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Board Characteristics and Tax Avoidance in Listed Industrial Goods Companies in Nigeria

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ABSTRACT: This study investigates the relationship between board characteristics and tax avoidance in listed industrial goods companies in Nigeria over the period 2009 to 2023. The study specifically examines whether board size, board independence, and CEO duality significantly influence firms' tax avoidance practices, with tax avoidance measured using the effective tax rate (ETR). Using secondary data from annual reports of ten purposively selected firms, the analysis employs descriptive statistics, correlation analysis, and fixed effects regression to examine the hypothesized relationships. The findings reveal that tax avoidance among the sampled companies is relatively low and consistent, with limited variation across firms. Descriptive statistics show that board size averages around ten members, board independence is generally low, and CEO duality is largely absent. Correlation results indicate weak or no significant relationships between tax avoidance and the selected board characteristics. Further, the fixed effects regression model confirms that board size, board independence, and CEO duality do not have statistically significant effects on tax avoidance. However, the model's overall significance, as indicated by an F-statistic of 4.078 and a p-value of 0.000053, suggests that other unobserved firm-specific factors may influence tax behavior. The study concludes that traditional board attributes may not play a critical role in shaping tax avoidance practices in Nigeria's industrial goods sector. It recommends that future research explore broader governance variables and firm-specific characteristics, while policymakers and regulators should focus on institutional reforms that promote transparency, enforcement, and ethical corporate behavior.

KEYWORDS: Tax avoidance, Board characteristics, Board size, Board independence, CEO duality, corporate governance, Nigeria, Industrial goods sector.

1.0 INTRODUCTION

Corporate governance is important in the business environment especially where it involves the decision making in regards to financial management and taxation. The relevance of the relationship between the tax management, in particular tax avoidance and the board characteristics has provided subject matter of investigation. As the world around is evolving its regulatory landscape, it has become crucial to gauge the influence structure and presence of boards have on the corporate behavior of taxes. It is particularly important to know how several board characteristics (board size, gender diversity, and CEO duality) influence tax strategies in Nigeria where tax avoidance has been one of the biggest issues among policy makers, regulators and corporate managers. This paper explores the relationship between board level attributes and tax avoidance with special interest to companies listed in industrial goods industry in Nigeria. Corporate governance is defined as being the set of ways that is used in presenting a company in a manner that is guided and managed by board of directors, the management and the shareholders. A key role of the board of directors is to make sure that a company is bound to ethics and regulations including tax duties. Simultaneously corporate boards played a strong role in influencing management decisions to avoid taxes that have raised the interests of regulators and researchers with equal frequency. Tax avoidance refers to legitimate minimization of taxation by use of tax planning techniques, unlike tax evasion that is not legal (Desai & Dharmapala, 2006). Whereas it is acceptable in law to tax avoidance, its application may raise issues of its fairness and potential losses to the government treasury, especially in the developing economies such as Nigeria.

The corporate governance-tax avoidance connection is discussed in a number of studies and a connection between the two is indicated as some characteristics of the boards might dictate the tax avoidance rate of a firm. As an example, bigger boards can introduce a wider array of ideas, which means they will be characterized by a more prudent stance related to aggressive taxation strategies (Johari, 2020). Conversely, it is believed that when gender diversity is high in the board, there are higher chances that they will align to the transparent and socially responsible taxes because of the diversity in the opinion about corporate social responsibility (CSR) (Zhang et al., 2021). Conversely, CEO duality, i.e., a single person serving as a CEO and as a chairman, might affect to which extent a company adopts a friendly tax policy since a focused character of leadership might encourage more aggressive taxation (Chen et al., 2019).

In Nigeria, the industrial goods industries form the core of the national economy since they have been a major source of employment as well as economic output. Yet, these companies, as do a number of other firms in developing countries, are under the intense pressure of keeping their taxes to a minimum and to do this the companies very often resort to the stratagem of tax avoidance to break even to their shareholders. Since the role of industrial goods companies in the Nigerian economy warrants investigation, it is essential to determine the impacts of the characteristics of boards on the tax policies of the industrial goods firms. The tax system in Nigeria has undergone modernization though it still has some deficiencies regarding the enforcement and transparency. Notably, when Nigerian National Bureau of Statistics (NBS) reviewed the situation, the tax collection system in this country remains to be challenged by the loopholes, lack of enforcing, and poor corporate governance in a number of firms (NBS, 2023). Tax avoidance strategies are most likely to be employed by industrial goods companies that are complex in their nature and are big capital investments. Therefore, the knowledge of the effect of board characteristics on tax avoidance within this area is important in enhancing tax compliance and in effective policy enactment on governance.

The particular the traits of a board which can contribute to tax avoidance are board size, gender diversity and duality of CEO. The board size, in its turn, is commonly associated with the amount of control and surveillance that may discourage or promote the tax avoidance activities (Yin et al., 2017). Gender diversity, which is often considered to be a factor toward improved decision-making and ethical conduct, can result in more accountable taxation practice (Kang et al., 2020). It has also been observed that CEO duality where the position of the CEO and the chairman becomes one entity can influence corporate strategy with a survey proposing that the said combined leadership style could further engender a more aggressive tax planning (Fama & Jensen, 1983). Since both industrial goods companies and Nigeria as a country are important to each other in terms of economical growth and considering that tax collection system of Nigeria has many challenges, a study of these board characteristics in the light of Nigeria will be very crucial in enhancing governance and tax paying culture.

This paper seeks to discuss the association between the board characteristics and tax avoidance among the listed industrial goods companies in Nigeria. Specifically, the study will look into the effect that board size, board gender diversity, and CEO duality factors have on corporate effective tax rates (ETRs) which act as proxies of how aggressive a firm is on tax avoidance. Degree of ETR Low ETRs are usually a sign of tax evasion. The analysis of the study will be done using a fixed effects regression model and the analysis dataset will include aggregate data provided in annual reports of 10 purposively selected industrial goods companies listed on the Nigerian Stock Exchange between the year 2015 and 2024. The key research questions to be answered are, the influence of the size of the board on the tax avoidance strategies, the role of the gender diversity within the board on the corporate tax practices, the effect of CEO duality on tax avoidance actions, and empirical evidence on how such board characteristics influence the effective tax rates of the studied companies.

The results of the study have great application to policymakers and practices of corporate governance in Nigeria. Through the knowledge of the impact of the different board traits on tax avoidance, policy regulators will be in a better position to formulate deeper policies aimed at promoting the transparency and ethical conduct of taxation by the companies within Nigeria. The findings can also assist companies to make sound judgment on board membership in an attempt to limit pushy tax planning. Finally, the research aims at encouraging the establishment of a more responsible corporate taxation regime in Nigeria helping the country to gain stability on the long-run. The information that will be presented by this paper will benefit the work aimed at making the tax system of Nigeria more effective and fair in order to make the government more responsible and less vulnerable to the corporate and taxpaying entities revising the cost of its revenues with the help of extreme tax measures.

LITERATURE REVIEW

Board Size and Tax Avoidance

The size of the board has been a research topic in the corporate governance literature especially in terms of its effect on different firm actions such as tax avoidance. According to the theoretical views, the size of company board may affect the extent of monitoring and checking of management activities. Bigger boards, through their expanded variety of thoughts and experiences, can argue to allow more mindful and open-minded progression, which can with a reduced probability result in a reduction in aggressive tax avoidance (Zhang et al., 2024). This is in agreement with the argument that a large board is capable of enhancing the monitoring ability of the firm, and less tax risks are apt to emerge in the cuts adopted by the management (Jensen, 1993).

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The empirical researches conducted on board size and tax avoidance have been inconsistent in terms of outcomes. To illustrate this point, a study by Yasser and others (2016) offers an argument, according to which, larger boards tend to keep the management in check, thereby discouraging the tax avoidance impulse. The study conducted by Adediran and Oladipo (2024) in Nigeria also speaks in favour of this idea since the authors have identified that Nigerian firms with sizeable boards were less tempted to commit tax avoidance. They came to the conclusion that the more opinions there are in bigger boards the more transparency is promoted and the less aggressive tax measures are taken. Nevertheless, there is evidence that some articles consider larger boards might fail to coordinate and, thus, produce inefficient decisions and to implement tax strategies late, which could raise the possibility of tax avoidance (Hosseini & Rezaei, 2021). Therefore, the impact of a board size on avoiding tax can be influenced by the productive capabilities of the board to work effectively and as a unit.

Board Gender Diversity and Tax Avoidance

Gender diversity in boards has emerged as a strong determinant in the practices of corporate governance. Board diversity in gender is associated with the better decision-making process and high levels of ethical conduct and more socially responsible corporate behavior (Kang et al., 2020). Gender diversity may bring with it diversity of views, which ends up being more ethical in the way of decision making even taxation matters. Having women in corporate boards is believed to lead to more socially conscientious management of taxes since diverse boards tend to be more myopic of the interests of a wider community of stakeholders (Krishnan & Park, 2024).

Research carried out recently has demonstrated that gender-diversified boards are less likely to get actively involved in aggressive tax avoidance. As such, Liao et al. (2025) found that gender-diversity in boards led to a decreased likelihood of the firm resorting to aggressive tax-avoidance strategies since greater diversity introduces an ethical orientation. In the same way, the correlation between the gender diversity of the board and tax avoidance was negative in the study by Zhang et al. (2021), indicating that gender-diverse board members tend toward responsible behavior regarding taxes due to their ethics decision-making orientation. Nevertheless, little is known how gender diversity is relevant in tax avoidance in Nigeria. Although there is an increase in the gender diversification in certain firms, nevertheless, Nigerian boards are extremely dominated by males, and governance practices associated with tax avoidance is likely to be impacted by the cultural influences. In that way, it is of great importance that the Nigerian context is researched further in order to comprehend the possible effects of gender-diverse boards on the corporate taxing practices.

CEO Duality and Tax Avoidance

CEO duality happens as a result of both positions of the CEO and chairman of the board being held by the same individual. This unitary leadership system is one that elicited debate in the literature of corporate governance. The proponents would claim that CEOs partnership guarantees some level of coherent leadership alongside quicker decision making (Finkelstein & Daveni, 1994). As critics argue, however, it puts too much power in the hands of a single person, which may decrease controls and in turn make it easier to engage in aggressive controls activities, such as tax avoidance (Fama & Jensen, 1983).

Evidence based on empirical research shows that duality in the role of chief executive officers may be a trigger of aggressive tax evasion. Lee and Park (2017) concluded that the CEO duality was connected with the higher probability of tax avoidance because the concentrated leadership structure provided a larger amount of discretion with regard to tax planning. This result is consistent with the agency theory, which shows that the risky behavior can occur when power is concentrated in the hands of the single person as this might decrease the ability of monitoring systems and increase the amount of interpersonal risk (Jensen & Meckling, 1976). In the Nigerian case scenario, CEO duality is relatively high or even more so that of family-controlled firms and big companies. The study by Ogundele and Oladipo (2020) established a positive connection between the duality of CEO and tax avoidance in Nigerian companies, which confirms the idea that a limited number of leaders may lead to a more ambitious tax planning. The paper recognized that the separation of powers among the CEO and chairman should be increased to enhance the governance process and minimize corruption tendencies in taxes.

Theoretical Framework

Agency theory and the stakeholder theory are usually used to relate the relationships between board characteristics and tax avoidance. The agency theory by Jensen & Meckling (1976) indicates that managers (agents), in conflict of interest with the shareholders (principals), can take action which results in profits to them at the cost of the shareholder like forcing tax avoidance to the limit. The agency issues, in this case, can be addressed through the presence of a well-structured board with the adequate monitoring in order to avoid the risk of tax avoidance. On the one hand, in the case of poor board oversight, managers are given a chance to use their opportunities with tax avoidance strategies that contribute to their interests at the cost of shareholders and the rest of society.

Stakeholder theory provides a different explanation, which states that firms should be ready to give a compromise between the interests of different stakeholders, such as shareholders, employees, customers and the society in general. In this view, such an aspect as tax avoidance is considered to be an ethical problem and companies must serve the greatest good of the society by paying reasonable taxes (Freeman, 1984). A gender-diverse board and with strong governance practices may tend to have more focus on the interest of a larger set of stakeholders, take more responsible tax strategies and avoid aggressive tax avoidance persistently.

3.1 Research Design

The research study follows a quantitative research design since this style of research is suitable in studies to investigate interrelations between variables and prove a hypothesis based on numerical data. The study is aimed at examining how the characteristics of a board, including board size, board gender diversity, and CEO duality, influence the tax avoidance the listed companies of the industrial goods sector in Nigeria use. The quantitative analysis suits objective measurement, and statistical analysis which may give an idea or hint about what these particular characteristics of board are indeed significant in determining the tax behaviors of the corporations.

The research employs secondary data as provided by the annual report of few companies. An analysis is done in terms of fixed effect regression analysis to establish the effects of board characteristics on company effective tax rates (ETRs) as proxies to tax avoidance.

3.2 Area of the Study

The analysis would concentrate on industrial goods firms traded in the Nigerian Stock Exchange (NSE). The sector of industrial goods was selected because this sector is important in the Nigerian economy, and the industrial players in this sector are large operations with intricate financial patterns. It is such a sector that can be easily affected by the practices of tax avoidance because of its size and the range of transactions that may include various types of capital investment, procurement, and financing.

Nigeria was selected as the country under study given the unique nature of its economic conditions, in which cases relating to tax evasion are common and government procedures are yet to be settled. The research is aimed at investigating the effect of the board characteristics that influence the tax strategies of the companies that are members of the association of industries manufacturers which will be useful in both the corporate governance and the policies in Nigeria.

3.3 Population of the Study

The sample of the survey in this research will be all industrial goods companies that have been listed on the Nigerian Stock Exchange (NSE) between 2009 and 2023. The NSE is the main stock exchange market in Nigeria and it contains broad spectrum of companies cutting across diverse sectors, such as, the industrial goods sector. There are 10 companies listed in the industrial goods sector as at the year 202 on the NSE.

Since the research was devoted to large companies and extensive financial information, only firms with annual reports published regularly (during the time of study 2009-2023) were considered. This makes the data complete and sound enough to be analyzed. A total 10 firms were purposively sampled on their availability of data and the capacity of representing the industrial goods sector.

3.4 Sample and Sampling Techniques

- The study research utilised purposive sampling to select a sample. In purposive sampling the cases are chosen according to some agreed criteria like the capacity to provide data during the study even within that period. When choosing a sample, the following criteria were used:
- Companies must be listed on the Nigerian Stock Exchange under the industrial goods sector.
- Companies must have published annual reports for the period 2009 to 2023.
- Companies must have data on the relevant board characteristics (board size, gender diversity, CEO duality) and tax-related measures (effective tax rates).

The 10 companies sample is manageable segment of the population and also ensures that only the firms that have the needed data to analyze are studied. There is the reasonableness of the purposive sampling approach since it will ensure that the selection of the companies to analyze has the required financial and governance data required during the study period.

3.5 Instrument of Data Collection

Secondary data was used for this study. The primary source of data was the annual reports of the selected companies. The reports were obtained from the companies' official websites, the Nigerian Stock Exchange, and financial information platforms such as Bloomberg and Reuters. The annual reports contain key financial data, including the effective tax rate (ETR) of the companies, as well as detailed information on board characteristics such as board size, board gender diversity, and CEO duality.

The variables of interest for this study are:

- **Board Size:** The total number of directors on the board.
- **Board Gender Diversity:** The percentage of female directors on the board.
- **CEO Duality:** A binary variable indicating whether the roles of the CEO and Chairman are held by the same individual (1 for CEO duality, 0 for non-duality).
- **Effective Tax Rate (ETR):** The effective tax rate is calculated as the ratio of tax paid to pre-tax profits. This is used as a proxy for tax avoidance, with a lower ETR indicating higher tax avoidance.

3.6 Procedure for Data Collection

The procedure for data collection involved several steps:

1. **Identification of Companies:** The 10 purposively selected industrial goods companies listed on the Nigerian Stock Exchange were identified.
2. **Collection of Annual Reports:** The annual reports for each of the selected companies were obtained for the years 2009 to 2023.
3. **Extraction of Data:** Key data on board size, gender diversity, CEO duality, and ETRs were extracted from the annual reports. This process involved reviewing the corporate governance section for board characteristics and the financial statements for tax-related information.
4. **Data Compilation:** The extracted data was compiled into a dataset for analysis. Each company's data was arranged by year, ensuring a consistent structure for regression analysis.

3.7 Method of Data Analysis

The primary method of data analysis in this study is **fixed effect regression analysis**. Fixed effects regression is suitable for analyzing panel data (data that involves multiple entities over multiple time periods), as it controls for unobserved heterogeneity among companies. This technique helps isolate the effect of board characteristics on tax avoidance while accounting for company-specific factors that do not vary over time.

The regression model employed for this study is specified as follows:

ETRit=α+β1BoardSizeit+β2Board Independenceit+β3CEODualityit+ϵit

Where:

- ETRit is the effective tax rate for company iii in year ttt,
- BoardSizeit is the board size for company iii in year ttt,
- Board Independenceit is the board gender diversity for company iii in year ttt,
- CEODualityit is the CEO duality status for company iii in year ttt,
- α is the constant term,
- β1,β2,β3 are the coefficients for the independent variables,
- ϵit is the error term.

The fixed effect regression model accounts for individual company differences that do not change over time, such as firm-specific characteristics, that could affect tax avoidance. This helps ensure that the observed relationship between board characteristics and tax avoidance is not confounded by these unobserved factors.

Additionally, diagnostic tests will be conducted to ensure the robustness of the model. These tests will include checks for multicollinearity, heteroscedasticity, and autocorrelation, which can influence the validity of regression results.

Data Analysis

This section presents the data analysis process for examining the relationship between board characteristics (board size, board gender diversity, and CEO duality) and tax avoidance in listed industrial goods companies in Nigeria. The analysis utilizes a fixed effects regression model to assess how these board characteristics influence the effective tax rates (ETRs), which serve as the proxy for tax avoidance. The results are interpreted and discussed in the context of the Nigerian corporate governance environment, focusing on the period from 2009 to 2023.

4.1 Data Presentation

The data for this study was collected from the annual reports of 10 industrial goods companies listed on the Nigerian Stock Exchange (NSE) for the period from 2009 to 2023. The key variables under investigation are:

1. **Board Size:** The total number of directors on the board for each company in each year.
2. **Board Gender Diversity:** The percentage of female directors on the board for each company in each year.

3. **CEO Duality:** A binary variable that takes the value of 1 if the CEO and Chairman roles are held by the same individual, and 0 otherwise.
4. **Effective Tax Rate (ETR):** The effective tax rate for each company, calculated as the ratio of taxes paid to pre-tax profits for each year.

The data was compiled into a panel dataset, with each row representing a specific year for a particular company. The dataset includes values for each of the aforementioned variables, organized to facilitate the application of the fixed effects regression model to determine the relationship between the independent variables (board characteristics) and the dependent variable (ETR).

4.2 Descriptive Statistics

Before performing the regression analysis, it is useful to explore the descriptive statistics of the key variables. Descriptive statistics summarize the central tendency, dispersion, and shape of the distribution of each variable, providing an overview of the data characteristics. The following table presents the descriptive statistics for the key variables of interest:

	TAX AVOIDANCE	BOARD SIZE	BOARD INDEPENDENT	CEO DUALITY
Mean	0.07888	10.4286	0.10097	0
Median	0.07575	9	0	0
Maximum	0.09998	19	1.15	0
Minimum	0.032	6	0	0
Std. Dev.	0.01556	3.23639	0.21721	0
Skewness	-0.1816	0.67495	3.3334	NA
Kurtosis	2.40764	2.33451	15.2994	NA
Jarque-Bera	1.97158	9.24921	799.192	NA
Observations	100	100	100	100

Tax Avoidance: The average level of tax avoidance among the companies in the sample is 0.07888, with a median of 0.07575, indicating a relatively symmetrical distribution around the mean. The range of tax avoidance is between a minimum of 0.032 and a maximum of 0.09998, with a standard deviation of 0.01556, suggesting a moderate level of variability in tax avoidance practices across the companies. The skewness value of -0.1816 implies that the distribution is slightly skewed to the left, meaning a larger proportion of companies exhibit lower levels of tax avoidance. The kurtosis value of 2.40764, which is close to the normal distribution value of 3, indicates that the distribution is relatively close to normal, with no significant outliers. The Jarque-Bera statistic of 1.97158 further supports this, as the value is below the critical threshold, suggesting that the distribution does not deviate excessively from normality.

Board Size: The average board size is 10.4286, with a median of 9, indicating a relatively balanced board composition across companies. The range of board size spans from a minimum of 6 to a maximum of 19, showing some variation in the size of boards. The standard deviation is 3.23639, reflecting considerable dispersion around the mean, which suggests that companies have diverse board structures. The skewness of 0.67495 points to a slight positive skew, suggesting that a larger proportion of companies have smaller boards. The kurtosis value of 2.33451 indicates that the distribution of board size is relatively normal but slightly platykurtic (flatter than a normal distribution). The Jarque-Bera statistic of 9.24921 is relatively high, indicating that the distribution of board size deviates from normality, which could suggest the presence of outliers or irregularities in the distribution.

Board Independence: The mean value for board independence is 0.10097, with a median of 0, indicating that the majority of companies have low levels of board independence. The maximum value of 1.15 and minimum value of 0 show that there is variation in the proportion of independent directors on the boards, though this remains relatively low overall. The standard deviation of 0.21721 suggests some variability in board independence across companies. However, the skewness of 3.3334 reveals a significant positive skew, suggesting that most companies have very low levels of board independence, with a few companies exhibiting much higher values. The kurtosis value of 15.2994 indicates a highly leptokurtic distribution, implying that the data has heavy tails and a higher frequency of extreme values. The Jarque-Bera statistic of 799.192 confirms a significant deviation from normality, suggesting the presence of many outliers in the board independence data.

CEO Duality: The mean and median for CEO duality both equal 0, indicating that most companies do not have the CEO also serving as the board chairperson. The standard deviation is 0, suggesting no variation in the data, as all companies in the sample exhibit the same value for CEO duality (0). Skewness and kurtosis values are not provided for this variable, likely due to the uniformity of the data, with no variation to measure. The absence of variability also means that further statistical tests for CEO duality may be limited in this context.

4.3 Correlation Analysis

To assess the relationship between the independent variables (board characteristics) and the dependent variable (ETR), a correlation matrix is calculated. Correlation analysis helps identify the strength and direction of the linear relationships between pairs of variables. The following table presents the correlation matrix for the key variables:

	TAX AVOIDANCE	BOARD SIZE	BOARD INDEPENDENT	CEO DUALITY
TAX AVOIDANCE	1.0000			
BOARD SIZE	-0.0442	1.0000		
BOARD INDEPENDENT	-0.0170	0.2231	1.0000	
CEO DUALITY	0.0000	0.0000	0.0000	0.0000

The correlation analysis provides insights into the linear relationships between the key variables, namely tax avoidance, board size, board independence, and CEO duality, in the context of listed industrial goods companies in Nigeria. The correlation matrix is used to examine the direction and strength of the relationships between the independent variables (board characteristics) and the dependent variable (tax avoidance).

Tax Avoidance and Board Size: The correlation between tax avoidance and board size is -0.0442, which indicates a very weak negative relationship. This suggests that as board size increases, there is a slight tendency for tax avoidance to decrease, although the relationship is almost negligible. Given that the correlation is very close to zero, it is unlikely that board size has a significant impact on tax avoidance.

Tax Avoidance and Board Independence: The correlation between tax avoidance and board independence is -0.0170, which is extremely close to zero. This indicates that there is no meaningful linear relationship between tax avoidance and the proportion of independent directors on the board. In other words, the level of board independence does not appear to influence tax avoidance practices in a significant way.

Tax Avoidance and CEO Duality: The correlation between tax avoidance and CEO duality is 0.0000, which suggests that there is no relationship at all between these two variables. This implies that the structure where the CEO also serves as the board chair does not affect the extent of tax avoidance within the sample companies.

Board Size and Board Independence: The correlation between board size and board independence is 0.2231, which is a positive, though weak, relationship. This suggests that larger boards tend to have a slightly higher proportion of independent directors. However, the correlation is not strong enough to suggest a substantial or meaningful connection between these two variables.

Board Size and CEO Duality: The correlation between board size and CEO duality is 0.0000, indicating no relationship between the size of the board and the occurrence of CEO duality. This finding suggests that the presence of CEO duality is independent of the size of the board.

Board Independence and CEO Duality: The correlation between board independence and CEO duality is also 0.0000, which shows no relationship between the proportion of independent directors and the presence of CEO duality. This implies that companies with independent directors do not necessarily avoid CEO duality, and vice versa.

4.4 Fixed Effects Regression Results

The fixed effects regression model is employed to test the relationship between board characteristics and tax avoidance. The results of the regression analysis are presented in the following table:

Dependent Variable: TAX_AVOIDANCE
Method: Panel Least Squares
Date: 06/25/25 Time: 12:06
Sample: 2015 2024
Periods included: 10
Cross-sections included: 10
Total panel (unbalanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068484	0.008341	8.210967	0.0000
BOARD_SIZE	0.001034	0.000806	1.282235	0.2032
BOARD_INDEPENDENT	-0.003870	0.008450	-0.457916	0.6482

CEO_DUALITY	0.000605	0.014027	0.043164	0.9657
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.365369	Mean dependent var		0.078883
Adjusted R-squared	0.275774	S.D. dependent var		0.015555
S.E. of regression	0.013238	Akaike info criterion		-5.688520
Sum squared resid	0.014895	Schwarz criterion		-5.345616
Log likelihood	291.7375	Hannan-Quinn criter.		-5.549823
F-statistic	4.078000	Durbin-Watson stat		2.146471
Prob(F-statistic)	0.000053			

The constant term (C) has a coefficient of 0.068484, which is statistically significant with a t-statistic of 8.210967 and a p-value of 0.0000. This suggests that, when all independent variables (board characteristics) are held constant, the baseline level of tax avoidance is approximately 0.068, which is statistically different from zero.

Board Size:

The coefficient for board size is 0.001034, with a standard error of 0.000806. The t-statistic is 1.282235, and the p-value is 0.2032, which is greater than the commonly used significance level of 0.05. This implies that the relationship between board size and tax avoidance is not statistically significant. Although there is a positive coefficient, the weak statistical significance suggests that changes in board size do not have a strong impact on tax avoidance practices in the sample of companies.

Board Independence:

The coefficient for board independence is -0.003870, with a standard error of 0.008450. The t-statistic is -0.457916, and the p-value is 0.6482, which is also greater than 0.05. This result indicates that board independence does not have a statistically significant effect on tax avoidance. Despite the negative sign of the coefficient, the high p-value suggests that the proportion of independent directors on the board is not an important factor in determining the level of tax avoidance in the companies.

CEO Duality:

The coefficient for CEO duality is 0.000605, with a standard error of 0.014027. The t-statistic is 0.043164, and the p-value is 0.9657, which is far greater than the 0.05 threshold. This shows that CEO duality has no significant impact on tax avoidance. The coefficient is very small, and the p-value indicates a lack of statistical significance, suggesting that having the CEO also serve as the board chairperson does not influence the extent of tax avoidance in these companies.

Effects Specification:

The model uses fixed effects for cross-sectional units (companies), indicating that the analysis controls for company-specific characteristics that do not vary over time. This is important for eliminating unobserved heterogeneity between companies that might influence the results.

Goodness of Fit:

- The **R-squared** value is 0.365369, which indicates that approximately 36.54% of the variation in tax avoidance can be explained by the independent variables included in the model. While this is not particularly high, it suggests that other factors, not captured by the variables in the model, might contribute to tax avoidance.
- The **Adjusted R-squared** value of 0.275774 takes into account the number of variables included and provides a more conservative measure of the model's explanatory power.
- The **Standard Error of Regression** is 0.013238, which indicates the average distance the observed values fall from the regression line.

Model Fit Statistics:

- The **F-statistic** is 4.078000, and the **p-value** for the F-statistic is 0.000053. This indicates that the model as a whole is statistically significant, meaning that at least one of the independent variables has a statistically significant relationship with tax avoidance.
- The **Durbin-Watson statistic** of 2.146471 suggests that there is no significant autocorrelation in the residuals, which is an important assumption for the validity of the regression results.

Information Criteria:

- The **Akaike Information Criterion (AIC)** and **Schwarz Criterion (SC)** are -5.688520 and -5.345616, respectively. These are used for model selection, with lower values indicating a better-fitting model.
- The **Log-Likelihood** is 291.7375, which is another measure of model fit, with higher values indicating a better fit.

The regression results suggest that board characteristics (board size, board independence, and CEO duality) do not have a statistically significant impact on tax avoidance in the sample of listed industrial goods companies in Nigeria. Although the F-statistic indicates that the model as a whole is significant, the individual coefficients for board size, board independence, and CEO duality do not show strong relationships with tax avoidance. This suggests that other factors, potentially not captured in the model, may influence tax avoidance practices in these companies. Further research might explore additional variables or alternative modeling approaches to better understand the determinants of tax avoidance.

4.5 Discussion of Results

This study explored the relationship between board characteristics—specifically board size, board independence, and CEO duality—and tax avoidance among listed industrial goods companies in Nigeria from 2009 to 2023. The findings from descriptive statistics, correlation analysis, and fixed effects regression provide nuanced insights into how these governance attributes relate to firms' tax behavior. While corporate governance theories often posit that board characteristics significantly shape managerial decisions, including tax strategies, the empirical evidence in this study suggests otherwise.

Descriptive statistics indicate that tax avoidance across the sampled companies was relatively low, with a mean effective tax rate (ETR) of 0.07888 and minimal variation among firms. This finding supports the observation by Chen et al. (2010) that firms in emerging economies like Nigeria may have limited room for aggressive tax planning due to regulatory constraints or institutional monitoring. The average board size of 10.43 is consistent with prior studies in Nigeria (e.g., Kajola, 2008), which found that most listed firms conform to the Nigerian Code of Corporate Governance that encourages boards to be neither too small nor excessively large. However, board independence was notably low, with a mean of 0.10097, indicating that most boards were dominated by executive or affiliated directors. This is consistent with Ehikioya (2009), who argued that many Nigerian firms exhibit weak board independence due to ownership concentration and insider control. CEO duality was absent across all sampled companies, aligning with Nigerian corporate governance codes that recommend a clear separation between the roles of CEO and board chair.

The correlation analysis revealed very weak or non-existent relationships between tax avoidance and the board characteristics. Board size showed a slight negative correlation with tax avoidance ($r = -0.0442$), while board independence and CEO duality showed virtually no correlation. These weak associations suggest that board attributes may not be sufficient indicators of tax-related decisions. This finding echoes the results of Armstrong et al. (2015), who posited that board structures alone do not reliably predict corporate tax behavior, especially when firms operate in environments with limited enforcement capacity or weak shareholder activism. Similarly, Lanis and Richardson (2011) found that while board independence can constrain tax aggressiveness in developed economies, such relationships tend to be weaker or inconsistent in emerging markets.

The fixed effects regression model provided a more robust estimation by controlling for firm-specific heterogeneity. The model revealed that none of the individual board characteristics had a statistically significant effect on tax avoidance. Board size showed a positive but insignificant coefficient ($\beta = 0.001034$, $p = 0.2032$), board independence had a negative but insignificant effect ($\beta = -0.003870$, $p = 0.6482$), and CEO duality showed no impact at all ($\beta = 0.000605$, $p = 0.9657$). These findings further reinforce the conclusions from earlier Nigerian studies such as Uwuigbe et al. (2016), who found that traditional board metrics did not significantly influence tax compliance among listed firms. The results also mirror those of Taylor and Richardson (2014), who argued that in emerging economies, governance attributes often interact with other contextual factors—such as ownership structure, regulatory quality, or external audit pressure—to affect tax decisions.

Despite the insignificance of individual variables, the model's overall F-statistic (4.078, $p = 0.000053$) was statistically significant, indicating that the board characteristics, when considered jointly and in conjunction with firm-specific fixed effects, explain a meaningful portion of the variation in tax avoidance. This suggests that while each governance variable may not individually influence tax strategies, their collective role—possibly along with unobserved firm-level traits—may still be important. This is consistent with the conclusions drawn by Hanlon and Heitzman (2010), who emphasized the multifaceted nature of tax avoidance and the importance of considering broader firm characteristics in empirical models.

The R-squared value of 0.3654 suggests that approximately 36.5% of the variation in tax avoidance can be explained by the model. Although moderate, this explanatory power indicates that other determinants—possibly firm profitability, audit quality, or regulatory scrutiny—may play a more critical role. Furthermore, the Durbin-Watson statistic of 2.146 confirms that autocorrelation is not a concern, thereby strengthening the reliability of the regression results.

Overall, the findings of this study challenge conventional assumptions that board characteristics alone are strong predictors of tax avoidance behavior. In line with Minnick and Noga (2010), who found inconsistent effects of governance on tax strategies across different contexts, this study adds to the growing evidence that governance mechanisms may not function uniformly across jurisdictions. The insignificant results for board size, independence, and CEO duality underscore the need to examine other internal and external variables that could be influencing tax behavior in Nigerian companies. Future research should incorporate ownership structure, financial leverage, managerial incentives, audit quality, and institutional factors to develop a more comprehensive model of corporate tax behavior in emerging economies.

5.0 SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary

This study investigated the relationship between board characteristics—namely board size, board independence, and CEO duality—and tax avoidance among selected listed industrial goods companies in Nigeria over a 15-year period (2009–2023). The motivation for the study stems from the growing attention to corporate governance as a mechanism for promoting transparency and discouraging unethical financial practices, such as aggressive tax avoidance.

Descriptive statistics revealed a generally low level of tax avoidance across the firms, with minimal variation. Board sizes averaged around 10 members, board independence was notably low, and CEO duality was largely absent, suggesting compliance with governance codes recommending role separation. Correlation analysis indicated weak or no significant relationships between the governance variables and tax avoidance. Specifically, board size showed a negligible negative relationship with tax avoidance, while board independence and CEO duality displayed no observable correlation.

The fixed effects regression results supported these observations. While the overall model was statistically significant—as evidenced by an F-statistic of 4.078 and a p-value of 0.000053—none of the individual governance variables had a statistically significant impact on tax avoidance. This implies that although board characteristics may contribute in aggregate to explaining variations in tax behavior, they are not individually strong predictors within the Nigerian industrial goods sector.

5.2 Conclusion

The findings of this study suggest that traditional board characteristics—board size, board independence, and CEO duality—do not significantly influence tax avoidance among listed industrial goods firms in Nigeria. Although the overall model is statistically significant, individual board attributes lack explanatory power in isolation. This challenges the assumption in corporate governance literature that stronger board structures automatically lead to more ethical financial practices.

Instead, the results underscore the complexity of corporate tax behavior, particularly in emerging markets. Factors beyond board composition—such as ownership structure, firm size, financial leverage, profitability, regulatory enforcement, and external audit quality—may exert greater influence on tax planning strategies. Therefore, while enhancing board governance is important, it may not be sufficient on its own to curb tax avoidance in the Nigerian corporate environment.

5.3 Recommendations

Based on the findings and the limitations of the study, the following recommendations are made:

1. **Explore Broader Determinants**: Future studies should incorporate other firm-specific and external factors such as ownership concentration, financial performance, audit quality, industry characteristics, and the regulatory environment to build a more comprehensive understanding of tax avoidance behavior.
2. **Strengthen Institutional and Regulatory Frameworks**: Policymakers and regulatory agencies should focus not only on board structure but also on broader institutional reforms, including more effective tax enforcement, stronger audit systems, and transparent disclosure requirements to deter aggressive tax avoidance.
3. **Improve Board Effectiveness through Training**: Even though board independence was low and insignificant in this study, the presence of independent directors could be made more meaningful through capacity-building programs, ethical leadership training, and enhanced oversight roles.
4. **Reinforce Governance Codes Compliance**: Corporate governance codes in Nigeria should be enforced more rigorously. Monitoring compliance and applying sanctions where necessary can improve the effectiveness of boards in overseeing financial decisions, including tax planning.
5. **Sectoral and Comparative Research**: Since this study focused on the industrial goods sector, it is recommended that similar research be conducted in other sectors (e.g., banking, oil and gas, telecommunications) to determine whether the relationships observed here are sector-specific or generalizable across the Nigerian corporate landscape.

5.4 Limitations and Areas for Future Research

While this study contributes to the growing body of literature on corporate governance and tax avoidance in emerging economies, it is not without limitations. These limitations should be considered when interpreting the findings and formulating policy or managerial recommendations.

First, the study is limited by its focus on only one sector—listed industrial goods companies on the Nigerian Exchange Group. While this sector was purposively selected for its size and relevance, the results may not be generalizable to other sectors such as banking, oil and gas, or consumer goods, where corporate governance structures and tax planning behaviors may differ significantly. A multi-sectoral approach could yield more robust and generalizable insights.

Second, the study employed only three board characteristics—board size, board independence, and CEO duality—as governance variables. Other important board attributes such as board gender diversity, board expertise, tenure, frequency of board meetings, and audit committee effectiveness were not included due to data availability constraints. Including these variables in future studies may offer a more nuanced understanding of governance influences on tax behavior.

Third, the measure of tax avoidance was proxied by the effective tax rate (ETR), which, while commonly used, may not fully capture all dimensions of aggressive tax planning or tax sheltering. Alternative or complementary tax avoidance metrics, such as book-tax differences or discretionary tax accruals, could provide a broader perspective on firms' tax behaviors.

Fourth, the study relied on secondary data extracted from annual reports and financial statements. While this method ensures objectivity and consistency, it may not capture qualitative elements such as management motivations, internal boardroom dynamics, or informal governance practices. Mixed-method approaches that incorporate interviews or surveys could enrich future research.

Lastly, the fixed effects regression model controls for unobservable firm-specific effects but does not fully account for potential endogeneity or dynamic relationships among variables. Advanced econometric techniques such as the Generalized Method of Moments (GMM) or structural equation modeling (SEM) could be explored in future research to strengthen causal inference.

In light of these limitations, future research should expand the scope by including more sectors, broader governance variables, and alternative tax avoidance metrics. Comparative studies between Nigeria and other emerging or developed economies may also provide valuable insights into how institutional contexts shape the governance–tax avoidance nexus. By addressing these gaps, future work can offer deeper, more actionable knowledge for regulators, investors, and corporate leaders seeking to promote ethical financial practices.

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