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EFFECT OF FIRM COMPLEXITY ON EFFECTIVE TAX RATE OF QUOTED CONSUMER GOODS MANUFACTURING FIRMS IN NIGERIA

Okerekeoti, Chinedu U.
Department of Accountancy
Nnamdi Azikiwe University, Awka
Mail: nattyhoodz@yahoo.com

Abstract
This study ascertained the effect of firm complexity on effective tax rate of quoted consumer goods manufacturing firms in Nigeria. The study employs Ex Post Facto research design. The population of the study consist of consumer goods manufacturing firms quoted in Nigeria as at year ended December 2020 under the financial sector on the Nigeria Exchange Group (NGX). The study made use of secondary data which were sourced from the various annual reports of the sampled consumer goods manufacturing firms. The research covered a period of nine (9) financial years (2012-2020). The data were analysed using descriptive statistics and hypothesis was tested using regression analysis via E-view 9.0. The result shows that there is a significant negative relationship between firm complexity and effective tax rate in Nigerian consumer goods manufacturing firms. Based on the findings, the study recommended that because most diversified Nigerian consumer goods manufacturing firms have subsidiaries and must deal with local and complex tax laws in their various business segments, both governments must simplify tax laws and focus more on creating a tax culture to encourage voluntary compliance among multinationals.

Key words: Effective tax rate, firm complexity and Leverage

Introduction

Despite the fact that corporate tax contributes to economic development and is a part of corporate social responsibility, businesses could avoid paying it in order to keep more profits (Chen and Tsai, 2018). In practice, corporate tax avoidance increases shareholder value and is an important corporate strategy, particularly for large corporations (Armstrong et al., 2015; Desai & Dharmapala, 2009; Hanlon & Heitzman, 2010; Wilson, 2009). Tax-cutting measures result in a considerable reduction in government revenue, impairing the government's ability to administer welfare policies and social public services, and crippling the government's ability to maintain a normal social and economic order. Governments are well aware of the potential incentives for tax avoidance, but enacting legislation to discourage the practice and improve the state budget is not easy (Sayidah & Assagaf, 2019). Since tax avoidance affects both the focal firm and the society, it is important to explore this field in more depth.

A corporation that is successful in its activities will grow its business in the hopes of making a profit or improving its reputation by doing so. This has the effect of raising income from a variety of business areas and subsidiaries, attracting investors to invest (Jia, 2010; Khan, Bhatti, Hassan and Fraz., 2020). Nonetheless, growing the number of subsidiaries or business segments would not only improve the parent company's profit and market share, but will also result in large startup, acquisition, and operational supervision costs, which could constitute a burden to the organization (Queen and Fasipe, 2015). The decision to expand or not relies on how the company uses it, whether it is for profit or not.

Tax avoidance is considered as a tactic to transfer wealth from government to corporations, which should efficiently enhance firm value. For this reason, it is expected that corporate tax avoidance is positively related to firm performance, at least due to the wealth effect. Tax evasion, on the other hand, comes with its own set of costs, including the cost of implementation, reputational damage, and state penalties if discovered (Chen, Hu, Wang and Tang, 2014). As a consequence of the balance of the benefits and drawbacks connected with this technique, it should be the firm's decision to engage in tax avoidance. This study however, ascertains the effect of firm complexity on effective tax rate of quoted consumer goods manufacturing firms in Nigeria.

Review of Related Literature

Firm Complexity

According to researchers such as Barinov, Park, and Yldzhan (2016), the earnings reporting behaviors of conglomerates and single-segment enterprises differ greatly, and this most likely translates to tax aggressive behavior, since complex organizations are more likely to have a greater tax burden. Firm complexity is divided into two categories by Markarian and Parbonetti (2007): internal and external complexity. Internal complexity refers to the sophistication of internal work processes, production technology, and employee work processes (as measured by R&D spending and capital invested), whereas external complexity refers to the external competitive structure (proxied by the number of business subsidiaries and geographic segments, and industrial). The latter category is the focus of this study since it is practically observable that majority of the banks in both Nigeria and South Africa are highly complex and diversified.

According to Wahba and Elsayed (2010), firm complexity refers to how diverse and interconnected a company's operations and activities are. It is one of the firm-specific characteristics that has an impact on a variety of organizational outcomes. The premise of existing literature (Chen, Ge, Louis, and Zolotoy, 2019; Pratama, 2017) in the context of this

study is that the more complicated the firm is, the higher the tax burden should be. Because complex firms are defined by larger subsidiaries and business segments, notably conglomerates or cross-border financial institutions with foreign affiliations, the possible influencing effect of firm complexity on tax aggressiveness is more likely to be valid.

The number of industries in which the company competes, and the number of various company sites and branches, both locally and internationally, have all been used as proxies for external firm complexity in prior research. Corporations with foreign subsidiaries must comply with a variety of regulatory and professional disclosure requirements in those jurisdictions; as a result, complex firms' tax evasion techniques are likely to differ. The problem of firm complexity has received a lot of attention in previous academic studies on firms' tax planning behavior (Mills, Erickson, and Maydew, 1998), and it is one of the independent variables in this study.

Leverage

Tax avoidance, according to Harrington and Smith (2012), has a favorable impact on leverage in a broad range of businesses. Their research confirmed the idea that tax avoiders valued leverage as part of a larger tax avoidance plan, and it was resistant to different definitions of leverage, tax avoidance tactics, and refinancing events. Furthermore, the chance of issuing borrowed capital as a strategy of refinancing projects is positively associated with tax avoidance. However, if a corporation with a high marginal tax rate employs high debt as a source of financing, there might be a positive relationship between ETR and debt to total asset ratio (leverage). Previous research has shown that ETR has a negative relationship with the debt-to-total-asset ratio (Richardson and Lanis, 2007; Ryandono, Ernayani, Atmojo, Susilowati, and Indriastuty, 2020). Aigienohuwa and Ezejiofor, (2021) found that firm leverage has no significant relationship with timeliness of financial reports in Nigerian quoted companies. Okeke, Ezejiofor, and Okoye (2021) found that leverage has a significant negative effect on cash ratio of conglomerates firm Nigeria at 5% level of significance.

Using confidential information from the IRS's Office of Tax Shelter Analysis (OTSA) and publicly available financial statement data, Lisowsky (2010) developed a tax shelter prediction model based on firm characteristics highlighted in the US Treasury Department's White Paper on Tax Shelters from 1999. In a logistic framework for publicly traded US companies, he looked for cross-sectional factors. For its main sample, the article showed no significant association between leverage and the use of tax shelters, contrary to previous evidence. Graham and Tucker (2006) found that corporations using tax shelters had lower leverage and a reduced chance of issuing debt during years when the shelters were effective in a small sample of enterprises with known tax shelters gathered from court documents.

Effective Tax Rate

The average tax rate for a firm or a person is known as the effective tax rate. Individuals' effective tax rates are the average rates at which their earned income is taxed, whereas corporations' effective tax rates are the average rates at which their pre-tax earnings are taxed (Jon 2012). The effective tax rate is the average rate of taxation on earned income for an individual or the average rate of taxation on pre-tax profits for a corporation.

Rego (2003), Ayed (2013), and Seyram & Holy (2013) have all utilized this metric to gauge a reflection of tax planning that reduces a firm's tax liability without necessarily lowering its accounting income. Corporate ETR evaluates a company's tax performance. Thus, it is the

best measure to evaluate the actual corporate tax burdens. ETR is a commonly used measure of a firm's tax burden. ETR provides a basic summary statistic of tax performance which describes the amount of taxes paid by a company relative to its profit before tax. This measure reflects aggressive tax planning through permanent book tax differences, Khaoula, Amor & Ayed (2013). The ETR is computed as tax paid/Profit before tax.

How it works (Example):
The formulas for *effective tax rate* are as follows:
Individual: Total Tax Expense / Taxable Income
Corporation: Total Tax Expense / Earnings before tax
Effective tax rates simplify comparisons among companies or taxpayers. This is especially true where a progressive or tiered tax system is in place. Those subject to progressive taxes will see different levels of income taxed at different rates. The following is a hypothetical example:
Company A
Annual Pre-Tax Earnings = ₦600,000
Total Taxes Paid = (₦100,000 @ 10% + ₦400,000 @ 15% + 100,000 @ 25%) = ₦95,000
Effective Tax Rate = ₦95,000 / ₦600,000 = 15.8%

Company B
Annual Pre-Tax Earnings = ₦900,000
Total Taxes Paid = (₦100,000 @ 10% + ₦400,000 @ 15% + ₦400,000 @ 25%) = ₦170,000
Effective Tax Rate = ₦170,000 / ₦900,000 = 18.9%

In the example above, note that both Company A and Company B are in the 25% marginal tax bracket. However, this does not provide a fair comparison of their tax exposure. In reality, Company B has much more money taxed at the uppermost rate than Company A, and has to pay nearly twice as much in taxes.

Fortunately, the difference is readily apparent in Company B's higher effective tax rate (18.9 percent vs. 15.8 percent). As a result, the effective tax rate is a better depiction of a company's tax liability than the marginal tax rate.

It's crucial to remember that the quantity of cash tax payments made by an individual or organization may fluctuate significantly from the amount of tax expense incurred in a given period. This is due to the fact that most businesses generate two sets of financial statements: one for reporting and the other for tax purposes.

Empirical Review
Ezejiofor and Ezenwafor (2021) investigate the impact of CEO duality on the effective tax rate of publicly traded food and beverage industries. Ex-post facto research was employed in this study. A purposive sampling technique was utilized to select nine (9) organizations during the data collection process. From 2013 to 2019, data was gathered from the annual reports and financial statements of the tested companies. The data in the study was analyzed with descriptive statistics, and regression was used with the e-view, which had a 95 percent confidence level at five degrees of freedom (df). According to the data, CEO duality was considerable and had a favorable coefficient on tax planning in Nigerian food and beverage companies. From 2000 to 2019, Nweze, Ogbodo, and Ezejiofor (2021) looked into the impact of tax revenue on Nigeria's per capita income. This study, which used time series data, used an ex-post facto research design. The data was evaluated using descriptive statistics, and the hypothesis was tested using Ordinary Least Square (OLS) regression analysis. According to

the findings, tax collection had a significant positive impact on Nigeria's per capita income. The impact of corporate characteristics on tax aggression in Nigerian listed insurance firms was investigated by Yahaya and Yusuf (2020). As independent variables and indicators of firm characteristics, the researchers focused on firm size, firm age, profitability, and leverage. From 2010 to 2018, their sample included twenty (20) insurance companies that were publicly traded on the Nigerian Stock Exchange. They used the two-step system GMM panel regression model to conduct their research and discovered that firm size and leverage had a positive impact on tax aggression, whereas firm age and profitability had a negative impact. They suggested that firm size be determined in accordance with regulatory requirements. Martinez and Rodrigues (2020) investigated whether companies that participated in multiple business sectors were more tax aggressive than companies that only operated in one or a few. Using financial data from companies listed on the Brazilian Stock Exchange B3 from 2010 to 2017, as well as ETR (effective tax rate) and ETR long (long-run effective tax rates) as measures of tax aggressiveness, a panel regression model with fixed effect was used to analyze tax aggressiveness. it was observed that the more companies were diversified, the lower the probability of having low tax aggressiveness, or that more diversified companies were likely to be more aggressive, compared to companies with only one segment. Umeh, Okegbe, and Ezejiofor (2020) examined the impact of tax preparation on corporate value in Nigeria's publicly traded consumer goods manufacturing enterprises. Ex-post facto research was employed in this study. Data from yearly public financial and non-financial reports will be used for the study, which will span the years 2009 through 2018. The three hypotheses were investigated using traditional lease square regression with the help of E-View 9.0. The effective tax rate (ETR) has a negative impact on firm value, according to this study, however the effect is minor. Ezejiofor, Oranefo, and Ndum evaluated tax revenue on Nigerian per capita income (2021). Ex-post facto research was employed in this study. The population of Nigeria made up the economy, and data for this study came from the Central Bank of Nigeria's (CBN) Statistical Bulletin and the Federal Inland Revenue Service (FIRS). Customs and excise duties, as well as per capita income (PCI), were obtained as variables. The information for this study's data analysis came from CBN, FIRS, and NBS publications and statistical bulletins. Correlation and Ordinary Least Square (OLS) regressions were used to evaluate the hypothesis. According to statistical research, customs and excise fees have a non-significant positive impact on Nigeria's per capita income. In their study on corporate board characteristics and tax aggressiveness on manufacturing firms in Nigeria from 2011 to 2016, Onatuyeh and Odu (2019) found a link between corporate board features and tax aggressiveness on manufacturing firms. The findings revealed that board size and independence had negative and significant effects on tax aggression in Nigerian manufacturing enterprises, whereas board gender had no effect. They claimed that the insufficient number of women on corporate boards of directors was a feasible explanation for the lack of influence of board gender diversity on tax aggression. Oraka, Okegbe, and Ezejiofor looked into the influence of the value added tax on the Nigerian economy (2017). An ex post facto research design was used in this study. From 2003 through 2015, the study used GDP, PCI, and TR to assess the Nigerian economy. The acquired data was evaluated using simple regression analysis. The value added tax, according to the research, has had little impact on the Nigerian economy's Gross Domestic Product. In addition, it was discovered that VAT and per capita income have a negative relationship. The impact of the Tertiary Education Tax Fund (TETFUND) on management in Nigerian tertiary education was investigated by Oraka, Ogbodo, and Ezejiofor (2017). The hypothesis was created in accordance with the objectives of the investigation. A survey and a time series study design were used. Financial ratios were utilized to collect data from the National Bureau of Statistics, which was then examined with regression analysis using SPSS statistical software

version 20.0. According to the data, ETF fund allocations to Nigerian Tertiary Institutions have no association with the enrolment rates of Nigerian Tertiary Institutions. Udeh and Ezejiofor (2018) investigated the impact of accounting information on deferred taxation in Nigerian deposit money institutions. Ex post facto research was used to collect data from yearly reports and accounts of Nigerian deposit money banks. A pooled multiple regression analysis was utilized to test the hypotheses. Earnings per share (EPS) and cash flow (CASHFL) have a negative impact on our dependent variable, deferred tax, according to the data, but book value of equity has a statistically significant impact, but EPS and CASHFL do not. Amrie and Reza (2019) looked at the impact of financial restrictions, investment opportunity set, and aggressive financial reporting on tax aggressiveness. Financial constraints were positively associated with tax aggressiveness, the investment opportunity set was negatively associated with tax aggressiveness, and financial reporting aggressiveness was not associated with tax aggressiveness, according to regression data based on a sample of 88 non-financial companies listed on the Indonesian Stock Exchange between 2011 and 2015. Using a sample of 30 manufacturing enterprises, Inua (2018) looked into the factors that influence corporate effective tax rates in Nigeria. The sampled companies' annual accounts from 2011 to 2016 were utilized to compile secondary data. The results of the panel data regression technique revealed that firm leverage, board independence, and board size were all adversely and substantially connected to ETR, while firm size was both negatively and non-significantly related to ETR. External board members with competence in accounting, financial, and management concerns should be greatly encouraged, according to the study, as this would lower the tax rate and result in more effective tax practices. The study by Irianto, Sudibyo, and Wafirli (2017) attempted to look into the elements that influenced a company's tax avoidance. Size, leverage, profitability, and capital intensity were among the characteristics they considered. The goal of the research was to see how the size, leverage, profitability, and capital intensity ratio of manufacturing companies listed on the Indonesian Stock Exchange affected tax avoidance from 2013-2015. The population studied consisted of 156 manufacturing enterprises that were listed on the Indonesian Stock Exchange. The sample was determined using the purposive sampling method, which yielded a sample of 36 manufacturing enterprises based on specified criteria. The findings revealed that size had a beneficial impact on the effective tax rate, whereas leverage, profitability, and capital intensity ratio had no effect on tax evasion.

METHODOLOGY

Research Design

The study employs *Ex Post Facto* research design. The population of the study consist of consumer goods manufacturing firms quoted in Nigeria as at year ended December 2020 under the financial sector on the Nigeria Exchange Group (NGX).

Methods and Sources of Data

The study made use of secondary data which were sourced from the various annual reports of the sampled consumer goods manufacturing firms. The research covered a period of nine (9) financial years (2012-2020).

Model Specification

The models were thus modified with the introduction of firm complexity and auditor type as earlier justified in the first chapter.

The model for the study was modified thus;

$BTD_{it} = \alpha + \beta_1 CPX_{it} + \beta_2 LEV_{it} + \varepsilon_{it}$ ……. 1

Where;
ETR = Effective tax rate.
LEV = Leverage measured as the ratio of total debt to total equity.
CPX = Firm complexity measured as the number of subsidiaries.
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

Method of Data Analysis
The data were analysed using descriptive statistics and hypothesis was tested using regression analysis via E-view 9.0.

Decision Rule
The decision based on 5% (0.05) level of significance. The null hypothesis (Ho) would be accepted, if probability value (for example, Pvalue or Sig.) calculated is greater than (>) the stated 5% level of significance, otherwise reject.

Analysis and Result

Table 1: Descriptive Analysis

	ETR	CPX	LEV
Mean	0.769000	11.77778	0.880979
Median	0.770000	12.00000	0.869543
Maximum	2.230000	12.00000	0.914618
Minimum	0.110000	11.00000	0.858065
Std. Dev.	0.691865	0.440959	0.022386
Skewness	0.948700	-1.336306	0.645702
Kurtosis	3.170252	2.785714	1.709419
Jarque-Bera	1.360916	2.695791	1.249996
Probability	0.506385	0.259786	0.535262
Sum	6.921000	106.0000	7.928813
Sum Sq. Dev.	3.829412	1.555556	0.004009
Observations	9	9	9

Table 1 shows the mean (average) for each of the variables, their maximum values, minimum values, standard deviation and Jarque-Bera (JB) Statistics (normality test). The results in table 1 provided some insight into the nature of the Nigerian consumer goods manufacturing firms that were used in this study.

It was observed that on the average over the nine (9) years period (2012-2020), the sampled firms in Nigeria were characterized by positive effective tax rate (0.769). Also, the large difference between the maximum and minimum value of the firm complexity (CPX), and firm leverage (LEV) show that the sampled firms in this study are not dominated by firms with more tax aggression.

In this table, the Jarque-Bera (JB) which test for normality or the existence of outliers or extreme values among the variables shows that most of the variables are normally distributed at 5% level of significance. This means that any variable with outlier are not likely to distort our conclusion and are therefore reliable for drawing generalization. This also implies that the least square estimate can be used to estimate the pooled regression model.

Test of hypothesis

Ho: Firm complexity has no significant effect on effective tax rate of quoted consumer goods manufacturing firms in Nigeria.

Table 2: Regression analysis between ETR, COPX, and LEV

Dependent Variable: ETR
Method: Least Squares
Date: 04/30/22 Time: 11:13
Sample: 2012 2020
Included observations: 9

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.73530	7.113543	2.071443	0.0837
CPX	-1.255597	0.435218	-2.884985	0.0279
LEV	0.932873	8.572845	0.108817	0.9169

R-squared	0.620887	Mean dependent var	0.769000
Adjusted R-squared	0.494516	S.D. dependent var	0.691865
S.E. of regression	0.491897	Akaike info criterion	1.680109
Sum squared resid	1.451779	Schwarz criterion	1.745850
Log likelihood	-4.560489	Hannan-Quinn criter.	1.538239
F-statistic	4.913215	Durbin-Watson stat	1.700865
Prob(F-statistic)	0.054489		

From the Table 2, R-squared and adjusted Squared values were (0.62) and (0.49) respectively. This indicates that all the independent variables jointly explain about 62% of the systematic variations in effective tax rate (ETR) of our samples banks over the ten years periods (2012-2020). Table 2 reveals an R-square value of 0.62. The R square, which represents the coefficient of independent variables imply that 62% of the total variation in the dependent variable (effective tax rate) of quoted consumer goods manufacturing firms in Nigeria is jointly explained by the explanatory variables (CPX and LEV). The R-square of 62% did not constitute a problem to the study because the F- statistics value of 4.913 with an associated Prob.>F = 0.054 indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variables are properly selected, combined and used. The value of R-square of 62% also shows that 38% of the variation in the dependent variable is explained by other factors not captured in the study model.

Test of Autocorrelation: using Durbin-Waston (DW) statistics which we obtained from our regression result in table 2, it is observed that DW statistics is 1.700865 and an Akaike Info Criterion and Schwarz Criterion which are 1.680 and 1.746 respectively also further confirms that our model is well specified.

The results show that firm complexity (CPX)) has a negative but significant relationship with effective tax rate (ETR) measured with a beta coefficient (β_1) and t- value of 1.255597 and -2.884985 respectively and p-value of 0.054 which is statistically significant at 5%. This beta coefficient revealed that if firm complexity increases by one unit, then the sampled firms' effective tax rate would decrease by 1.3%.

Based on the empirical evidence that suggests that firm complexity has a significant negative effect on effective tax rate of quoted consumer goods firms in Nigeria at 5% level of significance, thus, the alternative hypothesis of the study is accepted.

CONCLUSION

The results of the regression approach revealed that firm in terms of the hypothesis tested, the model's result revealed that in Nigeria, the variable of company complexity had a significant negative coefficient. As a result of the considerable negative coefficient of complexity in the Nigerian sample, highly diversified Nigerian enterprises or those with a large number of segments/subsidiaries were linked to low tax aggression. The conclusion was contrary to the study's presumption, which was that highly diversified corporations with several subsidiaries or business sectors would have greater tax loads due to economies of scale, and so would have a strong incentive to engage in tax planning to decrease their tax burden. As a result, they suggest that in Nigerian consumer products manufacturing enterprises, there is a strong negative association between firm complexity and effective tax rate. It implied that highly diversified businesses were less tax aggressive in Nigeria.

The concept that highly diversified enterprises participated in less tax aggression was confirmed in the Nigerian sample, according to the findings. Because most diversified Nigerian consumer goods manufacturing firms have subsidiaries and must deal with local and complex tax laws in their various business segments, both governments must simplify tax laws and focus more on creating a tax culture to encourage voluntary compliance among multinationals.

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