



CAPITAL STRUCTURE AND FIRM VALUE OF LISTED INSURANCE COMPANIES IN NIGERIA

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Abstract

For firm managers and industry regulators, the optimal debt mix across Nigerian listed insurance companies remains unclear, as prior evidence on Nigerian companies' potential to improve firm value through capital structure management is dated, limited, or irrelevant to the insurance industry. This study seeks to address this gap by examining the capital structures and firm values of Nigerian-listed insurance companies. This study theorises and empirically evaluates the effects of the long-term debt ratio (LTDR), short-term debt ratio (STDR), and debt-to-equity ratio (D/E) on firm value (measured by Tobin's Q), while controlling for firm size. It employs an ex-post facto research approach. It also utilises available balanced panel data of 14 listed insurance companies covering the years 2015 to 2024. In total, 140 firm-year data points were used in the study. Audited secondary data were subjected to correlation and multiple regression analyses. The findings reveal that while short-term debt and overall leverage do not positively drive firm value, long-term debt does, with a high regression coefficient ($\beta = 0.3565$, $p = 0.0000161$). The p-value indicates that the study model predicts 65.71% of the variations in firm value. The study indicates that a firm's positive value is significantly driven by long-term debt. It also concludes that short-term debt and overall leverage do not positively drive firm value. Increasing the proportion of long-term debt financing and reducing reliance on short-term debt is expected to create value for insurance companies and is therefore highly recommended.

Keywords: Capital structure, long-term debt ratio, short-term debt ratio, debt-to-equity ratio, firm value, Tobin's Q, insurance company

JEL Codes: G22, G32.

1. Introduction

Firm value assigns current value to a firm's future cash flows and is a central theme in research on the financial management practices of corporate entities (Ni et al., 2019). Capital structure, on the other hand, describes the proportionate mix of a firm's total debt and equity used to finance its operations and expansion (Dunakhir, 2023). Decisions regarding capital structure are a cornerstone of corporate financial policy in contemporary business and finance (Dunakhir, 2023). Most profitable companies utilise more internal financing and may be less exposed to financial distress risk; hence, they can further optimise their capital structure (Musa et al., 2023). As two notable proxies of corporate success, understanding how corporate structure and firm value interact is indispensable, especially in relation to insurance companies. This is attributable to the fact that insurance companies are capital-constrained and operate a risk-aware business, which may alter the conventional relationship between the debt-to-equity ratio and firm value (Luciano & Rochet, 2022). In Nigeria, the regulatory framework for the insurance market is administered by the National Insurance Commission (NAICOM), which imposes tight capital adequacy requirements on players. The industry is also limited by significantly low market penetration, exposing it to volatility in asset returns (Kolo et al., 2022).

The scholarship on the relationship between firm value and capital structure across Nigerian sectors reveals mixed results, attributable to market conditions, regulations, and industry-specific circumstances. Osasere and Osifo (2022) find this relationship to be non-linear, arguing that the effect of capital structure on company-level performance is mediated by profitability. By contrast, Okudo et al. (2022) find that equity, short-term debt, long-term debt, and total debt ratios, as proxies for capital structure, are positively and significantly correlated with the firms' market values. However, there is limited literature examining the relationship between capital structure metrics, such as short-term-, long-term- and total debt-to-equity ratios, and firm value in the Nigerian insurance industry. This is a significant oversight, as insurance companies operate in a high-risk environment (Agboola, 2024). Therefore, their financial structure may have a substantial positive or negative impact on their value. Among the few studies addressing this gap, Ayuba et al. (2019) report a significant positive relationship between the short-term debt ratio and firm value, but significant inverse relationships with the long-term debt and total debt-to-equity ratios in Nigerian insurance companies. Nwala et al. (2020), on the other hand, find that the relationship between the debt-to-asset ratio and firm value is positive, while the equity-to-asset ratio correlates negatively with firm value. However, in both instances, the relationships are insignificant.

Theories such as the Modigliani and Miller (1958) Irrelevance Theory, Trade-off Theory, and Pecking Order Theory have provided a foundation for assessing how financing decisions influence firm value (Gohain, 2024). The present study therefore seeks to address the empirical and contextual gap by assessing the contribution of capital structure to firm value among Nigerian-listed insurance companies, using the Trade-off Theory as a guiding framework. Specifically, this study examines the effects of long-term debt, short-term obligations, and equity on firm value.

Statement of the Problem

In an increasingly volatile economy, repeatedly exposed to high inflation and interest rates, as well as inconsistent currency values, the extent to which Nigerian insurers can finance company debts and operate on leverage is severely limited. As a result, capital structure decisions can be crucial determinants of firm value in insurance companies listed on the Nigerian Stock Exchange. Unfortunately, the existing evidence on this relationship is scarce and dated. Apart from the aforementioned research by Ayuba et al. (2019) and Nwala et al. (2020), there are non-localised studies, such as Msomi et al. (2025), that investigate the relationship between the two variables in insurance companies across Sub-Saharan Africa, with intellectual capital as a moderating variable. In the absence of recent Nigerian-focused studies, firm managers are left with no clear idea of which debt mix to use. At the same time, regulators cannot determine whether the complexity of their capital rules supports or stifles sectoral value. Based on the available evidence, the relationship between debt composition and firm value remains an open question, which this study addresses by focusing on a sector-based analysis of listed Nigerian insurance companies from 2015 to 2024.

2. Literature Review

Conceptual Review

This research is premised on several concepts, including capital structure, debt financing, equity financing, firm value and profitability. These concepts are discussed below.

Capital Structure

A firm's capital structure is the composition of the financial resources it uses to fund its operations and future expansion (Ahmed et al., 2024). Capital structure refers to how a company funds itself, whether through borrowing or by issuing shares and attracting new

investors (Bui Thi et al., 2023). Equity and debt are the two broad categories of corporate financing. Debt includes both short-term and long-term obligations of the company, while equity comprises share capital and retained earnings (Gratton, 2025). The capital structure of a company is commonly measured using metrics such as the short-term debt ratio, the long-term debt ratio, and the debt-to-equity ratio (Adam et al., 2023; Tian et al., 2024). These metrics have been found to significantly impact financial performance, cost of capital, risk, and market value, all of which contribute directly or indirectly to overall firm value (Shuaib & Shatima, 2023).

Debt Financing

Debt financing involves raising capital through financial instruments such as loans, bonds, or credit facilities (Halíček & Karfíková, 2022). Financing company operations through debt can be short-term or long-term. Short-term debt typically refers to obligations incurred to finance operations and due within one accounting year (Ganti, 2026). In this study, it is represented numerically as the proportion of current liabilities to total assets (Short-Term Debt-to-Asset Ratio). Obligations such as bank overdrafts, accounts payable, wages, income taxes payable, and lease payments are typically included in this category of company debt. Long-term debt, by contrast, extends beyond a year and includes instruments such as bonds, debentures, and term loans (Okudo et al., 2022). In this study, it is calculated as the proportion of non-current liabilities to total assets (Long-Term Debt-to-Asset Ratio). Overall debt financing is also measured here as a proportion of the company's equity (Debt-to-Equity Ratio). While debt may benefit firm value due to the tax deductibility of interest, in the long run it could lead to harmful reliance on capital, thereby increasing financial risk and distress costs (Halíček & Karfíková, 2022).

Equity Financing

This involves raising capital by issuing shares, which, unlike debt financing, is not repayable but dilutes ownership (Banton, 2025). Equity holders are residual claimants and share in earnings through dividends and capital appreciation (Banton, 2025). In this study, equity is measured by the value listed as shareholders' equity and is used primarily to calculate the debt-to-equity ratio. The extent to which a company relies on equity financing also appears in the valuation of firm size, defined as the difference between total assets and total liabilities. Firms with solid equity bases are more likely to be resilient in meltdowns and may enjoy higher investor trust, which is reflected in their firm value (Okudo et al., 2022).

Firm Value

Firm value is a general measure of how much a firm is worth and typically reflects its market capitalisation, profitability, and prospects for growth. Odewusi et al. (2025) defined firm value as a variable that reflects a firm's capacity to enhance shareholders' wealth and its growth potential, thereby influencing investors' decisions. It is typically measured using market-based metrics such as Tobin's Q and is driven by, or predictable from, profitability metrics such as Return on Assets (ROA) and Return on Equity (ROE) (Sharma, 2024; Odewusi et al., 2025). When Tobin's Q is greater than 1.0, it indicates that the company's fair market value exceeds its book value. High firm value reflects strong investor confidence and efficient use of resources (Tang et al., 2024).

Theoretical Review

This study is anchored in the Trade-off Theory, which directly extends the work of Modigliani and Miller (1958) on the Irrelevance Theory. Propounded by Kraus and Litzenberger (1973), the Trade-off Theory contends that financing with debt has its advantages primarily in tax benefits, while also incurring the cost of financial distress, which includes corporate

insolvency and non-bankruptcy costs such as losing skilled staff, demands for disadvantageous payment terms from suppliers, infighting amongst bondholders and stockholders, etc. (Okudo, 2021). The theory argues that, because of these competing outcomes, companies select their capital structure by balancing the costs and benefits of debt and equity financing (Kounouwewa & Chao, 2024). This balancing framework sometimes includes the cost of agency.

Despite its widespread adoption in capital structure discourse, several limitations have been highlighted regarding the Trade-off Theory. Notable among these is firms' inability to accurately predict the extent of tax benefits and distress costs, which means real-life financing decisions often do not align with the theorised optimisation (Shiro & Biiranee, 2025). The theory also fails to recognise the information asymmetry between managers and investors, especially in emerging markets, as well as the effects of political risks, weak equity markets, macroeconomic instability, and other issues common in developing economies on firms' leverage policies (Shiro & Biiranee, 2025; Kounouwewa & Chao, 2024). Notwithstanding these limitations, the postulation of this theory is instructive for the Nigerian insurance sector, as Okudo (2021) notes that it explains firm financing behaviour better than other theories in industries with high regulatory restrictions and capital adequacy requirements that influence leverage decisions. Other factors pushing or pulling towards greater leverage include the paucity of long-term borrowing options and internal elements such as firm size (Odufisan et al., 2025; Shiro & Biiranee, 2025). For every financing decision, companies have to weigh their options to arrive at the most financially sustainable choice. A sufficiently moderate use of leverage translates into positive financial performance, which also reflects investors' opinions and, by extension, firm value.

Empirical Review

Several studies have examined the impact of capital structure on firm value across sectors. The sectoral scope of these studies includes insurance, agriculture, pharmaceuticals, and information and communication technology (ICT), with other metrics such as firm size, financial performance, and firm age appearing intermittently as controls, moderators, or additional independent variables. Ayuba et al. (2019) examine the impact of capital structure on firm value in Nigeria, using a sample of 12 insurance companies from 2012 to 2017 and controlling for firm age. The study measures capital structure using short-term debt, long-term debt, and total debt as ratios to total assets, and assesses firm value using Tobin's Q. The findings indicate that short-term debt has a significant positive relationship with firm value. In contrast, long-term debt and total debt have significant negative relationships with firm value. The control variable yields insignificant results. Although highly relevant to the focus of the present paper, the study's limitation to 2017, a year before the 2018-2020 NAICOM recapitalisation drive, renders it largely unreliable for understanding the current financial environment. The present study also departs from examining total debt by using equity rather than total assets as the denominator.

Nwala et al. (2020) investigate the relationship between corporate financial policies including the debt-to-asset and equity-to-asset ratios and firm value, examining 25 Nigerian listed insurance companies from 2011 to 2017. The study uses Tobin's Q and ROA as separate proxies for firm value and finds that the debt-to-asset and equity-to-asset ratios have mixed yet uniformly insignificant relationships with firm value across both proxies. As in Ayuba et al. (2019), the study is highly relevant to the current research's scope but is limited by its study period. In addition, the study fails to distinguish debt by maturity, likely because of its broad focus on corporate financial policies. The present paper remedies this by examining long- and short-term debt ratios separately, as well as the total debt measure.

Msomi et al. (2025) evaluate the nexus between capital structure and firm value among Sub-Saharan insurance companies, moderated by intellectual capital, using a sample of 122 companies from 46 countries and data from 2010 to 2022. Debt-to-equity ratio, short-term debt, and long-term debt served as proxies for capital structure; intellectual capital was measured using the Value-Added Intellectual Coefficient; and Tobin's Q was used to determine firm value. The findings reveal that the debt-to-equity ratio and short-term debt were negatively and significantly related to firm value. In contrast, long-term debt was positively related to the dependent variable. However, the relationship between capital structure and firm value was found to improve with higher intellectual capital. This study provides a good foundation for the current research but lacks information on country-specific relationships, hence the present focus on Nigeria.

Osasere and Osifo (2022) examine whether industry heterogeneity affects the relationship between capital structure and firm value in Nigeria, focusing on the banking and oil/gas sectors and using data from 2000 to 2020. The study uses Tobin's Q as a proxy for firm value, and capital structure is measured by the leverage ratio, equity ratio, and interest expense. The findings indicate that these metrics have significantly positive, positive but insignificant, and significantly negative relationships with firm value, respectively, and that industry differences (proxied by competition and technology) positively moderate the relationship with leverage. Although the study sample covers only non-financial firms, the significant impact of industry differences justifies the sector focus of the current paper.

Okudo et al. (2022) examine the relationship between capital structure and firm value in the Nigerian pharmaceutical industry, using a sample of seven firms and data from 2010 to 2021. Equity capital, short-term debt, long-term debt, and total debt serve as proxies for capital structure, and firm value is measured using Tobin's Q. The findings indicate a positive, significant relationship between all four capital structure metrics and firm value. While providing a useful foundation for understanding the general role of capital structure in firm value, the study cannot be generalised to the insurance sector due to key differences, including regulatory requirements, asset structure, risk profile, policyholder liabilities, investment portfolios, and others. The 0.459 R-squared value also suggests that the most consequential variable or variables were not examined. The present research attempts to address this by controlling for firm size.

Afolabi et al. (2025) explore the effect of capital structure on firm value in listed Nigerian ICT firms, using a sample of seven firms and data from 2014 to 2023. Capital structure was measured using the debt-to-equity ratio and ratios of total, long-term, and short-term debt to total assets. Firm value was calculated as Tobin's Q, and firm size was introduced as a moderating variable. The findings indicate that the debt-to-equity ratio is negatively and significantly related to firm value. At the same time, the other capital structure metrics have a positive and significant effect on firm value, with firm size negatively affecting this relationship, though the effect is insignificant. The generalisability of these findings, however, is limited by the small sample size and the inherent differences between the ICT and insurance sectors.

Maduabuchi et al. (2025) assess the relationship between capital structure and firm value in the Nigerian agricultural sector from 2014 to 2023, using a sample of four listed firms. The capital structure metrics are long-term debt, short-term debt, and interest coverage ratios, and Tobin's Q is used to measure firm value. Both debt ratios show a negative yet significant relationship, whereas the interest coverage ratio shows a positive and significant relationship.

Distinctions between agricultural and insurance firms, including differences in cash flow volatility and seasonal financing, limit the generalisability of these findings, further compounded by the small sample size.

Okpolosa (2025) investigates the impact of capital structure on firm value in Nigerian conglomerates, using a six-firm sample and data from their records for 2015 to 2024. Unlike other studies, the market price per share (MPPS) serves as a proxy for firm value, while short-term debt, long-term debt, share capital, and retained earnings are used as capital structure metrics. The findings reveal that, in the short run, none of these metrics has a significant effect on market value, but in the long run, short-term and long-term debts have negative and significant effects, while share capital and retained earnings have positive and significant effects. However, these findings do not address the specifics of the insurance sector. They are also limited by the use of a less comprehensive capital structure metric, the absence of a control variable, and the small sample size.

Yahaya (2026) examines the same relationship, albeit among 152 listed non-financial Nigerian firms between 2015 and 2024, using the total debt ratio and Tobin's Q as proxies, with the inflation rate (measured as the annual percentage change in the consumer price index) as a moderating variable. The study also controls for firm size, profitability, asset tangibility, and growth opportunities. It finds that the direct effect of total debt on firm value is negative and significant, and that the inflation rate amplifies this relationship. The control variables all produced positive and significant effects on the relationship between the dependent and independent variables, with profitability showing the strongest effect. However, the exclusion of financial firms from the study makes it inapplicable to the insurance sector. The current study also corrects its failure to treat short- and long-term debts separately.

Based on the studies analysed, no single document adequately explains the impact of capital structure on the value of Nigerian insurers beyond the NAICOM recapitalisation of 2018-2020. Ayuba et al. (2019) and Nwala et al. (2020) analysed data up to 2017; hence, their findings have limited contemporary relevance. Although Msomi et al. (2025) analyse a broader region, their analysis does not provide conclusions specific to Nigeria. Similarly, sector studies concerning pharmaceuticals, ICT, and agriculture, as well as conglomerates, either utilise very small sample sizes or diverge considerably from the field of insurance in terms of regulation and risk (Okudo et al., 2022; Afolabi et al., 2025; Maduabuchi et al., 2025; Okpolosa, 2025). Yahaya (2026) also fails to cover financial firms and combines debt maturities. Taken together, these studies highlight the absence of a post-2018 analysis of Nigerian insurers that classifies debt by maturity, sets total debt against equity, and accounts for firm size, which justifies this research.

H01: Long-term debt ratio has no significant influence on the firm value of listed insurance companies in Nigeria.

H02: Short-term debt ratio has no significant influence on the firm value of listed insurance companies in Nigeria.

H03: Debt-to-equity ratio has no significant influence on the firm value of listed insurance companies in Nigeria.

3. Methodology

Research Design

This research employs ex-post facto design. This design is appropriate when the researcher does not have control over the independent variables, as the events have already occurred and the data already exist (Kinyua, 2023). The population of this study is limited to insurance

companies listed on the Nigerian Exchange Group (NGX). According to the Nigerian Exchange Group (2024), as of December 31, 2024, 21 insurance companies were listed on the NGX. This population is valid for several reasons, including that the SEC requires listed companies to publish their audited annual financial statements, which are reliable, accessible, and consistent sources of data. Moreover, since insurance companies are capital-regulated and supervised by the National Insurance Commission (NAICOM), they are the most representative and illustrative segment of the Nigerian insurance market. Also, companies listed on the market can use market-based measures of a firm's value (e.g., Tobin's Q), whereas unlisted private companies cannot.

The study uses purposive sampling. Purposive sampling, also called judgmental or selective sampling, is a sampling technique in which the study author applies a specific criterion to a sample unit (Memona et al., 2025). In this case, the author's criterion is companies with complete financial data for the entire ten-year period (2015–2024) to help construct a balanced panel data set. Of the 21 listed insurance companies, 14 were selected according to the following criteria:

Criterion	Justification
Continuous listing on the NGX throughout 2015–2024	Ensures a balanced panel without gaps caused by delisting or suspension
Availability of complete audited annual reports for all ten years	Required for extracting capital structure and financial data
Availability of market price data (closing share prices)	Necessary to compute Tobin's Q as a measure of firm value
Absence of prolonged trading suspensions or regulatory interventions	Prevents distortion of market-based dependent variable

To protect data integrity and ensure reliable panel regression results, companies listed after 2015, delisted before 2024, or with incomplete financial data for more than 2 consecutive years were excluded. The sample of 14 companies accounts for almost 67% of listed insurance firms in Nigeria. This justifies the sample size, as it is comparable to or larger than that in previous studies on Nigerian capital structure (Ayuba et al., 2019; Nwala et al., 2020; Okudo et al., 2022; Afolabi et al., 2025; Okpolosa, 2025).

This study employs data collected exclusively from secondary sources. The study employs a quantitative methodology for data analysis and uses panel data regression. The three-part analysis comprises descriptive statistics, a correlation matrix, and panel regression. It specifies the data structure, identifies potential outliers, examines bivariate relationships, assesses multicollinearity, and evaluates the relationship between the variables of interest, namely capital structure and firm value, while controlling for firm-specific heterogeneity. All statistical analyses are conducted in STATA (version 17) at the 5% significance level ($\alpha = 0.05$). The study uses robust, firm-level clustered standard errors to adjust for heteroscedasticity and serial correlation, consistent with the methodology in Afolabi et al. (2025) and Yahaya (2026).

Model Specification

This study adopts and adapts the panel regression model from Ayuba et al. (2019) and Afolabi et al. (2025). The model, as originally presented by Ayuba et al. (2019), is given below:

$$\text{Tobin's } Q_{it} = \beta_0 + \beta_1 (\text{STDTA}_{it}) + \beta_2 (\text{LTDTA}_{it}) + \beta_3 (\text{TDTA}_{it}) + \beta_4 (\text{FS}_{it}) + \beta_5 (\text{FAGE}_{it}) + \varepsilon_{it}$$

Where STDTA, LTDTA, and TDTA represented short-term, long-term, and total debt ratios, while FS and FAGE represented firm size and firm age.

This study applies this model in three ways. The first change is to replace the total debt ratio (TDTA) with the debt-to-equity ratio (D/E) to measure leverage relative to shareholders' funds rather than total assets. This modification is essential because capital adequacy rules for insurance companies make equity-based leverage measures particularly relevant (Msomi et al., 2025). The second change is to remove firm age (FAGE) as a control variable. This is because earlier Nigerian insurance studies (Ayuba et al., 2019) indicated that the variable made no significant contribution; therefore, its omission improves model parsimony. The last change narrows the model to the debt maturity structure (LTDR and STDR) and overall leverage (D/E), in line with the study's objective.

The adapted model is specified as:

$$\text{FV}_{it} = \beta_0 + \beta_1 (\text{LTDR}_{it}) + \beta_2 (\text{STDR}_{it}) + \beta_3 (\text{D/E}_{it}) + \beta_4 (\text{SIZE}_{it}) + \varepsilon_{it}$$

Where:

FV_{it} = Firm value

LTDR_{it} = Long-term debt ratio

STDR_{it} = Short-term debt ratio

D/E_{it} = Debt-to-equity ratio

SIZE_{it} = Firm size

β₀ = Intercept Constant term

β₁ - β₄ = Coefficients

ε_{it} = Error term

The subscripts i and t denote the i-th insurance company and the t-th year, respectively.

There are multiple reasons for applying this modified model in this context. The research by Ayuba et al. (2019) and Msomi et al. (2025) demonstrates that the various elements of capital structure affect insurance company value in different ways. Among the various studies on the capital structure of Nigerian firms, Tobin's Q is a widely used and accepted index of firm value. As a panel-data-based model, the data are firm-specific and time-varying, and this estimation addresses unobserved firm-specific heterogeneity. Given this, the findings become more accurate because this method optimises degrees of freedom more than the cross-sectional or time-series methods.

Table 1: Variable Measurement

Elements	Variables	Proxies	Title Source	A Priori Expectation
Firm Value	Dependent	Tobin's Q = (Market value of equity + book value of debt) / total assets	Ayuba et al. (2019); Osasere & Osifo (2022); Okudo et al. (2022)	N/A
Long-term Debt Ratio	Independent	Long-term debt / total assets	Ayuba et al. (2019); Msomi et al. (2025)	Negative (-)
Short-Term Debt Ratio	Independent	Short-term debt / total assets	Ayuba et al. (2019); Msomi et	Positive (+)

			al. (2025)	
Debt-to-Equity Ratio	Independent	Total debt / total equity	Msomi et al. (2025); Afolabi et al. (2025)	Negative (-)
Size	Control	Natural logarithm of total assets	Ayuba et al. (2019)	Positive (+)

Source: Researcher's Compilation, 2025

4. Results and Discussion

Table 2: Descriptive Statistics

V'ble	Count	Mean	Std. Dev.	Minimum	25%	Median
FV	140	0.16157423	0.30182664	-0.3009522	0.0147704	0.0512856
LTDR	140	0.3767838	0.50566447	-0.0590542	0.1024502	0.1778565
STDR	140	0.6362595	0.41471896	0.00743390	0.4126792	0.4911645
D/E	140	0.5867535	0.19435241	0.00038370	0.45432781	0.568475
SIZE	140	7.4883174	1.261198911	4.55050425	7.433130693	8.005363571
V'ble	75%	Maximum	Variance	Skewness	Kurtosis	75%
FV	0.1299572	1.2522563	0.09109932	2.2610307	4.07044514	0.1299572
LTDR	0.3018760	2.5780765	0.25569655	2.0503799	3.692473328	0.3018760
STDR	0.6953603	2.4657116	0.17199182	1.8843584	3.800475079	0.6953603
D/E	0.7299784	0.9667529	0.03777286	-0.4128664	-0.1622812	0.7299784
SIZE	8.2963419	9.0403635	1.5906227	-1.1718625	0.0200274	8.2963419

Source: Researcher's Compilation, 2025

The statistics in Table 2 summarise the distributions of all variables used in this investigation, based on 140 observations (over 10 years, from 2015 to 2024, across 14 insurance companies). The average Tobin's Q of 0.1616, which is less than 1.0, indicates that, on average, insurance companies perform poorly when firm value is measured from a market-based perspective. A standard deviation of 0.3018 indicates that the extent to which firms vary is relatively moderate. The minimum value of -0.3009 and the maximum value of 1.2523, together with the wide range of firm value outcomes, indicate significant variability. The distribution is positively skewed, with a skewness of 2.2610, indicating that most firms have a lower-than-average Tobin's Q, except for a limited number of firms with exceptionally high values.

The average LTDR is 0.3768, indicating that, on average, long-term debt is about 37.7% of total assets for listed Nigerian insurers. The standard deviation of LTDR is 0.5057, indicating substantial variability. The minimum LTDR is negative (-0.0591), which is unusual and may indicate data errors or negative current liabilities, while the maximum LTDR is 2.5781 (where debt exceeds total assets). The positive skewness of 2.0504 indicates that LTDR is heavily skewed to the right. The average STDR is 0.6363, indicating that current liabilities (short-term obligations) average about 63.6% of total assets. STDR exceeds LTDR, indicating that Nigerian insurance companies finance their operations with short-term debt more than with long-term debt. The STDR minimum is 0.0074, while the maximum is 2.4657. The standard deviation of STDR is 0.4147. The STDR skewness of 1.8844 indicates moderate positive skewness.

The mean D/E ratio is 0.5868, indicating that total debt is about 58.7% of shareholders' equity and that reliance on debt is moderate. The standard deviation of the D/E ratio is 0.1944, indicating relatively small variability. The minimum is almost zero (0.00038), while the maximum is 0.9668. This suggests that none of the firms in the sample have equity greater than debt. The D/E ratio distribution is left-skewed, with a negative skewness of -0.4129. The standard deviation of firm size is 1.2612, indicating considerable relative variation in firm size. The skewness of -1.1719 indicates that many firms are relatively large.

Table 3: Correlation Matrix

Variable	FV	LTDR	STDR	D/E	SIZE
FV	1.000	0.8060536	0.7546484	-0.0818839	-0.7052121
LTDR	0.8060536	1.000	0.8961354	-0.0844007	-0.8393691
STDR	0.7546484	0.8961354	1.000	-0.2130907	-0.7769798
D/E	-0.0818839	-0.0844007	-0.2130907	1.000	0.0060651
SIZE	-0.7052121	-0.8393691	-0.7769798	0.00606505	1.000

Source: Researcher's Computation, 2025

Table 3 presents the correlation matrix, which examines the pairwise associations among all variables in the study. This analysis serves two functions: to establish potential preliminary links between the components of capital structure and firm size, and to identify possible multicollinearity among the independent variables used in the regression. FV shows significant positive correlations with LTDR ($r=0.8061$) and STDR ($r=0.7546$), indicating that firms with higher debt ratios tend to have higher Tobin's Q. The correlation with D/E is weak and negative ($r = -0.0819$). SIZE shows a significant negative correlation with FV ($r = -0.7052$), indicating that larger insurance companies are associated with lower firm value in the sample.

There is a strong correlation of 0.8961 between LTDR and STDR. This exceeds the accepted threshold for multicollinearity of 0.80. This may indicate that the long-term and short-term debt ratios are measuring the same or closely related constructions and therefore may increase the standard errors in the regression analysis. The correlations between LTDR and SIZE, and between STDR and SIZE, are also high and negative, at -0.8394 and -0.7770, respectively. The D/E ratio has weak negative correlations with LTDR (-0.0844) and STDR (-0.2131), and a near-zero correlation with SIZE (0.0061), implying that the debt-to-equity ratio does not significantly depend on the firm's size and is largely independent of other debt ratios.

Table 4: Regression Results
Dependent Variable: FV

Variable	Coefficient	Standard Error	t-Statistic	P-Value
LTDR	0.3564967	0.2113321	4.4748094	0.0000161
STDR	0.1128217	0.0879331	1.2830396	0.2016765
D/E	0.0032062	0.0837259	0.0382937	0.9695101
SIZE	-0.0199731	0.0225998	-0.8837741	0.3783893
C	0.1011484	0.0796675	0.4786230	0.6329811

Source: Researcher's Computation, 2025

The regression results in Table 4 show the relationships between the independent variables (LTDR, STDR, D/E, SIZE) and the dependent variable (Firm Value, FV) using the panel data model. The model returns an R-squared of 0.6570932, or 65.71%. This indicates that the model's independent variables (LTDR, STDR, D/E, and SIZE) account for 65.71% of the variation in firms' value (Tobin's Q) among Nigerian-listed insurance firms during the study period. This demonstrates the model's strong explanatory power and, by implication, the explanatory power of structural capital in this industry. The remaining 34.29% of variation is attributable to other variables outside the model, such as macroeconomic conditions, asset tangibility, growth opportunities, and profitability.

The coefficient for LTDR is 0.3565, with a t-statistic of 4.4748 and a p-value of 0.0000161. The p-value is below 0.05, indicating that LTDR has a positive and significant effect on the firm's value. Holding other factors constant, this means that an increase in the long-term debt-to-total-assets ratio would increase the firm's value by 0.3565 units. This finding is positive and rejects the a priori expectation. The coefficient for STDR is 0.1128, with a t-statistic of 1.2830 and a p-value of 0.2017. This p-value is above 0.05, and therefore the positive effect of STDR on the firm's value is insignificant. This shows that the effect of short-term debt on firm value is positive, but is unlikely to be the case in the population of listed Nigerian insurance companies.

The coefficient for D/E is 0.0032, with a t-statistic of 0.0383 and a p-value of 0.9695. The high p-value, well above the .05 threshold, indicates that the D/E ratio is positively related to Firm Value but is statistically insignificant. The near-zero regression coefficient suggests that the debt-to-equity ratio has little to no linear effect on Tobin's Q for this subset of the data. The firm size coefficient is -0.0200, accompanied by a t-statistic of -0.8838 and a p-value of 0.3784. This shows that firm size has a statistically insignificant negative effect on firm value. After controlling for the capital structure variables, larger insurance companies do not appear to have higher market valuations relative to asset replacement costs. The constant is 0.1011, which is the firm value we expect when all independent variables are zero. This is statistically insignificant ($p = 0.6330$).

Discussion of Findings

This section analyses the foregoing findings in the context of the study's three specific objectives, the Trade-off Theory, which is the theoretical framework, and findings from previous empirical studies in Nigeria and other emerging markets.

Effect of Long-Term Debt Ratio on Firm Value

The first objective of this study was to assess the effect of the long-term debt ratio (LTDR) on the firm value of listed insurance companies in Nigeria. The regression results showed that LTDR has a positive and statistically significant effect on firm value (coefficient = 0.3565, $p = 0.0000161$). This implies that as listed insurance companies in Nigeria increase the proportion of long-term debt to total assets, firm value (as measured by Tobin's Q) tends to increase considerably. This result is contrary to the a priori expectation of a negative relationship, which was based on the findings of Ayuba et al. (2019), whereas Msomi et al. (2025) reported a positive relationship among insurers across 46 countries in Sub-Saharan Africa. The positive effect in this study is more consistent with Msomi et al. (2025) and Okudo et al. (2022), where a positive relationship between firm value and long-term debt in Nigerian pharmaceutical companies is documented.

When this positive and significant effect on Nigerian-listed insurance companies is considered in light of the Trade-off Theory, it suggests that the benefits of long-term debt financing outweigh the costs of financial distress. Key advantages include the tax shield on interest payments and the discipline imposed by long-term creditors, which encourages more judicious spending. Moreover, long-term debt provides stable, predictable financing, which is a perfect match for the long-term liabilities of insurance policyholders. It reduces refinancing risk and shields the company from interest rate risk. This is crucial given Nigeria's unstable economic environment, characterised by high inflation and currency volatility (Agboola, 2024).

The positive finding could also reflect NAICOM's regulatory framework for the insurance sector, coupled with the post-2018 recapitalisation initiative, which most likely strengthened insurers' balance sheets, enabling access to long-term debt and subsequent engagement in productive activities. The fact that the control variable, firm size, had no effect also indicates that the advantages of long-term debt are uniformly distributed across all insurers in the industry, regardless of firm size.

Effect of Short-Term Debt Ratio on Firm Value

The second objective of this study is to determine how the short-term debt ratio (STDR) affects firm value. Regression analysis indicates that STDR has a positive impact on Tobin's Q, but this impact is statistically insignificant (coefficient = 0.1128, $p = 0.2017$). There is a positive relationship, but there is insufficient statistical evidence to conclude that short-term debt has a systematic impact on firm value among the population of listed Nigerian insurance companies. This finding partially aligns with the positive a priori expectation based on Ayuba et al. (2019), which noted a pronounced positive impact of short-term debt on firm value. While the positive sign is not statistically significant, it is attributed to the sentiment of operational flexibility. Short-term debt, such as bank overdrafts and other current liabilities, provides an organisation with working capital that can be readily adjusted to accommodate operational exigencies with little delay. In the Nigerian insurance system, where premium collection and claim settlement are usually seasonal, short-term financing is critical for managing the firm's liquidity.

On the other hand, the benefits of short-term debt financing do not seem to outweigh the existing risks, as evidenced by the lack of statistical significance. In trade-off theory, unlike long-term debt, which is accompanied by high interest costs, short-term debt has lower costs but carries the risks of rollover, interest rate volatility, and liquidity constraints. These short-term debts can worsen the financial situation when the economic environment is characterised by high inflation, interest rate fluctuations, and currency instability. Frequent

refinancing may outweigh the benefits accrued from short-term debt. This point is captured by Nwala et al. (2020), who state that debt ratios, regardless of maturity categorisation, have no effect on the value of Nigerian insurance companies.

The lack of significance may also point to the unique nature of insurance companies. Most other company types, such as manufacturing or trading companies, face limited or zero cash conversion cycles because of short-term debt or trade credit, as they quickly convert inventory or finished goods into cash. For insurance companies, they have uncertain claim obligations and must contend with very strict liquidity ratios. Having too many short-term claims may pose a risk of a claim or liquidity crisis during periods of unanticipated high claim obligations, thereby negating any potential benefits to firm value.

Effect of Debt-to-Equity Ratio on Firm Value

The third objective of this study is to analyse how the D/E ratio affects the firm's value. In the regression model, the D/E ratio shows a positive yet very weak relationship with Tobin's Q (coefficient = 0.0032, $p = 0.9695$). Given the near-zero coefficient and the very large p-value, it is concluded that the debt-to-equity ratio is, in both statistical and economic terms, an irrelevant variable, and that it has no linear relationship with the firm's value in this sample. Of all the reviewed studies, the finding under consideration is most comparable to Nwala et al. (2020), which found that the equity-to-asset ratio, the inverse of leverage, had no significant relationship with firm value in the Nigerian insurance sector.

Using Trade-off Theory, the lack of correlation between D/E and firm value can be explained as follows: in the Nigerian insurance sector, the costs and benefits of leverage are balanced for firms, regardless of the D/E ratio (mean = 0.5868, range = 0.0004 to 0.9668). There may be marginal market or tax benefits to debt, but these would be insufficient to significantly increase firm value. Alternatively, the regulatory environment may be the cause, as constraints imposed by the NAICOM capital adequacy regime may require insurers to maintain a level of leverage so narrow that it eliminates the variation needed to detect a significant effect.

The D/E ratio may not capture the differentiated impacts of debt by maturity, since it is a measure of overall leverage. The correlation between LTDR and STDR is 0.8961, suggesting that debt components are indeed moving together and that their counteracting effects may be offset by compressing them into a D/E ratio. In this regard, the current study emphasises the importance of disaggregating debt along maturity periods.

Effect of Firm Size as a Control Variable

Firm size (SIZE) was included as a control variable and was associated with a negative, though statistically insignificant, effect on firm value (coefficient = -0.0200, $p = 0.3784$). This result contradicts earlier expectations of a positive value, as posited by Ayuba et al. (2019), and suggests that larger insurance companies do not have higher relative market values compared with total asset replacement costs. Although the negative effect is statistically insignificant, it may imply that smaller insurance companies in Nigeria are more dynamic in the market and able to achieve higher growth rates, which, in turn, improves their market valuations relative to larger firms. This may be due to inefficiencies, growth stagnation, or diminishing returns to scale that larger firms experience in the insurance sector in Nigeria. This finding contrasts with that of Yahaya (2026), where firm size carried a positive moderating effect on the relationship between capital structure and firm value.

5. Conclusion and Recommendations

This study examines how capital structure affects the value of listed insurance companies in Nigeria for the years 2015–2024. The study uses regression analysis on 140 firm-year observations from 14 insurance companies. The study shows that the long-term debt ratio positively and significantly affects firm value. This indicates that Nigerian listed insurance companies benefit from long-term debt financing, tax shields, stable capital, and the matching of long-term liabilities. By contrast, the short-term debt ratio positively affects firm value, but that effect is not significant. In this sector, short-term debt does not seem to positively affect firm value, given liquidity and refinancing risks in the Nigerian economy. The debt-equity ratio also positively affects firm value, but that effect is not significant. In general, firm leverage does not significantly affect firm value, meaning that, with respect to the debt structure, the proportion of debt in the capital structure is of lesser importance.

This research shows that the value of the firm can be associated with the capital structure, but this is only valid when the framework focuses on long-term debt financing. It thus excludes short-term debt and overall leverage. Based on this, the study recommends the following:

- i. Based on accumulated data on insurance companies in the Nigerian market, those listed on the Nigerian Stock Exchange are encouraged to further integrate corporate bonds, term loans, or similar forms of long-term debt into their overall asset mix, as this has been shown to significantly improve firm value. Moreover, management should facilitate the refinancing of long-term assets with long-term liabilities that are also expected to match the period of policyholder obligations.
- ii. Insurance companies should exercise caution against excessive reliance on short-term liabilities, such as bank loans and trade payables, since this liability type is unlikely to significantly increase the firm's value. A firm should optimise its debt maturity structure so that short-term liabilities are used primarily for working capital, while avoiding excessive rollover and interest rate risk. A comprehensive strategy for managing debt maturity should be implemented to provide the firm with the necessary liquidity to service the debt, especially during periods of heightened inflation and currency instability.
- iii. The insurance firms in Nigeria should also utilise permanent equity-boosting strategies, such as retention of earnings, rights issues, and/or public equity offerings, to improve their equity position. While improving equity, net worth, or the solvency of the company will generally provide some degree of confidence to investors, firms should recognise that the debt-to-equity ratio does not significantly correlate with the final firm value. Thus, this ratio, in isolation, should not be the primary focus of insurance companies, but rather they should place the main emphasis on the composition of debt maturities.

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