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Effects of tax sheltering on earnings management in Nigeria

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ABSTRACT

This study examines how tax sheltering and its interactions with cash effective tax rate, long-term effective tax rate, tax savings, book tax gap, temporary difference of tax shelter and permanent difference of tax shelter impacted the modified Jones earnings model (earnings quality management) from 2009 to 2016. The study used a sample of all 116 listed companies on the Nigerian stock exchange ranging from all sectors excluding financial services sector due to its reporting system. Preliminary analyses were also conducted, such as descriptive statistics and the correlation matrix. In analysing the data, the study adopted panel multiple regression to identify the possible effects on earnings quality. We employed the panel generalised method of moments regression because we suspected there is a variety of moment conditions that are deduced from the assumption of the theoretical model. The result shows that tax sheltering had a significant and positive effect on the quoted the modified Jones earnings model (earnings management). We concluded that the cash effective tax rate, long term effective tax rate, tax savings temporary and permanent tax difference are insignificant meaning that stakeholders in Nigeria are interested in companies that produce quality financial reports, which clearly shows that there is high earnings manipulation among Nigeria quoted companies as most firms manipulate earnings through abnormal accruals. This is attributed to pressure Nigeria companies face in maintaining existing investors' confidence, smooth income over the years. While the significant effects of the book tax gap show that increase or decrease in the book tax gap is a signal to high or low earnings quality. These reactions were different in developed economies, like the United States, as the cash effective tax rate, long-term effective tax rate, tax savings, book tax gap and temporary difference are significant where news about involvement in tax aggressiveness affects the quality of the firm's earnings.

Keywords: tax sheltering, earnings management, cash ETR, long-term ETR, tax savings, book tax gap, temporary tax difference, permanent tax difference.

1. Introduction

Tax sheltering practices are usually implemented to minimise the tax burden to achieve greater after-tax earnings per share and cash available for shareholders. Thus, it could also reflect a decline in taxable income when managed through tax planning practices that are legal as well as activities that may be viewed as illegal in some circumstances to reduce tax liability. References provide that tax sheltering can be substituted with tax aggressiveness, tax planning and tax avoidance. Since tax sheltering is a form of corporate decision and action that

could reflect both executives' and non-executives' aversion to risk (Lanis and Richardson 2012; Chen, Chen, Cheng, and Shevlin 2010; Khurana, and Moser 2013; Lanis, Richardson and Taylor 2015; Francis, Hasan, Wu and Yan 2014). The reaction of tax aggressiveness on earnings quality has emerged as an issue of interest to analysts, investors, managers and other market participants (Lipe 1990; Chan, Jegadeesh, and Lakonishok, 2006; and Cahan, Emmanuel, and Sun, 2009). Managers are much concerned about meeting analysts' forecast by maintaining sustainable growth of the companies as a means to protect themselves,

while researchers have documented issues where companies with higher earnings having a lower effective tax rate is an issue of the companies' tax aggressiveness practices. From the perspective of previous studies, researchers have documented the effect of tax sheltering on earnings quality. Such researchers as Lyimo (2014); Atwood, Michael, Drake, Linda and Myers (2010) concluded that higher consistency between the accounting profits and tax base earnings adds to the quality of earnings and undermines earnings persistence; Linda and Chen (2012) indicated that the reaction of tax policies on earnings management is significant and it affects the information content of earnings quality as well (Mohammadreza, Aliasghar and Hamid, 2013). Their results show differences on how investors react to issues of tax sheltering on earnings quality in different environments. None of these studies factored the current Nigerian situation considering the tax agencies' strategies and stakeholders' reaction of tax sheltering on earnings quality of Nigerian firms to the best of the researchers' knowledge.

In the Nigerian context, the Federal Inland Revenue Services focus on improving compliance and expanding the tax base rather than introducing new taxes or increasing the rates of existing taxes due to decline in oil revenue (PWC Nigeria tax alert September 2015). Nigeria is undergoing a lot of restructuring on fiscal policy such as National tax policy, transfer pricing guidelines for multinational enterprises and tax administrations which mandate all organizations to include transfer pricing declaration and disclosure form during tax return (Nolands taxflash 2017), voluntary assets and income declaration scheme (VAIDS) and so on. One of the Federal Inland Revenue Services' strategy is evaluating tax aggressiveness practices of Nigerian firms against their earnings. As tax agencies are on the pressure of increasing government revenue through taxation, this has created another face for valuing firms' earnings through tax aggressiveness. These agencies have increased their drive on tax audit and investigations on Nigerian firms, publishing reports on the firms' tax aggressiveness strategies, by using their statutory tax rate and effective tax rate. This recent process will lead to another reaction to Nigerian firms by stakeholders ranging from the government, intending investors, business managers, stock market analysts and business owners, which is the motivating factor of this research trying to find out the reaction of tax sheltering practices to earnings quality on the quoted firms in Nigeria. What are the tax sheltering reactions to firms' earnings? Are they significant? To what

extent of significance? Is it positive or negative? The main aim of the study is to determine the effects of tax sheltering on earnings quality management in Nigeria, while the specific objectives are:

1. Determine the effect of the cash effective tax rate on earnings quality
2. Determine the effect of the long term cash effective tax rate on earnings quality
3. Determine the effect of tax savings on earnings quality
4. Investigate the effect of the book tax gap on earnings quality
5. Ascertain the effect of the temporary difference of tax shelter on earnings quality
6. Determine the effect of the permanent difference of tax shelter on earnings quality

A set of null hypotheses were formulated for the study as follows:

1. The cash effective tax rate does not have a significant effect on earnings quality
2. The long term cash effective tax rate does not have a significant effect on earnings quality
3. Tax savings do not have a significant effect on earnings quality
4. The book tax gap does not have a significant effect on earnings quality
5. The temporary difference of tax shelter does not have a significant effect on earnings quality
6. The permanent difference of tax shelter does not have a significant effect on earnings quality

The study covers 165 quoted firms in the Nigerian stock exchange from 2009 to 2016. However, it ascertains the effects of the cash effective tax rate, long term cash effective tax rate, tax savings, book tax gap, temporary difference of tax shelter and permanent difference of tax shelter on earnings quality of quoted firms in Nigeria stock exchange.

The remaining sections of the paper are organised as follows. Section 2 briefly reviews empirical literature on earnings quality. It discusses its effect on tax sheltering. The research design is described in Section 3, while Section 4 presents and discusses the empirical findings. Section 5 provides a summary of the results, conclusion and recommendations.

2. Review of related literature

2.1. Conceptual Framework

2.1.1. Corporate tax aggressiveness

Stephen, Sophie, Jean-Pierre and Matthew (2014) defined corporate tax aggressiveness as examination of a firm's tendency to manage its taxable income downward through more or less aggressive tax planning activities. It is a situation close to abusive tax avoidance, which is the 'worst case' of tax aggressiveness. This has

been established in a judgment rules in the United States, Canada and some countries. Tax aggressiveness refers to aggressive tax planning observed to find some degrees of artificiality or abnormality in the firms' financial transaction. The question of legal-ity or illegality lies on courts, tax authorities or outside observers. A firm's tax position is not considered as aggressive if it is not based on technical merits; the position will be subjected to examination. However, an uncertain tax position is considered to be tax aggressiveness to some degree.

Canada Revenue Agency (2013) is of the view that tax aggressiveness is an arrangements that have some legal basis in a technical sense, but firms go beyond the intentions of the legislator that passed the law. They simplified it to be arrangements made by firms with a primary purpose of avoiding the payment of the required taxes, which could be in violation of the taxation laws. Firms can possibly divide potential tax reduction into arrangements that have the category of tax aggressiveness, changing gradually from fraud to legitimacy. Those categories may be paralleled to the corporate moral development stages proposed by Reidenbach and Robin (1991) that reported one end of the gradual change in tax aggressiveness includes inadequate books and records, substantial understatement of income, fraudulent failure to file tax returns, lying, deceit and hiding transactions.

Many variables have been used in previous studies to capture tax sheltering and aggressiveness activities, e.g., Stickney and McGee (1982); Gupta and Newberry (1997); Desai and Dharmapala (2006); Frank et al. (2009); Salihu et al.; (2013); Armstrong, Blouin and Larcker (2012) Lisowsky, Robinson, and Schmidt, (2013) and others. They are: effective tax rate; tax savings; book tax gap or difference; tax shelter with its temporary and permanent differences. Frank et al. (2009) propose an approach in which they combine the literature on effective tax rates and discretionary accruals to estimate the discretionary permanent differences that constitute their measure of tax sheltering and aggressiveness. The variable presents the advantage of being less correlated, as compared to other tax aggressiveness measures, to earnings quality.

2.1.2. Corporate earnings quality

Sepe, Nelson, Tan and Spiceland (2012) define earnings quality as the ability of reported earnings (income) to predict a company's future earnings. It is an assessment criterion for how "repeatable, controllable and bankable" a firm's earnings are, amongst other factors,

and has variously been defined as the degree to which earnings reflect underlying economic effects, estimates of cash flows, conservative and predictable.

Warshavsky (2012) on his analysing earnings quality reported it as an important aspect of ascertaining the firms' financial status, which has been studied since 1934 (according to Graham and Dodd's security analysis in Warshavsky 2012). Earnings quality refers to the ability of a firm's published earnings to best represent its true earnings. It is the stability, or lack thereof, in a firm's reported earnings. Srinidhi, Gul, and Tsui, (2011) as explained in Lyimo (2014) reported earnings quality as the ability of the firms' current earnings to reflect the future cash flow and earnings. In this direction, earnings quality reflects best how the current earnings can predict the future earnings of firms.

2.2. Theoretical framework

This study is anchored on prospect theory and tax planning theory, which states that when firms face risks and options of making decisions, firms have the options of using aggressive tax planning activities to reduce its taxable income, as to increase its earning.

Dhami and Al-Nowaihi (2007), following prospect theory, characterise individuals as loss averse. These individuals overweight small probabilities while underweighting the large ones. Their results shows that despite the existence of low audit probabilities and penalty rates in actual practice, the magnitude of tax aggressiveness predicted by prospect theory is consistent with the data. Individuals are also predicted to respond to an increase in the tax rate by increasing the amount evaded. This accords with the bulk of the evidence, but contrasts with the converse prediction made by the expected utility theory. Optimal tax rates predicted by prospect theory, in the presence of tax aggressiveness behaviour, are consistent with actual tax rates. Prospect theory was developed to explain actual choice under generic situations of risk. They used the parameters of human choice that are revealed from independent experimental evidence, stating that prospect theory explained the tax aggressiveness puzzles. Its predictions about the magnitudes of optimal income taxes in the presence of tax aggressiveness are indicative of the actual magnitudes. They conclude that the behaviour of tax payers provides strong support for prospect theory.

Some studies have dealt with the problem of tax aggressiveness in the literature on prospect theory. Yaniv (1999), in Gwenola (2012), analyses the influence of obligatory advance tax

payments on the taxpayer's aggressiveness decision. He applies prospect theory to a simple model of tax aggressiveness, using the income after the payment of the tax advance and prior to the filing of a re-turn for the reference income, and demonstrates that advance tax payments may be a substitute for costly detection efforts in enhancing compliance. Bernasconi and Zanardi (2004), in Gwenola (2012), used cumulative prospect theory with a general reference point but with particular probability weighting and utility functions.

Dhami and al-Nowaihi (2007), in Gwenola (2012), applied cumulative prospect theory to tax aggressiveness, considering the legal after-tax income to be the reference point because it is the only one with which the taxpayer is in the domain of gains if not caught, and in the domain of losses if caught. They use a probability of detection which depends on the amount of income evaded and introduce stigma costs of evasion. Using the power utility function of Tversky and Kahneman (1992), they show that the predictions of prospect theory are consistent with the evidence. Using parameters estimated by the experimental literature and the weighting probability function of Prelec (1998), they show that relative to the expected utility theory, prospect theory provides a much better explanation of tax aggressiveness.

2.2.1. Prospect Theory

It is a theory that is based on decision making when faced with conditions of risk. Decisions are based on judgements. Judgements are assessments about the external positions of the external environment, which are made under conditions of uncertainty. It is hard to foresee the certainties or consequences of events. Decisions are internal and are difficult when choices differ in values and goals. Prospect theory addresses how choices are evaluated in the decision making process. The theory was propounded by Kahneman and Tversky in 1979. Prospect theory predicts that firms tend to be risk seeking in a domain of losses or crises. They applied psychophysical principles to ascertain decision-making and judgment. Reporting that firms are making decisions according to how management brains processes information, and not on the basis of basic part and usefulness that certain option possesses for decisions making.

2.2.2. Tax planning theory

The theory of tax planning is a theory that states that tax payers have the capacity to arrange their financial activities in such a manner so as to suffer a minimum expenditure for

taxes through effective tax planning. It was propounded by William Hoffman in 1961 and explains that all tax planning does not reduce the tax liability to the desired minimum level. The tax planning that is not cut properly to suit the individual taxpayer may have the ultimately adverse effect of maximizing the tax. Tax planning must likewise be distinguished from tax saving. There are many transactions, once closed, where the taxpayer is capable of accomplishing tax saving by following an accepted tax avoidance procedure. This would certainly be the case of the taxpayer who, by consulting a tax practitioner, was able to learn about the capital gains benefits of certain securities transactions that have already transpired. This is a commendable segment of the practitioner's work, but it is not tax planning. Tax saving usually becomes the result of tax planning, but it may be accomplished by other names. Hoffman (1961), in Mgamal and Ismail (2015), reported that tax planning activity theories introduce concepts and principles that are typically applicable to tax practitioners. Tax planning could not be continued for long except if the activities of tax planning are "flexible", meaning continuity of the strategies. This is particularly applicable to the cases of tax planning strategies that depend on tax regulation ambiguities and loopholes. Thus, tax planning strategies must be time-oriented and proportionate in the logic that "the past, the present and the future limit requires consistency. But the present limit must be further circumscribed in the light of the taxpayer's future requirements".

2.3. Empirical Review

2.3.1. Studies on developed markets

Dyreg et al. (2010), focused on long run corporate tax aggressiveness on earning on the basis of the United States. They used the accounting effective tax rate to measure tax aggressiveness. The result indicates a significant positive effect of accounting the effective tax rate on earning quality, meaning that investors based on after-tax results to assess firms earning quality. Similarly, Armstrong, Blouin and Larcker (2012) studied the effects of incentives for tax planning on earnings quality. They used accounting the effective tax rate to measure tax aggressiveness to see the effects of tax aggressiveness on earnings quality using regression analysis on firms quoted in the United States. Their results indicate a significant positive effect of accounting the effective tax rate on earning quality.

Huseynov and Klamm (2012) worked on the effective tax aggressiveness, tax management and corporate social responsibility. They used S&P 500 firms in the United States (the number of

firms varies between 25 and 425 per year and depends upon the availability of data). They reported that accounting the effective tax rate has been a widely used measure of tax aggressiveness because it measures tax aggressiveness relative to accounting earnings. Their result stated a significant positive effect of accounting the effective tax rate on corporate social responsibility indicating higher earnings quality.

Desai and Dharmapala (2006) worked on corporate tax aggressiveness on firm value using the United States firms. They argue that aggressive tax planning reducing tax may not necessarily be beneficial to stockholders and earnings. They used regression analysis to analyze the effect of accounting the effective tax rate on earnings quality. Their result shows a significant positive effect of accounting the effective tax rate on earnings quality. They are of the view that corporate tax aggressiveness transfer resources from the state to shareholders, which is incomplete given the agency problems characterizing shareholder-manager relations. This resources transfer negatively affect earnings quality.

Hope, Ma and Thomas (2012) focused on tax aggressiveness and geographic earnings disclosure. They employed the current effective tax rate to measure tax aggressiveness while examining the association between corporate tax aggressiveness and geographical earnings' disclosure practices based on the United States multinationals. They found a significant positive effect of the current effective tax rate on geographic earnings quality disclosures. Similarly, Lanis and Richardson (2012) worked on the effect of tax aggressiveness on corporate social responsibility. They used regression analysis to analyse the dependent and independent variables using 408 Australian firms. They measured tax aggressiveness using the current effective tax rate on corporate social responsibility. Their results show a significant positive effect of the current effective tax rate on corporate social responsibility indicating a high tax rate, which in turn indicates high earnings quality.

Deméré, Lisowsky, Li and Snyder (2017) worked on whether smoothing activities indicate higher or lower financial reporting quality, drawing evidence from effective tax rates. The study used 35,201 firm's yearly observations in the United States, excluding financial, insurance and utility firms, from 1996 to 2012. They used effective tax rate, profitability, size, market-to-book, leverage, research and development expense, net operating loss carry forwards, foreign income-producing activity, intangible assets, mergers and acquisitions, capital intensity, cash holdings and losses as dependent,

independent and control variables. They used ordinary least square regression to analyse the dependent and independent variables. Their results show a significant negative effect of the effective tax rate on discretionary accruals, meaning the effective tax rate serves as an indicator to financial reporting quality on both reducing and increasing earning quality.

Ayers et al (2009) worked on taxable income as a performance measure. They used the long-term cash effective tax rate to measure the firms' tax aggressiveness. The study reported that taxable income becomes less informative for high tax aggressiveness firms and more informative for firms with low earnings quality, suggesting that investors, at least in part, are able to distinguish sources of book-tax differences, after using regression analysis to analyse the effect. The results show a significant negative effect of the long-term cash effective tax rate on earnings quality, meaning that taxation is evidence of low earning quality.

Hanlon and Slemrod (2008) focused on what tax aggressiveness signals on earning quality. They used regression analysis to analyse the effect of tax aggressiveness signal on earning quality, calculating the long-term effective tax rate by the cash taxes paid summed over the two years divided by pre-tax income summed over the two years. Their results show a significant negative effect of tax aggressiveness signal on earning quality, meaning that firms stock price declines when there is news about its involvement in tax aggressiveness. The reaction is less negative for firms that are viewed to be generally less tax aggressive.

Hanlon (2005) worked on the effects of tax aggressiveness on earnings management using the United State large firms. The study used regression analysis to analyse long-run cash effective tax rate on persistence and accruals of large firms. The results show a negative effect of tax aggressiveness on earnings management, stating that large tax aggressiveness, on average, is systematically associated with the quality (persistence, growth) of firm earnings.

Dhaliwal et al. (2011) worked on the effect of corporate tax aggressiveness on firms' valuation using regression analysis to analyse the long-run cash effective tax rate on the valuation of the United State firms. Their results show negative effects of tax aggressiveness on firms' valuation but only for the firms with weak corporate governance structures. Similarly, Frank et al. (2009) focused on the tax reporting aggressiveness on its relation to financial reporting of firm's earnings. Their result shows negative effects of tax aggressive policy on financial reporting. They reported that tax aggressive po-

licity reduces earnings quality of sample firms.

Brad, Sharon and Sonja (2010) worked on how tax aggressiveness of firms influence earning quality, on the basis of the United States private equity ownership on portfolio firms. They examine whether private equity firms influence the extent and types of tax aggressiveness at portfolio firms as an additional source of economic value taking tax saving; cash effective tax rate; book-tax gap as independent variables on firms earning as dependent variable. The result shows a significant negative effect of tax savings on earnings of the private equity ownership firms. They reported that private equity backed firms pay 14.2 percent less income tax per dollar of adjusted pre-tax income than non-private equity backed private firms, even after controlling for the presence of net operating loss and debt tax shields, which affect earning quality.

Thomas and Zhang (2010) worked on the effects of tax aggressiveness information about core profitability that is incremental to reported earnings and information not reflected in stock prices because tax disclosures are complex and opaque. They analysed the independent and dependent variables, such as tax savings, price momentum, discretionary accruals, size, book-to-market, ratio of tax income to earnings, income effect of changes in effective tax rates using regression analysis to analyse the sample of the United States firms. Their results show positive significant effects of tax savings on the level of earnings. They state that higher tax expense is good news for investors, as the fact that higher tax implies higher earnings. They posit that tax disclosures are not easily discovered and investors do not fully appreciate these implications for future earnings and tax expense.

Ftouhi, Ayed and Zemzem (2016) examined whether corporate tax planning behaviour increases the firm value of European countries. They used regression analysis to analyse the effect of tax savings on firm earnings. They reported that the impact of tax planning on firm earnings is a function of tax savings in disclosures of tax reduction in the financial statements. They argue that tax savings affect the value of a firm negatively due to higher agency costs. The result show that the corporate effective tax rate is below the statutory tax rate of the listed firm, meaning that tax taxpayers use tax saving policies to reduce tax liability in obtaining the tax saving benefits while expose to risk related to inspection or investigation by tax authorities.

Hafkenscheid and Janssen (2009) worked on whether income tax savings policies create firms' earnings using content analysis of the

theory of tax planning. The study was held in the Netherlands. They argue that tax planning strategies do create company value, that the value created by tax saving should be calculated separately from the value created by growth of the operating profits. Their results show that many investors and analysts said they disregard tax as a value driver because they lack the relevant information, that firms generally are reluctant to provide information on their tax position, often arguing that this would negatively affect their position toward the taxing authorities.

Guenther, Hu and Williams (2013) worked on the large book-tax gap effects on discretionary accruals on the basis of the United States firms. Their study used annual pre-tax book income, annual deferred tax expense, tax book gap to measure tax aggressiveness while discretionary accruals to measure earnings quality. Their results show positive significant effects of tax book gap on earnings quality while stating that the large book tax gap will provide helpful information on discretionary accruals or earnings quality to investors and tax authorities.

Blaylock, Gaertner and Shevlin (2012) worked on the association between book-tax conformity and earnings management to determine whether managing earning upward lead to high tax and managing tax downwards leads to lower earnings quality. They used panel regression analysis on 141,389 firm annual observations across 35 countries over the period of 1996-2007. They used current tax expense, ratio of foreign pre-tax income to total tax expense, dividend as independent variables. And accrual quality as dependent variable. The results show a significant positive effect of book tax conformity on earnings quality, meaning that high book tax conformity indicates high earnings management which is a signal of low earnings quality.

Diehl (2010) worked on the ratio of deferred tax liabilities to shares as a predictor of stock prices using 3,016 United States companies. They used regression analysis to analyse basic earnings per share, earnings per share, book value per share, deferred tax liabilities per share, retained earnings per share, market capitalisation and number of shares as dependent and independent variables. Their results show a statistical significant effect of tax aggressive planning on earnings quality, indicating that low earnings quality prediction errors are more positive where a large book-to-tax gap exists.

Boise (2005) worked on tax fraud and inflated corporate earnings. They study investigated

whether tax fraud and inflated corporate earnings is an alternative to the missing legislative fix using United States firms with special emphasis on World Com corporation. The study used content analysis to analyze the dependent and independent variables. The results show a significant effect of tax fraud on the quality of firms earning while identifying two indicators as a signal of tax fraud and inflated corporate earnings. A large book tax gap indicates lower earnings quality and tax payment on artificial earnings to hit analysts expected target to maintain the price of the stock.

Seidman (2008) investigated the book tax income gap with factors that affect the gap and details regarding its most significant component. Their study was based on the United States firms from 1993 to 2004. Their dependent and independent variables are accounting rules, earnings management behaviour, tax law, tax sheltering behaviour, book tax gap and general business conditions. They study the use of regression analysis to analyse the dependent and independent variables. The results show that temporary tax differences have a significant effect on earnings quality with high R², indicating wide variations in the permanent tax difference. It is reported that tax sheltering is more significant through permanent tax differences than through temporary tax differences, stating that tax shelters create permanent tax differences. The study disagrees with previous studies that belief that tax shelter was the primary cause of the rise in the book-tax income gap.

Evers, Meier and Nicolay (2016) worked on the implications of the book-tax gap from a meta-analysis point on whether the increased book-tax gap actually reduces earnings quality. The study uses these variables book-tax conformity, book-tax gap, tax sheltering, and earnings management to analyse the dependent and independent variables in the United States. The meta-analysis is to quantify the impact of these sources of heterogeneity in the study design with respect to the sign and statistical significance of the association between tax book gap on earnings management, using meta regression analysis as an innovative tool in the empirical accounting literature to clarify the interpretation of opposing outcomes and providing guidelines for future studies. Their results show a negative effect of tax book gap on earnings management, which means that a higher tax book gap affects earnings quality.

Abdul Wahab and Holland (2014) worked on the persistence of the book-tax gap using non-financial quoted firms in the United Kingdom from 2005 to 2010. They used the effective tax rate, book tax gap, earning manage-

ment, current tax expense and deferred tax as dependent and independent variables while using regression analysis to analyse the effect of the variables. Their results show a significant positive effect of the tax book gap on earnings quality suggesting that taxation is a motivating factor. They reported that the majority of companies' face a lower overseas statutory rate compared to the United Kingdom rate. The ability to maintain the book tax gap effect over time is consistent with an underlying tax motivation, which affects their earnings quality.

Blackburne and Blouin (2016) worked on the understanding of the informativeness of the book-tax gap using 19,129 firms' annual observation on listed firms in the United States from 2001 to 2012. The study used the book tax gap, ratio of deferred tax expense grossed up by the top statutory tax rate to average total assets, temporary tax different and permanent tax different as independent variables. While discretionary accruals as dependent variable. They used counterfactual tests, simulation analyses and multiple regression analysis to analyse the dependent and independent variables. The results show a significant effect of book tax gap on earnings quality indicating that managers manipulate book income and taxable income reports because of incentives such as value relevance of the report and tax reduction.

Romanus (2007) worked on the impact of earnings quality on investors and analysts' reactions to restating announcements with a major focus using temporary tax different against earnings quality. The study used earnings quality, restatements, book-tax differences, accruals as dependent and independent variables, analyzing cross-sectional data of 719 publicly traded firms that announced restatements between 1997 and 2004 in the United States. The study reported that the log of the absolute value of the total tax difference is used because both large positive and large negative tax differences provide indications of low earnings quality as reported by Hanlon and Krishnan 2005 in Romanus 2007. The result shows that temporary tax differences have a significant negative effect on earning quality, which indicates that large book tax differences have a lesser negative effect on market reaction on earnings quality. However, a temporary tax difference conveys information about the quality of earnings to investors. A temporary tax difference further provides signal to investors that quality of earnings may be problematic, thereby increasing investors' due diligence while suggesting that tax aggressiveness has consequences that extend beyond outcomes.

Raedy, Seidman and Shackelford (2010) worked on book-tax differences, as they matter to equity investors, using 250 United States firms from 1993 to 2007. The study used employee benefits, environmental costs, general business expenses, differences related to foreign income, intangible property differences, inventory differences, leased property differences, differences arising from mergers, acquisitions, divestitures or restructuring, net loss carry forwards, differences related to owned tangible property, items unique to the regulated industries, differences in revenue recognition, state and local taxable income differences, differences related to subsidiaries to capture measures for temporary tax difference on earnings quality as dependent variable. However, they used regression analysis to analyze the impact of the variables. Their results show a significant positive effect on temporary tax difference on earnings quality, which is consistent as the investors favourably view increase and decrease in temporary tax difference. They reported that firms' tax obligations potentially shed information about the quality of firms' earnings. They further state that investors examine the temporary tax difference arising from the accounts where managers enjoy the right to choose in the recognition of income and expenses in respect to the accrual quality of firms.

Blaylock, Shevlin and Wilson (2010) worked on tax avoidance, large positive book-tax differences and earnings persistence, which investigate why temporary tax differences appear to serve as a useful signal of earnings persistence. Their analysis focuses on firms with large temporary tax differences because these differences could be a signal of either earnings management or tax avoidance on 21,205 United States firms' annual observations. They used pre-tax book income, pre-tax book income for the current year divided by the average asset, the modified Jones model discretionary accruals, cash effective tax rate, temporary tax differences, earnings management to analyse the dependent and independent variables while analyzing the effects with regression analysis. Their result shows a significant positive effect on the temporary tax difference on earnings quality stating that temporary tax differences serve as a useful signal of future earnings, with some cases leading to lower earnings. They reported that despite concerns over the limited information provided to investors in respect to differences between a firm's book and taxable income, they find that investors are able to use the disclosures to look through to the source of temporary tax differences and ascertain earnings quality.

Deslandes and Landary (2007) worked on taxable income, tax-book difference and earnings quality. They investigated how taxable income and temporary tax difference affect assessing earnings quality. They reported that the gap between temporary tax differences and reported earnings might be an indication of financial statement manipulations and tax aggressiveness behaviour. They used all firms listed at the Toronto Stock Exchange (Canada) for the period of 2000 - 2005. Their variables are earnings before taxes, taxable income, total tax differences, temporary tax differences, permanent tax differences, cash flow from operations. Regression analysis was used for analysing the impact of the independent on the dependent variables. Their results show a significant positive effect of temporary tax differences on earnings quality, stating that the temporary tax difference helps predicting the firms' future earnings.

Lev and Nissim (2004) worked on taxable income, future earnings and equity values. They ascertain the ability of a tax based fundamental to predict earnings growth and stock returns. The tax fundamental reflects temporary and permanent tax differences as well as tax accruals such as changes in the tax valuation allowance. They used taxable income; deferred taxes; temporary and permanent tax differences, earnings quality; cash flow from operations, earnings management; market efficiency to analyse the dependent and independent variable with regression analysis. The study used 40,372 United States firms from 1973 to 2000, obtained from the Compustat database. Their results show a significant negative effect of temporary tax differences on earnings quality. It suggests that permanent tax differences and temporary tax differences are relevant as deferred taxes for predicting earnings growth. They reported that a decrease in the tax and an increase in the cash flow from operations coefficients appear consistent with a general deterioration in the quality of earnings during the late 1980s and 1990s, according to Lev and Zarowin (1999), in Lev and Nissim (2004), reflecting the increasing importance of permanent tax differences and temporary tax difference indicators in predicting earnings quality. However, they reported that the existence of permanent book-tax differences does not change taxable income and tax relative to book income. While permanent differences may either strengthen or weaken the information in taxable income less reported earnings, depending on their variability and correlations. The study supported by Dhaliwal et al. (2002), in Lev and

Nissim (2000), documents that changes in the effective tax rate, which are due to permanent differences and tax accruals, have negative effects on firms' incentives to increase reported earnings.

2.3.2. Studies on emerging markets

Saliyu et al. (2013) worked on the measures of corporate tax avoidance on the basis of empirical evidence from an emerging economy of Malaysia. They used a long-run cash effective tax rate as the proportion of cash taxes paid to the accounting income before tax, accounting the effective tax rate and current effective tax rate as a measure to tax aggressiveness. They used regression analysis to determine the effects of tax aggressiveness on earnings quality. Their results show a significant negative effect of the current and long-run cash effective tax rate on earning quality, suggesting that the relative information content of taxable income for low earnings-quality firms raised concerns about opportunistic earnings management.

Chen and Chu (2005) worked on a model of tax aggressiveness on internal control and external manipulation on the basis of Malaysia firms. They employed the current effective tax rate to measure tax aggressiveness. They argued that tax aggressiveness leads to loss of internal control. The results show a significant positive effect of tax aggressiveness on internal control that affects earnings quality.

Amidu, Yorke, and Harvey (2016) worked on the effects of financial reporting standards on tax avoidance and earnings quality. The study included a sample of 116 firms listed in the Ghana Stock Exchange. The study used the effective tax rate, statutory tax rate and book tax gap as a measure to tax avoidance while the modified Jones model of earnings management as a measure to earnings quality. They used multiple regression analysis to analyze the dependent and independent variables. The results show a significant effect of tax avoidance on earnings quality. They reported that large firms that engage in manipulations of earnings is not always as a result of tax aggressiveness.

Eko (2013) worked on the income tax rate and earnings management of firms listed on the Indonesian Stock Exchange. The study investigated the impacts of the firms' tax savings on management behaviour in determining earnings quality using financial data from manufacturing firms in the years 2003 – 2009. The independent variables are tax savings, statutory tax rate and effective tax rate. While the dependent variables are performance model and modified Jones model. The study used regres-

sion analysis to analyse the independent variables and the dependent variables. The results show a significant negative effect of tax savings on earning quality, stating that management tends to accrue expenses earlier whenever the circumstances are available to minimise tax which affects earning quality. In the same way, revenue may be recognised in later years in order to manage income and tax savings.

Li (2014) worked on tax-induced earnings management, auditor conservatism and tax enforcement on the basis of Hong Kong firms. The study used tax savings, enforcement, effective tax rate, quality high on earning manipulation as a measure to earning quality. The results show a significant negative effect of tax savings on earning manipulation, which means that firms subject to stricter tax enforcement report higher discretionary current accruals than their counterparts when they have incentives to manage earnings downward for current tax savings.

Kawor1 and Kporgbi (2014) worked on the effect of tax planning on the market performance of firms on the basis of non-financial companies listed in the Ghana Stock Exchange over a period of twelve years. They adopted panel regression to analyse the effect of tax savings, sales growth, firm size, leverage and firm age. Their results show a significant position effect of tax savings and firm earnings, meaning that firms engage in intensive tax planning activities when tax authorities maintain low corporate income tax rates that have a neutral influence on the performance of firms under analysis.

Hu, Cao and Zheng (2015) worked on the effects of aggressive tax planning on earnings quality of 202 firms listed on the Chinese capital market from 2008 to 2010. The study used book-tax differences and deferred tax expense as proxy to tax aggressive planning, and nonconforming earnings management as proxy for earning quality. They used regression analysis to analyse the independent variables and the dependent variables. The results show a significant negative effect of aggressive tax planning on earnings quality, indicating that firms has motivations to some aggressive tax planning strategies to reduce tax liability which affects the quality of earnings.

Ingrid (2017) worked on the effect of book-tax gap and corporate governance disclosure on the quality of earnings using accounting conservatism as moderating variables on the basis of listed companies on the Indonesian Stock Exchange from 2012 to 2014. Their study used a book-tax gap, operating cash flow, firms'

growth as independent variables. The results show a significant effect of book tax gap on earnings quality, indicating that firms with a large book tax gap have lower earning persistence compared to firms with a small book tax gap.

Rafay and Ajmal (2014) worked on the earnings management through deferred taxes recognised under IAS 12 using Pakistani firms. The study examines the calculation of a temporary difference under the IAS 12 and its impact on the firm's earnings valuation. They reported that studies indicate that a temporary difference is a source of opportunistic earnings management, suggesting that because accounting principles give managers more ability than tax authorities, while the decrease in tax paid through deferred tax liabilities is classified as tax aggressiveness. The study used the temporary difference, abnormal operating earnings, deferred tax liabilities, earnings quality to measure the dependent and independent variables, while using the regression analysis to analyse the impact of the variables. Their results show a negative effect of the temporary tax difference on earnings quality, meaning that Pakistani investors treat the temporary tax difference negatively, penalizing companies that attempt to manage their earnings through the use of deferred taxes. It also shows that the permanent tax difference has an insignificant effect on earnings quality.

Huang and Wang (2013) worked on the book-tax differences and earnings quality for the banking industry using quoted firms in Taiwan. They concentrated on the banking industry because of the specific accrual models of accounting the discretion in the loan loss provisions. The study examined earnings management on how it is been effected by temporary tax differences. The variables are earnings quality, temporary tax differences, permanent tax differences, large positive book-tax differences, large negative book-tax differences, small book-tax differences, while using regression analysis to analyze them. Their results show that banks with large temporary book tax differences have discretionary loan loss provisions that are greater than banks with small temporary book-tax differences. The paper also finds that large temporary book-tax differences have significant negative effects on earnings quality of the sample than those with small temporary book-tax differences, while it reported no significant effects of permanent book-tax differences on earnings quality.

Waluyo (2016) worked on the relationship between a book-tax gap and earnings growth on the basis of Indonesian manufacturing firms within the period of 2010 - 2014. The study

used permanent tax differences and temporary tax differences to capture tax aggressiveness of Indonesian firms, while changes in pre-tax income and changes in net income were used to measure earnings quality. The study used the size of firms, return on assets, operating cash flows and accrual income as control variables, while using regression analysis to analyse the effects of the independent variables on the dependent variables. The results show that the permanent tax difference has a significant positive effect on earnings quality while the temporary tax difference has a significant negative effect on earnings quality. He reported that firms with a large temporary tax difference tend to have earnings that are not persistent.

Filho, Martinez and Anunciação (2013) worked on the analysis of the relationship between the components of book tax differences and annual variations in earnings and tax expenses on the basis of 130 companies listed firms in the Brazilian Stock Exchange from 2004 to 2011. They used temporary tax differences, permanent tax differences, return on assets, ratio of earnings to stock price as independent variables, and earnings management as a dependent variable. The study used abnormal working capital accruals as a metric to infer the existence of earnings quality, to see whether this interferes in the relation of permanent tax differences or temporary tax differences with variations in pre-tax earnings and income tax expenses using regression analysis to analyse the variables. Their results show a significant negative effect of temporary tax differences on earnings quality, and a significant positive effect of permanent tax differences on earnings quality. They summarised their results that changes in temporary tax differences on the future pre-tax earnings growth and permanent tax differences on the future tax expense are useful for investors and analysts.

Satyawati and Palupi (2017) worked on the influence of book tax differences on the correlation of current earnings, accruals and cash flows with future earnings on the basis of 147 registered firms listed on the Indonesian Stock Exchange from 2007 to 2011. Their study used pre-tax book income, large negative temporary tax differences, large positive temporary tax differences and earnings before tax of the current period to measure the independent and dependent variables, while using regression analysis to analyse the effects between the variables. Their results show that large negative temporary tax differences are insignificant and do not affect the accounting earnings, which means that firms with large negative temporary tax differences may not be able to realise their

future earnings. Secondly, large temporary tax differences have a positive significant effect on earnings quality, meaning that firms with large positive temporary tax differences will persist to low tax returns due to their accrual, which affects their earnings quality.

In summary, Salihu et al (2013), Dyeng et al (2010), Armstrong, Blouin and Lariker (2012) concentrated on the effective tax rate without capturing the effects of temporary and permanent tax different. Desai and Dharmapala (2006) argued that tax aggressiveness may not necessarily benefit stockholders and earnings. Hope, Ma and Thomas (2012), Richardson (2012), Chen and Chu (2005), Adhikari, Dershid and Zabg (2005) reported positive effects of tax aggressiveness on earnings quality while Ayres et al (2009), Hanlon and Slemord (2008) reported negative effects of tax aggressiveness on earnings quality. Ratay and Ajmal (2014) are of the view that the temporary difference of tax shelter is a source of opportunistic earning management, saying that accounting principles give managers more ability than tax authorities, while Marques, Costa and Silva (2015) captured the usefulness of tax book gap on one measure of earnings quality (earnings per share). Huang and Wang (2013), Romanus (2007), Raedy, Seidman and Shackelford (2010), Blaylock, Shevlin and Wilson (2010) used the modified Jones model to capture discretionary accruals while Warshavsky (2012) brought in the earnings manipulation model by Professor Beneish as analytical tools for earnings quality. Most of these prior studies were done in developed countries such as the United States and European countries, as well as in emerging economies, like Indonesia, Ghana and others.

3. Methodology

3.1. Research design

The study is an ex post facto design. We used secondary data by obtaining financial information covering the selected quoted companies from 2009 to 2016. The data were obtained from the annual reports of the firms. The selection of the variables (regress and regressor) is primarily guided by the results of the previous empirical studies and the available data. Our population comprises 165 firms ranging from agriculture, conglomerate, construction/real estate, consumer goods, health care, information communication technology (ICT), industrial goods, natural resources, oil and gas, services and financial services (Nigerian Stock Exchange, 2017). While the sample size consists of 116 quoted companies excluding financial services firms due to their nature of financial reporting.

3.2. Model Specification and Measurement of Variables

In specifying our panel regression model of the effects of tax sheltering on earnings quality, our major variables are the cash effective tax rate (CashETR), long term effective tax rate (LongtermETR); tax savings (TaxSav); book tax gap (BTG); temporary difference (TemDiff) and permanent difference (PermDiff). Also included in the model are cross-section and years in the panel regressions.

In the light of the above, we measure earnings quality for the study to be based on the method used by Marai and Pavlović (2014), Warshavsky (2012), Kamarudin, and Ismail (2014), Healy (1985), DeAngelo (1986) and Jones (1991), Dechow et al. (1995), Hermanns (2006), Francis, LaFond, Olsson, and Schipper (2004), Aboody, Hughes, and Liu (2005), Myers, Myers and Omer (2003), Lyimo (2014), Perotti and Wagenhofer (2011). Scholars have widely employed earnings management as a proxy for earnings quality, particularly in valuing public companies.

One of the most popularly used method to calculate earnings management is the modified Jones model, which presents that total accrual changes may be predicted by the use of explanatory variables, which arise in some way from the organization's economic position (non-discretionary accruals) without earnings manipulation. However, taking into account the fact that total accrual changes may result from discretionary accrual changes. The model estimates firms' abnormal accruals (discretionary) based on certain activities and accounting fundamentals using time series regression as total accruals to the change in sales and the level of gross property, plant and equipment. The residuals of the model are considered as abnormal or discretionary accruals as they are not explained by the firm's economic conditions. Total Accruals = Non-Discretionary Accruals + Discretionary Accruals

3.3. Tax aggressiveness vs. modified Jones Model (Earning quality)

We proxy earnings quality with the modified Jones model which examines how tax sheltering influences earnings quality of selected quoted firms in Nigeria.

The panel regression with an error term (μ_i) for model 1 is expressed in equation (1)

ModifiedJones_{it} = f (CashETR + LongtermETR + TaxSav + BTG + TemDiff + PermDiff) equ (1)

ModifiedJones_{it} = $\alpha_i + \beta_1$ CashETR_{it} + β_2 longtermETR_{it} + β_3 TaxSav_{it} + β_4 BTG_{it} + β_5 TemDiff_{it} + β_6 PermDiff_{it} + μ_i equ (2)

where: α_i = constant, EM_{it} = earnings management, $CashETR_{it}$ = cash effective tax rate, $Ln\text{term}ETR_{it}$ = long-term cash effective tax rate, $TaxSav_{it}$ = tax savings, BTG_{it} = book tax gap, $TemDiff_{it}$ = temporary difference of tax shelter, $PermDiff_{it}$ = permanent difference of tax shelter, μ_{it} = error terms

The apriori sign;

$\beta_1 < 0, \beta_2 < 0, \beta_3 < 0, \beta_4 > 0, \beta_5 < 0, \beta_6 < 0 \leq 0$

Dependent Variables

MJM = modified Jones model. We proxy earnings management with the modified Jones model. The model estimates firms' abnormal accruals (discretionary) based on certain economic and accounting fundamentals using time series regression used by Dechow, Ge and Schrand (2010), Dechow and Dichev (2002). $\mu_t = DA_t = \{TA_t\} - \{(\beta_{oi} (1/T_{t-1}) + \beta_{i1} (\Delta REV_t - \Delta REC_t) + \beta_{i2} (PPE_t))\}$

where: DA_t = Discretionary accruals in year t, TA_t = Actual total accruals from financial statement data = $\{\Delta \text{Current assets} - \Delta \text{cash} - \Delta \text{current liabilities} - \Delta \text{Current maturities of long-term debt} - \Delta \text{Income taxes payable} - \text{Depreciation and amortisation expenses}\}$, ΔREV_t is the change in revenues from last year to this year, ΔREC_t is the change in receivables from last year to this year, PPE_t is the book value of property, plant and equipment.

The model measures the firm's operations before managers' manipulations. It is expected that total accruals, which include changes in accounts receivables, rely on the extent of changes in revenue, as revenues are to control the firms economic environment, gross property, plant and equipment control for the portion of total accruals related to non-discretionary depreciation expense. The prediction error in the model, μ_t measures the level of discretionary accruals.

Independent Variables

$CashETR$ = cash effective tax rate, following Salihu et al. (2013), Chen et al. (2010) Dyreng et al. (2010). It is computed as the total tax expenses divided by the income before tax, reflecting the aggregate proportion of the accounting income payable as taxes. It captures tax aggressiveness as it relates to accounting earnings. The apriori sign is $\beta_1 < 0$

$Ln\text{term}ETR$ = long term effective tax rate: following Chen et al. (2010); Dyreng et al. (2010); Minnick and Noga (2010); Kim, Li and Zhang (2011); Salihu et al. (2013); the long-run cash effective tax rate is the proportion of cash taxes paid to the accounting income before tax. It helps to minimize the likely effects of items such as valuation allowance and tax cushions. The long-run cash effective tax rate also uses the tax information for multiple years (say 3-10

years, Hanlon and Heitzman, 2010, p. 140, in Salihu et al., 2013) which helps to eliminate the volatility in the annual level measures. Volatility in tax aggressiveness measurement is mostly caused by the timing differences between the treatments of certain items under financial and tax accounting (otherwise known as temporary difference). The apriori sign is $\beta_2 < 0$

$TaxSav_{it}$ = tax savings: following Ilaboya, Izevbekhai and Ohiokha (2016), Ftouhi, Ayed and Zemzem, (2010); Kawor and Kportorgbi (2014), Lisowsky, Lennox and Pittman (2013), Atwood and Reynolds (2008), tax savings are calculated as a difference between the statutory tax rate and the effective tax rate ($TaxSav = 30\% - ETR$). Where a firm operates across a number of jurisdictions with varying statutory rates, tax rate differentials can provide tax savings recognized in earnings quality. The apriori sign is $\beta_3 < 0$

BTG_{it} = book tax gap: following Seidman (2008); Talisman (1999); Mills, Newberry and Trautman (2002); Desai (2003); Waluyo (2016); Plesko (2004), in Satyawati and Palupi (2017), the book tax gap is calculated as the differences between the income reported on financial statements and the income reported on tax returns (i.e. book income less taxable income) ($BTG = EBIT - TI$). Taxable income is calculated as current tax expense divided by the corporate statutory rate (30%). We used the book tax gap to measure the abusive tax aggressiveness behaviour of the sample - quoted firms. The apriori sign is $\beta_4 > 0$

$TemDiff_{it}$ = temporary difference of tax shelter: following Seidman (2008); the temporary difference of tax shelter is calculated as deferred tax expense divided by the corporate statutory rate (deferred tax / 30%). We used it to measure how temporary differences affect earnings management because of the nature of most methods used on earnings due to a time difference that reverses in the near future. The apriori sign is $\beta_5 < 0$

$PermDiff_{it}$ = permanent difference of tax shelter: following Seidman, (2008); the permanent difference of tax shelter is calculated as a book tax gap less temporary tax differences ($BTG - TemDiff$) where BTG = book income less taxable income, and $TemDiff$ = deferred tax / 30%. We used permanent tax differences as a measure to tax aggressiveness because permanent tax differences strive to permanently reduce tax, rather than delay tax payment. The apriori sign is $\beta_6 < 0$.

Table 1: Dependent and independent variables

Nature of variables	Name of variables	Measurement of variables	Expectation sign
Dependent variables	modified Jones model	$DA_t = \{TA_t\} - \{(\beta_{0i} (1/T_{t-1}) + \beta_{1i} (\Delta REV_t - \Delta REC_t) + \beta_{2i} (PPE_t))\}$	
	CashETR	Total tax expenses divided by the income before tax	-
	LongtermETR	Total tax expenses divided by the income before tax; uses the tax information for multiple years	-
	TaxSav	The difference between the statutory tax rate and the effective tax rate (TaxSav = 30% - ETR).	-
Independent variables	BTG	Differences between the income reported on financial statements and the income reported on tax returns. $BTG = EBIT - TI$. Taxable income is calculated as current tax expense divided by the corporate statutory rate (30%)	+
	TemDiff	Deferred tax expense divided by the corporate statutory rate (deferred tax / 30%)	-
	PermDiff	A book tax gap less temporary tax differences (BTG - . TemDiff)	-

Source: own study.

4. Data presentation and analysis

To ensure adequate observation for statistical testing, we adopted a panel data analysis to identify the possible effects on earnings quality. We conducted descriptive statistics and the correlation matrix. Pooled and panel regression with fixed and random effect panel data regression as well as the Hausman test were also conducted to select between fixed and random effect models.

Table 2 from appendix one 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 2 provided some insight into the nature of the quoted firms used in the study. First-ly, the large difference between the maximum and minimum values of the modified Jones model shows that the quoted firms have different discretionary accruals (earnings management). Secondly, it has been observed that on average, over the eight-year period (2009 – 2016), 52% mean of the modified Jones model indicates high earnings management of quoted firms. We also observed that the modified Jones model over the period was 2.0305 maximum, with minimum running at -7.2899. This shows that the quoted firms have different discretionary accruals (earnings management). Thirdly, we also find out that on average, 16% tax rate was paid by firms on their earned income while on the long run, 68% tax rate was paid by firms on their earned income. Tax saving stood at 13%. The book tax gap was N1,752,912, leading to N76,592,962 on the temporary tax difference accumulated due to the accrual method of earnings manipulation by the quoted firms. Lastly, the Jarque-Bera (JB)

test, which tested for normality or the existence of outliers are normally distributed at 1% level of significance. This means that any variables with outliers are not likely to distort our conclusion, and therefore are reliable for drawing generalizations.

In examining the relationship among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in table 3.

The use of the correlation matrix in most regression analyses is to check for multicollinearity and to explore the association between each explanatory variable and the dependent variable. Table 3 focuses on the correlation between earnings quality (modified Jones model), tax aggressiveness (CashETR, LongtermETR, TaxSav, BTG, TemDiff, PermDiff).

The findings from the correlation matrix table show that cash ETR (CashETR, modified Jones model = 0.0059) was positive and weakly associated with the modified Jones model. This suggests that increase on cash ETR indicate high earnings quality of quoted firms. Long term ETR shows a weak positive and negative association with earnings quality (0.0052, -0.0077 and -0.0005) indicating that on the long run, the proportion of tax paid out of accounting income affects high and low earnings quality of the quoted firms. Tax savings show a negative association with earnings quality (-0.0075, -0.0433, -0.0011) indicating that an increase in tax sheltering is a signal of low earnings quality of the quoted firms. The book tax gap shows strong and weak associations with earnings quality (0.0622, 0.0598, -0.0093), meaning that the book tax gap negatively or positively affects earnings quality.

Table 2: Data Description and Analysis

Variables	Descriptive Statistic				
	Mean	Max	Min	Std. Dev	JB (P-Value)
ModifiedJonesModel	0.5200	2.0305	-7.2899	0.3524	1744223 (0.00)*
CashETR	0.1681	41.0839	-90.8830	3.5145	10328480 (0.00)*
LngtermETR	0.6875	504.8176	-13.3025	16.9360	28888007 (0.00)*
TaxSavings	0.1345	91.1830	-40.7839	3.5069	10507138 (0.00)*
BTG	1,752,912	2.1900	-36,503,027	16,144,385	255599.7 (0.00)*
TemDiff	76,592,962	3.4200	-4.5500	1.5000	7632413 (0.00)*
PermDiff	-74,638,687	4.5500	-3.4000	1.4900	7629798 (0.00)*
No of Cross-section	113				
All data observations	891				

Note: *1% level of significance, ** 5% level of significance and ***10% level of significance
Source: Author (2018).

Table 3: Correlation Matrix

Variables	Correlation						
	ModJonesMod	CashETR	LngtermETR	TaxSav	BTG	TemDiff	Permitt
ModJones	1.0000						
CashETR	0.0059*	1.0000					
LngtermETR	0.0052*	0.0043*	1.0000				
TaxSav	-0.0075*	-0.0997***	-0.0041*	1.0000			
BookTaxGap	0.0622***	-0.0072*	-0.0049*	0.0072*	1.0000		
TemDiff	0.0073*	-0.0032*	-0.0020*	0.0032*	0.5884	1.0000	
PermDiff	-0.0068*	0.0031*	0.0019*	-0.0031*	-0.5816	-0.0999***	1.0000

Note: *1% level of significance, ** 5% level of significance and ***10% level of significance
Source: Author (2018).

Checking for multicollinearity with the use of the variance inflation factor, we notice that no two explanatory variables were perfectly correlated, as the VIF mean was 1.168, which is much lower than the threshold of 10. This means that there is the absence of multicollinearity problem in our model. Multicollinearity between the explanatory variables may result wrong signs or implausible magnitudes, in the estimated model coefficients, and the bias of the standard errors of the coefficients.

However, to examine the effect on the dependent variables earnings management and tax sheltering and to test our formulated hypotheses, we used a panel data regression analysis, since the data had both time series (2009 – 2016) and cross-sectional properties (115 quoted firms). The panel regression results are presented and discussed below.

In testing for the cause-effect between the dependent and independent variables in the modified Jones model (earnings management), we reported pooled and panel analyses. The study adopted pooled and panel data regression models (fixed effect and panel data esti-

mation techniques). The difference in these models is based on the assumptions made about the explanatory variables and the cross-sectional error term.

In table 4, we presented OLS pooled regression and two panel data estimation techniques (fixed effect and panel data estimator). The three results revealed differences in their coefficients magnitude, signs and number of significant variables. This clearly shows that the pooled OLS regression does not reflect the heterogeneity in the sampled companies. This effect is reflected in the two panel data regression results. Selecting from the two panel data models, the Hausman test was conducted, and the result (less than 5% or 0.05) shows that we should accept H_0 (adopt the fixed effect model and reject the random effect model). This means that we adopt the fixed effect panel data regression results. The R squared value was 0.51, but the adjusted R squared was 0.09 doubting the goodness of fit of the model. However, we employed a panel generalised method of moments because we suspected there are a variety of moment conditions that are deduced

from the assumption of the theoretical model. When the number of moment conditions is greater than the dimension of the parameter vector θ , the model is said to be over-identified. Over identification allows us to check whether the model's moment conditions match the data

well or not. Conceptually we can check whether $\hat{m}(\hat{\theta})$ is sufficiently close to zero to suggest that the model fits the data well. If the J-stat is 0, the model is good. If the model correctly describes the data, then $1/N \sum_{t=1}^T g(X_i, \theta^*)$ will be very close to 0.

Table 4: Modified Jones Model Panel Regression Result

	Aprior Sign	ModiJonesModel (OLS Pooled)	ModiJonesModel (Fixed Effect)	ModiJonesModel (Random Effect)	ModiJonesModel (GMM)
C		0.01 (0.46) [0.63]	0.00 (0.14) [0.88]	0.00 (0.37) [0.70]	0.04 (0.66) [0.50]
CashETR	-	-0.03 (-0.61) [0.54]	-0.02 (-0.45) [0.65]	-0.20 (-0.56) [0.57]	-0.10 (-0.19) [0.84]
LnqtermETR	-	0.00 (0.17) [0.86]	1.51 (0.02) [0.98]	8.04 (0.11) [0.90]	-0.00 (-0.02) [0.98]
TaxSavings	-	-0.30 (-0.62) [0.53]	-0.02 (-0.42) [0.67]	-0.02 (-0.56) [0.57]	-0.15 (-0.52) [0.60]
BookTaxGap	+	3.72 (1.33) [0.18]	5.85 (1.98) [0.04]**	4.56 (1.64) [0.09]***	1.19 (1.05) [0.09]***
TemporaryDiff	-	-1.82 (-0.66) [0.50]	-1.90 (-0.32) [0.74]	-2.22 (-0.80) [0.42]	-1.17 (-0.04) [0.96]
PermanentDiff	-	-1.81 (-0.66) [0.50]	-1.07 (-0.31) [0.75]	-2.21 (-0.80) [0.42]	-1.17 (-0.04) [0.96]
R-Squared		0.20	0.51	0.27	0.28
Adj-R-Squared		-0.00	0.09	0.00	0.29
F-Statistic		0.89(0.49)	1.75 (0.00)*	1.09 (0.36)	
Hausman Test				6(0.01)*	
J Statistic					0.00*
N(n)		892(115)	892(115)	892(115)	772(115)

Note: (1) Parentheses () are t-statistic while brackets [] are p-values; (2) * 1%, ** 5% and *** 10% level of significance

Source: own study based on the data from the Notoria database.

Following the above, we will therefore discuss the panel generalised method of moments regression results from Table 4. In Table 4, the R-squared and adjusted R-squared values were (0.28) and (0.29). This indicates that all independent variables jointly explain about 28% of the systematic variations in the modified Jones model of our sampled companies over the eight-year period (2009 – 2016). The above average R-squared value is realistic as it clearly shows earnings quality and its interaction with tax sheltering. The J-statistics 0.00 shows that the model is best fit.

In addition to the above, the specific finding

from each explanatory variable from the panel generalised method of moments regression model is provided as following:

Cash effective tax rate (CashETR), based on the coefficient of -0.10 and p-value 0.84 appears to have a negative influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically insignificant at above 10% since its p-value was greater than 0.10. Therefore, this result suggests that we should accept hypothesis one (H01), which stated that the cash effective tax rate does not significantly affects earnings quality. This means that an increase in the cash

effective tax rate of the sampled quoted companies indicates lower earnings quality of the firms. With negative influence on earnings quality and conform to apriori expectation. These findings, like similar studies by Frank, Lynch and Rego (2009); Salihu et al. (2013); Demeré, Lisowsky, Li and Snyder (2017), confirm the negative effect of tax sheltering on earnings quality, suggesting that the cash effective tax rate serves as an indicator of financial reporting quality on both reducing and increasing earning quality.

Long-term effective tax rate (Ln_{gterm}E_{TR}), based on the coefficient of -0.00 and p-value 0.98 appears to have a negative influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically insignificant at above 10%, since its p-value was greater than 0.10. Therefore, this result suggests that we should accept hypothesis two (H02), which stated that the long term effective tax rate does not significantly affect earnings quality. This means that an increase in the long term effective tax rate of the sampled quoted companies indicates a reduction in earnings quality of the firms on the long run. With a negative influence on earnings quality. These findings like similar studies by Ayers et al (2009); Hanlon and Slemrod (2008); Salihu et al. (2013); Hanlon (2005); Dhaliwal et al. (2011) confirm the negative effect of the long term effective tax rate on earnings quality suggesting that taxation is evidence of low or high earnings quality.

Tax savings (TaxSavings), based on the coefficient of -0.15 and p-value 0.60, appear to have a negative influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically insignificant at above 10%, since its p-value was greater than 0.10. Therefore, these results suggest that we should accept hypothesis three (H03), which stated that tax savings do not significantly affect earnings quality. This means that an increase in tax savings of the sampled quoted companies reduces earnings quality of firms. With a negative influence on earnings quality. These findings, like similar studies by Eko (2013); Brad, Sharon and Sonja (2010); Li (2014), confirm the negative effect of tax savings on earnings quality suggesting that management tends to accrue expenses whenever circumstances available to minimise tax.

Book tax gap (BTG), based on the coefficient of 1.19 and p-value 0.09 appears to have a positive influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically significant at 10%, since its p-value was lesser than 0.10. Therefore,

these results suggest that we should reject hypothesis four (H04), which stated that the book tax gap does not significantly affect earnings quality. This means that an increase in the book tax gap of the sampled quoted companies indicates high earnings management, which affect the quality of the firm's earnings. With a positive influence on earnings quality. These findings, like similar studies by Guenther, Hu, and Williams (2013); Blaylock, Gaertner, and Shevlin (2012); Diehl, (2010); Seidman (2008); Abdul Wahab and Holland (2014), confirm the positive effect of the book tax gap on earnings quality, suggesting that book tax gap will provide helpful information on discretionary accruals or earnings quality to investors and tax authorities.

Temporary tax different (TemporaryDIFF), based on the coefficient of -1.17 and p-value 0.96 appears to have a negative influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically insignificant at above 10%, since its p-value was greater than 0.10. Therefore, these results suggest that we should accept hypothesis five (H05), which stated that temporary tax difference does not significantly affect earnings quality. This means that an increase in the temporary tax difference of the sampled quoted companies indicates lower earnings quality. With a negative influence on earnings quality. These findings, like similar studies by Rafay and Ajmal (2014); Marques, Costa and Silva (2015); Huang and Wang (2013); Romanus (2007), confirm the negative effect of the temporary tax difference on earnings quality, suggesting that investors treat temporary tax difference negatively, penalising companies that attempt to manage their earnings through the use of deferred taxes, which negatively affects earnings quality.

Permanent tax different (PermanentDIFF), based on the coefficient of -1.17 and p-value 0.96 appears to have a negative influence on our sampled quoted companies, earnings management (modified Jones model) and was statistically insignificant at above 10%, since its p-value was greater than 0.10. Therefore, these results suggest that we should accept hypothesis six (H06), which stated that the permanent tax difference does not significantly affect earnings quality. This means that an increase in the permanent tax difference of the sampled quoted companies indicate lower earnings quality. With a negative influence on earnings quality. These findings, like similar studies by Rafay and Ajmal (2014); Lev and Nissim 2004, confirm the negative effect of the permanent tax difference on earnings quality. This is be-

cause permanent tax difference do not give rise to deferred tax assets or deferred tax liabilities. It does not change taxable income and tax relative to book income. However, it may either strengthen or weaken the information in taxable income less reported earnings, depending on their variability and correlations.

5. Conclusion and recommendations

The study has revealed that the cash effective tax rate, long term effective tax rate, tax savings, temporary and permanent tax differences are insignificant with the quoted companies in Nigeria. It means that stakeholders are interested in companies that produce quality financial reports, which clearly shows that there are high earnings manipulations among Nigerian quoted companies, as most firms manipulate earnings through abnormal accruals. It is attributed to the pressure which Nigerian

companies face in maintaining the existing investors' confidence, smooth income over the years. While the significant effects of the book tax gap on earnings quality show that an increase or decrease in the book tax gap is a signal to high or low earnings quality. These reactions were different in developed economies, like the United States as the cash effective tax rate, long-term effective tax rate, tax savings, book tax gap and temporary differences are significant where news about involvement in tax aggressiveness affects the firm's earnings quality.

However, this study recommends that investors and business managers in Nigeria access the book tax gap to find out the quality of earnings in a firm before investing. Although as investors are looking for higher return, an increase in the tax book gap might give investors higher returns, a continuous study in this area will help more to discover the extent to which the stated variables influence the firms' earnings.

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Appendix 1. Descriptive Statistics

	Descriptive Statistic						
	ModifiedJonesModel	CashETR	LngtermETR	TaxSavings	BookTaxGap	Temporary-Diff	PermanentDiff
Mean	0.052380	0.168147	0.687532	0.134508	1752912.	76592962	-74638687
Median	0.043294	0.259662	0.237874	0.035068	-26789.37	7546.667	-42175.42
Maximum	2.030507	41.08395	504.8176	91.18309	2.19E+08	3.42E+10	4.55E+08
Minimum	-7.289997	-90.88309	-13.30251	-40.78395	-36503027	-4.55E+08	-3.40E+10
Std. Dev.	0.352481	3.514536	16.93605	3.506950	16144385	1.50E+09	1.49E+09
Skewness	-11.37728	-17.51451	29.64928	17.62650	8.467747	21.21948	-21.21704
Kurtosis	218.5567	529.2900	883.1203	533.8275	84.22826	454.4264	454.3489
Jarque-Bera	1744223.	10328480	28888007	10507138	255599.7	7632413.	7629798.
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	4.667485	149.8191	612.5911	119.8468	1.56E+09	6.82E+10	-6.65E+10
Sum Sq. Dev.	110.5763	10993.25	255278.6	10945.84	2.32E+17	2.01E+21	1.98E+21
Observations	891	891	891	891	891	891	891

Appendix 2. Correlation Matrix

	Descriptive Statistic						
	ModifiedJonesModel	CashETR	LngtermETR	TaxSavings	BookTaxGap	Temporary-Diff	PermanentDiff
ModifiedJones	1.000000	0.005995	0.005231	-0.007528	0.062215	0.007367	-0.006834
CashETR	0.005995	1.000000	0.004338	-0.099747	-0.007294	-0.003253	0.003157
LngtermETR	0.005231	0.004338	1.000000	-0.004144	-0.004904	-0.002005	0.001959
TaxSavings	-0.007528	-0.099747	-0.004144	1.000000	0.007256	0.003222	-0.003126
BookTaxGap	0.062215	-0.007294	-0.004904	0.007256	1.000000	0.588490	-0.581638
TemporaryDiff	0.007367	-0.003253	-0.002005	0.003222	0.588490	1.000000	-0.099996
PermanentDiff	-0.006834	0.003157	0.001959	-0.003126	-0.581638	-0.099996	1.000000

Variable	VIF	1/VIF
TaxSavings	1.45	0.997908
CashETR	1.37	0.996784
BookTaxGAP	1.01	0.993931
PermanentD~f	1.01	0.994391
LngtermETR	1.00	0.999908
Mean VIF	1.168	

Appendix 3. Regression result of the modified Jones Model

Dependent Variable: MODIFIEDJONESMODEL
 Method: Panel Least Squares
 Date: 02/13/18 Time: 11:51
 Sample: 2009 2016
 Periods included: 8
 Cross-sections included: 113
 Total panel (unbalanced) observations: 892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009041	0.019260	0.469416	0.6389
CashETR	-0.029984	0.048950	-0.612552	0.5403
LngtermETR	0.000124	0.000721	0.171555	0.8638
TaxSavings	-0.030798	0.049055	-0.627817	0.5303
BookTaxGAP	3.72E-09	2.79E-09	1.335419	0.1821
TemporaryDIFF	-1.82E-09	2.72E-09	-0.669668	0.5032
PermanentDIFF	-1.81E-09	2.72E-09	-0.665755	0.5057
R-squared	0.206061	Mean dependent var		0.002138
Adjusted R-squared	-0.000678	S.D. dependent var		0.364253
S.E. of regression	0.364376	Akaike info criterion		0.826556
Sum squared resid	117.5013	Schwarz criterion		0.864172
Log likelihood	-361.6438	Hannan-Quinn criter.		0.840932
F-statistic	0.899457	Durbin-Watson stat		1.650335
Prob(F-statistic)	0.494544			

Method: Panel Least Squares
 Date: 02/13/18 Time: 11:54
 Sample: 2009 2016
 Periods included: 8
 Cross-sections included: 113
 Total panel (unbalanced) observations: 892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003073	0.020667	0.148692	0.8818
CashETR	-0.024972	0.055088	-0.453308	0.6505
LngtermETR	1.51E-05	0.000735	0.020513	0.9836
TaxSavings	-0.023309	0.055154	-0.422611	0.6727
BookTaxGAP	5.85E-09	2.94E-09	1.987364	0.0472
TemporaryDIFF	-1.09E-09	3.39E-09	-0.321142	0.7482
PermanentDIFF	-1.07E-09	3.39E-09	-0.314157	0.7535

Effects Specification

Cross-section fixed (dummy variables)				
R-squared	0.511682	Mean dependent var		0.002138
Adjusted R-squared	0.091344	S.D. dependent var		0.364253
S.E. of regression	0.347218	Akaike info criterion		0.845902
Sum squared resid	93.19326	Schwarz criterion		1.485390
Log likelihood	-258.2725	Hannan-Quinn criter.		1.090296
F-statistic	1.759056	Durbin-Watson stat		1.937470
Prob(F-statistic)	0.000007			

Dependent Variable: MODIFIEDJONESMODEL
 Method: Panel EGLS (Cross-section random effects)
 Date: 02/13/18 Time: 11:59
 Sample: 2009 2016
 Periods included: 8
 Cross-sections included: 113
 Total panel (unbalanced) observations: 892
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008183	0.021691	0.377276	0.7061
CashETR	-0.028245	0.049836	-0.566747	0.5710
LngtermETR	8.04E-05	0.000707	0.113693	0.9095
TaxSavings	-0.028045	0.049924	-0.561758	0.5744
BookTaxGAP	4.56E-09	2.77E-09	1.647564	0.0998
TemporaryDIFF	-2.22E-09	2.76E-09	-0.806390	0.4202
PermanentDIFF	-2.21E-09	2.76E-09	-0.801061	0.4233
Effects Specification				
			S.D.	Rho
Cross-section random			0.108603	0.0891
Idiosyncratic random			0.347218	0.9109
Weighted Statistics				
R-squared	0.270402	Mean dependent var	0.001667	
Adjusted R-squared	0.000672	S.D. dependent var	0.347753	
S.E. of regression	0.347636	Sum squared resid	106.9527	
F-statistic	1.099897	Durbin-Watson stat	1.772555	
Prob(F-statistic)	0.360458			
Unweighted Statistics				
R-squared	0.005647	Mean dependent var	0.002138	
Sum squared resid	117.5503	Durbin-Watson stat	1.648796	

Correlated Random Effects - Hausman Test
 Equation: Untitled
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	8.724442	6	0.0197	
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff)	Prob.
CashETR	-0.024972	-0.028245	0.000551	0.8891
LngtermETR	0.000015	0.000080	0.000000	0.7444
TaxSavings	-0.023309	-0.028045	0.000550	0.8399
BookTaxGAP	0.000000	0.000000	0.000000	0.1958
TemporaryDIFF	-0.000000	-0.000000	0.000000	0.5669
PermanentDIFF	-0.000000	-0.000000	0.000000	0.5644

Cross-section random effects test equation:
 Dependent Variable: MODIFIEDJONESMODEL
 Method: Panel Least Squares
 Date: 02/13/18 Time: 12:00
 Sample: 2009 2016
 Periods included: 8
 Cross-sections included: 113
 Total panel (unbalanced) observations: 892

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003073	0.020667	0.148692	0.8818
CashETR	-0.024972	0.055088	-0.453308	0.6505
LngtermETR	1.51E-05	0.000735	0.020513	0.9836
TaxSavings	-0.023309	0.055154	-0.422611	0.6727
BookTaxGAP	5.85E-09	2.94E-09	1.987364	0.0472
TemporaryDIFF	-1.09E-09	3.39E-09	-0.321142	0.7482
PermanentDIFF	-1.07E-09	3.39E-09	-0.314157	0.7535
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.511682	Mean dependent var	0.002138	
Adjusted R-squared	0.091344	S.D. dependent var	0.364253	
S.E. of regression	0.347218	Akaike info criterion	0.845902	
Sum squared resid	93.19326	Schwarz criterion	1.485390	
Log likelihood	-258.2725	Hannan-Quinn criter.	1.090296	
F-statistic	1.759056	Durbin-Watson stat	1.937470	
Prob(F-statistic)	0.000007			

Dependent Variable: MODIFIEDJONESMODEL
 Method: Panel Generalised Method of Moments
 Date: 08/19/18 Time: 20:02
 Sample (adjusted): 2010 2016
 Periods included: 7
 Cross-sections included: 115
 Total panel (unbalanced) observations: 772
 2SLS instrument weighting matrix
 Instrument specification: C CashETR(-1) LngTermETR(-1) TaxSavings(-1) BookTaxGap(-1) TemporaryDIFF(-1) PermanentDIFF(-1)
 Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045500	0.067998	0.669144	0.5036
CashETR	-0.102421	0.517612	-0.197872	0.8432
LngTermETRr	-0.000161	0.007120	-0.022609	0.9820
TaxSavings	-0.154578	0.295529	-0.523054	0.6011
BookTaxGap	1.19E-09	2.00E-08	1.059488	0.0952
TemporaryDiff	-1.17E-09	2.79E-08	-0.041859	0.9666
PermanentDiff	-1.17E-09	2.80E-08	-0.041878	0.9666
R-squared	0.282875	Mean dependent var		0.007387
Adjusted R-squared	0.292936	S.D. dependent var		0.337077
S.E. of regression	0.383282	Sum squared resid		112.3821
Durbin-Watson stat	1.610499	J-statistic		9.77E-11
Instrument rank	7			

