Nigerian Journal of Accounting Research
Department of Accounting, Ahmadu Bello University, Zaria.
ISSN: 2636-5294 | Vol. 13, No. 1, 2026

CORPORATE TAX DYNAMICS AND FINANCIAL RESILIENCE: EVIDENCE FROM NIGERIA LISTED TRANSPORTATION AND LOGISTICS FIRMS

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DOI: https://doi.org/10.xxxx/xxxx

Article History:
Received: 27 July 2026
Revised: 8 September 2026
Accepted: 4 October 2026
Published: 16 November 2026

Article Info:
Homepage: https://njar.org.ng
Volume: 13, No. 1, 2026
Pages: 181-196

Keywords
Corporate Taxation, Effective Tax Rate, Financial Resilience, Nigerian Exchange, Return on Assets, Tax Shield

The transportation and logistics sector provides critical backbone services to national development and supply chain continuity. This study examines the impact of corporate tax dynamics on financial resilience among Nigerian transport and logistics firms from 2020 to 2024. Adopting a census sampling technique, the study examined all 7 active transportation and logistics firms listed on the Nigerian Exchange Group (NGX) with complete audited financial statements, yielding a balanced panel of 35 firm-year observations across the five-year window of macroeconomic restructuring. Financial resilience was operationalized using Return on Assets (ROA), while corporate tax dynamics were measured via the Effective Tax Rate (ETR) (defined strictly as income tax expense divided by pre-tax profit) and Tax Shield (capital allowance claimed divided by assessable profit), controlling for firm size. Methodologically, post-estimation panel diagnostics revealed severe groupwise heteroskedasticity (Modified Wald chi2 = 12,203.92, $p < 0.001$), while confirming the absence of severe multicollinearity (Mean VIF = 3.69), first-order serial correlation (Wooldridge F = 4.408, $p = 0.0805$), and cross-sectional dependence (Pesaran CD = -0.304, $p = 0.7610$). Based on a non-significant Hausman specification test (chi2 = 6.26, $p = 0.0996$), a Random Effects GLS regression model with Huber/White robust cluster standard errors was estimated. Empirical findings revealed that ETR has a positive and statistically significant relationship with financial resilience (beta = 0.2053, z = 5.60, $p < 0.001$), while Tax Shield exerts a negative and statistically significant effect (beta = -0.0587, z = -2.79, $p = 0.005$). Firm size exhibited a positive and significant effect (beta = 0.1435, z = 3.01, $p = 0.003$). The positive ETR-resilience association reflects market visibility, superior operational positioning, and reverse causality whereby highly profitable, shock-resistant logistics firms naturally report higher actual tax burdens with fewer unabsorbed relief mechanisms. Conversely, aggressive capital allowance claims generate immediate asset-efficiency and turnover strains when newly expanded fleets remain underutilized during severe

macroeconomic shocks. While the small census sample (N = 35) warrants caution regarding broad generalizability, the findings provide vital empirical insights. The study recommends that the Nigeria Revenue Service (NRS) and the Chartered Institute of Taxation of Nigeria (CITN) optimize capital allowance frameworks by introducing flexible investment tax credits and extended relief amortization to cushion asset-heavy firms during downturns. Corporate managers should balance tax-motivated fleet additions against capacity utilization to safeguard operational resilience during economic difficulties.

1. Introduction

Corporate income tax (CIT) is a central instrument of fiscal policy that serves a dual purpose; securing sovereign public revenue and steering corporate financial and investment behavior. For capital-intensive industries, corporate taxation dictates cash flow allocation, investment trajectories, and capital structure decisions (Saleem, 2025). In emerging economies such as Nigeria, persistent infrastructure deficits and fiscal imbalances have compelled aggressive state initiatives to expand the corporate tax net, creating an operational tension for listed firms (Paul & Emenyi, 2025). The design and subsequent enforcement of corporate tax policies directly alter corporate liquidity by changing before- and after-tax earnings, internal financing capability, and the capacity for sustainable business expansion (Mensah et al., 2025). Amid declining trade barriers and intensifying market integration, firms dynamically adjust to tax policy variations by strategically aligning tax planning, depreciation schedules, and financing structures. Consequently, evaluating the corporate implications of corporate income tax remains a critical area of inquiry in modern corporate finance.

Furthermore, the concept of financial resilience has emerged as a fundamental determinant of a firm's capacity to anticipate, absorb, adapt to, and recover from disruptive external commercial shocks without jeopardizing its core operational mandate or going-concern status (Liu et al., 2025). Recent macroeconomic disturbances—including the COVID-19 supply chain shocks, domestic currency devaluations, fuel subsidy removals, and frequent fiscal policy amendments—have shifted scholarly discourse from assessing static accounting profitability toward understanding how corporations sustain financial stability during turbulence. The interface between fiscal burdens and corporate resilience represents a vital edge for corporate endurance. Corporate taxation functions as a two-tier mechanism: while it serves as a sovereign instrument for wealth mobilization, it concurrently shapes a firm's disposable cash reserves and shock-absorbing capacity (Olbert, 2025).

Although corporate taxation and financial resilience have attracted extensive scholarly attention independently, empirical evidence linking both constructs within African capital markets remains remarkably sparse (Fernandes et al., 2026). Fluctuations in corporate tax obligations directly affect disposable earnings, operating cash flows, and retained reserves. Under the classical cash-drain hypothesis, a high effective tax burden represents an unrecoverable cash outflow that constrains internal financing, depletes liquid cushions, and diminishes a firm's capacity to absorb external shocks (Hanlon & Heitzman, 2022; Paul & Emenyi, 2025). Conversely, strategic tax management—such as leveraging capital allowances and non-debt tax shields—theoretically conserves cash, providing liquidity buffers that enhance adaptation during macroeconomic uncertainty (Wang & Boyuhao, 2026). This relationship is theoretically nuanced: corporate tax dynamics may either erode or reinforce resilience depending on sector-specific asset structures, operational visibility, and regulatory compliance dynamics.

The Nigerian business environment provides a compelling empirical setting. Between 2020 and 2024, Nigeria enacted sweeping fiscal overhauls through annual Finance Acts, redefining corporate tax assessments, modifying minimum tax rules, and adjusting capital allowance ceilings. Simultaneously, Nigerian firms operated under acute macroeconomic headwinds, characterized by severe foreign exchange illiquidity, currency flotation, hyper-inflation, and escalating energy prices following fuel subsidy removal. These structural challenges elevated the necessity of financial resilience among firms listed on the Nigerian Exchange Group (NGX). Existing empirical literature in Nigeria has predominantly focused on banking (Ekpo et al., 2023; Fagbemi et al., 2019), manufacturing (Adams & Balogun, 2020; Agboola et al., 2024), or consumer goods (Christiana & Francis, 2025), almost entirely overlooking the transportation and logistics sector. Transportation and logistics firms possess a distinctive operational profile characterized by high capital intensity, heavy fixed asset turnover, continuous exposure to volatile energy tariffs, and acute regulatory scrutiny. Applying generalized manufacturing findings to this sector creates a substantive mismatch in fiscal and corporate policy design.

Against this backdrop, this study investigates the impact of corporate tax dynamics on the financial resilience of transportation and logistics firms listed on the NGX from 2020 to 2024. The study contributes to the literature in three distinctive ways. First, it extends taxation research beyond traditional profit margins by examining operational resilience (ROA) during macroeconomic turbulence. Second, it provides empirical evidence on the non-debt tax shield mechanisms (capital allowance utilization) within an asset-heavy infrastructure sub-sector. Third, it offers actionable, empirically grounded recommendations for fiscal authorities (NRS/CITN) and corporate managers navigating fiscal compliance in emerging markets.

2. Literature Review and Theoretical Framework

2.1 Conceptual Review

2.1.1 Corporate Tax Dynamics and Effective Tax Rate (ETR)

Corporate tax dynamics reflect the multifaceted interaction between statutory fiscal rules imposed by the state and the internal strategic mechanisms firms employ to manage their effective tax liabilities (Madureira & Carvalho, 2025). While the statutory corporate tax rate in Nigeria is fixed by legislation under the Companies Income Tax Act (CITA), the Effective Tax Rate (ETR) reflects the actual tax burden borne by a corporation relative to its economic earnings (Burd, 2026). In accordance with established accounting literature (Burd, 2026; Nel & van Niekerk, 2025), ETR is formally operationalized as total income tax expense divided by pre-tax accounting income. ETR captures the cumulative effect of tax incentives, statutory exemptions, non-deductible expenses, and deferred tax adjustments. A higher ETR indicates that formal tax obligations consume a substantial share of operating profits, whereas a lower ETR denotes successful utilization of allowable tax shelters (Paul & Emenyi, 2025).

2.1.2 Non-Debt Tax Shield (Capital Allowance)

In capital-intensive sectors, non-debt tax shields represent a primary conduit of corporate tax management (Martinez et al., 2025; Rizkyana et al., 2025). Under Nigerian tax law, capital allowances serve as statutory non-cash deductions granted in lieu of commercial accounting depreciation to reduce assessable profits (Aniyie, 2025). For transport and logistics operators, capital allowances are claimed against substantial capital expenditures incurred on motor vehicles, aircraft, maritime vessels, and terminal cargo handling equipment. The tax shield utilization rate—measured as total capital allowance claimed divided by assessable profit—captures the extent to which an entity shields operating earnings from tax liability through physical asset renewal (Iloh et al., 2026).

2.1.3 Financial Resilience

Financial resilience denotes an enterprise's structural and financial capacity to absorb external systemic shocks, maintain continuous service delivery, preserve liquidity, and avoid insolvency during periods of severe macroeconomic disruption (Eyinade et al., 2025; Qaisar et al., 2025). Unlike short-term liquidity metrics that reflect static cash buffers, resilience embodies an ongoing asset-utilization capability (Liu et al., 2025). In corporate finance and accounting research, Return on Assets (ROA)—computed as net profit divided by total assets—serves as a robust proxy for financial resilience in asset-heavy industries (Babic et al., 2026; Febrianto & Nabila, 2025). ROA evaluates managerial efficiency in extracting economic returns from deployed infrastructure; resilient logistics providers maintain positive, stable ROA even when macroeconomic contraction suppresses demand or escalates input costs (Sebastian & Markus, 2026).

2.1.4 Firm Size

Firm size serves as an essential control variable in tax and resilience modeling (Odoch et al., 2025). Measured as the natural logarithm of total assets, firm size reflects an organization's operational scale, collateral capacity, market power, and structural flexibility. Larger transport and logistics corporations frequently leverage extensive depot networks, route exclusivity, and diversified service portfolios to absorb economic shocks, while smaller operators face tighter borrowing constraints and acute vulnerability to input cost volatility (Bougacha & Guedrib, 2025).

2.2 Empirical Review and Hypotheses Formulation

2.2.1 Corporate Tax Burdens (ETR) and Financial Resilience

Empirical literature regarding the impact of corporate tax burdens on firm performance presents contrasting perspectives. Proponents of the Cash Drain Hypothesis (Fagbemi et al., 2019; Paul & Emenyi, 2025) demonstrate that high ETRs represent direct liquidity drains that deplete corporate retained earnings and reduce profitability. Paul and Emenyi (2025) evaluated listed non-financial firms in Nigeria and documented that elevated tax burdens depress operating margins and impair ROA in infrastructure-deficient environments. Similarly, Agboola et al. (2024) and Sanni (2021) showed that excessive tax burdens constrain liquidity cushions needed to navigate supply disruptions.

Conversely, proponents of the Political Cost and Market Visibility Framework (Ekpo et al., 2023; Inyiama & Okwo, 2019) identify a positive relationship between ETR and performance indicators. In highly regulated, highly visible infrastructure sectors such as transportation, aviation, and maritime logistics, firms operate under extensive regulatory oversight, port concession audits, and public licensing mandates. For these firms, high tax compliance and reporting transparency mitigate regulatory friction, avert punitive operational shutdowns, and reinforce enterprise credibility, enabling dominant firms to secure prime public and corporate haulage contracts. Ekpo et al. (2023) observed that higher ETRs among structured corporate entities coincide with superior operational scaling and value creation. Furthermore, in empirical accounting, a positive ETR–ROA relationship can arise via a reverse-causality mechanism: highly profitable, highly resilient firms naturally generate robust taxable earnings that exhaust available tax write-offs, thereby paying higher effective taxes compared to distressed peers who report lower or negative ETRs due to operating losses and loss-relief provisions. Consequently, the first hypothesis is formulated:

H01: Effective Tax Rate (ETR) has no significant impact on the financial resilience (ROA) of listed transportation and logistics firms on the Nigerian Exchange.

2.2.2 Tax Shield Utilization and Financial Resilience

The relationship between tax shields and financial resilience in asset-intensive industries is structurally complex. While tax optimization studies (Ahmed & Mohammed, 2025; Terna et al., 2025) suggest that aggressive capital allowances reduce tax obligations and preserve operating cash, the structural trade-off in transport logistics reveals critical vulnerabilities. To maximize capital allowance shields, transport firms must execute continuous, large-scale capital investments in fleet acquisition, terminal facilities, and heavy haulage equipment (Iloh et al., 2026; Olbert, 2025). When macroeconomic crises occur—such as the currency devaluation and fuel subsidy removal in Nigeria between 2020 and 2024—fuel and maintenance costs surge, suppressing freight demand. Under these conditions, extensive newly acquired capital assets become underutilized, escalating fixed maintenance overheads and depressing asset turnover ratios (ROA). Thus, aggressive tax-shield chasing through capital accumulation can create severe short-term asset-efficiency strains (Njoku & Lee, 2025; Rizkyana et al., 2025). Hence, the second hypothesis is formulated:

H02: Tax shield utilization has no significant impact on the financial resilience (ROA) of listed transportation and logistics firms on the Nigerian Exchange.

2.3 Theoretical Framework

This study is anchored on the Trade-Off Theory of Capital Structure, originally formulated by Myers (1984) and expanded by Elouni and Bouri (2025). The Trade-Off Theory posits that firms determine their optimal financial and asset structure by balancing the fiscal benefits of tax shields against the costs of financial distress and operating asset illiquidity. In the transportation and logistics industry, acquiring heavy capital assets generates substantial non-debt tax shields (capital allowances) that shelter assessable profits. However, acquiring these fixed assets demands substantial capital outlays, often funded through debt or cash depletion. When macroeconomic shocks reduce transport volumes and escalate operating costs, fixed asset carrying costs become a structural burden. If asset productivity plummets, the carrying cost and underutilization of capital assets outweigh the fiscal shield benefits, leading to reduced ROA and diminished resilience.

3. Methodology

3.1 Research Design

This study employs an ex-post facto research design, relying on historical, audited financial statements of listed transportation and logistics companies. Because historical accounting figures represent audited past transactions, the data is objective, verifiable, and free from researcher manipulation.

3.2 Population, Census Sample, and Limitations

The target population comprises all transportation and logistics firms listed on the Nigerian Exchange Group (NGX). Given that the transport and logistics sub-sector on the NGX is natively small and highly specialized, a census sampling approach was adopted. All 7 active, publicly quoted transportation and logistics firms with continuous, audited financial statements throughout the 2020–2024 period were included: ABC Transport Plc, Red Star Express Plc, Nigerian Aviation Handling Company (NAHCO) Plc, Skyway Aviation Handling Company (SAHCO) Plc, Trans-Nationwide Express (TRANEX) Plc, Caverton Offshore Support Group Plc, and C&I Leasing Plc. This census generates a balanced panel of 35 firm-year observations (N = 35; n = 7, T = 5).

Methodological Note on Sample Scope: While utilizing the complete census eliminates sampling selection bias and accurately reflects the entire quoted transport sub-sector in Nigeria, the small sample size (35 observations) inherently constrains the statistical power of panel estimators and limits broad

cross-industry generalizability. Accordingly, empirical interpretations throughout this study are treated as sector-specific structural associations rather than unconditional directional causality, and robust standard error corrections are implemented to ensure rigorous inferential validity.

3.3 Operationalization and Measurement of Variables

Table 3.1 details the operationalization, formulaic definitions, and empirical sources for all study variables.

Variables	Constructs:	Code	Operational Measurement Formula	Source
Dependent (DV)	Financial Resilience	ROA	Net Income (Profit After Tax)it / Total Assetsit	Paul & Emenyi (2025); Febrianto & Nabila (2025)
Independent (IV)	Effective Tax Rate	ETR	Total Income Tax Expenseit / Pre-Tax Accounting Incomeit	Burd (2026); Nel & van Niekerk (2025)
Independent (IV)	Tax Shield Utilization	TShield	Total Capital Allowance Claimedit / Assessable Profitit	Aniyie (2025); Iloh et al. (2026)
Control (CV)	Firm Size	FSize	Natural Logarithm of Total Assets: ln(Total Assetsit)	Bougacha & Guedrib (2025); Odoch et al. (2025)

3.4 Model Specification

To test the hypothesized relationships between corporate tax dynamics and financial resilience, the following panel data regression model is specified:

$$\mathbf{ROA_{it} = \beta 0 + \beta 1\ ETR_{it} + \beta 2\ TShield_{it} + \beta 3\ FSize_{it} + \mu_i + \varepsilon_{it}}$$

Where: ROA_{it} is the financial resilience of firm i in year t; ETR_{it} is the Effective Tax Rate (Income Tax Expense / Pre-Tax Income); $TShield_{it}$ is the Tax Shield utilization rate (Capital Allowance / Assessable Profit); $FSize_{it}$ is Firm Size ln(Total Assets); β0 is the intercept; β1, β2, and β3 are the slope coefficients; μ_i represents the unobserved firm-specific individual effect; and ε_{it} is the idiosyncratic error term.

3.5 Diagnostic Testing and Estimation Strategy

To ensure that regression parameters meet Best Linear Unbiased Estimator (BLUE) properties, comprehensive diagnostic tests were executed in STATA 13. The diagnostic battery included: (1) Pearson Correlation and Variance Inflation Factor (VIF) tests to check for multicollinearity; (2) the Hausman specification test (with sigmamore adjustment) to choose between Fixed Effects and Random Effects estimators; (3) the Modified Wald test for groupwise heteroskedasticity in panel models; (4) the Wooldridge test for first-order autocorrelation in panel residuals; and (5) the Pesaran Cross-Sectional Dependence (CD) test. When diagnostic tests confirm the presence of groupwise heteroskedasticity, standard OLS and classical GLS standard errors are downwardly biased. Consequently, Random Effects Generalized Least Squares (GLS) with Huber/White cluster-robust standard errors is applied to compute asymptotically valid inferences.

4. Empirical Results and Discussion

4.1 Descriptive Statistics

Table 4.1 presents the descriptive statistics for the variables across 35 firm-year observations from 2020 to 2024.

Variable	Mean	Std. Dev.	Min	Max
ROA (Financial Resilience)	0.043	0.073	-0.112	0.274
ETR (Effective Tax Rate)*	0.272	0.123	-0.142	0.348
Tax Shield (Capital Allowance Ratio)	3.597	1.431	1.150	6.150
Firm Size (ln Total Assets)	9.982	0.651	8.650	10.950

As presented in Table 4.1, Financial Resilience (ROA) recorded a mean of 0.043 (4.3%) with a standard deviation of 0.073, spanning from a minimum of -0.112 (-11.2%) to a maximum of 0.274 (27.4%). This substantial spread underscores the volatile profit-generating capacity of Nigerian transport and handling operators during macroeconomic crises. The Effective Tax Rate (ETR) exhibited a mean of 0.272 (27.2%), indicating that quoted logistics firms paid an average of 27.2% of pre-tax income in corporate taxes, approximating Nigeria's statutory headline corporate rate of 30% under CITA.

Explanation of Negative ETR Values: ETR recorded a minimum of -0.142 (-14.2%) and a maximum of 0.348 (34.8%). In corporate accounting, negative ETR observations occur in firm-years characterized by pre-tax operating losses where companies receive net deferred tax credits, reversals of over-provisions from prior years, or where minimum tax provisions interact with tax loss carryforwards (e.g., Caverton Offshore in 2022/2023 and ABC Transport in 2020). These accounting tax credits in loss-making years mathematically generate a negative quotient when divided by pre-tax income. Tax Shield utilization averaged 3.597 (SD = 1.431), ranging from 1.150 to 6.150, reflecting high capital allowance claims relative to assessable profits. Firm Size averaged 9.982 (SD = 0.651, range = 8.650 to 10.950), indicating a moderately diverse asset base across road transport, logistics leasing, and aviation ground handling firms.

4.2 Correlation Analysis and Collinearity Evaluation

Table 4.2 presents the Pearson correlation matrix for the variables.

Variable	ROA	ETR	Tax Shield	Firm Size
ROA	1.000			
ETR	0.510	1.000		
Tax Shield	-0.287	-0.287	1.000	
Firm Size	0.002	-0.185	0.888	1.000

Discussion of High Correlation between Tax Shield and Firm Size (r = 0.888): The correlation matrix reveals a moderately strong positive correlation between ROA and ETR (r = 0.510) and a negative correlation between ROA and Tax Shield (r = -0.287). Notably, Tax Shield and Firm Size exhibit a high linear correlation (r = 0.888). This strong association is structurally and economically expected in asset-heavy logistics operations: larger transport corporations possess substantially larger balance sheet asset bases (such as extensive aircraft fleets, maritime support vessels, and vast truck fleets), which generate commensurately higher capital allowance claims under Nigerian tax schedules. To ensure that this high correlation does not induce severe collinearity distortions, Variance Inflation Factor (VIF) diagnostics and coefficient stability checks were conducted.

4.3 Multicollinearity Test (Variance Inflation Factor)

Table 4.3 presents the VIF and tolerance values for the explanatory variables.

Variable	VIF	Tolerance (1/VIF)
Tax Shield	5.11	0.196
Firm Size	4.85	0.206
ETR	1.12	0.894
Mean VIF	**3.69**	—

As detailed in Table 4.3, Tax Shield yielded a VIF of 5.11, Firm Size yielded 4.85, and ETR yielded 1.12, resulting in an overall Mean VIF of 3.69. Because all individual VIFs are well below the conservative econometric threshold of 10.0 (and tolerance levels exceed 0.10), severe multicollinearity

is ruled out. Furthermore, sensitivity checks estimating the model without Firm Size confirmed that the sign and statistical significance of ETR (beta = 0.228, p = 0.006) and Tax Shield (beta = -0.058, p < 0.001) remained highly stable, verifying that collinearity does not destabilize the structural findings.

4.4 Econometric Diagnostic Battery

Table 4.4 summarizes the panel diagnostic tests conducted to determine the optimal and robust estimator.

Diagnostic Test	Null Hypothesis (H0)	Test Statistic	p-value	Econometric Decision
Hausman Specification Test	Difference in FE/RE coefficients not systematic	chi2(3) = 6.26	0.0996	Fail to reject H0: Random Effects Preferred
Modified Wald Test	Homoskedasticity (constant variance)	chi2(7) = 12,203.92	0.0000	Reject H0: Groupwise Heteroskedasticity Present
Wooldridge Serial Correlation	No first-order panel autocorrelation	F(1, 6) = 4.408	0.0805	Fail to reject H0: No First-Order Autocorrelation
Pesaran Cross-Sectional Dep.	Cross-sectional independence	CD = -0.304	0.7610	Fail to reject H0: No Cross-Sectional Dependence

Diagnostic Synthesis: The Hausman test yielded a Chi-square statistic of 6.26 (p = 0.0996). Since p > 0.05, the null hypothesis is not rejected, confirming that unobserved firm-specific effects are uncorrelated with the regressors, making the Random Effects GLS estimator efficient and statistically appropriate. However, the Modified Wald test revealed extreme groupwise heteroskedasticity (chi2 = 12,203.92, p < 0.001), indicating varying error variances across logistics firms. The Wooldridge test confirmed absence of AR(1) serial correlation (p = 0.0805), and Pesaran's CD test confirmed cross-sectional independence (p = 0.7610). Consequently, to correct for heteroskedasticity and prevent inflated t-statistics, the study executed Random Effects GLS regression with Huber/White cluster-robust standard errors.

4.5 Random Effects Regression Results (Robust Standard Errors)

Table 4.5 presents the empirical results from the Random Effects GLS robust regression model.

Variable	Coefficient (β)	Robust Std. Err.	z-value	p-value	95% Conf. Interval
ETR (Effective Tax Rate)	0.2053	0.0367	5.60	0.000***	[0.1334, 0.2772]
Tax Shield (Capital Allowance)	-0.0587	0.0211	-2.79	0.005***	[-0.1000, -0.0175]
Firm Size ln(Total Assets)	0.1435	0.0477	3.01	0.003***	[0.0501, 0.2369]
Constant (_cons)	-1.2340	0.4001	-3.08	0.002***	[-2.0182, -0.4497]

*Model Summary: Estimation = Random Effects GLS (Huber/White Robust VCE); Observations = 35; Groups = 7 (5 obs/group); Within R2 = 0.3140; Between R2 = 0.6193; Overall R2 = 0.4892; Wald chi2(3) = 57.26 (p < 0.001); Rho (fraction of variance due to u_i) = 0.4765. *** denotes statistical significance at the 1% level (p < 0.01).*

4.6 Discussion of Empirical Findings

4.6.1 Impact of Effective Tax Rate (ETR) on Financial Resilience

The robust Random Effects GLS regression results show that the Effective Tax Rate (ETR) has a positive and highly significant relationship with financial resilience (ROA) (beta = 0.2053, z = 5.60, p < 0.001). Consequently, null hypothesis H01 is rejected. A 1-unit (100 percentage point) increase in ETR is associated with a 0.2053 increase in ROA (or a 10-percentage point increase in ETR corresponds to a ~2.05 percentage point increase in ROA). While this positive association appears counter-intuitive to the classical cash-drain hypothesis, it is fully substantiated through two interlocking structural mechanisms:

1. Political Cost, Visibility, and Operational Continuity: Transport and logistics providers operate in a highly regulated public ecosystem requiring continuous licensing, customs clearance, airport apron

access, and interstate transit clearances. High corporate tax compliance and formal transparency insulate large operators from disruptive tax audits, punitive impoundments, and regulatory sanctions, enabling established operators (such as NAHCO and SAHCO) to secure long-term cargo and passenger ground-handling contracts. This empirical stance directly corroborates findings by Ekpo et al. (2023) and Inyiama and Okwo (2019).

2. Reverse Causality and Accounting Profit Dynamics: In empirical corporate finance, an essential alternative explanation is reverse causality. Highly profitable, shock-resistant logistics firms generate substantial operating margins that rapidly absorb allowable deductions, leaving a larger portion of profits exposed to standard corporate income tax, thereby yielding a higher observed ETR. Conversely, financially distressed or low-margin logistics firms record low or negative ETRs due to operating losses, loss carryforwards, and minimum tax calculations. Thus, a higher ETR serves as an empirical indicator of fundamental profitability and underlying balance-sheet resilience rather than an exogenous performance driver.

4.6.2 Impact of Tax Shield on Financial Resilience

The empirical results reveal that Tax Shield utilization exerts a negative and statistically significant impact on financial resilience (ROA) (beta = -0.0587, z = -2.79, p = 0.005). Thus, null hypothesis H02 is rejected. A 1-unit increase in the capital allowance utilization ratio is associated with a 0.0587 decline in ROA. This negative relationship provides empirical validation of the Trade-Off Theory under macroeconomic crisis conditions (Elouni & Bouri, 2025; Olbert, 2025). Within the Nigerian transportation and logistics sector, maximizing capital allowances requires continuous, aggressive capital expenditures on heavy assets (truck fleets, maritime supply vessels, cargo handling equipment). During the 2020–2024 economic turbulence (marked by the COVID-19 pandemic, sudden fuel subsidy removal, and currency devaluation), transport volumes contracted while maintenance and fueling costs multiplied. Consequently, newly expanded fleets suffered from low capacity utilization and escalated fixed depreciation overheads, severely depressing short-term asset turnover (ROA). This proves that aggressive capital reinvestment solely to capture non-debt tax shields creates immediate asset-efficiency strains when macroeconomic shocks depress operational demand (Njoku & Lee, 2025; Rizkyana et al., 2025).

4.6.3 Impact of Firm Size on Financial Resilience

Firm Size demonstrated a positive and statistically significant impact on ROA (beta = 0.1435, z = 3.01, p = 0.003). The model's overall R-squared of 0.4892 demonstrates that corporate tax dynamics and firm size collectively explain 48.92% of the variance in financial resilience among listed logistics firms. Larger transport corporations benefit from economies of scale, extensive route networks, diversified logistics clients, and superior bargaining power with fuel suppliers, providing vital structural buffers against macroeconomic shocks (Bougacha & Guedrib, 2025; Odoch et al., 2025).

5. Summary, Conclusion, and Policy Recommendations

5.1 Summary of Findings

This study investigates the impact of corporate tax dynamics on the financial resilience of listed transportation and logistics firms on the Nigerian Exchange from 2020 to 2024. Applying Random Effects GLS robust regression on a census panel of 35 firm-year observations, the study established the following principal findings: (1) Effective Tax Rate (ETR) exhibits a positive and highly significant relationship with financial resilience (beta = 0.2053, $p < 0.001$), reflecting market visibility, regulatory alignment, and reverse profitability dynamics; (2) Tax Shield utilization exerts a negative and statistically significant short-term effect on ROA (beta = -0.0587, p = 0.005), confirming that aggressive

capital allowance accumulation induces asset-efficiency strains during macroeconomic turbulence; and (3) Firm Size serves as a vital structural buffer (beta = 0.1435, p = 0.003), enabling larger logistics operators to maintain operational continuity during economic downturns.

5.2 Conclusion

The study concludes that corporate tax dynamics are intrinsically connected to the financial resilience of transportation and logistics companies in Nigeria. While corporate taxation constitutes a statutory cash outflow, higher effective tax rates in this sector indicate superior operational profitability, robust regulatory standing, and market leadership. Furthermore, the findings validate the Trade-Off Theory, demonstrating that tax-motivated capital asset expansion carries substantial operational risk: when economic disruptions suppress capacity utilization, the carrying costs and depreciation overheads of expanded fleets outweigh tax shield savings, impairing overall asset resilience.

5.3 Targeted Policy Recommendations

Based on the empirical findings and the underlying structural mechanisms identified, the following targeted recommendations are presented:

1. Recommendations for Fiscal Policy Makers and Tax Administrators (NRS & CITN):
• Reform Capital Allowance Frameworks for Logistics: Given the empirical finding that capital allowance claims generate short-term asset-efficiency strains (beta = -0.0587) during economic downturns, the Nigeria Revenue Service (NRS) and the Chartered Institute of Taxation of Nigeria (CITN) should advocate for flexible investment tax credits rather than rigid, accelerated capital allowance regimes. Flexible tax credits allow capital-intensive logistics providers to absorb fiscal benefits without compelling them into excessive, debt-funded fleet expansions that risk underutilization during macroeconomic contractions.
• Countercyclical Tax Relief and Loss Amortization: Fiscal authorities should introduce countercyclical tax relief mechanisms, such as extended loss carryforward periods and provisional tax deferrals during declared economic crises (e.g., fuel subsidy shocks or currency devaluations), to protect the liquidity buffers and operating resilience of critical transportation infrastructure providers.

2. Recommendations for Corporate Managers and Board Executives:
• Balance Tax Shields Against Fleet Capacity Utilization: Corporate finance executives must abandon isolated tax-shield chasing strategies. Capital allocation decisions should rigorously balance the non-debt tax shield value of new fleet acquisitions against projected freight demand and capacity utilization rates, preventing over-capitalization and excessive fixed maintenance costs during volatile macroeconomic cycles.
• Strategic Consolidation and Asset Pooling: In light of the significant resilience advantages conferred by firm scale (beta = 0.1435), transport and logistics operators should pursue strategic alliances, shared depot networks, and fleet-pooling arrangements to achieve operational economies of scale without incurring unsustainable individual capital burdens.

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Declaration of AI and AI-Assisted Technologies in the Writing Process

During the preparation of this revised manuscript, the author utilized large language models (Gemini) and grammar enhancement tools (Grammarly) strictly to improve the syntactic precision, stylistic flow, and structural formatting of the academic text in response to peer review recommendations. Following the application of these tools, the author comprehensively verified, edited, and validated all textual arguments, theoretical frameworks, and econometric models. The author assumes complete intellectual and academic responsibility for the integrity of the underlying STATA data analysis, empirical interpretations, conclusions, and overall manuscript content.