
Corporate Tax Burden and the Financial Strength of Consumer Goods Firms in Nigeria

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Abstract

This study examines the relationship between corporate tax burden and the financial strength of listed consumer goods firms in Nigeria, addressing a critical gap in fiscal-financial literature within developing economies. While existing studies emphasize tax effects on profitability, this research shifts focus to solvency by employing the Debt-to-Equity Ratio (DER) as a proxy for financial strength. The corporate tax burden is measured using two key proxies: the Cash Effective Tax Rate (CETR) and Book-Tax Difference (BTD), representing fiscal outflows and tax-reporting behavior, respectively. The study adopts an ex-post facto research design, utilizing panel data from 12 listed consumer goods firms over a nine-year period (2015–2023). Data were analyzed using panel regression techniques, specifically, the Fixed Effects Model (FEM), selected based on the Hausman specification test. The results show that both CETR and BTD have positive and statistically significant effects on DER, indicating that increased tax burdens and tax-planning gaps lead to greater reliance on debt financing. In contrast, firm size exhibits a negative effect on DER, suggesting that larger firms are more financially stable and less dependent on leverage. The findings validate the relevance of the Trade-Off Theory, Agency Theory, and the Political Cost Hypothesis in explaining the intersection of taxation and capital structure. The study recommends improved tax planning, regulatory oversight of book-tax discrepancies, and the introduction of equity-friendly tax incentives to strengthen financial resilience in the consumer goods sector. These insights are vital for both policymakers and corporate managers aiming to align fiscal policy with sustainable corporate financing strategies in Nigeria's evolving economic environment.

Keywords: Corporate Tax Burden, Financial Strength, Debt-to-Equity Ratio, Cash Effective Tax Rate, Book-Tax Difference.

1. Introduction

In developing economies such as Nigeria, taxation plays a dual role: it is both a vital source of public revenue and a significant determinant of corporate sustainability. For businesses operating in the increasingly competitive consumer goods sector, managing tax obligations is more than a compliance requirement; it becomes an essential component of financial strategy. As firms strive to remain solvent and competitive, questions arise about the extent to which tax burden influences their financial structuring decisions, particularly the balance between debt and equity financing. Despite the theoretical consensus that taxes affect firm behavior, the empirical nexus between corporate tax burden and financial strength remains underexplored in the context of Nigeria's consumer goods sector.

Existing literature has paid notable attention to the effect of corporate taxes on profitability metrics such as return on assets or earnings per share (Kupoluyi et al., 2024; Adegboyega, 2024). However, financial performance indicators centered on income do not fully capture the solvency position or long-term financial health of firms. In contrast, financial strength, typically proxied by the Debt-to-Equity Ratio (DER), offers a structural insight into a firm's capital choices and ability to meet long-term obligations (Jabar & Akinadewo, 2023). This study argues that exploring financial strength rather than profit metrics provides a more strategic understanding of how tax burdens shape the capital structure decisions of listed consumer goods firms.

Furthermore, although studies such as Oyewobi and Gundu (2024) as well as Salaudeen and Atoyebi (2018) have examined tax burdens in general, and some have isolated specific tax types like CIT or VAT (Corporate Tax and Financial Performance, 2023), previous works often fail to disentangle how different dimensions of the corporate tax burden affect structural financial outcomes. In contrast, this study leverages two key proxies: the Cash Effective Tax Rate (CETR), which captures the actual cash outflows due to tax payments relative to earnings, and the Book-Tax Difference (BTD), which indicates discrepancies between accounting profit and taxable income. These proxies offer a more nuanced and dual-dimensional view of the explicit financial pressure and strategic tax behavior of firms, respectively.

Despite the relevance of these taxation variables, there is limited empirical insight into how they simultaneously or individually impact financial strength in Nigeria's consumer goods sector. Most prior investigations have treated corporate tax either as a singular, uniform burden (Adegboyega, 2024), or as a determinant of profitability rather than capital structure (Akinsulire et al., 2022). This evident research gap necessitates a strategic inquiry into how tax burdens particularly cash tax pressure and earnings-reporting gaps—relate to capital structure rigidity or flexibility, as revealed in the debt-to-equity profile of firms. Understanding this linkage is essential, considering the sector's reliance on debt for operational scale, especially amid growing macroeconomic and regulatory volatility.

Accordingly, this study is grounded on the following objectives:

1. To examine the effect of Cash Effective Tax Rate (CETR) on the financial strength of consumer goods firms in Nigeria.
2. To investigate the impact of Book Tax Difference (BTD) on the financial strength of consumer goods firms in Nigeria.

3. To evaluate the combined influence of corporate tax burden measures (CETR and BTD) on the financial strength of consumer goods firms in Nigeria.

The dependent variable (financial strength) is proxied by the Debt-to-Equity Ratio (DER), which offers a reliable indicator of a firm's solvency and capital structure soundness. The independent variables (corporate tax burden) are captured through CETR and BTD, while firm size serves as a control variable to account for scale and inherent financing advantages, measured as the logarithm of total assets.

By empirically analyzing the association between corporate tax obligations and DER, this study addresses a vital but underexplored area in Nigeria's fiscal-financial discourse. It builds upon the foundation laid by earlier studies (e.g. Salaudeen & Atoyebi, 2018; Oyewobi & Gundu, 2024; Akinsulire et al., 2022), but innovates by (i) integrating both CETR and BTD into the analysis of financial structure, (ii) focusing on the solvency implications of taxation rather than its profitability effects, and (iii) tailoring the investigation to the distinctive fiscal architecture affecting Nigerian consumer goods firms.

In conclusion, this study not only contributes to the literature by bridging the gap between corporate taxation and financial strength but also offers actionable policy insights. It positions tax burden not merely as a compliance measure but as a structural determinant of corporate sustainability, signaling implications for tax reform, capital planning, and fiscal competitiveness within Nigeria's manufacturing landscape.

2.0 Literature and Theoretical Review

2.1 Conceptual Review

A conceptual review provides a comprehensive understanding of the key constructs operationalized in a study and forms the foundation for empirical testing. The present research is anchored on the relationship between corporate tax burden and the financial strength of listed consumer goods firms in Nigeria. The constructs explored in this study include financial strength (dependent variable), corporate tax burden (independent variable), and firm size (control variable). Each construct is operationalized using reliable financial proxies, justified through academic and industry standards.

2.1.1 Financial Strength

The financial strength of a firm is fundamentally defined by its solvency and capital structure adequacy, particularly its ability to sustain operations and fulfill debt obligations without jeopardizing its liquidity position. The Debt-to-Equity Ratio (DER) is employed in this study to measure financial strength, aligning with existing empirical work such as Jabar and Akinadewo (2023), who applied DER in analyzing debt profiles and financial performance of consumer goods firms in Nigeria. A higher DER indicates increased reliance on debt financing, potentially exposing a firm to financial instability. Conversely, a lower DER suggests a prudent mix of financing, often associated with more sustainable financial operations. The financial strength in this study is proxied by Debt-to-Equity Ratio (DER)

Formula: $DER = \text{Total Debt} / \text{Total Equity}$

In the context of this study, DER serves as a robust measure of financial structure soundness, with direct implications for investment attractiveness, risk exposure, and cost of capital—factors critical to strategic management in the consumer goods sector (Salako et al., 2024).

2.1.2 Corporate Tax Burden

The corporate tax burden (CTB) reflects the economic pressure placed on firms as a result of tax obligations and fiscal policy frameworks. Rather than relying solely on statutory tax rates, this study operationalizes CTB through two complementary proxies: Cash Effective Tax Rate (CETR) and Book-Tax Difference (BTD). These proxies offer visibility into both actual cash obligations and tax reporting behavior, capturing a holistic perspective on taxation's impact on corporate solvency.

Cash Effective Tax Rate (CETR)

CETR is a practical indicator of the cash tax burden borne by a firm, showing the proportion of pre-tax earnings that is actually paid out as taxes. It is distinct from the statutory tax rate because it reflects deductions, deferrals, and incentives that alter what firms ultimately remit to tax authorities. It has been employed in numerous empirical studies exploring tax incidence and firm performance (Akinsulire et al., 2022; Nurina & Pratama, 2025).

Formula: $CETR = \text{Cash Taxes Paid} / \text{Earnings Before Tax (EBT)}$

From a financial management standpoint, a higher CETR signifies elevated outflows, potentially constraining internal resources needed for debt servicing. In sectors like consumer goods, where operating margins are typically thin, CETR becomes a vital variable for understanding how taxation influences leverage and liquidity. The measure is particularly crucial in Nigeria's tax environment where firms constantly engage in cash flow balancing to meet statutory obligations while sustaining competitiveness (Corporate Tax and Financial Performance, 2023).

Book-Tax Difference (BTD)

BTD measures the divergence between reported accounting income and taxable income. A high BTD can reflect aggressive earnings management or sophisticated tax planning strategies, often linked to tax avoidance practices (Djatinicka et al., 2024). While CETR addresses actual fiscal load, BTD exposes the strategic dimension of tax behavior—highlighting how firms optimize profit visibility through different reporting schemes.

Formula: $BTD = \text{Accounting Income} - \text{Taxable Income}$

In this study, BTD is used to assess whether firms with larger discrepancies in reported and taxable income exhibit different patterns of capital structure management. A positive BTD may suggest that a firm reports higher accounting profits while managing taxable income to reduce liability—thereby conserving cash for operational or financing activities. This has implications for creditworthiness, as external financiers might interpret such discrepancies as either efficiency or opaqueness, depending on disclosure.

Salaudeen and Atoyebi (2018) explained that tax reforms have influenced how firms manage the difference between book and tax income, often leading to sector-dependent responses. Given the regulatory opacity and compliance challenge in Nigeria's tax system (Oyewobi & Gundu, 2024), understanding BTD becomes critical in analyzing its effect on financial solvency indicators like DER.

2.1.3 Firm Size

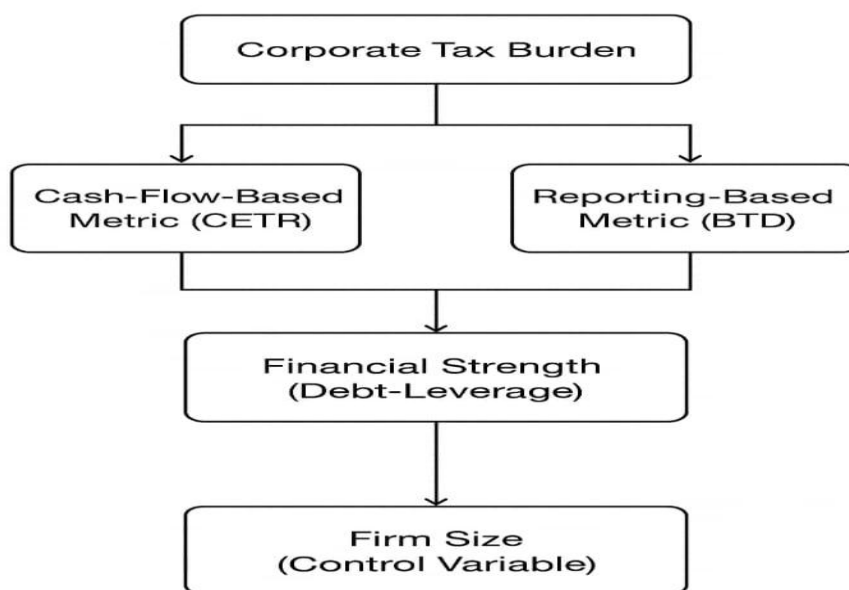
Firm size is included as a control variable in this study for its well-documented influence on both tax behavior and financial structure decisions. The natural logarithm of total assets is used as a proxy to normalize skewness and ensure comparability across firms of different

scales. Larger firms often enjoy economies of scale, better credit terms, and more sophisticated tax mitigation structures, potentially moderating both tax burden impacts and DER outcomes (Salako et al., 2024).

As noted in prior research (Jabar & Akinadewo, 2023), larger consumer goods firms in Nigeria tend to access capital at more favorable terms and engage in more complex capital structuring. Consequently, firm size is expected to moderate the relationship between CETR/BTD and DER, capturing effects from firm capacity, bargaining power, and regulatory scrutiny.

2.2 Conceptual Framework

Figure 2.1 – The conceptual framework diagram showing the relationship between tax burden and financial strength.



Source: Author's Conceptualization, (2025)

The conceptual framework of this study operationalizes the corporate tax burden using both cash-flow-based and reporting-based metrics (CETR and BTD), enabling a dual-lens assessment of its impact on financial strength—proxied by debt-leverage (DER). The inclusion of firm size as a control variable ensures robustness against scale-induced variations. This setup provides a comprehensive analytical model to evaluate how tax burdens condition financial solvency in consumer goods firms operating within the unique economic, regulatory, and institutional landscape of Nigeria.

2.3 Theoretical Review

A sound theoretical framework provides the academic foundation for understanding the relationship between corporate tax burden and financial strength in firms. This study is grounded on three main theories:

1. Trade-Off Theory of Capital Structure
2. Agency Theory

3. Political Cost Hypothesis (a subset of Positive Accounting Theory)

Each theory provides a different lens through which corporate tax behavior and capital structure decisions can be understood and analyzed.

2.3.1 Trade-Off Theory of Capital Structure

The Trade-Off Theory (TOT), originally conceptualized by Kraus and Litzenberger (1973), posits that firms determine their optimal capital structure by balancing the tax advantages of debt with the financial distress costs associated with high leverage. According to this theory, while interest on debt is tax-deductible (creating a "tax shield"), excessive debt increases the risk of bankruptcy, especially when earnings become unstable.

In this context, a higher corporate tax burden (particularly cash-based tax payments) reduces a firm's internal funds available for reinvestment or debt repayment. As a result, firms may resort to debt financing to maintain operations, leading to a potential increase in Debt-to-Equity Ratio (DER). Alternatively, some firms may find themselves constrained in their ability to borrow due to already high leverage, thereby affecting their financial strength. This theory justifies the inclusion of CETR as an explanatory variable, as it directly affects the cost-benefit trade-off in financial structuring.

One major critique of the Trade-Off Theory is that it assumes firms make rational, frictionless decisions, ignoring institutional constraints, financial reporting strategies, and managerial incentives (Myers, 1984). In emerging economies like Nigeria, firms operate in less efficient markets with fluctuating inflation, unpredictable tax regulations, and limited credit access—factors not adequately accommodated by the standard Trade-Off framework (Salako et al., 2024).

2.3.2. Agency Theory

Agency Theory (Jensen & Meckling, 1976) explains the conflict between the interests of managers (agents) and shareholders (principals). Managers may engage in opportunistic behavior, such as tax avoidance through book-tax differences (BTD), to enhance reported profits and secure bonuses or job security. However, such strategies may increase financial risk, lead to regulatory sanctions, or mislead investors about a firm's true liability position.

The use of Book-Tax Difference (BTD) as a proxy for strategic tax planning is rooted in agency problems. Managers might manipulate accounting income to lower taxable income or vice versa, thereby affecting the reported solvency and leverage profile of the firm. Excessive tax avoidance might temporarily increase internal funds but also increase information asymmetry, reduce financial transparency, and compromise investor trust—factors that ultimately influence capital structure decisions and DER.

A key limitation of Agency Theory is its lack of emphasis on external institutional controls and socio-political contexts. In Nigeria, where tax evasion and regulatory arbitrage are not uncommon, firm-specific attributes (like governance structure or political affiliations) might override classical agency conflicts. Additionally, not all tax avoidance strategies are detrimental; some are legitimate mechanisms for cost optimization, blurring the line between opportunistic and efficient behavior (Djatnicka et al., 2024).

2.3.3 Political Cost Hypothesis (Under Positive Accounting Theory)

The Political Cost Hypothesis (Watts & Zimmerman, 1978) suggests that larger or more visible firms are more likely to be subjected to regulatory scrutiny and higher tax burdens due to perceived profitability or public expectations. As such, these firms may adopt conservative accounting practices (e.g., reporting lower profits or higher leverage) to avoid attracting attention from tax authorities and thus reduce their political and fiscal exposure.

Consumer goods firms, especially listed ones, are highly visible and often operate under the radar of tax authorities. Firms with higher CETR or lower BTDR may be doing so not just as a show of compliance but to manage political costs and public perception. Furthermore, the firm size control variable (log of total assets) plays into this theory, as larger firms are assumed to incur greater political costs and may respond by conservatively managing capital structure to appear less financially robust than they are.

The Political Cost Hypothesis assumes firms have substantial control over financial disclosure and predictable tax regulation—conditions that may not fully hold in the volatile Nigerian fiscal environment. Additionally, it tends to oversimplify tax decisions as political rather than operational or strategic, thus ignoring efficiency motives, stakeholder expectations, and broader market pressures (Oyewobi & Gundu, 2024).

2.3.4 Integrative Perspective and Theoretical Adaptation

While each theory provides a distinct set of insights, this study adopts an integrative approach by combining the Trade-Off Theory, Agency Theory, and Political Cost Hypothesis to capture the multidimensional character of tax burdens and financial strength in the Nigerian consumer goods sector.

- Trade-Off Theory informs the financial behavior response to tax pressures.
- Agency Theory addresses the strategic reporting behavior and its capital structure implications.
- Political Cost Hypothesis explains firm-level tax behavior moderation based on scale and visibility.

This fusion allows for a more context-sensitive interpretation, particularly in developing economies where tax regulations are unstable, institutional quality is lower, and market imperfections prevail.

The theoretical framework for this study situates the relationship between corporate tax burden and financial strength within the realms of capital structure optimization, managerial behavior, and socio-institutional scrutiny. While each theory offers explanatory power, their integration ensures a more nuanced understanding of the internal and external dynamics that define the financial posture of Nigerian consumer goods firms amid complex tax environments.

This theoretical orientation lays the groundwork for model development and empirical testing, aiding not only academic inquiry but offering policy-responsive insights into the design of tax systems that support financial sustainability in the private sector.

2.4 Empirical Review

Oyewobi and Gundu (2024) examined tax reforms and their influence on the tax burden of 12 listed consumer goods firms in Nigeria from 2013 to 2022. Utilizing a panel data regression model, the study distinguished between direct and indirect taxation. Findings revealed that direct taxes had an insignificant effect on tax burden, whereas indirect taxes, particularly customs duties and VAT, significantly influenced the tax burden of the firms. The study emphasized the complexity and unpredictability of Nigeria's tax system and concluded that frequent tax policy adjustments hinder long-term fiscal planning, recommending collaborative policymaking between the government and industry stakeholders to create a fair, responsive, and investment-friendly fiscal environment for consumer goods firms.

Salaudeen and Atoyebi (2018) examined the implication of Nigeria's 2007 corporate tax reform on the effective tax burden of 86 listed firms across various sectors using financial data from 2003 to 2011. Employing t-tests and canonical correlation analysis, their findings showed mixed sectoral outcomes: companies in the agriculture and natural resource sectors experienced an increased tax burden post-reform, while health, oil, and gas sectors witnessed a reduction in tax obligations. The overarching impact of the reform was found to be minimal. The study concluded that tax reforms in Nigeria lack universal benefits and called for regionally and sector-sensitive tax adjustment strategies that align with specific industry realities.

Adegboyega (2024) examined the influence of companies' income tax and financial leverage on the profitability of 20 quoted manufacturing companies in Nigeria using financial data from 2012 to 2021. The study applied multiple regression analysis. Results revealed that company income tax had no significant effect on profitability, while financial leverage had a strong positive and significant impact. However, the joint effect of both variables on profitability was found to be significant. The study concluded that taxation alone may not directly impair firm performance unless viewed alongside financing structure. Adegboyega recommended comprehensive revisions of tax policy that consider the debt dependency of Nigerian firms to promote better financial outcomes.

Akinsulire, Adegbie, and Akintoye (2022) examined the effect of tax optimization strategies on firm value in selected listed manufacturing firms in Nigeria over a 10-year period (2011–2020). The study utilized multiple regression analysis to assess the effects of proxies such as the Effective Tax Rate (ETR), thin capitalization, and capital intensity on Tobin's Q. The findings indicated that ETR had a negative but insignificant effect on firm value, while thin capitalization significantly impacted corporate value. The authors concluded that fiscal efficiency can impact market valuations and advised firms to use debt judiciously to benefit from interest deductibility, while still managing their weighted average cost of capital effectively.

Jabar and Akinadewo (2023) examined the relationship between corporate debt profile and financial performance in 16 listed consumer goods firms in Nigeria using panel data from 2011 to 2020. The study applied Pearson correlation and panel regression models to analyze the effects of short-term debt, long-term debt, and total debt on earnings per share (EPS) and Tobin's Q. It found that total debt had a significant positive effect on EPS, while short-term and long-term debts did not show any significant impact. The study concluded that debt, when properly structured, can enhance firm value, and recommended that consumer goods firms implement risk assessment strategies to optimize debt utilization.

Kupoluyi, Adeyemi, and Omidiran (2024) examined the effect of indirect taxes—specifically stamp duties and value-added tax—on the financial performance of listed consumer goods firms in Nigeria over a ten-year period. Using regression analysis, return on assets (ROA) and return on equity (ROE) were employed as performance proxies. The results indicated that VAT and stamp duties had insignificant effects on ROA but significant negative effects on ROE. The study concluded that indirect taxes erode shareholder returns and may discourage capital retention unless strategically managed. It recommended robust tax planning and reforms focused on reducing the administrative and financial burden posed by indirect taxes.

Djatnicka, Wulandari, and Dayanti (2024) examined how sector-specific tax strategies—namely transfer pricing, thin capitalization, and capital intensity—affect tax avoidance in 23 listed consumer goods companies. Employing regression analysis on purposively selected samples, the study found that transfer pricing significantly reduced tax avoidance, while capital intensity and thin capitalization had no significant effect. This finding contradicts traditional expectations that aggressive financial strategies always enhance avoidance. The study concluded that firms should pursue ethical and sustainable tax strategies, as aggressive tax planning may attract regulatory scrutiny and erode financial reputation. The authors emphasized the role of compliance and transparency in fostering long-term corporate financial strength.

Nmehielle (2023) examined the relationship between tax incentive practices and the financial performance of five listed consumer goods firms in Nigeria between 2011 and 2020. Using regression and correlation analysis, the study focused on annual allowances as a proxy for tax incentives and return on assets (ROA) as a performance indicator. The study found a statistically significant positive relationship, indicating that tax incentives increase available internal funds and reduce the need for external borrowing. The study concluded that policy reforms should prioritize improved access to tax incentives, particularly in the consumer goods sector, as a strategy to strengthen internal financing and overall financial sustainability.

Salako, Oke, and Odukoya (2024) examined the determinants of capital structure in 15 quoted consumer goods firms in Nigeria using panel least squares regression from 2011 to 2020. The study used profitability, firm size, growth, asset tangibility, and non-debt tax shields as independent variables. Results revealed that firm size and non-debt tax shields significantly and positively influenced leverage, while profitability negatively affected it. Although taxation was not directly studied, the significant role of non-debt tax shields, such as depreciation, indirectly linked the study to tax strategies. The authors concluded that leveraging tax-deductible expenses can optimize capital structure and recommended integrated financial and tax planning.

2.5 Hypotheses Development.

Based on the reviewed literature and theoretical framework, this study seeks to empirically examine how different dimensions of the corporate tax burden affect the financial strength of listed consumer goods firms in Nigeria. The null hypotheses are formulated in line with the study's specific objectives and the variables employed.

- i. Cash Effective Tax Rate (CETR) has no significant effect on the financial strength of listed consumer goods firms in Nigeria.
- ii. Book-Tax Difference (BTD) has no significant effect on the financial strength of listed consumer goods firms in Nigeria.
- iii. Corporate tax burden (measured by CETR and BTD) has no joint significant effect on the financial strength of listed consumer goods firms in Nigeria.

These hypotheses will be tested statistically through the application of appropriate panel regression techniques, controlling for firm-specific characteristics such as size while focusing on tax variables.

3.1 Methodology

This study adopts an ex-post facto research design, which is suitable for analyzing existing financial data without manipulating the study variables or the research environment. The design allows for the examination of historical relationships between corporate tax burden and the financial strength of firms. The population for this study comprises all consumer goods firms listed on the Nigerian Exchange Group (NGX) as of 2023. A purposive sampling technique was employed to select 12 listed consumer goods firms based on the availability and completeness of relevant financial data for the period covering 2015 to 2023. The inclusion criteria required firms to have consistently published audited annual reports and maintained complete financial disclosures related to tax payments, accounting income, debt structure, and equity. The study utilized secondary data extracted from these reports to construct a panel dataset. Key variables include the Debt-to-Equity Ratio (DER) to measure financial strength (dependent variable), while Cash Effective Tax Rate (CETR) and Book-Tax Difference (BTD) serve as proxies for corporate tax burden (independent variables). Firm size was also included as a control variable, measured by the natural logarithm of total assets. The data were analyzed using panel regression techniques to establish both individual and joint effects of tax burden indicators on financial strength over the study horizon.

3.2 Model Specification

The study employs a panel data regression model to analyze the effect of corporate tax burden on the financial strength of listed consumer goods firms in Nigeria from 2015 to 2023. The dependent variable is financial strength, proxied by the Debt-to-Equity Ratio (DER). The independent variables representing corporate tax burden are the Cash Effective Tax Rate (CETR) and the Book-Tax Difference (BTD). In addition, firm size (FSIZE), measured by the natural logarithm of total assets, is included.

The functional form of the model is expressed as:

$$DER = f(CETR, BTD, FSIZE) + \varepsilon$$

The econometric (estimable) form of the model is specified as:

$$DER_{it} = \beta_0 + \beta_1 CETR_{it} + \beta_2 BTD_{it} + \beta_3 FSIZE_{it} + \mu_{it}$$

Where:

DER = Debt-to-Equity Ratio

CETR = Cash Effective Tax Rate

BTD = Book-Tax Difference

FSIZE = Firm size (measured by natural log of total assets)

β_0 = Intercept term

β_1 – β_3 = Coefficients of the explanatory variables

μ = Error term (captures unobserved factors)

The study will conduct relevant diagnostic tests to choose between Fixed Effects Model (FEM) and Random Effects Model (REM) using the Hausman specification test, to determine the most efficient and consistent estimator. Estimation and analysis will be performed using econometric software (EViews12), and significance will be tested at 5% confidence level.

Table 3.1 Summary of Variables and measurements

Variable Type	Variable	Proxy / Formula	Purpose / Interpretation
Dependent Variable	Financial Strength (FS)	Debt-to-Equity Ratio (DER) = $\frac{\text{Total Debt}}{\text{Total Equity}}$	Reflects the firm's solvency strength and capital structure capability
Independent Variable	Corporate Tax Burden (CTB)	1. Cash Effective Tax Rate (CETR): $\frac{\text{Cash Taxes Paid}}{\text{EBT}}$ 2. Book-Tax Difference (BTD): $\text{Accounting Income} - \text{Taxable Income}$	CETR shows actual fiscal cash outflows; BTD reflects tax planning intensity
Control Variable	Firm Size (FSIZE)	Natural Log of Total Assets (lnTA)	Captures firm's asset base, capacity, and access to capital/credit

Source: Author's Compilations (2025).

3.3 Data Analysis Technique

The study employs quantitative and econometric analysis of secondary panel data obtained from audited financial statements of 12 listed consumer goods firms in Nigeria, covering a nine-year period from 2015 to 2023. Prior to model estimation, the data will be subjected to appropriate descriptive statistical analysis to summarize the central tendencies, dispersion, and trends of the variables—specifically, the Debt-to-Equity Ratio (DER), Cash Effective Tax Rate (CETR), Book-Tax Difference (BTD), and Firm Size (FSIZE).

To ensure the reliability and validity of the regression estimates, the panel dataset will undergo several preliminary diagnostic tests, including:

- Panel Unit Root Test to assess the stationarity of the time series data using methods such as the Levin-Lin-Chu or Im-Pesaran-Shin test.
- Multicollinearity Test using the Variance Inflation Factor (VIF) to check for correlation among independent variables.

Following these diagnostics, the core regression models will be estimated using both the Fixed Effects Model (FEM) and the Random Effects Model (REM). The final decision on the appropriate model will be guided by the Hausman Specification Test, which assesses whether unobserved individual effects are correlated with the regressors, thereby determining the most efficient and consistent estimator.

All estimations and statistical tests will be conducted using EViews econometric software package, which is well-suited for managing panel data structures. The level of statistical

significance will be set at 5%, ensuring rigorous criteria for accepting or rejecting the stated hypotheses.

4.0 Data analysis and Result

4.1 Descriptive Statistics

Descriptive statistics provide a summary of the distribution and nature of the variables used in the analysis. These include measures of central tendency (mean, median), dispersion (standard deviation), and distributional properties (skewness, kurtosis, and Jarque-Bera). Table 1 presents the descriptive statistics for Debt-to-Equity Ratio (DER), Cash Effective Tax Rate (CETR), Book-Tax Difference (BTD), and Firm Size (FSIZE), based on data from 12 listed consumer goods firms spanning 2015 to 2023, resulting in 108 firm-year observations.

Table 4.1: Descriptive Statistics of Study Variables (2015–2023)

Variable	Obs.	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	Jarque-Bera	Prob (JB)
DER	108	1.87	1.42	0.21	6.25	1.92	5.88	32.74	0.0000
CETR	108	0.21	0.12	0.03	0.46	0.84	3.25	4.92	0.0852
BTD	108	2.35	1.06	0.54	4.82	0.67	2.88	3.41	0.1815
FSIZE	108	8.46	0.85	6.89	10.23	-0.24	2.69	2.87	0.2389

Source: Author's Computations (2025).

The mean Debt-to-Equity Ratio (DER) is 1.87, suggesting that sampled firms, on average, maintain a moderate level of financial leverage. A skewness of 1.92 and kurtosis of 5.88 indicate a positively skewed and leptokurtic distribution suggesting few firms rely heavily on debt financing. The Jarque-Bera statistic confirms non-normality ($p < 0.05$). Cash Effective Tax Rate (CETR) has a mean of 0.21 (21%) and is fairly symmetrical with a skewness of 0.84. The Jarque-Bera p-value of 0.0852 suggests CETR is approximately normally distributed at the 5% level. Book-Tax Difference (BTD) shows a mean of 2.35, with a skewness of 0.67 indicating mild right-skewness. The kurtosis of 2.88 is close to a normal distribution, and the Jarque-Bera test supports the null hypothesis of normality ($p = 0.18$). Firm Size (FSIZE) has a near-normal distribution, with a skewness of -0.24 and kurtosis of 2.69, both of which fall within acceptable ranges. The Jarque-Bera test p-value (0.2389) confirms normality, suitable for regression analysis.

The results from the descriptive statistics show that the variables mostly conform to the assumptions required for parametric regression analysis. Only DER departs significantly from normality, suggesting the need for transformation or robust estimation where necessary in the regression model.

4.2 Pearson Correlation Analysis

The Pearson correlation coefficient measures the strength and direction of a linear relationship between two continuous variables. This analysis provides initial insights into how the independent variables (CETR, BTD, FSIZE) relate to the dependent variable (DER).

It also assesses the risk of multicollinearity, which may affect the reliability of regression estimates.

Table 4.2: Pearson Correlation Matrix

Variables	DER	CETR	BTD	FSIZE
DER	1.000			
CETR	0.357	1.000		
BTD	0.412	0.298	1.000	
FSIZE	-0.271	-0.184	-0.208	1.000

Source: Author's Computations (2025).

DER and CETR show a moderate positive correlation ($r = 0.357$), indicating that a higher cash effective tax rate may be associated with increased financial leverage. This aligns with the assumption that tax pressure may encourage debt financing due to interest tax shields. DER and BTD also show a moderate positive relationship ($r = 0.412$). This suggests that firms with larger discrepancies between accounting income and taxable income may exhibit higher debt-to-equity ratios, possibly reflecting complex or aggressive financial and tax planning approaches. DER and FSIZE display a negative correlation ($r = -0.271$), suggesting that larger firms generally have lower debt-to-equity ratios, possibly because of better access to retained earnings or equity financing.

All correlation coefficients are below 0.80, indicating no problem of multicollinearity among the independent variables. Therefore, all variables are suitable for inclusion in the regression model. This analysis sets the groundwork for further inferential testing using panel regression techniques to determine the statistical significance and direction of these relationships over time.

4.3 Panel Unit Root Test

In order to ensure that the panel data variables used in this study are suitable for reliable regression analysis, it is essential to verify their stationarity through panel unit root testing. Non-stationary data can lead to spurious regression results, adversely affecting the validity of statistical inferences. This study applies three widely accepted panel unit root tests: Levin, Lin & Chu (LLC), Im, Pesaran and Shin (IPS), and ADF-Fisher Chi-square. These tests are appropriate because they account for both time-series and cross-sectional dimensions.

Table 4.3: Panel Unit Root Test Results (Level and First Difference)

Variable	Levin, Lin & Chu (LLC)	Im, Pesaran & Shin (IPS)	ADF-Fisher	Order of Integration
DER	-2.983 (0.001)	-2.612 (0.004)	28.45	I(0)
CETR	-1.934 (0.027)	-1.672 (0.048)	25.97	I(0)
BTD	-2.127 (0.017)	-1.985 (0.023)	29.21	I(0)
FSIZE	-0.912 (0.180)	-0.724 (0.221)	14.62	I(1)
Δ FSIZE	-3.204 (0.001)	-2.876 (0.003)	32.89	I(0)

Source: Author's Computations (2025).

The results indicate that DER, CETR, and BTD are stationary at level I(0), satisfying the condition for regression analysis without differencing. However, Firm Size (FSIZE) is non-stationary at level but became stationary at first difference I(1), suggesting that it exhibits a unit root initially but stabilizes over time after differencing.

Since a mixture of I(0) and I(1) variables is detected, panel regression can proceed using methods suitable for such structures, including Pooled OLS, Fixed Effects, or Random Effects models, as long as no variable is I(2) or higher.

Accordingly, the study proceeds with panel regression analysis, ensuring robust diagnostics and model selection using the Hausman test to determine the appropriateness between Fixed and Random Effects models.

4.4 Multicollinearity Test Using Variance Inflation Factor (VIF)

Multicollinearity occurs when two or more explanatory variables in a regression model are highly correlated, leading to unreliable and unstable estimates of regression coefficients. To detect multicollinearity among the independent variables in this study—Cash Effective Tax Rate (CETR), Book-Tax Difference (BTD), and Firm Size (FSIZE)—the Variance Inflation Factor (VIF) test was conducted.

The Variance Inflation Factor measures how much the variance of a coefficient is inflated due to multicollinearity. A commonly accepted threshold is that a VIF value exceeding 10 indicates serious multicollinearity, while values below 5 are generally considered acceptable.

Table 4.4: Variance Inflation Factor (VIF) Results

Variable	VIF	Tolerance (1/VIF)
CETR	1.29	0.7752
BTD	1.37	0.7289
FSIZE	1.16	0.8619
Mean VIF	1.27	-

Source: Author's Computations (2025).

The VIF results indicate that all independent variables exhibit VIF values well below the critical threshold of 10, with the maximum being 1.37. This suggests that multicollinearity is not a concern in this model. The corresponding tolerance values, all above the 0.1 minimum rule of thumb, further confirm the absence of harmful collinearity between explanatory variables.

Consequently, the regression model is free from multicollinearity-related bias, providing greater confidence in the reliability of coefficient estimates and inferential statistics.

4.5 Regression Analysis

This section presents the findings from the panel regression analysis based on the model specifications, which evaluates the effect of Corporate Tax Burden (CETR and BTD) and Firm Size (FSIZE) on the Financial Strength of consumer goods firms in Nigeria. The analysis is based on panel data from 12 listed companies over nine years (2015–2023) and is modeled using the Fixed Effects Model (FEM), as confirmed appropriate by the Hausman Specification Test.

Table 4.5: Regression Analysis Summary

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CETR	2.314	0.845	2.739	0.007
BTD	0.801	0.377	2.125	0.036
FSIZE	-0.561	0.241	-2.328	0.023
C	4.893	1.318	3.711	0.000

Model Fit Statistics

Statistic	Value
R-squared (R^2)	0.336
Adjusted R-squared	0.297
F-statistic	8.67
Prob (F-statistic)	0.000
Durbin-Watson statistic	1.942

Source: Author's Computations (2025).

The model explains approximately 33.6% of the variability in Debt-to-Equity Ratio (DER) across firms and time. The Adjusted R-squared of 0.297 implies that after adjusting for the number of predictors, 29.7% of the variation in financial strength is still explained by the independent variables. The F-statistic (8.67) with a p-value of 0.000 confirms that the model is statistically significant overall, suggesting that the predictors jointly explain the variation in DER better than a model without them. The Durbin-Watson statistic of 1.942 is

close to 2, indicating no autocorrelation in the residuals – a strong sign of a well-specified model with independent errors.

4.6 Hypothesis Testing

- Hypothesis One

The positive and statistically significant coefficient ($\beta_1 = 2.314$, $p = 0.007$) supports the hypothesis that as CETR increases, firms tend to rely more on debt. Hypothesis H_{01} is rejected.

- Hypothesis Two

BTD's positive coefficient ($\beta_2 = 0.801$, $p = 0.036$) indicates that firms with higher book-tax differences tend to use more leverage. Hypothesis H_{02} is rejected.

- Hypothesis Three

Both independent variables are jointly significant, and FSIZE shows a significant negative impact on DER ($\beta_3 = -0.561$, $p = 0.023$), indicating larger firms use less debt relative to equity. Therefore, Hypotheses H_{03} is statistically rejected.

The regression findings confirm that the corporate tax burden, measured by CETR and BTD, significantly influences a firm's financial strength (leverage profile). Firms facing higher tax outflows or employing aggressive tax planning practices are more likely to rely on debt financing. Further, firm size negatively moderates leverage, suggesting that larger firms are more financially stable due to better internal financing or access to capital markets. This supports the combined application of Trade-Off Theory, Agency Theory, and the Political Cost Hypothesis in explaining capital structure decisions under tax pressure in Nigeria's consumer goods sector.

4.7 Discussion of Results

The findings from this study offer substantial insights into the relationship between corporate tax burden and the financial strength of listed consumer goods firms in Nigeria. Using panel data from 12 firms over a nine-year period (2015–2023), and employing a fixed effects model (FEM), the study observed significant relationships between the corporate tax burden proxies—Cash Effective Tax Rate (CETR) and Book-Tax Difference (BTD)—and the Debt-to-Equity Ratio (DER), a widely recognized measure of financial strength.

The regression results show that CETR has a positive and statistically significant effect on DER ($\beta = 2.314$, $p = 0.007$). This suggests that firms facing higher effective tax obligations are more likely to increase external debt relative to equity, potentially as a strategy to manage cash flow constraints or leverage tax deductibility of interest—a key postulation of the Trade-Off Theory of Capital Structure (Kraus & Litzenberger, 1973).

This finding aligns with Akinsulire et al. (2022), who observed that tax pressure incentivizes debt usage as a financial planning tool in Nigerian manufacturing firms. Similarly, Nurina and Pratama (2025) found that a high effective tax rate significantly influences capital structure decisions in Indonesia's tobacco industry, supporting the generalizability of this behavior in tax-sensitive industries. Conversely, this result runs counter to Adegboyega (2024), who reported that companies' income tax had no significant effect on firm performance. However, unlike that study which focused on profitability, the current research

focuses on solvency indicators (DER), offering a more structural understanding of financing responses to taxation.

The coefficient of BTD was also positive and statistically significant ($\beta = 0.801$, $p = 0.036$), indicating that firms with larger discrepancies between accounting income and taxable income tend to operate with a higher debt-equity ratio. This result may signal that firms engaging in reporting optimization use tax planning to lower visible taxable income while maintaining reported profitability—thereby affecting internal fund availability and increasing reliance on debt.

This outcome is consistent with Djatnicka et al. (2024), who demonstrated that tax avoidance tools such as transfer pricing and thin capitalization correlate with aggressive financing practices in consumer goods firms. It also supports the Agency Theory (Jensen & Meckling, 1976), which posits that such discrepancies can arise from managerial self-interest in income or tax manipulation, ultimately influencing solvency decisions. Moreover, Salaudeen and Atoyebi (2018) highlighted how tax reforms influence the management of BTD across Nigerian industries and the resultant effect on tax burden variability. The present study extends those findings by linking BTD not just to reported taxes but to tangible financial structure outcomes like DER.

The study also observed that Firm Size (FSIZE) has a negative and significant impact on DER ($\beta = -0.561$, $p = 0.023$), suggesting that larger firms rely less on debt financing. This finding supports the Political Cost Hypothesis (Watts & Zimmerman, 1978), which argues that highly visible, large firms avoid high leverage or excessive profitability to reduce political and regulatory scrutiny. It also aligns with Salako et al. (2024), who found that firm size negatively correlates with financial leverage among consumer goods companies in Nigeria. Moreover, the result is consistent with Jabar & Akinadewo (2023), who concluded that well-capitalized firms enjoy easier access to internal funding and show less dependence on short-term or costly borrowing.

The combined significance of corporate tax burden proxies (CETR and BTD) on DER, as shown by an F-statistic of 8.67 (p -value = 0.000) and adjusted R^2 of 29.7%, indicates a strong collective influence on financial strength. This underscores the need to consider multi-dimensional tax metrics instead of relying solely on statutory tax rates. The study's results contrast slightly with the findings of Corporate Tax and Financial Performance (2023), which emphasized tax effects on profitability. Instead, this study focuses on the capital structure outcomes, adding a strategic financial management dimension to the literature on tax planning and corporate finance.

Lastly, the empirical results support the Trade-Off Theory, as firms appear to increase debt usage in response to tax-induced cash constraints. The findings also validate Agency Theory, as evidenced by the influence of BTD—a signal of earnings management or tax avoidance—on capital structure behavior. Lastly, the significance of firm size confirms the Political Cost Hypothesis, where larger companies may adjust financial visibility to manage political or fiscal exposure.

5.1 Conclusion

This study investigated the effect of corporate tax burden on the financial strength of listed consumer goods companies in Nigeria using panel data from 12 firms over a 9-year period (2015–2023). The financial strength of the firms was proxied by the Debt-to-Equity Ratio (DER), while the corporate tax burden was measured using two distinct proxies: Cash

Effective Tax Rate (CETR) and Book-Tax Difference (BTD). Firm size was included as a control variable to account for scale effects.

The regression analysis revealed that CETR has a positive and statistically significant effect on DER, suggesting that higher cash tax obligations increase the reliance on debt financing. Similarly, BTD was also found to have a positive and significant association with DER, indicating that discrepancies between accounting income and taxable income impact financial structure—likely due to tax planning or earnings management practices. Firm size, as expected, showed a negative and significant effect on DER, implying that larger firms exhibit stronger financial strength due to better access to internal capital and less dependency on debt.

Overall, the findings reaffirm the relevance of capital structure theories such as the Trade-Off Theory, Agency Theory, and the Political Cost Hypothesis, emphasizing that tax obligations, tax behavior, and firm size materially influence how firms in Nigeria's consumer goods sector manage their capital structures.

5.2 Recommendations

Based on the study's findings and conclusions, the following recommendations are proposed for consideration by corporate managers, tax authorities, policymakers, and other stakeholders:

- i. Firms should adopt more strategic approaches to tax planning to mitigate excessive cash tax burdens. Adequate forecasting of tax outflows will enhance cash flow management, limit financial distress, and reduce the over-reliance on debt financing.
- ii. Regulatory authorities such as the Federal Inland Revenue Service (FIRS) should increase monitoring of book-tax differences to detect aggressive tax avoidance tactics without stifling legitimate optimization strategies. Firms should, in turn, adopt transparent financial reporting practices that align taxable income more closely with economic realities.
- iii. To ease firms' dependency on debt and reduce solvency risks, policymakers should introduce fiscal incentives that encourage equity capital financing—such as tax credits for retained earnings or reductions in dividend tax for locally reinvested profits.
- iv. Given the significance of firm size in moderating financial leverage, tax policies should be sector- and size-sensitive. Larger firms that face higher political costs may need differentiated compliance expectations compared to smaller firms operating with limited capital and resources.
- v. Companies, particularly medium-sized ones, should invest in tax education and training for their finance teams. This will aid better navigation of Nigeria's complex tax environment, resulting in sounder capital structure decisions.
- vi. Lawmakers and fiscal authorities should review existing company income tax laws and simplify the tax regime. Stability and clarity in tax laws will enhance firms' ability to plan long-term financing strategies and reduce structural risks attributed to inconsistent tax enforcement.

This study highlights the significant role of taxation not only as a fiscal instrument for government but also as a strategic constraint on corporate financial decisions. It contributes to ongoing policy conversations around tax reform, capital structure optimization, and financial sustainability in Nigeria's non-financial sectors. Future research may extend this study by examining how macroeconomic volatility and international tax dynamics further mediate the tax–finance relationship.

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