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## **CORPORATE BOARD ATTRIBUTES AND TAX AGGRESSIVENESS AMONG LISTED OIL AND GAS FIRMS IN NIGERIA**

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### ***Abstract***

*The study examined the effect of board attributes on the tax aggressiveness of listed oil and gas companies in Nigeria for the period of 2011-2020. The sample size of the study is the entire 13 oil and gas firm listed in Nigeria exchange. The study used unbalance panel which include companies that has been delisted and those that were listed after the period of the study. Secondary data were used, extracted from the financial reports and accounts of the companies that made the sample of the study. The study employed test multicollinearity test, Heteroskedasticity Normality test Generalized Least Square Random Effect, as the best estimator of the regression model. The study revealed that gender diversity and board financial expertise have significant negative impact on the Effective Tax Rate (ETR) of oil and gas firms in Nigeria. This implies that gender diversity and board financial expertise reduce ETR and encourage tax aggressiveness of the sampled firms. The study recommends that, Shareholders of listed oil and gas firms in Nigeria should appoint more women as board members to take advantage of their advisory role in reducing tax since the findings of the study shows that board gender diversity enhances tax aggressiveness. Also, the study recommends that the board should nominate more members with accounting and finance background to the board who can contribute towards tax aggressiveness. Doing this will reduce firm tax liability.*

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### **1.1 Introduction**

Corporate board attributes (CBA) have been around for a long period of time. However, contemporary corporate board attribute issues started in United States (U.S) in 1990s as a result of misuse of shareholders' wealth by managers (Ying, 2015). This prompted the enactment of code of corporate governance for public companies in different countries. Since then, Corporate Board Attributes (CBA) have received considerable attention from researchers, institutions, and countries around the globe with various studies not only from accounting, management and law, but also economics and finance, and other fields of study. Corporate board attribute has come to our knowledge as a distinct and expanding field of study (Parker & Shin, 2004) and had gained global recognition because of the infamous corporate fraud cases that occurred during the last three decades.

In addition, board attribute is considered as the comprising of diversity in experience, nationality, gender, academic qualifications among other who served as the boards of directors represent the interests of shareholders and are responsible for managing the company's operations, reviewing management's actions, and defending shareholder interests (Srivastava et al, 2015). Board of Directors have large responsibility of protecting the interest of the shareholders and other stakeholders. This responsibility may include tax aggressiveness to increase shareholders wealth as well prevention of fraud.



Consequently, The Permanent Subcommittee on Investigations released a report titled "The Role of the Board of Directors in Enron's Collapse" on July 8, 2002. The report highlights a number of significant fiduciary failures by Enron's board of directors, including a lack of independence between board members and management, inactivity in the performance of key fiduciary duties, and a lack of strong intra-board behaviours, such as questioning one another and providing constructive criticism of fellow board members' suggestions.

More so, in Nigeria the financial scandals that rock companies such as Cadbury Nig. Plc., the AP Nig., and some banks in Nigeria have made investors and stakeholders lost confidence in financial reporting as well as the entire financial system. The provisions of the 2011 SEC Code and repealed of the code in 2014 and 2018 was designed to improve corporate performance among firms as it had evidently focused on corporate board attribute, Law, and Business and other incidental matters in Nigeria.

The Nigerian Securities and Exchange Commission (SEC) issued the Code of Corporate Governance of 2011 in Nigeria to agree with the international best practices on corporate governance with a view to resolving some of the gaps and poor display of the Corporate Governance of 2003 issued by SEC (Ibadin & Dabor, 2015). Consequently, "The Code of Corporate Governance, 2018" recently issued by the Financial Reporting Council of Nigeria (FRCN, 2018) where Board of Director are saddled with the responsibility protecting interest of shareholders.

On the other hand, tax is a cost to firms and its shareholders and as a result, a reduction in cash flow available to them as profit, and shareholders prefer tax planning activities in an effort to increase not only profit after tax but also cash available to shareholders (Khurana & Moser, 2013). Tax aggressive as defined by (Pniowsky2010).is the process of structuring one financial affairs in order to defer, reduce or even eliminate the amount of taxes payable to the government within the ambit of the law. Moreover, tax aggressive has been identified as the best option, within legal guidelines, to reduce tax burden. One of the ways of reducing tax burden is through differing of tax rates between distinctive jurisdictions and economic activities, as well as many of tax incentives provided under tax laws Fallan et al, (1995).

The American Institute of Certified Public Accountants (AICPA) (2015) has identified two main objectives of tax aggressive. The first is to minimize the overall income tax liability, whilst the other is to fulfil financial planning with minimal tax expenses. These goals are achieved through three broad ways. The first is by reducing income tax resulting from an arrangement or a transaction. The second involves shifting the timing of a taxable event, and the third relates to shifting income to another taxpayer in the same category whose jurisdiction has lower tax rate.

The attributes of board are widely known to ensure the credibility of the financial reporting process and quality information for the computation of tax liability which is highly significant to public revenue and national development. Even with this, income taxes are seen as major source of cash outflow and significant amount of time, energy, and money may be employed reducing its impact on financial results. Thus, the decisions of managers and tax accountants may possibly favour incorporating actions that decrease taxes (Lanis & Richardson, 2002).



Corporate board attributes and tax aggressiveness can relate in different contexts. One of such contexts is ensuring that boards of directors do not encourage behaviours that conflict with the interests of shareholders. Another thing is ensuring quality of management decisions and transparency in tax planning. In particular, it is important to ensure that the board, shareholders and other stakeholders are aware of the attributes that are involved in the management of taxes (Owens, 2008). Tax planning by managers within an agency framework poses a new set of issues which are related to the alignment of their interests with those of the shareholders. The interest of management and the shareholders may not be the same. Shareholders are after wealth maximization and that is why they like ethical practice which reduces cost, as managers may have their personal interest to pursue. Desai and Dharmapala (2006) laid emphasis on management to function in utmost good faith and discharge its responsibilities in an acceptable way to reduce cost through tax planning. Studies (such as Inder & William, 2009; Yeung, 2010; Sakthi & Kasipillai, 2011; Nik, 2011; Ahmed & Khaoula, 2013; Beryl, 2014; Hairul et al 2014, and Radu, Georgeta, et al, 2016) show mixed and inconclusive results on the effect of CBA on tax aggressiveness.

Furthermore, the oil and gas firms are those companies which are not in the financial services sector. The companies have similar characteristics and they use the same code of corporate board structure. These companies contribute to the economic growth of the country as the companies deal with production of oil and gas which is the major source of Nigeria revenue. Similarly, with the recent implementation of the Finance Acts 2019 and 2020, as well as the Information Technology levy, in addition to about forty different taxes imposed on corporations and individuals (Taxes and Levies, Approved List for Collection Act 1998, and other laws), there are now about forty different taxes imposed on corporations and individuals. Many of these taxes are collected from corporate entities, particularly oil and gas companies, by different levels of government. In this regard oil and gas companies will find means of reducing their tax burden probably through effective structuring of Board of Directors (BOD). Furthered more, recently, the contribution of the oil and gas sectors to Nigerian Gross Domestic Product (GDP) reduced as reported by National Bureau of Statistics (2020). It is against this background that this study will examines the effect of corporate board attributes on tax aggressiveness of listed oil and gas companies in Nigeria.

Given the importance of this concept of tax aggressiveness for corporate organization in Nigeria there is a gap that this present study seeks to bridge by exploring deference tax aggressiveness available using annual account of 13 oil and firms in Nigeria exchange

The main objective of this study is to examine the effect of corporate board attributes on tax aggressiveness in Nigeria.

The rest of this paper is organised as follow: In section 2, we review related literature and highlight the theoretical base for the study. Section 3, present the methodology of the study, the empirical result and discussion are presented in section 4. While we concluded the study in section 5.



## **2.0. Review of Related Literature**

The presentation in this section is in two parts: the theoretical review and summarized related literature

### **2.1 Underpinning Theory**

Agency is used as underpinning theory. Agency theory was propounded by Jensen and Meckling (1976). A contractual relationship that exists between an agent (manager) and the principal (shareholders) in which the shareholders bequeath the responsibilities to run the business to the manager is known as agency theory. Agency theory is about a contractual relationship between two or more persons. The development of corporate governance standards and principles is centred on agency theory (Fama & Jensen, 1983; Vafeas, 1999). The boards' structure, functions and composition are governed by the “principal and agent” with a view to reducing agency costs and ensure that managers maximised shareholder wealth Conger et al. (2005)

Agency theory is a term that explains the relationship that exists when one person or group of persons (agents) act on behalf of the principal (shareholder). The essence of this theory is because of the likely conflict of separating ownership from the daily management of organization (Oye, 2010). According to Jensen and Meckling (1976), agency relationship is a contractual arrangement between one or more person (principals) and another person (the agent) who is engaged and delegated with some decision-making authority by the principals to perform some service on their behalf. This theory addresses particularly on one hand the principal-agent relationship between shareholders and directors and on the other hand the relationship between company agents and stakeholders Hayes et al. (1999).

The principals and agents in an agency relationship are also presumed to be reasonable economic individuals who have the capability of establishing objective expectations regarding the effect of agency problems in addition to the associated future value of their wealth Barnea et al. (1985); Jensen and Meckling (1976) posit that managers, who are agents of the principals (shareholders), are employed to work for maximizing the returns to the shareholders. Managers of organizations are agents to the shareholders. Therefore, in order to maximize shareholders' wealth, they would need to reduce their operating costs. One of such ways to reduce operating costs is to engage in tax aggressiveness to reduce their tax liability. However, in order to reduce the tax burden of firms, tax aggressiveness must be done within the legal framework. The primary reason managers of organisations involve in tax aggressiveness is because of the benefits they derived from an increase in after-tax returns. Similarly, different theories and definitions of aggressive tax have revealed that significantly, after tax returns could be uninterestedly influenced by tax minimization, while minimisation of tax could be seen as tax aggressive benefit.

### **2.2 Empirical Reviews**

Many empirical studies have been conducted on corporate board structure and tax aggressiveness in Nigeria below are some of the literature reviews for both local and international researchers

Bashiru, et al. (2020) examined the impact of corporate governance attributes on tax planning of listed Nigerian conglomerate companies. The study adopts ex-post facto research design and utilized panel data from annual reports and accounts of the listed





companies for the period of five years (2014-2018). The Data were analyzed using a panel regression technique. The results from random effect estimation model were interpreted which indicates a positive relationship between board size and ETR. Similarly, Peter et al. (2020) evaluates the effects of board attributes on tax planning of listed non-financial companies in Nigeria. Data for the study were collected from the annual reports and accounts of the sampled companies for a period of ten years from 2008 to 2017. The data collected were analysed using descriptive statistics to provide summary statistics for the variables, and correlation analysis was carried out using Pearson product-moment correlation to determine the relationship between the dependent and independent variables. Regression analysis was also conducted. The study revealed that board independence has a significant negative effect on tax planning; board size, have non-significant positive effect on tax planning in listed non-financial companies in Nigeria. The findings on board size for both Bashiru et al. (2020); Peter et al. (2020) indicate that board size does not in any way increase tax avoidance.

Onyali and Okafor (2018) examined the effect of corporate board structure and tax aggressiveness among selected oil marketing firms in Nigeria using the ex-post facto research design. Data was derived from the financial statements of Forty- four (44) consumer production firms on the Nigerian stock exchange (NSE) and the NSE fact book as at December, 2016 for the period 2005-2017. The data were analysed using the Ordinary Least Square technique with its Best Linear Unbiased Estimate (BLUE) Property. Findings revealed that board size has no significant effect on tax aggressiveness while board diversity, independent director and proportion of nonexecutive directors to executive directors have a significant impact on tax aggressiveness.

Salawu and Adedeji (2017) examined the impact of corporate board structure on tax planning of nonfinancial quoted companies in Nigeria between 2004 and 2014. A sample of fifty (50) companies out of 151 non-financial quoted companies for 10 sectors were purposively determined and a stratified random sampling technique used for its selection. The data used in the analysis were collected from the audited financial statements and the Nigeria Stock Exchange Fact books of the selected companies in Nigeria. The data were analysed using generalizes method of moments (GMM). The analysis discloses that there is significant negative relationship between board size and tax planning. Also, it reveals that board independence, and foreign ownership have significant negative relationship with tax planning.

Odoemela et al. (2016) examined the association flanked by corporate governance mechanism and tax planning using audited financial statements of banks quoted in the Nigerian Stock Exchange from 1994 to 2014. The data were analysed with the help of Econometric View (E-view statistical package). Findings of the study reveal that there is no significant effect between Board Size and Tax savings of Firms in Nigeria.

Oyeleke, et al. (2016) examine the association between directors' gender diversity and tax planning of listed banks in Nigeria for 2012 – 2014 using data from the annual reports and accounts of the firms. The study uses multiple regressions in the analysis. The study provides evidence of a positive and insignificant relationship between female directors and tax planning. Also, the study shows that board size and female directors are significantly related with reduced level of tax planning. As control



variables, firm size and leverage exhibits positive relationship with ETRs, while return on assets depicts negative association.

Olayinka and Francis (2016) examined the relationship between board size, gender diversity and tax planning using 85 sampled financial institution listed on the Nigeria Stock Exchange. The cross-sectional time-series research design was used as the blue print for data collection in this study, data collected were analysed using Statistical Package for Social Sciences (SPSS). Findings revealed that while a positive and no significant association exist between female directors and tax planning, the interaction between board size and female directors is significantly associated with the reduced level of tax planning.

Zemzem and Khaoula (2013) investigated the effect of board size on tax planning in Nigeria using 73 sampled French companies for the period 2006-2010. Regression analysis was used in the study analysis. Results showed that board size and the percentage of women in the board significantly and positively affect the activity of tax planning. Flowing from the above empirical review on corporate governance and tax aggressiveness, findings have been mixed and inconclusive. Given the limited number of studies in this area and the mixed findings, this study believes additional evidence would be needed to address whether corporate governance affects tax aggressiveness using firms in the Nigerian Oil & Gas marketing industry listed in the Nigerian Stock Exchange as at 31st December, 2017. The inconclusive research evidence necessitates the need for the study.

Lanis et al. (2017) examined the impact of board of director gender diversity on corporate tax aggressiveness. Based on a sample of 418 U.S. firms covering the 2006–2009 period (1672 firm-year observations), The ordinary least squares regression results show a negative and statistically significant association between female representation on the board and tax aggressiveness after controlling for endogeneity. Also, Kanagaretnam et al. (2016) empirically examine the relation between audit quality and corporate tax aggressiveness on a cross – country basis. They used a sample of 41958 firms across 31 countries with the aid of panel regression method. The study found strong evidence that auditor quality is negatively associated with the likelihood of tax aggressiveness, after controlling for other institutional determinants like home country tax system characteristics. Sometimes, the influence of external audit on tax aggressiveness of firms may be inversed. A situation where external auditors have stronger incentives by way of higher fees, they will always want to enforce stringent financial reporting quality and compliant, and by so doing will indirectly damper tax aggressiveness particularly when investor protection is strong.

Khamoussi et al. (2016) examined CG structure, and tax planning of American listed firms on NASDAQ 100 for the period 2008-2012. The study uses multiple regressions in data analysis, and it shows that CG structure have significant influence in reducing ETR. Also, the study shows a negative association between board size and ETR. In addition, the study reveals that there is a direct negative relationship between CEO duality, tax fees, and ETR of American listed firms on NASDAQ 100. Also, Radu et al. (2016) examined the association between board structure, CEO characteristics and effective tax rate using 50 companies from technology firms listed on NASDAQ and component of Dow Jones index in U.S from 2000-2013. Panel least squares and quartile regression as well as robustness checks by means of generalized least square,



generalized linear model, and generalized method of moments are used. The analysis reveals that board independence and board size have significant negative effect on corporate tax rate. CEO ownership shows a mixed influence.

Streefland (2016) examines whether female board participation influences the level of corporate tax planning of publicly listed firms in U.S for 2009-2014. The study reveals that the number of female directors is significantly associated with ETR and uncertain tax benefit position. Similarly, Manon (2015) examines the effect of female representation in the top management of an organization on corporate tax planning in U.S. The sample consists of S & P 1500 companies in the period 2000-2011. Descriptive statistics with multiple regressions were employed in the analysis of data. The results show that there is a negative relationship between female directors and tax planning. Thus, the presence of women on the board reduces tax liability through tax planning.

Christopher et al. (2015) investigates the relationship between CG, managerial incentives and tax planning. The study is domiciled in U.S and uses quartile regression in the analysis of data. The analysis discloses that board independence and managerial incentives have strong relationship with tax planning. The result suggests that CG tends to decrease extremely high levels of tax planning and increase extremely low levels of tax planning which may be symptomatic of over and under investment respectively by managers.

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 (i.e. 2006-2010). Regression analysis was employed and the results show that board size and percentage of women on the board affect ETR. They also find that firm size and return on assets have significant effects on ETRs.

Aliani (2013) investigates the effect of CG on tax planning using a sample of 300 American companies for the periods 1996-2009. The study shows that there is no significant relationship between board size and tax planning. This result confirms that of Aliani et al. (2012 “a”) who find board size to have no significant relationship with tax planning. Also, the study reveals that return on asset which is used as a control variable to measure performance does not have significant effect on tax planning. Aliani and Zarai (2012 “a”) assess the effect of demographic gender diversity on corporate tax planning using a sample of 300 firms (S & P 500) in America. Data were extracted from compustat database from 1996-2009. Contrary to their study in Tunisia, they find out that gender diversity on the board of directors does not have significant effect on tax planning. They conclude the predominance of men in tax planning strategies. Men are more experts in minimizing tax burdens; they act by using a strategy. The demographic diversity doesn’t influence the attitude towards tax compliance. The study also documents that board independence enhances acceptable tax practices.

Felix et al. (2018) examined the impact of board meeting frequency on firm performance of deposit money banks in Nigeria. Data used for the study were spawned from annual reports of the deposit money banks listed on Nigeria stock exchange (NSE) market. The study employed a panel regression to test the significant association amid variables. The main empirical result shows a positive association amid board meeting frequency and firm performance. Although, the findings also

show that board size was positive and not significant and firm size was negative and significant. The study recommended that management of banks should consider increasing their frequency of board meetings to at least four (4) meetings per year. This will allow the sampled deposit money banks to comply with the good governance code in Nigeria which states that companies must meet at least once per quarter.

### 3.0 Methodology

This section deals with the method employed to obtain relevant information on corporate board attribute and tax aggressiveness on oil and gas sector.

#### 3.1 Data Source and Description

Secondary data (audited annual reports and account) for a period of ten years 2011 to 2020 obtained from the official website of the 13 oil and gas firm listed in Nigeria exchange commission were used for the study.

#### 3.2 Model Specification

This analysis has been carryout within a panel data estimation framework. Panel data estimation gives room for the control of individual effects which are unobservable and may be correlated with other explanatory variables included in the specification of the relationship between dependent and explanatory variables (Hausman and Taylor, 1981). The basic model for panel data regression takes the form:

##### Pooled Regression Model Specification

$$ETR_{it} = \beta_0 + \beta_1 BGD_{it} + \beta_2 BI_{it} + \beta_3 BS_{it} + \beta_4 BFE_{it} + \beta_5 BM_{it} + \beta_6 ROA_{it} + \beta_7 FV_{it} + \varepsilon_{it} \text{ ---- } 1$$

##### Random Effect Model Specification

$$ETR_{it} = \beta_0 + \beta_1 BGD_{it} + \beta_2 BI_{it} + \beta_3 BS_{it} + \beta_4 BFE_{it} + \beta_5 BM_{it} + \beta_6 ROA_{it} + \beta_7 FV_{it} + \mu_{it} + \varepsilon_{it} \text{ -- } 3$$

Where;

ETR = Effective Tax Rate

BGD = board gender diversity;

BIN = board independence;

BS = board size

BFE = board financial expertise;

BM= board meetings;

FV=Firm value

ROA = return on assets;

i = firms 1 – 13;

t = the financial years 2011 – 2020;

$\beta_0$  = the intercept;

$\beta_1-7$  = the slope coefficient of explanatory variables; and

$\varepsilon_{it}$  = error term.

#### 3.3 Model Estimation Procedure

This study employed three phase procedural steps: pre-estimation, estimation and post-estimation. This study has used inferential statistics to see whether the data obtained supports or refutes the hypotheses presented in section one. The reason for inferential analysis is to generalize the result on a sample to entire population. Inferential statistics is the most suitable instrument for this analysis since it is



investigating corporate board attributes on tax aggressiveness according to Gujarati (2010). The statistical model that better explains the relationship underlying variables under unbalance panel regression and correlation analysis according to Peter (2014). The data has been analysed using the unbalance panel least square estimation technique. The study has been conducted using unbalance panel regression on the fact that the study sample size includes firms that were listed outside the period to be covered by the study. Some firms were listed in 2014 and one of the companies was delisted in 2020 as stated earlier. Also, the study has used unbalance panel least square based on the assumption that heterogeneity problem is associated with cross section study. This assumption is that the unobserved effect in each of the cross sections was correlated with the error term. However, when the correlation between the unobserved term and the error term was significant to challenge regression estimation, the fixed effect estimation was conducted (FEM) which implies that the analysis is conducted based on mean corrected values, thus, was not significant, the random estimation (REM) result was accepted. The decision to choose between the FEM and REM was based on the Hausman test statistic. The decision ruled that the Hausman probability value is less than 0.05, this indicate that the correlation between the unobserved effect in the cross section and the error term is significant which would dent the regression result thereby requiring the FEM estimation, however the probability value was greater than 0.05, the correlation is insignificant therefore the study has accepted the REM.

However, the Hausman result is insignificant the study further conducts Lagrangian multiplier test to decide between Ordinary Least Square OLS and random effect estimations. Random effects assume that the change across entities is random and not correlated with the independent variables included in the model. An important assumption for selecting the random effect estimation is that the unobserved heterogeneity should not be correlated with the independent variables. If no correlation is found, random effects would be employed but if correlation exists, OLS should be employed. The decision rule that probability chi-square was less than 5% then random effect was used and vice versa. The study has also carried out some post estimation test such as multicollinearity using Variance Inflation Factors (VIF). In order to detect the harmful evidence of heteroscedasticity the study will employ Brusch Pagan Test.

The estimation was carried out with the aid of STATA version 14. Software. Having described the estimation procedure, the next section discusses the result of the pre-estimation procedure, post post-estimation procedures and regression result.

#### **4.1 Analysis**

This section presents the descriptive statistics, correlation and regression results of the study. The results were obtained from data collected from annual reports and accounts of the sampled oil and gas companies for the period of the study.

#### **4.2 Descriptive Statistics**

Table 4.1 presents the descriptive statistical analysis generated from data on the dependent and explanatory variables of the study. The summary statistics of the data include measures of central tendency, such as mean, measures of dispersion such as



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the standard deviation, minimum and maximum values of both dependent and explanatory variables. The summary statistics provides detail on the nature of the data.

**Table 4.1: Descriptive Statistics of the Variables (N=114)**

<b>Variables</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>
ETR (%)	0.1159	0.2490	-0.6489	0.9307
BGD (%)	0.1834	0.1549	0	0.5714
BS (Number)	9.3772	2.6389	4	18
BIN (%)	0.2495	0.1753	0	0.6
BFE (%)	0.0746	0.0890	0	0.4
BM (Times)	4.7895	1.5254	2	9
FV (%)	0.3360	1.0730	-0.2135	9.3089
ROA (%)	0.0321	0.2170	-0.5573	1.5131

Source: STATA (14.0) Output 2021.

Table 4.1 show that the mean of ETR is 12% with standard deviation of 0.2490. The minimum value is -0.6489 with a maximum value of 0.9307. The mean ETR is below the statutory tax rate of 30% which is indicative of tax aggressiveness practice in the sampled oil and gas companies in Nigeria. The standard deviation of 0.216 shows that there is significant difference in ETR of the sampled companies during the period of the study since the standard deviation is greater than the mean. The minimum value of -0.6489 is an indication of tax computed based on loss before tax.

The mean gender diversity is approximately 18%. This means that about 18% of board members of sampled firms are female while 82% are male directors. The standard deviation is 0.1549 which implies low variation in the number of females on the board of directors of the sampled companies. The minimum value of 0 shows non-existence of female members of the board in some of the sampled companies while the maximum number of female directors of the companies is approximately 0.4714. The mean board size is 9 members with a minimum of 4 and maximum of 18 members. The standard deviation of 2.6387 implies that there is no significant variation in board size of the sampled companies.

Board independence has an average of 25% with a minimum value of 0 and maximum value of 60% independent directors. The standard deviation is 0.1753. These indicate that independent board members are few in the sampled companies and there is a high variation in board independence under the period of the study. Financial expertise of board of directors has a mean of 8%. This means that 8% of the board members are financial experts by either being members of professional accounting bodies (such as ICAN, ANAN, ACCA) or those with qualifications in accounting and finance. The remaining 82% members of the board are not financial experts. The board has a minimum of 0 members who are financial experts and maximum of 40%. The standard deviation of 0.0890 signifies that there is wide variation around the mean of the proportion of board members with financial knowledge in the sampled companies. More so, on average, the frequency of board of directors meeting is 5 with a minimum of 2 meetings and maximum of 9 in a financial year. The standard deviation of 1.5254 means that there is high variation in the number of meetings held by the sampled companies in a financial year.

Furthermore, on average the sampled companies have firm value of about 34% with a minimum debt of -0.2135 and maximum of 9.3089. The standard deviation of 1.0730

implies high variation in the firms' value. Finally, profitability (measured as ROA) has a mean of 34% with a minimum loss of 56% and maximum profit of 151%. The standard deviation of 0.2170 indicates low dispersion in profitability among the sampled companies.

**Table 4.2: Correlation Matrix of the Dependent and Explanatory Variables**

Var	ETR	BGD	BS	BIN	BFE	BM	FV	ROA
ETR	1.0000							
GEND	0.1586	1.0000						
BS	-0.1668	0.0434	1.0000					
BI	0.0037	-0.4187	0.0907	1.0000				
BFE	-0.0108	0.0606	0.2695	0.1588	1.0000			
BM	-0.023	0.2292	0.3814	-0.1689	-0.0021	1.000		
FV	-0.1529	-0.3806	-0.3512	0.194	-0.1962	-0.4330	1.0000	
ROA	0.5457	0.2991	0.0526	-0.062	-0.0997	0.0065	-0.1678	1.0000

Source: STATA (14) Output, 2021

Table 4.2 shows the correlation coefficients on the relationship between the dependent variable (tax aggressiveness) and explanatory variables (gender diversity, board size, board independence, board financial expertise, board meetings, firm value and profitability). 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 1.000 for all the variables, which indicate perfect positive linear relationship that each variable has with itself.

From Table 4.2 it can be seen that gender diversity, board independence and profitability have weak positive relationship with ETR with correlation coefficients of 0.1586, 0.0037 and 0.5457 respectively. This means that board gender diversity, board independence and profitability move towards the same direction with and tax aggressiveness. It implies that the gender diversity, board independence and profitability increase ETR, this also implies that they decrease tax aggressiveness. Also, board size, board committee meetings, board financial expertise and firm value have weak and negative relationships with ETR with correlation coefficients of -0.1668, -0.0108, -0.1529 and -0.2046 respectively. This suggests that board size, board financial expertise, board meeting and firm value reduce ETR, which signifies tax aggressiveness.

### 4.3 Pre and Post estimation Tests

Pre-estimation test is conducted to ascertain the validity of all statistical inferences for the study. This is done to evaluate the effect of distribution problems, in addition to the problem of outliers before taking decision on the appropriate statistical method to adopt. The robustness tests include multicollinearity, heteroskedasticity, normality of dependent variable and Lagrangian multiplier test.

#### 4.3.1 Normality Test

The study used numerical test to check for normality of research data. The numerically test was conducted using Shapiro-Wilk normality test shows that data are



not normally distributed as the p-value of most of the variables is 0.0000 except board independence which has probability value of 0.08 (see Table 4.3).

**Table 4.3: Normality of Data (N=114)**

Variable	W	V	z	Prob>z
ETR	0.93501	5.989	3.999	0.00003
BGD	0.90667	8.600	4.808	0.00000
BS	0.95739	3.927	3.056	0.00112
BIN	0.98013	1.831	1.352	0.08825
BFE	0.92170	7.215	4.415	0.00001
BM	0.95632	4.025	3.111	0.00093
FV	0.34415	60.438	9.164	0.00000
ROA	0.63901	33.266	7.830	0.00000

Source: STATA (14) Output, 2021

#### 4.3.2 Multicollinearity Test

Multicollinearity is a statistical term in which two or more explanatory variables in a multiple regression model are highly correlated. In order to check for the presence of multicollinearity between independent variables, correlation coefficients and variance inflation factor (VIF) with tolerant values are mostly used. This study has adopted VIF in checking for the presence of multicollinearity between the explanatory variables in the models. According to Gujarati (2003), VIF in excess of 10 is an indication of multicollinearity. Result from VIF test is less than 10 for all the study variables which is an indication of absence of multicollinearity. In this respect board gender diversity has the highest value VIF of 1.45 while lowest value of 1.06 belonging to probability (ROA)

**Table 4.4: Multicollinearity Test**

Variables	Variance Inflation Factor (VIF)	Tolerance Value (1/TV)
BGD	1.45	0.689418
BIN	1.39	0.721520
BM	1.26	0.790808
BS	1.26	0.794249
FValue	1.10	0.906844
BFE	1.09	0.920089
ROA	1.06	0.946599
Mean VIF	1.23	

Source: STATA (14) Output, 2021

#### 4.3.3 Heteroskedasticity Test

Heteroskedasticity test is conducted to check whether the change in error terms is constant within the explanatory variables or not. The reason of this test is to ensure that the regression fits all the independent variables that is the residuals do not vary with independent variable and therefore are random in nature. Result of Breusch-Pagan/Cook-Weisberg test for Heteroskedasticity reveals that there is absence of Heteroskedasticity in the three models with probabilities of chi square 0.1242.

**Table 4.5: Breusch-Pagan/Cook Weisberg Test for Heteroskedasticity**

Chi2	Prob > chi2
2.36	0.1242

Source: STATA (14) output, 2021

#### 4.3.4. Hausman Test

Because endogenous explanatory variables have the potential to cause OLS estimators to fail, the study conducted Hausman Specification Test to determine their presence in the models. The study model was subjected to Hausman Specification tests in order to select a more consistent estimator between the GLS fixed and random effects. The null hypothesis is that the regressors and unique errors are correlated. The results on Table 4.6 of the Hausman test shows that the (REM) is most appropriate over the (FEM) at probability value of 0.0601 which is greater than 0.05 level of significance.

**Table 4.6: Hausman Test**

Variables	(b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
BGD	-.6811393	.0836082	-.7647475	.2326431
BS	-.015886	-.0141967	-.0016893	.0031547
BIN	.3895126	.2790048	.1105078	.0258498
BFE	.3015964	.1413358	.1602606	
BM	-.0245717	-.0183456	-.0062261	.0082121
FValue	.0314613	.0202111	.0112502	
ROA	.0602869	.0532211	.0070658	
Chi2	13.53			
Prob > chi2	0.0601			

Source: STATA (14) output, 2021

The study also used Breusch-Pagan Lagrange multiplier test to determine whether to use Ordinary Least Square OLS or random effect estimations since the Hausman test is in favour of REM. The assumption behind random effects is that the change among entities is random and unrelated to the independent variables in the model. The unobserved heterogeneity should not be correlated with the independent variables, which is a crucial assumption for choosing the random effect estimating model. The results of the LMT test shows that the (REM) is most appropriate over the OLS with chi2 of 43.05 and probability value of 0.0000.

**Table 4.7: Breusch and Pagan Lagrangian multiplier Test for Random effects**

Chi2	Prob > chi2
43.05	0.0000

#### 4.4 Regression Results

This subsection presents and interprets the results obtained from the data that is used in testing the research hypotheses. Table 4.8 presents regression results based on REM model. The figures in parentheses are coefficients of the variables while the ones without parentheses are the probability values. Table 4.8 shows that the overall R<sup>2</sup> of the REM model is (0.16516) which is the percentage of the total variation in the dependent variable explained by the board attributes variables jointly. It signifies that 15.16% of the total variation in tax aggressiveness companies in Nigeria is caused by their gender diversity, board size, board independence, board financial expertise, and

board meetings. While the remaining 84.84% of the total variation in tax aggressiveness is caused by factors not explained by the model. Also, the regression Analysis in Table 4.8 displays a significant relationship between board attributes and tax aggressiveness based on the probability value of 0.0165 which is less than the critical value of 0.05 ( $0.00 < 0.05$ ).

The REM result on Table 4.8 shows that gender diversity with coefficient value of -0.0836 and p-value of 0.004 has negative but significant effect on tax aggressiveness of oil and gas companies in Nigeria. This suggests that one unit increase in gender diversity on the board with everything being constant, will leads to 8.36% decrease in ETR of oil and gas companies in Nigeria. The result further reveals that board size has a coefficient value of -0.0141967 and p-value of 0.012 which signifies that board size has negative but significant effect on tax aggressiveness of listed oil and gas companies in Nigeria. The result implies that one unit increase in the number of directors on board with other factors remaining constant, will lead to 1.42% decrease in ETR of listed oil and gas companies in Nigeria.

Moreover, Table 4.8 shows that board independence has a coefficient value of 0.2790048 and p-value of 0.050. This means that board independent has a positive effect on tax aggressiveness of listed oil and gas companies in Nigeria. The result indicates that one unit increase in the number of independent directors will leads to 27.9% increase in tax aggressiveness of listed oil and gas companies in Nigeria.

Also, as revealed in Table 4.8, board financial expertise has a coefficient value of -0.1413358 and p-value of 0.548 which signifies that board financial expertise has negative and insignificant effect on tax aggressiveness of listed oil and gas companies in Nigeria. This means that a one unit increase in the number of financial experts on firm's board, the ETR would reduce by 14.13%. Also, it is revealed that board meeting has a coefficient value of -0.0183456 and p-value of 0.284 which implies that board meeting has negative and insignificant effect on ETR of listed oil and gas companies in Nigeria. The result indicates that regular board meeting will lead to decrease in ETR of listed oil and gas companies in Nigeria. This implies that lack of board meeting increases tax aggressiveness of sampled oil and gas companies in Nigeria.

Table 4.8 shows that firm value which was used as control variable has a coefficient value of 0.0202111 and p-value of 0.296 which proves that firm value has positive but insignificant effect on ETR of listed oil and gas companies in Nigeria. This means that as firm value increases, ETR increases by 20.21%. Also, profitability, measured using return on assets (ROA) used as a control variable has a coefficient value of 0.0532211 and p-value of 0.561. This shows that ROA has positive but insignificant effect on ETR of listed oil and gas companies in Nigeria. This implies that one unit increase in profit would increase ETR of listed oil and gas companies in Nigeria by 53.22%. This means that more profitable companies do not engage in tax aggressiveness.

**Table 4.8: Regression Results**

Variables	OLS	RE
Constant	0.002* (0.350)	0.091*** (0.231)
Borad Gender Diversity	0.060** (0.333)	0.004* (-0.084)
Board Size	0.062** (-0.018)	0.012* (-0.014)
Board independence	0.291 (0.161)	0.050** (0.270)
Board financial expertise	0.859 (-0.047)	0.548 (-0.141)
Board meeting	0.036** (-0.035)	0.284 (-0.018)
Firm value	0.458 (-0.016)	0.296 (0.020)
Return on assets	0.154 (0.152)	0.561 (0.053)
R <sup>2</sup>	0.2328	
Adj. R <sup>2</sup>	0.1755	
F stat	2.32	
R <sup>2</sup> :		
within		0.2145
between		0.0880
overall		0.1516
p value	0.0307	0.0165

Source: STATA 14 Output 2021

Note: \*, \*\* and \*\*\* indicate 1%, 5% and 10% level of significance respectively

## 5.0 Conclusions

Corporate board attribute as a way through which firms including oil and gas sectors give back support to the organisation is becoming an increasingly important for a business to have well organized board structure to insure well day to day running of the business to achieve it goal this is very important to businesses nationally and internationally. Based on the findings of the study, the following conclusions are drawn;

- The study concluded that gender diversity is one of the factors that contribute towards tax aggressiveness of the listed oil and gas firms in Nigeria.
- The study also concluded that good representation of women in executive positions and on the board increases tax aggressiveness of listed oil and gas firms in Nigeria.
- The study also concluded that firm with large board size has low ETR which indicates high tax aggressiveness.
- The study also concluded that board size of listed oil and gas firms in Nigeria plays significant role in increasing tax aggressiveness of companies. Based on the result between board independent and tax aggressiveness the study concluded that



board independence is not one of the determinants of tax aggressiveness in listed oil and gas firms in Nigeria.

v. The study also concluded that board independence does not influence tax aggressiveness because most independence directors of the sampled firms are not financial expertise who has vast knowledge on issues of taxation.

vi. The study also drawn conclusion that board financial expertise enhances tax aggressiveness of the listed oil and gas companies in Nigeria.

vii. The study furthered concludes that for firms to have high tax aggressiveness involvement of financial expertise should be one of the priorities.

viii. Finally, the study concluded that board meeting enhances tax aggressiveness the implications of this is because the more board hold meeting it gives them more times to check the necessary means of reducing tax burden within the armpit of the law.

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