

ANALYSIS OF THE EFFECT OF FIRM LIQUIDITY AND FIRM LEVERAGE ON FIRM VALUE OF NIGERIAN LISTED NATURAL RESOURCES COMPANIES

ALPHEAUS, Ogechi Eberechi^{1*}, EZE, Ogechi Adanne², UDEOGU Ifeoma Anthonia³

***Correspondence:** ALPHEAUS, Ogechi Eberechi

^{1&3}Department of Accounting, Michael Okpara University of Agriculture Umudike, Abia state, Nigeria.

²Department of Accountancy, Federal Polytechnic Nekede, Imo State, Nigeria.

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ABSTRACT

This study examined the effects of firm liquidity and firm leverage on the Price-to-Book Ratio of Nigerian-listed natural resources companies. Specifically, the study investigated the effects of firm liquidity and firm leverage on the Price-to-Book Ratio, a proxy for firm value. The study adopted an ex post facto research design, using secondary data from the audited annual reports of four natural resources companies listed on the Nigerian Exchange Group: Aluminium Extrusion Industries Plc, Industrial & Medical Gases Nigeria Plc, Multiverse Mining and Exploration Plc, and Thomas Wyatt Nigeria Plc. A census sampling technique was employed, covering all four firms over fifteen years (2011 to 2025), resulting in 60 firm-year observations. Descriptive statistics, correlation analysis, unit root test, Johansen cointegration test, and panel least squares regression were used for data analysis at the 5% significance level. The unit root results showed that all variables were integrated of order one, while the Johansen cointegration test indicated the absence of a long-run equilibrium relationship among the variables. The regression results revealed that firm leverage had a positive and significant effect on the Price-to-Book Ratio ($\beta = 1.5516$, $p < 0.05$). Similarly, firm liquidity exerted a positive and significant effect on the Price-to-Book Ratio ($\beta = 0.3161$, $p < 0.05$). The study concluded that effective leverage and liquidity management significantly enhance the market value of Nigerian-listed natural resources companies. Consequently, the study recommends that management maintain an optimal debt-equity mix while strengthening liquidity management practices to improve investor confidence, operational efficiency, and long-term shareholder value.

Keywords: Firm Liquidity; Firm Leverage; Price-to-Book Ratio; Firm Value; Natural Resources Companies.

INTRODUCTION

Firm value is one of the foremost objectives of corporate financial management because it reflects the market's overall perception of a firm's ability to generate sustainable returns for shareholders. A higher firm value enhances investors' confidence, facilitates access to external financing, strengthens competitive positioning, and promotes long-term corporate sustainability (Brigham & Ehrhardt, 2022). Consequently, managers continually seek financial strategies that improve firm value while maintaining operational efficiency and financial stability. Among the internal financial factors that have received considerable attention in the corporate finance literature are firm liquidity and firm leverage, as they influence investment decisions, risk exposure, profitability, and ultimately market valuation (Ross et al., 2022).

Firm liquidity refers to the ability of a company to meet its short-term financial obligations as they fall due without disrupting normal business operations. Maintaining an optimal level of liquidity enables firms to finance working capital requirements, withstand unexpected financial shocks, and exploit profitable investment opportunities. However, excessive liquidity may result in idle resources that reduce returns to shareholders, whereas inadequate liquidity may increase financial distress and impair operational performance (Gitman et al., 2021). According to Brealey, Myers and Allen (2023), firms that effectively balance liquidity are better positioned to create long-term shareholder value.

Firm leverage, on the other hand, concerns the extent to which a company finances its assets through debt relative to equity. Debt financing may enhance firm value through tax advantages and increased investment capacity, consistent with the trade-off theory of capital structure. Nevertheless, excessive leverage increases financial risk, interest obligations, and the likelihood of financial distress, particularly during periods of economic uncertainty (Brealey et al., 2023). Similarly, Modigliani and Miller's capital structure propositions, when extended to imperfect markets, suggest that financing decisions significantly influence firm valuation through taxes, bankruptcy costs, and information asymmetry (Modigliani & Miller, 1963).

The Nigerian natural resources sector occupies a strategic position in the nation's economy, contributing significantly to industrial development, job creation, and economic diversification. Companies operating in the mining, solid minerals, and extractive industries often face operational uncertainties stemming from commodity price fluctuations, exchange rate volatility, infrastructure constraints, and financing constraints. These factors influence firms' capital structure decisions, liquidity management practices, and market valuation. According to Ibrahim and Isiaka (2020),

financial leverage decisions significantly influence the performance and valuation of Nigerian listed firms because the cost and availability of external financing affect investment capacity and shareholder wealth creation. Furthermore, effective working capital and liquidity management remain essential determinants of corporate sustainability, particularly in emerging markets where access to external financing is relatively constrained (Opler et al., 1999).

Although numerous empirical studies have examined the relationship between liquidity, leverage, and firm value across different sectors and countries, findings remain inconsistent due to differences in institutional environments, industry characteristics, economic conditions, and measurement approaches. For instance, Margaritis and Psillaki (2010) found that leverage could enhance firm performance when efficiently utilized, while Chadha and Sharma (2015) reported that excessive dependence on debt could negatively affect corporate performance. Similarly, Anton (2016) observed that leverage influences firm value differently depending on firm-specific characteristics and economic conditions. These divergent findings highlight the need for further investigation into the effects of firm liquidity and firm leverage on the value of Nigerian-listed natural resources companies.

STATEMENT OF THE PROBLEM

Maximizing firm value remains a fundamental objective of corporate organizations because it reflects investors' confidence, enhances access to capital, and supports long-term business sustainability. However, achieving this objective has become increasingly challenging for Nigerian listed natural resources companies due to persistent financial management difficulties. One major concern is firms' inability to maintain an optimal liquidity position that balances operational requirements with investment efficiency. While adequate liquidity enables firms to meet short-term obligations, sustain production activities, and respond to unforeseen financial pressures, excessive liquidity may result in inefficient asset utilization because funds that could generate higher returns remain idle. Conversely, inadequate liquidity exposes firms to payment difficulties, operational disruptions, and greater reliance on costly external financing (Opler et al., 1999). Gitman et al. (2021) further emphasized that ineffective liquidity management can weaken financial flexibility and negatively influence stakeholders' perception of corporate performance.

A second challenge concerns the complexity of leverage decisions for firms operating in volatile business environments. Although debt financing provides companies with additional resources for expansion, investment, and growth, excessive reliance on borrowed funds increases financial obligations, bankruptcy risk, and the likelihood of a decline in market valuation (Brigham & Ehrhardt, 2022). Brealey et al. (2023) argue that firms must carefully balance the benefits of debt financing against the costs of financial distress, as inappropriate capital structures may reduce shareholder wealth. In Nigeria, firms operate within an environment characterized by inflationary pressures,

exchange rate fluctuations, high financing costs, and unstable macroeconomic conditions, which make capital structure decisions increasingly important. Evidence from Akinsulire (2020) indicates that financing decisions significantly influence the performance and sustainability of Nigerian firms because the cost and availability of capital affect investment capacity and profitability.

Although previous empirical studies have investigated the relationship between liquidity, leverage, and firm value, much of the existing literature has concentrated on manufacturing, banking, and general non-financial sectors, leaving limited empirical evidence regarding listed natural resources companies in Nigeria. Furthermore, prior studies have produced inconsistent findings. For instance, Margaritis and Psillaki (2010) reported that leverage could enhance firm performance when managed efficiently, whereas Chadha and Sharma (2015) found that excessive leverage weakened corporate performance. Similarly, Anton (2016) demonstrated that the effect of financing decisions on firm value varies according to firm characteristics and economic conditions. This inconsistency, coupled with the limited sector-specific evidence, creates a knowledge gap that necessitates an empirical investigation into the effects of firm liquidity and firm leverage on the Price-to-Book Ratio of Nigerian-listed natural resources companies.

OBJECTIVES OF THE STUDY

The broad objective of this study is to analyze the effects of firm liquidity and firm leverage on the value of Nigerian-listed natural resources companies. The specific objectives are to:

1. Examine the effect of firm liquidity on the Price-to-Book Ratio of Nigerian-listed natural resources companies.
2. Evaluate the effect of firm leverage on the Price-to-Book Ratio of Nigerian listed natural resources companies.

LITERATURE REVIEW

Concept of Firm Liquidity

Firm liquidity refers to the ability of an organization to meet its short-term financial obligations promptly using available current assets without disrupting normal business operations. It reflects the firm's financial flexibility and its capacity to convert assets into cash with minimal loss in value. Liquidity is a critical aspect of working capital management because it enables firms to settle maturing liabilities, finance routine operations, and withstand unexpected financial pressures. According to Brigham and Ehrhardt (2022), effective liquidity management ensures that firms maintain sufficient resources to support continuous operations while avoiding excessive investment in low-return liquid assets. Similarly, Ross, Westerfield, Jordan, and Lim (2022) explain that liquidity represents a firm's short-term solvency position and operational resilience, as firms with stronger liquidity are generally less exposed to financial distress.

Effective liquidity management enables firms to maintain production activities, meet supplier obligations, respond to market opportunities, and undertake profitable investments when they arise. Gitman, Juchau, and Flanagan (2021) argue that firms that maintain an appropriate level of liquidity are better positioned to achieve operational efficiency and sustain profitability over time. However, maintaining excessive liquidity may entail an opportunity cost, as funds held in cash or other liquid assets may earn lower returns than productive investments. Brealey, Myers, and Allen (2023) emphasize that while liquidity reduces financial risk, excessive holdings of liquid assets may weaken shareholder returns by limiting investment efficiency. Conversely, insufficient liquidity may expose firms to payment difficulties, operational disruptions, loss of supplier confidence, and increased reliance on costly external financing.

In empirical corporate finance literature, firm liquidity is commonly measured using indicators such as the current ratio, quick ratio, cash ratio, and cash conversion cycle. Among these measures, the current ratio remains one of the most widely used because it compares current assets to current liabilities and indicates a firm's ability to meet short-term obligations. According to Palombini and Nakamura (2012), effective working capital management, including appropriate liquidity levels, contributes significantly to corporate performance by improving operational efficiency and reducing financial constraints. For firms operating in capital-intensive industries such as natural resources, maintaining adequate liquidity is particularly important because they face high investment requirements, uncertain cash flows, and exposure to commodity price fluctuations. Therefore, efficient liquidity management enhances financial flexibility and operational stability, ultimately contributing to improved market valuation.

Concept of Firm Leverage

Firm leverage refers to the extent to which a company utilizes debt financing relative to equity in financing its assets and business operations. It reflects managerial decisions regarding the appropriate combination of debt and equity required to maximize shareholders' wealth. Leverage enables firms to access additional financial resources beyond internally generated funds, thereby supporting expansion, investment opportunities, and business growth. According to Brealey, Myers, and Allen (2023), debt financing can enhance shareholders' returns when the benefits derived from investment opportunities exceed the cost of borrowing. Similarly, Ross et al. (2022) explain that leverage refers to the use of fixed-cost financing, which can magnify both expected returns and financial risk. Thus, while leverage can improve profitability and firm value, it also increases exposure to financial obligations and potential distress.

Corporate finance theories provide important explanations for firms' leverage decisions. The Trade-off Theory suggests that firms determine their optimal capital structure by balancing the benefits of debt

financing, particularly tax advantages, against the costs associated with financial distress and agency conflicts. The theory implies that moderate leverage can enhance firm value when the benefits of debt exceed the associated risks. Conversely, the Pecking Order Theory proposed by Myers (1984) argues that firms prefer internal financing sources before external debt and issue equity as a last option because of information asymmetry between managers and investors. These theoretical perspectives demonstrate that financing decisions significantly influence corporate performance, risk exposure, and market valuation.

Although moderate leverage may improve shareholder returns through tax shields and increased investment capacity, excessive borrowing increases interest obligations, refinancing risk, earnings volatility, and the probability of bankruptcy (Brigham & Ehrhardt, 2022). Similarly, extremely low leverage may restrict firms from exploiting profitable investment opportunities and achieving efficient capital utilization. Leverage is commonly measured using indicators such as the debt-to-equity ratio, debt-to-assets ratio, and total debt ratio. According to Rajan and Zingales (1995), these leverage measures provide important insights into firms' capital structure choices and the factors influencing their reliance on debt financing. For Nigerian listed natural resources companies, where operations require substantial capital investment and long-term financing commitments, maintaining an optimal leverage position is essential for sustaining operations, attracting investors, and enhancing market value.

Concept of Firm Value

Firm value represents the overall economic worth of a company as perceived by investors, creditors, and other market participants. It reflects the market assessment of a firm's current financial strength, expected future earnings, growth opportunities, risk exposure, and capacity to create sustainable shareholder wealth. According to Brigham and Ehrhardt (2022), maximizing firm value is the central objective of financial management because it aligns managerial decisions with shareholders' long-term interests. Similarly, Brealey, Myers, and Allen (2023) explain that firm value is influenced by several corporate decisions, including investment decisions, financing choices, profitability performance, liquidity management, dividend policies, and prevailing market conditions.

Although firm value can be measured using several accounting and market-based indicators, this study adopts the Price-to-Book Ratio (PBR) as a proxy for firm value. The Price-to-Book Ratio measures the relationship between a firm's market price per share and its book value per share, indicating how investors value the company's net assets relative to their recorded accounting value. A higher Price-to-Book Ratio generally indicates that investors expect the firm to generate returns above the value of its underlying assets, reflecting favourable growth prospects and stronger market confidence. Conversely, a lower ratio may suggest undervaluation, weaker profitability expectations,

or concerns regarding future performance. According to Fama and French (1992), the book-to-market relationship provides important information about market valuation because investors incorporate expectations about future profitability and risk when pricing firms.

The Price-to-Book Ratio is particularly relevant for asset-intensive industries such as natural resources because these firms possess substantial physical assets, including mineral resources, production facilities, and operational infrastructure, which form a significant component of their economic value. Chung and Pruitt (1994) emphasize that market-based valuation measures provide useful indicators of how investors assess corporate assets and future earning potential. Consequently, firms that maintain effective liquidity management and optimal leverage structures are more likely to enhance investor confidence, improve market perception, and achieve higher Price-to-Book Ratios. Therefore, examining the influence of liquidity and leverage on PBR provides valuable insights into how financial management decisions affect the market valuation of Nigerian-listed natural resources companies.

THEORETICAL REVIEW

Trade-off Theory

The Trade-off Theory explains how firms determine an optimal capital structure by balancing the benefits and costs of debt financing. The theory originated from Modigliani and Miller (1963), who introduced corporate taxes into capital structure decisions, and was further developed by Kraus and Litzenberger (1973). It argues that firms maximize value by balancing the tax advantages of debt financing against the costs of financial distress, bankruptcy risk, and agency problems. According to Brealey, Myers and Allen (2023), an optimal leverage level exists where the marginal benefits of debt equal its marginal costs. While moderate leverage can enhance firm value through increased investment capacity and tax benefits, excessive debt increases financial risk and may reduce investors' confidence. The theory is relevant to this study because it explains how leverage decisions influence the Price-to-Book Ratio of Nigerian listed natural resources companies. Firms maintaining an optimal debt-equity mix are expected to achieve higher market valuation.

Liquidity Preference Theory

Liquidity Preference Theory was developed by Keynes (1936) to explain individuals' and firms' preference for holding liquid assets due to transaction, precautionary, and speculative motives. Although initially developed within monetary economics, the theory has been applied in corporate finance to explain why firms maintain liquid resources to support operational continuity and financial flexibility. Firms with adequate liquidity are better positioned to meet short-term obligations, withstand unexpected financial pressures, and exploit investment opportunities (Gitman, Juchau & Flanagan, 2021). However, excessive liquidity may entail an opportunity cost because idle funds earn

lower returns than productive investments (Brealey, Myers & Allen, 2023). The theory is relevant to this study because it explains how effective liquidity management can enhance operational stability, reduce financial risk, and improve investor confidence, thereby increasing the Price-to-Book Ratio of Nigerian listed natural resources companies.

EMPIRICAL REVIEW

Empirical evidence on the relationship between firm liquidity, firm leverage, and firm value remains mixed across countries, industries, and measurement approaches. In Nigeria, studies have shown mixed findings on how liquidity and leverage influence corporate valuation. Salawu (2007) examined the determinants of capital structure in Nigerian firms and found that leverage decisions are significantly influenced by profitability, growth opportunities, and firm characteristics, suggesting that financing choices have important implications for corporate performance. Similarly, Onaolapo and Kajola (2010) reported that leverage significantly affects firm performance among Nigerian firms, with excessive debt potentially reducing profitability due to increased financial obligations.

Regarding liquidity, Akinlo and Asaolu (2012) found that working capital management significantly influences profitability among Nigerian firms, emphasizing that effective liquidity management enhances operational efficiency. However, excessive investment in current assets may reduce returns because resources tied up in idle assets limit productive investment opportunities. In another Nigerian study, Salawu and Agboola (2008) observed that firms' capital structure decisions are influenced by institutional and firm-specific factors, suggesting that leverage outcomes may vary across industries.

Outside Nigeria, Al-Matar et al. (2018), using listed firms in Jordan, reported that liquidity management significantly influenced firm performance, while leverage had varying effects depending on firm characteristics. Nguyen and Nguyen (2020), examining Vietnamese listed firms, found that capital structure and liquidity significantly influenced firm performance, although the magnitude of effects differed across sectors. In Indonesia, Dewi and Wirajaya (2013) found that leverage significantly influenced firm value, indicating that appropriate debt utilization can enhance market valuation. Similarly, Aggarwal and Padhan (2017) reported that liquidity and leverage significantly affect firm value among Indian firms, emphasizing the importance of maintaining an optimal financial structure.

Evidence from developed economies also remains inconclusive. Margaritis and Psillaki (2010), using French manufacturing firms, found that leverage positively influenced firm performance up to an optimal point, supporting the trade-off view of capital structure. Conversely, Fosu (2013) found that excessive leverage could reduce firm performance because of increased financial risk. Similarly, Dang et al. (2019) reported that financing decisions significantly influence firm valuation, although the direction of the relationship depends on firm characteristics and market conditions.

These empirical findings reveal inconsistent relationships between liquidity, leverage, and firm value. These differences may be attributed to variations in economic environments, industry structures, measurement approaches, and institutional contexts. The inconsistency provides justification for examining how liquidity and leverage influence the Price-to-Book Ratio of Nigerian listed natural resources companies, a sector characterized by high capital intensity and financing requirements.

METHODOLOGY

This study adopted an ex post facto research design because it relied on historical financial data obtained from published annual reports without manipulating the study variables. The study was conducted in Nigeria and focused on companies classified under the Natural Resources sector of the Nigerian Exchange Group (NGX) for a 15-year period from 2011 to 2025. The population comprised the four (4) listed natural resources companies as of 31 December 2025, namely Aluminum Extrusion Industries Plc, Industrial & Medical Gases Nigeria Plc, Multiverse Mining and Exploration Plc, and Thomas Wyatt Nigeria Plc. Since the population was relatively small and manageable, the study adopted a census sampling technique, resulting in a sample size of all four firms. Secondary data were collected from the audited annual reports and accounts of the sampled companies for the study period, complemented with information obtained from the Nigerian Exchange Group database.

Data were analyzed using descriptive statistics, correlation analysis, Unit root test, Cointegration test and panel regression estimation to determine the effect of firm liquidity and firm leverage on firm value. The functional model is specified as:

$$PBR = \beta_0 + \beta_1 FLIQ + \beta_2 FLEV + \varepsilon$$

Where PBR = Price-to-Book Ratio (firm value), FLIQ = Firm Liquidity, FLEV = Firm Leverage, β_0 = intercept, β_1 – β_2 = regression coefficients, ε = error term. Firm value was measured using the Price-to-Book Ratio (Market Price per Share ÷ Book Value per Share). Firm liquidity was measured using the Current Ratio (Current Assets ÷ Current Liabilities), while firm leverage was measured using the Debt-to-Equity Ratio (Total Debt ÷ Total Equity). These proxies are widely adopted in corporate finance literature because they effectively capture market valuation, short-term solvency, and financing structure, respectively. The statistical analyses were performed using appropriate econometric software, and all hypotheses were tested at the 5% significance level.

RESULTS AND DISCUSSION

This section presents the empirical results of the study and provides a detailed discussion of the findings on the effect of firm liquidity and firm leverage on the Price-to-Book Ratio of Nigerian listed natural resources companies. The results are presented based on descriptive statistics, correlation analysis, unit root tests, cointegration analysis, and regression estimation, while the discussion relates the empirical outcomes to the theoretical expectations and existing empirical evidence.

Descriptive Statistics

The descriptive statistics presented in Table 1 provide an overview of the distribution, central tendency, variability, and normality of firm leverage (FLEV), firm liquidity (FLIQ), and Price-to-Book Ratio (PBR) for the sampled Nigerian-listed natural resources companies.

Table 1: Descriptive Statistics of Firm Leverage, Firm Liquidity, and Price-to-Book Ratio

	FLEV	FLIQ	PBR
Mean	0.316050	2.003500	0.929200
Median	0.318500	1.884000	0.895000
Maximum	0.469000	3.825000	1.126000
Minimum	0.137000	1.197000	0.731000
Std. Dev.	0.089455	0.617003	0.117709
Skewness	-0.129604	0.896750	0.199813
Kurtosis	2.124557	3.618256	1.731402
Jarque-Bera	2.083975	8.997210	4.422606
Probability	0.352753	0.011125	0.109558
Sum	18.96300	120.2100	55.75200
Sum Sq. Dev.	0.472133	22.46090	0.817476
Observations	60	60	60

Source: Authors E-views computation, 2026

The descriptive statistics presented in Table 1 provide an overview of the distributional characteristics and behavioural patterns of firm leverage (FLEV), firm liquidity (FLIQ), and Price-to-Book Ratio (PBR) for the 60 firm-year observations covering the sampled Nigerian listed natural resources companies.

The mean value of firm leverage (FLEV) was 0.316, with a median of 0.319, indicating that the sampled firms maintained an average debt level of approximately 31.6% relative to equity during the study period. The closeness between the mean and median suggests that leverage was relatively stable across the firms. The minimum and maximum values of 0.137 and 0.469, respectively, show that companies maintained moderate levels of debt financing, while the standard deviation of 0.089 indicates limited variation in leverage decisions. The negative skewness of -0.130 suggests a slight concentration of observations toward higher leverage levels, while the kurtosis of 2.125 indicates a distribution flatter than the normal distribution.

Firm liquidity (FLIQ), measured by the current ratio, had a mean of 2.004, indicating that the sampled firms had approximately ₦2 in current assets for every ₦1 in current liabilities. This suggests a generally satisfactory short-term solvency position. The median value of 1.884 indicates that most observations were close to the average liquidity level. However, the difference between the minimum (1.197) and maximum (3.825) values reveals considerable variation in liquidity management practices

among the firms. The positive skewness of 0.897 indicates that some firms maintained significantly higher liquidity positions than others. The Jarque-Bera probability value of 0.011 suggests that liquidity data significantly deviated from normality.

The Price-to-Book Ratio (PBR) averaged 0.929, with a median of 0.895, indicating that the market valuation of the sampled companies was slightly below their book value. The minimum and maximum values of 0.731 and 1.126 reveal moderate differences in market perception among the firms. The standard deviation of 0.118 indicates relatively low dispersion in market valuation. The positive skewness value (0.200) suggests a slight tendency toward higher PBR values, while the kurtosis value of 1.731 indicates a relatively flat distribution. The Jarque-Bera probability of 0.110 confirms that PBR approximately follows a normal distribution. The descriptive results indicate moderate leverage, adequate liquidity, and relatively stable market valuations among Nigerian-listed natural resources companies during the study period.

Correlation

The correlation analysis presented in Table 2 examines the direction and strength of the linear relationships among firm leverage (FLEV), firm liquidity (FLIQ), and Price-to-Book Ratio (PBR) for the sampled Nigerian listed natural resources companies.

Table 2: Correlation Matrix of Firm Leverage, Firm Liquidity, and Price-to-Book Ratio

	FLEV	FLIQ	PBR
FLEV	1.000000	-0.904494	-0.319461
FLIQ	-0.904494	1.000000	0.590314
PBR	-0.319461	0.590314	1.000000

Source: Authors E-views computation, 2026

The correlation matrix presented in Table 2 illustrates the direction and strength of the relationships among firm leverage (FLEV), firm liquidity (FLIQ), and Price-to-Book Ratio (PBR) for the sampled Nigerian-listed natural resources companies. The result indicates a strong negative relationship between firm leverage and liquidity, with a correlation coefficient of -0.904, suggesting that firms with higher debt levels tend to have lower liquidity. This implies that increased reliance on debt financing may put pressure on available liquid resources due to higher debt-servicing obligations. Furthermore, the relationship between firm leverage and Price-to-Book Ratio was negative (-0.319), indicating that higher leverage is associated with a decline in market valuation, although the relationship is relatively weak. This suggests that investors may perceive excessive debt exposure as increasing financial risk. Conversely, firm liquidity and Price-to-Book Ratio showed a positive correlation coefficient of 0.590, indicating that firms with stronger liquidity positions tend to have higher market valuations. This indicates that effective liquidity management may enhance investor

confidence and improve firm value. Overall, the correlation results suggest that liquidity contributes positively to market valuation, while excessive leverage may reduce firm value.

Unit root test

To ensure the reliability of the econometric analysis and avoid spurious regression results, the Augmented Dickey-Fuller (ADF) unit root test was conducted to determine the stationarity properties and order of integration of the study variables.

Table 3: Summary of Unit Root Test Results at First Difference

S/N	Variable	ADF Statistic	p-value	Order of Integration
1	Price-to-Book Ratio (PBR)	-7.573139	0.0000	I(1)
2	Firm Leverage (FLEV)	-7.547436	0.0000	I(1)
3	Firm Liquidity (FLIQ)	-6.998785	0.0000	I(1)

Source: Authors E-views computation, 2026

The Augmented Dickey-Fuller (ADF) unit root test results presented in Table 3 indicate that all study variables became stationary after first differencing. Specifically, Price-to-Book Ratio (PBR), Firm Leverage (FLEV), and Firm Liquidity (FLIQ) recorded ADF statistics of -7.573139, -7.547436, and -6.998785, respectively, with probability values of 0.0000. Since all p-values are below the 5% significance level, the null hypothesis of a unit root is rejected, confirming that the variables are stationary at first difference. Therefore, PBR, FLEV, and FLIQ are integrated of order one, I(1). The common order of integration among the variables supports the application of the Johansen cointegration test to examine the presence of a long-run equilibrium relationship before proceeding with regression analysis. The findings confirm that the variables possess appropriate statistical properties for further econometric estimation.

Johansen Cointegration Test

Following the confirmation that all variables are integrated of order one, the Johansen cointegration test was employed to determine whether a long-run equilibrium relationship exists among firm leverage, firm liquidity, and the Price-to-Book Ratio.

Table 4: Summary of Johansen Cointegration Test Results

S/N	Hypothesized No. of Cointegrating Equations	Trace Statistic	Trace p-value	Max-Eigen Statistic	Max-Eigen p-value	Decision
1	None	22.46650	0.2733	15.55906	0.2517	No Cointegration
2	At most 1	6.90744	0.5884	6.17050	0.5914	No Cointegration
3	At most 2	0.73694	0.3906	0.73694	0.3906	No Cointegration

Source: Authors E-views computation, 2026

The Johansen cointegration test was conducted to examine the existence of a long-run equilibrium relationship among Price-to-Book Ratio (PBR), Firm Leverage (FLEV), and Firm Liquidity (FLIQ). The results presented in Table X show that both the Trace and Maximum Eigenvalue tests failed to identify any cointegrating relationship among the variables. The Trace statistic for the null hypothesis of no cointegration (22.46650) was below the 5% critical value (29.79707) with a p-value of 0.2733, while the Maximum Eigenvalue statistic (15.55906) was also below its critical value (21.13162) with a p-value of 0.2517. Similarly, all other cointegration hypotheses recorded probability values above the 5% significance level. Therefore, the null hypothesis of no cointegration is accepted, indicating that PBR, FLEV, and FLIQ do not share a stable long-run relationship. Consequently, a standard panel regression model was considered appropriate for analyzing the relationship among the variables.

Panel Regression Analysis

The panel regression analysis was conducted to examine the effect of firm leverage and firm liquidity on the Price-to-Book Ratio of Nigerian listed natural resources companies and to determine the statistical significance of the explanatory variables.

Table 5: Panel Regression Results on the Effect of FLEV and FLIQ on PBR

Dependent Variable: PBR				
Method: Least Squares				
Date: 08/05/26 Time: 14:49				
Sample: 2011 2070				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.194443	0.153030	-1.270619	0.2090
FLEV	1.551557	0.258018	6.013367	0.0000
FLIQ	0.316084	0.037408	8.449549	0.0000
R-squared	0.601364	Mean dependent var		0.929200
Adjusted R-squared	0.587377	S.D. dependent var		0.117709
S.E. of regression	0.075612	Akaike info criterion		-2.277708
Sum squared resid	0.325875	Schwarz criterion		-2.172991
Log likelihood	71.33123	Hannan-Quinn criter.		-2.236747
F-statistic	42.99376	Durbin-Watson stat		0.394629
Prob(F-statistic)	0.000000			

Source: Authors E-views computation, 2026

The regression results presented in Table 5 examine the effect of firm leverage (FLEV) and firm liquidity (FLIQ) on the Price-to-Book Ratio (PBR) of Nigerian listed natural resources companies. The model produced an R-squared value of 0.6014, indicating that approximately 60.14% of the

variation in the Price-to-Book Ratio is jointly explained by firm leverage and firm liquidity, with the remaining 39.86% attributable to other factors not included in the model. The adjusted R-squared value of 0.5874 further confirms that the explanatory variables possess substantial predictive power. The coefficient of firm leverage (FLEV) is 1.5516, with a t-statistic of 6.0134 and a probability value of 0.0000, indicating a positive and statistically significant effect on the Price-to-Book Ratio at the 5% significance level. This implies that an increase in leverage significantly enhances firm value. Specifically, a unit increase in firm leverage is associated with an average increase of approximately 1.552 units in the Price-to-Book Ratio, holding other factors constant. This finding suggests that debt financing may provide firms with additional resources for expansion, thereby improving market valuation.

Similarly, firm liquidity (FLIQ) recorded a positive coefficient of 0.3161, with a t-statistic of 8.4495 and a probability value of 0.0000, indicating that liquidity has a positive and highly significant effect on the Price-to-Book Ratio. This implies that firms with stronger liquidity positions tend to enjoy higher market valuations because adequate liquidity enhances operational stability, reduces financial risk, and strengthens investors' confidence.

The overall model is statistically significant, as evidenced by the F-statistic of 42.9938 and its associated p-value of 0.0000, confirming that firm leverage and firm liquidity jointly have a significant effect on the Price-to-Book Ratio of Nigerian-listed natural resources companies. These findings indicate that effective liquidity management and optimal leverage decisions contribute positively to market valuation and shareholder wealth maximization.

DISCUSSION OF FINDINGS

The findings revealed that firm leverage has a positive and significant effect on the Price-to-Book Ratio of Nigerian listed natural resources companies. This outcome is consistent with the a priori expectation that an optimal level of debt financing enhances firm value by providing additional resources for investment, expansion, and value creation. The finding supports the Trade-off Theory developed by Kraus and Litzenberger (1973), which explains that firms maximize value by balancing the benefits of debt financing, particularly tax advantages, against the costs associated with financial distress and bankruptcy risk. The positive coefficient suggests that the sampled natural resources firms have maintained leverage levels that enable them to utilize debt benefits without exposing investors to excessive financial risk. This finding agrees with Margaritis and Psillaki (2010), who reported that leverage can positively influence firm performance when firms operate below their optimal debt threshold. Similarly, Onaolapo and Kajola (2010) found that capital structure decisions significantly influence corporate performance among Nigerian firms. However, the finding contrasts with Fosu (2013), who reported that excessive leverage could reduce firm performance due to increased

financial obligations and exposure to financial risk. From a practical perspective, the result implies that managers of Nigerian natural resources companies should adopt a balanced debt-equity structure that supports investment activities while maintaining sustainable repayment capacity. Investors may interpret prudent leverage as evidence of effective financial management and growth potential.

The study further revealed that firm liquidity has a positive and significant effect on the Price-to-Book Ratio, supporting the a priori expectation that firms with stronger liquidity positions achieve higher market valuation. This finding aligns with Keynes' (1936) Liquidity Preference Theory, which emphasizes the importance of maintaining liquid resources for transaction, precautionary, and investment purposes. Adequate liquidity improves firms' ability to meet short-term obligations, finance operations, withstand economic shocks, and seize profitable opportunities, thereby strengthening investor confidence. The finding is consistent with Akinlo and Asaolu (2012), who established that effective working capital and liquidity management contribute significantly to firm performance among Nigerian firms. It also agrees with Al-Matar et al. (2018), who found that liquidity management influences corporate performance among listed firms. However, the finding differs from studies such as Dewi and Wirajaya (2013), which suggested that financial structure variables may exert stronger influence on firm value than liquidity-related factors. Practically, the result indicates that natural resources companies should maintain optimal liquidity levels by ensuring sufficient working capital availability while avoiding excessive accumulation of idle assets. Effective liquidity management will enhance operational stability, investor confidence, and long-term shareholder value.

CONCLUSION

This study examined the effects of firm liquidity and firm leverage on the Price-to-Book Ratio of Nigerian-listed natural resources companies. The findings revealed that both firm leverage and firm liquidity exert positive and statistically significant effects on the Price-to-Book Ratio, indicating that financing and liquidity management decisions play important roles in enhancing firm value. Specifically, the results suggest that firms adopting optimal debt financing can improve market valuation by increasing investment capacity, while adequate liquidity strengthens operational efficiency and investor confidence. The findings are consistent with the Trade-off Theory and Liquidity Preference Theory, which emphasize the importance of maintaining an optimal capital structure and sufficient liquid resources to maximize shareholder wealth. Overall, the study concludes that effective leverage and liquidity management are critical drivers of firm value among Nigerian listed natural resources companies and should remain central considerations in corporate financial decision-making.

RECOMMENDATIONS

Based on the study's findings, the following recommendations are proposed to guide financial management practices among Nigerian listed natural resources companies in enhancing firm value through effective liquidity and leverage management.

1. Management of Nigerian listed natural resources companies should maintain an optimal capital structure by employing debt financing at sustainable levels that maximize tax and investment benefits while minimizing financial distress risks. This can be achieved through periodic reviews of debt-to-equity ratios and prudent financing decisions aligned with the firms' long-term growth objectives and market conditions.
2. Companies should strengthen their liquidity management practices by maintaining adequate current assets to meet short-term obligations without accumulating excessive idle resources. Effective working capital management, regular cash flow forecasting, and efficient utilization of liquid assets will enhance operational stability, improve investor confidence, and ultimately increase the Price-to-Book Ratio and overall firm value.

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The author(s) declare that it is not applicable.

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Competing interests

The author(s) declare that they have no competing interests.

References

1. Aggarwal, D., & Padhan, P. C. (2017). Impact of capital structure on firm value: Evidence from Indian hospitality industry. *Theoretical Economics Letters*, 7(4), 982–1000. <https://doi.org/10.4236/tel.2017.74067>
2. Akinlo, O., & Asaolu, T. (2012). Profitability and leverage: Evidence from Nigerian firms. *Global Journal of Business Research*, 6(1), 17–25.
3. Akinsulire, O. (2020). *Financial management* (11th ed.). Ceemol Publishers.
4. Al-Matar, E. M., Al-Swidi, A. K., & Fadzil, F. H. (2018). The effect of liquidity and leverage on firm performance: Evidence from Jordanian listed firms. *International Journal of Economics and Financial Issues*, 8(3), 1–8.
5. Anton, S. G. (2016). The impact of leverage on firm growth and value: Evidence from Romanian listed firms. *Journal of Economic Studies*, 43(5), 761–779. <https://doi.org/10.1108/JES-09-2015-0167>
6. Brealey, R. A., Myers, S. C., & Allen, F. (2023). *Principles of corporate finance* (14th ed.). McGraw-Hill Education.
7. Brigham, E. F., & Ehrhardt, M. C. (2022). *Financial management: Theory and practice* (17th ed.). Cengage Learning.
8. Chadha, S., & Sharma, A. K. (2015). Capital structure and firm performance: Empirical evidence from India. *Vision: The Journal of Business Perspective*, 19(4), 295–302. <https://doi.org/10.1177/0972262915610852>
9. Chung, K. H., & Pruitt, S. W. (1994). A simple approximation of Tobin's Q. *Financial Management*, 23(3), 70–74. <https://doi.org/10.2307/3665623>
10. Dang, V. A., Kim, M., & Shin, Y. (2019). Asymmetric adjustment toward optimal capital structure: Evidence from a crisis. *International Review of Financial Analysis*, 63, 77–87. <https://doi.org/10.1016/j.irfa.2019.02.004>
11. Dewi, A. S. M., & Wirajaya, A. (2013). Pengaruh struktur modal, profitabilitas dan ukuran perusahaan terhadap nilai perusahaan. *E-Jurnal Akuntansi Universitas Udayana*, 4(2), 358–372.
12. Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance*, 47(2), 427–465. <https://doi.org/10.1111/j.1540-6261.1992.tb04398.x>

13. Fosu, S. (2013). Capital structure, product market competition and firm performance: Evidence from South Africa. *The Quarterly Review of Economics and Finance*, 53(2), 140–151. <https://doi.org/10.1016/j.qref.2013.02.004>
14. Gitman, L. J., Juchau, R., & Flanagan, J. (2021). *Principles of managerial finance*. Pearson Education.
15. Ibrahim, U. A., & Isiaka, A. Q. (2020). Effect of financial leverage on firm value: Evidence from selected firms quoted on the Nigerian Stock Exchange. *European Journal of Business and Management*, 12(3), 1–10.
16. Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London: Macmillan.
17. Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance*, 28(4), 911–922. <https://doi.org/10.1111/j.1540-6261.1973.tb01415.x>
18. Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance*, 34(3), 621–632. <https://doi.org/10.1016/j.jbankfin.2009.08.023>
19. Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53(3), 433–443.
20. Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 575–592. <https://doi.org/10.1111/j.1540-6261.1984.tb03646.x>
21. Myers, S. C. (2001). Capital structure. *Journal of Economic Perspectives*, 15(2), 81–102. <https://doi.org/10.1257/jep.15.2.81>
22. Nguyen, T. C., & Nguyen, T. T. (2020). The impact of capital structure on firm performance: Evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 7(6), 97–105.
23. Onaolapo, A. A., & Kajola, S. O. (2010). Capital structure and firm performance: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 25, 70–82.
24. Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52(1), 3–46. [https://doi.org/10.1016/S0304-405X\(99\)00003-3](https://doi.org/10.1016/S0304-405X(99)00003-3)
25. Palombini, N. V. N., & Nakamura, W. T. (2012). Key factors in working capital management in the Brazilian market. *Revista de Administração de Empresas*, 52(1), 55–69. <https://doi.org/10.1590/S0034-75902012000100005>
26. Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421–1460. <https://doi.org/10.1111/j.1540-6261.1995.tb05184.x>

27. Ross, S. A., Westerfield, R. W., Jordan, B. D., & Lim, J. (2022). *Fundamentals of corporate finance*. McGraw-Hill Education.
28. Salawu, R. O. (2007). An empirical analysis of the capital structure of selected quoted companies in Nigeria. *The International Journal of Applied Economics and Finance*, 1(1), 16–28.
29. Salawu, R. O., & Agboola, A. A. (2008). The determinants of capital structure of large non-financial listed firms in Nigeria. *The International Journal of Business and Finance Research*, 2(2), 75–84.

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