

# BOARD ATTRIBUTES AND TAX AVOIDANCE OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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## Abstract

*The study examined the effect of board attributes on tax avoidance of listed industrial goods firms in Nigeria. Data for the study were sourced solely from secondary sources extracted from annual reports and accounts of the studied industrial goods firms for the period 2012 to 2022. Panel regression analysis was applied to analyse the data. The study documented that board attributes have varied effects on the tax avoidance of the sampled listed industrial goods firms in Nigeria; where board size and board independence exert positive and insignificant effects on the cash effective tax rate (CETR), while gender diversity and board financial expertise depict negative and significant effects on the CETR. The study recommended that the management of the industrial goods firms should conduct a comprehensive assessment of the board size in relation to the firm's operational complexity and strategic needs and evaluate the effectiveness of board committees and subcommittees in managing tax-related matters. The management should also review the current composition of the board to ensure a substantial number of independent directors and strengthen their roles and influence in strategic tax avoidance decisions. The study also recommended that Industrial goods firms should identify gaps in the current board's financial expertise and consider appointing directors with a strong background in taxation, finance, and accounting. Firms should provide on-going training and development opportunities for board members to enhance their understanding of tax avoidance strategies and implications.*

**Keywords:** Tax avoidance, board size, gender diversity, board independence, financial expertise

## Introduction

Taxes are major source of revenue for governments all over the world. However, for companies, taxes are significant costs that reduce the wealth of shareholders without immediate compensation. In addition, tax is a cost to firms and their shareholders, and as a result, there is a reduction in cash flow available to them as profit. Thus, shareholders prefer tax avoidance activities in an effort to increase not only profit after tax but also cash available to shareholders (Khurana & Moser, 2013). Tax avoidance refers to the legal reduction of tax liabilities through the

strategic use of tax planning techniques and loopholes, often resulting in lower tax payments by corporations (Dyrenge et al., 2017).

Taxes on corporate incomes are compulsory and usually constitute a huge outflow for firms' world over. And, if not properly avoided, it could lead to the unwilling transfer of corporate resources to the government which may affect the operating capacity and value of the firms. Therefore, companies that maximize the loopholes in the tax laws tend to lower their tax burden. Despite its legitimacy, the amounts of revenue thought to have been lost through

various creative avoidance activities worldwide have become an issue of concern.

Board attributes have been recognized as important factors that can influence various firms' behaviours. The board of directors plays a crucial role in overseeing and controlling a firm's activities, and its composition and characteristics can impact the decision-making process, including tax avoidance strategies. It was however observed that little attention has been focused on whether these corporate board attributes have effects on corporate tax avoidance. Despite the efforts to enhance corporate governance practices in Nigeria, few studies such as Okeh and Ofor (2022), Akhor et al. (2023) were found to have considered the effect of board financial expertise on tax avoidance among others. Furthermore, Minnick and Noga (2010) have earlier posited that different companies with different governance structures are likely to choose different tax management strategies. Given this assertion, it may therefore be misleading to assume that the empirical results from certain economic sectors will hold for others. This study tends to examine the effect of board attributes (board size, board independence, board gender diversity and board financial expertise) on the tax avoidance of listed industrial goods firms in Nigeria. It therefore seeks to fill the gap on some determinants of corporate tax avoidance of listed industrial goods firms that is being relatively understudied in relation to the tax avoidance phenomenon in Nigeria. In particular, this will be done by examining the extent to which board attributes play a significant role in determining corporate tax avoidance in the study area.

## **Literature Review**

### **Concept of Tax Avoidance**

The term corporate tax avoidance does not have a universal definition as it might give different meaning to different people (Hanlon & Heitzman, 2010). There have been several definitions of corporate tax avoidance put forward by researchers in recent times (Salihu, Sheikh-Obid & Annuar, 2013; Annuar, Salihu & Sheikh-Obid, 2014; Salihu 2014). Tax Avoidance is about a taxpayer arranging their financial affairs in a manner that minimizes tax liabilities without contravening the tax laws (Liman, 2019). Murphy (2008) defined tax avoidance as the process whereby taxpayers smoothed tax laws without breaking them; however, his definition did not state the drive why taxpayers round the tax law without breaching the law. The drive of the taxpayers rounding the tax laws is to reduce tax expenses (Tanko, 2020). He furthered considered tax avoidance as a plan employed by taxpayers to decrease tax expenses within the armpit of the laws.

### **Concept of Board Attributes**

Board attributes are very essential to the optimal operation and performance of companies all over the world. Board attributes are often analysed in relation to varying aspects of firms with a view to determining their contribution to shareholders' wealth. Some of the board attributes commonly examined in extant literature encompass board size, board independence, board gender diversity and board expertise, among others. These varying attributes of the board interrelate to influence expense reduction including tax liability of firms. In the light of the present global challenges, the performance of firms whether large or small, and the level of

investors' confidence are hinged on the reduction of tax expenses. The overall performance of firms depends on how costs are reduced in a systematic manner. Many of the board attributes indicated above have been empirically examined against many other variables particularly tax avoidance as will be discussed in the following sections.

### **Board Size and Tax Avoidance**

Studies have looked into the impact of board size on tax avoidance of companies and come up with conflicting findings. According to Mohammed (2017), the size of a corporation's board of directors has no effect on corporate tax avoidance. Similarly, Peter et al. (2020) evaluates the effects of board attributes on tax planning of listed non-financial companies in Nigeria. The study found positive and insignificant effect of board size on ETR. The findings on board size for Peter et al. (2020) indicate that board size does not visibly increase tax avoidance. In the same manner, Uniamikogbo et al. (2019) revealed positive effect of board size on ETR. Inconsistent with Uniamikogbo et al. (2019) and Peter et al. (2020) is the findings of Novita and Herliansyah (2019) which revealed a negative relationship between board size and ETR. The focus on board size as an internal mechanism of board attributes centres on concerns about consistency, co-ordination, and timely intervention of the board in respect of advice over relevant organizational matters. In addition, regarding board stability, alignment, and timely intervention in relation to related organisational matters have prompted a focus on board size as a fundamental component of the features of the board that permit coping with aggressive managerial manipulation.

### **Board Independence and Tax Avoidance**

Several studies have shown that the number of independent directors on a board increases the firm's performance. Richardson and Roman (2011) show that companies having a high number of independent directors will reduce significantly the aggressive tax planning. The presence of independent non-executive directors on the board is often seen as a balancing force; their presence indicates good corporate governance, and shareholders are able to authorise management to be tax-responsive (Bhagat & Bolton 2008). Onyali and Okafor (2018) examined the effect of corporate governance mechanisms on tax aggressiveness among selected oil marketing firms in Nigeria and found that independent directors, that is, the proportion of non-executive directors to executive directors have a positive and significant impact on tax aggressiveness. Independent board members are independent of the company's management, so it is assumed that they will perform their supervisory function more efficiently and that independent boards will be in a stronger position to guide company resources towards tax avoidance. Independent boards are expected to lead to lower ETRs as a result of more effective tax burden management, as they help track managers.

### **Board Gender Diversity and Tax Avoidance**

There have been submissions that diversity could improve the effectiveness of the board and specifically that companies can benefit more from the existence of professional women on their boards. Ahmed and Khaoula (2013) examine the effect of board characteristics on tax planning using a sample of 73 French companies on SBF 120

index for ten years (2006-2015). Regression analysis was employed and the results show that percentage of women has negative effect on the ETR. Similarly, findings were documented by Olayinka and Francis (2016) who examined the relationship between board size, gender diversity, and tax planning. Findings revealed a positive and insignificant association between board size and tax planning, while the interaction between board size and female directors was found to be negative and significantly associated with ETR. This shows that, firms can benefit significantly from the existence of women in shaping tax avoidance strategies. In addition, higher participation of women on corporate board is generally promoted as female directors are believed to bring relevant information concerning tax avoidance strategies due to more wide-ranging professional experiences.

### **Board Financial Expertise and Tax Avoidance**

Board members' financial expertise may improve financial performance because of their knowledge and experience in taxation, finance, and other finance-related issues. Since the tax benefits created by restructuring transactions are joint feature of financial accounting rules and tax laws, having accounting experts on the board of directors may be particularly useful in assessing tax planning transactions (Maydew & Shackelford 2007; Shackelford et al. 2011). According to McGuire et al. (2012), companies with access to high levels of accounting experience in independent auditors have extensive tax avoidance practices. In addition, accounting specialists will provide managers with useful advice regarding tax related matters. Similarly, when companies are audited by professional

accounting firms their ETRs are lower because experienced audit firms influence tax avoidance practises by incorporating their financial literacy and tax expertise to establish techniques that support clients from both a tax and financial statement perspective. Furthermore, considering board financial expertise in terms of tax avoidance decisions may improve companies' financial performance and improves the credibility of financial information because of their knowledge and expertise in the area.

### **Methodology**

Correlational research design was adopted for this study and the target population of the study consisted of all the industrial goods firms listed on the floor of Nigerian Exchange Group (NGX) as at December, 2022. According to the records extracted from the NGX website and fact books, there were Thirteen (13) listed industrial goods firms on the floor of the Nigerian Exchange Group (NGX, 2022) namely; Austin Laz & Company Ltd., Berger Paints Plc., Beta Glass Plc., BUA Cement, CAP Plc., Cutix Plc., Dangote Cement Plc., Grief Nig. Plc. (Vanleer), Larfage Africa Plc., Meyer Plc., Notore Chemicals Ind. Plc., Premier Paints Plc., and Triple Gee & Company Plc. The sample size comprised the entire working population of study for a period of eleven years (2012- 2022) using a two-point filter, the firm must be listed before 2012 and must not be delisted before 2022. The firm must have the available data for the study period. Using the filter, the study eliminated BUA cement which was listed in 2020 and NOTORE chemicals which was listed in 2018. The study arrived at eleven (11) firms which stand as the working population of the study. The study employed the census

sampling technique to adopt the entire eleven firms as the sample size. The secondary source of data collection method was used to generate data from the annual reports and accounts of the listed industrial goods firms in Nigeria.

### Measurement of Variables

Tax avoidance in this study was measured using the cash ETR. It is calculated as the actual tax paid (tax expense) divided by earnings before tax as in Aliani et al. (2012), Streefland (2016), Radu et al. (2016), Mohammed (2017), Yinka and Uchenna (2018), and Peter et al. (2020).

Board attributes served as the study's independent variable. Board size, board independence, board gender diversity and board financial expertise were used as board attributes in the analysis to determine their impact on tax avoidance. Board Size was measured as total number of directors on the board, as used by Richardson and Roman (2011); Aliani *et al.* (2012); Peter et al. (2020). Board Independence was measured as percentage of independent directors sitting on the board, as used by Ahmed *et al.* (2013), Mahdi *et al.* (2015), and Mohammed (2017). Board Gender Diversity was measured as ratio of female directors to total board size, as used by Aliani et al. (2012), Oyeleke, Erin, and Emeni (2016), Streefland

(2016). Board Financial Expertise was measured as proportion of directors with financial literacy that are members of the board, as used by Jean and Suzanne (2011), John *et al.* (2012). For control variables, the study assessed profitability using ROA, which is profit before tax divided by total assets, as recommended by Aliani et al. (2012), Aliani (2013), and Ana et al. (2015); Mohammed (2017); Peter et al. (2020). Leverage was also included as a control variable for this study. According to Chen et al (2010) and Hairul et al. (2014), leverage is calculated by dividing total debts by total equity.

### Results and discussion

The study conducted several diagnostic tests to ensure the validity and reliability of the regression model. These tests include normality test, heteroscedasticity test, multicollinearity test, linearity test, models specifications test, Hausman specifications test, and Langrangiane multiplier test.

#### Normality of Residuals

The study uses the Shapiro Wilk test, which hypothesis that the error term in the distribution is normally distributed. The result as displayed below shows that the p-value for the model is insignificant, indicating that the residuals are normally distributed.

#### Shapiro-Wilk W test for Normal Data

| Variable | Observation | W       | V     | Z     | Prob>z  |
|----------|-------------|---------|-------|-------|---------|
| Model    | 121         | 0.97921 | 1.339 | 0.637 | 0.26215 |

Note. STATA 14.0 Outputs (2023)

### Homoscedasticity of the Residuals

One of the assumptions of the CLRM is the homogeneity of variance (homoscedasticity) of the residuals, i.e., the error variance should be constant for all values of explanatory variables. The study uses Breusch–Pagan–Godfrey Test to affirm the compliance of the research model with the assumption. The results obtained from the Breusch-Pagan-Godfrey test for heteroscedasticity for model is 0.9416.

### Hausman Specification Test

The study uses the Hausman Specification Test to examine the presence of endogenous explanatory variables in the model because of its potential to cause the OLS estimators to fail. The Hausman specification test was carried out in the model of the study to choose a more consistent estimator. The result shows that in the model, unique error is not correlated with the regressors because the chi-square probability is 0.3840, which is insignificant.

### Breusch-Pagan Langrange Multiplier Test for Random Effects

The study uses the Breusch and Pagan Langrangiane Multiplier (BPLM) test for random effects to choose between OLS and a random effect for the model, since the Hausman results is insignificant. Random effects assume that the change across entities is random and not correlated with the independent variables included in the model. Table 3 shows that the result was presented in favour of random effect model estimation since the probabilities of the chi square are 0.0000. The model was interpreted using random effect

### Descriptive Statistics

The descriptive statistics provide an overview of the variables used in the analysis. The mean, standard deviation, minimum and maximum values of the variables are presented below:

**Table 1 Descriptive Statistics**

| Variables   | Observations | Mean   | Std. Dev. | Minimum  | Maximum |
|-------------|--------------|--------|-----------|----------|---------|
| CETR        | 121          | 0.1223 | 0.2077    | -0.9082  | 0.7945  |
| BS (number) | 121          | 8.5041 | 3.1382    | 4        | 19      |
| BIN (ratio) | 121          | 0.3349 | 0.1708    | 0.0909   | 0.75    |
| BGD (ratio) | 121          | 0.1859 | 0.1578    | 0        | 0.5     |
| BFE (ratio) | 121          | 0.1274 | 0.1502    | 0        | 0.6667  |
| ROA (ratio) | 121          | 0.0870 | 0.2631    | -1.8203  | 1.2386  |
| Lev (ratio) | 121          | 0.2073 | 1.6938    | -15.0673 | 5.1734  |

*Note.* Stata 14 output based on data extracted from listed industrial goods firms from 2012-2022.

Table 1 displays the calculated values for the mean, the standard deviation, the minimum, and the maximum for each of the research variables for the 11 industrial goods firms during the period of the study (2012 to 2022). Table 1 also shows that the study

uses 121 firm-year observations for the study.

Table 1 shows that the CETR has a mean of 0.1223 or 12.23% which on average, indicates a higher level of tax avoidance since the average is lower than 20% and 30% tax rate for medium and larger firms,

respectively. The results also show the standard deviation of CETR at 0.2077 which shows wide level of deviation around the mean. The minimum and the maximum values for CETR are -0.9082 and 0.7945, respectively. The negative minimum resulted from high loss of ₦7, 071,000 incurred by Meyer Plc. in 2019 and paid corporate tax of ₦6, 422,000. While the maximum is the low profit before tax of ₦40,149,000 by Greif Nigeria Plc. in 2015 and the firm paid tax of ₦31,898,000.

Table 1 shows that on average BS is 8.5041 that is approximately 9 members while the standard deviation is 3.1383 which show that the size of the board tends to deviate from the mean approximately by 6 members on average. More so, the minimum board size is 4 members and the maximum is 19 members. The minimum value of board size was obtained from annual reports of Greif Nigeria Plc. for the year 2020, while the maximum value was obtained from Lafarge Africa for the years 2014 and 2015. Moreover, board independence stood at the average level of 0.3349 indicating that 33.49 % of members of the board of listed industrial goods firms are independent members. The standard deviation implies that the level of board independence tends to deviate from the mean by approximately 0.1708 units on average. The minimum value for board independence is 0.0909 suggests that there are some accounting years that board independent members are 9% of the total members. The maximum value for board independence is 0.75. The maximum also indicates that some firms have independent board members of 75%, while the remaining 25% are executive directors.

Furthermore, board gender diversity mean is 0.1859 which indicates that on average 18.59% of the board members of the sampled firms are female. The standard deviation is at 0.1578 implying that the level of board gender diversity tends to deviate from the mean by approximately 15.78%. The minimum value for board gender diversity is 0 suggests that there are some companies that do not have female board members. The maximum value for board gender is 0.5 indicating that some firms have 50% female members on board while the remaining 50% are male. From the table also, the average level of board financial expertise is 0.2174, meaning that 21.74% of the board members are considered financial experts by either being members of professional accounting bodies (such as ICAN, ANAN, ACCA, etc.) or those with qualifications in accounting and finance. The board has a minimum of 0 members who are financial experts and a maximum of 66.67%. The standard deviation of 0.1502 signifies that there is no wide variation around the mean of the proportion of board members with financial knowledge in the sampled companies.

Table 1 also shows that profitability (measured as ROA) has a mean of 0.0870, which suggests that on the average the sampled firms generate profit of 8.70%, with a minimum of -1.8203 (loss) about 182.03% and a maximum profit of 1.2386, which is about 123.86%. These minimum and maximum values were resulted from a loss of ₦311, 537,000 and a profit of ₦398, 529,000 from Greif Nigeria Plc in 2019 and 2020 respectively. More so, the standard deviation of 0.2631 indicates wide dispersion in profitability among the sampled companies. The average leverage is 0.2073; which implies that, on average the

sampled firms' capital structure is 20.73% debt capital. The standard deviation of the leverage tends to deviate from the mean by approximately 1.6934 on average which indicates wide variation. The minimum leverage is -15.0673, resulted from high gearing of Premier Paint Plc in 2016. The firm has total debt of ₦115, 762,000 and

shareholders' funds of ₦7, 683,000. The shareholders' funds were negative because of loss of ₦33, 556,000 incurred by the firm in 2016. Similarly, the maximum of 5.1734 resulted from high gearing of Premier Paint Plc in 2012. The firm capital structure consists of ₦61, 538,000 and low shareholders' equity of ₦11, 895,000,000.

### Correlation Analysis

**Table 2 Correlation Matrix**

| VAR. | CETR    | BS      | BIN     | BGD    | BFE     | ROA    | LEV.   | VIF  |
|------|---------|---------|---------|--------|---------|--------|--------|------|
| CETR | 1.0000  |         |         |        |         |        |        |      |
| BS   | -0.1265 | 1.0000  |         |        |         |        |        | 1.48 |
| BIN  | -0.0624 | -0.1663 | 1.0000  |        |         |        |        | 1.05 |
| BGD  | 0.1062  | -0.0433 | 0.0425  | 1.0000 |         |        |        | 1.16 |
| BFE  | 0.2799  | -0.6893 | 0.1278  | 0.1868 | 1.0000  |        |        | 1.49 |
| ROA  | 0.5299  | 0.2127  | -0.0009 | 0.2577 | 0.0033  | 1.0000 |        | 1.14 |
| LEV. | -0.1657 | 0.2838  | 0.1917  | 0.1300 | -0.1918 | 0.0823 | 1.0000 | 1.02 |

*Note.* Stata 14 output based on data extracted from listed industrial goods firms from 2012 - 2022

Table 2 shows the correlation coefficients between the dependent variable and the explanatory variables in the study. Furthermore, it shows the correlation matrix with the values displaying the Spearman correlation coefficient between all the pairs of the research variables. The choice of the Spearman correlation over the Pearson correlation is because the outcome of the Shapiro Wilk test for normality indicates that the data are not normally distributed. The Shapiro Wilk test for all the variables is 0.0000 which is significant at a 1% level of significance. In addition, the values of the correlation coefficients range from -1 to 1. The sign of the correlation coefficient indicates the direction of the relationship (positive or negative), the absolute values of the correlation coefficient indicate the strength, with larger values indicating stronger relationships. The correlation coefficients on the main diagonal are 1.0000

for all the variables, which indicate perfect positive linear relationship that each variable has with itself. From the table 2, there is a negative and weak relationship between board size, board independence, leverage, and CETR at correlation coefficient of -0.1265, -0.0624 and -0.1657 respectively. This suggests that board size, board independence, and leverage reduce ETR, which signifies tax avoidance improvement. It further shows that both of board gender diversity and board financial expertise have weak and positive relationship with CETR at 0.1062 and 0.2799 respectively. Similarly, the ROA has a positive and strong relationship with CETR with a correlation coefficient of 0.5299. This implies that the ROA moved in the same direction as the board gender diversity and board financial expertise. The overall results show an absence of multicollinearity among the variables. This is beneficial for conducting a

regression analysis or other modelling techniques.

## Regression Analysis

**Table 3 Panel Regression Results (Fixed effect)**

| Variables              | Coefficient | Z      | P> z    |
|------------------------|-------------|--------|---------|
| Constants              | -0.0236     | 0.24   | 0.808   |
| BS                     | 0.0014      | 0.17   | 0.863   |
| BIN                    | 0.0510      | 0.43   | 0.666   |
| BGD                    | -0.1212     | 3.00   | 0.011*  |
| BFE                    | -0.5813     | -3.87  | 0.000*  |
| ROA                    | 0.1612      | 2.36   | 0.018** |
| LEV                    | -0.0046     | -0.50  | 0.619   |
| Overall R <sup>2</sup> |             | 0.2118 |         |
| Wald Chi2 (6)/F-Sta.   |             | 20.39  | 0.0024  |
| Hausman (6)            |             | 6.36   | 0.3840  |
| LM chibar2 (01)        |             | 15.15  | 0.0000  |
| Hetttest Chi2 (1)      |             | 0.20   | 0.6554  |

*Note.* Stata 14 output based on data extracted from listed industrial goods firms from 2012-2022

\*and \*\* indicate 1%, and 5% level of significance respectively.

The regression results in table 3 above shows that the overall R-square value is 0.2118. R-square, also known as the coefficient of determination, represents the proportion of the dependent variable's variance that is explained by the independent variables in the regression model. In this case, the R-square value of 0.2118 indicates that approximately 21.18% of the variance in the CETR can be explained by the independent variables (board size, board independence, board gender diversity, and board financial expertise), as well as the control variables (ROA and leverage). This means factors other than those included in the model are likely influencing the CETR of listed industrial goods firms in Nigeria. However, the variables included in the model collectively account for about 21.18% of the CETR variability. Regarding the random effect wald chi2 test, it is used to test the significance of the coefficients in a random

effects model. In this case, the wald chi2 test has a value of 20.39 with 6 degrees of freedom and a probability value of 0.0024, which is less than the conventional threshold of 0.05. The study concludes that there is statistically significant evidence to suggest that at least one of the independent variables has a significant effect on the CETR of listed industrial goods firms in Nigeria.

The model reveals that board size has a positive but insignificant effect on the cash ETR (coefficient value = 0.0014, probability value = 0.863). This indicates that the size of the board does not significantly influence tax avoidance behaviour. It aligns with agency theory, which suggests that larger boards may have more diverse interests, making it challenging to reach unanimous decisions on tax strategies. In the analysis, the board size does not encourage tax avoidance to large extent. This finding agrees with the findings of Mohammad

(2017), Peter and Tahir (2020), Uniamikogbo et al. (2019) where the board size was found to have a positive and insignificant effect on tax avoidance. However, the result disagrees with the findings of Khoula and Ali (2012) and Khoula and Ali (2013), who revealed a negative and significant effect of board size on tax avoidance. The study therefore, does not document enough evidence to reject the hypothesis which states that board size does not have significant effect on CETR of listed industrial goods firms in Nigeria.

The results show a positive yet insignificant effect of board independence on the cash ETR (coefficient value = 0.0510, probability value = 0.666). This implies that independent directors' presence on the board does not significantly impact tax avoidance practices. The findings resonate with agency theory, which posits that independence may not necessarily curb managerial opportunism related to tax avoidance. The positive coefficient suggests that 1% increase of board independence would lead to increase of CETR by 5.10%. This finding suggests that independent board members, who are not involved in the day-to-day operations of the company, may not support any increase in tax avoidance as they may not have enough knowledge about the tax laws that can encourage tax avoidance. The presence of independent directors on the board does not strengthen the board ability to exercise effective monitoring and control, leading to tax avoidance. Furthermore, the findings of the study are consistent with the findings of Onyali and Okafor (2018), and Peter and Tahir (2020), who found that board independence has positive and insignificant effect on CETR but contradicts Ogbeide and Obaretin (2018), Jamei (2017), and Salawu and Adedeji (2017), who documented a negative influence of board independence on the CETR. Consequently, the finding of the

study fails to reject the null hypothesis that board independence has no significant effect on the CETR of listed industrial goods firms in Nigeria.

Interestingly, the results reveal a negative and significant effect of board gender diversity on the cash effective tax rate (coefficient value = -0.1212, probability value = 0.011). This indicates that 1% increase of board gender diversity would decrease CETR by 12.12%. This implies that more female on board is associated with high tax avoidance. The significant and negative relationship suggests that firms with more gender-diverse boards tend to engage more in tax avoidance.

This aligns with the political power theory, which argues that gender diversity on boards may lead to increased ethical considerations in tax planning and increase tax avoidance within the armpit of the law. Furthermore, the study documents enough evidence to reject the null hypothesis which states that board gender has no significant effect on CETR. The finding is in agreement with the findings of Ahmed et al. (2015) and Aliani et al. (2012), who documented a negative and significant effect of board gender diversity on the CETR. On the other hand, Olayinka and Francis (2016) found evidence to the contrary.

The result from the table 3 also indicates a negative and significant effect of board financial expertise on the cash effective tax rate (coefficient value = -0.5813, probability value = 0.000). The significant positive relationship suggests that boards with financial expertise are more likely to engage in tax avoidance. This finding supports the agency theory as financially skilled boards might adopt more sophisticated tax strategies. The negative coefficient also implies that 1% increase of board financial expertise would decrease CETR by 58.13%

as other factors remain constant. This also means that board financial expertise reduces CETR and encourages firms to indulge in tax avoidance. This also indicates that the presence of members with financial expertise, such as accounting or auditing professionals enhances the board's ability to critically evaluate financial statements, tax laws and identify potential loopholes and ensure compliance with tax laws to reduce tax incidence. In addition, the study provides enough evidence to reject the null hypothesis that board financial expertise has no significant effect on the CETR of listed industrial goods firms in Nigeria. This finding further re-affirms our previous assumption when testing the board independence, that the outside directors may have no adequate knowledge of tax laws and loopholes to utilise the tax avoidance opportunity. The finding also, is consistent with Oyeleke et al (2019) and Peter and Tahir (2020), but disagrees with Bashiru et al (2020) who documented a positive effect of board financial expertise on tax avoidance.

The results in table 3 show a positive and significant effect of ROA on the cash effective tax rate (coefficient value = 0.1612, probability value = 0.018). This implies that firms with higher ROA are more likely not to engage in tax avoidance practices. The finding aligns with the political power theory, as profitable firms may have more resources and influence to shape tax policies in their favour. The model reveals a negative and insignificant effect of leverage on the cash effective tax rate (coefficient value = -0.0046, probability value = 0.619). The result indicates that leverage does not significantly influence tax avoidance behaviour. This finding is consistent with the agency theory as the use of debt may directly impact tax avoidance decisions.

## Conclusion and Recommendations

The study identified that board size and board independence did not yield significant effects on CETR, indicating that these factors may not be the primary drivers of tax avoidance strategies in listed industrial goods firms in Nigeria. Conversely, board gender diversity and board financial expertise were observed to exert a negative and significant impact on CETR. This emphasizes the significance of gender diversity and financial proficiency in shaping tax avoidance decisions. The study contributes to the understanding of how board attributes collectively shape tax avoidance decisions within the listed industrial goods firms in Nigeria. The results emphasize the importance of considering gender diversity and financial expertise in the composition of boards in fostering responsible and effective tax avoidance practices. These insights hold practical implications for policymakers, regulators, and practitioners seeking to enhance corporate governance and tax management strategies in the Nigerian industrial sector. For instance, the insignificant effect of board size and board independence on tax avoidance highlights the importance of considering other governance mechanism to address potential agency conflicts in the tax avoidance decisions, the significant positive effect of board financial expertise on tax avoidance emphasizes the need for monitoring and transparency in the tax avoidance processes, as experts may be employed for aggressive tax strategies.

The management of industrial goods firms should conduct a comprehensive assessment of the current board size in relation to the firm's operational complexity and strategic needs and evaluate the effectiveness of board committees and subcommittees in managing tax-related matters. The management should review the current

composition of the board to ensure a substantial number of independent directors and also strengthen their roles and influence in strategic tax avoidance decisions to enhance objectivity, transparency and implement regular board evaluations to assess the independence and effectiveness of each director.

Firms and Financial Reporting Council of Nigeria (FRC) should set gender diversity targets for the board composition considering their positive impact on tax avoidance efficiency and establish a structured nomination process that encourages the inclusion of qualified female candidates in the board selection process. And also create an inclusive and supportive environment that facilitates the active participation of all board members, regardless of gender. Firms should consider appointing directors both executive and independent, with strong background in taxation, finance, and accounting and provide on-going training and development opportunities for all board members to enhance their understanding of tax avoidance strategies and implications. FRC should also create provisions where firms should have at least 20% of their board members to be financial expertise by at least one member from professional accounting or taxation bodies.

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