Firm Attributes and Corporate Tax Aggressiveness: A Comparative Study of Nigeria and South Africa Banks

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Abstract

The aim of this paper is to investigate the link between firm attributes and tax aggressiveness in Nigeria and South Africa. A comparative analysis was carried out on the variables of firm size, age, profitability, leverage, liquidity, complexity, foreign ownership and tax aggressiveness on banks in Nigeria and South Africa. The study employed the longitudinal research design and took a comparative analysis approach. The population consists of the 13 listed commercial banks quoted on the Nigerian Stock Exchange and the 16 local commercial banks listed on the Johannesburg Stock Exchange. The time frame for the study was from 2012-2020. Data collated was analysed using the techniques of descriptive statistic, correlation and panel data regression technique while MAPE and Theil's inequality coefficient were used in evaluating the forecast abilities of the models. Two alternative measures of tax aggressiveness (GAAP-ETR and D_BTD) were adopted as dependent variables. The panel data collected was analysed. The result of the Nigerian model (using the D_BTD measure) showed that firm size and firm complexity both have a significant positive relationship with tax aggressiveness while firm age and profitability asserted significant negative impacts on tax aggressiveness. The outcome of the South Africa model (using the GAAP-ETR measure) showed that firm age and profitability have a significant negative relationship with tax aggressiveness while firm size and liquidity have significant positive relationships with tax aggressiveness. The study recommends, that regulatory bodies and tax authorities should beam their searchlight on tax saving strategies of small size companies with a view to effectively monitoring their aggressive tax avoidance schemes.

Keywords: Corporate tax aggressiveness, firm attributes, Nigeria, South Africa

1. Introduction

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, nobody pays tax with a grin, because taxpayers instantly receive nothing 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 loop holes 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, et al, 2018). This leads us to the major focus of this study, tax aggressiveness.

Martinez et al. (2019) described tax aggressiveness as a wide range of operations with the sole aim of reducing the total tax debt or tax liability of an entity. For organisations, 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).

Economically, Nigeria and South Africa have a lot in common. For example, some of the multinational banks in Nigeria have subsidiaries and cross-border banking affiliations with South Africa (e.g. Ecobank, FCMB, First City Monument Bank), Stanbic IBTC and Union Bank) while some South African companies have strong presence in Nigeria such as MTN which is currently listed on the Nigerian Stock Exchange (MTN, got listed in May 2019). While there are existing Memorandum of Understanding (MoUs) between both countries on information sharing and

anti-money laundering via tax crimes, there are indications from available indices that both countries do not generate as much revenue from income taxes as they should. For example, according to the Corporate Affairs Commission (CAC) in Nigeria as reported by Awodipe (2018), out of the estimated 90 million individuals economically active in Nigeria, only 19 million are tax registered under the PAYE (Pay as You Earn) scheme. Similarly, out of about 30 million registered corporate organisations, only 2.5 million tax-registered corporate bodies (just above 8%) are captured on the CAC list, leaving the rest out of the tax net. On the other hand, The South African Revenue Service (SARS) in its 2018 Annual Report stated that of an estimated 27 million taxpayers registered with SARS (comprising of 21 million individual taxpayers and about 6 million corporate entities), only about 30% submit tax returns.

Thus, the first identified research gap that prompted this study was the fact that there is a widening tax gap between tax revenue projections and actual tax revenue collected thereafter in most developing countries such as Nigeria and South Africa. Closing these wide gaps between the taxable income group and the percentage of actual retrieved taxes poses a major challenge to most governments which needs to be addressed. Governments generally consider tax offences as highly grievous. Tax aggressiveness is not necessarily a tax offence as it is usually classified as a tax avoidance practice and viewed as legal in most jurisdictions. Etter-Phoya et al (2019) posit that "South Africa is the only country that requires taxpayers to report tax avoidance schemes they have used and tax advisers to report tax avoidance schemes they have marketed or sold" 9p.13). No other African country requires taxpayers or advisers to report uncertain tax positions for which reserves have been created in annual company accounts (Ettev-Phoya et al, 2019). Thus, in most nations that do not depend largely on natural resources in financing their budgets (such as Nigeria), tax is considered inevitable, just like death (Chytis et al, 2018).

The second identified research gap that prompted this study was the fact that to the best of the researchers knowledge, there has not been any comparative empirical study on firm attributes and tax aggressiveness between Africa's two largest economies. With the increasing indoctrination of cross-country analyses into main stream accounting and taxation research, such an empirical study involving Africa's two dominant economies becomes almost inevitable (Boateng, 2018). This research effort thus reveals the key differences between firm attributes and the tax aggressive behaviour of the banks in the two countries from which vital lessons could be learnt, both for the respective countries and others within the African continent and beyond. Thus, in addition to closing the earlier identified gaps in previous studies, this study equally adopts a cross-country comparative analysis between Nigerian banks and South Africa banks in a bid to expand the existing horizons on tax aggressiveness research. Flowing from the above, the following research objectives guided the study:

(i) To determine the influence of firm size on tax aggressiveness of Nigerian and South African banks

(ii) To examine the influence of firm age on the tax aggressiveness of Nigerian and South African banks

(iii) To assess the influence of firm profitability on tax aggressiveness of Nigerian and South African banks.

(iv) To investigate the influence of leverage on tax aggressiveness of Nigerian and South African

(v) To determine the influence of liquidity on tax aggressiveness of Nigerian and South African banks

(vi) To ascertain the extent to which firm complexity influences tax aggressiveness of Nigerian and South African banks.

(vii) To find out the influence of ownership structure on tax aggressiveness of Nigerian and South African banks.

1.1 Hypotheses

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

(i) $H_0 1_a$: Firm size has no significant relationship with tax aggressiveness in Nigerian banks

$H_0 1_b$: Firm size has no significant relationship with tax aggressiveness in South African banks.

(ii) $H_0 2_a$: Firm age does not significantly influence tax aggressiveness in Nigerian banks

$H_0 2_b$: Firm age does not significantly influence tax aggressiveness in South African banks

(iii) $H_0 3_a$: There is no significant relationship between firm profitability and tax aggressiveness in Nigerian banks

$H_0 3_b$: There is no significant relationship between firm profitability and tax aggressiveness in South African banks

(iv) $H_0 4_a$: The level of leverage does not significantly influence tax aggressiveness in

Nigerian banks

H_04_b: The level of leverage does not significantly influence tax aggressiveness in South African banks

(v) H_05_a: There is no significant relationship between liquidity and tax aggressiveness in Nigerian bank

H_05_b: There is no significant relationship between liquidity and tax aggressiveness in South African banks.

(vi) H_06_a: Firm complexity does not significantly relate with tax aggressiveness in Nigerian banks.

H_06_b: Firm complexity does not significantly relate with tax aggressiveness in South African banks

(vii) H_07_a: The ownership structure of Nigerian banks does not influence their level of tax aggressiveness.

(viii) H_07_b: The ownership structure of South African banks does not influence their level of tax aggressiveness.

2. Literature Review

2.1 Corporate Tax Aggressiveness

Kirchler and Maciejovsky (2001) connote that tax avoidance as a concept is simply an attempt to reduce tax payments by legal means, for instance by exploiting tax-loopholes. Mughal and Akram (2012) also defined tax avoidance as the activity of tax payers in which they try to find out different ways to lessen or eliminate their tax liability and do not show their legal income without violating the law. Murphy (2004: P.309) also defined aggressive tax planning as "the situation where there is a reasonable probability that a particular tax return stance will not be upheld by an audit and subsequent legal challenge". In all these definitions of tax aggressiveness, there is one common ideology – manipulation of fiscal profits (often through legal means) to reduce taxes.

For the purpose of this study, however, corporate tax aggressiveness can be defined as a concept that encompasses all activities (either legally or rationally) a firm engages in with the aim of optimizing their tax burden. According to Zhu, et al. (2019), the act of tax aggressiveness (i.e. the idea of trying to reduce a firm's tax expense by exploiting the loopholes and complexities in extant tax laws) is considered as old as the inception of taxation itself. The traditional role of management in trying to reduce cash outflows is often considered as being in the interest of the shareholders, as it is intended to increase after-tax earnings and firm value – at least on the short-run. However, many researchers (Armstrong, et al, 2015; Zemzem & Ftouhi, 2013) have questioned such perceived benefits on a long run. Chen, et al. (2014) used the famous case of Enron (2001) to describe situations where the shareholders might not be the ultimate beneficiaries of aggressive tax planning – as the complicated financial transactions they used to evade tax and manipulate earnings became so expensive for the firm, which ultimately led its failure and eventually massive loss of shareholders wealth. There are also some varieties of direct costs associated with tax planning (such as expenses for tax consultancy or for running a tax department) faced by firms which may outweigh the savings from tax management (Jacob, et al, 2019).

2.2 Political Economy Theory

This study is anchored on the political economy theory. The political economy theory posits that accounting system act as mechanisms used to create, distribute and mystify power (Buhr, 1998). This theory is based upon economic theories of self-interest. The emergence of pressure groups creates a threat to companies who may face increased government intervention in the form of regulatory actions which then create political costs (Uwuigbe, 2011). Companies are therefore predicted to counter possible political costs by resorting to government lobbying and providing social responsibility disclosures (Watts and Zimmerman, 1978). Deegan (2000) describes the classical political economy theory as that which tends to perceive accounting reports and disclosures as a means of maintaining the favoured position of those who control scarce resources (capital), and as a means of undermining the position of those without scarce capital. It focuses on the structural conflicts within society.

The usefulness of political economy theories is that they do not focus solely on the economic self-interest and wealth-maximization of the individual or corporation, instead, they consider the political, social and institutional framework within which the economic activities take place (Gray, et al. 1995).

This theory is relevant to this study because firms (especially banks) being regulated by government on tax issues are in the dilemma of compliance with stiff tax regulations imposed on them not without a cost and meeting the

economic bottom line of firms which is the primary objective of corporate firms with a view to maximizing shareholders wealth. The economic self-interest of managers of firms is perceived as the reason why they engage in tax aggressiveness in order to achieve the firm's underlining economic goals.

3. Methodology

The population sample consisted of thirteen (13) commercial banks listed under the financial sector of the Nigerian Stock Exchange (NSE). In the same period also, there were a total of sixteen (16) local commercial banks listed under the financial sector in Johannesburg Stock Exchange (JSE). The longitudinal and cross-sectional approach was valid for use in the study. The major criterion for inclusion/exclusion was data availability. On that, five (5) out of the 16 local South African commercial banks were excluded from the sample during the data gathering process due to some of the banks being subsidiaries of parent companies. Data was sourced from the annual reports of banks listed on the Exchanges of the two countries. Data was analysed using the panel regression technique. The table below shows how the variables for the study were measured:

Variables	Notation	Measurements	apriori sign
Dependent variable: Tax Aggressiveness			
GAAP effective tax rate	ETR	Ratio of current income tax expense to pre-tax book income	-nil-
Total book tax difference	D_BTD	Residual of BTDit = βITACCit + μI + εit	-nil-
Independent variables:			
Firm size	SIZE	Natural log of total asset	+
Firm age	AGE	Current year less year of incorporation	+
Firm profitability	ROA	Ratio of profit after tax to total asset	-
Leverage	LEV	Ratio of total debt to total equity	-
Firm liquidity	LIQ	Ratio 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 0 otherwise	+

3.1 Model Specification

The model for this study is a culmination from several studies (Ilaboya et al., 2016; Ogbeide, 2017; and Atu et al., 2018) which were put together and adapted. The model is functionally expressed as:

Tax Aggressiveness = f(firm size, age, profitability, leverage, liquidity, complexity, foreign ownership)…… (3.1)

Introducing the control variable, we have:

Tax Aggressiveness = f(firm size, age, profitability, leverage, liquidity, complexity, foreign ownership, auditor type)…… (3.2)

The general econometric model for the study is specified thus:

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

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

AGE= Firm age

ROA= Return on assets

LIQ = Liquidity

LEV = Leverage

FOWN= Foreign ownership

CPX = Firm complexity

BIG4= Audit firm size

α = Constant

β_1 to $\beta 8$ = The coefficient of the parameter estimate

ε = The error term or residual

i = ith firm for cross-section

t = Time period

Equation 3.3 was split into two to accommodate the two dependent variables of ETR and BTD and was tested in both the Nigerian and the South African samples.

The models for the Nigerian banks are given as:

$ETR_{i,tNGA} = \beta_0 + \beta_1 SIZE_{t,tNGA} + \beta_2 AGE_{i,tNGA} + \beta_3 ROA_{t,tNGA} + \beta_4 LEV_{i,tNGA} + \beta_5 LIQ_{i,tNGA} + \beta_6 CPX_{i,tNGA} + \beta_7 FOWN_{i,tNGA} + \beta_8 BIG4_{i,tNGA} + \varepsilon_{I,tNGA}$ ……………………… (3.4a)

Where: NGA represents the country code for Nigeria and ETR represents the accounting (GAAP) effective tax rate. With the introduction of a different proxy for tax aggressiveness as dependent variable, the split model is given as:

$DBTD_{i,tNGA} = \beta_0 + \beta_1 SIZE_{i,tNGA} + \beta_2 AGE_{i,tNGA} + \beta_3 ROA_{i,tNGA} + \beta_4 LEV_{i,tNGA} + \beta_5 LIQ_{i,tNGA} + \beta_6 CPX_{i,tNGA} + \beta_7 FOWN_{i,tNGA} + \beta_8 BIG4_{i,tNGA} + \varepsilon_{I,tNGA}$ ……………………….. (3.4b)

Where: NGA represents the country code for Nigeria and D_BTD represents the discretionary (total) book-tax-difference. With the introduction of a different measure of tax aggressiveness as dependent variable, the split model is given as

The models for the South African banks are given as:

$ETR_{i,tRSA} = \beta_0 + \beta_1 SIZE_{i,tRSA} + \beta_2 AGE_{i,tRSA} + \beta_3 ROA_{i,tRSA} + \beta_4 LEV_{i,tRSA} + \beta_5 LIQ_{i,tRSA} + \beta_6 CPX_{i,tRSA} + \beta_7 FOWN_{i,tRSA} + \beta_8 BIG4_{i,tRSA} + \varepsilon_{I,tRSA}$ …………………….. (3.5a)

$D\_BTD_{i,tRSA} = \beta_0 + \beta_1 SIZE_{i,tRSA} + \beta_2 AGE_{i,tRSA} + \beta_3 ROA_{i,tRSA} + \beta_4 LEV_{i,tRSA} + \beta_5 LIQ_{i,tRSA} + \beta_6 CPX_{i,tRSA} + \beta_7 FOWN_{i,tRSA} + \beta_8 BIG4_{i,tRSA} + \varepsilon_{i,tRSA}$………………………….. (3.5b)

Where: RSA represents the country code for Republic of South Africa while ETR and D_BTD represent the accounting (GAAP) effective tax rate and discretionary (total) book tax difference used as proxies of tax aggressiveness, the dependent variable.

3.2 Presentation of Results

Table 1. 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	-2.7865	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
South Africa	**GAAP_ETR**	**D_BTD**	**FSIZE**	**AGE**	**ROA**	**LEV**	**LIQ**	**CPX**	**FOWN**	**BIG4**
Mean	0.18008	-1.14E-16	512487616.3	32.91	-0.185	6.65	0.1467	24.151	27.831	0.939
Median	0.23815	0.03622	67466000	27.00	0.014	6.63	0.0705	10.000	30.690	1.000
Maximum	0.54973	0.3654	2532940000	69.00	6.449	14.47	1.0000	95.000	51.430	1.000
Minimum	-0.8421	-4.9131	572000.0	10.00	-28.31	-3.26	0.0004	2.0000	0.1500	0.000
Std. Dev.	0.16654	0.5122	60806941.7	15.70	2.928	4.85	0.1533	24.923	15.172	0.239
Skewness	-2.7606	-90935	1.092945	0.560	-8.966	-0.06	2.0216	1.2381	-0.092	-3.68
Kurtosis	16.5185	87.361	3.721646	2.285	87.98	1.48	10.853	3.7668	2.080	14.56
Jarque-Bera	879.5911	30720.8	21.85791	7.282	31118.4	9.64	321.83	27.718	3.628	775.5
Probability	0.0000	0.0000	0.000018	0.026	0.00000	0.008	0.0000	0.0001	0.163	0.000
Observations	99	99	99	99	99	99	99	99	99	99

Source: Eviews 10 (2022)

The descriptive statistics in table 3 shows the characteristics of the variables used in the study. The result was presented in a comparative form to reflect the sample characteristics of both countries. As observed, the mean values GAAP_ETR (i.e. tax aggressiveness, proxied GAAP-ETR) stood at 0.1425 (for Nigerian banks) and 0.18008 (for South African banks) respectively. This implies that the Nigeria banks are more tax aggressive than their South African counterparts with effective tax rates (ETR) of 14% and 18% respectively for years 2012-2020 pooled together. 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 more tax aggressive than the South African banks. According to Prawira (2017), the bigger the BTD, the bigger the company is tax aggressive, but the opposite is the case for ETR measures.

The mean value of FIZE, run using the raw value of total assets, showed an average value of ₦2,707,354,683,000 (about £5.1 billion) for Nigerian banks and R 512,487,616,000 (£25.8 billion) for South African banks respectively, meaning that the South African banks have more assets base than the Nigerian banks. The maximum values of 10,384,227,000 (NAIRA) and 2,532,940,000,000 (RAND), which is about £19.6 billion and £127.7 billion respectively, show that as at year ended 2020, Eco Bank and Standard Bank were the biggest banks in both countries based on total assets.

Further, the mean values of AGE show that Nigerian banks jointly (howbeit, marginally) older than the South African banks with average firm age of 35yrs and 33yrs respectively. 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 South African banks have negative average ROA of -0.185. This goes to show that within the nine-year period covered by the study, the Nigerian banks (on average) made better profits than their South African counterparts.

However, 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 0016, while the standard deviation of the South African sample (2.928) suggests that the ROA of some of the banks are way higher than the mean value. Conversely, the mean values of LEV (measured by debt-to-equity ratio) showed an average of 9.9497 for Nigerian banks and 6.65 for South African banks which implies that Nigerian banks have higher debts than the South African banks.

On the variable of LIQ (measured as ratio of cash to total assets), the mean values stood relatively same at 0.155 and 0.147 for Nigeria and South African banks respectively which implies that banks in both countries maintain low cash reserves. The mean values of CPX (from complexity) which stood at 13.128 and 24.151 for Nigeria and South African banks respectively suggest that the latter have more number of subsidiaries than the former. On the proportion of the company shared held by foreign investors, the mean values of FOWN indicate 27% (Nigeria banks) and 28% (South African banks) respectively. Similarly, the mean values of the variable of Big4 show that about 93% of Nigerian banks and 94% of South African banks employ the services of Big4 audit firms (i.e. that is, Deloitte, Ernst & Young, KPMG and Price Water house Coopers). This means that in both countries, the non-Big4 audit firms are lowly patronized.

On the Jarque-Bera test of goodness-of-fit, the result suggests that only data on firm liquidity (in the Nigerian sample) and foreign ownership (in the South African sample) follow a normal distribution. However, the departure from normality of other variables does not pose any major problem in panel data since the Central Limit Theorem connotes that the violation of the normality assumption poses no major problem in panel data analysis, especially with large firm-year observations (Ghasen & Zahediasi, 2012).

3.3 Correlation Matrix

The correlation matrix was presented in two tables due to the two different types of measures: correlation matrix using GAAP_ETR (Accounting Effective Tax Rate), while that of D_BTD (Discretionary/Total Book Tax Difference).

As observed from the first table using GAAP_ETR showed that 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, GOWN 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 are 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).

From the result presented in the table (run using only South African banks), the result shows that only the measure of AGE is inversely correlated with GAAP_ETR but not significantly; while the remaining measures of SIZE, ROA, LEV, LIQ, CPX, FOWN and BIG4 showed positive correlation coefficients. However, only the variables of SIZE (r = 0.246, p-0.01), LEV (r=0.325, p=0.000), CPX (r = 0.309, p=0.00) and BIG (r = 0.237, p = 0.02) are statistically significant at different levels of confidence. This implies that in the South African context, the variables of SIZE, LEV, CPX and BIG4 all move in the same direction with GAAP-ETR. This can be translated to mean that large and highly complex South African banks with high debt-to-equity-ratio and those employing the Big4 audit firms are all associated with high GAAP effective tax rate, meaning they are less tax aggressive. On the inter-relationships amongst the other variables, SIZE and ROA move significantly in the same direction (just as in the Nigerian context). The same significant positive relationships can also be observed between SIZE and LEV, SIZE and BIG4, SIZE and CPX. This outcome coincides with the Nigerian result which showed that large banks are more profitable and use more Big4 audit firms, among other associations.

The observable differences between the outcomes of both results are (i) the differences in the correlation coefficient signs and (ii) in terms of the significance of each variable in both samples. On the former, for example, LEV, FOWN and Big4 showed weak negative signs in Nigeria sample and strong positive signs in the South African sample. On the latter, SIZE and ROA showed same positive signs in both samples but differed in terms of significance. Only,

CPX maintained same sign and significance in both samples. What this suggests is that how the selected variables associate with GAAP-ETR are likely not the same in both samples.

The outcome of the correlation matrix using the D_BTD (Discretionary/Total Book Tax Difference) showed that on the Nigerian sample, 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 highly 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 the table that used the Nigerian sample.

Further, from the second part of the result presented (using only South African sample), it was observed that only the measure of firm profitability (ROA) is negatively correlated with the tax aggressive measure (D_BTD), but the probability value of 0.66 (66%) is greater than 5% and thus not statistically significantly. On the other hand, the remaining variables of SIZE, AGE, LEV, LIQ, CPX, FOWN an BIG4 all showed positive correlation coefficients but none was statistically significant due to their high probability values of 0.18, 0.91, 0.27, 0.51, 0.47, 0.31 and 0.92 respectively. This implies that, in the South African setting and using the D_BTD measure of tax aggressiveness, there are likelihoods that firm size, profitability, leverage liquidity, complexity and the use of Big4 can move in the same direction with D_BTD; however, such relationships are not statistically relevant in the context of this study. And just like in the Nigerian result, the interrelationships amongst the other variables in the South African sample remain unchanged with the result obtained in the Table.

3.4 Regression Diagnostic Tests

Some diagnostic tests are conducted to ensure that the basic assumptions underlying regression modeling are not violated. This sub-section presents the outcomes of Variance Inflation Factor (VIF) for muliticollinearity, the heteroskedasticity tests and the Breusch-Godfrey LM test for serial correlation.

Table 2. Results of the VIF Tests

Nigeria Variable	**Coefficient variance**	**Centred VIF**	**South Africa** Variable	**Coefficient variance**	**Centred VIF**
C	0.001230	NA	C	0.083796	NA
SIZE	3.10E-06	2.357177	SIZE	0.000287	5.641687
AGE	1.31E-08	1.188409	AGE	1.20E-06	1.256306
ROA	0.006043	1.574715	ROA	3.53E-05	1.288922
LEV	2.70E.09	1.134556	LEV	4.94E-05	4.945097
LIQ	0.000375	1.417221	LIQ	0.017706	1.772964
CPX	1.42E-08	1.997466	CPX	5.11E-07	1.352714
FOWN	1.42E-09	1.207615	FOWN	1.29E-06	1.270038
BIG4	3.43E-05	1.789804	BIG4	0.005527	1.354679

Source: Eviews 10 output (2022)

From the VIF test results presented in Table 2, it can be observed that all the centred VIF values of both models 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 or 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

concluded it can be observed that there are no issues of unstable parameter estimates in the regression lines of both models.

Table 3. Results of other regression diagnostic tests

	Model 3.4 (Nigerian banks)	Model 3.5 (South African banks)
Heteroskedasticity test: Breusch-Pagan-Godfrey;		
F-statistics	0.123335	1.084432
Breusch-Godfrey Serial Correlation LM Test:		
F-statistics	1.956873	0.677968
Prob. F(2,56)	0.1464	0.5103

Source: Compiled from Eviews 10 output (2022)

From Table 3 presents the results of the Breusch-Pagan-Godfrey heteroscedasticity test which checks for the presence/absence of non-constant variance. Here, the decision rule is to conclude that there is no heteroscedasticity (i.e. residual is homoscedastic, which is desirable) if the corresponding probability value of the F-statistic value is greater than 5% level. As can be observed from the upper part of the Table, the probability values of both models stood at 0.7261 (Nigerian banks) and 0.3813 (South African banks) which shows the absence of heteroscedasticity. This means that the residuals of the two models are homoscedastic (which is desirable) due to the high p-values are 72.61% and 38.13% respectively.

Similarly, the lower part of Table 3 shows the Breusch-Godfrey Lagrange Multiplier (LM) test for higher order serial correlation for both samples. The outcome revealed that the hypotheses of zero autocorrelation in the residuals cannot be rejected because the probabilities values of 0.1464 (14.64%) and 0.5103 (51.03%) respectively for both models are greater than 5%. This means that there is no presence of autocorrelation in both models.

3.5 Multivariate Results

This sub-section presents the analysis and interpretation of the four (4) panel regression models built for the purpose of this study, as specified in the previous chapter. The cross-country comparative nature of the study necessitated the splitting of the sample into two in order to accommodate separate analyses of Nigerian versus South African banks. Similarly, the need to study and compare the impacts of the selected firm attributes of both samples using two different measures of tax aggressiveness necessitated further splits of the models (resulting in four separate) in order to encompass both ETR and BTD measures in separate models and in both countries. Howbeit, the decision on the hypotheses are based on the model with the better forecasting power (between ETR and BTD models) as determined using the model forecasting evaluation tests.

For the panel regressions, both fixed and random effects procedures were estimated for all the models. The Hausman tests was then conducted since the standard procedure for panel data analysis requires it in selecting the most appropriate model for statistical inference between the fixed and effects model. For the Hausmann tests, the null hypothesis (H_O) is that Random Model is consistent, while the H_1 is that Fixed Effect Model is consistent. The decision rule is to accept H_1 (i.e. fixed effect is more consistent) when the p-value is less than 5%. The Hausman test results of the GAAP-ETR and D_BTD models of both samples are presented in Table 3.

Table 4. Hausman Test Results

Nigeria	**GAAP-ETR model 3.4a**			**D_BTD model 3.4b**		
	Test Summary	Chi-sq. Statistic	Prob.	Test Summary	Chi-sq. Statistics	Prob.
	Cross-section random	12.16626	0.1439	Cross-section random	13.59623	0.0345*
South Africa	**GAAP-ETR model 3.5a**			**D_BTD model 3.5b**		
	Test Summary	Chi-sq. Statistic	Prob.	Test Summary	Chi-sq. Statistics	Prob.
	Cross-section random	16.59354	0.0346*	Cross-section random	43.63067	0.000*

Source: Eviews 10 Output (2022) NOTE: 8Significant showing desirability of the fixed effect models

As can be observed in Table 4, the corresponding probability values of the chi-squared statistic are both less than 5% in the D_BTD models 3.4b and 3.5b (0.0345 and 0.000 respectively) as well as in the model 3.5a of the GAAP-ETR

model (p-value = 0.0346). This shows the suitability of the fixed effect models. However, in the GAAP-ETR model 3.4a, the p-value is more than 5% 9i.e. 0.1439) which means that the null hypothesis (Ho) that random effect is desirable cannot be rejected at the 5% level of significance. This implies that fixed effect model is preferred to the random effect model in the significant results while the latter is considered in capturing the relationships and drawing inferences in GAAP-ETR model 3.4a.

Table 5. Panel Regression Results

Dependent variable: GAAP-ETR	**Model 3.4a (Nigeria)**	**Model 3.5a (South Africa)**	**Dependent variables: D_BTD**	**Model 3.4b (Nigeria)**	**Model 3.5b (South Africa)**
C	0.422363	-0.79425**	C	0.34823***	-9.0402***
	(1.0206)	(-1.9827)		(3.90246)	(-5.2429)
	(0.3097	(0.0508)		(0.0002)	(0.00000
SIZE	-0.01113	0.081792***	SIZE	-0.0232***	0.60543***
	(-0.5356)	(5.20662)		(-4.5647)	(6.1238)
	(0.5934)	(0.0000)		(0.0000)	(0.0000)
AGE	-0.00184	-0.01493***	AGE	0.00396***	-0.0699***
	(-1.3661)	(-2.6518)		(5.19498)	(-3.6054)
	(0.1747)	(0.0097)		(0.0000)	(0.0005)
ROA	1.64472*	-0.00768**	ROA	1.33064***	-0.0641***
	(1.79303)	(-1.9884)		(16.1289)	(-2.9843)
	(0.0758)	(0.0502)		(0.0000)	(0.0038)
LEV	-0.00032	-0.01186	LEV	5.10E-05	0.010134
	(-0.5148)	(-1.3050)		(1.11514)	(0.24725)
	(0.6078)	(0.1956)		(0.2676)	(0.8053)
LIQ	-0.08127	0.19845*	LIQ	0.004575	0.711023
	(0.3557)	(1.97783)		(0.21776)	(1.36463)
	(0.7227)	(0.0514)		(0.8281)	(0.1762)
CPX	0.00314**	0.000559	CPX	-0.0014***	0.000464
	(2.2353)	(0.25881)		(-2.8094)	(0.05594)
	(0.0275)	90.7964)		90.0060)	(0.9555)
FOWN	-0.00061	0.001047	FOWN	-0.00015	0.002609
	(-1.3777)	(1.08898)		(-1.0753)	(0.25932)
	(0.1712)	(0.2794)		(0.2850)	(0.7961)
BIG4	-0.01423	-0.05198	BIG4	0.010836	-0.19045
	(-0.2059)	(-0.6173)		(0.95447)	(-0.6787)
	(0.8373)	(0.5388)		(0.34220)	(0.4993)
R^2	0.099601	0.473574	R^2	0.82721	0.403047
Adjusted R^2	0.032904	0.355129	Adjusted R^2	0.791212	0.268732
F-Stat	1.493348	3.99824***	F-Stat	22.9793***	3.00077***
Prob (f-stat)	0.167971	0.000009	Prob (f-stat)	0.0000	0.000395
D.W.	1.838295	1.800816	D.W.	2.275867	1.527028

Source: Eviews 10 (2022) BN: T-Statistic ( ); p-value { }; *, **, * significant at 1%, 5% and 10%**

3.6 Interpretation of the GAAP-ETR Models (Models 3.4a and 3.5a)

From the first two columns of Table 5, it can observed that in terms of the joint statistical significance of the GAAP-ETR models, representing the Nigerian (model 3.4a) and South African samples (model 3.5a), the overall probability values of 0.16797 and 0.00009 (respectively) implies that whereas there is linear relationship between the dependent variable (GAAP_ETR) and the explanatory variables (taken together) in model 3.5a; no joint linear relationship could be established in model 3.4a. 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. This suggests that left unaccounted for while about 64.5% of the variations in GAAP_ETR were not captured by model 3.5a (using the South African sample). This means that the explanatory variables explained more variations in GAAP_ETR using the South African sample, but showed poor explanatory power using the Nigerian sample.

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.

On the behaviours of the explanatory variables on the GAAP-ETR measure of tax aggressiveness in model 3.5a (the South African sample), it can be observed that the variables of SIZE, AGE, ROA and LIQ appeared statistically significant in model 3.5a, while LEV, CPX, FOWN and BIG4 were not statistically significant. Specifically, the variable of SIZE and LIQ have positive coefficient values of 0.0179 (p-value = 0.0000) and 0.19845 (p-value = 0.514) which means that, holding other variables constant, GAAP-ETR is predicted to increase by up to 8.2% and 20% (respectively) when SIZE and LIQ increase by one per cent (each) at 1% level of significance. On the other hand, the measures of firm age (AGE) and profitability (ROA) have negative coefficient values of -0.0149 (p-value = 0.0097) and -0.0077 (p-value = 0.0502) respectively, which implies that increases in firm age and profitability causes a decreasing impact on GAAP-ETR among the South African banks. Implicationality, using the ETR measure of tax aggressiveness, older and more profitable South African banks are more tax aggressive (i.e. have lower effective tax rate), while larger and highly complex South African banks are less tax aggressive (i.e. have higher effective tax rate).

3.7 Interpretation of the D-BTD Models (Models 3.4b and 3.5b)

From the last two columns of Table 5, which showed the outcomes of the D_BTD models (models 3.4b and 3.5b), it can be observed that the F-statistic values of 22.979 (p = 0.0000) and 3.0008 (p = 0.0004) for both fixed effect models respectively are above 2.0 which indicates that both models are statistically valid for drawing inferences from the tests at the 1% level of significance. The coefficient of determination (R-squared) of the both fixed effect models was observed to be approximately 83% and 40% respectively. This implies that the model estimated using the Nigerian sample (Model 3.4b) have more explanatory power than the model estimated using the South African sample (i.e. Model 3.5b).

On the behaviours of the independent variables on the tax aggressive measure of D_BTD, it can be observed from the outcome of model 3.4b that the variables SIZE, AGE, ROA and CPX were statistically significant at the 1% level of significance respectively. However, while SIZE and CPX have negative coefficient signs of -0.023 (p=0.000) and -0.0014 (p=0.006) respectively; AGE and ROA possess positive coefficient signs of 0.00396 9p=0.000) and 1.33064 (p=0.000) respectively. This implies that tax aggressiveness (D_BTD) is predicted to decrease by up to 2.3% when SIZE increases by one per cent. Similarly, D_BTD is predicted to decrease by up to 0.0014 units when CPX goes up by one. On the other hand, the significant positive coefficients of AGE and ROA implies that, holding other variables constant, increases in firm age and profitability are predicted to trigger corresponding increasing impacts on D_BTD

by p to 0.004 and 1.33 units respectively. Going by the above results, it then means that in the Nigerian setting and in the context of this study, larger banks and those with greater number of subsidiaries are associated with lesser tax aggressiveness using the D-BTD measure. In the same vein, the older and more profitable Nigerian banks, the older and more profitable Nigerian banks, the more tax aggressive.

Further, from the fourth column of Table 5, which shows the outcome of fixed effect model 3.5b, using the South African banks, it can be deduced that the same variables of SIZE, AGE and ROA that were statistically significant in the Nigerian (model 3.4b) maintained the same levels of significance. However, they differed in their coefficient signs. For example, while AGE and ROA showed positive signs in the Nigerian sample, the South African sample showed negative signs. Similarly, while SIZE is negatively related to the tax aggressiveness proxy (D_BTD) in the Nigerian sample, its effect on D_BTD turned positive using the South African sample. The implication of the model 3.5a result is that a one per cent increase in SIZE is predicted to lead to about 60.5% increase on D_BTD. On the other hand, D_BTD is predicted to decrease by up to 6.4% when return on assets increase by one. Also, a unit increase in AGE is predicted to reduce D-BTD by approximately 0.07 units, all things being equal. These can be translated to mean that, in the South African setting, larger banks are more tax aggressive (based on the D_BTD measure of tax aggressiveness) while older and more profitable South African banks are less tax aggressive, all things being equal.

The general observation from the outcome of the regression estimations is that all the significant firm-specific attributes in the two samples behave different towards the variable of interest (tax aggressiveness), in both measures of tax aggressiveness adopted. For example, in the GAAP-ETR models, SIZE and ROA were positively and negatively significant (respectively) in the South African sample, but the coefficient signs were the opposite in the Nigerian sample, while CPX was positively significant in the Nigerian sample (using the GAAP-ETR measure) and the sign was negative and non-significant using the same measure in the South African sample. Similar, the variables that possess the same coefficient signs were not significant on both sides; for example, AGE, LIQ and CPX in the GAAP-ETR models and LEV and LIQ in the D_BTD models. Thus, for the study to make inferences on the formulated hypotheses, the model comparison tests were conducted in order to detect which, between the GAAP-ETR and D_BTD model, has the best forecasting accuracy.

Table 6. Summary of Hypotheses Testing

S/N	Hypotheses	Predicted sign	Nigerian result	South African 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: Researchers' Compilation (2022) *Significant relationships

3.8 Discussion of Findings

As observed from the first hypothesis test, the null hypothesis that firm size has no significant relationship with tax aggressiveness was rejected in both the Nigerian and South African models. It can be observed that despite the variable of firm size being statistically significant as projected, the coefficient sign varies between both samples; negative in Nigeria and positive in South Africa. However, considering that the South African result is based on the GAAP-ETR measure of tax aggressiveness (based on the outcome of the model forecasting evaluation in Table …..)

while the Nigerian result is based on the D_BTD measure (see Table 6), it then means that the implication of the varied coefficient of firm size is the same in both countries. On the one hand, the significant positive sign of firm size in the South African model implies that large South African banks are less tax aggressive, while the significant negative sign in the Nigerian context also implies that large Nigerian banks are less tax aggressive. The uniformity in the above result was not expected since, going by the average total assets of the banks in both countries, the sampled South African banks (on average) are five-times bigger than the sampled Nigerian banks taken together. However, the result is in tandem with the political cost theory and also supports the result of most prior studies including Atu et al (2018), Rani et al (2018), Irianto et al (2017), Ogbeide (2017). Pratama (2017), Ugbogbo et al (2018), Salaudeen and Akano (2018), Zemzem and Ftouhi (20130, which all found that firm size is positively and significantly related with ETR. On the other hand, studies like Inua (2018); Salaudeem and Ejeh (2018) did not find any significant relationship between the size of firm and its tax aggressive behaviour (using ETR) of Nigerian firms. The reason for the non-significance of their result could be sector-based since both studies sample 30 manufacturing companies and 40 non-financial firms respectively.

On the second hypothesis, the independent variable of firm age showed positive coefficient sign in the Nigerian model and a negative coefficient in the South African model. The probability values of firm age in both models are statistically significant which led to the rejection of the split null hypothesis two. Similar, to the result of firm size, the implication of the result on firm age is the same in both countries despite having differing coefficient signs. This is due to measurement pattern of the two dependent variables where low ETR represents higher tax aggressiveness while low D_BTD represents lesser tax aggressiveness. Going by the above, the implication of the firm age result is that older Nigerian banks have higher D_BTD (i.e. are more tax aggressive). In the same way, the South African result on firm age implies that older South African banks have lower ETR, meaning they are more tax aggressive. The similarly in the result of firm age is expected since the average firm age of both samples is relatively similar at 35 years and 33 years respectively. The result supports the political clout theory which assumes that older firms usually have all the connection and resources for lobbying and more sophisticated tax planning activities, than newer firms. Hence, the tendency to exploit aggressive tax management in order to remain relevant in the industry. This finding on firm age corroborates those of Fernandez-Rodriguez et al (2019), Pratama (2017), Ogundajo & Onakoya (2016) which showed evidence that the older the company, the higher the tax aggressiveness in Spain, Indonesia and Nigeria respectively.

Further, the test of the third hypothesis showed that firm profitability has a positive coefficient sign in the Nigerian sample and possess a negative coefficient in the South African sample. Both probability values are statistically significant which led to the rejection of the fourth null hypotheses. Going by the obtained coefficient signs and their significance, it can be interpreted that highly profitable Nigerian banks have higher D_BTD (i.e. are more tax aggressive) and similarly, highly profitable South African banks have lower ETR, which means they are more tax aggressive. This outcome is in line with the expectation of the study and the school of thoughts that more profitable firms arguably have greater incentive to reduce their tax burden as compared to firms that are less profitable due to the greater potential savings (Rego, 2003; Ribeiro et al., 2015). This explains why most large profitable companies often engage in large scale philanthropy and disaster managements in order to gain relevance and attract government tax reliefs. The highly profitable firms are more likely to engage in earnings management for tax planning purposes in order to reduce their tax burden (Dunbar, et al 2010). The finding that profitable firms are associated with higher tax aggressiveness is in tandem with the result of most prior studies such as Zhu et al (2019) Rani et al (2018) Chytis et al (2018). However, the result negates those of some Nigerian researchers (e.g. Atu et al, 2018; Salawu & Adedeji, 2018, Onyali & Okafor, 2018) which found a non-significant relationship between profitability and tax aggressiveness. This disparity can be attributed to methodological and sector-based differences since Atu ey al (2018) used OLS technique while the others sampled the non-financial companies.

From the result and testing of the fourth hypothesis, it can be observed that the fifth null hypothesis which states that leverage has no significant relationship with tax aggressiveness in both Nigeria and South Africa could not be rejected. This was due to the high probability values obtained by the variable of leverage in both models 3.4b and 3.5a used in making inferences on the research hypotheses. However, despite the non-significance of the variable of leverage, the positive and negative coefficients obtained in both models are indications that highly leveraged banks in both countries have the tendency of being highly tax aggressive. The implication of inverse sign of leverage against ETR is expected as the study projected that leveraged firms will most likely have strong incentive to avoid taxes so as to preserve cash to service their debt burden. This position tallies with Rego and Wilson (2012). However, the non-significant result can be explained with the postulation that firms with high debt levels may be faced with less pressure to draw on alternative non-debt tax shields as are more likely to benefit from administrative tax shield.

The result of most prior Nigerian studies such as Ifurueze et al (2018), Ilaboya et al (2016), Onyali and Okafor (2018) and Atu et al (2018) also found that leverage is non-significant in explaining variations in tax aggressiveness using varying samples of companies in Nigeria. Similarly, a study by foreign authors (Irianto et al, 2017) also found that leverage does not significantly influence the tax avoidance in Indonesia. Be that as it may, the result on leverage negates those of some Nigerian authors such as Inua (2018), Ogbeide (2017), Salaudeen and Ejeh (2018), Ugbogbo et al (2018) which found that leverage have significant relationship with corporate tax aggressive avoidance. However, the disparity between our result and theirs could be attributed the measure of leverage adopted as Ogbeide (2017) used total debts while other used debt-to-assets ratio, while this current study used debt-to-equity ratio as proxy of leverage.

As observed from the fifth hypothesis testing, the variable of firm liquidity maintained positive coefficients in the Nigerian and the South African model. However, it only passed the significance test at the 10% levels in the South African (GAAP-ETR) model and was non-significant in the Nigerian (D_BTD) model. This implies that the highly liquid South African banks are associated with low effective tax rate, which means high tax aggression. The positive impact of liquidity on the tax aggressiveness measure of D_BTD is not expected since firms facing liquidity problem are struggling for survival and may have more incentive to avoid taxes and reduce outflows, same with the South African result. All things being equal, liquidity pushing down tax aggression (that is, increasing ETR) is only expected in firms facing liquidity problems. This can be explained by the average liquidity (cash) ratio of the two samples at approximately 0.15 respectively which is considered below the required 0.5.

On the outcome of the sixth hypotheses testing, the result of the two models shows that while the variables of firm complexity have a significant negative coefficient in the Nigerian sample; its coefficient sign in the South African model is positive and statistically non-significant due to the high p-value of 79.6%. This led to the rejection of the null hypothesis only in the South African model. The implication of this result is that while there is significant relationship between firm complexity and tax aggressiveness in the Nigeria banks, the variable of firm complexity does not influence the tax aggressive behaviours of the South African banks. Thus, the significant negative coefficient of complexity in the Nigerian sample implies that highly diversified Nigerian banks or those with numerous segments/subsidiaries are associated with low tax aggressiveness. This result is against the apriori expectation of the study since the study projected, in line with the economies of scale, that highly diversified companies with more subsidiaries or business segments are more likely to have higher tax burdens. Hence, the motivation to engage in tax planning to reduce their tax burden will be high. The result on firm complexity negate those of Martinez and Rodrigues (2019) which examined the effect of corporate diversification on tax aggressiveness in Brazilian companies and showed empirical evidence that in the group of diversified companies, the higher the number of segments a company operates, the lower the likelihood of this company having low tax aggressiveness, i.e. operating in more segments increases the likelihood of more tax aggressiveness. However, our result on firm complexity, in the Nigerian context, tallies with that of Zheng (2017) who found that companies operating in fewer segments are more tax aggressive than diversified firms. Overall, the non-significance of the variable of complexity in the South African context was not expected since their banks are more diversified than the Nigerian banks.

The outcome of the seventh hypothesis showed that the variable of foreign ownership has no significant relationship with tax aggressiveness in both the Nigerian and South African samples. This is due to the high probability values obtained by the variable of FOWN in both models 3.4b and 3.5a which led to the acceptance of the null hypothesis in both samples. Despite the variable of foreign ownership not being significant, the coefficient signs give clue to its would-be impacts on the tax aggressiveness measures of the both samples. Specifically, the negative and positive coefficients of FOWN obtained in both models 3.4b and 3.5a respectively are indications that Nigerian and South African banks with higher proportion of foreign investors are more likely to be less tax aggressive; howbeit not significantly. This implication of coefficient signs confirms the general notion that foreign investors always conform to international best practices (Salihu, et al. 2015). The outcome is also line with the legitimacy theory which projects that foreign investor do promote tax compliance among management to establish a good reputation for the firm. However, the result of Shi et al (2020) which found a non-significant relationship between foreign ownership and two different measures of tax avoidance in Philippine tallies with this current result. The result also supports Hasan, et al. (2016) which found that foreign institutional ownership is negatively associated with 9i.e. reduces) corporate tax avoidance. On the other hand, out result negates those of Alkurdi and Mardini (2020); Salihu et al (2015) which found that foreign ownership has a positive relation that increases the likelihood of adopting tax avoidance strategies in Jordanian and Malaysian companies respectively.

4. Conclusion

In a bid to contribute to the existing literature, the study embarked on a comparative analysis of the impact of different firm attributes on the corporate tax aggressiveness of commercial banks in Nigeria and South Africa. The study specifically examined how firm size, age, profitability, leverage, liquidity, complexity and foreign ownership relate with tax aggressiveness in both Nigerian and South African banks. The study employed two alternative measures of tax aggressiveness, the GAAP-ETR and D_BTD, in order to provide robustness to the findings. Based on the findings, it can be summarized that within the context of this study, firm size, firm age and firm profitability are the major determinants of tax aggressiveness in both Nigerian and South African banking sector since (i) they maintained statistical significance across the dual measures of tax aggressiveness adopted and also (ii) the interpretation and implication of their different coefficients towards our variable of interest (tax aggressiveness) is exactly same in both countries. It can also be concluded that between the two adopted measures of tax aggressiveness, the discretionary book tax difference (D_BTD) produced a m ore fitted model than the GAAP-ETR in the Nigerian setting, while reverse was the case using the South African sample. Thus, in terms of the impact of firm attributes of tax aggressiveness of Nigeria and South African banks, the major variables of interests in both climes are size, age and profitability, while firm complexity and firm liquidity was crucial only in the Nigeria and the South African samples apiece. The remaining explanatory variables of leverage, foreign ownership and Big4 were not of crucial importance in either of the samples within the 9-year period captured by the study.

4.1 Recommendations

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

(i) Based on the result that large banks are significantly less tax aggressive in both countries, the regulatory bodies and tax authorities should beam their searchlight on the tax saving strategies of small size companies with a view of discouraging aggressive tax avoidance schemes.

(ii) The notion that older firms have higher reputational risks and would resort to less-risky tax management practices did not hold in the context of this study as older firms were found to be highly tax aggressive. Since the older firms have all the connections that can be deployed to conceal sophisticated tax planning activities, regulators should increase their monitoring of the older firms as a strategy of reducing potential tax evasions while encouraging appropriate tax savings strategies to ensure greater tax compliance.

(iii) Considering the finding of the study that highly profitable firms are highly tax aggressive, the management should ensure they install strong corporate governance mechanisms in order to ensure that the intended gains from tax avoidance activities are not opportunistically misused by the managers.

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