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Abstract

Purpose: The study examined the impact of firm attributes on tax aggressiveness in Nigeria. The study employed the longitudinal research design.

Methodology: The population consisted of the 13 listed commercial banks quoted on the Nigerian Stock Exchange. The final sample, after excluding firms with incomplete data, consisted of 13 Nigerian banks for a period of nine financial years (2012-2020). Data for the study were collected from the annual reports and financial statements of the selected banks. Two alternative measures of tax aggressiveness (GAAP-ETR and D_BTD) were employed and the data was analysed using the panel data regression technique while MAPE and Theil's inequality coefficient was used in evaluating the forecast abilities of the models.

Findings: The findings of the analysis revealed that firm size and firm complexity have significant positive relationship with tax aggressiveness, firm age and profitability asserted significant negative impact respectively on tax aggressiveness.

Recommendations: The study recommends that regulatory bodies and tax authorities should beam their searchlight on the tax saving strategies of small size companies with a view to discouraging aggressive tax avoidance schemes. It was also recommended that regulators should increase their monitoring of the older firms as a strategy for reducing potential tax evasions while encouraging appropriate tax savings strategies to ensure greater tax compliance.

Keywords: *Firm attributes, corporate tax aggressiveness*.

1.0 Introduction

One of the major challenges facing most developing countries is the diversification of their sources of revenue. Nigeria is not left out. Although richly endowed with crude oil among other solid mineral resources, her age-long dependence on oil revenue as a major source of government revenue, at the expense of other possible non-oil sources of revenue, has left much to be desired (Obi, 2018). The unsustainability of the crude oil sales became glaring owing to the instability of oil prices at the international market coupled with the periodic attacks on oil pipelines and production facilities by different militant groups which has decreased the volume of oil production (Musa, Saad & Ibrahim, 2017). As a result, governments are now diversifying and rolling out policies towards strengthening other sources of revenue, for which taxation is one of such (Izevbigie & Ebohon, 2019; Nworu, 2017). Interestingly, this constitutes one of the major fiscal policies of the current federal government.

Tax is an important source of government revenue. Government requires tax revenue to augment its public expenditure as well as in ensuring sufficient provisions of public amenities to the society. Most developed nations (such as United Kingdom) rely on taxation as a major source of government revenue and appear to have fared better, because taxes provide a more stable and predictable flow of income in meeting governments' expenditure needs (Ofoegbu, Akwu & Oliver, 2016). Unfortunately, not every national government, especially in developing countries, are able to effectively achieve optimal tax compliance level. In many cases, a large proportion of the informal sector of the economy escapes the tax net entirely (Oladipupo & Obazee, 2016) while companies in the formal sector try to avoid taxes by engaging in tax planning activities in order to minimize their tax burden (Hutchens, Rego & Williams, 2019).

According to Olaoye and Ekundayo (2019), one of the underlying features of tax is that it is a mandatory payment enforced by government for which no immediate gain is received in return at least in the short-run. Thus, most people pay tax grudgingly because taxpayers do not receive any instant direct benefit identifiable in return for their contributions. This makes tax payment quite unattractive to taxpayers. As a result, individuals and corporations often device means of decreasing their tax liabilities using available loopholes in tax laws. At the corporate level, taxes have direct implication on the pre-tax earnings of a company and subsequently the distributable profits. However, unlike individual tax payers, tax management decisions at the corporate level are not made directly by the shareholders, but indirectly through their agents (i.e. the management) since companies operate within the principal agent model (Chytis, Tasios & Gerantonis, 2018). This leads the researchers to the major focus of this study, tax aggressiveness.

Tax aggressiveness has been described "as wide range of operations with the sole aim of reducing the total tax debt or tax liability of an entity" (Martinez, Reinoso, Antonio & Santos, 2019, p.4). According to Martinez and Silva (2017) as cited in Martinez & Martins (2019), tax aggressive companies are those that adopt adequate tax avoidance mechanisms in order to reduce income tax expenses. For organizations, taxes are considered as a significant cost because they remove part of their earnings without apparent and immediate compensation, while tax avoidance increases net cash flows which can be used to boost corporate investment, fulfill debt obligations, or be distributed to shareholders in the form of dividends or share buybacks (Jihene & Moez, 2019). However, governments consider tax avoidance as a major problem because it threatens the

economy of any nation. For this reason, studies on tax aggressiveness and its possible determinants have continued to attract massive research interest among academic researchers.

A look at extant literature shows that the level of tax aggressiveness varies across companies because each company has peculiar characteristics. As a result, a handful of previous researches have examined the determinants of tax aggressiveness from the dimension of firm-specific attributes using different proxies. On the studies by Nigerian authors for example, Ogbeide (2017) used audit fees, firm size, leverage and interest charges as proxies for firm characteristics while Ilaboya, Obasi & Izevbekhai (2016) used firm size, profitability (ROA), leverage, ownership concentration and capital intensity. Atu, Uniamikogbo and Atu (2018) used firm size, leverage, liquidity and profitability, while Salawu and Adedeji (2017) used quality of external auditor, ownership concentration, firm value, leverage, profitability, size, growth opportunities and capital intensity as both firm characteristics and corporate governance variables. Salaudeen and Eze (2018) used firm size, leverage, profitability, capital intensity, inventory intensity, labour intensity and auditor type. Some others used variables outside the firm attributes, such as Oyeleke, Erin and Emeni (2016) which used female directors and Onyali and Okafor (2018) who studied the board of director characteristics.

Similarly, a look at some of the findings of the previous Nigerian studies shows mixed results. For example, while Ogbeide (2017) and Salaudeen and Eze (2018) found all the firm attributes they studied as significant determinants of tax aggressiveness, Ilaboya et al (2016), Salawu and Adedeji (2018), Onyali et al. (2018) and Atu et al. (2018) found that firm size, leverage and firm profitability (respectively) are all non-significant in explaining variations in tax aggressiveness using varying samples of companies in Nigeria. These observed conflicting evidences in prior studies are indications that the issues relating to firm attributes' influence on tax aggressiveness are far from been settled empirically; hence, the need for this study.

Despite the mixed findings in prior studies, it was also observed that none of the previous Nigerian studies considered the variable of 'firm complexity' as among the possible firm attributes influencing tax aggressiveness. In line with this, the objectives of the study were:

(i) To determine the influence of firm size on tax aggressiveness;

(ii) To examine the influence of firm age on the tax aggressiveness;

(iii) To assess the influence of firm profitability on tax aggressiveness;

(iv) To investigate the influence of leverage on tax aggressiveness;

(v) To determine the influence of liquidity on tax aggressiveness;

(vi) To ascertain the extent to which firm complexity influences tax aggressiveness; and

(vii) To find out the influence of ownership structure on tax aggressiveness.

1.1 Hypotheses

The following null hypotheses were tested in the course of the study:

(i) Firm size has no significant relationship with tax aggressiveness in Nigerian banks

(ii) Firm age does not significantly influence tax aggressiveness in Nigerian banks

(iii) There is no significant relationship between firm profitability and tax aggressiveness in Nigerian banks

(iv) The level of leverage does not significantly influence tax aggressiveness in Nigerian banks

(v) There is no significant relationship between liquidity and tax aggressiveness in Nigerian banks

(vi) Firm complexity does not significantly relate with tax aggressiveness in Nigerian banks

(vii) The foreign ownership structure of Nigerian banks does not influence their level of tax aggressiveness.

2.0 Literature Review

2.1 Corporate Tax Aggressiveness

Considering that tax expense is a significant cost to organisations as it affects their cashflow and working capital – thereby reducing the amount available to companies to meet their working capital needs; companies usually strive to take advantage of the loopholes that exist in the tax laws (Nwaobia & Jayeoba, 2017). This action is often called aggressive action in taxation. According to Hanlon and Heitzman (2010), the concept of corporate tax aggressiveness lacks universal definition as each researcher conceptualizes it depending on the context of its usage in a particular setting. Most studies (see for instance Cabello, Gaio & Watrin, 2019; Jacob et al., 2019; Zhu, Mbroh, Monney & Bonsu, 2019; Zemzem & Ftouhi, 2013) use different terms to represent corporate tax aggressiveness. Terms like tax avoidance, tax planning, tax management are all related terms signifying firms' activities towards (legally) reducing their tax burden or to increase after-tax cash flows by the optimization of the effective tax rate (Jacob et al. 2019). As Zaitul and Ilona (2019) put it, the term of tax aggressiveness often refers to the tax avoidance and it is part of tax planning.

By way of definition, however, scholars like Desai and Dharmapala (2009) opine that tax aggressiveness is generally the legal exploitation of the tax system to one's advantage to attempt to reduce the amount of tax that is payable by means that are within the law while making a full disclosure of the material information to the tax authorities. Researchers like Lee, Dobiyanski, and Minton (2015); Zemzem and Ftouhi (2013) differed in the above conjecturing by positing that companies' tax aggressiveness can be seen in two ways (firm's deliberate efforts to reduce its tax liabilities through either legal or illegal means or strategies); one is the legal tax avoidance that tries to unearth the kinds of transactions that are favourable under the current law via the valid tax consultancy services provided by the accountants. The second way is to do tax sheltering – which may not be entirely legal (Hanlon & Heitzman, 2010; Yeung, 2010).

2.1.1 Tax Aggressiveness Strategies

According to Badertscher, Katz, Rego and Wilson (2016) corporate tax planning activities can be classified in two: the conforming and non-conforming tax aggressive strategies. Aronmwan and Okafor (2019) note that the former (conforming tax aggressive strategy) entails efforts by firms in reducing both taxable income and accounting income (i.e. reducing both book and taxable incomes together), while the latter involves the reducing taxable income only without reducing accounting income. Hutchens, Rego and Williams (2019) and Jacob et al., (2019) claim that while some tax

avoidance strategies are highly certain and unlikely to be challenged by tax authorities (e.g. the tax treatment of capital expenditures or bond interest income), others have highly uncertain future outcomes (e.g. cross-border income shifting via intellectual property and tax-optimized transfer-pricing regimes). The income shifting strategy entails the transfer of transactional profits to other jurisdictions, within the business complexity/networks, where the tax rates are more favorable.

The above methods of obtaining tax deductions are akin to the strategies put forward by Morien (2008), which includes: strategies for obtaining tax credits and offsets by moving income away from an entity paying a high rate of tax to an entity paying a lower rate of tax; strategies for moving profits and losses between tax years, either to defer tax or take advantage of a more favorable tax rate and strategies for reducing the amount of assessable capital gains tax from an investment sold at a profit. Martinez and Motta (2019) also posit that tax planners often choose debt over equity financing. This strategy is termed thin capitalization. Ogbeide (2017) claim that non-deductible tax expense through debt financing is a way of engaging in aggressive tax behavior to influence earnings and enhance shareholders' wealth because of the non-deductibility of interest expenses (tax shield) unlike the case of equity financing which is tax deductible due to dividends to investors.

Overesch and Wamser (2010) also identified another strategy called multinationals' profit shifting via inter-company loans. This involves a multinational choosing a capital structure according to differences in international taxation, in order to minimize the tax burden of the whole company group. This can be perfected by borrowing from affiliates situated in low-tax countries and lending to subsidiaries in high-tax locations with triggers a deduction of interest payments from profits at high-tax locations and a reduction of the overall tax payments. Onatuyeh and Odu (2019) also claim that firms carry out tax aggressive activities in a number of ways, including failure to submit returns, wrong returns by manipulating taxable profits, reporting fictitious transactions and overstating expenses.

2.2 Determinants of Tax Aggressiveness – Firm Attributes

2.2.1 Firm Size

Firm size is measured as the natural log of total assets. Firm size approximates the degree of capital market frictions, where transaction costs are relatively lower for larger firms (Fischer, et al., 1989). Interest groups and policy makers have long been drawing on average effective tax rates (ETRs) to conveniently support their arguments in tax reform debates and discussions on corporate tax provisions (Callihan, 1994). This focus of the debate on corporate size led to a stream of research investigating whether there is a systematic relation between firm size and annual average ETRs. Empirical studies showed different conclusion related to the relationship between effective tax rate and company size. Several researchers found positive relation between ETR-based avoidance proxies and company size (Minnick & Noga, 2010; Vieira, 2013; Kraft, 2014), which is consistent with the political cost hypothesis, meaning that large firms are characterized by higher visibility and thus subject to greater regulatory activity (Watts & Zimmerman 1986). According to this theory, effective tax rates are a proxy for political cost for the reason that taxes paid are a mean of wealth transfer from firms so other social groups. Effective tax rates are also a proxy for firms' success; therefore, if larger firms are more successful than small firms they will be exposed to more political scrutiny.

2.2.2 Profitability

An intuitive indicator with capacity to influence effective tax rate is firms' profitability. Specifically, when profitability is measured based on pre-tax income it is expected that more profitable firms have higher earnings and consequently, pay more taxes. This point of view is the one most evident in the literature (Ribeiro et al., 2015). An early study by Gupta and Newberry (2007) finds that tax avoidance is associated with firm profitability. Gupta and Newberry (2007) were among the first to investigate the association between GAAP ETRs and multiple firm-level characteristics. Multivariate results derived from micro-level panel data show that ETRs are significantly associated with a number of other firm characteristics besides size, e.g. firm profitability. Profitability is commonly measured as either return on assets or cash flow from operations. The basic argument is that more profitable firms arguably have a greater incentive to reduce their tax burden as compared to firms that are less profitable (Dunbar, Higgins, Phillips & Plesko, 2010). More profitable firms generally pay higher taxes. On the other hand, one could argue that more profitable firms have greater incentives to engage in tax avoidance due to the greater potential savings (Rego 2003; Frank et al. 2009; McGuire et al., 2012).

2.2.3 Leverage

Leverage may be representative of complex financing arrangements that minimizes taxes (Mills, et al., 1998). Leverages firms using debt capital to finance their activities incur interest expenses that are, as opposed to dividend payments, deductible for taxable income. Leveraged firms thus benefit from a tax shield, its value increasing with financial leverage. Hence, firms with high debt levels may be faced with less pressure to draw on alternative non-debt tax shields (Graham & Tucker, 2006). Alternatively, leverage might also measure the complexity of a firm's financial transactions, leading to the assumption that highly leveraged firms have greater ability to reduce taxes through the use of financing transactions (Mills et al. 1998). In sum, leveraged firms may either have a relatively strong incentive to avoid taxes so as to preserve cash to service the debt burden, or a relatively weak motivation to engage in tax avoidance because of the beneficial debt tax shield (Badertscher, Blouin & Guay, 2011).

2.2.4 Foreign Ownership

As part of the variables of ownership structure, this study intends focused on foreign ownership. This is due to the fact that some of the Nigerian authors (e.g. Salaudeen & Ejeh, 2018) have already examined ownership structure variables like managerial ownership and ownership concentration – for which the latter was statistically non-significant while the former was negatively significant. Prior research, such as Ying, Wright & Huang (2017), recognized several ways by which institutions differ from individuals as investors. First, institutions are widely acknowledged to be better at monitoring and gathering information than individuals. Monitoring can mean gathering information, analyzing information, acting based on the information, or influencing others – either manager of other shareholders (Fich et al., 2015). Institutions invest larger amounts in each stock and, therefore, they have incentives to devote resources to monitoring (Grossman and Hart, 1980). Second, taxes and regulations distinguish institutional investors from individuals. Some institutions, like pension funds, do not pay taxes on their capital gains or dividends. Third, institutions are fiduciaries – they invest on behalf of others and therefore, are subject to agency

conflicts. Some prior research articles have stated that institutional investors prefer short-term earnings over long-term earnings, called also as myopic behaviour (Lang & McNichols, 1997).

2.2.5 Liquidity

Liquidity is the ability of any organization to meet its short term obligations using its short term resources. In the light of this, Priya and Nimalathasan (2013) posit that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of the inability to meet due short-term obligations, on one hand, and avoid excessive investment in these assets, on the other. This is due in part to the reduction of the probability of running out of cash in the presence of liquid assets. Liquidity is having enough money in form of cash, to meet ones financial obligations and one of these obligations is tax liability. Liquidity requirement of a firm depends on the peculiar nature of the firm and there is no specific rule on determining the optimal level of liquidity that a firm can maintain (Owolabi & Obida, 2012). The liquidity position of sampled firms for the period of study is determined by computing current ratio, which is the most common liquidity ratio used to determine the proportion of current assets available or cover current liabilities (Kartal, 2016).

2.2.6 Age of Company

Generally, theory postulates a difference between old and young firms concerning their probability to alter contractual outcomes that depend on accounting numbers. Political cost theory can be used to explain the association between the age of company and tax avoidance. Scott (2003) argue that the older the company, the broader its business and the higher its reputational risk. Older firms tend to mitigate risk and choose actions that do not trigger higher risk. Previous research in the field of tax aggressiveness practices show contrasting views concerning age as one of the company attributes. This research aims to address the influence of this variable in Nigerian banks.

2.2.7 Auditor Type

In literature, audit firms are classified in terms of their size because they vary as such (Chytis et al., 2018). Those classified as the 'Big4' audit firms are KPMG, Ernst and Young, PricewaterhouseCoopers and Deloitte. Traditionally, it is expected that the Big4 auditing firms can exert a significant influence on the level of tax avoidance. McGuire, Omer and Wang (2012) concluded that companies engage in greater tax avoidance when their external audit firm is a tax expert. Thus, it is generally believed that the Big4 auditing firms might have different corporate cultures than the small domestic auditing firms, and thus might provide different tax strategies to their audit clients compared with domestic auditing firms.

2.2.8 Firm Complexity

According to Wahba and Elsayed (2010), firm complexity refers to what extent the firm's operations and activities are diversified and interrelated. It is among the firm-specific attributes that usually influence several organizational outcomes. In the context of this study, the premise of existing literature (Chen et al., 2010; Chen, Ge, Louis & Zolotoy, 2019; Pratama, 2017). Is that the more complex the firm is, the greater the tax burden should likely be. In line with the economies of scale, the potential influencing effect of firm complexity on tax aggressiveness is more likely to be valid since complex firms are characterized by larger subsidiaries and business segments, especially conglomerates or cross-border financial institutions with foreign affiliations.

Researchers like Barinov, Park and Yildizhan (2016) suggest that earnings reporting behaviours of conglomerates and single-segment firms differ significantly, and this most likely transcends to tax aggressive behaviours since there is likelihood that complex firms have higher tax burden.

2.3 Agency Theory

Slemrod (2004) was one of the first papers to highlight the agency problems inherent in corporate tax avoidance decisions. Desai, Dyck and Zingales (2007) along this line built a model that contributed to the growing literature on the cross-sectional variation in corporate tax avoidance. They however went further so state that tax avoidance is a three-party game involving the shareholders, insiders/manager and the state, so therefore, there is bound to be conflict of interest between these three parties. According to the agency-view of tax avoidance, conflicts between firm owners and its management may arise because managers who are generally expected to make tax-effective decisions may in fact behave opportunistically and divert corporate wealth for their private benefit (Jensen & Meckling 1976; Desai & Dharmapala, 2006).

Slemrod (2004) and Chen and Chu (2005) were among the first to view corporate tax avoidance within an agency framework. Tax avoidance is related to agency problem that is, tax avoidance is perceived as a tool of the creation a shield for managerial opportunism and diversion of rents. According to this view, theoretically corporate tax avoidance can create a shield for expedience activities of managers and diversion of rents (Desai et al., 2006). An emerging literature in financial economics, however, emphasizes agency cost implications of tax avoidance and suggests that tax avoidance may not always increase the wealth of outside shareholders. In accordance with this alternative view, tax aggressiveness may contribute to managerial rent extraction, which ranges from theft of corporate earnings and earnings manipulation to excessive executive compensation, in various forms. Tax aggressiveness may potentially reduce the after-tax value of the firm, since the combined costs of company, which include costs directly related to tax planning activities, additional compliance costs, and non-tax costs e.g. agency costs may surpass the tax benefits for shareholders (Wang, 2010). Desai et al., (2006) suggest an agency-view on tax avoidance, stating that agency costs in form of managerial rent extraction may result from a complimentary relationship between tax avoidance and managerial diversion. Self-interested managers might use tax avoidance strategies to mask the opportunistic extraction of rents (Desai, Dyck and Zingales, 2007).

3.0 Methodology and Model Specification

The nature of the study enabled the use of the longitudinal and the cross-sectional research design. The study focused on the banking sector, with the total of 13 banks taken as the population and sample. The time period covered ranged from 2012-2020. The annual reports of the banks were used as the source for the data. The univariate and multivariate analysis by way of descriptive statistics, correlation and regression technique.

3.1 Model Specification

The idea behind this study was formulated under the deductive approach which seeks to explain why and what causes variations in corporate tax aggressiveness. Thus, the analytical assumptions were based on the objectivist school of thought that all variables exist independently in a single social reality, but with the ability to influence certain external factors. The agency and political

cost theories form the theoretical basis upon which the model specifications were built. Figure 1 presents the research framework:

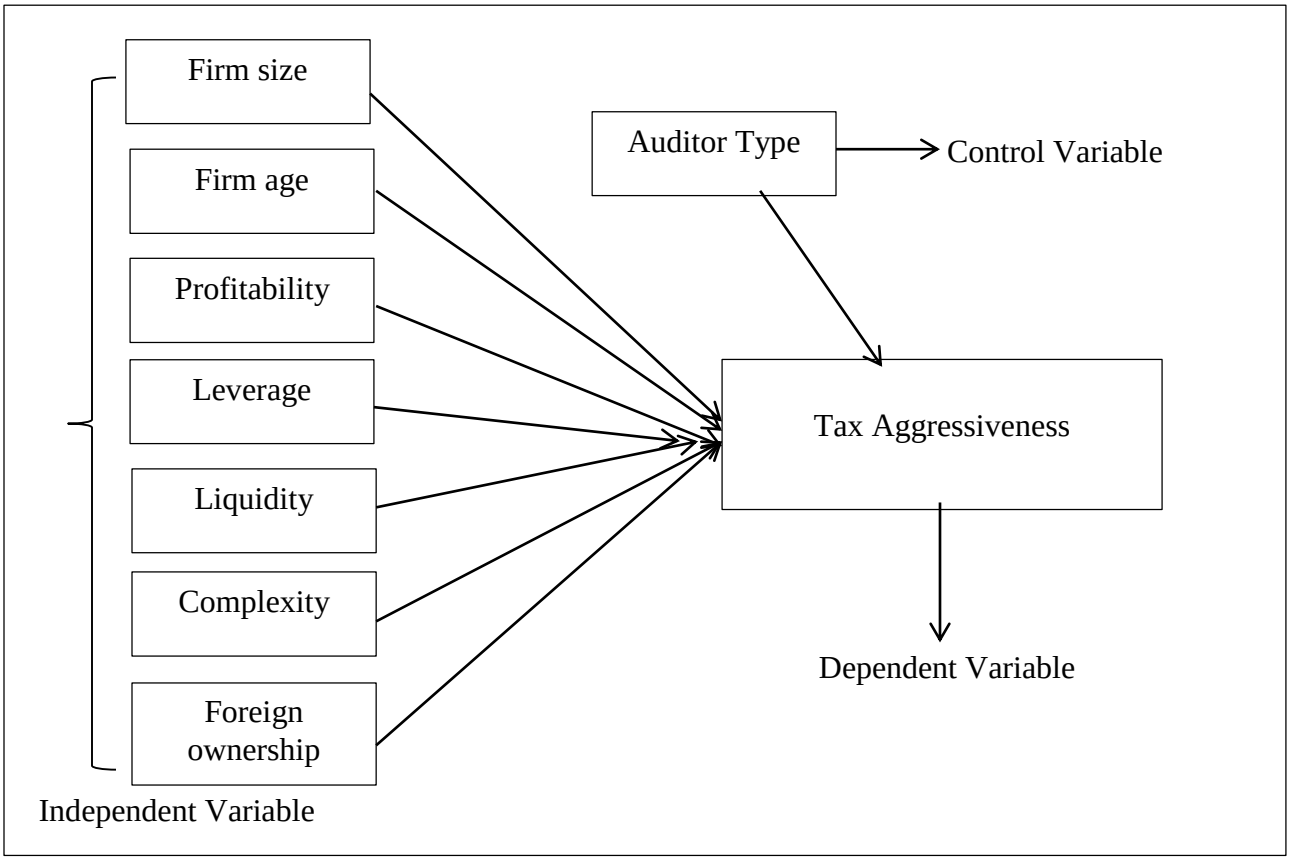

Figure 1: Proposed Research Framework (2022)

The model as specified in the paper is provided in its econometric form below:

The general econometric model for the study is specified thus:

$$TAG\ (ETR\ and\ BTD) = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 AGE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 CPX_{i,t} + \beta_7 FOWN_{i,t} + \beta_8 BIG4_{i,t} + \varepsilon_{i,t} \quad (3.3)$$

Where:

TAG = Tax aggressiveness, measured using two proxies (GAAP_ETR and Total BTD) as similarly used by Balakrishnan et al (2017); Martinez and Motta (2019) and Martinez and Rodrigues (2019)

SIZE = Firm size for the nine year period

AGE = Firm age for the nine year period

ROA = Return on assets for the nine year period

LIQ = Liquidity for the nine year period

LEV = Leverage for the nine year period

FOWN= Foreign ownership for the nine year period

CPX = Firm complexity for the nine year period

BIG4 = Audit firm size for the nine year period

α = constant, β_1 to β_8 = the coefficient of the parameter estimate, ε = the error term or residual

i = ith firm for cross-section, t = time period

Table 1: Operationalization of Variables

Variables	Notation	Measurements	apriori sign
Dependent variable: tax aggressiveness			
GAAP effective tax rate	ETR	Ratio of current income tax expenses to pre-tax book income	-nil-
Total book tax difference	D_BTD	Residual of BTDit = β1TACCit + μi + εit	-nil-
Independent variables:			
Firm size	SIZE	Natural log of total asset	+
Firm age	AGE	Current year less year incorporation	+
Firm profitability	ROA	Ratio of profit after tax to total asset	-
Leverage	LEV	Ratio of total debt to total equity	-
Firm liquidity	LIQ	Raito of cash to total assets	+
Firm complexity	CPX	Natural log of the number of a firm's operating segments or subsidiaries	+
Foreign ownership	FOWN	Proportion of shares owned by foreign investors	+
Control variable			
Auditor type	BIG4	Dummy variable of 1 if firm *i* is audited the Big4 in year *t*, and o otherwise	+

3.2 Presentation of Results

Table 2: Descriptive Statistics

Nigeria	GAAP_ETR	D_BTD	FSIZE	AGE	ROA	LEV	LIQ	CPX	FOWN	BIG4
Mean	0.1425	-1.01E-18	2707354683	34.69	0.016	9.9497	0.155	13.128	27.127	0.931
Median	0.1504	0.0017	1835466000	31.00	0.013	6.8031	0.1504	8.0000	11.910	1.000
Maximum	1.0016	0.0355	10384349227	60.00	0.056	246.26	0.3625	53.000	99.900	1.000
Minimum	-0.5520	-0.1796	156506504	22.00	-0.095	-2.787	0.0165	1.0000	0.0000	0.000
Std. Dev.	0.1459	0.0220	2339323048	10.59	0.018	22.758	0.0683	13.182	32.346	0.253
Skewness	0.7716	-5.7938	1.138537	1.07	-2.165	9.7285	0.3517	1.9209	1.1849	-3.42
Kurtosis	16.7027	44.941	3.494667	2.89	16.204	101.13	3.2036	5.2428	2.9693	12.69
Jarque-Bera	926.953	9229.9	26.47007	22.44	941.33	48791	2.6135	96.479	27.384	686.7
Probability	0.00000	0.0000	0.000002	0.0013	0.0000	0.0000	0.2707	0.0000	0.0001	0.000
Observations	117	117	117	117	117	117	117	117	117	117

The descriptive statistics in table 2 shows the characteristics of the variables used in the study. The result was presented in a form to reflect the sample characteristics of both countries. As observed, the mean values of GAAP_ETR (i.e. tax aggressiveness, proxied using GAAP-ETR) stood at 0.1425 for Nigerian banks. The mean value of SIZE, run using the raw value of total assets, showed an average value of ₦2,707,683,000 ((about £5.1 billion) for Nigerian banks. On the variable of D_BTD, the mean value of -1.01E-18 is greater than -1.14E-16 since a less negative number is always greater than a more negative number. This corresponds with the GAAP_ETR result that Nigerian bank are tax aggressive. The average age of the Nigerian banks are 35 years. On the performance of the companies in terms of return on assets (ROA), it could be deduced that while the Nigerian banks have an average ROA value of 0.016. The standard deviation of 0.018 (for Nigerian banks) is an indication that the ROA of majority of the sampled banks revolves around the mean value of 0.016. On the variable of LIQ (measured as ratio of cash to total assets), the mean values stood relatively same at 0.155.

Table 3: Correlation matrix (GAAP_ETR)

	ETR	SIZE	AGE	ROA	LEV	LIQ	CPX	FOWN	BIG4
ETR	1.000								
	……..								
SIZE	0.117	1.000							
	(0.21)	……..							
AGE	-0.13	0.068	1.000						
	(0.17	(0.47)	……						
ROA	0.174	0.376	-0.16	1.000					
	(0.06)*	(0.00)*	(0.09)*	……..					
LEV	-0.07	-0.14	-0.06	-0.202	1.000				
	(0.46)	(0.14)	(0.54)	(0.03)*	…….				
LIQ	0.055	0.28	0.123	0.389	-0.145	1.000			
	(0.56)	(0.00)*	(0.19)	(0.00)*	(0.12)	……			
CPX	0.155	0.544	0.231	-0.035	-0.001	0.149	1.000		
	(0.09)*	(0.00)*	(0.01)*	(0.71)	(0.99)	(0.11)	…….		
FOWN	-0.08	0.107	0.134	-0.021	0.007	-0.09	0.318	1.000	
	(0.42)	(0.25)	(0.15)	(0.82)	(0.94)	(0.36)	(0.01)*	……	
BIG4	-0.01	0.48	0.159	0.379	0.055	0.394	0.091	0.122	1.000
	(0.89)	(0.00)*	(0.09)*	(0.00)*	(0.56)	(0.00)*	(0.33)	(0.19)	…..

Source: Eviews 10 (2022)

As observed from the part one of Table 3 (using only Nigeria banks), the measures of firm age (AGE), leverage (LEV), foreign ownership (FOWN) and audit firm size (Big4) are all negatively correlated with tax aggressiveness (using GAAP_ETR). However, the large p-values of 0.17, 0.46, 0.42 and 0.89 for AGE, LEV, FOWN and BIG4 respectively, suggest non-significant associations between the four aforementioned variables and the variable of interest (i.e. GAAP_ETR). On the other hand, the measures of firm size (SIZE), profitability (ROA), liquidity (LIQ) and complexity (CPX) have positive associations with the tax aggressiveness measure (GAAP_ETR). Howbeit, only the correlation coefficients of AGE and CPX appeared significant, but only at the 10% levels.

The above result can be translated to mean that, in the Nigerian context highly profitable banks and associated with high ETR meaning they are less tax aggressive. Similarly, the weakly significant positive correlation between CPX and GAAP_ETR means that highly complex Nigerian banks are less tax aggressive. On the interrelationship among the individual variables, it can also be observed that SIZE (r = 0.376, p-value = 0.000) is positively and significantly correlated with ROA implying that large banks are more profitable, more liquid (LIQ), more complex (CPX) and use more Big4 (p-value 0.000).

Table 4: Correlation matrix (D_BTD)

	D_BTD	SIZE	AGE	ROA	LEV	LIQ	CPX	FOWN	BIG4
D_BTD	1.000								
	……..								
SIZE	0.308	1.000							
	(0.00)*	……..							
AGE	-0.003	0.068	1.000						
	(0.97	(0.47)	……						
ROA	0.815	0.376	-0.159	1.000					
	(0.00)*	(0.00)*	(0.08)	……..					
LEV	-0.134	-0.137	-0.058	-0.202	1.000				
	(0.15)	(0.14)	(0.54)	(0.03)*	…….				
LIQ	0.334	0.28	0.123	0.388	-0.15	1.000			
	(0.00)*	(0.00)*	(0.19)	(0.00)*	(0.12)	……			
CPX	-0.06	0.544	0.231	-0.035	-0.001	0.149	1.000		
	(0.54)	(0.00)*	(0.01)*	(0.71)	(0.99)	(0.11)	…….		
FOWN	0.002	0.107	0.134	-0.021	0.007	-0.09	0.318	1.000	
	(0.98)	(0.25)	(0.15)	(0.82)	(0.94)	(0.36)	(0.01)*	……	
BIG4	0.491	0.48	0.159	0.379	0.055	0.394	0.091	0.122	1.000
	(0.00)*	(0.00)*	(0.09)*	(0.00)*	(0.56)	(0.00)*	(0.33)	(0.19)	…..

Source: Eviews 10 (2022)

The outcome of the correlation matrix using the D_BTD (Discretionary/Total Book Tax Difference) is presented in Table 3. The measures of firm age (AGE), leverage (LEV) and

complexity (CPX) are all negatively correlated with the tax aggressive measure (D_BTD). This implies that AGE, LEV and CPX move in the opposite direction with D_BTD; but not significantly due to their high probability values of 0.97, 0.15 and 0.54 for AGE, LEV and CPX respectively.

On the other hand, the variables SIZE, ROA, LIQ, FOWN and BIG4 have positive associations with D_BTD measure of tax aggressiveness. This means that they all move in the same direction with D_BTD; however, only the variable of FOWN is not statistically significant while the variables of SIZE, ROA, LIQ and BIG4 are all significant at the 5% levels. This can be translated to mean that large and profitable Nigerian banks are associated with high D_BTD (i.e. are highly tax aggressive). Also, high liquid Nigerian banks and those employing the Big4 are most likely tax aggressive. Relatedly, the interrelationship among the individual variables showed that SIZE is significantly and positively associated with ROA, LIQ, CPX and Big4 which implies that large banks are more profitable, more liquid (LIQ), more complex (CPX) and use more Big4. This same outcome was observed in table 2.

Table 5: VIF Tests

Variable	Coefficient variance	Centred VIF
C	0.001230	NA
SIZE	3.10E-06	2.357177
AGE	1.31E-08	1.188409
ROA	0.006043	1.574715
LEV	2.70E-09	1.134556
LIQ	0.000375	1.417221
CPX	1.42E-08	1.997466
FOWN	1.42E-09	1.207615
BIG4	3.43E-05	1.789804

Source: Eviews 10 (2022)

From the VIF test results presented in Table 5, it can be observed that all the centred VIF values of the model are below the benchmark value of 10. The decision rule of the VIF tests is that if any of the explanatory variables exhibits VIF of up to, more than ten (10), then correlates with another independent variable(s), and if otherwise (i.e. < 10), then multicollinearity issues among the variables are likely absent. Going by the above decision rule, it can be observed that there are no issues of unstable parameter estimates in the regression lines of the model.

3.3 Panel Regression Results

Table 6: Regression output

Dependent variable: GAAP-ETR	Model 3.4a (Nigeria)	Dependent variable: D_BTD	Model 3.4b (Nigeria)
C	0.422363 (1.0206) (0.3097)	C	0.34823*** (3.90246) (0.0002)
SIZE	-0.01113 (-0.5356) (0.5934)	SIZE	-0.0232*** (-4.5647) (0.0000)
AGE	-0.00184 (-1.3661) (0.1747)	AGE	0.00396*** 95.19498) (0.0000)
ROA	1.64472* (1.79303) (0.0758)	ROA	1.33064*** (16.1289) (0.0000)
LEV	-0.00032 (-0.5148) (0.6078)	LEV	5.10E-05 (1.11514) (0.2676)
LIQ	-0.08127 (-0.3557) (0.7227)	LIQ	0.004575 (0.21776) (0.8281)
CPX	0.00314** (2.2353) (0.0275)	CPX	-0.0014*** (-2.8094) (0.0060)
FOWN	-0.00061 (-1.3777) (0.1712)	FOWN	-0.00015 (-1.0753) (0.2850)
BIG4	-0.01423 (-0.2069) (0.8373)	BIG4	0.010836 (0.95447) (0.34220)
R^2 Adjusted R^2 F-Stat Prob (F-stat) D.W.	0.099601 0.032904 1.493348 0.167971 1.838295	R^2 Adjusted R^2 F-Stat Prob (F-stat) D.W.	0.82721 0.791212 22.9793*** 0.0000 2.275867

Source: Eviews 10 (2022)

Table 6 shows the regression output for the model. It can observed that in terms of the statistical significance of the GAAP-ETR model, the overall probability values of 0.16797 and 0.00009 (respectively) implies that whereas there is a linear relationship between the dependent variable (GAAP_ETR) and the explanatory variables; no linear relationship could be established in the model. The R^2 values of 0.0996 and 0.47357 for models 3.4a and 3.5a respectively, indicate that

the latter have a stronger explanatory power than the former at about 47.4% and 10% respectively. On the adjusted R^2 which controls for the effect of the inclusion of successive explanatory variables on the degrees of freedom, both models showed values of 0.0329 and 0.355.

On the performance of the individual variables in terms of their levels of significance, it could be observed from model 3.4a that despite failing the overall significance test due to the high overall probability value of 16.8%, two out of the eight independent variables (i.e. ROA and CPX) were statistically significant, howbeit, at 10% and 5% levels of confidence respectively. This suggests that the changes in tax aggressiveness (TAXA) in the Nigerian commercial banks within the nine-year period covered by the study are significantly associated with firm profitability (ROA) and firm complexity (CPX). However, the remaining independent variable of SIZE, AGE, LEV, LIQ, FOWN and BIG4 were not statistically significant due to high probability values of 0.59, 0.175, 0.608, 0.723, 0.17 and 0.837 respectively. Thus, going by the positive coefficients of ROA and CPX (1.6447 and 0.00314) in model 3.4a, it then means that, on the average, the GAAP-ETR adjusted by 1.645 units (p = 0.0758) with one unit change in return on assets at 10% level of significance. Similarly, holding other variables constant, GAAP-ETR is predicted to increase by 0.00314 units when firm complexity increases by one unit. In essence, all things being equal, highly profitable Nigerian banks have higher effective tax rate (i.e. are less tax aggressive), while the Nigerian banks with more subsidiaries (complexity) are equally less tax aggressive.

Table 7: Summary of Hypotheses Testing

S/N	Hypotheses	Predicted sign	Result
H_{01}	No significant relationship between firm size and tax aggressiveness	+	-*
H_{02}	No significant relationship between firm age and tax aggressiveness	+	+*
H_{03}	No significant relationship between firm profitability and tax aggressiveness	-	+*
H_{04}	No significant relationship between leverage and tax aggressiveness	-	+
H_{05}	No significant relationship between liquidity and tax aggressiveness	+	+
H_{06}	No significant relationship between firm complexity and tax aggressiveness	+	-*
H_{07}	No significant relationship between foreign ownership and tax aggressiveness	+	-

Source: Researcher's compilation (2022) **Significant relationships*

3.4 Discussion

The null hypothesis that business size has no meaningful link with tax aggression was rejected by the first hypothesis test. The findings are consistent with those of Atu et al (2018), Rani et al (2018), Irianto et al (2017), Ogbeide (2017), Pratama (2017), Ugbogbo et al (2018), Salaudeen and Akano (2018), and Zemzem and Ftouhi (2013), all of which discovered that company size is positively and substantially connected to ETR. Inua (2018) and Salaudeen and Ejeh (2018), on the other hand, found no significant association between the size of a business and its tax aggressive behaviour (using ETR) of Nigerian enterprises. The rationale for their results non-significance might be sector-based as both research sampled 30 manufacturing enterprises and 40 non-financial organisations, respectively.

According to the study's second premise, there is no significant association between company age and tax aggression. The findings confirm the agency hypothesis, which holds that older corporations have more connections and resources for lobbying and smarter tax preparation than newer ones. As a result, in order to remain relevant in the business, companies have a proclivity to engage in aggressive tax planning. This conclusion on business age corroborates that of Fernandez-Rodriquez et al., (2019), Pratama (2017), and Ogundajo et al. (2016), who found evidence that the older the company, the more aggressive the taxation in Spain, Indonesia and Nigeria, respectively.

Furthermore, the third hypothesis was tested, and it was shown that company profitability had a positive coefficient sign. This result is consistent with the studies and the school of thought's anticipation that more profitable enterprises have a larger motivation to minimize their tax burden than less profitable firms due to the bigger potential savings (Rego, 2003; Ribeiro et al., 2015). This explains why most major successful corporations frequently participate in large-scale charity and disaster management to establish relevance and get government tax breaks. Highly profitable companies are more prone to engage in earnings management for tax planning purposes in order to lower their tax burden (Dunbar et al., 2010). The conclusion that profitable enterprises are related with increased tax aggression is consistent with the findings of most previous research including Zhu et al. (2019), Rani et al., (2018), and Chytis et al. (2017). However, the findings contradict the findings of certain Nigerian researchers (e.g. Atu et al, 2018; Salawu & Adedeji, 2018, Onyali et al., 2018), who discovered a non-significant link between profitability and tax aggression. This discrepancy might be attributable to methodological and sector-specific discrepancies, since Atu et al. (2018) utilized the OLS approach while the others sampled non-financial enterprises.

The results and testing of the fourth hypothesis show that the null hypothesis, stating that leverage has no meaningful link with tax aggression, is correct. The consequence of the inverse sign of leverage against ETR is expected, since the study predicted that leveraged enterprises will have a strong incentive to evade taxes in order to save cash to pay their debt load. This position is shared by Rego and Wilson (2012). The non-significant result, on the other hand, can be explained by the hypothesis that enterprises with high debt levels may be under less pressure to use alternative non-debt tax shields since they are more likely to benefit from administrative tax shield. Most previous Nigerian research, including Ifurueze et al. (2018), Ilaboya et al (2016), Salawu and Adedeji (2018), Onyali et al. (2018) and Atu et al. (2018), discovered that leverage is insignificant in explaining variations in tax aggressiveness using diverse samples of enterprises in Nigeria.

Similarly, a research conducted by international writers (Irianto et al., 2017) discovered that leverage had no substantial impact on tax evasion in Indonesia. Nonetheless, the findings on leverage contradict those of certain Nigerian writers, like Inua (2018), Ogbeide (2017), Salaudeen and Ejeh (2018) and Ugbogbo et al. (2018) who discovered a substantial association between leverage and corporate tax aggressive avoidance. The difference between our results and theirs might be related to the measure of leverage utilized, as Ogbeide (2017) used total debts, while others used debt-to-assets ratios, and our present study used debt-to-equity ratio as a proxy for leverage.

According to the results of the fifth hypothesis testing, the variable of firm liquidity had positive coefficients in the Nigerian setting. The favorable impact of liquidity on the D_BTD tax aggressiveness measure is not predicted because enterprises suffering liquidity problems are fighting for survival and may have a greater motivation to dodge taxes and limit outflows. All else being equal, liquidity pushing down tax aggressiveness (that is, raising ETR) is only to be expected in enterprises experiencing liquidity issues. However, the findings are consistent with those of Salawu and Adedeji (2017), who studied 50 non-financial firms and discovered a considerable beneficial impact of liquidity on ETR. The similar conclusion was reached by Atu et al. (2018), who sampled 10 Nigerian listed banks and Chen et al. (2019), who selected US and Chinese enterprises and discovered that firms with more stock liquidity engage in less aggressive tax evasion. However, the findings contradict those of Lanis et al. (2015), who studied Australian enterprises and found that liquidity significantly increases tax aggression.

According to the results of the sixth hypothesis testing, the variables of firm complexity have a substantial negative coefficient. The presence of a significant negative coefficient of complexity in the Nigerian sample suggests that highly diversified Nigerian banks or those with several segments/subsidiaries are related with low tax aggression. This conclusion contradicts the study's a priori hypothesis, since the study predicted that highly diversified enterprises with more subsidiaries or business sectors would have greater tax loads due to economics of scale. As a result, the incentive to participate in tax planning to decrease their tax burden will be strong. The findings on firm complexity contradict those of Martinez and Rodrigues (2019), who investigated the effect of corporate diversification on tax aggressiveness in Brazilian companies and found empirical evidence that in the group of diversified companies, the higher the number of segments a company operates in, the lower the likelihood of this company having low tax aggressiveness, i.e. operating in more segments increases the likelihood of being more tax aggressive. However, in the Nigerian context, our conclusion on business complexity matches that of Zheng (2017) who discovered that enterprises operating in fewer categories are more tax aggressive than diverse organisations. However, the measurement of firm complexity could be the reason for the unfavourable result, as this study measured firm complexity as the number of firm's operating segments and subsidiaries, whereas the aforementioned prior studies (Martinez & Rodrigues, 2019; Zheng, 2017) measured it as a dummy variable indicating firms in more than one segment in the sample and those in only one segment.

The seventh hypothesis revealed that there is no substantial association between foreign ownership and tax aggression. This implication of coefficient signals validates the common idea that foreign investors always follow worldwide best practices (Salihu, Annuar & Obid, 2015). The result is also consistent with the idea, which proposes that foreign investors encourage tax compliance

among management in order to build a good reputation for the organization. However, the findings of Shi et al. (2020), who discovered a non-significant association between foreign ownership and two separate metrics of tax evasion in the Philippines, corroborate our present finding. The findings back with the findings of Hasan, Kim, Teng and Wu (2016), who discovered that foreign institutional ownership is adversely linked with (i.e. lowers) company tax evasion. On the other hand, our findings contradict those of Alkurdi and Mardini (2020) and Salihu et al. (2015), who discovered that foreign ownership enhances the chance of implementing tax evasion tactics in Jordanian and Malaysian firms, respectively.

Finally, the results show that the control variable of auditor type, as assessed by the Big4 dummy variable, likewise has a non-significant positive link with tax aggression. This indicates that, in the context of this study, the kind of audit company (whether Big4 or non-Big4) has no bearing on the level of tax aggression of the firm. However, the coefficient signals show that the more the usage of Big4 audit firms, the greater the tax aggression; but only somewhat. As a result, banks that engage Big4 auditors are more likely to be tax aggressive. This finding is comparable to that of Salaudeen and Eze (2018), who discovered that businesses who hire tax professionals (Big audit firms) experience reduced ETR (that is higher tax aggressiveness).

4.0 Conclusion

In order to contribute to the current knowledge, the study examined the influence of several company factors on the corporate tax aggressiveness of Nigerian commercial banks. The research looked precisely at how business size, age, profitability, leverage, liquidity, complexity, and foreign ownership affect tax aggression in Nigeria. In order to offer robustness to the findings, the study used two other metrics of tax aggression, the GAAP-ETR and D_BTD. The census technique of sampling was used, with an emphasis on listed commercial banks in both nations, with thirteen (13) commercial banks making the cut in the Nigerian setting. The seven (7) aforementioned firm-specific qualities serve as independent variables, which are tested against dual tax aggression metrics of GAAP-ETR and D_BTD while accounting for audit firm size (Big4).

There were both univariate and multivariate analyses done. According to the descriptive research, Nigerian banks are tax aggressive in terms of average total assets. Based on the results of this study, it can be concluded that firm size, firm age, and firm profitability are the major determinants of tax aggressiveness in Nigeria because (i) they maintained statistical significance across the dual measures of tax aggressiveness used and (ii) the interpretation and implication of their different coefficients towards our variable of interest (tax aggressiveness) is exactly the same in both countries. It may also be argued that, in the Nigerian context, the discretionary book tax difference (D BTD) created a more fitting model than the GAAP-ETR.

5.0 Recommendations

The following recommendations were made in view of the findings and conclusions drawn from the results of the study:

(i) There are indications, although non-significant that leveraged firms in Nigeria may likely have strong incentive to avoid taxes so as to preserve cash to service their debt burden, the study recommends that tax authorities should draw up appropriate tax holiday policies that

would allow genuinely struggling firms to emerge from distress position without resorting to aggressive tax avoidance measures.

(ii) On the weak likelihood that liquid firm are likely less tax aggressive, there is need for management to note that poor liquidity may not change swiftly based on tax aggressiveness. Thus, banks facing liquidity issues show focus on seeking for fresh capital and asset expansions as well as in creating more value for the banks.

(iii) On complexity, the notion that highly diversified banks engage in less tax aggression was upheld. Since most diversified firms have cross-border affiliations and multiple subsidiaries and have to contend with the local complex tax laws in its diverse business segments, there is need for government to simplify the tax laws and focus on creating a tax culture in order to foster voluntary compliance amongst corporations.

(iv) There are indications from the results that higher foreign ownership is associated with less tax aggression. However, the result is not statistically significant and therefore may not be valid for any policy. Be that as it may, while foreign capital inflow is desirable for banks, management should ensure that influencing the role of foreign investors in corporate tax avoidance decisions are tailored to ensure that the cost of tax avoidance does not outweighs the benefits that can be generated thereof.

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