

CORPORATE TAX AVOIDANCE: REVIEW OF MEASURES AND PROSPECTS

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Abstract

This study examines the various measures of corporate tax avoidance that have been used in extant literature. The objective of the study is to provide a guide to researchers with the choice of how to measure corporate tax avoidance. The reason for this is that different measures capture different aspects of corporate tax avoidance, and a wrong choice of a measure leads to faulty conclusion and generalization. The study utilizes a survey research design and finds that the various measures indeed capture different aspects of tax avoidance as such; none actually captures corporate tax avoidance in its entirety. In addition, some of the measures are better suited for specific research focus. Thus, the choice of the measure to use should be determined by the research purpose as well as the availability of data.

Keywords: Book- tax difference, Corporate tax avoidance, Effective tax rate, Henry and sanning Measure, Tax shelter score, Unrecognised tax benefit

Introduction

Governments all over the world are consciously looking for avenues to finance their policies and operations in order to perform their duties and responsibilities to their citizenry. One viable tool they employ in their search for finance is taxation (Eragbhe & Aronmwan, 2015). Tax is a compulsory levy imposed by the government on the income, profit, or wealth of persons and corporate entities (Aronmwan, Imobhio & Izedonmi (2015). It is equally a civic duty that individuals, as well as corporate entities, are expected to perform (Salihu, Obid & Annuar, 2013). For corporate entities, tax is one of the line item found in their financial statements (Hanlon & Heitzman, 2010) and is a reduction in the distributable profit available to their shareholders who desire a maximization of their wealth. Thus, Salihu, Obid, and Annuar (2013) assert that because corporate taxes are a significant business cost that reduces distributable profit, there is a tendency for firms to avoid taxes. This is what has led to the issue of corporate tax avoidance.

This issue of corporate tax avoidance is associated with both developed and developing nations and it is a topical issue that has gained attention in the media and literature. Thus, one would expect that research on corporate tax avoidance is overarching and the issues surrounding it should have been exhausted but this is not the case. First, Salihu et al. (2013) note that rivalry between the tax authority and the corporate taxpayer is widening as the latter is more aggressive in its approach in reducing the leakage from profit caused by tax imposition while the former seeks an avenue to increase revenue from this source. Second, Hanlon and Heitzman (2010) note that a fundamental issue in corporate tax avoidance studies is that of conceptual definition. They assert that there is yet no generally accepted

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definition for tax avoidance due to the multifaceted nature and perception of the concept. Third, Gebhart (2017) observes that the studies on corporate tax avoidance are interested in its determinants, nature, and implication for tax authorities, corporate taxpayers, and corporate shareholders and these studies according to him all face similar challenges in measuring and capturing corporate tax avoidance. Fourth, given the principal-agent environment associated with corporate entities, many factors such as corporate governance, corporate social responsibility, and other institutional factors are expected to interact and predict the nature of tax avoidance. Thus, the intricacies of this nature are expected to keep the research area active. However, if infallible findings and generalization must be made, it is imperative that corporate tax avoidance is measured properly or at least, measured to suit the research focus and interpreted accordingly.

Therefore, this study seeks to examine the various measures that have been used in literature to capture corporate tax avoidance, how they are measured, the attributes, prospects, and limitations associated with each; all with the intent of providing a guide on the choice of measures for future studies to prevent wrong inferences. To the best of the researcher's knowledge, this study is one of the very few studies that have examined corporate tax avoidance from a measurement perspective.

The rest of this paper is divided as follows: section two deals with the concept of corporate tax avoidance; section three is on the measures of corporate tax avoidance; section four deals with the prospects and limitations associated with the measures; section five is the concluding section.

Corporate Tax Avoidance

The concept of tax avoidance is not new. However, interest has been rekindled in this area of research in recent times, since the work of Shackelford and Shevlin (2001) who observed the unprecedented tax avoidance practices by firms. This call was further heightened by Weisbach (2002) who sought to understand the rationale and determinants of tax sheltering. Nevertheless, despite the level of attention this area of study has, it is observed that there is no one single, accepted, and agreed definition for tax avoidance (Gebhart, 2017; Hanlon & Heitzman, 2010). Concepts such as tax planning, tax management, tax aggressiveness, tax sheltering, and even tax evasion have been used to depict the conceptual meaning of tax avoidance (Boussaidi & Hamed, 2015). Though conceptual differences exist, among these concepts, Salihu, Annuar, and Obid (2015) observe that these concepts have been used interchangeably in studies on corporate tax avoidance.

The widely held public opinion is that tax avoidance is an act or action carried out to reduce the tax burden of a taxpayer legally while evasion is the illegal angle to it. Hanlon and Heitzman (2010) broadly define tax avoidance as any act aimed at reducing the explicit tax liability of a taxpayer. The act may include real activities that are allowed by the tax authorities such as tax-favoured activities like investing in municipal bonds, setting up business in a Free Trade Zone; specific tax avoidance activities such as using tax reliefs and exemptions; and targeted tax benefits from lobbying activities such as tax sheltering and other uncertain tax positions. Similarly, Chen, Chen, Cheng, and Shevlin (2010) describe tax avoidance as any planned action to reduce tax payment and these activities form a continuum of legal, grey, or illegal actions. They further opine that those that fall within the grey area better describes tax aggressiveness and that these do not sufficiently mean that the taxpayer acted improperly.

Slemrod (2004:4) argues that it may be quite difficult to determine conceptually, how much of corporate tax avoidance is legal given that it consists of "anything that corporations do to reduce their tax liability" and the "anything" could be quickly blurred when the issue of morality versus legality is introduced. This is also the contention of Weisbach (2002) and Lee, Dobiyski, and Minton (2015) who posit that the legality of a tax structure or arrangement or transaction is not easily determined and most often requires an ex-ante analysis. Furthermore, tax avoidance, though legal, could become illegal when it is done aggressively, which in the words of Hanlon and Heitzman (2010:137) is "pushing the envelope of tax law". Furthermore, Slemrod and Yitzhaki (2002) assert that tax aggressiveness is a subset of tax avoidance and it consists of a wide range of reporting practices whose underlying intent is to minimize tax liability without any real business response by the firm. Based on this, we deduce that tax aggressiveness is an extreme form of tax avoidance that involves reducing one's tax liability using any action beyond what the tax authorities would ordinarily permit.

Tax planning, which is another concept readily used interchangeably with tax avoidance in extant literature, is described as exploiting the loopholes and uncertainty in the tax system (specifically the tax laws) to consciously achieve an advantageous tax reporting position that will result in a predetermined objective of tax liability minimisation (Tang & Firth, 2011). This definition suggests that tax planning is the managerial aspect that involves determining the objective (usually tax minimization as no taxpayer would want to maximize tax payments) and strategizing on how to achieve the objective which may include carrying out legal or illegal acts. Summarily, Tang and Firth (2011) see tax planning as the generic name for any act aimed at reducing tax liability; a position shared by the Chartered Institute of Taxation of Nigeria (CITN, 2017: section 2) which in its exposure draft- Statement of Taxation Standard 9: Tax Planning, identified two forms of tax planning- tax avoidance and tax mitigation and urge that these are done within the "spirit of the law" which does not involve "bending the rules of the tax system to enjoy gains from a tax position not intended by law" (aggressive tax avoidance and tax evasion). Furthermore, the Institute asserts that tax mitigation as a related concept involves a taxpayer making use of the "fiscal incentive afforded to him by the tax legislation through compliance with the conditions and economic consequences that the particular tax legislation entails" (CITN, 2017). Thus, when one compares tax mitigation and tax avoidance as defined by the Institute, one would observe the similarity between the two concepts and also a slight difference in that tax avoidance seems weightier than tax mitigation.

From the foregoing, we observed that over time, so many related concepts have been coined to describe the act of reducing one's tax liability and the distinctions between all these concepts may not be clear-cut. However, as suggested by Hanlon and Heitzman (2010), the degree of aggressiveness is very relative and most research interest is on excessive exploitation of loopholes in the tax system (aggressive tax avoidance, evasion, sheltering, and haven). Therefore, corporate tax avoidance as used in the remaining part of this study is a concept that broadly describes any act by corporate entities aimed at reducing explicit tax liability.

Measures of Corporate Tax Avoidance

In measuring corporate tax avoidance, Badertscher et al. (2016), Hanlon and Heitzman (2010), and Lee et al. (2015) document that most extant studies have focused on the non-conforming aspect of tax avoidance (reducing taxable income without reducing accounting income) with less concentrated effort on conforming tax avoidance (efforts by firms in reducing both taxable income and accounting income). Annuar, Salihu, and Obid (2014) categorise measures used in literature into three groups

(those that examine the gap between book and taxable income, those that examine the ratio of tax to income, and those that are not part of the first two groups); Gebhart (2017) categorisations were grouped into five (effective tax-based measures, book-tax differences based measures, Henry and Sansing's H & S measure, unrecognised tax benefits, and tax shelter scores). A critical analysis of these groups reveals no significant difference between the individual members of the groups. Therefore, we align with Annuar et al. (2014) for ease of classification.

Effective Tax Rate (ETR) Measures

These are measures that capture tax avoidance by dividing tax expense as recorded in the financial statement by pre-tax accounting income or cash income (Hanlon & Heitzman, 2010). The resulting effective tax rate (subsequently referred to as ETR) can broadly be grouped into average ETRs and marginal ETRs. According to Gupta and Newberry (1997:1), the average ETR, which has mostly been used in tax debates and reforms by policymakers and researchers, is better used when measuring the "distribution of tax burdens across firms or industries whereas marginal ETRs are appropriate to analyze the incentives for new investments".

However, irrespective of the broad groupings, individual ETR measures as used in literature include Accounting ETR (Chen et al., 2010; Kraft, 2014; Purwantini, 2017); current ETR (Delgado, Fernandez-Rodriguez, & Martinez-Arias, 2014; Hsieh, 2012); cash ETR (Wang, Campbell, & Johnson, 2014); long-run ETR (Salihu et al., 2015; Zeng, 2010); and ETR differential (Hanlon & Heitzman, 2010; Lin et al., 2013). The major difference between these measures is how the numerator and denominator are determined. They are further discussed subsequently.

Accounting ETR

Accounting ETR is calculated by dividing the tax expense by pre-tax accounting income (Hanlon & Heitzman, 2010). The accounting ETR is usually compared to the statutory rate to determine the extent of tax avoidance so that the wider the difference, the more the tax avoidance and this difference reflects the difference between the accounting income and taxable income (Lee et al., 2015). The numerator is usually reported in the profit or loss statement and is a reflection of both current and deferred taxes, which is one limitation of accounting ETR. Current tax is the tax expense derived by applying the current tax rate on the income/profit for the year, while the deferred tax is that portion of the tax expense that arises because of temporary differences. By temporary difference, we refer to the difference between the carrying value of an asset or liability and the tax base of the same asset or liability. This difference can lead to either deferred tax asset or liability. The tax expense in the income statement is usually a combination of current and deferred tax. Therefore, based on the numerator, attempts by a firm to engage in deferral tax strategies, usually as a result of management's discretion and choice of policy, is not captured by accounting ETR because deferred tax is a component and increases [decreases] in the current tax expense are offset by corresponding decreases [increases] in the deferred tax expense. Similarly, non-tax planning strategies such as valuation allowance changes can also affect the accounting ETR (Gebhart, 2017; Hanlon & Heitzman, 2010).

Second, the denominator (pre-tax income) may suffer from earnings manipulations by management, therefore, making it difficult to specifically differentiate tax avoidance activities (non-conforming tax avoidance) from earnings management activities. Third, in a situation where the pre-tax income is a loss (negative), calculation of accounting ETR would be truncated thereby causing a bias in the

inference and misleading interpretation (Henry & Sansing, 2014). To avoid the above limitations observed, other variants have been suggested and used over time.

Current ETR

Current ETR is derived by dividing the current tax expense for a year by the pre-tax accounting income in the financial statement. The basic difference between the current ETR and accounting ETR is in the numerator and this according to Gebhart (2017), Salihu et al. (2013), Oyeleke, Erin, and Emeni (2016) provide justification of the superiority of current ETR over accounting ETR in capturing deferral tax strategies. However, it suffers from every other limitation suffered by the accounting ETR (Lee et al., 2015). For example, Salihu, Obid, and Annuar (2014) document the inability of this measure to reveal the long term tax avoidance practice of companies being that it is computed on an annual basis and subject to yearly volatility. In similar parlance, Dunbar, Higgins, Phillips, and Plesko (2010) observe that this measure may understate the extent of tax aggressiveness by a firm if contingencies associated with uncertain tax benefits are contained in earnings. What they mean in simple terms is that if benefits that a company is not sure will be accepted by the tax authority upon a tax audit are included in the earnings (denominator), the resulting ETR will be lower as a result of a larger denominator as against a situation where uncertain tax benefits are not included.

Cash ETR

The accrual concept in accounting allows for the recognition of income (expense) when it is earned (incurred) and not when it is received (paid). This creates a problem in both accounting ETR and current ETR as the influence of accrual management, such as valuation allowance changes, employees' stock options affects the numerator and they do not measure the actual tax paid per unit of income earned (Lee et al., 2015), hence, the superiority of cash ETR which is derived by dividing the cash tax paid (found in cash flow statement) by pre-tax accounting income. This measure, therefore, helps to determine the actual tax avoided per unit of income and deferral tax strategies. However, it suffers other weaknesses of the ETR based measures. A notable weakness in this measure as observed by Salihu et al. (2013) is the mismatch it creates between the numerator and denominator in that while the numerator is cured of accrual management, the denominator is not. This, therefore, creates ambiguity. Further, ambiguity is observed with this measure because it is possible that the cash tax paid may relate to various years as cash basis deals with recognizing the movement of cash in the books when it is received or spent irrespective of the originating period (Hanlon & Heitzman, 2010). However, to address this, the use of operating cash flow instead of pre-tax accounting income has been suggested (Hanlon & Heitzman, 2010; Salihu et al., 2013). They further assert the superiority of this measure over other ETR based measures as it may capture the conforming type of tax avoidance.

Cash flow ETR

It is observed that the cash ETR equates a numerator devoid of accrual management with a denominator uncured of accrual management, thus creating ambiguity. This ambiguity can be resolved by using a cash-based numerator and denominator. Though this measure is not commonly found in the literature (Gebhart, 2017), it is believed to measure the conforming aspect of tax avoidance (Hanlon & Heitzman, 2010). However, Badertscher et al. (2016:10) argue that cash flow ETR does not effectively measure conforming tax avoidance because it "excludes book-tax conforming tax strategies involving the acceleration of expenses or deferral of revenue that affect cash flow from operations". Thus, the reliability of this measure in capturing conforming tax avoidance requires more research. Further, as seen in Salihu et al. (2013), there are two variants, tax expense to

operating cash flow, which is attributed to Zimmerman (1983) and cash tax paid to operating cash flow. The former has the same weakness of ambiguity as cash ETR in that the denominator is cured of accruals, but the numerator is not while the latter has both the numerator and denominator cured of accruals. Aside from the issue of ambiguity and capturing of conforming tax avoidance, the cash flow ETR suffers other weaknesses of ETR based measures. Quite notably, it is possible that the operating cash flow is negative and thus, creating a negative ETR which we opine may lead to data truncation bias. However, this may be avoided if the focus is on just profitable firms and this may limit the generalization of findings therefrom.

Long-run ETR

This measure was propounded by Dyreng, Hanlon, and Maydew (2008). While all the above ETR based measures are computed on a yearly basis, the long run ETR is not. As the name implies, this ETR is calculated over a period of years (3 to 10). It can either be the long run accounting ETR or long run cash ETR though the latter is prominent in literature. The difference between the long run period (multiple years) and short-run period (annual) is that the long run is able to deal with the issue of volatility. According to Zeng (2010), long run ETR is measured as the cumulative tax expense/current expense/cash tax over a period of years divided by pre-tax accounting income over the same number of years. Its significance as pointed by Hanlon and Heitzman (2010) is justified based on its ability to deal with annual volatility in ETRs.

In summary, we have variants of ETRs that have been used in extant studies to capture tax avoidance. While they each have their superiority over one another, they clearly suffer common limitations of measuring only the non-conforming aspect of tax avoidance and data truncation bias when pre-tax income is negative.

Book-Tax Difference (BTD) Measures

Aside the ETR based measures; another group of measures used in extant literature is the book-tax difference based measures. Firms ordinarily report two measures of income (accounting income and taxable income) to different authorities and these are generated using different rules and principles. These rules and principles are the fundamental reasons why it is difficult for the two measures to be the same (Comprix, Graham, & Moore, 2010). However, it is argued that the difference is also not unconnected to tax avoidance strategies by firms.

The book-tax based measures seek to capture tax avoidance activities by comparing the tax paid based on the accounting income with the tax paid based on taxable income. But, because of the confidential nature of a firm's tax return, taxable income is generated by grossing up tax expense recorded in the financial statement using the statutory tax rate (Lee et al., 2015) and is, therefore, an estimation of the real amount. Hanlon and Heitzman (2010) describe the book-tax difference as a reporting difference associated with the same transaction, but for different purposes (accounting and tax purposes). That is a discrepancy between what is reported for a transaction in the books of account for stewardship purpose and what is reported to tax authorities for tax purpose. The difference between these two according to Salihu et al. (2013) is what is referred to as the book-tax gap and they opine that the difference or gap may be accounted for by many factors. These factors may either be tax avoidance factors or earnings management factors (Gebhart, 2017). Some of the various measures of book-tax differences (hereafter called BTD) are discussed below.

Total Book-Tax Difference

The concept of total BTD is traceable to the study of Manzon and Plesko (2002) where they developed a proxy to capture total BTD. Furthermore, researchers such as Gebhart (2017), Hanlon and Heitzman (2010), Lee et al., (2015) argue that this measure is a noisy proxy for tax avoidance because it reflects the effects of both earnings management and tax planning in that, attempts by firms to increase their accounting income through earnings smoothing and management would affect the pre-tax income and consequently increase the difference. Lee et al. (2015) add that total BTD captures both temporary and permanent differences relating more to non-conforming tax avoidance and they are quick to advise that a cautious approach should be taken when making interpretations.

In a similar manner, Hanlon and Heitzman (2010) observe that researchers tend to use total BTD in investigating different research questions despite the fact that total BTD is composed of temporal/permanent difference and/or normal/abnormal difference. These various compositions may provide confounding effects and consequently lead to over interpretation. For example, total BTD may result from tax credits (allowable for tax purpose and not a tax avoidance issue); interests on bonds (causes permanent differences and is allowable for tax purpose); valuation allowances, depreciation rates, warranty expenses (causes temporal differences which may/may not be allowable for tax purpose depending on the uncertainty in income tax). Also, Gebhart (2017) documents that a large difference in book-tax income is associated with earnings management each time management exercises discretion in the accrual process.

In summary, the total book-tax difference seems the least preferred measure for tax avoidance based on the confounding effects of earnings management and tax avoidance strategies in that it captures both elements of earnings management and tax management. Nevertheless, it is not a write-off as Dridi and Boubaker (2015) point out that tax management cannot be so detached from earnings management because managers may rather choose to manipulate both accounting income and taxable income in order to avoid costs that may be incurred if he/she overlooks tax authorities. Other variants such as the temporal BTD, abnormal BTD have also been developed to overcome the weaknesses in the usage of total BTD.

Temporal Book-Tax Difference

The temporal book-tax difference is derived by dividing deferred tax expense by the statutory tax rate (Hanlon & Heitzman, 2010). Comprix et al. (2010) observe that temporal BTD exists when there is a timing difference in the recognition of revenue/expense, for accounting and tax purposes. Though this difference according to them could be an outright consequence of differences in accounting and tax rules, they opine that temporal BTD may also be a fall-out of management discretion in the accrual accounting process (an example is deferred tax accounting), thus closely linking it to earnings management. This is a view equally shared in this study. In addition, Abdul Wahab and Holland (2015) assert that there could be a tax management/planning aspect to temporal BTD because whenever a firm is persistent in its deferral strategies, over time, the effect could become a permanent nature and consequently reflect tax avoidance. This assertion negates our line of reasoning. Deferral strategies are simply aimed at postponing or shifting the time for tax payment. We opine that though the firm is a going concern, its deferral strategies cannot be permanent because the assets through which deferred assets or liability may result are not of a permanent nature and thus have finite useful live at the end of which, any tax payment earlier avoided would eventually be paid.

Lee et al. (2015) align with Comprix et al. (2010) and submit that deferral strategy, though may be aimed at tax avoidance, are largely subject to the manager's discretion and further opine that it may be better suited for earnings management or at best, non-conforming tax avoidance. Based on these, we submit that like total BTM which is argued to have both confounding effects of earnings management and tax management, temporal BTM may also be used to capture tax management.

Total Discretionary Book-Tax Difference

Due to the argument of a confounding effect of earnings management and tax management associated with BTM, studies like Chen et al. (2010), Desai and Dharmapala (2006) devised means of eliminating or reducing the confounding effect. According to Hanlon and Heitzman (2010), the total discretionary BTM which may be seen a measure of abnormal BTM is conceptually useful as it removes the underlying factors that are not "intentional tax avoidance" driven (that is, earnings management driven) leaving those that are intentional tax avoidance driven.

Understanding the idea behind total discretionary BTM is similar to understanding the idea behind the Jones model for discretionary accruals (Lee et al., 2015) because just as the Jones model seeks to capture discretionary accruals as the residual gotten after regressing total accruals on industry level variables (Property, Plant & Equipment [PPE], total asset, revenue); Desai and Dharmapala (2006) capture discretionary BTM (measure for tax avoidance) by regressing total BTM against total accrual (measure for earnings management) with both sides of the equation scaled by lag of total asset.

Though the argument for discretionary total BTM is conceptually sound, it still only captures non-conforming tax avoidance (Hanlon & Heitzman, 2010), usually subjected to model misspecification errors (Lee et al., 2015), may produce ambiguity in interpretation (Gebhart, 2017), and cannot differentiate between intentionally created BTM and accidentally created BTM (Frank, Lynch, & Rego, 2009). The ambiguity in interpretation is a fall-out of discretionary BTM been captured as residuals (sum derived from all firm-year observations) and not as a percentage/ unit of money like ETR while the inability to differentiate between intentionally created BTM and accidentally created BTM is based on the argument that earnings management is not the only unintentional tax avoidance driven activity by firms nonetheless, it is the only one controlled for when using discretionary total BTM.

According to Hanlon and Heitzman (2010), the extent of foreign operations by a company, the treatment of intangible assets (e.g. research and development cost), loss relief treatment may be used unintentionally by managers and these are examples of accidentally created BTM that Frank et al. (2009) argued are not controlled for when estimating discretionary BTM, but these too may be used intentionally to avoid tax payment (Hanlon & Heitzman, 2010) therefore, making it is difficult to correctly control and assume if these activities are intentional or unintentional tax driven activities.

Discretionary Permanent Book-Tax Difference

The argument by Frank et al. (2009) that discretionary total BTM cannot differentiate between intentionally created BTM and accidentally created BTM led to the concept of discretionary permanent BTM. Discretionary permanent BTM is gotten by first capturing total permanent BTM (total BTM minus temporal BTM), and then the total permanent BTM is regressed against a set of firm attributes that create permanent BTM but have no association with tax planning as a means of controlling against factors that may cause accidental BTM (Gebhart, 2017). These set of firm attributes include intangible assets, income/loss reported under equity method, income/loss attributed to minority interest, current

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state income tax expense, changes in net operating loss carried forward, and a year lagged permanent BTM (Dunbar et al., 2010) that create permanent BTM but have no association with tax planning, in order to control against factors that may cause accidental BTM (Gebhart, 2017). Finally, the residual from this regression is what Frank et al. (2009) call discretionary permanent BTM. Alternatively, Lee et al. (2015) document that total permanent BTM may be captured by multiplying pre-tax accounting income by ETR differentials (differences between accounting ETR and the statutory tax rate).

The strength of this measure is that while discretionary total BTM is affected by actions by management to either manage accounting income (unintentional tax avoidance) or taxable income (intentional tax avoidance) or both, discretionary permanent BTM deals with only intentional tax avoidance (Frank et al., 2009) and on one hand, may therefore be a measure of aggressive tax avoidance [example is tax shelters] (Dridi & Boubaker, 2015). However, there are compelling arguments that tax shelter activities may generate temporal BTM and permanent BTM or even result in no BTM (Hanlon & Heitzman, 2010; Wilson, 2009). Thus, supporting the idea discretionary permanent BTM may not be a robust measure of tax avoidance behaviour.

Furthermore, in an attempt to separate the confounding effect of earnings management and tax avoidance, Hanlon and Heitzman (2010) observe that discretionary permanent BTM fails to consider deferral tax strategies as captured by temporary BTM and therefore is a restrictive measure of tax avoidance activities. In the opinion of Lee et al. (2015), tax avoidance strategy by a firm may not be fully captured by the Permanent BTM because tax avoidance is also reflected in other measures as well. In addition, since discretionary permanent BTM is derived from regression and modeling, we believe it may suffer the same weakness of model misspecification as discretionary total BTM even though this limitation is not based on empirical observations.

Tax Effect Book-Tax Difference

While all the above mentioned BTM measures are seen as income effect BTM, Tang and Firth (2011) developed a variant that captures the tax effect. They argued, based on their observation that deriving taxable income requires grossing up tax expense using the statutory rate, which creates estimation problems that can be solved if the tax effect of BTM is utilized. Accordingly, the tax effect of BTM is gotten by subtracting current tax expense from the product of accounting income and the statutory tax rate. Alternatively, it can be derived from the "sum of the multiplication of the statutory tax rate by the permanent differences and the multiplication of the statutory tax rate by the temporary differences" (Tang & Firth, 2011:182). Apart from solving the estimation problem associated with grossing up, tax effect BTM is suitable for investigating firms that are subject to varying tax rates (Salihu et al., 2013), and firms that engage in income shifting strategies (Tang & Firth, 2011). Income shifting strategies are observed to reduce the tax burden without affecting both accounting and tax income.

From the foregoing, it is documented that the tax effect BTM solves the estimation problem associated with grossing up, thus, it may be a better measure when compared to other variants of BTM. However, more empirical analyses are required to confirm this assertion. In addition, since Nigerian companies are not subject to varying corporate tax rate, this measure may not be suitable in investigating tax avoidance in Nigeria.

Other Measures of Tax Avoidance

Aside from the ETR and BTM based measures; other measures have been documented in tax

avoidance literature. These measures are meant to overcome some of the limitations already mentioned. These measures include, but not limited to Henry and Sansing's cash tax measure, unrecognized tax benefits, tax shelter score and Badertscher, Katz, Rego, and Wilson (2016) Conform-tax measure. These are discussed below.

Henry and Sansing's Measure

The work of Henry and Sansing (2014) provides strong evidence of the weakness of ETR. They argued that ETR may lead to data truncation bias. First, most ETRs are derived by dividing the total tax expense/current tax expense/cash tax paid by accounting income (Pre-tax) and it is possible for the pre-tax income to be negative (loss) which consequently, yield a negative quotient that is truncated at zero for the purpose of analysis. According to Henry and Sansing, a significant portion of any population would have this attribute and therefore, if discarded, would mean the researcher is focused on just profitable firms, interested in treating income and loss years asymmetrically and giving income years more weight. Also, the discarding of loss years is not random and can lead to spurious effects. Second, while using pre-tax income as a scalar is meant to aid comparison across firms with different sizes, Henry and Sansing (2014:6) argue that this scalar creates exaggerated effect on "firms with low but positive pre-tax book income" and by using a cash tax non-conformity measure, the exaggerated tax preference effect can be normalized across firms. Therefore, they proposed a cash tax non-conformity measure (hereafter referred to as H & S measure).

The H & S measure is gotten by first getting the difference between the cash tax paid and the product of pre-tax income and the statutory rate [that is, cash tax minus pre-tax income multiplied by the statutory rate]. This is then scaled by the market value of assets [that is, the book value of assets plus the market value of equity less the book value of equity] (Henry & Sansing, 2014). This measure makes computation and interpretation easy even when loss years are present because a firm having its cash tax equal to expected cash payment will have its cash ETR equal to the statutory rate and consequently have zero (0) as its H & S measure; firms with cash payment higher than expected tax payment will have its cash ETR higher than the statutory rate and consequently have a positive signed H & S measure; while firms with cash payment lower than expected tax payment will have its cash ETR lower than the statutory rate and consequently have a negative signed H & S measure (Gebhart, 2017). Thus, having a zero H & S value means the company paid exactly what was expected by the tax authority; paid more than what was expected by the tax authority if the H & S value is positive; while it paid lower than what was expected if the H & S value is negative. In addition, this measure is opined to capture both conforming and non-conforming tax avoidance practices (Badertscher et al., 2016). This is a position equally shared in this study as we observed that the H & S measure differs significantly from other measures that capture non-conforming tax avoidance.

Unrecognised Tax Benefits (UTB)

From the perspective of the US GAAP, effective from December 15, 2006, firms are now required to disclose unrecognized tax benefits in their financial statements (Gebhart, 2017; Lee et al., 2015; Lisowsky, Robinson, & Schmidt, 2013). Unrecognized tax benefit (hereafter called UTB) is a reserve created to cater for future tax contingencies (Hanlon & Heitzman, 2010). This reserve is required when a firm is not sure if the tax position/treatment/recognition of tax benefits (transactions that reduce tax liability, such as tax credits or income exclusions) in the tax returns will be allowed by the tax authority and therefore lead to further tax payments when subjected to a tax audit (Lisowsky et al., 2013).

In providing clarity, Lee et al (2015) document that through the self-assessment scheme; firms provide information that enables the determination of its tax liabilities. This determination of the tax liability is what Lee et al refer as tax position. They assert that firms may wrongly or ambiguously apply tax laws and policies in the process of arriving at the tax liability and this is likely to be challenged by the tax authority in the light of a tax audit. As such, in anticipation of the possibility of a tax position being challenged and future tax payments subsequently required, firms provide a tax contingency reserve (also called tax cushion, unrecognized tax benefit). This reserve has been opined to be a proxy for tax avoidance at the extreme right of the continuum (Hanlon & Heitzman, 2010; Lisowsky et al., 2013).

Before this reserve can be created, certain conditions must be fulfilled; a recognition condition and a measurement condition (Lisowsky et al., 2013). If a tax benefit is to be recognized, there must be a 50% and above probability that the tax position that generates the tax benefit is allowed by the tax authority. If the probability is lower than 50%, it means such a position is uncertain and therefore, the associated tax benefit should be treated as an unrecognized tax benefit (it failed the recognition condition). This is a necessary but not sufficient condition. If the recognition condition is fulfilled, the next is the measurement condition. The recognized tax benefit is "measured as the largest amount of financial statement benefits, which is greater than 50% likely to be settled with the tax authorities" (Lee et al., 2015:31) while the difference represents the unrecognized portion. This explanation is quite similar to the position taken by the International Accounting Standard Board as documented in its interpretation of uncertainty over income tax treatment (IFRIC 23) issued in 2017.

Studies (Gebhart, 2017; Lee et al., 2015; Lisowsky et al., 2013) agree that UTBs can be used as a measure of tax avoidance. Lee et al. (2015) are specific as they assert that UTBs overcomes the weaknesses associated with other measures of tax avoidance and is well able to predict both conforming and non-conforming tax avoidance practices. Lisowsky et al. (2013) equally opine that since tax sheltering is the most aggressive form of tax avoidance; a conforming tax avoidance practice that has a significant positive relationship with UTBs, then UTBs is by extension a probable measure of tax avoidance at the extreme right of the continuum. In their inquiry, Lisowsky et al. (2013) found that more aggressive firms have a higher uncertainty in their tax positions and thus a higher UTB than less aggressive firms. However, this position is partly challenged by Hanlon and Heitzman (2010) as they urge researchers to exercise caution. They argue that UTBs is broadly determined by tax conditions as well as financial reporting conditions. The amount of UTBs reported in the financial statement is still subject to some elements of management judgment and thus may suffer from the confounding effect of earnings management.

In summary, it is no doubt that UTBs overcomes most of the weaknesses of other measures. However, the debate on its being confounded by earnings management is on-going and requires more research. In addition, based on the Nigerian context, since IFRIC 23 is relatively new and its effective date is 2019 (though firms can presently start applying it), its usage as a proxy may exclude a good portion of any population study.

Tax Shelter Score

Hanlon and Heitzman (2010) opine that it may be difficult to put forward a generally accepted definition of tax sheltering when it is viewed from the broad perspective of tax avoidance. However, the commonly used description of tax sheltering is any activity not linked to any real business purpose aimed at reducing tax liability or taxable income. These activities are designed to avoid tax without any

form of business risk. According to Graham and Tucker (2006), the activities by which firms carry out tax shelters may be seen from 8 mechanics (Lease-In Lease Out [LILLO], Transfer Pricing [TP], Corporate-Owned Life Insurance [COLI], Cross-Border Dividend Capture [CBDC], Contingent-Payment Installment Sales [CPIS], Contested Liability Acceleration Strategy [CLAS], Liquidation & Re-contribution [LR], and Offshore Intellectual Property Havens [OIPH]). While some of these activities relate to having a shell or paper or hollow company/subsidiary, others relate to taking advantage of the time value of money and creating tax-deductible interest expenses (Lee et al., 2015). According to Lisowsky et al. (2013), the most extreme form of tax aggressiveness which seeks to test the bounds of legality is best captured as tax shelters. Although they assert that this concept may not absolutely imply illegality rather, such an issue is determined in a court of law.

As it is generally accepted, only the court can determine the legality of an action, especially when the intention surrounding such action is in doubt. So, in our opinion, the same may be said of tax shelters as some of the mechanics for tax sheltering involve just taking advantage of the time value of money and creating tax-deductible interest expenses, which to the ordinary eyes, is within the bounds of the law. Thus, based on the foregoing, it is observed that the issue of tax sheltering is subtle and may not be easily determined by outsiders. Therefore, to reveal tax sheltering, five judicial approaches by the court are usually at play. They are the doctrines of substance over form doctrine, sham transaction doctrine, business purpose doctrine, economic substance doctrine, and the step transaction doctrine (Lee et al., 2015). All these doctrines are related to and used by the court to determine whether tax sheltering has occurred. For example, the substance over form doctrine seeks to prove the occurrence of tax sheltering by looking at the economic substance (business profit motive) or the reality of a transaction as against the formalized or legal form which is usually done for tax purpose. The step transaction doctrine looks at the number of transactions and independent economic purpose associated with them. Where the transactions are related and have no independent economic purpose, such transactions would be deemed as step transactions and therefore treated as one by the tax authority. In applying the sham doctrine, the court looks at the reality of a transaction and treats it as a sham if in fact, the transaction never occurred or if such transaction occurred, but lacks any tax consideration/economic reality/business purpose (Graham & Tucker, 2006).

Studies on tax shelter may be grouped into two- those that use sample firms legally accused of tax shelter activities and those that do not (Lee et al., 2015). Those that do not use sample firms accused of tax shelter make use of financial statement proxy to infer tax shelter and this has been criticized because those proxies "represent multiple dimensions of corporate characteristics" thus require caution when interpreting (Lee et al., 2015: 29). Some of the proxies used are total BTM, discretionary permanent BTM, contingent tax liability, and long run ETR.

On the other hand, Gebhart (2017) points out those studies that use a sample of firms accused of tax shelter may have generalization issues because of the selection bias associated with the sample. Further, Hanlon and Heitzman (2010) point out that tax shelter may be engaged by some firms as a last resort plan to reduce tax or by other firms that have already used other avenues to avoid taxes. Thus, tax shelter becomes an extreme measure of tax avoidance that will likely fail to capture the many other firms that do not engage in a tax shelter, yet practice tax avoidance. In situations where the sample includes firms accused of tax shelter and control firms, Dunbar et al. (2010) puts forward a prediction model for tax shelter based on the study of Wilson (2009). That is,

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$$P(\text{Shelter}) = -4.30 + (6.63 * \text{TotalBTD}) + (-1.72 * \text{LEV}) + (0.66 * \text{SIZE}) + (2.26 * \text{ROA}) + (1.56 * \text{MNC}) + (1.56 * \text{RD})$$

Where:

P. (Shelter) = predicted probability of sheltering activity;

Total BTD = Pre-tax income less an estimate of taxable income, where taxable income is computed by grossing up the sum of federal tax expense and foreign tax expense by the statutory rate and subtracting the change in the net operating loss carry forward. Total BTD is scaled by total assets at the beginning of the year;

LEV = Long term debt scaled by total assets;

SIZE = Log of total assets;

ROA = Pre-tax income divided by total assets;

MNC = Dichotomous variable of 1 if pre-tax foreign income is greater than zero, and 0 if otherwise;

RD = Total research and development expense scaled by total assets at the beginning of the year.

In summary, extant literature agrees that tax shelter indeed reflects practices at the extreme end of the tax avoidance continuum (tax aggressiveness) and Hanlon and Heitzman (2010) suggest that it is appropriate when the researcher is interested in international tax aggressive planning behaviour at a transaction level. However, it suffers limitations just like the other measures of tax avoidance. There is a generalization of findings bias whenever only firms accused of tax sheltering are sampled. Also, in using the prediction model, there may be some problems associated with modelling (model misspecification error) which may also be an issue. Lastly, the conflicting findings in the literature on the association between tax shelters and other measures of tax avoidance necessitate further research.

Prospects and Way-forward

Having examined a series of proxies that can be used to capture tax avoidance in its varieties, it is important that we place them in proper perspectives. As Hanlon and Heitzman (2010) noted, the measures for tax avoidance are not equal as some are more appropriate than others depending on the research question and the focus of the research.

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S/n	Measure	Operationalization	Accounting Earnings	Deferral Tax Strategy	Nature of Tax Avoidance	Prospects/Limitations	Empirical studies that used the measure
1	Accounting ETR	Total tax expense to Accounting earnings before tax.	The numerator affects earnings	Cannot capture deferral tax strategies	Non-conforming	Captures total tax expense per ₦1 of pre-tax accounting income; captures the left-hand side on the tax avoidance continuum; associated with earnings management; presence of truncation bias; and relates to only explicit taxes and captures anything that can reduce this type of tax either tax-induced or not.	Badertscher, Katz, and Rego (2013); Belz, Hagen, and Steffens (2016); Dyreng, Hanlon, and Maydew (2010); Dunbar et al. (2010); McGuire, Omer, and Wang (2012)
2	Current ETR	Current tax expense to Accounting earnings before tax.	The numerator affects earnings if there are items of permanent difference in the current tax expense.	Captures deferral tax strategies	Non-conforming	Captures current tax expense per ₦1 of pre-tax accounting income; captures the left-hand side on the tax avoidance continuum; associated with earnings management; presence of truncation bias; and relates to explicit taxes only.	Chen, Check, and Rasiah (2016); Dunbar et al. (2010); Gupta and Newberry (1997); Oyeleke et al. (2016)
3	Cash ETR	Cash tax paid to Accounting earnings before tax.	The numerator does not affect earnings	Captures deferral tax strategies	Non-conforming	Captures actual tax paid per ₦1 of pre-tax accounting income; captures the left-hand side on the tax avoidance continuum; little or no effect of accrual or earnings management; presence of truncation bias; a possibility of a mismatch between numerator and denominator; prone to volatility in annual effective tax rates; and relates to explicit taxes only.	Badertscher et al. (2013); Dyreng et al. (2010); Dunbar et al. (2010); Gallemore and Labro (2015); McGuire et al. (2012)

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4	Cash flow ETR	Cash tax paid to cash flows from operations.	The numerator does not affect earnings	Captures deferral tax strategies	Captures non-conforming and conforming to an extent	Captures actual tax paid per \$1 of earnings from operations; no effect of accrual or earnings management; may capture tax avoidance practices to the right of the continuum; the possible presence of truncation bias; and relates to explicit taxes only.	Annuar et al. (2014); Gebhart (2017); Salihi et al. (2013); Salihi et al. (2015)
5	Long run cash ETR	Sum of cash tax paid for n years to Sum of accounting earnings before tax for n years.	The numerator does not affect earnings	Captures deferral tax strategies	Non-conforming	Captures the left-hand side on the tax avoidance continuum; little or no effect of accrual or earnings management; the possible presence of truncation bias; little or no mismatch between numerator and denominator; overcomes volatility in annual effective tax rates; and relates to only explicit taxes	Dyreg et al. (2008); Dunbar et al. (2010); Salihi et al. (2015); Taylor and Richardson (2012);
BTD Based Measures							
6	Total BTD	Earnings before tax less taxable income. Taxable income is current tax expense divided by the statutory tax rate.	Affects earnings to an extent	Captures deferral tax strategies	Non-conforming	Associated with earnings management; may be associated with tax shelter activity; affected by estimation error; and may relate to the right-hand side of the tax avoidance continuum.	Dunbar et al. (2010); Kim and Im (2017); McGuire et al. (2012); Taylor and Richardson (2012);
7	Temporal BTD	Deferred tax expense divided by the statutory tax rate.	Does not impact on earnings	Captures deferral tax strategies	Non-conforming	Associated with earnings management; and affected by the estimation error	Hanlon and Heitzman (2010); Lee et al. (2015)
8	Total Discretionary BTD	Residual from regressing BTD/lagged total asset on total accrual/lagged total asset.	Affects earnings to an extent	Captures deferral tax strategies	Non-conforming	Affected by model specification error; cured of earnings management; interpretation is complex; and cannot differentiate between intentional and accidental BTD except for earnings management.	Chyz and White (2014); Gebhart (2017); Kim and Im (2017); Taylor and Richardson (2012);

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9	Discretionary Permanent BTB	Residual from regressing total permanent BTB on intangible assets, income/loss reported under the equity method, income/loss attributable to minority interest, current tax expense, change in net operating loss carry-forward, and lagged total permanent BTB. Total permanent BTB is total BTB less temporal BTB.	Does not impact on earning	Cannot capture deferral tax strategies	Non-conforming	Affected by model specification error; relates to the extreme right-hand side of the tax avoidance continuum	Armstrong, Blouin, and Larcker (2012); Baderscher et al. (2013); Dunbar et al. (2010); McGuire et al. (2012)
10	Tax Effect BTB	Book income multiplied by statutory tax rate less current tax expense.	Affects earnings if there are items of permanent difference in the current tax	Captures deferral tax strategies	Non-conforming	Useful when firms are subjected to different tax rates and regimes; captures income shifting tax strategies; and Not prone to estimation error.	Tang and Firth (2011);
Other Measures							
11	Henry and Sansing's Measure	Cash tax paid less (accounting income before tax multiplied by the statutory tax rate). This is then scaled by the market value of assets. The market value of an asset is book value of the asset plus the market value of equity less the book value of equity.	The numerator does not affect earnings	Captures deferral tax strategies	conforming	Interpretation is complex; no truncation bias; measures long-run tax avoidance; relates to the right-hand side of the tax avoidance continuum	Henry and Sansing (2014)

12	Unrecognized Tax Benefit	Tax contingency reserve	Affects earnings	To an extent	Captures non-conforming and conforming to an extent	Not affected by earnings management: relates to tax shelter activity; usage is not developed in Nigeria; and relates to the extreme right-hand side of the tax avoidance continuum	Armstrong, Blouin, Jagolinzerb, and Larcker (2015); Blouin (2014); Lisowsky et al. (2013)
13	Tax Shelter Score	$P(\text{Shelter}) = -4.30 + (6.63 \cdot \text{Total BTD}) + (-1.72 \cdot \text{LEV}) + (0.66 \cdot \text{SIZE}) + (2.26 \cdot \text{ROA}) + (1.56 \cdot \text{MNC}) + (1.56 \cdot \text{RD})$	Depends on the tax shelter mechanic used	To an extent	Captures non-conforming and conforming to an extent	Relates to the extreme right-hand side of the tax avoidance continuum; and generalization of finding is limited	Armstrong et al (2012); Badertscher et al. (2013); Dunbar et al. (2010); Graham, Hanlon, Shevlin, and Shroff (2014)

Source: Researcher's Compilation

Table 1 above is a tabular representation of the measures examined in this study, their manner of operationalization, studies that have used them in empirical investigations on tax avoidance, and other attributes. It is seen that these measures capture either conforming tax avoidance or non-conforming tax avoidance as Hanlon and Heitzman (2010) argue that no one single measure has been able to adequately capture tax avoidance in its entirety. Therefore, a researcher who is interested in conforming tax avoidance may be expected to use such measures as Henry and Sansing's measure, unrecognized tax benefit, tax shelter score, and the ratio of cash tax paid to cash flow from operations. One that is interested in non-conforming may use any of the effective tax rate measures. Although Hanlon and Heitzman (2010) express the inability of the book-tax-difference measures to capture conforming tax avoidance, we can infer the opposite from Wilson (2009) who discovered that book-tax-difference measures are associated with tax shelter which to an extent can capture conforming tax avoidance. Thus, the debate on the nature of tax avoidance that book-tax-difference measures capture is on-going.

Furthermore, some of the measures have confounding effect of earnings management and tax avoidance (Lee et al., 2015) suggesting that as a measure, the findings generated may be explained by the financial reporting aggressiveness of a firm and not necessarily the tax reporting aggressiveness. Thus, care should be taken when interpreting such measures like accounting ETR, Current ETR, total BTM, and total discretionary BTM. In addition, some of the measures are derived by modelling which is equally prone to model specification errors, thereby affecting the prowess and reliability of the measure. In a similar vein, some of the measures have been observed to capture the right-hand side of the tax avoidance continuum; this suggests the nature of the aggressiveness associated with such measures (Dunbar et al., 2010). Therefore, a researcher interested in the extreme forms of tax avoidance may use measures like tax shelter score, unrecognized tax benefits, and discretionary permanent book-tax-difference.

Based on the nature of the environment, Saihu et al. (2013) suggested that in environments with less pressure from the capital market and less emphasis on earnings reporting, conforming tax avoidance is likely to be prevalent. Thus, measures that do not capture conforming tax avoidance may be inadequate. Similarly, Tang and Firth (2011) assert that book-tax-difference that captures tax effect is more appropriate in jurisdictions requiring separate tax reporting and having frequent changes in tax rates as a result of different tax incentives being offered by the government.

In summary, all these underscore the importance of the researcher knowing what the research focus is, the prospects and limitations of the various measures and choosing the appropriate one that will minimize reaching an erroneous conclusion.

Conclusion and Recommendations

In this study, we have examined the concept of tax avoidance and the various measures used in the literature to capture its nature. Though the widely held notion of tax avoidance sees it as a legal way of reducing tax liability, currently, the debate on tax avoidance has shifted from a legal perspective to an issue of morality. In this study, we defined tax avoidance as a reduction in explicit tax. We also describe tax avoidance as a continuum of less tax aggressive practice on the left-hand side (an example are tax-favoured activities such as the purchase of bond) and the most aggressive on the right (an example is a tax shelter). Furthermore, we observed that due to the inability to get a generally accepted definition for tax avoidance, many measures have been developed. These measures were broadly grouped into

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effective tax rate based measures, book-tax-difference based measures, and other measures such as tax shelter score, unrecognized tax benefits... just to mention a few.

In summary, we observed that these measures capture various aspects of tax avoidance as such; none actually captures tax avoidance in its entirety. Furthermore, we observed that some of these measures are better suited for various research questions and focus. Thus, the choice of measure to use should be determined based on the research design and focus as well as the availability of data. Empirical studies on tax avoidance have mixed results and this may be attributed to the plethora of measures that can be used to capture tax avoidance. Thus, more researches aimed at resolving this mixture are encouraged. Researchers may use multiple measures if the availability of data is not an issue since no one measure completely captures tax avoidance. Researchers also should consider the peculiarity of the environment wherein the study is carried out. For example, in jurisdictions requiring separate tax reporting and having frequent changes in tax rates as a result of different tax incentives being offered by the government, tax-induced ETR based measure is more appropriate. In jurisdictions with weak regulation or capital market pressure, measures that capture conforming tax avoidance are more appropriate.

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