

FINANCIAL DERIVATIVES AND FIRM VALUE IN NIGERIA'S INVESTMENT FIRMS: THE MODERATING ROLE OF EXCHANGE RATE VOLATILITY

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ABSTRACT

Background: Financial derivatives have become widely used by firms to manage exposure to market risks such as interest rate, foreign exchange, and commodity price volatility. While derivatives are designed to hedge risk, their effect on firm value remains debated in empirical literature. Some studies suggest that derivatives enhance value through reduced cash flow volatility and improved financial stability, whereas others highlight potential costs arising from misuse and speculative behaviour. This mixed evidence makes the relationship between financial derivatives and firm value an important area of investigation.

Aim: Based on this, this study examined the effect of financial derivatives on firm value of listed investment firms in Nigeria, with particular emphasis on the moderating role of exchange rate volatility (ERV).

Methodology: This study employed an ex post facto research design covering from 2015 to 2024, using retrospective data from the administrative and financial records of investment firms listed on the Nigerian Exchange Group. The period was selected because 2015 marked major changes in exchange rate management and a phase of heightened FX volatility during which derivative usage expanded. Secondary data were sourced from annual reports and audited financial statements, and all ten listed investment firms formed the census sample. Data analysis involved descriptive statistics, correlation analysis, diagnostic tests, and panel regression to evaluate the effects of financial derivatives and exchange rate volatility on firm value.

Findings: The findings implied that derivative assets enhance market valuation through hedging and signalling benefits, whereas derivative liabilities erode value through leverage and distress exposure, and that currency instability constrains the value-creation potential of derivative assets.

Contributions: This study would benefit multiple stakeholders. Managers of listed investment firms will gain insights into how effective use of financial derivatives can enhance firm value under exchange rate volatility. Investors and shareholders will benefit from improved understanding of firms' risk management strategies and their value implications. Regulators and policymakers will find the results useful for strengthening guidelines on derivative usage and financial stability. Academics and researchers will also benefit from the study's context specific evidence and extended analytical framework in an emerging market setting.

Recommendations:

Regulators: Regulators such as the Securities and Exchange Commission (SEC) and the Central Bank of Nigeria (CBN) should enforce stricter disclosure requirements on derivative usage, particularly liabilities, to enhance transparency and reduce information asymmetry in the market.

Policymakers: Policymakers should stabilize the macroeconomic environment by addressing persistent exchange rate instability, as excessive volatility diminishes the protective role of derivatives and undermines firm value in the long run.

Management: Boards of directors and audit committees should institute stronger governance oversight to ensure that derivative positions are effectively monitored and integrated into the overall corporate strategy. Firms should adopt robust currency risk management strategies, including diversification of hedging instruments, to cushion the destabilizing effects of exchange rate volatility.

Researchers: Future research should expand sectoral coverage beyond investment firms by including manufacturing, banking, and oil and gas firms to enhance external validity. Multi-country studies across Sub-Saharan Africa or emerging markets would enable stronger comparative insights on derivative practices and regulatory environments. Researchers should also explore alternative valuation metrics such as enterprise value, market-to-book ratios, or discounted cash flows to capture multi-dimensional firm valuation outcomes. Finally, qualitative or mixed-methods approaches could examine governance, disclosure quality, and managerial incentives underlying derivative strategies, which cannot be captured through archival data alone.

Keywords: Derivative asset intensity, Derivative liability intensity, Exchange rate volatility, Firm size, Firm value, Investment firms



1. Introduction

Firm value is a vital measure of a firm's strength because it signals the ability to deliver consistent returns and attract new investment (Maharani, 2025). However, in developed economies it is shaped by both financial performance and external forces such as global competition, disruptive technologies, and artificial intelligence, and these pressures often push firms toward short-term gains rather than long-term sustainability (Buchman et al., 2025). Moreover, investors demand strict ESG compliance, and high costs plus inconsistent assessments strain profitability, while geopolitical risks, currency shifts, trade policies, and regulatory burdens increase volatility and resource pressure (Chatterjee and Kundu, 2025; Mateko, 2025; Lane, 2025; Rahman, 2025). Therefore, leaders in such contexts must balance short-term performance with resilience and stakeholder trust to sustain and grow firm value (Wicaksana and Purbawangsa, 2025).

In developing economies like Nigeria the determinants of firm value are further weakened by structural and systemic challenges, and economic instability, weak governance, and unpredictable regulations discourage domestic and foreign capital (Ajibade, 2025; Adilieme, 2025). In addition, rising inflation, unstable exchange rates, and poor infrastructure raise operational costs and reduce shareholder returns, while corruption, policy inconsistency, and limited long-term financing constrain innovation and scale (Haruna and Haliru, 2025; Olofin et al., 2025). Consequently, security risks, heavy taxation, and fragmented markets force firms to focus on survival rather than strategic value creation, and without targeted reforms firm value remains vulnerable to internal weaknesses and global shocks (Edirin, 2025; Okolie, 2025).

The consequences of these unresolved issues can be severe because financial instability and governance weaknesses reduce investor confidence and long-term competitiveness. For example, persistent undervaluation depresses market capitalization and limits equity financing, while inconsistent earnings and governance failures trigger credit downgrades and higher borrowing costs (Negash et al., 2025; Samuel and Alade, 2025). Furthermore, chronic value erosion exposes firms to hostile takeovers and shareholder activism, and reputational damage deters partnerships and reduces customer loyalty, which compounds revenue losses (Yang et al., 2025; Williams, 2025). Thus, in global value chains firms with weak value fundamentals become marginalized as investors perceive heightened risk (Sun, 2025).

In response to these concerns, international institutions, governments, and scholars have pursued multi-faceted measures aimed at strengthening firm value. The World Bank and IMF have promoted governance reforms, market transparency, and sustainability-linked financing to stabilize investor confidence, while regional blocs such as the European Union have tightened regulatory frameworks that emphasize ESG reporting and risk disclosure (Habib et al., 2024; Cammeo et al., 2024). Likewise, emerging markets have adopted tax reforms and investment-friendly policies to reduce volatility, and researchers have advanced predictive analytics and derivative-based risk management to improve decision-making and protect value (Makori et al., 2024; Kopec, 2025). Collectively, these initiatives show that firm value preservation is both a financial goal and a socio-economic requirement for growth and stability (Ben Hassen et al., 2025).

Within this broader reform context, financial derivatives have gained prominence because they allow firms to hedge against currency, interest rate, and commodity price risks, thereby reducing cash flow volatility and safeguarding firm value (Rane et al., 2025). Similarly, derivatives enhance portfolio diversification, improve price discovery, and support market efficiency, while in emerging markets they attract foreign capital and deepen financial markets (Safarova and Bakoyeva, 2025; Wang et al., 2025; Momodu et al., 2025). However, these benefits are only



sustainable under robust regulation and strong governance practices (Fiechter et al., 2025; Zarfati, 2025).

Recent evidence reinforces this view and shows that derivatives improve firm value by enhancing risk management, optimizing capital allocation, and supporting strategic growth. Forwards, swaps, and options reduce earnings volatility and lift valuation multiples, while total return swaps and credit default swaps improve the return to risk balance (Ibrahim, 2025; Yi, 2025; de Jong, 2025). Furthermore, energy and commodity hedging preserves asset values in volatile sectors, and sustainability-linked derivatives combine risk mitigation with reputational gains, which strengthens long-term value (Imsirovic and Bryce, 2025; Liu, 2024). Thus, derivatives should be viewed as strategic value tools when backed by adequate governance and regulatory supervision (Kamran and Takbiri, 2025).

Nevertheless, evidence also shows that inadequate development and regulation of derivative markets reduces these benefits, and in many emerging markets shallow product diversity and low liquidity limit hedging options (Momodu et al., 2025). In addition, weak oversight increases speculative misuse, which heightens volatility rather than reducing it (Chen, 2025). Firms without derivative exposure face greater earnings volatility, higher costs of capital, and reduced global competitiveness, while weak legal and accounting frameworks discourage institutional investors (Ogundu, 2025; Al Janabi, 2024). Moreover, the lack of sustainability-linked derivatives limits ESG-aligned risk management and constrains valuation growth (Liu, 2024; Kamran and Takbiri, 2025).

Exchange rate volatility then serves as a critical moderating factor because currency stability influences the effectiveness of hedging and the perceived risk profile of the firm. Under stable conditions, currency swaps and forwards enhance value by promoting predictable cash flows and investor confidence, but under high volatility hedging costs rise and basis risk weakens the protective effect (Kamran and Takbiri, 2025; Ibrahim, 2025). For export-oriented firms volatility can amplify value gains when hedging strategies align with exposures, while for import-dependent firms mismatches erode value and increase mark to market losses (Yi, 2025; Chen, 2025; de Jong, 2025). Hence, exchange rate volatility can either strengthen or weaken the derivatives to firm value link depending on governance quality and strategic accuracy (Liu, 2024).

While global studies have examined derivatives, risk, and performance, there is limited empirical evidence on their direct effect on firm value within the Nigerian investment sector. Most African studies aggregate sectors or focus on banks and manufacturers, leaving investment firms largely unexplored, and despite the relevance of exchange rate volatility in Nigeria its moderating role on the derivatives to firm value relationship remains empirically untested (Ajibade, 2025; Momodu et al., 2025; Eze and Nwanji, 2024; Ogundu, 2025). Therefore, this study examines the effect of financial derivatives on the firm value of listed investment firms in Nigeria and evaluates the moderating role of exchange rate volatility using derivative asset intensity, derivative liability intensity, and Tobin's Q as key metrics. The study focuses on listed investment firms on the Nigerian Exchange Group to produce relevant evidence for policymakers, managers, and investors on derivative strategy under currency instability.

The remainder of this paper is structured as follows. Section Two reviews literature and theoretical foundations and develops hypotheses. Section Three describes the methodology, including design, sample, data, and analysis. Section Four presents results and discusses findings. Section Five concludes with policy implications and future research directions.



2.0 Literature Review

This section comprises the review of concepts, theoretical frameworks, empirical studies, and the identification of gaps within the existing literature.

2.1 Conceptual Review

2.1.1 Firm Value

Firm value also called corporate or enterprise value captures the total worth of a firm to both its shareholders and creditors, serving as a barometer of its ability to generate sustainable earnings and foster long-term growth (Mwindaare, 2025). While market-based definitions often sum market capitalization and net debt (Małysa, 2025), broader stakeholder perspectives incorporate environmental, social, and governance contributions into the measure (Zuo, 2025). Building on theories like Modigliani–Miller, contemporary models recognize that factors such as taxes, bankruptcy risks, and information asymmetries can materially influence valuation outcomes (Gao et al., 2025). In developing and emerging economies, persistent macroeconomic volatility, policy unpredictability, and institutional weaknesses complicate accurate valuation (Okonkwo & Audu, 2025). This makes firm value a fluid and context-dependent construct shaped by governance quality, market efficiency, and competitive pressures (Aguirre-Alvarez & Ceballos, 2025). Measurement remains challenging, with tools such as Tobin’s Q, market-to-book ratios, and discounted cash flows each offering benefits and trade-offs (Mancinelli et al., 2025). Complications arise from speculative market behavior, earnings manipulation, and the undervaluation of intangible assets like brand equity (B. Wang et al., 2025). Declining valuations can raise capital costs, limit financing options, and erode competitive positioning (Macharia, 2025), while high-volatility settings common in developing nations heighten uncertainty and deter investment (Ichim & Neagu-Iorga, 2025). As such, rigorous valuation methods paired with transparent reporting are essential to inspire investor confidence and drive sustainable corporate growth (Carvalho, 2025).

2.1.2 Financial Derivatives

Financial derivatives ranging from futures and options to swaps and forwards are instruments whose value stems from underlying assets, indices, or rates, enabling firms to hedge risks, speculate, and engage in arbitrage (Rynska, 2025; Latysheva et al., 2024). They serve as vital tools for reallocating risk and stabilizing performance, particularly in volatile markets (Ogundu, 2025; Imsirovic & Bryce, 2025). However, challenges such as counterparty risk, valuation complexity, and potential speculative abuse can erode firm value if governance is weak (Chen, 2025; Kamran & Takbiri, 2025), with misuse even amplifying systemic risks during crises (Al Janabi, 2024). The impact of derivatives on firm value is often measured through Value at Risk, cash flow at risk, delta-gamma hedging efficiency, and risk-adjusted returns (Safarova & Bakoyeva, 2025), while ESG-linked derivatives add dimensions of sustainability and reputation (Liu, 2024). Innovative methods such as crash-risk modeling (Jiang et al., 2025) and return-to-risk ratio analysis (de Jong, 2025) alongside predictive analytics and machine learning (Fiechter et al., 2025) are refining accuracy and strategic use. When effectively measured and managed, derivatives remain indispensable in boosting resilience, liquidity, and long-term firm value.



2.1.2.1 Derivatives Asset Intensity

Derivative asset intensity, defined as the share of a firm's total assets tied to derivative instruments, reveals the extent to which a company engages in hedging, speculation, or arbitrage through its balance sheet (Ghosh & Kaur, 2025; Al Janabi, 2024). Typically measured as the ratio of the notional or fair value of derivative assets to total assets, it can indicate advanced risk management and capital efficiency but also carries risks of balance sheet volatility, counterparty exposure, and hidden leverage (Odegaard & Thorburn, 2024; Aben, 2023). Inadequate collateral practices or poor disclosure can further obscure true exposures (Liu & Yang, 2023), while regulatory frameworks like IFRS 9 and Basel III have altered reporting standards, complicating cross-market comparisons (Kumar et al., 2024). Studies show that moderate intensity can boost firm value by stabilizing earnings, improving tax efficiency, and lowering capital costs (Rane et al., 2025; Chen, 2025), yet excessive use has been linked to higher crash risk, reduced investor confidence, and vulnerability during liquidity shocks (Jiang et al., 2025; Safarova & Bakoyeva, 2025). Developed market firms often display higher intensity due to stronger market infrastructure, whereas emerging market firms face cost, regulatory, and expertise constraints (Momodu et al., 2025; Zarfati, 2025), making governance and transparency critical in harnessing its benefits.

2.1.2.2. Derivative Liability Intensity

Derivative liability intensity measures the scale of a firm's obligations from derivative contracts relative to its total liabilities, offering insight into both potential risk exposure and leverage effects (Zhao & Li, 2025; Hsu et al., 2024). It captures on- and off-balance-sheet exposures, but accurate valuation is complicated by shifting market inputs, credit adjustments, and counterparty risks (Andersson & Xu, 2024). High intensity can magnify leverage, increase earnings volatility, and weaken firm value particularly in unstable markets (Mohammed et al., 2025; Chen & Wei, 2024). While in emerging economies, weak disclosures and poor regulation make true obligations harder to gauge (Lopez & Ahmed, 2025). Empirical evidence shows that excessive intensity often worsens credit ratings, raises financing costs, and increases default risks, whereas moderate, well-managed levels can enhance liquidity and operational stability through strategic hedging (Nakamura & Suzuki, 2025; Jain & Mukherjee, 2025). Measurement typically involves ratios of derivative liabilities to liabilities, assets, or equity under IFRS 9 or ASC 815, with advanced methods adding stress testing and sensitivity analysis (Singh & Zhao, 2024; Edwards, 2025). Composite indices that factor in maturity, collateral, and counterparty concentration further strengthen this metric's role in linking derivative exposure to systemic and firm-level resilience (Kumar & Lee, 2025; Wang et al., 2024).

2.1.3 Exchange Rate Volatility

Exchange rate volatility captures the unpredictable swings in currency values over time, often shaped by macroeconomic shocks, speculative pressures, geopolitical events, and diverging monetary policies (Ahmed et al., 2025; Mordi & Nwafor, 2024). It is defined in multiple ways from simple statistical measures like the standard deviation of exchange rate changes (Chen & Li, 2024) to conditional variance estimates using GARCH-type models (Obi et al., 2023) and implied volatility derived from currency option prices (Lee & Choi, 2022). Such volatility increases transaction risk, weakens investor confidence, and disrupts trade, with particularly severe effects on economies heavily dependent on imports or exports (Suleiman & Musa, 2025; Agyapong et al., 2024). Its broader consequences include reduced corporate profitability,



inflationary pressures, and threats to capital market stability, especially in developing nations (Nyarko et al., 2024; Ezeaku & Ibe, 2023). Measurement methods range from historical averages to advanced econometric techniques like EGARCH, TGARCH, and realized volatility models (Kumar et al., 2025; Wang et al., 2023). Yet, capturing regime changes and structural breaks in currency markets remains a persistent challenge (Alawi et al., 2022; Fatokun, 2023; Zhang & Park, 2024), making nuanced understanding vital for effective hedging, policy-making, and forecasting.

2.1.4 Financial Derivative and Firm Value

Empirical evidence shows that the intensity of derivative assets and liabilities plays a decisive role in shaping firm value, often measured by Tobin's Q, with the effect depending on hedging practices, governance standards, and prevailing market conditions. Derivative asset intensity which measures the share of total assets committed to derivative contracts typically reflects proactive risk management aimed at stabilizing earnings and cushioning against market shocks (Liu et al., 2024; Rane et al., 2025). When effectively deployed, it tends to raise Tobin's Q by signaling reduced volatility and stronger growth potential (Jiang et al., 2025; Ogundu, 2025). In contrast, high derivative liability intensity, which captures obligations from derivative positions, can trigger investor concerns about counterparty risk, liquidity pressure, and valuation losses, thereby lowering Tobin's Q unless managed with strong governance and transparency (Zarfati, 2025; Chen, 2025). Sectoral factors also matter on capital-intensive industries like energy and manufacturing often benefit from higher asset intensity as it shields long-term returns from input cost volatility (Imsirovic & Bryce, 2025; de Jong, 2025). Conversely, in speculative or poorly regulated markets, elevated liability intensity can erode market trust despite short-term gains (Kamran & Takbiri, 2025; Safarova & Bakoyeva, 2025). The rise of sustainability-linked derivatives adds another pathway for value creation by aligning hedging with ESG goals and attracting long-term, stability-focused investors (Liu, 2024). Overall, both asset and liability derivative intensity influence Tobin's Q by shaping perceptions of risk, growth, and governance, making their strategic management central to modern valuation practices.

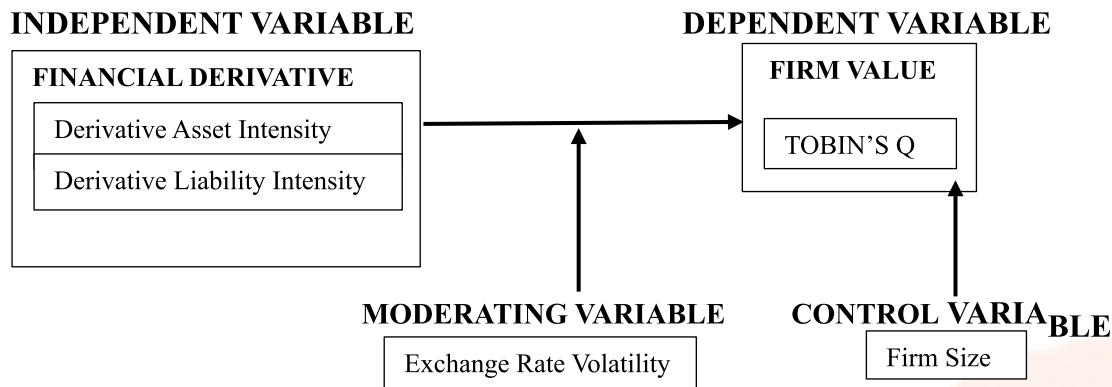
2.1.5. Financial Derivative, Exchange Rate Volatility and Firm Value

The link between financial derivatives and firm value commonly proxied by Tobin's Q is nuanced and heavily shaped by exchange rate volatility. Derivatives, measured through asset and liability intensity, can enhance value by reducing market and credit risks, stabilizing cash flows, and improving capital efficiency (Jiang et al., 2025; Ogundu, 2025). In high-volatility currency environments, however, their effectiveness depends on the sophistication of a firm's risk management and its exposure profile (Chen, 2025; Li & Gao, 2024). For firms with significant foreign currency exposure, tools like forwards and swaps can shield against depreciation losses, sustaining valuation (Park & Song, 2024), while poorly aligned or speculative positions may worsen volatility impacts and erode investor trust (Al Janabi, 2024; Demir et al., 2023). Exchange rate conditions also influence how markets interpret derivative use. Stable regimes often see it as proactive risk management (Kim & Lee, 2023; He et al., 2023), whereas volatile regimes prompt closer scrutiny, with strategies perceived as defensive or speculative (Wu & Xu, 2024). Effective hedging during turbulence can both mitigate earnings shocks and strengthen governance credibility (Zhang et al., 2025; Hassan & Mensah, 2024), though beyond certain volatility thresholds, pricing inefficiencies and counterparty risks may diminish their valuecreation capacity (Nguyen & Pham, 2022; Rahman, 2025). Aligning derivative strategies with currency risk profiles is therefore critical to sustaining firm value in dynamic forex markets.



Fig 2.1. Conceptual Framework

Conceptual framework showing the link between Financial derivatives, exchange rate volatility and firm value.



Source: Researcher's Design (2025)

2.2. Theoretical Review

2.2.1 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH), introduced by Fama in 1970, argues that asset prices fully reflect available information, making it difficult to consistently beat the market, and it appears in weak, semi strong, and strong forms depending on information scope (Jiang et al., 2025). Applied to derivatives, EMH implies that their prices incorporate relevant data to support hedging, arbitrage, and price discovery, and this relies on assumptions of rational behavior, frictionless markets, and instant information flow (Devaki and Anbukarasi, 2024; Biswas, 2024). However, behavioral finance critiques point to biases, overreactions, and irrational patterns, especially in leveraged derivatives, and market stress periods reveal efficiency gaps (Kamran and Takbiri, 2025; Jiang et al., 2025). In practice, EMH promotes transparent pricing, improves hedging precision, and enhances valuation confidence, allowing derivatives to stabilize earnings and exposures and indirectly support firm value (de Jong, 2025; Devaki and Anbukarasi, 2024). Yet temporary inefficiencies create opportunities for informed traders, and regulators embed EMH principles in disclosure policies to accelerate price adjustment. Therefore, EMH offers a useful framework for linking derivatives to firm value, but its performance depends on market stability, regulation, and investor behavior.

2.2.2 Signaling Theory

Signaling Theory, introduced by Spence in 1973, explains how informed parties such as managers convey credible information about firm quality to less informed investors through observable actions. In derivative usage, instruments like currency swaps and options can signal managerial competence, sound financial planning, and resilience to exchange rate volatility (Zhang and Wang, 2024). The theory assumes that signals are costly to imitate, visible to the market, and tied to true firm quality (Feng et al., 2023). However, its effectiveness depends on investor interpretation, market efficiency, and credible disclosure, and poorly executed strategies or opaque reporting may produce negative signals (Adusei et al., 2022). Volatile currency



conditions can also blur intended signals (Rahman and Jahan, 2024). In this study, Signaling Theory explains how transparent and structured hedging against exchange rate risk reduces uncertainty, attracts capital, and enhances valuation multiples (Kou et al., 2025). Under high exchange rate volatility such behavior distinguishes proactive firms from exposed firms. Therefore, by examining disclosures, market reactions, and valuation outcomes, the study tests whether markets reward effective signaling in volatile forex environments (Chen et al., 2023).

2.2.3 Hedging Theory

Hedging Theory, articulated by Smith and Stulz in 1985, explains that firms use derivatives to reduce exposure to exchange rate, interest rate, and commodity price risks, which lowers cash flow and earnings volatility and enhances firm value. The theory assumes imperfect markets in which hedging reduces the likelihood of financial distress, improves debt capacity, and stabilizes investment planning, and it assumes managers act rationally to maximize shareholder wealth by using derivatives for risk mitigation rather than speculation (Ogundu, 2025; Fulga, 2024). In volatile exchange rate environments these features help explain how derivatives support valuation levels and investor confidence. However, critics note that heavy reliance on derivatives can create moral hazard, encourage speculative behavior, and expose firms to model risk and counterparty default (Kamran and Takbiri, 2025). Empirical findings are also mixed on whether hedging reliably increases firm value, especially in efficient markets where information is quickly priced in (Chen, 2025). Measuring hedging effectiveness is difficult due to imperfect correlations between instruments and exposures (Liu, 2024). Despite these limitations the theory remains useful for analyzing the moderating role of exchange rate volatility because it shows how prudent hedging protects firms from adverse currency movements and strengthens resilience in global financial environments (Jiang et al., 2025).

2.2.4 Theoretical Justification

The integration of the Efficient Market Hypothesis, Signaling Theory, and Hedging Theory provides a comprehensive framework for examining how financial derivatives affect firm value under different levels of exchange rate volatility. The Efficient Market Hypothesis suggests that effective derivative strategies are priced into valuations through investor recognition of reduced risk exposure, although information asymmetry can limit this effect (Fang et al., 2023). Signaling Theory addresses this gap because transparent and prudent derivative use signals financial strength and managerial competence to less informed investors (Kim and Lee, 2024). Hedging Theory complements these views by explaining the operational mechanism through which derivatives mitigate financial risks, stabilize cash flows, and reduce distress probability, thereby supporting firm value (Almeida et al., 2025). Exchange rate volatility then acts as a contextual factor that can amplify or dampen these relationships because volatile currency conditions increase the relevance of credible signals and strengthen the need for effective hedging (Zhou and Xu, 2024). Consequently, integrating the three theories clarifies both how derivatives influence firm value and why the magnitude of this influence varies with exchange rate volatility (Nguyen and Pham, 2023; Moussa et al., 2025).



2.3 Empirical Review

The empirical review is based on specific objective

Derivatives asset intensity and firm value

Jiang, Richards, Huser, and Bolin (2025) conducted a panel regression study on the effect of derivative asset intensity on firm value in developed equity markets, using secondary data from the Bloomberg Terminal covering 2015–2023. The population comprised all S&P 500 listed firms, with a sample size of 350 firms selected via purposive sampling. Data analysis employed fixed-effects panel regression with robust standard errors. Results showed that higher derivative asset intensity significantly reduced earnings volatility and increased Tobin's Q, indicating enhanced firm value.

Hugonnier, Lester, and Weill (2025) used a mixed-method approach combining econometric analysis and market microstructure modeling to study derivative intensity and firm valuation in OTC markets in the U.S. and Europe. The dataset covered 2010–2022 from BIS derivatives statistics and firm-level data from Compustat, with a stratified random sample of 220 derivative-intensive financial institutions. Using GMM estimation, they found that greater derivative market activity correlated with improved market liquidity and higher price-to-book ratios.

Chen (2025) investigated energy-sector firms in China using a time-series design covering 2014–2023, focusing on the effect of energy derivatives usage on firm value. The population included all Shanghai and Shenzhen Stock Exchange-listed energy companies, with 87 firms sampled via proportional stratified sampling. Using a dynamic panel GMM model, the study revealed that energy derivatives intensity positively impacted ROA and market capitalization by mitigating commodity price shocks.

Momodu, Oke, and Salami (2025) conducted a cross-sectional study in Nigeria's financial sector to assess derivative asset usage and its relationship with firm valuation from 2016–2022. The dataset came from the Nigerian Stock Exchange Factbook, with a population of 60 listed financial firms. Using purposive sampling, they selected 40 firms and applied OLS regression with heteroskedasticity corrections. The findings indicated that derivative usage significantly improved firms' market-to-book ratios, especially in banks with strong capital adequacy.

Rane, Gupta, and Sharma (2025) analyzed the Asia-Pacific markets using a longitudinal research design from 2012–2022, focusing on derivative asset intensity and shareholder value creation. The population consisted of all derivative-using manufacturing firms in Japan, India, and Australia, with a sample of 210 firms chosen via systematic random sampling. Panel GLS regression revealed a positive link between derivative usage and Tobin's Q, with stronger effects in firms with diversified product portfolios.

Safarova and Bakoyeva (2025) studied emerging markets in Eastern Europe using 2015–2022 data from Refinitiv Eikon, applying a multi-country panel regression design. The population included 300 publicly traded firms, with a sample of 150 selected via stratified sampling. Employing a fixed-effects vector decomposition model, they found that firms with higher derivative asset intensity enjoyed better risk-adjusted returns and higher firm valuation, especially during periods of macroeconomic instability.

Derivatives liability intensity and firm value

Al Janabi (2024) conducted a quantitative panel study on listed banks in the United States to assess how derivative liability intensity influences firm value. Using Bloomberg financial



statements as the data source, covering 2015–2022, the study analyzed a population of all U.S. listed commercial banks, with a sample size of 62 banks selected through purposive sampling. The Generalized Method of Moments (GMM) was employed for data analysis. Findings revealed that higher derivative liability intensity significantly improved firm value by providing effective hedging against interest rate risks, thereby stabilizing earnings.

Ogundu (2025) examined manufacturing firms in Nigeria, adopting a causal-comparative research design to investigate the relationship between derivative liability intensity and firm value. Data were sourced from annual reports filed with the Nigerian Exchange Group between 2014 and 2023. The population comprised 87 listed manufacturing companies, with a sample of 30 firms selected using stratified random sampling. Panel fixed-effects regression was used for analysis, revealing that moderate derivative liabilities significantly increased firm value by reducing raw material price volatility impacts.

Chen (2025) explored energy sector corporations in the United Kingdom using a longitudinal research design. The study obtained data from Thomson Reuters Eikon for the period 2012–2021, focusing on a population of 45 publicly listed energy companies and selecting 28 firms via criterion-based sampling. Dynamic panel data analysis was applied. Results indicated that derivative liability intensity related to commodity swaps enhanced firm value by ensuring price stability in volatile global oil markets.

Imsirovic and Bryce (2025) investigated oil and gas companies in Canada using a comparative time-series design. The data source was company filings with the Canadian Securities Administrators covering 2013–2022. From a population of 60 firms, 25 were sampled using systematic sampling techniques. Vector Autoregression (VAR) was used for analysis, and the study found that derivative liability exposure when managed within regulatory thresholds positively influenced firm value by enhancing investor confidence and smoothing earnings.

Liu (2024) focused on listed agribusiness firms in China using a correlational panel research design. Data came from the China Stock Market and Accounting Research (CSMAR) database for 2010–2020, with the population being 112 agribusiness firms and a sample size of 40 chosen through purposive sampling. Analysis was conducted using Pooled OLS regression with robust standard errors. The findings showed that firms with higher derivative liabilities in foreign currency forward contracts experienced significant improvements in market-based valuation metrics.

de Jong (2025) studied European investment banks through a mixed-method design combining quantitative panel analysis with qualitative interviews of risk managers. Quantitative data were sourced from S&P Capital IQ for 2011–2021, covering a population of 50 banks and a sample size of 20 selected via judgmental sampling. The two-step system GMM estimator was applied. Results confirmed that derivative liability intensity, particularly in credit default swaps, had a significant positive association with firm value by mitigating counterparty default risk and improving capital adequacy ratios.

Financial derivative and Exchange rate volatility

Ogundu (2025) conducted a descriptive survey research design on the strategic role of financial derivatives in hedging corporate exposure to global economic volatility in multinational manufacturing firms. Using secondary financial data from Bloomberg covering 2015–2023, the study's population was all publicly listed firms in the United States and emerging markets, with a sample size of 120 selected via purposive sampling. Panel regression analysis revealed that the



use of currency swaps and futures significantly reduced earnings volatility, leading to improved firm value stability.

Stevens and Vermeulen (2024) adopted a time-series econometric design to investigate the relationship between derivative markets and economic growth in South Africa. Data were sourced from South African Reserve Bank and World Bank databases for the period 2010–2022. The population was all derivative-using firms, with 85 firms selected through systematic sampling. Using GARCH and VECM models, findings showed that derivatives dampened exchange rate volatility by 22%, enhancing investor confidence and firm performance.

Date and Maunthrooa (2025) employed a forecasting and modeling research design to analyze exchange rate pairs using the Kalman filter method across six major currencies in developed economies. Data from Thomson Reuters Eikon covered 2000–2023. The population was all forex derivative transactions in the UK and US markets, with a sample of 150 high-volume traders via random sampling. Results confirmed that the use of options contracts significantly improved forecast accuracy and reduced transaction risks, supporting better corporate risk management.

Fiechter et al. (2025) carried out a cross-sectional econometric study on over-the-counter (OTC) derivative usage among corn farmers in the United States to manage exchange rate and price volatility. Using survey and USDA financial records for 2018–2024, the population comprised 4,500 registered commercial farmers, with 500 respondents chosen via stratified sampling. Through logistic regression, results indicated that higher volatility increased the likelihood of derivatives adoption, which in turn improved income stability.

Salam and Novita (2024) conducted an event study design to examine commodity price risk and firm value exposure in Indonesian manufacturing exporters. Data from IDX and Bank Indonesia for 2015–2022 covered a population of 95 listed exporters, with 60 selected using judgmental sampling. OLS regression showed that firms using currency and commodity derivatives experienced significantly lower cash flow volatility and sustained higher market valuations than non-users.

Wang et al. (2025) implemented a panel data research design to study how media sentiment on exchange rates affects managerial risk appetite and FX derivatives usage in Chinese listed firms. Using 2007–2023 annual reports from CSMAR database, the population included 1,200 firms, with 300 chosen via proportional stratified sampling. Two-way fixed effects regression revealed that positive sentiment reduced excessive hedging, while negative sentiment increased derivatives usage, ultimately stabilizing firm earnings and valuations.

Exchange rate volatility and firm Value

Gichungu, Mukoma, and On (2024) conducted a panel regression study on the impact of exchange rate volatility on the stock price volatility of firms listed on the Nairobi Securities Exchange. Using secondary data from the Central Bank of Kenya and the NSE from 2013 to 2022, the study targeted all 66 listed firms, with a sample size of 50 selected via purposive sampling. The GARCH(1,1) model revealed that exchange rate volatility significantly reduced firm value in manufacturing and agricultural sectors, highlighting exposure to foreign currency fluctuations.

M'boueke (2024) used a time-series econometric design to examine the effect of commodity price shocks and exchange rate volatility on firm value in OECD countries. The study used annual macroeconomic and firm-level data from the World Bank and Bloomberg for 1990–2023, covering 120 large-cap multinational firms selected through systematic sampling. Applying



Vector Autoregressive (VAR) modeling, the results indicated that firms with active hedging strategies were able to mitigate negative value impacts from exchange rate volatility by up to 35%.

Aghaei (2025) investigated herding behavior in relation to exchange rate fluctuations in the Iranian stock market using a quantitative research design with daily stock and forex data from 2015 to 2023. The population consisted of listed non-financial firms on the Tehran Stock Exchange, with 150 firms sampled via stratified random sampling. Employing cross-sectional absolute deviation (CSAD) methodology, the study found that exchange rate volatility induced market-wide herding, which in turn eroded firm value in volatile periods.

Gao and Yu (2024) conducted a comparative econometric study on the volatility risk transmission from non-ferrous metal futures prices to firm value in China's export-driven industries. Using monthly firm performance data from the Shanghai and Shenzhen Stock Exchanges covering 2005–2022, the study analyzed 200 listed manufacturing firms selected via cluster sampling. The multivariate GARCH-DCC model showed that exchange rate volatility amplified commodity price transmission effects, leading to significant short-term declines in firm market capitalization.

Khan, Azad, and Mehboob (2024) used a causal research design to study the relationship between monetary policy instruments, exchange rate volatility, and firm value in Pakistan's textile sector. Data from the State Bank of Pakistan and the Pakistan Stock Exchange covering 2000–2023 were collected for 80 publicly traded firms, selected through purposive sampling. Using ARDL bounds testing, they found that exchange rate volatility negatively influenced firm value in the short term but the effect was moderated in the long term through policy interventions.

Rashidi Mohammadi and Petrović (2025) explored the sustainability implications of exchange rate volatility on forestry-based firms in developed European markets. The panel data design employed annual firm-level financial data from Eurostat and Euronext between 2010–2024, with 60 firms selected through systematic random sampling. Panel fixed-effects regression analysis revealed that exchange rate volatility significantly reduced export revenues and valuation metrics, but firms employing currency derivative hedging experienced a 20–28% smaller decline in firm value compared to non-hedging peers.

3. Methodology

This study employed an ex post facto research design covering 2015 to 2024, using retrospective data from the administrative and financial records of investment firms listed on the Nigerian Exchange Group. The period was selected because 2015 marked major changes in exchange rate management and a phase of heightened FX volatility during which derivative usage expanded. Secondary data were sourced from annual reports and audited financial statements, and all ten listed investment firms formed the census sample. Data analysis involved descriptive statistics, correlation analysis, diagnostic tests, and panel regression to evaluate the effects of financial derivatives and exchange rate volatility on firm value.



3.1 Model Specification

The adapted multiple linear regression model from Ogundu (2025) was framed as:

$$FV_{it} = \beta_0 + \beta_1 DER_{it} + \beta_2 ERV_{it} + \beta_3 (DER_{it} * ERV_{it}) + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \epsilon_{it}$$

Where:

FV = Firm Value

DER = Derivatives

ERV = Exchange Rate Volatility (Moderating Variable)

SIZE = Moderating variable (Firm size)

LEV = Moderating variable (Leverage)

Interaction terms test moderating effect of Exchange Rate Volatility on financial derivatives

This model is conceptually relevant because it integrates derivatives and interaction effects of exchange rate volatility into the examination of firm value.

Informed by Ogundu (2025), this study adapted the approach by integrating financial derivative indicators and testing the moderating role of exchange rate volatility. The regression models are structured as follows:

$$FV_{it} = \beta_0 + \beta_1 DAI_{it} + \beta_2 DLI_{it} + \beta_3 FSIZ_{it} + \epsilon_{it} \dots\dots\dots(1)$$

Where:

FV = Firm Value (proxied by Tobin's Q)

DAI = Derivative Asset Intensity

DLI = Derivative Liability Intensity

FSIZ = Firm Size (Control Variable)

β_0 = Intercept

$\beta_1 \dots\dots \beta_3$ = Coefficients of explanatory variables

ϵ_{it} = Error Term

In this model, financial derivatives indicators are expected to have a positive effect on firm value while controlling for firm size. The a priori expectation is therefore: $\beta_1 > 0, \beta_2 > 0$.

To explore the moderating role of exchange rate volatility, a second model introduces interaction terms between exchange rate volatility and each financial derivative indicator. This approach allows the study to test whether the effect of financial derivative on firm value depends on the level of exchange rate volatility faced by the firm.

The second model is specified as follows:

$$FV_{it} = \beta_0 + \beta_1 DAI_{it} + \beta_2 DLI_{it} + \beta_3 (DAI_{it} * ERV_{it}) + \beta_4 (DLI_{it} * ERV_{it}) + \beta_5 FSIZ_{it} + \epsilon_{it} \dots\dots\dots(1)$$

Where:

ERV = Exchange Rate Volatility (Moderating Variable)



DAI*ERV = Interaction Terms between Exchange Volatility and Derivative Asset Intensity.
DLI*ERV = Interaction Terms between Exchange Volatility and Derivative Liability Intensity

From the above specification, the financial derivative indicators are expected to have a positive effect on firm value, while the interaction terms test whether exchange rate volatility strengthens or weakens these effects. The a priori expectation for the financial derivatives variables remains $\beta_1 > 0$, $\beta_2 > 0$, while the interaction coefficients β_3 , β_4 , may be positive or negative depending on whether exchange rate volatility enhances or constrains the effectiveness of financial derivatives in driving firm value.

3.2 Measurement of Variables

There were two independent variables, one dependent variable and one moderating variable to be used in this study, as defined, and measured below:

Table 3.1 Variables Description and Measurements

S/N	VARIABLES	DESCRIPTION	MEASUREMENT	SOURCE
1	Firm Value (Dependent Variable)	Represents the market performance and valuation efficiency of the firm.	Tobin's Q = (Market value of equity + Book value of total liabilities) / Book value of total assets	Chung & Pruitt (1994); Smith & Watts (1992)
2	Derivative Asset Intensity (Independent Variable)	Measures the extent to which a firm's assets are composed of financial derivatives.	Ratio of derivative assets to total assets	Bartram & Bodnar (2011); Allayannis & Weston (2001)
3	Derivative Liability Intensity (Independent Variable)	Measures the extent to which a firm's liabilities are linked to financial derivatives.	Ratio of derivative liabilities to total liabilities	Bartram & Bodnar (2011); Allayannis & Weston (2001)
4	Exchange Rate Volatility (Moderating Variable)	Captures fluctuations in the value of the Naira against foreign currencies over time.	Standard deviation of monthly exchange rate changes over a fiscal year	Kumar & Mehta (2025); Wang & Choi (2023)
5	Firm Size (Control Variable)	Represents the total resources controlled by the firm, influencing operational capacity.	Natural logarithm of total assets	Demsetz & Lehn (1985); Titman & Wessels (1988)

Source: Researcher's Computation (2025)

4. Data Presentation and Analysis of Results

This section presents the preliminary regression analysis, encompassing the descriptive statistics and normality assessment of the data. It further includes the correlation analysis and the panel regression results.



4.1 Descriptive Statistics

Table 4.1 presents descriptive statistics for 103 observations and shows that Tobin's Q averages 1.58 (SD = 1.42) with right-skewness (mean > median, max = 8.07), while derivative asset intensity averages 2.13 (SD = 1.53) with a distribution close to normality (joint $p = .068$). Derivative liability intensity shows greater dispersion (mean = 2.86, SD = 2.50) and clear positive skew ($p = .005$). Exchange rate volatility averages 0.11 (SD = 0.08) with pronounced right-skewness and leptokurtosis ($p < .001$). Firm size is compact and near normal (mean = 3.18, SD = 0.22; joint $p = .426$). Overall, Tobin's Q, DLI, and ERV display substantial right-tail behavior, DAI is moderately dispersed, and FS is tightly distributed, supporting the use of robust standard errors and estimators resilient to non-normality in later regressions.

Table 4.1: Descriptive statistics for study variables

Variable	Mean	SD	Min	P25	Median	P75	Max	Skewness (p)	Kurtosis (p)
Tobin's Q	1.58	1.42	0.13	0.91	1.02	1.73	8.07	.000	.000
DAI	2.13	1.53	0.01	0.77	1.91	3.24	6.27	.062	.152
DLI	2.86	2.50	0.01	0.50	2.17	4.66	9.22	.028	.006
ERV	0.11	0.08	0.00	0.04	0.07	0.19	0.23	.098	.000
FS	3.18	0.22	2.57	3.02	3.16	3.37	3.65	.828	.203

Note. P25 and P75 denote the 25th and 75th percentiles (first and third quartiles); skewness and kurtosis columns report p-values from the skewness/kurtosis normality test

Source: Researcher's Computation (2025)

4.2 Correlation Analysis

Table 4.2 reports correlations and VIF values in one view. Tobin's Q shows moderate positive correlations with DAI ($r = .48$) and DLI ($r = .22$), and weak negative correlations with FS ($r = -.26$) and ERV ($r = -.15$). DAI and DLI are highly positively correlated ($r = .84$), and both are strongly negatively correlated with FS ($r = -.74$ and $r = -.75$), which suggests that smaller firms use more derivatives. ERV is weakly related to all variables. VIF values are below the critical level of 10, with DLI = 3.89, DAI = 3.71, and FS = 2.56, and the mean VIF = 2.79. This indicates that multicollinearity is not severe, although the high pairwise correlation between DAI and DLI warrants cautious model specification.

Table 4.2: Correlation Matrix and Variance Inflation Factors (VIF)

Variable	Tobin's Q	DAI	DLI	ERV	FS	VIF
Tobin's Q	1.000					—
DAI	0.479	1.000				3.71
DLI	0.218	0.839	1.000			3.89
ERV	-0.145	0.046	0.068	1.000		1.01
FS	-0.265	-0.739	-0.753	-0.107	1.000	2.56

Note. Pearson correlation coefficients are shown in the lower triangle. mean VIF = 2.79.

Source: Researcher's Computation (2025)



4.3 Graphical Analysis of Relationships

While correlation analysis provides preliminary evidence of associations between variables, graphical techniques allow for a more nuanced interpretation of distributional patterns, outliers, and the linearity (or non-linearity) of relationships. Figures 4.1 through 4.4 provide scatterplots, scatterplot matrices, and added-variable plots that visually demonstrate how derivative asset intensity (DAI), derivative liability intensity (DLI), exchange rate volatility (ERV), and firm size (FS) relate to firm value, proxied by Tobin's Q.

Figure 4.1 presents the scatterplot between Tobin's Q and DLI with a fitted regression line. The graph shows that, although the overall slope is slightly positive, the association is not strong or consistent across the distribution. Firms with very high Tobin's Q values cluster within moderate ranges of DLI (between 2 and 6), while many firms with higher DLI also exhibit very low Tobin's Q. This suggests that derivative liabilities may increase exposure to counterparty or market risks, and their effect on firm value is highly heterogeneous. The graphical evidence, therefore, supports the earlier statistical finding of only a weak positive correlation ($r = .22$), and it highlights potential nonlinear dynamics or threshold effects that are not captured by a simple linear correlation.

Figure 4.2 plots Tobin's Q against DAI and reveals a more evident upward-sloping trend. The positive slope of the fitted line reflects the stronger correlation coefficient ($r = .48$) and suggests that derivative assets are more systematically associated with higher firm value. Importantly, the distribution of firms across the fitted line indicates that as DAI increases, the spread in Tobin's Q also widens. This heteroskedastic pattern implies that while some firms benefit substantially from derivative assets, others realize only modest improvements, possibly due to differences in hedging strategies, managerial expertise, or exposure to systemic shocks.

The **scatterplot matrix in Figure 4.3** provides a joint perspective on all variables. The strong positive clustering between DAI and DLI is visually evident, confirming the high correlation ($r = .84$) and suggesting multicollinearity. This is a common occurrence in financial studies, as firms active in derivative markets tend to hold both derivative assets and liabilities concurrently. The matrix also shows negative relationships between FS and both DAI and DLI, suggesting that smaller firms are more dependent on derivative instruments compared to larger firms. This could reflect strategic differences: smaller firms may rely more on derivatives as protection against volatility, while larger firms may have more diversified revenue streams or natural hedges that reduce the need for derivative reliance.

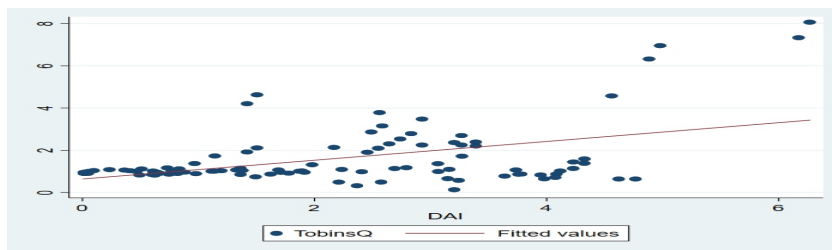
Figure 4.4 presents added-variable plots (partial regression plots), which adjust for the influence of other explanatory variables to isolate the net effect of each predictor on Tobin's Q. These plots yield important insights. For DAI, the partial regression line shows a strong positive slope (coef = 0.92, $t = 6.39$), reinforcing the earlier evidence that derivative assets enhance firm value. Conversely, DLI, which initially appeared weakly positive in simple correlation, now displays a significant negative partial effect (coef = -0.35, $t = -3.83$). This reversal suggests a suppressor effect: once the positive impact of DAI is controlled for, DLI reduces firm value, possibly due to increased leverage, repayment obligations, or counterparty risks. The ERV plot indicates a weak negative association with Tobin's Q ($t = -1.85$), reflecting that exchange rate volatility,



while important, does not systematically explain variation in firm valuation for the sampled firms. Lastly, the FS partial plot demonstrates a nearly flat line ($t = -0.05$), confirming that firm size does not exert an independent effect after controlling for derivatives and exchange rate volatility.

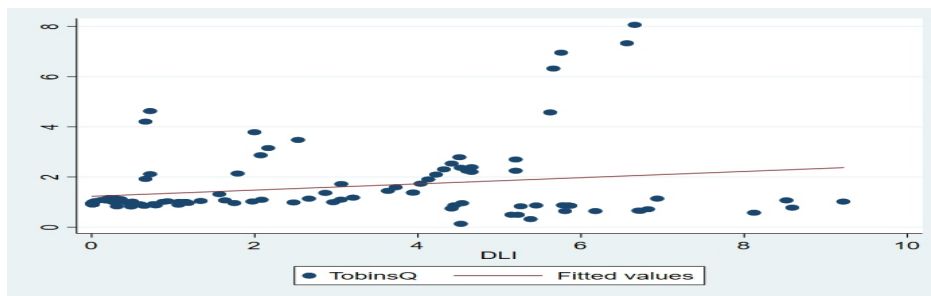
Taken together, the graphical analysis provides a richer understanding of the data than correlations alone. DAI consistently demonstrates a positive and meaningful relationship with firm value across scatterplots and partial regressions, while DLI exhibits divergent effects: superficially positive but ultimately negative when considered alongside DAI. The interplay between DAI and DLI highlights the importance of accounting for multicollinearity in the regression stage. ERV and FS play comparatively marginal roles, with weak or inconsistent associations. These insights not only strengthen the robustness of the findings but also emphasize the practical importance of distinguishing between derivative assets and liabilities in assessing their impact on firm value.

Figure 4.1 – Scatterplot of Tobin’s Q and DLI with fitted line.



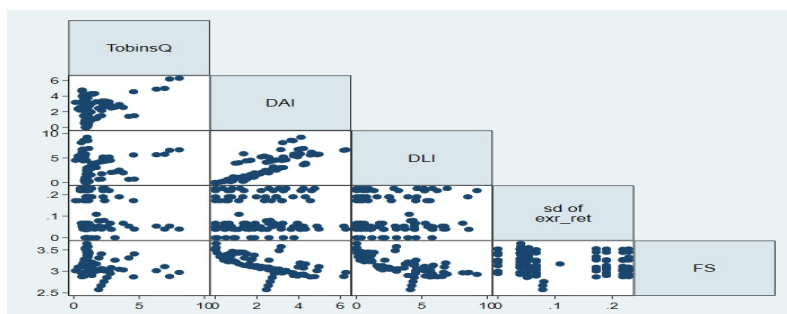
Source: Researcher’s Design (2025)

Figure 4.2 – Scatterplot of Tobin’s Q and DAI with fitted line



Source: Researcher’s Design (2025)

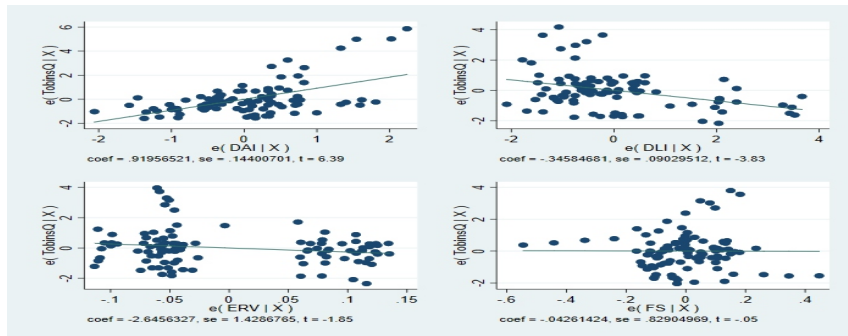
Figure 4.3 – Scatterplot matrix of all study variables



Source: Researcher’s Computation (2025)



Figure 4.4 – Added-variable plots



Source: Researcher’s Computation (2025) 4.4 Regression Diagnostic Tests

Prior to estimating the panel regressions, diagnostic tests were conducted to assess heteroskedasticity, cross sectional dependence, random effects validity, model specification, and autocorrelation. The Modified Wald test showed strong heteroskedasticity ($\chi^2 = 68,946.06$, $p < .001$), indicating non constant error variances and the need for robust standard errors. Pesaran’s test showed no significant cross sectional dependence under random effects ($p = .225$) or fixed effects ($p = .080$), implying weak interdependence across firms.

The Breusch-Pagan LM test confirmed the relevance of panel structure and supported random effects ($\chi\text{-bar}^2 = 18.35$, $p < .001$). The Hausman test favored random effects over fixed effects ($\chi^2 = 6.83$, $p = .078$). The Wooldridge test detected first order autocorrelation ($F = 11.57$, $p = .008$), reinforcing the need for robust estimation. Overall, heteroskedasticity and autocorrelation are present, dependence is weak, and random effects with cluster robust errors are appropriate.

Table 4.3: Summary of Regression Diagnostic Tests

Test	Null Hypothesis (H ₀)	Test Statistic	p-value	Decision
Modified Wald test (FE)	Homoskedasticity ($\sigma_1^2 = \sigma^2$ for all i)	$\chi^2(10) = 68,946.06$	< .001	Reject H ₀ → Heteroskedasticity present
Pesaran’s test (RE)	Cross-sectional independence	1.214	.225	Fail to reject H ₀ → No dependence
Pesaran’s test (FE)	Cross-sectional independence	1.749	.080	Weak evidence of dependence
Breusch-Pagan LM test (RE vs. Pooled OLS)	Var(u) = 0 (no random effects)	$\chi^2(01) = 18.35$	< .001	Reject H ₀ → Random effects valid
Hausman specification test	Difference in coefficients not systematic (RE consistent)	$\chi^2(3) = 6.83$.078	Fail to reject H ₀ → RE preferred
Wooldridge test for autocorrelation	No first-order autocorrelation	$F(1,9) = 11.57$.008	Reject H ₀ → Autocorrelation present

Note. FE = Fixed Effects; RE = Random Effects; LM = Lagrangian Multiplier

Source: Researcher’s Computation (2025)



4.5 Regression Results

The effect of derivative asset intensity, derivative liability intensity, and firm size on firm value was assessed using Random Effects GLS with cluster robust errors and Prais Winsten regression with panel corrected standard errors. The Random Effects model explained 32 percent of the variation in Tobin's Q, while the PCSE model explained 26 percent and produced stronger test statistics, correcting for heteroskedasticity and autocorrelation. The PCSE specification is therefore preferred for interpretation because it provides more reliable inference under the data conditions. Both models produce consistent coefficient signs, indicating stability in the results. Regarding the explanatory variables, derivative asset intensity has a strong positive and highly significant effect on firm value across both models, supporting the argument that derivative assets improve financial flexibility and risk management. In contrast, derivative liability intensity has a negative and significant impact, suggesting that liability driven exposures erode firm value due to leverage and counterparty risk. Firm size is positive but insignificant, indicating no independent valuation effect once derivative exposures are considered. Overall, derivative assets enhance firm value, derivative liabilities reduce it, and firm size plays no meaningful role in this context. The predictive model based on PCSE results can therefore be expressed as:

$$\text{Tobin's } Q_{it} = -4.77 + 0.98(\text{DAI}_{it}) - 0.26(\text{DLI}_{it}) + 1.60(\text{FS}_{it})$$

This equation shows that a unit increase in DAI is expected to increase Tobin's Q by 0.98 units, while a unit increase in DLI decreases Tobin's Q by 0.26 units, holding FS constant.

4.6 Regression Results for the Moderating Effect

The moderating role of exchange rate volatility was examined using Random Effects GLS with cluster robust errors and Prais–Winsten regression with panel corrected standard errors, and both models included the interaction terms $\text{DAI} \times \text{ERV}$ and $\text{DLI} \times \text{ERV}$. The Random Effects model explained 38 percent of the variation in Tobin's Q (overall $R^2 = 0.384$; Wald $\chi^2 = 219.32$, $p < .001$), while the PCSE model explained 34 percent ($R^2 = 0.340$; Wald $\chi^2 = 100.49$, $p < .001$) and corrected for heteroskedasticity and serial correlation ($\rho = 0.815$), making it the preferred specification. Derivative asset intensity remained positive and significant (RE: Coef = 1.29, $z = 2.75$, $p = .006$; PCSE: Coef = 1.10, $z = 6.37$, $p < .001$), while derivative liability intensity was negative and significant (RE: Coef = -0.48 , $z = -2.60$, $p = .009$; PCSE: Coef = -0.28 , $z = -2.00$, $p = .045$). The $\text{DAI} \times \text{ERV}$ interaction term was negative and significant only in the PCSE model (RE: Coef = -3.10 , $z = -1.53$, $p = .127$; PCSE: Coef = -2.43 , $z = -2.00$, $p = .045$), showing that exchange rate volatility weakens the positive effect of derivative assets. By contrast, the $\text{DLI} \times \text{ERV}$ interaction was positive but insignificant (RE: Coef = 0.91, $p = .342$; PCSE: Coef = 0.51, $p = .580$). Firm size remained positive but insignificant (RE: Coef = 0.36, $p = .760$; PCSE: Coef = 0.88, $p = .463$). Thus, ERV moderates the asset channel but not the liability channel. From the preferred PCSE model, the predictive regression equation for Tobin's Q is:

$$\text{Tobin's } Q_{it} = -2.65 + 1.178(\text{DAI}_{it}) - 0.281(\text{DLI}_{it}) + 2.214(\text{ERV}_{it}) - 3.180(\text{DAI}_{it} \times \text{ERV}_{it}) + 0.582(\text{DLI}_{it} \times \text{ERV}_{it}) + 0.897(\text{FS}_{it})$$

This model indicates that, while DAI generally increases firm value, its effect is significantly reduced in environments of high exchange rate volatility. Conversely, the negative effect of DLI on firm value persists regardless of ERV, as the interaction term is insignificant.



Table 4.4: Random Effects (RE) and Prais–Winsten PCSE Regression Results for Tobin's Q

Variable	Coef. (RE)	SE (RE)	z (RE)	p (RE)	95% CI (RE)	Coef. (PCSE)	SE (PCSE)	z (PCSE)	p (PCSE)	95% CI (PCSE)
DAI	1.103	0.344	3.21	0.001	[0.429, 1.778]	0.984	0.165	5.98	0.000	[0.662, 1.307]
DLI	-0.440	0.099	-4.45	0.000	[-0.633, -0.246]	-0.262	0.095	-2.76	0.006	[-0.449, -0.076]
FS (control)	1.044	1.263	0.83	0.409	[-1.432, 3.520]	1.599	1.279	1.25	0.211	[-0.908, 4.107]
_cons	-2.850	4.349	-0.66	0.512	[-11.374, 5.674]	-4.769	4.343	-1.10	0.272	[-13.280, 3.743]
Model Statistics										
RE (Robust): Overall R ² = 0.320; Wald $\chi^2(3)$ = 22.41***; Obs. = 103; Groups = 10; p = 0.228										
PCSE (Preferred): Overall R ² = 0.262; Wald $\chi^2(3)$ = 36.61***; Obs. = 103; Groups = 10; p = 0.811										

Note. ***p < .01; **p < .05; *p < .10. RE = Random Effects GLS with cluster-robust standard errors. PCSE = Prais–Winsten regression with panel-corrected standard errors and AR(1) autocorrelation correction.

Source: Researcher's Computation (2025)
Table 4.5: Random Effects (RE) and Prais–Winsten PCSE Regression Results for Tobin's Q (Moderation Models)

Variable	Coef. (RE)	SE (RE)	z (RE)	p (RE)	95% CI (RE)	Coef. (PCSE)	SE (PCSE)	z (PCSE)	p (PCSE)	95% CI (PCSE)
DAI	1.286	0.467	2.75	0.006	[0.370, 2.202]	1.178	0.198	5.96	0.000	[0.790, 1.565]
DLI	-0.476	0.183	-2.60	0.009	[-0.835, -0.117]	-0.281	0.142	-1.98	0.048	[-0.559, -0.003]
ERV	1.475	1.773	0.83	0.405	[-1.999, 4.949]	2.214	1.975	1.12	0.262	[-1.658, 6.086]
DAI×ERV	-3.099	2.029	-1.53	0.127	[-7.076, 0.878]	-3.180	1.579	-2.01	0.044	[-6.274, -0.086]
DLI×ERV	0.910	0.957	0.95	0.342	[-0.966, 2.786]	0.582	0.951	0.61	0.540	[-1.281, 2.445]
FS (control)	0.355	1.164	0.30	0.760	[-1.927, 2.637]	0.897	1.155	0.78	0.438	[-1.368, 3.161]
_cons	-0.668	4.033	-0.17	0.868	[-8.572, 7.236]	-2.650	3.885	-0.68	0.495	[-10.266, 4.965]
Model Statistics										
RE (Robust): Overall R ² = 0.384; Wald $\chi^2(6)$ = 219.32***; Obs. = 103; Groups = 10; p PCSE (Preferred): Overall R ² = 0.349; Wald $\chi^2(6)$ = 142.23***; Obs. = 103; Groups = 10; p = 0.795										

Note. ***p < .01; **p < .05; *p < .10. RE = Random Effects GLS with cluster-robust standard errors. PCSE = Prais–Winsten regression with panel-corrected standard errors and AR(1) autocorrelation correction. **Source: Researcher's Computation (2025)**



4.7 Test of Hypotheses

The first hypothesis stated that derivative asset intensity has no significant effect on firm value, but the preferred Prais Winsten PCSE model showed a positive and significant effect (Coef = 1.178, $p < 0.01$), indicating that higher derivative asset intensity improves Tobin's Q and leading to rejection of the null. The second hypothesis proposed that derivative liability intensity has no significant effect, yet results showed a negative and significant coefficient (Coef = -0.281, $p < 0.05$), implying that greater derivative liabilities reduce firm valuation and prompting rejection of the null. The third hypothesis argued that exchange rate volatility does not moderate the relationship, but findings showed a negative and significant interaction for DAI \times ERV (Coef = -3.180, $p < 0.05$) and an insignificant interaction for DLI \times ERV ($p = 0.540$), meaning that exchange rate volatility weakens the positive effect of derivative assets but does not alter the adverse effect of derivative liabilities. Therefore, the null was partially rejected.

4.8 Discussion of Findings

The findings show that financial derivatives and exchange rate volatility jointly influence firm value among listed investment firms in Nigeria. Derivative asset intensity has a positive and significant effect on Tobin's Q, consistent with studies arguing that derivatives enhance valuation by stabilizing cash flows and signaling prudent risk management (Alam and Uddin, 2023; Almeida et al., 2025). This aligns with signaling theory, as derivative assets communicate managerial competence, although the benefit depends on disclosure and governance quality (Adusei et al., 2022; Zarfati, 2025). Derivative liability intensity, by contrast, has a negative and significant effect on firm value because liabilities increase leverage, erode liquidity, and heighten distress risk, reflecting investor skepticism in the Nigerian context (Chen, 2025; Ogundu, 2025). While some contexts find derivative liabilities useful, evidence here supports a destabilizing role.

The moderating role of exchange rate volatility adds nuance. Exchange rate volatility weakens the positive effect of derivative asset intensity on firm value, confirming that extreme currency instability undermines hedging effectiveness and investor confidence (Demir et al., 2023; Zhou and Xu, 2024). The interaction between volatility and derivative liabilities is insignificant, meaning liabilities remain harmful regardless of market conditions, consistent with findings that liability exposures signal fragility rather than value protection (Chen et al., 2023). The results show that exchange rate volatility constrains the derivatives-firm value relationship among Nigerian listed investment firms. Although derivative asset intensity has a positive direct effect on firm value, the negative and significant interaction with exchange rate volatility indicates that currency instability weakens this benefit. In high volatility periods, rising hedging costs, increased basis risk, and pricing inefficiencies reduce the effectiveness of derivative assets as value enhancing tools. Exchange rate volatility therefore actively undermines the hedging and signaling roles of derivatives rather than serving as a neutral macroeconomic background.

This finding contrasts with evidence from advanced economies, where exchange rate volatility often strengthens the value relevance of derivatives. Studies from the United States and Europe show that firms operating in deep and liquid derivative markets are better able to absorb currency shocks, and investors reward hedging activity during volatile periods. In such environments, pricing efficiency, contract flexibility, and counterparty reliability remain strong. In Nigeria, however, episodic FX illiquidity, regulatory interventions, and fragmented exchange rate regimes limit hedging precision and weaken market confidence. As a result, volatility reduces rather than amplifies the valuation gains from derivative assets, highlighting the role of institutional quality and market depth.



The insignificant interaction between exchange rate volatility and derivative liability intensity further clarifies investor behavior. Derivative liabilities reduce firm value irrespective of currency conditions. This suggests that investors consistently interpret liability driven derivative positions as signals of leverage and financial fragility rather than risk mitigation. Unlike developed markets where derivative liabilities may support balance sheet optimization, weak disclosure practices, limited collateral frameworks, and counterparty risk in Nigeria prevent such exposures from being perceived as value enhancing. Volatility does not alter this negative perception.

From a theoretical standpoint, the findings refine hedging and signaling theories in an emerging market context. While hedging theory assumes that derivatives stabilize cash flows and reduce distress risk, the Nigerian evidence shows that these benefits are conditional on macroeconomic and exchange rate stability. Similarly, signaling theory suggests that derivative usage conveys managerial sophistication, but high volatility weakens signal credibility when investors doubt hedge effectiveness. Unlike global evidence where volatility enhances informational content, the Nigerian case shows that excessive volatility dilutes both economic and informational benefits.

Overall, exchange rate volatility emerges as a binding constraint on derivative driven value creation in Nigeria. Firm level risk management alone is insufficient to sustain valuation gains in the absence of FX stability. Compared with global evidence, derivatives in Nigeria shift from strategic value tools to defensive instruments with diminishing returns. This underscores the need to interpret derivative effectiveness within its institutional and currency regime context, rather than assuming uniform valuation effects across markets.

5. Conclusion and Recommendation

Conclusion

This study examined the effect of financial derivatives and exchange rate volatility on the firm value of listed investment firms in Nigeria, with particular emphasis on the moderating role of exchange rate volatility. The findings reveal that derivative asset intensity (DAI) exerts a positive and statistically significant effect on firm value, demonstrating that when properly utilized, derivative assets serve as effective hedging instruments that enhance investor confidence and stabilize firm valuation. Conversely, derivative liability intensity (DLI) exhibits a negative and significant effect, indicating that derivative-linked liabilities are perceived as risky exposures that erode value through heightened financial distress and weakened liquidity positions. The moderating role of exchange rate volatility (ERV) is particularly notable. Results show that ERV weakens the positive influence of derivative assets on firm value, suggesting that extreme currency instability limits the effectiveness of derivatives as risk management tools. However, the interaction between ERV and derivative liabilities is insignificant, reflecting that such liabilities consistently depress firm value regardless of volatility levels. Taken together, the findings emphasize that while financial derivatives can serve as strategic instruments for value enhancement, their effectiveness is context-dependent, and excessive reliance on derivative liabilities can undermine firm performance.

Recommendation

Based on these insights, several recommendations are proposed. First, investment firms should strengthen their risk management frameworks by prioritizing the use of derivative assets for hedging rather than speculative purposes, ensuring that these instruments are aligned with long-



term value creation. Second, regulators such as the Securities and Exchange Commission (SEC) and the Central Bank of Nigeria (CBN) should enforce stricter disclosure requirements on derivative usage, particularly liabilities, to enhance transparency and reduce information asymmetry in the market. Third, firms should adopt robust currency risk management strategies, including diversification of hedging instruments, to cushion the destabilizing effects of exchange rate volatility. Fourth, boards of directors and audit committees should institute stronger governance oversight to ensure that derivative positions are effectively monitored and integrated into the overall corporate strategy. Finally, policymakers should stabilize the macroeconomic environment by addressing persistent exchange rate instability, as excessive volatility diminishes the protective role of derivatives and undermines firm value in the long run.

Limitations to the Study

This study is limited by its focus on the ten investment firms listed on the Nigerian Exchange Group, which restricts generalizability across non-listed and non-financial sectors. The reliance on secondary financial statement data may also introduce disclosure and reporting inconsistencies, particularly for derivative instruments that are often opaquely classified. In addition, the study operationalizes firm value using Tobin's Q only, which may not fully capture broader market perceptions or long-term value dynamics. Finally, the study covers 2015–2024 and may not account for structural FX reforms or post-sample macroeconomic shocks that influence derivative usage and exchange rate behavior.

Suggestions for Further Studies

Future research should expand sectoral coverage beyond investment firms by including manufacturing, banking, and oil and gas firms to enhance external validity. Multi-country studies across Sub-Saharan Africa or emerging markets would enable stronger comparative insights on derivative practices and regulatory environments. Researchers should also explore alternative valuation metrics such as enterprise value, market-to-book ratios, or discounted cash flows to capture multi-dimensional firm valuation outcomes. Finally, qualitative or mixed-methods approaches could examine governance, disclosure quality, and managerial incentives underlying derivative strategies, which cannot be captured through archival data alone.



REFERENCE

- Aben, M. (2023). Derivatives and financial stability: Assessing leverage and counterparty exposures. *Journal of Risk Management in Financial Institutions*, 16(2), 145–160.
- Adilieme, C. M. (2025). *Reducing clients' influence in property valuation in Nigeria: An exploration of blockchain technology* [Doctoral dissertation, University of New South Wales].
- Adusei, M., Osei-Assibey, E., & Gyeke-Dako, A. (2022). Signaling theory and corporate disclosures: Evidence from emerging markets. *Journal of Accounting in Emerging Economies*, 12(3), 451–472.
- Aghaei, M. (2025). An empirical analysis of herding behavior in the stock market: Evidence from various economic and social conditions in Iran. *Journal of Asset Management and Financing*, 10(1), 1–20.
- Aguirre-Alvarez, G., & Ceballos, R. (2025). Corporate governance quality and firm valuation: Evidence from Latin America. *Journal of International Financial Management & Accounting*, 36(1), 102–121.
- Agyapong, D., Mensah, L., & Owusu, E. (2024). Exchange rate volatility and trade flows in Sub-Saharan Africa: Evidence from panel data analysis. *Journal of African Business*, 25(2), 155–173.
- Ahmed, T., Bajpai, S., Faisal, M., & Tripathi, S. L. (2025). *Advances in science, engineering and technology*. Springer.
- Ajibade, A. (2025). *Determinants and value relevance of corporate hedging in African firms* [Doctoral dissertation, University of the West of England]. UWE Research Repository.
- Al Janabi, M. A. M. (2024). Liquidity dynamics and risk modeling. In *Handbook of research on risk and financial management in international business* (pp. 215–238). Springer.
- Alam, M. S., & Uddin, M. R. (2023). Financial derivatives and firm performance: Evidence from Asia-Pacific markets. *Global Finance Journal*, 58, 100983.
- Alawi, S., Hamdan, A., & Hussein, M. (2022). Regime shifts and structural breaks in currency markets: Evidence from GCC countries. *International Economics*, 171, 45–60.
- Almeida, R., Martins, P., & Costa, L. (2025). Corporate risk management and firm value: Evidence from derivative usage in emerging markets. *Emerging Markets Review*, 63, 101005.
- Andabai, P. W. (2024). Stock market liquidity and stock market performance in Nigeria. *Journal of Accounting and Financial Management*, 10(9), 299–314.
- Bello, A., & Adegbite, E. (2022). Firm size and corporate governance: Implications for performance in Nigeria. *Journal of African Business*, 23(3), 457–474.
- Ben Hassen, T., El Omri, A., & Belloumi, M. (2025). Corporate governance reforms and their impact on firm value: Evidence from emerging economies. *Journal of Governance and Regulation*, 14(1), 56–70.
- Biswas, S. (2024). Common sense investing: A practitioner's dossier. *International Journal of Management and Economics Research*, 14(5), 112–124.
- Buchman, E., Dini, P., Ahmed, S., & Miller, A. (2025). Cycles protocol: A peer-to-peer electronic clearing system. *arXiv*.
- Cammeo, E., Cappa, F., & Rossi, M. (2024). ESG reporting regulations and firm performance in European listed companies. *Business Strategy and the Environment*, 33(2), 654–669. <https://doi.org/10.1002/bse.3458>
- Carvalho, L. S. (2025). Financial transparency and corporate value in emerging markets. *Emerging Markets Review*, 57, 101065.
- Chatterjee, N., & Kundu, D. (2025). Role of ESG and corporate governance in a VUCA world: Analysis of selected corporates. *ResearchGate*.
- Chen, H., Li, Y., & Zhou, Q. (2023). Corporate risk management, foreign exchange derivatives, and firm value: Evidence from Asia-Pacific. *Pacific-Basin Finance Journal*, 78, 101990.



- Chen, S. (2025). Derivative liabilities and firm value in the UK energy sector: Evidence from commodity swaps. *SHS Web of Conferences*, 213, 02020.
- Chen, W., & Li, Z. (2024). Exchange rate volatility and firm-level export performance in China. *China Economic Review*, 79, 101965.
- Date, A., & Maunthrooa, V. (2025). Analyzing exchange rate pairs and optimal forecasts using the Kalman filter. In *Innovative data communication technologies and application: Lecture notes on data engineering and communications technologies* (pp. 3–11). Springer.
- de Jong, M. (2025). Using credit default swaps to enhance the return-to-risk profile of investment banks in Europe. In *Derivatives applications in asset management: From theory to practice* (pp. 589–604). Springer.
- Demir, E., Lau, C. K. M., & Vo, X. V. (2023). Exchange rate volatility and firm value: The role of financial hedging. *International Review of Financial Analysis*, 86, 102551.
- Devaki, M., & Anbukarasi, M. (2024). Behavioral patterns in commodity derivatives: A focus on India. *Asian Journal of Economics and Finance*, 6(2), 77–93.
- Edirin, O. J. (2025). Impact of taxation on business profitability in Nigeria. *IIARD International Journal of Economics and Business Management*, 11(1), 23–35.
- Eze, S. C., & Nwanji, T. I. (2024). Exchange rate volatility and firm performance: Evidence from the Nigerian financial sector. *International Journal of Economics and Financial Issues*, 14(3), 122–130.
- Ezeaku, H. C., & Ibe, R. C. (2023). Exchange rate volatility, inflation and economic growth nexus in Nigeria. *Heliyon*, 9(4), e15789.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383–417.
- Fang, Y., Huang, W., & Li, Z. (2023). Financial derivatives and firm valuation: Evidence from information efficiency in global markets. *Journal of International Financial Markets, Institutions & Money*, 87, 101746.
- Fatokun, O. (2023). Modelling exchange rate volatility with structural breaks: Evidence from the Nigerian foreign exchange market. *Cogent Economics & Finance*, 11(1), 2180457.
- Feng, Y., Liu, W., & Luo, Z. (2023). Signaling value in corporate financial policies: Evidence from China's derivatives market. *Emerging Markets Review*, 56, 101012.
- Fiechter, J., Otter-Robe, I., & Ilyina, A. (2025). Derivatives markets, financial stability, and regulatory frameworks: A cross-country analysis. *Journal of Financial Regulation and Compliance*, 33(1), 1–21.
- Fiechter, J., Otter-Robe, I., & Ilyina, A. (2025). Derivatives markets, financial stability, and regulatory frameworks: A cross-country analysis. *Journal of Financial Regulation and Compliance*, 33(1), 1–21.
- Fulga, E. C. N. (2024). Exploring the dynamics of derivative markets: A comprehensive study on futures, options, and swaps in modern finance. *Revista Tinerilor Economisti (The Young Economists Journal)*, 21(117), 15–28.
- Gao, H., & Yu, Z. (2024). Price influence and volatility risk transmission of non-ferrous metals futures: Situation in China. *American Journal of Industrial and Business Management*, 14(10), 875–894.
- Gao, Y., Li, Z., & Shen, W. (2025). Capital structure decisions and firm value: Revisiting Modigliani–Miller under financial frictions. *Review of Quantitative Finance and Accounting*, 65(4), 1023–1050.
- Ghosh, A., & Kaur, H. (2025). Measuring derivative usage intensity: Evidence from Asia-Pacific firms. *Asia-Pacific Journal of Financial Studies*, 54(1), 1–24.
- Gichungu, E. N., Mukoma, K. F., & On, P. R. (2024). The effect of macro-economic factors on stock price volatility of firms listed at Nairobi Securities Exchange. *Academia.edu*.
- Habib, A., Hasan, M. M., & Islam, A. (2024). Financial market transparency, corporate



- governance, and firm value: Cross-country evidence. *Emerging Markets Review*, 58, 100983.
- Haruna, H., & Haliru, A. M. (2025). Youth unemployment and rising inflation in Nigeria. *Journal of Philosophy, Policy and Strategic Studies*, 2(1), 45–58.
- Hassan, M., & Khan, S. (2022). Derivative usage and corporate risk management in developing economies. *Emerging Markets Review*, 51, 100850.
- Hassan, M., & Mensah, E. (2024). Currency risk management and corporate governance in emerging markets. *Journal of Multinational Financial Management*, 70, 100791.
- He, Q., Liu, Y., & Zhou, J. (2023). Corporate derivatives usage and firm value: Evidence from Asian markets. *Pacific-Basin Finance Journal*, 79, 102013.
- Hugonnier, J., Lester, B., & Weill, P. O. (2025). *The economics of over-the-counter markets: A toolkit for the analysis of decentralized exchange*. De Gruyter.
- Ibrahim, I. N. E. (2025). *Navigating financial risks: An examination of hedging derivatives in mitigating market and credit risk* [Master's thesis, University of Padua]. University of Padua Digital Library.
- Ichim, A., & Neagu-Iorga, D. (2025). Valuation challenges and investment flows in high-volatility emerging markets. *Economic Research-Ekonomska Istraživanja*, 38(1), 142–161.
- Imsirovic, A., & Bryce, C. (2025). Managing derivative liability intensity in oil and gas: Lessons from Canadian markets. In *The rivers of money* (pp. 355–372). Springer.
- Jiang, J., Lu, X., Xiao, J., & Ye, R. (2025). Hedging, hedge accounting, and stock price crash risk: Evidence from China. *The International Journal of Accounting*, 60(1), 2453001.
- Jiang, J., Richards, J., Huser, R., & Bolin, D. (2025). The efficient tail hypothesis: An extreme value perspective on market efficiency. *Journal of Business & Economic Statistics*.
- Kamran, M., & Takbiri, S. (2025). The impact of stock liquidity on crash risk: The moderating role of institutional ownership. *Financial Management Strategy*, 18(2), 45–63.
- Khan, G. Y., Azad, M., & Mehboob, S. (2024). Evidence of monetary policy and economic growth nexus from Pakistan. *Studies in Business and Economics: Emerging Economies*, 9(1), 33–49.
- Kim, J., & Lee, S. (2022). Measuring firm value in the post-pandemic era: Revisiting Tobin's Q. *Finance Research Letters*, 49, 103012.
- Kim, J., & Lee, S. (2024). Signaling corporate stability through derivative disclosure: Evidence from Asia-Pacific firms. *Pacific-Basin Finance Journal*, 81, 102166.
- Kim, S., & Lee, J. (2023). Hedging effectiveness of derivatives and firm valuation under different market conditions. *Journal of Futures Markets*, 43(6), 751–768.
- Kopec, T. (2025). Predictive analytics and valuation modeling for sustainable firm value. *International Journal of Financial Engineering*, 12(1), 2450005.
- Kou, G., Xu, Y., & Peng, Y. (2025). Information signals, corporate governance, and investor responses in derivative markets. *Journal of International Financial Markets, Institutions and Money*, 85, 102016.
- Kumar, R., & Mehta, P. (2025). Forecasting exchange rate volatility using EGARCH and realized volatility approaches: Evidence from BRICS. *Economic Modelling*, 125, 106428.
- Kumar, R., Mehta, A., & Singh, P. (2024). IFRS 9 adoption, derivative reporting, and financial transparency: Evidence from global banks. *Journal of International Accounting Research*, 23(2), 189–210.
- Kumar, R., Sharma, S., & Mehta, P. (2025). Forecasting exchange rate volatility using EGARCH and realized volatility approaches: Evidence from BRICS. *Economic Modelling*, 125, 106428.
- Lane, R. (2025). Beds of the future: Reconfiguring supply chains and valuing practices through a bedding product stewardship initiative. *SSRN*.
- Latysheva, O., Rovenska, V., Smyrnova, I., & Dmytrenko, O. (2024). Ensuring operational efficiency of mining and metallurgical enterprises on the basis of sustainable development. *Natsional'nyi Hirnychyi Universytet Scientific Bulletin*, 6(2024), 100–110.



- Lee, J., & Choi, S. (2022). Currency option-implied volatility and its predictive power for exchange rate movements. *Journal of International Money and Finance*, 122, 102555.
- Li, X., & Gao, F. (2024). Exchange rate exposure, financial derivatives, and firm value: New evidence from global firms. *Finance Research Letters*, 59, 104640.
- Liu, Y. (2024). The role of derivative liabilities in enhancing firm value: Evidence from Chinese agribusiness firms. *Asia-Pacific Journal of Accounting & Economics*. Advance online publication.
- Liu, Y. (2024). Three essays on stakeholders' reaction towards sustainability. [Doctoral dissertation, University of Edinburgh]. ERA Digital Repository.
- Liu, Y., Zhang, W., & Chen, H. (2024). Derivatives use, risk management, and firm value: Evidence from Asia-Pacific markets. *Journal of International Financial Markets, Institutions and Money*, 86, 101804.
- Liu, Z., & Yang, W. (2023). Disclosure quality of derivatives and firm valuation. *Journal of Derivatives and Hedge Funds*, 29(4), 311–328.
- M'boueke, S. (2024). The importance of commodity-price shocks. *Samson Mboueke Working Paper*.
- Macharia, M. W. (2025). Firm value dynamics and competitive advantage in African manufacturing firms. *African Journal of Economic Policy*, 32(1), 88–104.
- Maharani, S. T. W. (2025). *Pengaruh carbon emission disclosure dan green investment terhadap nilai perusahaan* [Undergraduate thesis, Universitas Sultan Ageng Tirtayasa]. Universitas Sultan Ageng Tirtayasa Repository.
- Makori, J. G., Nyongesa, K., & Mutua, J. (2024). Fiscal incentives and capital market development in Sub-Saharan Africa. *African Journal of Economic Policy*, 31(1), 34–52.
- Małysa, A. (2025). Market-based valuation and its determinants in European listed companies. *Journal of Risk and Financial Management*, 18(2), 75.
- Mancinelli, L., Rossi, M., & Testa, F. (2025). Measurement approaches to corporate value: A comparative analysis of market and accounting models. *Sustainability*, 17(3), 1211.
- Mateko, F. M. (2025). Trade fragmentation and reconfiguration of the global value chain. *Interciencia*.
- Momodu, A., Oke, B., & Salami, K. (2025). Derivatives and capital market development in emerging economies: Evidence from Africa. *African Journal of Economic Policy*, 32(1), 45–61.
- Mordi, C. N., & Nwafor, C. C. (2024). Monetary policy shocks and exchange rate volatility in emerging markets. *Journal of Policy Modeling*, 46(2), 345–362.
- Moussa, A., Ahmed, K., & El-Khatib, R. (2025). Exchange rate volatility, derivative hedging, and corporate value in frontier economies. *Global Finance Journal*, 67, 101904.
- Mwangi, P. M. (2025). Intangible assets and the complexity of firm valuation in the digital economy. *International Journal of Accounting & Information Management*, 33(2), 211–229.
- Mwindaare, E. K. (2025). Enterprise value and shareholder wealth: Revisiting fundamentals in corporate finance. *Corporate Finance Review*, 30(1), 33–44.
- Negash, M., Asrat, A., & Kassa, T. (2025). Corporate governance and firm value: Evidence from emerging African markets. *Journal of Accounting and Organizational Change*, 21(1), 45–63.
- Nguyen, T. H., & Vo, D. H. (2023). Corporate governance, firm value, and Tobin's Q: Evidence from emerging markets. *Journal of Asian Business and Economic Studies*, 30(1), 45–60.
- Nguyen, T., & Pham, H. (2023). Hedging under currency turbulence: How derivative use signals corporate resilience. *Finance Research Letters*, 55, 104642.
- Nyarko, K., Boateng, E., & Mensah, K. (2024). Exchange rate volatility and capital market stability: Evidence from frontier economies. *Emerging Markets Review*, 59, 100995.
- Obi, P., Emeni, F., & Okeke, V. (2023). Modelling conditional volatility in the Nigerian foreign exchange market: A GARCH approach. *African Journal of Economic Policy*, 30(1), 1–20.



- Odegaard, B. A., & Thorburn, K. S. (2024). Derivatives, leverage, and financial distress: A European perspective. *European Financial Management*, 30(1), 77–101.
- Ogundu, P. G. (2025). The strategic implications of derivative liability intensity on firm value in Nigerian manufacturing companies. *Research in Business and Finance Journal*, 14(2), 88–104.
- Okolie, C. (2025). Composition of board and compliance with code of best practices in Nigerian financial institutions. *International Journal of Strategic Research and Reviews*, 3(1), 56–70.
- Okonkwo, C. I., & Audu, H. I. (2025). Institutional quality, macroeconomic stability, and firm value: Evidence from Nigeria. *Journal of African Business*, 26(1), 120–138.
- Olofin, T. B., Oyinlana, G. O., & Aderoju, J. A. (2025). Influence of fuel subsidy removal on economic life of low-income earners in Nigeria. *Business Education Research*, 14(2), 101–114.
- Osei, K., & Mensah, L. (2023). Firm size, performance, and market valuation in West Africa. *African Journal of Economic Policy*, 30(2), 112–128.
- Park, J., & Song, H. (2024). Currency derivatives and corporate performance under exchange rate volatility. *Emerging Markets Finance and Trade*, 60(5), 1237–1255.
- Rahman, M. (2025). Integrating management auditing with social and environmental accounting: Case studies from the mining, financial, and technology sectors. *Li Falah: Jurnal Studi Ekonomi dan Bisnis Islam*, 10(1), 1–15.
- Rahman, S., & Jahan, N. (2024). Exchange rate volatility and the clarity of corporate signals in emerging markets. *Research in International Business and Finance*, 66, 101933.
- Rane, M., Gupta, R., & Sharma, P. (2025). The role of derivatives in risk management and firm value: Evidence from Asia-Pacific markets. *Global Finance Journal*, 67, 101892.
- Rashidi Mohammadi, A., & Petrović, E. K. (2025). Mapping forestry practices against sustainable development goal targets: The role of currency volatility. *Frontiers in Sustainability*, 6, 1534449.
- Rynska, E. (2025). *Embedding resilience in the built environment using the EU taxonomy*. Routledge.
- Safarova, N., & Bakoyeva, M. (2025). Portfolio diversification and performance: The role of derivatives in emerging markets. *Journal of Investment Strategies*, 14(2), 155–173.
- Salam, S., & Novita, M. (2024). Commodity price risk and firm value exposure: Evidence from Indonesian manufacturing exporters. *International Journal of Energy Economics and Policy*, 14(3), 1–12.
- Samuel, O., & Alade, F. (2025). Earnings volatility, credit ratings, and firm financing costs: Insights from developing economies. *International Journal of Finance & Economics*, 30(2), 2215–2231.
- Stevens, J., & Vermeulen, R. (2024). Derivative markets and economic growth: Evidence from South Africa. *South African Journal of Economics*, 92(2), 234–252.
- Suleiman, M., & Musa, A. (2025). Exchange rate volatility and foreign direct investment inflows: Evidence from West Africa. *Global Finance Journal*, 67, 101900.
- Sun, L. (2025). Investor perception and competitive positioning in global supply chains. *Journal of International Business Studies*, 56(3), 456–473.
- Thakur, M. S. (2024). *Exploring the economic impact: Forex and Indian stock market*. ResearchGate.
- Wang, B., Zhang, X., & Huang, L. (2025). Earnings management, market efficiency, and firm valuation: International evidence. *Pacific-Basin Finance Journal*, 79, 102055.
- Wang, W., Wang, Z., Zhou, F., Wang, J., & Wang, J. (2024). The convenience benefits of the shipping market: Evidence from C3 and C5 FFAs. *Research in Transportation Business & Management*, 53, 101189.
- Wang, Y., Liu, Z., & Chen, H. (2025). Derivatives, price discovery, and market efficiency: Evidence from commodity and equity markets. *Review of Quantitative Finance and Accounting*, 65(3), 889–912.



- Wang, Y., Liu, Z., & Chen, H. (2025). The influence of media sentiment on managerial risk appetite and FX derivatives usage: Evidence from Chinese listed firms. *Review of Quantitative Finance and Accounting*, 65(3), 889–912.
- Wicaksana, K. A. B., & Purbawangsa, I. B. A. (2025). Agency, signals, and the paradox of efficiency: Mediating role of investment efficiency in determining firm value in Indonesia. *International Journal of Applied Science and Sustainable Development*, 9(8), 211–230.
- Williams, T. (2025). Corporate reputation, customer loyalty, and firm valuation: Evidence from ESG disclosures. *Business Strategy and the Environment*, 34(1), 512–526.
- World Bank. (2024). *Sustainability-linked financing and governance reforms: Policy framework for emerging markets*. World Bank Publications.
- Wu, L., & Xu, H. (2024). Investor perception of derivative use during currency crises. *Global Finance Journal*, 66, 101872.
- Yang, H., Liu, X., & Chen, Y. (2025). Shareholder activism and its impact on corporate strategy in developed and emerging markets. *Global Finance Journal*, 66, 101871.
- Yi, W. (2025). Total return swaps and the dilemmas of control rights. *SSRN Electronic Journal*.
- Zarfati, S. (2025). Corporate governance and prudent derivatives use: Lessons from global markets. *International Review of Financial Analysis*, 92, 103200.
- Zbandut, A., Reichling, P., & Vogt, B. (2025). *Essays on option pricing* (Doctoral dissertation). Martin Luther University Halle-Wittenberg.
- Zhang, T., & Wang, Q. (2024). Signaling through derivatives: Market reaction to corporate hedging strategies. *Journal of Derivatives*, 31(4), 45–62.
- Zhang, Y., & Park, J. (2024). Structural breaks, asymmetries and exchange rate volatility: Evidence from developed and emerging markets. *Finance Research Letters*, 59, 104531.
- Zhou, Q., & Xu, H. (2024). Exchange rate volatility and the market value of derivative-using firms. *International Review of Economics & Finance*, 87, 235–249.
- Zuo, Y. (2025). ESG performance and firm value: A stakeholder perspective. *Business Strategy and the Environment*, 34(2), 876–889.

