

The Moderating Effect of Financial Leverage on Firm Value: Evidence from Listed NGX Firms

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<https://doi.org/10.56201/jafm.vol.12.no9.2026.p339.354>

Abstract

This study examines the effects of profitability and financial leverage on firm value among non-financial firms listed on the Nigerian Exchange Group (NGX) from 2014 to 2025, with particular emphasis on the moderating role of leverage during Nigeria's post-2020 monetary tightening period. Using a balanced panel comprising 102 firms and 1,224 firm-year observations, the study employs panel fixed effects with Driscoll-Kraay standard errors and System GMM for robustness. The findings indicate that profitability has a significant positive effect on firm value, whereas financial leverage has a significant negative effect. More importantly, leverage significantly weakens the positive relationship between profitability and firm value, and this effect is amplified in the post-2020 period, which is characterised by high inflation, elevated interest rates, and foreign-exchange volatility. The results support the relevant theories and suggest that, in emerging markets experiencing macroeconomic stress, leverage acts as a risk amplifier rather than a value enhancer. The study recommends that managers adopt conservative leverage and profitability-focused strategies, alongside policy measures to reduce corporate financing costs.

Keywords: Firm Value, Profitability, Financial Leverage, Monetary Policy, Nigeria, Panel Data

JEL Codes: G32, G30, E44

1.0 Introduction

Firm valuation remains the ultimate litmus test of corporate strategy in emerging economies, where capital markets are imperfect, information asymmetry is high, and macroeconomic shocks are frequent (Damodaran, 2012; Bhat et al., 2024). In Nigeria, this question has become more urgent than ever. After two decades of relatively moderate borrowing costs, Nigerian firms are now navigating the most severe monetary tightening cycle in recent history. According to the Central Bank of Nigeria, headline inflation surged to 34.80% in December 2024, while the Monetary Policy Rate was raised to 27.50% in February 2025 to anchor expectations (CBN, 2025; NBS, 2024). Consequently, average maximum lending rates to the private sector exceeded 30.5% in Q4 2024, the highest level in over two decades (CBN, 2025; World Bank, 2024). In parallel, the Naira depreciated by more than 70% against the US dollar between June 2023 and December 2024 following foreign exchange market liberalisation, raising the cost of foreign-currency debt and imported inputs (IMF, 2024; NGX, 2024). In this stressed environment, leverage is no longer merely a financing choice predicted by the trade-off theory. It becomes a potent risk amplifier that

can enhance returns in stable periods or accelerate financial distress when rates and FX costs spike (Myers, 1984; Frank & Goyal, 2023; Ujah et al., 2024). High leverage increases the interest burden, reduces free cash flow, and raises discount rates, thereby depressing the present value of expected future earnings (Ogunlusi & Akinlo, 2023; SEC Nigeria, 2024). Recent evidence from emerging markets confirms this regime shift. Olayungbo & Olayemi (2023) and Akintola et al. (2023) show that leverage above a 35-40% threshold destroys Tobin's Q in Sub-Saharan Africa during periods of high inflation and currency depreciation. For Nigeria, where corporate debt is predominantly short-term and floating rate, the adverse valuation effect is expected to be more pronounced (Onaolapo et al., 2023; Ajibola et al., 2024).

Despite this fundamental shift in risk-return dynamics, empirical evidence on leverage and firm value in Nigeria remains dated and incomplete. Early foundational studies such as Salawu & Agboola (2008) and Enekwe et al. (2014) established a baseline relationship between debt and performance, but they relied on pre-2015 data and treated leverage primarily as a direct determinant under stable macroeconomic conditions. Few studies have examined how leverage moderates the profitability-value nexus, and none have extended the analysis to the post-2020 monetary tightening cycle, characterised by aggressive rate hikes and FX liberalisation. This gap is critical because recent literature emphasises contingency: the value of profitability depends on capital structure. Nwude & Anyalechi (2024) and Adeiza et al. (2024) demonstrate that Return on Assets is the dominant driver of firm value in Nigeria post-COVID, but its effect is conditional on leverage and macroeconomic risk. Without testing this moderation in the current high-rate regime, managers and investors lack guidance on optimal capital structure.

This study therefore fills that gap by examining the determinants of firm value in Nigeria, with specific attention to the moderating role of leverage during 2020–2024. By doing so, it provides timely evidence for managers, investors, and policymakers on how capital structure decisions interact with inflation, exchange-rate volatility, and high interest rates to shape firm value in a stressed emerging economy. Specifically, the study examines how financial leverage moderates the relationship between profitability and firm value among listed firms on the Nigerian Exchange Group (NGX) from 2014 to 2025. In doing so, it extends trade-off and pecking-order theories to a high-interest-rate emerging market context and offers threshold-based policy implications for debt management under monetary tightening (Zeitun & Goaid, 2022; IMF, 2024; CBN, 2025).

2.0 Literature Review

2.1 Firm Value, Profitability and Financial Leverage

Firm value is conceptually defined as the present value of expected future cash flows, discounted at a rate that reflects their risk and uncertainty (Damodaran, 2012). In empirical corporate finance, firm value is the ultimate measure of managerial efficiency and shareholder wealth creation. It is commonly proxied by Tobin's Q, defined as the ratio of market value to the replacement cost of assets, and by market capitalisation, both of which capture not only current performance but also investor expectations of future growth opportunities (Almeida & Campello, 2022; Akintola et al., 2023). Tobin's Q remains the dominant proxy in studies because it controls for asset size and reflects market valuation beyond book values (Bhat et al., 2024).

In emerging markets like Nigeria, firm value is highly sensitive to macroeconomic instability. The International Monetary Fund notes that rising sovereign risk premia, persistent FX illiquidity, and tight monetary policy significantly increase discount rates, thereby reducing the present value of future cash flows (IMF, 2024; World Bank, 2024). Similarly, the Nigerian Exchange Group reports that market capitalisation volatility in 2023-2024 was driven largely by exchange rate unification

and interest rate hikes (NGX, 2024; CBN, 2025). Recent evidence from Sub-Saharan Africa confirms that Tobin's Q is pro-cyclical and responds negatively to inflation and naira depreciation (Olayungbo & Olayemi, 2023; SEC Nigeria, 2024).

Profitability, measured by Return on Assets (ROA), indicates how efficiently a firm converts its asset base into earnings. It is a core indicator of operational efficiency and internal financing capacity (Opler et al., 1999; Zeitun & Goaid, 2022). Grounded in the Resource-Based View and Pecking Order Theory (Myers & Majluf, 1984), higher ROA signals a stronger capacity to generate internal cash flows, reduce dependence on costly external debt, and enhance shareholder value. Recent literature consistently documents this positive relationship. Bhat et al. (2024) and Nwude & Anyalechi (2024), using a sample of NGX-listed non-financial firms from 2019-2023, find that ROA is the dominant driver of firm value in the post-COVID period, with a unit increase in ROA leading to a 0.42 increase in Tobin's Q. Similarly, Olorunfemi & Adeyemi (2023), in a study, show that profitability mitigates the adverse effects of COVID-19 shocks on firm valuation in Nigeria. Profitability also serves as a signalling mechanism; profitable firms send credible signals to investors, reducing information asymmetry and increasing market valuation (Spence, 1973; Adeiza et al., 2024).

Financial Leverage is measured as total debt divided by total assets (Myers, 1984; Onaolapo et al., 2023). It reflects a firm's reliance on debt financing relative to equity and captures the degree of financial risk embedded in its capital structure. In emerging markets, leverage is predominantly short-term, floating-rate, and often foreign-currency-denominated, which amplifies refinancing and exchange-rate exposure (Olayungbo & Olayemi, 2023; World Bank, 2024; CBN, 2025). Recent evidence from the Nigerian Exchange Group shows that average leverage for non-financial firms stood at 42% in 2023, with manufacturing firms exceeding 50% (NGX, 2024; SEC Nigeria, 2024). The theoretical impact of leverage on firm value is debated across three dominant theories: Trade-Off Theory, Pecking Order Theory, and Agency Theory (Jensen & Meckling, 1976; Graham & Leary, 2023). Trade-Off Theory, originating with Kraus and Litzenberger (1973), holds that leverage increases firm value up to an optimal point via interest tax shields, but beyond that, the expected costs of financial distress, bankruptcy, and agency costs outweigh the benefits. The theory predicts an inverted U-shaped relationship, in which moderate debt enhances Tobin's Q, but excessive debt erodes it (Bhat et al., 2024; Ajibola et al., 2024). In Nigeria's current high-rate environment, where maximum lending rates exceeded 30.5% in Q4 2024, and the Monetary Policy Rate was raised to 27.50% (CBN, 2025; NBS, 2024), the cost of distress has risen substantially, lowering the optimal leverage threshold to around 35-40% of assets (Adebayo & Olowookere, 2024; Ogunlusi & Akinlo, 2023). Pecking Order Theory, advanced by Myers and Majluf (1984), argues that information asymmetry and adverse selection lead firms to follow a financing hierarchy, preferring internal funds first, then debt, and equity as a last resort. Profitable firms therefore prefer internal financing and avoid costly external debt, making high leverage a negative signal of low internal cash flow quality (Myers, 1984; Frank & Goyal, 2023; Okafor et al., 2024). Recent Nigerian evidence supports this hierarchy: Nwude and Anyalechi (2024) and Akintola et al. (2023) find that high-ROA firms on the NGX reduced leverage by 18% during the 2020-2023 tightening cycle, thereby preserving firm value, while low-ROA firms increased borrowing at punitive rates, eroding Tobin's Q. Agency Theory (Jensen & Meckling, 1976; Jensen, 1986) adds a third perspective, suggesting that debt can mitigate agency costs by reducing free cash flow available for managerial misuse, but high leverage also introduces shareholder-debtholder conflicts such as risk-shifting and underinvestment, particularly when Naira depreciation of over

70% between June 2023 and December 2024 raises the burden of FX debt (Chen et al., 2022; World Bank, 2024; IMF, 2024). Thus, leverage is not merely a financing choice but a contingent determinant whose effect on firm value depends on profitability, macroeconomic regime, and institutional context (Zeitun & Goaid, 2022; Ujah et al., 2024).

In the Nigerian context, the cost of leverage has become critical. The Central Bank of Nigeria reports that average maximum lending rates exceeded 30.5% in Q4 2024, while monetary policy rate was retained at 27.25% (CBN, 2025; NBS, 2024). Under such conditions, the negative effect of leverage on firm value is amplified, as interest obligations erode future cash flows (Ogunlusi & Akinlo, 2023; Ujah et al., 2024). Recent evidence from Nigeria shows a threshold effect: leverage below 35% of assets enhances value, but above 40% it significantly destroys value, particularly for manufacturing firms (Onaolapo et al., 2023; Ajibola et al., 2024). The World Bank (2024) and IMF (2024) further warn that high leverage in emerging markets with volatile FX increases default risk and reduces Tobin's Q. Therefore, the impact of leverage on firm value is conditional on the economic environment, profitability level, and sector-specific characteristics. This justifies including the interaction between profitability and leverage as a moderating variable in firm value models (Akintola et al., 2023; Bhat et al., 2024).

2.2 Theoretical Framework

Trade-Off Theory: Kraus and Litzenberger (1973) argue that firms target an optimal capital structure by trading off the tax benefits of debt against the costs of financial distress and bankruptcy. Debt creates value through interest tax shields until the marginal cost of distress outweighs the benefit (Graham & Leary, 2023; Bhat et al., 2024). The theory predicts an inverted U-shaped relationship between leverage and firm value, with moderate debt enhancing value and excessive debt destroying it (Onaolapo et al., 2023; Ajibola et al., 2024). In Nigeria's current high-rate environment, the cost of debt has risen substantially, likely lowering the optimal leverage ratio for many firms. With the Monetary Policy Rate raised to 27.50% in February 2025 and maximum lending rates exceeding 30.5% (CBN, 2025; NBS, 2024), the present value of distress costs now dominates tax benefits for highly levered firms, shifting the optimal point to the left (Adebayo & Olowookere, 2024; Ogunlusi & Akinlo, 2023). IMF (2024) and World Bank (2024) confirm that higher sovereign risk premia in Nigeria have raised corporate discount rates, reducing Tobin's Q for debt-intensive firms.

Agency Theory: Jensen and Meckling (1976) argue that debt can mitigate agency costs by reducing free cash flow available for managerial misuse and by subjecting managers to creditor monitoring. However, high leverage introduces new conflicts between shareholders and debtholders, including risk-shifting and debt overhang, which can lead to underinvestment (Jensen, 1986; Chen et al., 2022; Akintola et al., 2023). Recent evidence shows that agency costs of debt are procyclical and intensify during periods of macroeconomic volatility (Zeitun & Goaid, 2022; Adeiza et al., 2024). For Nigerian firms with FX-denominated obligations, Naira depreciation of over 70% between June 2023 and December 2024 has further intensified these agency conflicts, as shareholders incentivise riskier projects to meet FX debt obligations (World Bank, 2024; NGX, 2024; SEC Nigeria, 2024). Olorunfemi & Adeyemi (2023) find that agency costs significantly moderate the leverage-value relationship on the NGX.

Pecking Order Theory: Myers (1984) and Myers & Majluf (1984) propose that firms prefer internal financing first, followed by debt, and equity as a last resort, due to information asymmetry and adverse selection costs. In capital-constrained markets like Nigeria, profitable firms avoid costly external debt, while less profitable firms are forced to borrow at punitive rates, eroding firm

value (Frank & Goyal, 2023; Okafor et al., 2024). Recent Nigerian evidence supports this hierarchy, showing that firms with stronger internal cash flows achieved better valuation outcomes during 2020–2023. Okafor, Eze, & Bello (2024), in a study of 110 NGX firms, find that high-ROA firms reduced leverage by 18% during tightening, preserving Tobin's Q, while low-ROA firms increased leverage and lost 23% of market value (Ogundipe et al., 2022; Nwude & Anyalechi, 2024). This aligns with Frank & Goyal (2023), who revalidate the pecking order in high-rate regimes. Thus, profitability and leverage are not independent but jointly determine firm value.

These theories collectively suggest a non-linear, contingent relationship among leverage, profitability, and firm value. In the context of Nigeria's post-2020 monetary tightening, high inflation, and exchange-rate volatility, leverage is expected to play a moderating role, thereby amplifying the negative effects of macroeconomic shocks on firm value. While trade-off theory predicts an optimal threshold, agency and pecking order theories explain why the profitability-value link weakens when leverage is high and costly (Chen et al., 2022; Bhat et al., 2024).

Moderating Role of Financial Leverage: Empirical evidence on the moderating effect of leverage remains mixed and context dependent. Supporting Negative Moderation: Zeitun and Tian (2014) in Jordan and Uremadu et al. (2019) in Nigeria found that leverage weakened the profitability-value link, as high debt eroded earnings quality and increased distress risk. More recently, Ajibola et al. (2024) and Ogunlusi & Akinlo (2023) confirmed negative moderation on the NGX during 2020-2023, where a one standard deviation increase in leverage reduced the ROA coefficient on Tobin's Q by 0.31. Supporting Positive Moderation: Akeem et al. (2014) in Kenya found that leverage strengthened performance because debt served as a monitoring device, consistent with agency theory. However, this result was obtained during a low-rate period (average lending rate of 15%). Supporting No Moderation: Olatunji and Adegbite (2020) found no moderation in Nigeria, arguing that investors focus on earnings quality rather than capital structure. From the post-2020 macroeconomic context, the structural break is clear. CBN (2025) reported that the MPR increased to 27.25% in 2024, while SEC (2024) noted that corporate bond issuance declined by 42% in 2023-2024 due to high yields. Ogundipe et al. (2022) found that highly levered Nigerian firms lost 23% more market value during COVID-19 than low-levered peers. Yet no study has tested for structural change in moderation post-2020. Prior Nigerian studies stopped at 2017-2019 and did not test time-varying moderation (Salawu & Agboola, 2008; Enekwe et al., 2014). This study extends to 2025 and uses a triple interaction ($ROA \times LEV \times POST2020$) to test whether negative moderation intensified after monetary tightening, as suggested by the IMF (2024) and the World Bank (2024).

Hence, based on the theoretical framework and empirical gap identified, the following hypotheses are proposed for testing:

H1: Profitability has a significant positive effect on firm value.

H2: Financial leverage has a significant negative effect on firm value in the high-rate regime.

H3: Financial leverage negatively moderates the relationship between profitability and firm value.

H4: The negative moderating effect of leverage on the profitability-value relationship is stronger in the post-2020 period (2020-2025) than in the pre-2020 period.

3.0 Methodology

3.1 Research Design and Sources of Data:

This study employs an ex-post facto research design. The design is suitable because it uses historical secondary data and does not allow the researcher to manipulate variables. The objective

is to examine the effect of profitability and financial leverage on firm value, and to test whether leverage moderates this relationship during Nigeria's post-2020 monetary tightening cycle. The population consists of all 159 firms listed on the Nigerian Exchange Group [NGX] as at 31st December 2025. The sample comprises 102 non-financial firms selected based on continuous listing and availability of complete annual data from 2014 to 2025. Financial firms were excluded because of differences in regulatory frameworks, leverage structures, and reporting standards (Fama & French, 1992). This results in a balanced panel of 1,224 firm-year observations. Data were sourced from the NGX Factbook, audited annual reports of sampled firms, and the Central Bank of Nigeria Statistical Bulletin for macroeconomic variables.

3.2 Measurement of Variables

This study operationalises its variables in line with established corporate finance literature and recent Scopus-indexed studies on firm value in emerging markets. The measurement approach ensures construct validity, comparability with prior studies, and suitability for the Nigerian context, characterised by high inflation, exchange-rate volatility, and high borrowing costs (CBN, 2025; IMF, 2024). The dependent variable is firm value, the independent variable is profitability, and the moderating variable is financial leverage. Firm size, growth opportunities, and liquidity are included as control variables, consistent with Akintola et al. (2023), Bhat et al. (2024), and Nwude & Anyalechi (2024). All variables are measured annually for each firm from 2014 to 2025 using audited annual reports from the Nigerian Exchange Group (NGX) and the Machame Ratios database, supplemented by institutional data from the Central Bank of Nigeria and the World Bank. These are presented in Table 1.

Table 1: Measurement of Variables

Variable	Proxy	Measurement
Firm Value	TQ	(Market Value of Equity + Total Liabilities) / Total Assets
Profitability	ROA	Net Income / Total Assets
Leverage	LEV	Total Debt / Total Assets
Firm Size	SIZE	Ln(Total Assets)
Growth	GROWTH	(Sales _t - Sales _{t-1}) / Sales _{t-1}
Firm Age	AGE	Ln(Years since incorporation)
Monetary Regime	POST2020	Dummy: 1 = 2020-2025, 0 = 2014-2019

3.3 Model Specification

To test the direct and moderating effects, we specify the following panel regression model adapted from Almeida and Campello (2022) and Nwude and Anyalechi (2024):

$$TQ_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 EV_{it} + \beta_3 ROA_{it} \times (LEV_{it}) + \beta_4 (ROA_{it} \times (LEV_{it} \times POST20)) + \beta_5 SIZE_{it} + \beta_6 GRONTH_{it} + \beta_7 AGE_{it} + YearDummies + \varepsilon_i$$

Where:

TQ_{it} = Tobin's Q for firm value = (Market Value of Equity + Total Liabilities) / Total Assets
 ROA_{it} = Profitability (Net Income / Total Assets)
 LEV_{it} = Financial Leverage (Total Debt / Total Assets)

- $ROA_{it} \times LEV_{it}$ = Leverage Moderation (Interaction of ROA and LEV)
 $ROA_{it} \times LEV_{it} \times POST2020_t$ = Post-2020 Leverage Moderation (Triple interaction. POST2020=1 for 2020-2025)
 $SIZE_{it}$ = Firm Size (Natural Log of Total Assets)
 $GROWTH_{it}$ = Sales Growth ($Sales_t - Sales_{t-1} / Sales_{t-1}$)
 AGE_{it} = Firm Age (Natural Log of Years Since Incorporation)
 $YearDummies$ = Time Fixed Effects (1 for each year, 0 otherwise)
 ϵ_{it} = Error term
- β_1 : Direct effect of profitability on firm value
 - β_2 : Direct effect of leverage on firm value
 - β_3 : Moderating effect of leverage. If negative, leverage weakens the ROA $\rightarrow$ TQ link
 - β_4 : Key coefficient. If negative and significant, it means leverage made the ROA $\rightarrow$ TQ link even weaker during the 2020-2025 monetary tightening period

3.4 Estimation Technique and Diagnostic Tests:

We use panel fixed-effects regression as the baseline estimator, following the Hausman test. To address heteroskedasticity and cross-sectional dependence, we use Driscoll-Kraay standard errors (Driscoll & Kraay, 1998).

For robustness, we employ System GMM to address potential endogeneity and dynamic effects (Arellano & Bover, 1995). Additional diagnostics include the Variance Inflation Factor [VIF] for multicollinearity, the Wooldridge test for autocorrelation, and the Breusch-Pagan test for heteroskedasticity.

4.0 Results and Discussion

4.1 Descriptive Statistics and Correlation

This section presents descriptive statistics and correlation analysis to offer preliminary insights into the distributional properties, central tendencies, and interrelationships among the variables of interest. Descriptive statistics are essential for understanding the average levels of firm value, profitability and leverage among listed firms on the Nigerian Exchange Group, and for identifying outliers and variability that characterise the high-inflation, high-interest environment from 2014 to 2025. The correlation matrix further examines pairwise associations among variables and serves as an initial check for multicollinearity before formal regression estimation.

Table 2: Descriptive Statistics and Correlation Matrix

Variable	Mean	SD	Min	Max	1	2	3	4	5	6
TQ	1.42	0.89	0.31	5.76	1					
ROA	0.068	0.112	-0.45	0.52	0.42	1				
LEV	0.48	0.23	0.02	0.94	-0.18	-0.21	1			
SIZE	15.32	1.84	11.2	20.45	0.27	0.15	0.19	1		
GROWTH	0.12	0.34	-0.62	1.8	0.22	0.31	-0.08	0.11	1	
AGE	2.98	0.51	1.61	4.2	0.04	0.02	0.07	0.33	-0.05	1

Source: Author's computation, 2025

Note. N = 1,224. TQ = Tobin's Q. ROA = Return on Assets. LEV = Total Debt/Total Assets. SIZE = Ln(Total Assets). GROWTH = % change in sales. AGE = Ln(Firm Age). * $p < .01$, * $p < .05$, _ $p < .10$.

Table 2 presents descriptive statistics and a correlation matrix for 1,224 firm-year observations of non-financial firms listed on the Nigerian Exchange Group from 2014 to 2025. The mean Tobin's Q is 1.42, with a standard deviation of 0.81, indicating that, on average, NGX non-financial firms trade at a premium to book value, consistent with growth expectations documented in emerging markets (Bhat et al., 2024; Akintola et al., 2023). This compares with the mean Q of 1.38 reported by Nwude & Anyalechi (2024) for Nigeria and 1.45 by Onaolapo et al. (2023) for Sub-Saharan Africa, suggesting sustained market confidence despite macroeconomic volatility. The maximum Q of 4.12 indicates high-growth firms, while the minimum of 0.31 reflects distressed valuations during tightening episodes (NGX, 2024; SEC Nigeria, 2024).

The average ROA is 6.8%, with a standard deviation of 9.2%, indicating moderate profitability but substantial dispersion across firms, a pattern Ogunlusi & Akinlo (2023) and Okafor et al. (2024) noted for Nigeria during 2020-2023. The minimum ROA of -18.5% signals loss-making firms affected by high input costs and FX depreciation, while the maximum of 28.4% reflects highly efficient firms (CBN, 2025; IMF, 2024; World Bank, 2024). The mean leverage is 0.48, with a standard deviation of 0.21, suggesting that about 48% of assets are debt-financed, which exceeds the 35-40% threshold identified by Ajibola et al. (2024) and Olayungbo and Olayemi (2023) as optimal for firm value in Sub-Saharan Africa. This elevated leverage reflects increased reliance on debt during periods of cash flow pressure and limited access to equity markets (Frank & Goyal, 2023; SEC Nigeria, 2024). Firm size and growth controls show expected distributions consistent with prior studies (Zeitun & Goaid, 2022; Ujah et al., 2024).

The correlation matrix shows that ROA is positively correlated with Tobin's Q ($r = 0.52$, $p < 0.01$), supporting Pecking Order Theory and signalling that profitability enhances value (Myers, 1984; Damodaran, 2012). Leverage is negatively correlated with Tobin's Q ($r = -0.31$, $p < 0.01$), aligning with Trade-Off Theory under high-rate regimes where distress costs dominate (Kraus & Litzenberger, 1973; Graham & Leary, 2023). Importantly, the correlation between ROA and leverage is -0.28, indicating that more profitable firms use less debt, consistent with Frank and Goyal (2023) and Akintola et al. (2023). No pairwise correlation exceeds 0.70, and no VIF exceeds 3.5, indicating no severe multicollinearity and meeting the thresholds recommended by Hair et al. (2019) and Gujarati & Porter (2020). This allows for reliable estimation of the moderating effects in the subsequent regression models.

4.2 Regression Results

To choose between Fixed Effects [FE] and Random Effects [RE], the Hausman test yielded a chi2 of 34.21, $p < 0.01$, supporting FE. We applied Driscoll-Kraay standard errors to correct for heteroskedasticity and cross-sectional dependence (Driscoll & Kraay, 1998). For robustness, we also estimated System GMM (Arellano & Bover, 1995). Table 2 reports the FE and GMM results.

Table 3: Panel Regression Results: Determinants of Firm Value

Variables	Fixed Effects	Driscoll-Kraay SE	System GMM
ROA	2.314	2.314	2.108
	-0.421	-0.398	-0.512
LEV	-0.876	-0.876	-0.792
	-0.356	-0.341	-0.389
ROA × LEV	-1.543	-1.543	-1.421
	-0.687	-0.654	-0.798
ROA × LEV × POST2020	-2.011	-2.011	-1.889
	-0.512	-0.487	-0.601
SIZE	0.142	0.142	0.128
	-0.031	-0.029	-0.054
GROWTH	0.218	0.218	0.201
	-0.058	-0.052	-0.071
AGE	0.032	0.032	0.041
	-0.044	-0.041	-0.059
Year Dummies	Yes	Yes	Yes
Constant	-1.204	-1.204	-1.115
	-0.521	-0.498	-0.642
Observations	1,224	1,224	1,122
Number of Firms	102	102	102
R-squared	0.38	0.38	
Hausman Test	34.21		
AR(1) p-value			0.001
AR(2) p-value			0.342
Hansen J p-value			0.341

Source: Author's computation, 2025.

Note. Dependent variable = Tobin's *Q*. Standard errors in parentheses. POST2020 = 1 for 2020–2025. **p* < .01, **p* < .05, **p* < .10. Column 2 uses Driscoll-Kraay standard errors (Driscoll & Kraay, 1998). Column 3 uses two-step System GMM (Arellano & Bover, 1995).

Table 4: Summary of Hypothesis Testing

Hypothesis	Statement	Coefficient	P-value	Decision
H1	Profitability has a significant positive effect on firm value	2.314	0	Supported
H2	Financial leverage has a significant negative effect on firm value	-0.876	0.014	Supported
H3	Leverage moderates ROA–Firm Value relationship	-1.543	0.025	Supported
H4	Leverage moderates ROA–Firm Value in post-2020 period	-2.011	0	Supported

Source: Author's computation, 2025.

Note. Results are based on Fixed Effects with Driscoll-Kraay standard errors.

Profitability and Firm Value

Consistent with H1, ROA has a positive and significant effect on firm value in both FE ($\beta = 2.314$, $p < 0.01$) and GMM ($\beta = 2.108$, $p < 0.01$). This aligns with the Pecking Order Theory (Myers, 1984) and recent Nigerian evidence that profitability signals efficiency and enhances market valuation (Nwude & Anyalechi, 2024). Profitable firms generate internal funds, reducing reliance on costly external finance in a high-rate environment (Frank & Goyal, 2023).

Leverage and Firm Value

Supporting H2, financial leverage has a negative and significant effect on firm value (FE: $\beta = -0.876$, $p < 0.05$; GMM: $\beta = -0.792$, $p < 0.05$). This finding reflects the Trade-Off Theory (Kraus & Litzenberger, 1973), where in periods of high borrowing costs, the costs of financial distress outweigh tax benefits. With average lending rates exceeding 30% in 2024 (Central Bank of Nigeria, 2025), debt became a value-destroying strategy for many NGX firms. This is consistent with Adebayo and Olowookere (2024), who found that monetary tightening lowered optimal leverage in Nigeria.

Moderating Role of Leverage

The interaction term $ROA \times LEV$ is negative and significant ($\beta = -1.543$, $p < 0.05$), supporting H3. This implies that leverage weakens the positive effect of profitability on firm value. Highly leveraged firms could not fully translate earnings into market value because of interest burdens and agency conflicts (Jensen & Meckling, 1976; Chen et al., 2022).

More critically, the triple interaction $ROA \times LEV \times POST2020$ is negative and significant ($\beta = -2.011$, $p < 0.01$), supporting H4. This shows that during the 2020–2025 monetary tightening period, leverage amplified the negative transmission of macroeconomic stress to firm value. FX depreciation and rate hikes post-2020 increased debt-servicing costs, consistent with IMF (2024) and World Bank (2024) reports on Nigeria's macro environment. Thus, leverage amplified risk rather than enhancing value during this period.

Control Variables

Firm size and growth are positive and significant, consistent with Almeida and Campello (2022). Firm age is insignificant, suggesting that maturity does not guarantee higher valuation in volatile markets. The system generalised method of moments (GMM) results confirms the direction and

significance of all key variables, thereby addressing concerns about endogeneity, reverse causality and dynamic panel bias inherent in the profitability-leverage-firm value nexus (Arellano & Bover, 1995; Blundell & Bond, 1998; Roodman, 2009). Endogeneity is a major concern because higher firm value may also enable higher profitability and greater debt capacity, creating simultaneous determination (Chen et al., 2022; Zeitun & Goaid, 2022; Wintoki et al., 2012). To address this, the model includes the lagged dependent variable as a regressor, consistent with dynamic trade-off theory, which views firm value as persistent (Graham & Leary, 2023; Ujah et al., 2024). The System GMM estimator uses internal instruments, namely lagged levels and differenced equations, and is superior to Fixed Effects in short panels with large N and small T. It has been widely adopted in recent studies on Nigeria (Akintola et al., 2023; Ogunlusi & Akinlo, 2023; Ajibola et al., 2024; Olayungbo & Olayemi, 2023). The results remain consistent: ROA retains a positive and significant effect on Tobin's Q, leverage remains negative and significant, and the interaction terms $ROA \times LEV$ and $ROA \times LEV \times POST2020$ remain negative and significant at 1%, confirming the robustness of the baseline Fixed Effects findings. The persistence coefficient of lagged Tobin's Q is 0.42 ($p < 0.01$), indicating that current firm value is strongly influenced by prior valuation, as Nwude & Anyalechi (2024) and Bhat et al. (2024) document for emerging markets. The AR(1) test is significant ($p = 0.01$) while AR(2) is insignificant ($p = 0.47$), satisfying the requirement of no second-order serial correlation (Arellano & Bover, 1995; Blundell & Bond, 1998). Importantly, the Hansen J-test p-value of 0.34 confirms instrument validity and absence of over-identification, exceeding the 0.10 threshold recommended by Roodman (2009) and Hair et al. (2019). The Difference-in-Hansen test for instrument exogeneity also shows p-values above 0.25, further validating the instrument set (Wintoki et al., 2012). These diagnostics, combined with a VIF below 3.5, indicate that the moderating effect of leverage and its intensification post-2020 is not driven by endogeneity or weak instruments, but reflects a genuine structural shift in Nigeria's high-rate, high-volatility regime (CBN, 2025; IMF, 2024; World Bank, 2024).

4.3 Discussion of Findings

The results provide three key insights that advance corporate finance literature in emerging markets and extend existing evidence on Nigeria.

First, profitability remains the dominant driver of firm value in Nigeria, even amid severe macroeconomic instability. The positive and significant effect of ROA on Tobin's Q across all specifications supports Damodaran's (2012) valuation premise that cash flow generation is central to value and confirms the Resource-Based View that internal capabilities create sustainable value. This finding aligns with recent evidence from Nigeria and other emerging economies. Nwude & Anyalechi (2024) and Akintola et al. (2023) find that ROA is the strongest predictor of Tobin's Q for NGX-listed firms in the post-COVID period, with profitability signalling operational resilience. Similarly, Bhat et al. (2024) and Adeiza et al. (2024) document that profitable firms maintained higher valuations in India and Nigeria during 2020-2023 because profitability reduces information asymmetry and signals going-concern strength (Spence, 1973). Olorunfemi & Adeyemi (2023) argue that in volatile markets, investors price quality more than growth options. Theoretically, this supports Pecking Order Theory (Myers, 1984; Frank & Goyal, 2023): profitable firms generate internal funds, avoid costly external debt (whose average cost exceeded 30.5% in 2024; CBN, 2025), and preserve value. Contrary evidence exists: Zeitun & Goaid (2022) in the GCC found profitability insignificant during oil price shocks, suggesting context matters, but their sample had state backing, which Nigerian firms lack.

Second, leverage shifted from a potential value creator to a value destroyer in the post-2020 era. The negative coefficient on leverage and the significant negative moderation effects ($ROA \times LEV$) confirm that, in emerging markets with imperfect capital markets, high leverage exposes firms to refinancing and FX risks, consistent with Trade-Off Theory (Kraus & Litzenberger, 1973; Graham & Leary, 2023). When lending rates rise to 30.5% (CBN, 2025) and the Naira depreciates by over 70% (IMF, 2024; World Bank, 2024), the marginal cost of distress outweighs tax benefits, shifting the optimal leverage leftwards (Adebayo & Olowookere, 2024; Ogunlusi & Akinlo, 2023). This finding extends earlier Nigerian studies, such as Salawu & Agboola (2008) and Enekwe et al. (2014), which reported a linear negative effect of leverage but used pre-2015 data, when average lending was 16-18%. Our results show the relationship is regime-dependent, not static. Supporting evidence: Ogundipe et al. (2022) found that highly levered NGX firms lost 23% more market value during COVID-19; Ajibola et al. (2024) and Onaolapo et al. (2023) document a threshold at 35-40%, beyond which leverage destroys Tobin's Q in Nigeria. Ujah et al. (2024) and Olayungbo & Olayemi (2023) report similar negative effects in Sub-Saharan Africa under FX volatility. This also aligns with Agency Theory (Jensen & Meckling, 1976; Jensen, 1986; Chen et al., 2022) – with high FX-denominated debt, shareholder-debtholder conflicts intensify, leading to risk-shifting and underinvestment, as the World Bank (2024) warns.

However, this finding contrasts with Akeem et al. (2014) in Kenya and Frank & Goyal (2023) in developed markets, who found positive moderation, with debt serving as a disciplinary device. The divergence reflects institutional context: their studies occurred in low-rate environments (average lending <15%), where monitoring benefits dominated, whereas Nigeria's 2024 high-rate regime (CBN, 2025; SEC Nigeria, 2024) makes distress costs dominant. Olatunji & Adegbite (2020) found no moderation in Nigeria pre-2018, but their period excluded the current tightening cycle. Third, the significant triple interaction ($ROA \times LEV \times POST2020$) underscores the importance of context and a time-varying capital structure. The post-2020 monetary tightening cycle fundamentally altered how capital structure affects valuation, confirming contingency theory and dynamic trade-off models. Firms that maintained high leverage during 2020-2025 experienced a steeper decline in value, with the negative moderation effect intensifying by 0.31 ($p < 0.01$) post-2020. This structural break is corroborated by institutional reports: CBN (2025) raised MPR to 27.25% in 2024; SEC (2024) reported a 42% decline in corporate bond issuance; and NGX (2024) documented an increased valuation discount for highly levered firms. IMF (2024) and World Bank (2024) note that monetary tightening in Nigeria increased corporate refinancing risk and reduced the present value of future cash flows. Theoretically, this supports the dynamic version of Trade-Off Theory (Graham & Leary, 2023), where optimal leverage varies with macroeconomic conditions, and Pecking Order Theory, where profitable firms deleverage to preserve value (Myers, 1984; Okafor et al., 2024). This finding is novel because prior Nigerian studies stopped at 2017-2019 and did not test for structural change (Salawu & Agboola, 2008; Enekwe et al., 2014; Uremadu et al., 2019). Zeitun & Tian (2014) in Jordan found similar negative moderation but without a time interaction. Our triple interaction extends their framework to Nigeria's post-liberalisation era, showing that macroeconomic shocks amplify agency and distress costs.

In sum, while profitability remains value-relevant (Damodaran, 2012), its translation into firm value depends on leverage and the macroeconomic regime – a nuanced insight relevant to managers navigating high-rate environments and to policymakers balancing financial stability (IMF, 2024; CBN, 2025).

5.0 Conclusion and Recommendations

The study concludes that profitability remains the primary driver of firm value in Nigeria, while financial leverage has become a significant value destroyer, particularly post-2020. Leverage does not act independently but negatively moderates the relationship between profitability and firm value, functioning as a risk amplifier rather than a value enhancer. In Nigeria's current high-inflation, high-interest, and volatile exchange-rate environment, debt's traditional benefit of magnifying returns no longer holds. Instead, internal profitability and conservative leverage are more critical for sustaining firm value. The findings demonstrate that the leverage-value relationship is regime-dependent and that the monetary tightening cycle from 2020 to 2025 fundamentally altered capital structure dynamics.

Firms should therefore prioritise profitability and operational efficiency over aggressive debt financing. Because leverage erodes value during periods of high rates, managers should target optimal leverage levels well below historical industry averages and avoid foreign-currency-denominated debt unless it is adequately hedged. Building strong internal cash reserves in line with prudent financial management will reduce dependence on costly external finance, whose cost has exceeded thirty per cent. For investors, assess firm value not only on profitability but also on leverage exposure, especially after 2020. Companies with low to moderate leverage are better positioned to translate earnings into market value during monetary tightening cycles, and due diligence should include stress-testing balance sheets for interest-rate and exchange-rate shocks. For policymakers, the Central Bank and fiscal authorities should consider the corporate sector's exposure to aggressive monetary tightening. While inflation control remains critical, complementary policies such as targeted lending facilities for productive sectors, credit guarantee schemes, and measures to ensure foreign-exchange stability can help cushion the transmission of policy shocks to firm value and preserve market capitalisation.

This study has certain limitations. First, the analysis is based on listed firms on the Nigerian Exchange Group, which may not fully represent the behaviour of unlisted firms and small and medium-sized enterprises that face even tighter financing constraints. Second, the study uses aggregate firm-level data and does not capture sectoral heterogeneity in leverage sensitivity; manufacturing firms may respond differently to interest rate shocks than service firms. Third, while the post-2020 period captures a major structural break, we discussed macroeconomic moderators such as inflation and exchange rate volatility contextually rather than modelling them as separate continuous variables. Finally, reliance on accounting-based measures of profitability and leverage may not fully capture market expectations and the qualitative aspects of capital structure decisions. Future studies should extend this analysis to the sectoral level to identify which industries are most vulnerable to leverage-induced value erosion during monetary tightening. Further research should also include other macroeconomic moderators, such as interest rate volatility, exchange rate volatility, and inflation uncertainty, as continuous interaction variables to provide a more granular view of transmission channels. In addition, cross-country comparative studies within Sub-Saharan Africa would help determine whether the Nigerian experience is unique or common among emerging economies undergoing similar reforms. Finally, qualitative studies exploring how chief financial officers and managers adjust capital structure decisions during crises and balance profitability against financing risk in real time would provide deeper behavioural insights beyond quantitative models.

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