Capital structure and firm value of non-financial firms in Nigeria (2015-2024)

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Abstract

This study examines the effect of capital structure on the firm value of non-financial companies in Nigeria, in response to increasing concerns among investors regarding fluctuations in corporate value. A longitudinal research design was adopted, utilizing secondary data obtained from the Nigerian Exchange Group. A purposive sample of 40 firms was selected from a population of 54 listed non-financial companies. The study employed a fixed-effects regression model, as supported by the Hausman specification test.

The results indicate that the ratio of long-term debt to capital employed has a negative and statistically significant effect on firm value ($t = -7.18$, $p < .05$). Similarly, the ratio of long-term debt to equity exerts a negative and significant influence on firm value ($t = -3.37$, $p < .05$). These findings suggest that excessive reliance on long-term debt financing diminishes firm value.

The study concludes that capital structure plays a critical role in determining firm value in Nigeria's non-financial sector. It recommends that firms adopt an optimal capital mix that limits overdependence on long-term debt to enhance shareholder value.

Keywords: Corporate governance; financing; investments; returns, risks, tax shield, capital structure; firm value; long-term debt; fixed effects; Nigeria

Introduction

The performance of business organizations is a key determinant of firm value. Efficient and effective operations enhance corporate returns, which are typically reflected in rising share prices within the capital market (Mubyarto, 2024). Consequently, fluctuations in share prices serve as important indicators of changes in firm value. As a central construct in corporate finance research, firm value can be measured using various proxies; however, no universal consensus exists regarding the most appropriate measure (Igbinovia & Ogbeide, 2023).

Firm value is influenced by several factors, particularly those related to corporate performance. The relationship between firm performance and value is generally assumed to be positive, implying that improved performance leads to higher corporate valuation. Within this framework, financing decisions—especially those concerning capital structure—play a critical role. The trade-off theory suggests that firms can maximize value by balancing the benefits of debt financing, such as tax shields, against its associated costs, including financial distress (Zeume, 2023).

In Nigeria, firm value can be evaluated using publicly available data from the Nigerian Exchange Group Plc for listed firms. Historically, during the early post-independence period, Nigerian firms experienced sustained growth in value, which encouraged many manufacturing firms to transition into public limited liability companies. This trend also attracted substantial foreign direct investment (FDI), increased investor participation in financial markets, and contributed significantly to economic growth. During this period, the manufacturing sector accounted for over 60% of Nigeria's Gross Domestic Product (GDP) (Okwo et al., 2022).

In contemporary practice, many Nigerian manufacturing firms rely on debt financing to support operations, with the expectation of enhancing firm value. Capital structure, defined as the mix of debt and equity used to finance corporate activities, remains a critical financial decision. An optimal capital structure minimizes the cost of capital while maximizes firm value, whereas suboptimal financing choices can adversely affect a firm's financial position (Schorr & Lips, 2023).

Determining the optimal capital structure remains a complex challenge for financial managers. Firms typically finance operations through a combination of internal sources (e.g., retained earnings) and external sources (e.g., equity, hybrid

instruments, and long-term debt such as bonds and debentures). However, Nigerian firms tend to rely more heavily on external financing, particularly equity and long-term debt. For instance, companies such as Guinness Nigeria Plc, UAC of Nigeria Plc, and GlaxoSmithKline Nigeria Plc have historically depended on external financing structures. Given that capital structure represents claims on a firm's assets, its composition must be carefully optimized to ensure that the benefits of financing outweigh the associated costs. Access to reliable financing is therefore essential for achieving the primary objective of maximizing firm value (Aro & Pennanem, 2021).

Extant empirical studies have extensively examined the relationship between capital structure and firm value. However, many of these studies employ aggregate debt measures that incorporate short-term liabilities into capital structure proxies. For example, Harris and Roark (2022) utilized the ratio of total debt to capital employed, while Spitsin et al. (2024) adopted total debt to total assets. Such approaches may introduce measurement bias, as short-term liabilities are primarily associated with working capital management rather than long-term financing decisions. Consequently, including short-term debt in capital structure measures may result in analytical inconsistencies.

Despite the extensive body of literature, empirical findings on the relationship between capital structure and firm value remain inconclusive, particularly in emerging economies such as Nigeria. Many prior studies have not adequately distinguished between short-term and long-term financing components, thereby potentially obscuring the true effect of capital structure on firm value. This limitation is significant because short-term liabilities are mainly linked to working capital management, whereas long-term financing decisions are more relevant to sustainable value creation. Furthermore, the Nigerian corporate environment is characterized by structural inefficiencies, macroeconomic volatility, and limited access to long-term financing, which may alter the conventional capital structure–firm value relationship observed in developed economies.

In addition, there is a paucity of studies that employ refined proxies of long-term debt—such as the ratio of long-term debt to capital employed and long-term debt to equity capital—in examining firm value. This creates a gap in the literature regarding the specific contribution of long-term financing decisions to firm valuation. Addressing this gap is essential for providing more precise empirical evidence that can guide financial managers, investors, and policymakers in optimizing capital structure decisions. Therefore, this study contributes to the

literature by isolating long-term debt components and re-examining their effects on firm value within the context of Nigerian non-financial companies.

In light of the foregoing, the study aims to:

i. examine the influence of the ratio of long-term debt to capital employed (RLDCE) on firm value (Q) of non-financial companies in Nigeria; and
ii. determine the effect of the ratio of long-term debt to equity capital (RLDEC) on firm value (Q) of non-financial companies in Nigeria.

Literature Review

This section presents a comprehensive review of conceptual, theoretical, and empirical literature relevant to the study. It establishes the foundation for examining the relationship between capital structure and firm value, with particular emphasis on long-term debt components.

Concept of Firm Value

Firm value represents investors' overall assessment of a company's performance and future prospects and is commonly reflected in its market valuation. A higher share price generally indicates a higher firm value and signals positive market perception. According to firm theory, the primary objective of a business organization is to maximize shareholders' wealth, which is intrinsically linked to firm value (Okwo et al., 2022).

Firm value encompasses both tangible and intangible elements, including expected future cash flows, growth opportunities, and risk exposure. As noted by Purwohandoko (2021), firm value can be interpreted as the price that potential investors are willing to pay to acquire a company, thereby capturing its overall economic worth.

Tobin's Q as a Measure of Firm Value

Tobin's Q is one of the most widely used proxies for measuring firm value. It is defined as the ratio of the market value of a firm to the replacement cost of its assets. This measure incorporates both tangible and intangible asset values, making it a comprehensive indicator of firm performance (Zeume, 2023).

A Tobin's Q value greater than one suggests that the market values the firm above the replacement cost of its assets, indicating strong growth prospects or valuable intangible assets. Conversely, a value less than one implies that the firm is undervalued relative to its asset base. Aro and Pennanem (2021) note that a Tobin's Q below unity may reflect inefficiencies in asset utilization or weak market confidence.

Capital Structure

Capital structure refers to the mix of debt and equity used by a firm to finance its operations and investments. It reflects how a firm allocates its financial resources between fixed obligations to debt holders and residual claims of equity holders (Zhou & Sihombing, 2023).

Typically, capital structure comprises long-term sources of finance such as equity capital, preference shares, and long-term debt instruments. Each component carries an associated cost, which influences the firm's overall cost of capital and, ultimately, its value. Unlike short-term liabilities, which are primarily used for working capital management, capital structure focuses on long-term financing decisions that exhibit a degree of permanence. Therefore, achieving an optimal capital structure involves balancing the benefits and costs of different financing sources to maximize firm value.

Ratio of Long-Term Debt to Capital Employed (RLDCE)

The ratio of long-term debt to capital employed (RLDCE) measures the proportion of long-term debt relative to the total capital employed by a firm. Capital employed typically includes both equity and long-term debt. This ratio provides insight into the extent to which a firm relies on fixed-interest-bearing capital to finance its operations (Schorr & Lips, 2023).

RLDCE is an important indicator of financial risk and leverage. A higher ratio suggests greater dependence on debt financing, which increases financial obligations and potential risk exposure. Consequently, firms with high leverage may face constraints in distributing earnings to shareholders, particularly during periods of financial distress.

Ratio of Long-Term Debt to Equity Capital (RLDEC)

The ratio of long-term debt to equity capital (RLDEC), commonly referred to as the debt-to-equity ratio, measures the proportion of long-term debt relative to shareholders' funds. It is a key indicator of financial leverage and reflects the extent to which a firm's operations are financed through external borrowing (Setiawanti et al., 2023).

A higher RLDEC indicates greater financial leverage, which may enhance firm value through tax benefits but also increases financial risk. This ratio also reflects the ability of shareholders' equity to absorb losses in the event of financial distress. As noted by Uzliawati et al. (2025), the debt-to-equity ratio is a fundamental component of gearing ratios used in financial analysis.

Firm Size

Firm size is a significant control variable in corporate finance research, as it influences access to resources, operational capacity, and risk exposure. Larger firms generally benefit from economies of scale, diversified operations, and easier access to capital markets, which may enhance firm value. In contrast, smaller firms often face financial constraints and higher risk levels (Sudiyatno et al., 2024).

Firm size is commonly measured using proxies such as total assets, market capitalization, or total sales. In empirical studies, the natural logarithm of total assets is often used to normalize data and improve comparability across firms (Jihadi et al., 2025).

Theoretical Framework

This study is anchored on the trade-off theory of capital structure, which posits that firms can achieve an optimal capital structure by balancing the benefits and costs of debt financing. The benefits of debt include tax shields, while the costs involve financial distress and bankruptcy risk.

According to Ifada et al. (2023), the trade-off theory explains why firms typically employ a combination of debt and equity rather than relying solely on one source of financing. The theory emphasizes the importance of optimizing capital structure to maximize firm value.

Although other theories, such as the pecking order theory and agency theory, also explain financing behavior, the trade-off theory is particularly relevant to this study because it directly addresses the relationship between capital structure and firm value. It provides a suitable framework for analyzing how long-term debt influences firm valuation.

Empirical Review

Recent empirical studies provide mixed evidence on the relationship between capital structure and firm value. Harris and Roark (2022) found that total debt positively influences firm value up to an optimal level, beyond which the effect becomes negative. Similarly, Spitsin et al. (2024) reported a nonlinear relationship, suggesting the existence of an optimal capital structure.

In emerging markets, findings are less consistent. Setiawanti et al. (2023) reported a positive and significant relationship between debt-to-equity ratio and firm value, while Uzliawati et al. (2025) found that excessive leverage negatively affects firm value due to increased financial risk.

In the Nigerian context, Okwo et al. (2022) found that capital structure significantly affects firm value, although the direction depends on the composition of debt. Aro and Pennanem (2021) observed that long-term debt has a more stable relationship with firm value compared to short-term debt, highlighting the importance of debt maturity structure.

Schorr and Lips (2023) emphasized that excessive reliance on long-term debt increases financial risk, whereas Zeume (2023) noted that long-term debt can enhance firm value through tax advantages. Additionally, Sudiyatno et al. (2024) and Jihadi et al. (2025) found that firm size positively moderates the relationship between capital structure and firm value.

Despite these contributions, most studies rely on aggregate debt measures, which include short-term liabilities. This creates a methodological gap, as short-term debt is primarily associated with working capital management rather than long-term financing decisions. Consequently, there is a need to isolate long-term debt components to better understand their impact on firm value, particularly in Nigeria.

Conceptual Framework

The conceptual framework illustrates the relationship between long-term debt components and firm value, with firm size included as a control variable.

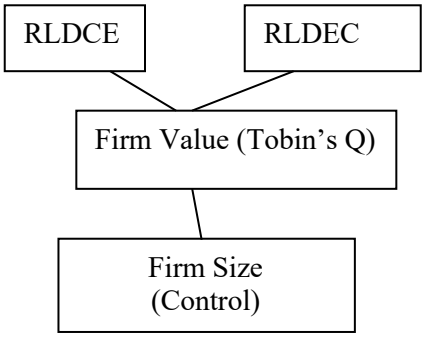

Figure 1
Conceptual framework showing the relationship between long-term debt components and firm value.

The framework assumes that long-term debt components directly influence firm value, while firm size affects the strength of this relationship.

Hypotheses Development

Based on the reviewed literature, the following hypotheses are formulated:

H1: The ratio of long-term debt to capital employed (RLDCE) has a significant effect on firm value (Q) of non-financial companies in Nigeria.

H2: The ratio of long-term debt to equity capital (RLDEC) has a significant effect on firm value (Q) of non-financial companies in Nigeria.

H3: Firm size has a significant effect on firm value (Q) of non-financial companies in Nigeria.

Methodology

This section describes the research design, population and sample selection, data sources, variable measurement, and model specification adopted to achieve the study objectives.

Research Design

This study employs a longitudinal (panel) research design, which combines both cross-sectional and time-series dimensions. The choice of this design is appropriate because it allows for the observation of multiple firms over a specified period, thereby enhancing the robustness and reliability of the empirical analysis.

Population and Sample

The population of the study comprises fifty-four (54) non-financial companies listed on the Nigerian Exchange Group as of 2024. A purposive sampling technique was employed to select forty (40) firms from the population.

The selection criteria were as follows:

(i) Only non-financial companies listed before 2015 and still in operation as of 2024 were included;
(ii) Firms with complete and consistent financial data throughout the study period were selected.

This approach ensures data adequacy and consistency for panel analysis.

Sources of Data

The study relies on secondary data obtained from the audited financial statements of the sampled firms. The use of secondary data is justified because the required financial variables are readily available from published corporate reports and are considered reliable for empirical analysis.

Measurement of Variables

This study categorizes variables into dependent, independent, and control variables.

Dependent Variable: Firm Value (Q)

Firm value is measured using Tobin's Q, which captures both market-based and accounting-based information. Consistent with prior studies (Mubyarto, 2024; Zaher, 2024), Tobin's Q is computed as:

$$Q = \frac{Market\ value\ of\ equity + Book\ value\ of\ liabilities}{Book\ value\ of\ total\ assets} \quad (1)$$

This proxy is adopted due to the difficulty in obtaining replacement cost data for assets.

Independent Variables: Capital Structure Proxies

Capital structure is proxied using two long-term debt ratios:

(i) Ratio of Long-Term Debt to Capital Employed (RLDCE)

$$RLDCE = \frac{Fixed\ interest\ debts}{Capital\ Employed} \times 100 \quad (2)$$

The above model was adopted from the study of Zaher (2024).

(ii) Ratio of Long-Term Debt to Equity Capital (RLDEC)

This ratio captures the extent of financial leverage attributable to long-term borrowing (Mubyarto, 2024).

$$RLDEC = \frac{Fixed\ interest\ debts}{Equity\ Capital} \times 100 \quad (3)$$

This measure reflects the proportion of fixed-interest-bearing capital in total capital employed (Zaher, 2024).

Control Variable: Firm Size (LnFS)

Firm size is included as a control variable and is measured as the natural logarithm of total assets:

LnFSit=ln(Total Assetsit)

This transformation helps normalize the data and reduce heteroscedasticity.

Model Specification

To examine the effect of capital structure on firm value, two functional models are specified:

$$[FV_{it} = f(RLDCE_{it}) \qquad (4)]$$

where FV = firm value (Q) and RLDCE = ratio of long-term debt to capital employed

$$Q_{it} = d_0 + d_1 RLDCE_{it} + d_2 LnFS_{it} + e_{it} \qquad (5)$$

δ_0 = intercept i.e the average value of Q when the values of RLDCE, InFS equal to zero

δ_1 = the slope of ratio of ratio of long-term debt to capital employed (RLDCE)

δ_2 = the slope of natural log of firm size (InFS)

ε = stochastic term

A priori expectations set by the economic theory for the model were as follows:

$\delta_1 > 0$; $\delta_2 > 0$.

Model 2: Effect of RLDEC on Firm Value

$$[FV_{it} = f(RLDEC_{it}) \qquad (6)]$$

where FV = firm value (Q) and RLDEC = ratio of long-term debt to equity capital

$$Q_{it} = \mu_0 + \mu_1 RLDEC_{it} + \mu_2 LnFS_{it} + \varepsilon_{it} \qquad (7)$$

μ_0 = intercept i.e the average value of Q when the values of RLDEC, InFS equal to zero

μ_1 = the parameter of ratio of long-term debt to equity capital (RLDEC)

μ_2 = the parameter of natural log of firm size (InFS)

ε = stochastic disturbance

The theoretical *a priori* expectations set by the model were as follows: $\mu_1 > 0$; $\mu_2 > 0$.

Estimation Technique

The study employs panel regression techniques, including pooled Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models. The Hausman specification test is conducted to determine the most appropriate estimator. Diagnostic tests such as multicollinearity, heteroscedasticity, and autocorrelation are also performed to ensure the validity and reliability of the estimates.

Results and Discussion

This section presents the empirical results obtained from data analysis and provides interpretations in line with the study objectives. The results are presented under descriptive statistics, correlation analysis, regression analysis, and discussion of findings.

Descriptive Statistics
Table 1:
Descriptive Statistics

Statistics	**Q**	**RLDCE**	**RLDEC**	**lnFS**
Mean	1.853	0.768	9.819	16.856
Maximum	7.420	0.990	183.000	21.413
Minimum	0.100	0.210	0.260	10.258
Skewedness	1.879	-1.147	5.563	-0.170
Kurtosis	5.940	3.823	39.813	3.266
Jarque-Bera statistic	379.439	99.061	24649.62	3.104
Probability	0.000	0.000	0.000	0.212
Observation	400	400	400	400

Source: Researcher's computation (2025)

The descriptive statistics in Table 1 reveal important characteristics of the dataset. The mean value of firm value (Q) is 1.853, indicating an average market valuation of approximately ₦1.853 billion across sampled firms. The mean values of RLDCE (0.768) and RLDEC (9.819) indicate that a substantial proportion of firm financing is derived from long-term debt, with RLDEC suggesting a highly leveraged structure. The average firm size (lnFS) of 16.856 indicates relatively large asset bases among sampled firms.

The maximum and minimum values indicate significant dispersion in firm value and leverage variables. Skewness results show that firm value and RLDEC are positively skewed, while RLDCE and firm size are negatively skewed. Kurtosis values indicate that all variables are leptokurtic except firm size, suggesting the presence of extreme values in most distributions.

The Jarque-Bera statistics confirm that all variables except firm size are not normally distributed at the 5% significance level, indicating deviation from normality in most variables.

Correlation Analysis

Table 2:

Correlation Matrix among the Variables

Variables	**Q**	**RLDCE**	**RLDEC**	**lnFS**
Q	1.000			
RLDCE	-0.048	1.000		
RLDEC	0.107	0.427	1.000	
lnFS	0.176	0.508	0.304	1.000

Source: Author's computation (2025)

The correlation results in Table 2 show that firm value (Q) is weakly and negatively related to RLDCE (−0.048), indicating that increases in long-term debt to capital employed slightly reduce firm value. Conversely, RLDEC shows a weak positive relationship with firm value (0.107), suggesting a marginal increase in firm value with higher leverage.

Firm size exhibits a positive relationship with firm value (0.176), implying that larger firms tend to have higher market valuation. The correlation between explanatory variables is moderate and below critical thresholds, indicating the absence of multicollinearity concerns.

Regression Analysis

Effect of RLDCE on Firm Value

Table 3:

Regression Results – RLDCE and Firm Value

Variables	**Fixed Effect Model**	**Random Effect Model**
C	-4.796 (-6.706)***	-4.213 (-6.052)***
RLDCE	-2.870 (-7.184)***	-2.743 (-7.114)***
lnFS	0.525 (10.900)***	0.485 (10.806)***
R-squared	0.870	0.233
Adjusted R-squared	0.855	0.229
F-statistic	(58.321)***	(60.157)***
Hausman test (Chi-square)	5.283 (0.071)	

Source: Researcher's computation (2025)

*Note: t-values are in parentheses; *** indicates significance at 1% level.*

The results in Table 3 show that RLDCE has a negative and statistically significant effect on firm value at the 1% level in both fixed and random effect models ($t = -7.184$; $p < 0.01$). This implies that an increase in long-term debt relative to capital employed reduces firm value.

The explanatory power of the model is high, with an R^2 of 0.870 and adjusted R^2 of 0.855 in the fixed effect model, indicating that 87% of variations in firm value are explained by the model. The Hausman test ($p = 0.071$) suggests that the random effects model is appropriate for interpretation.

Effect of RLDEC on Firm Value

Table 4:
Regression Results – RLDEC and Firm Value

Variables	**Fixed Effect Model**	**Random Effect Model**
C	-4.310 (-5.757)***	-3.855 (-5.318)***
RLDEC	-0.008 (-3.372)***	-0.007 (-3.305)***
lnFS	0.370 (8.319)***	0.343 (8.300)***
R-squared	0.856	0.158
Adjusted R-squared	0.839	0.153
F-statistic	(51.732)***	(37.123)***
Hausman test (Chi-square)	3.966 (0.138)	

Source: Researcher's computation (2025)
*Note: t-values are in parentheses; *** indicates significance at 1% level.*

The results in Table 4 indicate that RLDEC has a negative and statistically significant effect on firm value at the 1% level ($t = -3.372$; $p < 0.01$). This suggests that higher leverage reduces firm value among sampled firms.

The model explains approximately 85.6% of variations in firm value ($R^2 = 0.856$). The Hausman test ($p = 0.138$) indicates that the random effects model is appropriate.

Discussion of Findings

The findings reveal a consistent negative and statistically significant relationship between long-term debt variables (RLDCE and RLDEC) and firm value. This implies that increased reliance on long-term debt reduces firm value among non-financial firms in Nigeria.

This result contradicts the a priori expectation of a positive relationship but aligns with the argument that excessive leverage increases financial burden and reduces distributable earnings. High debt levels may also lead to restrictive covenants, reduced dividend payments, and lower investor confidence, all of which negatively affect firm valuation.

Additionally, macroeconomic instability, high interest rates, and financial market imperfections in Nigeria may exacerbate the negative impact of debt financing. These factors may cause financial distress costs to outweigh the tax advantages of debt.

The findings are consistent with Andow and Wetsi (2022) and Uzliawati et al. (2025), but contradict Azaro et al. (2023) and Niar et al. (2022). Overall, the results support the trade-off theory, suggesting that firms may have exceeded their optimal leverage levels.

Conclusion and Recommendations

Conclusion

This study examined the effect of capital structure on the firm value of non-financial companies in Nigeria over the period 2015 to 2024. Based on the empirical evidence obtained, the study concludes that capital structure has a statistically significant effect on firm value within the Nigerian non-financial sector. Specifically, the results indicate that both the ratio of long-term debt to capital employed and the ratio of long-term debt to equity capital exert a significant negative influence on firm value. This implies that increases in long-term leverage are associated with a decline in market valuation of firms. Consequently, firm value in the Nigerian non-financial sector is sensitive to changes in capital structure decisions, particularly those involving long-term debt financing.

Recommendations

In line with the empirical findings of the study, the following recommendations are made to enhance firm value and improve financing decisions.

First, management of non-financial firms should exercise caution in determining the proportion of long-term debt in their capital structure. Since the study establishes that the ratio of long-term debt to capital employed significantly

affects firm value, financing decisions should be carefully structured to avoid excessive reliance on long-term borrowing, which may erode shareholder value.

Second, shareholders and corporate decision-makers should adopt a balanced approach to financing that accommodates equity participation alongside debt financing. Although leverage can provide tax advantages, excessive dependence on debt may increase financial risk and reduce firm value. Therefore, a more flexible capital structure that minimizes financial distress costs while preserving ownership value is recommended.

Finally, firms should strengthen internal financing mechanisms such as retained earnings to reduce overdependence on external debt financing. This will help stabilize earnings, enhance investor confidence, and improve long-term firm valuation.

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