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BOOK TAX DIFFERENCES (BTDs) AND FINANCIAL DISTRESS OF LISTED CONSUMER GOODS FIRMS IN NIGERIA

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ABSTRACT

The decrease in the level of book tax conformity that increases the level of corporate tax avoidance and the incessant corporate failures due to masquerading of financial statement, necessitated the research work on Book Tax differences (BTDs). The focus of this study is to examine the relationship between the four components of book-tax differences (BTDs) and financial distress surrogated by Altman's Z- scores of listed consumer goods firms in Nigeria. The study adopted the ex post facto research design. The population comprised of listed consumer goods firms on the Nigerian Stock Exchange. The sample was purposively determined as twenty one consumer goods firms. The study relied on secondary sources of data. The data were analysed using both descriptive and inferential statistical techniques. The hypotheses were analysed using the panel EGLS regression technique. The results showed a significant positive relationship between temporary BTD and total BTD with Altman's Z-score. Based on this the study recommends among others things that external auditors should place additional emphasis on book tax information because of its ability to signal firms facing financial constraint.

Keywords: *Book Tax Differences (BTDs), Financial Distress, Consumer Goods Firms*

1. Introduction

Corporate taxes are levied on the profits of an incorporated entity by the state (Edame & Okoi, 2014). They are non-discretionary expenditure imposed by the government that all profitable firms must incur' (Edwards, Schwab, & Shevlin, 2013). In Nigeria, limited liability companies are liable to pay Company Income Tax (CIT) at a rate of 30% on their assessable profit on a preceding year basis. In addition, resident companies in the country are required to pay Education Tax at the rate of 2% of the assessable profit for each year of assessment. CIT is administered under the Companies Income Tax Act (CITA) 1979 as amended in 2007; which has its root from the Income Tax Management Act of 1961. CIT is administered and collected by the Federal Inland Revenue Service (FIRS or the Service).

Book Tax Difference (BTD) is the difference between accounting income and the estimated taxable income (Wahab & Holland, 2015). BTDs refer to the gap between pre-tax incomes, as shown in the published financial statement, and the taxable incomes reported to tax authorities (Tang, 2006). Book Tax Differences are mainly caused by differing local Generally Accepted Accounting Principle (GAAP) and tax treatment of revenue and expense items (Harrington, Smith, & Trippeer, 2012). Accounting and taxation are two autonomous regulations, sharing similar concepts while serving different purposes" (Koubaa &Jarboui, 2015); such that information required by tax authorities differs from that required by market participants (Huang &Wang, 2013).

BTDs originate from multiple sources and may either be temporary or permanent in nature (Harrington, Smith, & Trippeer, 2012). Temporary differences are differences in the timing of accrual recognition between pre-tax book and taxable income (for example, warranty reserve, bad debt reserve, depreciation, among others) (Hanlon, Krishnan, & Mills, 2012).Temporary differences combine "the choices a firm makes in terms of accruals for financial accounting and the choice of what is allowed for tax purposes" (Hanlon, Krishnan, & Mills, 2012). Permanent differences are differences between pre-tax book and taxable income that never reverse (Hanlon, Krishnan, & Mills, 2012). This difference occurs because some transactions are not included in the calculation of taxable income based on tax regulations (Martinez& Souza, 2016).

Book Tax Differences, play a key role in explaining the earnings quality of firms (Koubaa & Jarboui, 2017). BTDs are strategically managed to either avoid/defer taxes through sheltering (Wilson, 2009), avoid/defer tax payment through tax planning (Ayers, Jiang, & Laplante, 2009), or manage earnings (example, Phillips, Pincus, & Rego, 2003). Ayers, Laplante, and McGuire (2010) document a negative credit rating associated with BTDs to be attributed to earnings management and not tax avoidance. Similarly, using empirical data from China, Tang and Firth (2011) found evidence suggestive that BTDs can be used to capture both accounting and tax manipulations induced by managerial motivations.

Consumer goods firms are vital to the economy of any nation and Nigeria in particular. It is the source of a significant portion of the Gross Domestic Product of Nigerian economy and drives other sectors as well. The sector is also subject to micro and macro economic factors which determine survival. Thus, they are affected by both internal and external conditions likely to cause corporate financial distress.

According to Balasubramanian, Radhakrishna, Sridevi, and Natarajan (2019) financial distress is a condition in which a company's liquidation of total assets is less than the total value of creditor claims. That is a situation where a firm is incapable of meeting it's financial obligations (Brealey,Myers, & Marcus,2009). It is a condition in which a company cannot generate sufficient revenue or income and, thus unable to meet its financial commitments in the long term (Kenton, 2019; Waqas & Md-Rus, 2018). Primarily, studies classify firms into two: financial and non-financial firms. In the Nigerian context, over 30% of non-financial firms are actively engaged in consumer goods activities. The sector has witnessed a negative downturn in recent times causing several firms to go into financial distress. These have been mainly attributed to unfavourable government policies, inflation, exchange rate instability, political turmoil, inadequate social and infrastructural facilities among others (Uchenna & Okelue, 2012). According to the president of the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) cited in Imhanzenobe (2020) "majority of the surviving manufacturing firms have been classified as unhealthy". Many firms have therefore filed for bankruptcy because they cannot continue to exist in their original forms (Steyn-Bruwer & Hamman, 2006).

Financial distress has remained a dominant theme in the business literature following the demise of several corporations (for example, Enron, Adelphia, Global Crossing, Xerox, WorldCom, Skye bank, Diamond bank, Big Treat Confectionaries, Premier Breweries, Golden Guinea Breweries, among others). The growing tax literature suggests a relationship between BTD and financial distress (Altman, 1968; Noga & Schnader, 2013). This relationship arises because managers engage in aggressive tax manipulation to conceal weak financial performance over time. For instance, Hanlon (2005) finds that firms with large temporary BTDs have less persistent accruals and earnings; while, Mill and Newberry (2001) document an association between BTDs and reporting incentives, such as; income smoothing, financial distress, and bonus thresholds. Against this backdrop, the current study explores the relationship between Book-Tax Differences (BTDs) and financial distress surrogated by the Altman's Z-Score of listed consumer goods firms in Nigeria.

Objectives of the study

The main objective of the study is to ascertain the relationship between Book Tax Differences (BTDs) and financial distress of listed consumer goods firms in Nigeria. The specific objectives of the study are, to:

1. determine the relationship between temporary BTD and Altman's Z-Score of listed consumer goods firms;

2. examine the relationship between permanent BTD and Altman's Z-Score of listed consumer goods firms;
3. ascertain the relationship between total BTD and Altman's Z-Score of listed consumer goods firms; and,
4. examine the relationship between discretionary total BTD and Altman's Z-Score of listed consumer goods firms.

Statement of Hypotheses

The following hypotheses were formulated to guide the study; they are stated in their null forms:

HO1: There is no significant relationship between temporary BTD and Altman's Z-score of listed consumer goods firms

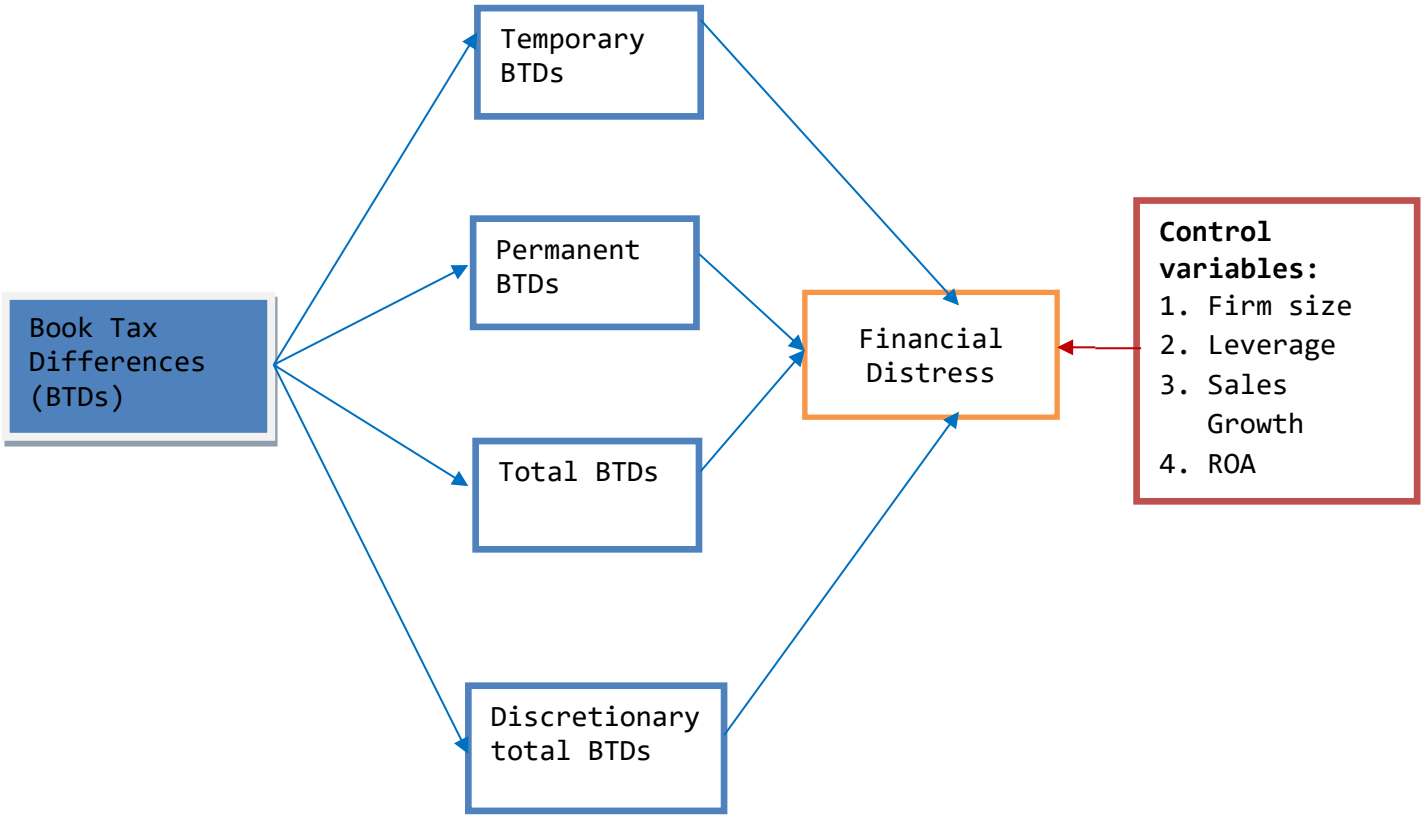
HO2: There is no significant relationship between permanent BTD and Altman's Z-score of listed consumer goods firms

HO3: There is no significant relationship between total BTD and Altman's Z-score of listed consumer goods firms

HO4: There is no significant relationship between discretionary total BTD and Altman's Z-score of listed consumer goods firms

2. Conceptual Framework

Figure 2.1: Conceptual Framework



Source: Author's Conceptualisation

The conceptual model shown above identifies the different components of BTDs that are utilised in the study, that is., temporary, permanent, total and discretionary BTDs. The measurement of these variables is described later. The different components of BTDs point to financial distress the main dependent variable in the study. The dependent variable financial distress is surrogate with the Altman's Z score. The model also shows some firm specific factors that also influence the relationship between BTDs and financial distress (Ahmed, Billings, Morton, & Stanford-Harris, 2002; Khan & Watts, 2009; Riguen & Jarboui, 2017; Widiatmoko & Indarti, 2019).

This is consistent with the study by Ikpesu (2019) that showed the following firm specific factors; leverage, liquidity, profitability, and firm size to affect financial distress of listed non-financial firms. The study employs firm size, leverage, sales growth, ROA, and CFO to control for firm-specific factors. The variable firm size was included because the size of a firm largely determines its exposure to financial risk; leverage is crucial because the debt-equity in the capital structure plays a vital role in the financial sustainability of a business; sales growth implies the annual change in the current level of sales over the prior year which is an indicator of the market performance of the company products; Return on Assets(ROA) is a long-term profitability measure which relates current period returns to total assets; while, the Operating Cash Flow(CFO) is actual cash generated from operations for the current period and crucial to the financing and investing decisions of a firm for long-term sustainability.

Financial Distress

Financial distress is a situation where a firm is incapable of meeting it's financial obligations (Brealey, Myers, & Marcus, 2009). It is a condition in which a company cannot generate sufficient revenue or income and therefore unable to meet its financial commitments in the long term (Kenton, 2019; Waqas & Md-Rus, 2018). Balasubramanian, Radhakrishna, Sridevi, and Natarajan (2019) define financial distress as a condition in which a company's liquidation of total assets is less than the total value of creditor claims. It is the scenario in which a company's operating cash flow cannot supersede the negative net worth. The definitions of financial distress vary across different countries because of differing accounting treatments and rules (Waqas & Md-Rus, 2018). Firms may file for bankruptcy when they are in financial distress and cannot continue to exist in their original forms (Steyn-Bruwer & Hamman, 2006). Bankruptcy may lead to either liquidation or reorganization (Bernstein, Colonnelli, Giroud, & Iverson, 2017).

According to Sharan (2011), corporate financial distress may be sub-divided into economic failure and financial failure. Economic failure is when the firm's cost of capital is higher than the revenue it generates. That is the firm is not operating at a profit (Sharan, 2011). Financial failure is when the firm fails to meet the contractual obligations of lenders (Sharan, 2011). Hofer (1980) defines "financial distress" as a condition in which a company suffers from negative net income for a consecutive period. Whitaker (1999) financial distress is a condition when the cash flow of a company is less than the current portion of company's long-term debt. Other scholars, such as Keasey, Pindado, and Rodrigues (2009) and Asquith, Gertner, and Scharfste (1994) classify a firm as "financially distressed" if the company's Earning Before Interest Tax Depreciation and Amortization (EBITDA) is less than its financial expense for two consecutive years. Lau (1987) prefers to see "financial distress" as a condition in which a company omits or reduces dividend payment to its shareholders.

Based on the reviewed literature, the authors adapt the following definition of financial distress as a condition when a firm suffers negative net income for consecutive periods and the cash flow is less than the current portion of company's long-term debt. The choice of this particular perspective is based on (i) the limited availability of data for companies that have filed for bankruptcy; and, (ii) the possibility that a firm with weak or negative net income may reverse in subsequent period from Government bailout or other similar factors.

The major causes of financial distress to non-financial firms have been attributed to factors such as inept corporate governance, severe competition, macroeconomic performance and capital structure (Outecheva, 2007). The study by McNamara, Duncan, and Kelly (2011) showed that variables such as interest rates and Gross Domestic Product have a significant positive correlation with firm survival. Another study by Mwangi, Anyango, and Amenya (2012) observed a remarkable difference in financial leverage of financial and non-financial companies.

Altman's Z-Score Model

The Altman's Z score model was developed by Professor Edward Altman. He used Multivariate Discriminant Analysis (MDA) to develop a model capable of predicting corporate failure (Altman, 1968). He employed MDA on a sample of 66 manufacturing firms (that is, half had filed for bankruptcy) to develop a discriminant function which predicted bankruptcy 2 years from the event. The model correctly classifies 96% of bankrupt firms and 79% of non-bankrupt firms.

The model predicted a company's health status based on a discriminant function of the form: Z = 0.012X1 + 0.014X2 + 0.033X3 + 0.006X4 + 0.999X5

Where:

X1 = working capital/total assets

X2 = retained earnings/total assets

X3 = earnings before interest and taxes/total assets

X4 = market value of equity/book value of total liabilities

X5 = sales/total assets

The model classifies firms into three zones:

Bankrupt < 1.81 ≤ Grey Area ≤ 2.99 > Safe Zone (Non-Bankrupt)

MDA combines information from multivariate independent variables (e.g. ratios) into a single score that is used to classify an observation into either of two a-priori and mutually exclusive groups (Hair, Anderson, Tatham, & Black, 1992). MDA relies on the several assumptions, such as: (i) the independent variables (e.g. ratios) are multivariate normally distributed; (ii) the dataset consists of two apriori chosen mutually exclusive groups; (iii) the two groups have equal population variances; and, (iv) the researcher just need to select the optimal cut-off point a-priori; Hair, Anderson, Tatham, & Black, 1992).

One advantage of MDA over univariate analysis is its ability to consider multiple variables as well as the interaction among these variables. The Altman's discriminant function uses five weighted ratios to calculate the Z-Score; which acts as a "cut-off" threshold. The "cut-off" threshold is then used to classify a company in the safe, grey and distress zones. Discriminant scores allows for classification between two or more groups (Fejer-Kiraly, 2015). Since its development the Z-Score model has gained wide acceptance by auditors, accountants, and finance experts as a viable tool for corporate failure prediction (Babatunde, Akeju, & Malomo, 2017).

Book Tax Differences (BTDs)

BTDs refer to the gap between pre-tax incomes, as shown in a company's published financial statement, and the taxable incomes reported to tax authorities (Tang, 2006). BTDs arise from differences between taxable income and pre-tax accounting income (Abdul Wahab, Ntim, Mohd Adnan, & Tye, 2018). Taxable income refers to the amount calculated in line with the rules established by the tax authorities of a particular country and on which the income taxes are levied (Chytis, 2019). Thus, BTDs are mainly caused by differing local GAAP and tax treatment of revenue and expense items (Harrington, Smith, & Trippeer, 2012).

Prior studies, such as Revsine, Collins, Johnson, and Mittelstaedt (2005), Pratt (2005) finds that ratio of pre-tax book income to taxable income is a useful indicator for assessing the degree of conservatism in a firm's accounting choices. According to Weber (2009) investors and financial analysts use information from BTDs for predicting future earnings and firm value. BTDs are often used to signal tax planning and earnings manipulation by firms (Abdul Wahab & Holland, 2015) and companies with large BTDs are often associated with high risks, including reputational risks (Abdul Wahab, 2016).

BTDs can be subdivided into three categories which reflect variations of BTD sources, namely permanent differences, temporary differences and statutory tax rates differences (Harrington, Smith, & Trippeer, 2012; Tye & Abdul Wahab, 2018). In the words of Formigoni, Antunes, and Paulo (2009):

Permanent differences occur when determined revenues or expenses are recognized in the accounts, but do not have tax effects. Temporary differences happen when both the tax and accounting systems recognize the same amount of revenue or expense, but diverge regarding the moment of this recognition.

Temporary differences combine "the choices a firm makes in terms of accruals for financial accounting and the choice of what is allowed for tax purposes" (Hanlon, Krishnan, & Mills, 2012). Temporary differences can be positive or negative. Positive temporary differences arise when the accounting income is higher than the taxable income, while negative temporary differences occur when the accounting income is lower than the taxable income (Hanlon, Krishnan, & Mills, 2012).

Specifically, Chytis (2019) divided temporary differences into: (a) taxable temporary differences, which result in payment of higher taxes in the future and recognition of - Deferred Tax Liabilities (DTL) in the present, and (b) Deductible Temporary Differences leading to higher tax paid in the current year and lower in future periods for which a - Deferred Tax Asset (DTA) is recognized. DTA and DTL in the Statement of Financial Position incorporate the estimated future tax effects resulting from temporary differences between book and taxable income (Chytis, 2019).

DTL increase as firms recognize revenues and/or deferred expenses for financial reporting purposes relative to tax purposes, resulting in book income that is higher than taxable income. Alternatively, DTA increase as firms recognize expenses and/or deferred revenues for financial reporting purposes relative to tax purposes, resulting in book income that is less than taxable income (Huang & Wang, 2013). The components of DTA and DTL vary widely across firms and are subject to managerial discretion (Hanlon & Heitzman, 2010). The study by Poterba, Rao, and Seidman (2007) found evidence that within-firm reporting of the DTA and DTL is fairly consistent over time.

The Total Tax Burden on book income (profit/loss) for a period is calculated as:

Tax Expense = Current Tax Expense (+/-) Deferred Tax Expense of the period

Permanent differences are differences between pre-tax book and taxable income that never reverse (Hanlon, Krishnan, & Mills, 2012). This difference occurs because some transactions are not included in the calculation of taxable income based on tax regulations (Martinez & Souza, 2016). Permanent differences are also associated with aggressive tax reporting (Balakrishnan, Blouin, & Guay, 2019; Frank, Lynch, & Rego, 2009); such that, shareholders may value permanent differences as risks that affect shareholders' wealth.

Other components of BTDs include statutory tax rates differences, which is associated with companies that have business operations across multiple jurisdictions. The differences imply companies' strategic tax planning activities to generate tax benefits by utilising their overseas permanent establishments that are subject to favourable tax regimes, including through transfer pricing (Organisation for Economic Co-operation and Development, 2018).

Discretionary BTDs, is associated with the discretionary practices of managers in choosing accounting and tax related practices (Tang & Firth, 2012). These practices are earnings management and tax management (Riguen & Jarboui, 2017).The study by Bauman and Bowler (2018) find evidence that firms manage their earnings using discretionary Deferred Tax Asset allowances changes taking into account the impact of analyst forecasts.

Temporary Book Tax Differences (BTDs) and Financial Distress

Crabtree and Maher (2009) examine the effect of difference between BTDs on bond ratings, and find that firms with deferred (temporary) BTDs and total BTDs deviating from the industry average receive lower bond rating, mainly because temporary differences are caused by differences in timing of accrual and realization, depreciation, amortization, inventory valuation and calculation of loss compensation (Hanlon, Krishnan, & Mills, 2012; Nor'Azam & Bardai, 2009).

Permanent Book Tax Differences (BTDs) and Financial Distress

Studies also provide evidence that managers primarily focus on tax strategies that produce both cash and financial reporting benefit (that is, tax strategies that produce permanent BTDs) with only a secondary interest, in strategies that only produce a cash benefit (that is, deferral strategies that produce temporary BTDs) (Armstrong, Blouin, & Larcker 2012; Graham, Hanlon, Shevlin, & Shroff (2014). For instance, the study by Laux (2013) shows that deferred taxes provides additional information on future tax payments; however the magnitude of the information is small. Dreher, Eichfelder, and Noth (2017) found that accounting information on tax loss carry forwards and deferred taxes not only does not improve the accuracy of performance forecasts but may even worsen them.

Total Book Tax Differences (BTDs) and Financial Distress

Studies have shown that financial distress could pose as an incentive for managers to engage in tax aggressiveness, because financial constraints increase the marginal benefits of tax saving, and exceed its marginal costs (Dhamara & Violita, 2017; Edwards, Schwab, & Shevlin, 2013). Financial distresses are likely fuelled by the following factors, such as increasing cost of capital (Dhamara & Violita, 2017), decreasing access to financial sources (Dhamara & Violita, 2017), lower credit rating (Ayers, Laplante, & McGuire, 2010; Dhamara & Violita, 2017), and a willingness to take higher risk by managers (Dhamara & Violita, 2017), among others. And specifically, the study by Edwards, Schwab, and Shevlin (2013) find that unlike many other cost reduction techniques (among others., reducing research and development, advertising, capital expenditures, staffing, among others), reducing cash taxes is less likely to adversely impact firm operations.

Discretionary Total Book Tax Differences (BTDs) and Financial Distress

Ayers, Laplante, and McGuire (2010) examine whether credit analysts utilise the information contained in the difference between book and taxable income in analysing a firm's credit risk (that is, credit rating). The results showed that large positive or negative changes in BTDs signal decreased earnings quality and/or increased off-balance sheet financing. In China, the study by Tang (2006) find that firms with strong incentives and prospects for earnings management exhibit high levels of abnormal book-tax differences. Noga and Schnader (2013) found that BTDs are useful for predicting bankruptcy of publicly quoted companies. Heltzer (2009) showed that positive or negative variations in BTDs are indicative of conditional or unconditional conservatism present in the financial statements.

3. Methodology

The study adopted the ex post facto research design. The population comprised of listed consumer goods firms on the Nigerian Stock Exchange. The population of the study comprised of listed consumer goods firms on the Nigerian Stock Exchange (NSE) from 2012 to 2019 financial year. The sample was purposively determined as twenty one consumer goods firms. The study relied on secondary sources of data. The data were analysed using both descriptive and inferential statistical techniques. The hypotheses were analysed using the panel EGLS regression technique.

Model Specification

$$Z\text{-Score}_{it} = \beta_0 + \beta_1 \text{Temporary BTD}_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROA_{it} + \beta_6 CFO_{it} + \varepsilon_t \quad \ldots\ldots\ldots\ldots 1$$

$$Z\text{-Score}_{it} = \beta_0 + \beta_1 \text{Permanent BTD}_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROA_{it} + \beta_6 CFO_{it} + \varepsilon_t \quad \ldots\ldots\ldots\ldots 2$$

$$Z\text{-Score}_{it} = \beta_0 + \beta_1 \text{Total BTD}_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROA_{it} + \beta_6 CFO_{it} + \varepsilon_t \quad \ldots\ldots\ldots\ldots 3$$

$$Z\text{-Score}_{it} = \beta_0 + \beta_1 \text{Disc Total BTD}_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROA_{it} + \beta_6 CFO_{it} + \varepsilon_t \quad \ldots\ldots\ldots\ldots 4$$

Description of Variables

Dependent variable		
Z-Score	$1.2*R_1+1.4*R_2+3.3*R_3+0.6*R_4+1.0*R_5$ Where: R_1 = working capital to total assets ratio R_2 = retained earnings to total assets ratio R_3 = Profit before interest & tax total assets R_4 = market value of equity to book value of total liabilities R_5 = Revenue to total assets	Altman (1968); Altman (2000).
Independent variables:		
Total BTD	Pretax book income $-$ $\frac{\text{current tax expense}}{\text{Statutory tax rate}}$	Manzon and Plesko (2002).
Temporary BTD	$\frac{\text{Deferred tax expense}}{\text{Statutory tax rate}}$	Manzon and Plesko (2002).
Permanent BTD	Total BTD – Temporary BTD	Manzon and Plesko (2002).
Discretionary Total BTD	Error term from the following regression: $\text{Total BTD}_{i,t} = \alpha + \beta*\text{Total Accruals}_{i,t} + \varepsilon_{i,t}$ This is part of Total BTD that can be attributed to tax avoidance and not earnings management; residual from regression of Total BTD on Total Accruals.	Desai and Dharmapala (2006); Evers, Meier, and Finke (2016).
Control variables:		
SIZE	Firm size	Khan and Watts (2009); Riguen and Jarboui (2017).
LEV	Leverage	Ahmed, Billings, Morton, and Stanford-Harris (2002); Riguen and Jarboui (2017).
GROWTH	Sales Growth	Ahmed, Billings, Morton, and Stanford-Harris (2002); Riguen and Jarboui (2017).
ROA	Returns on Assets	Khan and Watts (2009); Riguen and Jarboui (2017)
CFO	Operating Cash flow Cash flow is a better financial indicator and relatively more difficult to manipulate.	Widiatmoko and Indarti (2019)

4. Presentation of Data and Analysis

Table 4.1a: Descriptive statistics of main independent and dependent variable

	TEMPORARY BTD	PERMANENT BTD	TOTAL BTD	DISCRETIONARY TOTAL BTD
MEAN	2.26E+09	-2.96E+10	-2.74E+10	-1.03E-05
MEDIAN	2.81E+08	-1.77E+09	-4.19E+08	9.04E+09
MAXIMUM	4.45E+10	1.12E+11	1.16E+11	3.37E+11
MINIMUM	-1.11E+10	-3.69E+11	-3.68E+11	-2.83E+11
STD. DEV.	6.93E+09	8.92E+10	8.94E+10	8.02E+10
OBSERVATIONS	168	168	168	168

Source: E-Views 9

The table above shows the mean value of the selected proxies for corporate tax avoidance the average value of temporary BTD to approximate N2billion; the average value of permanent BTD to approximate negative N30billion. The average value of total BTD to approximate negative N27billion; while the average value of the discretionary total BTD approximate -0.000103. The standard deviations of the selected corporate tax avoidance proxies exceeded the mean, indicating high deviations from the mean value respectively. The average value of Altman's Z score was -19.341; indicating that on average the financial health of the firms in the sample were worsening. Imhanzenobe (2020) observed that when the Z-Score is less than 3, "potential investors ought to do critical due diligence before investing in such a firm"

Table 4.1b: Descriptive statistics of selected control variables

	SIZE	LEV	GROWTH	ROA	CFO
MEAN	1.27E+11	0.410464	391.6885	0.068089	4.96E+10
MEDIAN	6.59E+10	0.106977	6.399746	0.038547	7.98E+09
MAXIMUM	6.87E+11	12.95956	29329.08	1.973652	1.06E+12
MINIMUM	1.04E+08	0.000000	-100.0000	-3.021770	-4.27E+10

Source: E-Views 9

The table above shows the mean value of average asset for the firms in the sample to approximate N127billion and that of cash flow from operation to approximate N50billion. The standard deviations of SIZE and GROWTH both exceeded the mean, indicating high deviations from the mean value respectively. The average value of LEV was 0.410; indicating that the capital structure of the firms in the sample were approximately 41% financed by Debt. The average value of GROWTH was approximately 391.7% for firms in the sample. In comparison, the average value of ROA of firms in the sample was low approximate 6%. This suggests that the companies are earning less on the total level of investment.

Correlation Analysis

The Table below shows the Pearson's correlation results of the dependent, independent and control variables. The magnitude of the relationship is determined by the absolute value while the sign indicates the direction of the relationship.

Table 4.2: Correlation Matrix

	Temporary BTD	Permanent BTD	Total BTD	Discretionary Total BTD	ZSCORE	SIZE	LEV	GROWTH	ROA	CFO
Temporary BTD	1.000000									
Permanent BTD	-0.014764	1.000000								
Total BTD	0.062827	0.996988	1.000000							
Discretionary Total BTD	0.072812	0.892544	0.896525	1.000000						
Z SCORE	-0.057371	0.016085	0.011605	-0.125385	1.000000					
SIZE	-0.006025	-0.100261	-0.100541	-0.001376	0.164275	1.000000				
LEV	-0.053654	0.056511	0.052244	0.077652	-0.142784	-0.145523	1.000000			
GROWTH	-0.040923	0.034028	0.030790	0.098372	0.030594	0.009718	0.018138	1.000000		
ROA	-0.002180	0.035599	0.035363	0.138870	-0.486342	-0.046753	0.019341	-0.002395	1.000000	
CFO	0.039241	-0.308567	-0.304947	0.129262	-0.079971	0.273360	0.002659	0.175517	0.091001	1.000000
VIF	**1.01**	**1.13**	**1.12**	**1.05**	**-**	**1.28**	**1.22**	**1.04**	**1.01**	**1.23**

Source: E-Views 9

Notes: BTD is Book Tax Difference; Z SCORE is the computed Altman's Z Score; SIZE is Firm Size; LEV is Leverage; GROWTH is sales growth; ROA is Return on Assets ratio; and, CFO is Operating Cash flow.

The VIF is the kth diagonal element of the inverse of the correlation matrix of the variables. It can be calculated as (Velleman and Welsch).

VIFk = (1 –R2k) -1

Where: R2k is the multiple coefficient of determination of Xk regressed on all the other regressors. The VIFk ranges from 1 (noncorrelated coefficients, which derive from orthogonal designs) to infinity (perfect correlation, when Rk = 1). A VIFk> 1 indicates that the variable affected by collinearity and, although there is no exact rule, a VIFk> 10 is interpreted as an indicator of high collinearity. Thus, in summary the results show no evidence of multicollinearity among the variables, since the average VIF was less than 5.

The presence of multicolinearity between explanatory variables may result in wrong signs or implausible magnitudes, in the estimated model coefficients, and the bias of the standard errors of the coefficients (Osegbue, Nweze, Ifurueze, & Nwoye, 2018). The correlation results from Table 4.2 show that Temporary BTD was negatively correlated with Permanent BTD; and, positively correlated to Total BTD and Discretionary Total BTD. Temporary BTD negatively correlates with Z SCORE, SIZE, LEV, GROWTH and ROA. Temporary BTD was positively correlated with CFO. Permanent BTDpositively correlated with Total BTD, Discretionary Total BTD and the Z SCORE. Permanent BTD also positively correlates with three control variables LEV, GROWTH, and ROA. However, it was negatively correlated with SIZE and CFO. Total BTD positively correlates with Discretionary Total BTD, Z SCORE and three control variables LEV, GROWTH, and ROA. Total BTD was negatively correlated with SIZE and CFO. Discretionary Total BTD was negatively correlated with Z SCORE and SIZE; and, positively correlated with four control variables LEV, GROWTH, ROA, and CFO.The surrogate for financial distress, the Z SCORE positively correlated with SIZE and GROWTH; but, negatively correlated with LEV, ROA, and CFO. SIZE negatively correlated with LEV and ROA; but, positively correlated with GROWTH and CFO. LEV positively correlated GROWTH, ROA, and CFO. GROWTH negatively correlates with ROA and positively correlated with CFO. ROA positively correlated with CFO. Pearson correlation coefficient >.80 was

observed for Permanent BTD with Total BTD; Permanent BTD with Discretionary Total BTD; and, Total BTD with Discretionary Total BTD. However, none of these variables were utilised together in any regression equation.

Test of Hypotheses

Hypothesis One

H01: There is no significant relationship between temporary BTD and Altman's Z-score of listed consumer goods firms

Table 4.3: Temporary BTD and Altman's Z-score

VARIABLE	Coefficient	Std. Error	t-Statistic	Prob.
C	-298.7172	109.9821	-2.716052	0.0073
TEMPORARY BTD	2.684251	1.382727	1.941273	0.0540
SIZE	12.01304	4.314195	2.784539	0.0060
LEV	3.970853	3.729511	1.064711	0.2886
GROWTH	0.000330	0.000117	2.825455	0.0053
ROA	-99.11487	46.89787	-2.113419	0.0361
CFO	-1.827799	0.454561	-4.021022	0.0001
	Effects Specification			
			S.D.	Rho
PERIOD RANDOM			0.000000	0.0000
IDIOSYNCRATIC RANDOM			71.56560	1.0000
	Weighted Statistics			
R-SQUARED	0.506348	Mean dependent var		-19.34150
ADJUSTED R-SQUARED	0.487951	S.D. dependent var		99.01394
S.E. OF REGRESSION	70.85202	Sum squared resid		808221.3
F-STATISTIC	27.52342	Durbin-Watson stat		1.416683
PROB(F-STATISTIC)	0.000000			
	Unweighted Statistics			
R-SQUARED	0.506348	Mean dependent var		-19.34150
SUM SQUARED RESID	808221.3	Durbin-Watson stat		1.416683

Source: E-Views 9

Interpretation:

The R-squared values of .506 for both weighted and unweighted statistics; and, adjusted R-squared value .488 (to account for sample size). These values describe the proportion of variance in the dependent variable explained by the independent and control variables. Thus, the model explains approximately 49% variation of the dependent variable. The F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) used to check the statistical significance of the model. The value of the statistic was 27.523 ($p < .05$); thus, the hypothesis that all the regression coefficients are zero is rejected. Both the F-statistics and adjusted R^2s for the regression suggest that the overall model is a good fit and explains most of the variations in Altman's Z-Score.

The coefficient and t-statistic of our variable of interest (Temporary BTD) is positive and statistically significant [t-statistic (1.941273), p (0.0540, <.05)]; thus, the alternate hypothesis is accepted and null rejected. Therefore, "There is a significant positive relationship between Temporary BTD and Altman's Z-score of listed consumer goods firms". The table shows that the test of the following control variables SIZE, GROWTH, ROA and CFO were significant in the

regression output. The results from table 4.3 show that SIZE (p = 0.0060), GROWTH (p = 0.0053), ROA(p = 0.0361), and CFO (p = 0.0001) showed p-values less than .05 and therefore significant. The results from the analysis further showed that the t statistics of ROA and CFO were negative; while, SIZE and GROWTH were positive. The variable LEV was positive but p-value greater than .05 (p=0.2886) which is not significant.

Hypothesis Two

H02: There is no significant relationship between permanent BTD and Altman's Z-score of listed consumer goods firms

Table 4.4: Permanent BTD and Altman's Z-score

VARIABLE	Coefficient	Std. Error	t-Statistic	Prob.
C	-253.0483	103.7677	-2.438604	0.0158
PERMANENT BTD	0.478153	0.542156	0.881947	0.3791
SIZE	10.25439	4.043033	2.536312	0.0122
LEV	0.991485	3.975629	0.249391	0.8034
GROWTH	0.000332	0.000160	2.078248	0.0393
ROA	-104.5732	48.54035	-2.154357	0.0327
CFO	-1.371180	0.478147	-2.867693	0.0047
	Effects Specification			
			S.D.	Rho
PERIOD RANDOM			0.000000	0.0000
IDIOSYNCRATIC RANDOM			72.72396	1.0000
	Weighted Statistics			
R-SQUARED	0.489941	Mean dependent var		-19.34150
ADJUSTED R-SQUARED	0.470933	S.D. dependent var		99.01394
S.E. OF REGRESSION	72.01979	Sum squared resid		835082.9
F-STATISTIC	25.77496	Durbin-Watson stat		1.377982
PROB(F-STATISTIC)	0.000000			
	Unweighted Statistics			
R-SQUARED	0.489941	Mean dependent var		-19.34150
SUM SQUARED RESID	835082.9	Durbin-Watson stat		1.377982

Source: E-Views 9

Interpretation:

The R-squared values of .489 for both weighted and unweighted statistics; and, adjusted R-squared value .470 (to account for sample size). These values describe the proportion of variance in the dependent variable explained by the independent and control variables. Thus, the model explains approximately 47% variation of the dependent variable. The F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) used to check the statistical significance of the model. The value of the statistic was 25.774 (p <.05); thus, the hypothesis that all the regression coefficients are zero is rejected. Both the F-statistics and adjusted R^2s for the regression suggest that the overall model is a good fit and explains most of the variations in Altman's Z-Score.

The coefficient and t-statistic of our variable of interest (Permanent BTD) is positive but statistically insignificant [t-statistic (0.881947), p (0.3791, >.05)]; thus, the alternate hypothesis is rejected and null accepted. Therefore, "There

is no significant relationship between Permanent BTD and Altman's Z-score of listed consumer goods firms". The table also shows that the test of the following control variables SIZE, GROWTH, ROA and CFO were significant in the regression output. The results from table 4.4 show that SIZE (p = 0.0122), GROWTH (p = 0.0393), ROA(p = 0.0327), and CFO (p = 0.0047) showed p-values less than .05 and therefore significant. The results from the analysis further showed that the t statistics of ROA and CFO were negative; while, SIZE and GROWTH were positive. The variable LEV was positive but p-value greater than .05 (p=0.8034) which is not significant.

Hypothesis Three

H03: There is no significant relationship between total BTD and Altman's Z-score of listed consumer goods firms

Table 4.5: Total BTD and Altman's Z-score

VARIABLE	Coefficient	Std. Error	t-Statistic	Prob.
C	-230.7370	100.1479	-2.303963	0.0225
TOTAL BTD	1.810187	0.558299	3.242324	0.0014
SIZE	9.428568	3.909231	2.411873	0.0170
LEV	0.661216	3.747155	0.176458	0.8602
GROWTH	0.000255	0.000139	1.836571	0.0681
ROA	-101.8937	46.90784	-2.172210	0.0313
CFO	-1.461495	0.396208	-3.688703	0.0003
	Effects Specification			
			S.D.	Rho
PERIOD RANDOM			0.000000	0.0000
IDIOSYNCRATIC RANDOM			71.58923	1.0000
	Weighted Statistics			
R-SQUARED	0.507007	Mean dependent var		-19.34150
ADJUSTED R-SQUARED	0.488635	S.D. dependent var		99.01394
S.E. OF REGRESSION	70.80466	Sum squared resid		807141.3
F-STATISTIC	27.59615	Durbin-Watson stat		1.335078
PROB(F-STATISTIC)	0.000000			
	Unweighted Statistics			
R-SQUARED	0.507007	Mean dependent var		-19.34150
SUM SQUARED RESID	807141.3	Durbin-Watson stat		1.335078

Source: E-Views 9

Interpretation:

The R-squared values of .507 for both weighted and unweighted statistics; and, adjusted R-squared value .488 (to account for sample size). These values describe the proportion of variance in the dependent variable explained by the independent and control variables. Thus, the model explains approximately 49% variation of the dependent variable. The F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) used to check the statistical significance of the model. The value of the statistic was 27.596 (p <.05); thus, the hypothesis that all the regression coefficients are zero is rejected. Both the F-statistics and adjusted R^2s for the regression suggest that the overall model is a good fit and explains most of the variations in Altman's Z-Score.

The coefficient and t-statistic of our variable of interest (Total BTD) is positive and statistically significant [t-statistic (3.242324), p (0.0014, <.05)]; thus, the alternate hypothesis is accepted and null rejected. Therefore, "There is a significant relationship between Total BTD and Altman's Z-score of listed consumer goods firms".
The table also shows that the test of the following control variables SIZE, GROWTH, ROA and CFO were significant in the regression output. The results from table 4.5 show that SIZE (p = 0.0170), ROA(p = 0.0313), and CFO (p = 0.0003) showed p-values less than .05 and therefore significant; while, GROWTH (p = 0.0681) was significant at 10%.The results from the analysis further showed that the t statistics of ROA and CFO were negative; while, SIZE and GROWTH were positive. The variable LEV was positive but p-value greater than .05 (p=0.8602) which is not significant.

Hypothesis Four

H04: There is no significant relationship between discretionary total BTD and Altman's Z-score of listed consumer goods firms

Table 4.6: Discretionary Total BTD and Altman's Z-score

VARIABLE	Coefficient	Std. Error	t-Statistic	Prob.
C	-131.7386	76.98980	-1.711118	0.0890
DISCRETIONARY TOTAL BTD	-1.881418	0.471607	-3.989382	0.0001
SIZE	5.336705	3.113786	1.713896	0.0885
LEV	11.12514	4.770462	2.332088	0.0209
GROWTH	0.000421	0.001965	0.214315	0.8306
ROA	-113.0786	14.29673	-7.909404	0.0000
CFO	-0.790620	0.273140	-2.894559	0.0043
R-SQUARED	0.534247	Mean dependent var		-19.34150
ADJUSTED R-SQUARED	0.516890	S.D. dependent var		99.01394
S.E. OF REGRESSION	68.82076	Akaike info criterion		11.34166
SUM SQUARED RESID	762543.9	Schwarz criterion		11.47183
LOG LIKELIHOOD	-945.6996	Hannan-Quinn criter.		11.39449
F-STATISTIC	30.77946	Durbin-Watson stat		1.522239
PROB(F-STATISTIC)	0.000000			

UNWEIGHTED STATISTICS

R-SQUARED	0.534247	Mean dependent var	-19.34150
SUM SQUARED RESID	762543.9	Durbin-Watson stat	1.522239

Source: E-Views 9

Interpretation:

The R-squared values of .534 for both weighted and unweighted statistics; and, adjusted R-squared value .516 (to account for sample size). These values describe the proportion of variance in the dependent variable explained by the independent and control variables. Thus, the model explains approximately 52% variation of the dependent variable. The F-statistic (ratio of the mean regression sum of squares divided by the mean error sum of squares) used to check the statistical significance of the model. The value of the statistic was 30.779 (p <.05); thus, the hypothesis that all the regression coefficients are zero is rejected. Both the F-statistics and adjusted R^2s for the regression suggest that the overall model is a good fit and explains most of the variations in Altman's Z-Score.

The *coefficient* and *t-statistic* of our variable of interest (Discretionary Total BTD) is negative and statistically significant [t-statistic (-3.989382), p (0.0001, <.05)]; thus, the alternate hypothesis is accepted and null rejected. Therefore, "There is a significant relationship between Discretionary Total BTD and Altman's Z-score of listed

consumer goods firms". The test of the following control variables SIZE, LEV, ROA and CFO were significant in the regression output. The results from table 4.6 show that LEV (p = 0.0209), ROA(p = 0.0000), and CFO (p = 0.0043) showed p-values less than .05 and therefore significant; while, SIZE (p=0.0885) was significant at 10%.The results from the analysis further showed that the t statistics of ROA and CFO were negative; while, SIZE and LEV were positive. The variable GROWTH was positive but p-value greater than .05 (p=0.8306) which is not significant.

Conclusion and Recommendations

The main objective of the study is to ascertain the relationship between Book Tax Differences (BTDs) and financial distress of listed consumer goods firms in Nigeria. The major findings from the empirical data analysis were that this a significant positive effect of temporary and total BTD on Altman's Z score index, and, permanent BTD also had a positive but non-significant effect on the Altman's Z score measure. However, discretionary total BTD had a significant negative relationship with the Z score index.

Based on the findings of the study, the following recommendations were made:

1. Auditors should place emphasis on book tax information because of its ability to signal firms facing financial constraint. This would help safeguard several firms from facing a distress situation in the near future as managers often increase tax planning activities when facing financial constraints.

2. Shareholders should re-evaluate the wealth retention ability of managers from tax planning activities as these may signal opportunistic behavior by managers or the need to conceal a worsening financial condition (e.g., the Enron Case, etc.).

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