well-known interest-tax-shield incentive but also hints that other firm-level constraints (e.g., audit risk and credit-rating concerns) may limit the full exploitation of this channel.

#### 4.3 Discussion in Relation to Theory and Prior Studies

The overall pattern confirms that the nexus between firm characteristics and tax aggressiveness is shaped by the interaction of agency-cost incentives and institutional-norms

pressures (Lynch, 2022; Antonio & Giliard, 2022). Agency-cost arguments suggest that managers pursue tax-aggressive strategies to boost private gains and firm performance, especially where oversight is weak (Jensen, 1976; Mitnick, 2013). The insignificant effect of financial goals and the positive effect of global operations and competition illustrate how profit-maximising incentives can persist despite external pressures. At the same time, the significant positive effect of industry norms on ETR shows that institutional-level expectations can counteract opportunistic behaviour, supporting the idea that sector-level compliance cultures can reduce tax aggressiveness.

The limited impact of tax professionals and firm complexity further highlights the context-dependence of tax-aggressive behaviour in Nigeria's manufacturing sector. While international and domestic literature often treats "Big Four" involvement and firm size as strong disciplining mechanisms (Mansur et al., 2023; Eze, 2020), the results here suggest that in weaker-enforcement environments these factors may not fully curb aggressive planning. The strong negative effect of firm competition, however, aligns with emerging evidence that intense market rivalry can push firms to aggressively minimise tax burdens to preserve profitability and market share, even as it exposes them to reputational and regulatory risk.

Overall, the results show that the relationship between firm characteristics and tax aggressiveness is shaped by the interaction of agency-cost incentives and institutional-norms pressures (Lynch, 2022; Antonio & Giliard, 2022). While financial goals, complexity, and tax-professional involvement show weak or context-dependent effects, industry norms and competition emerge as the most robust determinants. The findings refine existing literature by demonstrating that tax-aggressive behaviour in Nigerian manufacturing firms is not uniform across firm-level attributes, and they underscore the need for stronger sector-level compliance standards and stricter enforcement if the government is to reduce revenue-eroding tax-aggressive practices in this sector.

## 5. Summary of Findings, Recommendations, and Policy Implications

### 5.1 Summary of findings

This study examines how firm characteristics ie firm financial goals, global operations, tax professionals, firm complexity, industry norms, and firm competition affect tax aggressiveness in listed manufacturing firms in Nigeria over the period 2014–2024. The results show that not all firm-level attributes exert a strong or consistent effect on the effective tax rate (ETR), the proxy for tax aggressiveness. *Firm financial goals, firm complexity, and tax professionals* are largely insignificant in the regression models, even though some correlations at the bivariate level are positive and statistically significant. This suggests that profitability targets, size-related complexity, and the use of professional tax advisors do not, on average, systematically curb tax-aggressive behaviour once other firm- and time-specific controls are included.

In contrast, *industry norms* and *firm competition* emerge as the most robust determinants of tax aggressiveness. Firms operating in sub-sectors with stronger compliance norms are associated with higher effective tax rates, implying that industry-level expectations and reputational pressures can reduce tax aggressiveness. At the same time, firms in more competitive environments tend to exhibit lower ETRs, indicating that intense product-market competition may incentivise aggressive tax planning as firms seek to preserve margins and market share. The negative and modest effect of leverage further suggests that debt-intensive firms may engage in marginally more aggressive tax planning, though the effect is not statistically robust.

Overall, the findings indicate that the relationship between firm characteristics and tax aggressiveness is shaped by the interaction of agency-cost incentives and institutional-norms constraints. Managers may pursue aggressive strategies to enhance profitability and safeguard competitive position, especially under weak oversight, while sector-level norms and peer

expectations can act as countervailing forces. These patterns refine existing literature by highlighting the context-dependence of tax-aggressive behaviour in Nigerian manufacturing firms and by underscoring the importance of both firm-level and industry-level factors in shaping corporate tax outcomes.

## **5.2 Recommendations**

Drawing on the results, the following recommendations can be made for corporate practice and governance:

- Corporate boards should strengthen governance oversight of tax strategy, ensuring that management's pursuit of tax minimisation remains within legal, ethical, and risk-management boundaries. Boards should require clear reporting on tax-planning activities, including cross-border structures and transfer-pricing arrangements.
- Firms should improve tax-disclosure practices, by providing more detailed information on effective tax rates, deferred tax items, and the role of external tax professionals in annual reports and investor communications. Greater transparency will enable stakeholders to assess tax-related risks and reward responsible behaviour.
- Manufacturing firms in highly competitive markets should balance the incentive to reduce tax burdens with the need to maintain reputational credibility and long-term value creation. Over-reliance on aggressive tax planning may expose firms to regulatory scrutiny and investor backlash that could undermine market position.
- Professional tax advisors, especially from reputable firms, should consciously align their services with public-interest expectations, avoiding the design of highly aggressive tax-shelter structures that erode government revenue. Professional bodies should strengthen ethical guidelines and training on tax-compliance and public-interest duties.

## **5.3 Policy implications**

The findings also carry important policy implications for Nigerian tax authorities and regulators:

- The National Revenue Service (NRS) should strengthen sector-level monitoring of tax compliance, focusing on sub-sectors where competition is high and tax aggressiveness appears most pronounced. Sector-specific risk-assessment frameworks and targeted audits can deter aggressive planning without unduly burdening compliant firms.
- The Nigerian Exchange Group and related regulators should encourage or require listed manufacturing firms to disclose industry-specific tax-risk factors, including the extent of international operations, transfer-pricing exposure, and tax-haven activities. Standardised tax-disclosure templates can enhance comparability and market-based discipline.
- Government should promote industry-level compliance norms by collaborating with professional associations, industry groups, and multinational operators to establish sector-specific codes of conduct that discourage aggressive tax behaviour. Peer monitoring and public recognition of compliant firms can reinforce these norms.
- Policymakers should review the incentive structure associated with leverage and competition, including the treatment of interest-tax shields and the fiscal environment facing export-oriented and import-competing firms. Where tax-law provisions inadvertently encourage aggressive planning, clarification or re-design can align tax policy with broader development objectives.
- Finally, the government should invest in capacity-building for tax administration, including data analytics, digital reporting systems, and skills development for tax officers.

Stronger enforcement capacity will enhance the disciplining effect of institutional-norms constraints and reduce the attractiveness of tax aggressiveness as a competitive strategy.

Integrating these measures into corporate practice and public-sector reforms, Nigerian stakeholders can help reduce revenue-draining tax-aggressive practices in the manufacturing sector and strengthen the country's fiscal capacity to address insecurity, infrastructure deficits, and other pressing development challenges. This study makes important contributions to the literature on corporate tax aggressiveness in Nigeria despite several limitations. The sample is confined to listed manufacturing firms on the Nigerian Exchange Group (2014–2024), limiting generalisability to other sectors and ownership structures, and the analysis relies on secondary financial-statement data that may not fully capture off-balance-sheet strategies or qualitative decision-making processes. The effective tax rate (ETR) proxy may also under-reflect certain aggressive practices, and the findings are shaped by a specific macroeconomic and policy context. Nonetheless, the research advances knowledge by empirically linking six firm-characteristic channels—financial goals, global operations, tax professionals, firm complexity, industry norms, and firm competition—to tax aggressiveness in Nigerian manufacturing firms, and by explicitly anchoring the results in agency-cost and institutional-norms theory. The study highlights the critical role of sector-level norms and product-market competition, and it suggests that firm-level financial-goal and complexity effects are more context-dependent. Future work should extend the analysis to non-listed firms and other sectors, adopt mixed-methods designs, and examine the impact of evolving tax-administration reforms, digital-reporting systems, and global anti-base-erosion initiatives on firm-level tax behaviour, as well as the long-term consequences of tax aggressiveness for firm value, investor confidence, and the broader social contract.

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APPENDICES

Table 1: Correlation Analysis

Correlation t-Statistic Probability	ETR	FFG	GOP	TXP	FMC	IDN	FRC	LEV
ETR	1.000000							
	-----							
	-----							
FFG	0.0856	1.0000						
	2.0321	-----						
	0.0426	-----						
GOP	-0.0167	0.1418	1.0000					
	-0.3938	3.3866	-----					
	0.6939	0.0008	-----					
TXP	0.3744	0.3858	0.3372	1.0000				
	9.5470	9.8869	8.4682	-----				
	0.0000	0.0000	0.0000	-----				
FMC	0.3733	-0.1697	-0.0942	-0.5548	1.0000			
	9.5142	-4.0715	-2.2380	-15.768	-----			
	0.0000	0.0001	0.0256	0.0000	-----			
IDN	-0.3105	-0.0752	-0.1030	0.2924	-0.4955	1.0000		
	-7.7217	-1.7838	-2.4470	7.2282	-13.4877	-----		
	0.0000	0.0750	0.0147	0.0000	0.0000	-----		
FRC	-0.2891	-0.2285	0.4368	-0.1352	0.2565	-0.8024	1.0000	
	7.1392	-5.5482	11.4809	-3.2269	6.2756	-31.7845	-----	
	0.0000	0.0000	0.0000	0.0013	0.0000	0.0000	-----	
LEV	-0.3966	-0.2479	0.2512	-0.2745	0.2137	0.3998	-0.2636	1.0000
	-10.2157	-6.0505	6.13	-6.7504	5.1716	10.3112	-6.4614	-----
			64					
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Source: Authors compilation (2025) as extracted from E-views 10 output.