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INVESTMENT INTENSITY, RISK TRANSFER PRACTICE AND FINANCIAL PERFORMANCE OF LISTED: THE CASE OF INSURANCE FIRMS IN NIGERIA

ADUKWU GLORY MACCILINA; DR. YASHIM, CALEB YAHAYA; & DR. DANIEL EMMANUEL

Department of Accounting, Bingham University, Karu, Nasarawa State.

Corresponding Author: gloryadukwu105@gmail.com

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Abstract

The Nigerian insurance industry has continued to face persistent challenges in achieving strong and consistent financial performance despite regulatory reforms and increased competition within the financial services sector. Many listed insurance firms struggle with fluctuating earnings per share, which raises concerns about the effectiveness of their financial management strategies, particularly investment intensity and risk transfer practices. As a result, this study examined the effect of Investment Intensity and Risk Transfer Practice on the Financial Performance of listed insurance firms in Nigeria over the period 2013–2025. The specific objectives were to assess the effect of investment intensity and risk transfer practice on EPS, while controlling for revenue growth. The study adopted an ex-post facto research design and relied on secondary data obtained from the annual reports of twelve (12) purposively selected insurance firms listed on the Nigerian Exchange Group. Panel data techniques were employed, and after conducting relevant diagnostic tests, the random effect model with robust standard errors was used for hypothesis testing. The empirical results revealed that investment intensity had a significant positive effect on EPS, indicating that increased investment activities enhanced the financial performance of listed insurance firms in Nigeria. Conversely, risk

KEYWORDS:
Investment Intensity; Risk Transfer Practice; Financial Performance; Earnings Per Share.

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transfer practice was found to have a significant negative effect on EPS, suggesting that excessive reliance on reinsurance and related mechanisms reduced profitability within the study period. The study concluded that while investment intensity enhances financial performance, inefficient risk transfer practices may erode earnings in the Nigerian insurance sector. The study recommended that insurance firms should optimize investment decisions and adopt cost-efficient risk transfer strategies to improve shareholder value. Consequently, the findings highlight the importance of balanced financial management strategies in achieving sustainable performance in emerging insurance markets.

INTRODUCTION

The insurance sector was recognized as a critical component of economic growth and sustainable development because it facilitates risk transfer, promotes financial stability, mobilizes long-term savings, and supports investment activities across various sectors of the economy. In developed nations, the insurance industry has played a significant role in fostering economic resilience by protecting businesses and households against unforeseen losses, while also serving as a major institutional investor in capital markets and infrastructure development. Empirical evidence from
G-20 economies indicated that insurance sector activities exert a positive influence on economic development through enhanced financial intermediation and risk management mechanisms (Taşdemir & Alsu, 2024). In emerging and developing economies, the insurance sector has contributed to economic transformation by improving financial inclusion, encouraging entrepreneurship, facilitating access to credit, and supporting long-term investments necessary for economic expansion and poverty reduction (World Bank, 2025). In Nigeria, the insurance industry has increasingly demonstrated its importance to economic growth through premium generation, claims settlement, capital formation, and financial risk mitigation. The sector recorded gross written premiums of approximately ₦1.562 trillion in 2024, representing a 56% increase from the previous year, while total assets rose to about ₦3.9 trillion, reflecting its growing contribution to financial sector development and economic stability despite relatively low insurance penetration Kule, 2025). Consequently, the insurance sector remained a vital catalyst for social welfare, business sustainability, investment promotion, and overall economic development in both advanced and emerging economies, including Nigeria (Organization of Economic Co-operation and Development, 2025).

Financial performance is widely regarded as a critical indicator of the success, stability, and sustainability of insurance companies because it reflects their ability to generate profits, meet policyholder obligations, maintain solvency, and create value for

shareholders. Globally, particularly in developed economies such as the United States and the United Kingdom, strong financial performance enables insurance firms to enhance risk-bearing capacity, support economic growth through long-term investments, and strengthen financial system stability. Profitable insurance companies are better positioned to underwrite risks, settle claims promptly, and invest substantial funds in capital markets and infrastructure projects, thereby contributing to overall economic development (Pfeifer & Langen, 2021).

In Nigeria, financial performance has become increasingly important as the insurance sector continues to expand its premium base, asset portfolio, and claims settlement capacity. The industry recorded gross written premiums of approximately ₦1.562 trillion and total assets of about ₦3.9 trillion in 2024, highlighting its growing contribution to the financial system and the broader economy (Kule, 2025). According to the Nigerian Insurers Association (NIA), 2025, the financial performance of Nigerian insurance firms has continued to face several challenges, including low insurance penetration, high inflation, exchange rate volatility, rising claims expenses, increasing operational costs, inadequate public awareness, and intense market competition. These challenges have exerted pressure on profitability and underwriting performance, causing some firms to rely heavily on investment income to sustain overall earnings rather than on core insurance operations. Furthermore, macroeconomic uncertainties, foreign exchange constraints, and the increasing cost of claims settlement have continued to affect the financial health and performance of insurance firms in Nigeria despite the sector's demonstrated resilience and growth trajectory (Nairametrics, 2024; National Insurance Commission [NAICOM], 2025,

Financial performance has been measured using both accounting-based and market-based indicators. Common accounting-based proxies include Return on Assets (ROA), Return on Equity (ROE), Earnings Per Share (EPS), Net Profit Margin (NPM), and Economic Value Added (EVA), while market-based measures frequently include Tobin's Q and market value indicators, all of which assess different dimensions of a firm's profitability, efficiency, shareholder value creation, and market performance (Hussain et al., 2022, as cited in Wallace et al., 2024). Recent empirical studies have continued to employ ROA, ROE, EPS, and Tobin's Q as the most widely accepted proxies for financial performance because they provide comprehensive insights into operational efficiency, profitability, shareholder returns, and market valuation (Sike et al; 2022; Wallace et al., 2024; Yahaya, 2026). This study adopted Earnings per Share (EPS) as the proxy for financial performance because it directly measures the portion of a company's profit attributable to each ordinary share outstanding, thereby reflecting the firm's profitability from the shareholders' perspective. EPS was also considered appropriate because it is a widely accepted and reliable indicator of financial performance that facilitates comparisons

across firms and over time, while capturing the effects of managerial decisions, investment activities, and risk management practices on shareholder wealth.

Investment intensity and risk transfer practice have become critical strategic tools for enhancing the performance and value of insurance firms across developed, emerging, and Nigerian economies (Usman & Obalola, 2025). In developed nations, insurance companies utilize investment intensity to optimize returns on accumulated premiums through diversified portfolios, while risk transfer mechanisms such as reinsurance enable them to manage underwriting exposures, maintain solvency, and improve profitability (Akpan et al., 2025). Similarly, in emerging and developing economies, effective investment strategies and risk transfer practices support capital accumulation, financial stability, business expansion, and resilience against operational uncertainties. These practices are particularly important in addressing challenges that undermine firm value, such as volatile investment returns, underwriting losses, claims fluctuations, liquidity constraints, and inadequate capital adequacy. In Nigeria, where insurance firms continue to face challenges including low insurance penetration, macroeconomic instability, inflationary pressures, exchange rate volatility, and rising claims obligations, investment intensity and risk transfer practices have become essential mechanisms for sustaining profitability and enhancing shareholder value. Evidence from recent studies indicated that investment-related activities positively influence the profitability of reinsurers, while effective reinsurance and risk retention practices strengthen financial stability, improve stakeholder confidence, and enhance overall firm performance and market valuation (Abdulkadir, 2024).

The motivation for this study stemmed from the growing need to enhance the financial performance of insurance firms in Nigeria amid increasing economic uncertainty, rising claims obligations, inflationary pressures, exchange rate volatility, and intense market competition. Despite the strategic importance of the insurance sector in promoting economic stability, risk protection, and capital formation, many insurance firms continue to face challenges in sustaining profitability and delivering adequate returns to shareholders. Consequently, understanding how investment intensity and risk transfer practices influence financial performance became imperative, as these strategies represent key mechanisms. The study was innovative in its combined analysis of investment intensity and risk transfer practice as joint drivers of financial performance in Nigerian listed insurance firms, addressing a gap in studies that previously examined these factors in isolation. It also contributed to literature by using a recent and extended dataset (2013–2025) and offering practical and theoretical insights that support better investment decisions, improved risk management, and enhanced firm value in the insurance industry.

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The Nigerian insurance sector has recently faced increasing pressure on financial performance despite apparent revenue growth, as reflected in declining profitability indicators and rising claims burdens. In the first quarter of 2025, gross premiums fell significantly by 51% to ₦769.2 billion, while net claims paid reached ₦167.3 billion with a market average net loss ratio of 36.7%, indicating persistent underwriting stress (NAICOM, 2025; Proshare, 2025). This pressure has also translated into weakened shareholder returns, as evidenced by a 43.8% decline in pre-tax profit among listed insurers in the first half of 2025, falling from ₦122.2 billion to ₦68.7 billion, alongside declining earnings per share in firms such as Sunu Assurances Plc and Cornerstone Insurance (Sunu Assurances, 2025; FundVine Securities, 2025). Despite these developments, existing studies have largely focused on isolated financial variables such as liquidity, dividend policy, or investment decisions, often excluding integrated analysis of investment intensity, risk transfer practices, and other financial strategies on EPS in the insurance sector (Lodikero & Soyinka, 2023; Olowa & Ita, 2017; Razak & Rahman, 2025; Sike et al; 2022). Furthermore, many prior studies have relied on cross-sectional designs that fail to capture long-term trends and sustainability of earnings, while limited research has comprehensively applied key theories such as the Trade-Off Theory, Resource-Based View, Modern Portfolio Theory, and Liquidity Preference Theory within the Nigerian insurance context. Consequently, there remains inadequate sector-wide and longitudinal evidence explaining why EPS is declining or stagnating despite revenue growth, creating a critical gap that this study seeks to address in order to provide clearer insights for managers, investors, and regulators in the Nigerian insurance industry.

The study tested the following null hypotheses in line with its objectives and model specification:

Ho_1: Investment Intensity ratio has no significant effect on the Earnings per Share of Listed Insurance Firms in Nigeria.

Ho_2: Risk Transfer ratio has no significant effect on the Earnings per Share of Listed Insurance Firms in Nigeria.

Investment Intensity

This refers to the extent to which a firm commits its financial resources to investment activities relative to its total asset base, reflecting its strategic focus on assets capable of generating future economic benefits. It is regarded as an indicator of the proportion of organizational resources devoted to long-term investments aimed at promoting growth, competitive advantage, and improved performance (Hitt et al., 2020). Similarly, Berk and DeMarzo (2020) describe investment intensity as a measure of a firm's engagement in investment activities that generate long-term returns. In the insurance industry, investment intensity is particularly important because investment income constitutes a

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significant component of overall revenue, making effective investment decisions critical to profitability and sustainability (Saunders & Cornett, 2022). Within the context of this study, investment intensity is defined as the proportion of total assets allocated by listed insurance firms in Nigeria to income-generating investment portfolios with the objective of improving financial performance measured by Earnings Per Share (EPS). It serves as a key indicator of managerial efficiency, capital allocation effectiveness, and shareholder value creation. Consistent with previous studies, investment intensity is measured as the ratio of total investment assets to total assets, providing an objective assessment of the extent to which insurance firms deploy their resources toward return-generating investments (Saunders & Cornett, 2022).

Investment Intensity Ratio

This measures how aggressively a company reinvests its capital into income-generating assets compared to its total size or revenue. Investment intensity ratio quantifies a company's commitment to growth, modernization, and asset accumulation. The ratio measures the ability of a company to effectively use its assets, showing how much investment in fixed assets was required during a given period to generate sales revenue. It indicates how much capital, as opposed to labour, is required to generate a given number of sales, and is frequently used to classify firms as capital-intensive or labour-intensive. A high ratio signals a capital-intensive operation requiring substantial long-term funding, while a low ratio suggests a leaner, more asset-efficient structure.
(Al Ani et al., 2023)

Risk Transfer Practice

This refers to the strategic process through which an organization shifts part or all of its potential financial losses to another party using mechanisms such as insurance, reinsurance, hedging, and contractual arrangements, thereby reducing exposure to financial uncertainties and enhancing organizational stability (Rejda & McNamara, 2020). It is a fundamental component of risk management that enables firms to allocate risks to entities better positioned to absorb or manage them, thereby improving resilience and performance (Vaughan & Vaughan, 2018). In the insurance industry, risk transfer is predominantly achieved through reinsurance arrangements, which allow insurers to redistribute underwriting risks, manage large or catastrophic exposures, stabilize earnings, and strengthen capital adequacy (Skipper & Kwon, 2020). Effective risk transfer enhances insurers' ability to meet policyholder obligations, increase underwriting capacity, reduce earnings volatility, and maintain operational continuity, all of which contribute positively to financial performance. Within the context of this study, risk transfer practice is defined as the systematic use of reinsurance and related mechanisms

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by listed insurance firms in Nigeria to transfer a portion of their underwriting risks to external parties with the objective of improving financial performance measured by Earnings Per Share (EPS). The study recognizes risk transfer practice as an important financial management strategy because efficient risk redistribution can reduce claim volatility, improve solvency, and support consistent profitability, whereas inadequate risk transfer may expose firms to significant losses and weakened financial outcomes. Consistent with prior literature, risk transfer practice is measured using the Reinsurance Utilization Ratio, calculated as reinsurance premiums ceded divided by gross written premiums, which provides an objective measure of the extent to which insurance firms transfer risk to reinsurers (Cummins & Weiss, 2014).

Risk Transfer Practice Ratio

Risk transfer ratio is the proportion of underwritten risk that insurance firms passed on to reinsurance partners. The use of premium volume as a proxy for risk transferred assumes that premium is roughly proportionate to underlying risk, which is a reasonable but imprecise assumption, since reinsurance pricing also reflects loading for expenses, profit margins, and the reinsurer's own risk appetite. Risk transfer practice ratio represents a strategic trade-off: a higher ratio (greater reliance on reinsurance) reduces volatility and strengthens solvency margins but increases the cost of underwriting, while a lower ratio (greater risk retention) preserves underwriting profit but exposes the insurer to greater earnings volatility and potential solvency strain in adverse years (Akpan, et al., 2025)

Financial Performance

This refers to the extent to which a firm effectively utilizes its resources to generate profits, achieve growth, and create value for shareholders, thereby reflecting its overall economic health, operational efficiency, profitability, and ability to meet financial obligations (Brealey et al., 2020). It represents the outcome of managerial decisions and strategic actions in relation to income generation, asset utilization, and market competitiveness (Ross et al., 2022). In the insurance industry, financial performance is influenced by underwriting activities, investment decisions, risk management practices, and the efficient utilization of assets (Chen & Wong, 2014). The assessment of financial performance is important to investors, regulators, and management because it provides insights into a firm's profitability, sustainability, and capacity to enhance shareholder wealth (Titman et al., 2018). Although various indicators such as Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin are commonly used, Earnings Per Share (EPS) is widely recognized as a reliable market-oriented measure because it reflects the portion of profit attributable to each outstanding share and directly signals value creation for shareholders (Gitman & Zutter, 2019). Accordingly, this study defines financial

performance as the ability of listed insurance firms in Nigeria to generate profits and create shareholder value, measured specifically by EPS. As the dependent variable, financial performance serves as the outcome of financial management strategies, particularly investment intensity and risk transfer practice, enabling the study to assess how these strategic decisions influence profitability and shareholder wealth within the Nigerian insurance sector.

Earnings per Share

Earnings per Share (EPS) is a widely recognized financial indicator that measures the portion of a company's profit attributable to each outstanding ordinary share, thereby serving as an important measure of profitability and shareholder value (Brigham & Ehrhardt, 2022). It provides investors and analysts with valuable insight into a firm's ability to generate earnings for its shareholders and is commonly used to evaluate financial performance. According to the International Financial Reporting Standards (IFRS, IAS 33), EPS should be reported on both a basic and diluted basis to account for the potential impact of convertible securities, stock options, and other instruments that may affect the number of outstanding shares (IFRS, 2022). Basic EPS is calculated by dividing net income available to ordinary shareholders by the weighted average number of ordinary shares outstanding during the reporting period. Within the context of this study, EPS is defined as the net income after deducting preferred dividends divided by the weighted average number of ordinary shares outstanding, representing the earnings available to common shareholders. As the dependent variable, EPS is employed to measure the financial performance of listed insurance firms in Nigeria and to evaluate how financial management strategies, particularly investment intensity and risk transfer practices, influence profitability and shareholder wealth creation (Brigham & Ehrhardt, 2022). EPS remains the most critical accounting number visible to the securities market. It directly determines the relative cost of a share via the Price-to-Earnings (P/E) ratio and serves as a primary signal of a company's capacity to distribute future dividends therefore EPS metrics align closely with cash flow and structurally push the market price of equity upward. (Dewi, E. 2021).

Revenue Growth

This refers to the rate at which a firm's total income from its core business activities increases over a given period and serves as an important indicator of business expansion, market demand, and managerial effectiveness in generating higher sales and income (Atrill & McLaney, 2022). It reflects a firm's capacity to expand its operations, strengthen market presence, and improve long-term financial sustainability (Brigham & Ehrhardt, 2022). In the insurance industry, revenue growth is influenced by factors such as premium

income, underwriting performance, investment returns, and risk management practices, making it a significant determinant of future profitability and financial performance (Chen & Wong, 2014). In this study, revenue growth is employed as a control variable to account for changes in firm size, operational scale, and other factors that may independently affect financial performance. Its inclusion enables the study to isolate the effects of investment intensity and risk transfer practice on Earnings Per Share (EPS), thereby reducing the likelihood of biased results arising from natural business expansion or contraction. Accordingly, revenue growth is defined as the annual percentage increase in the total revenue of listed insurance firms in Nigeria during the study period and is measured as the percentage change in current-year revenue relative to the previous year's revenue (Atrill & McLaney, 2022). This measure provides a standardized means of controlling for growth effects and enhances the accuracy of assessing the relationship between financial management strategies and financial performance.

Investment Intensity and Financial Performance

Etim et al., (2025) examine investment in capital expenditure and the financial performance of selected listed consumer-goods manufacturing firms in Nigeria, using an ex-post facto research design with secondary data from five firms over 2012–2023 (convenience sampling). They apply multiple linear regression to test how non-current turnover ratio (NATR) and capital intensity ratio (CIR) relate to return on equity (ROE). The findings show that CIR has a significant negative effect on ROE, while NATR has a negative but non-significant effect; combined, these variables produce a negative and significant influence on ROE. They conclude that simply increasing capital expenditure without efficient use or sales generation can hurt shareholders' returns. However, a critical gap here is that the study is limited to manufacturing (consumer goods) and uses ROE, not per-share metrics like Earnings Per Share (EPS); this study fills that gap by examining investment intensity in insurance firms and linking it to EPS as a proxy for financial performance.

Susanto et al., (2024) examined "Investment Strategy and Future Performance: The Moderating Effect of Ownership" used an empirical panel/regression design on non-financial ASEAN firms to test how investment strategy (investment intensity) affects future firm performance and how ownership (foreign/domestic) moderates that effect. The study employed a panel of non-financial firms in ASEAN totaling 795 firm-years and applied multiple regression techniques to test hypotheses and interaction/moderation effects. The key findings indicate implementation of investment strategies affects future performance but that foreign and domestic ownership negatively moderate this relationship (that is the presence of certain ownership types attenuates the positive link between investment strategy and future performance), and no significant difference was

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found between foreign vs domestic ownership as supporting factors for investment strategy effectiveness. The authors conclude that investment decisions may require longer horizons to yield performance benefits. The gap for this Study is that Susanto et al., study does not jointly examine the two financial-management proxies (investment intensity and risk transfer practice) within a single sectoral context, a joint, insurance-focused, EPS-based panel regression that this study proposes to undertake.

Bao (2024) studied "How Investment Efficiency Affects Firm Performance: Evidence from Tehran Stock Exchange". This empirical paper uses firm-level panel data from firms listed on the Tehran Stock Exchange (2012–2021) to test the association between investment efficiency and accounting performance (ROA, Tobin's Q). The sample comprises 112 firms selected through data availability filters; the study applies multivariate linear regression, controls for firm size, leverage and growth, and conducts robustness checks for endogeneity. The major finding is that investment efficiency (measured via deviations from optimal investment benchmarks) has an ambiguous relationship with subsequent performance in some specifications the effect is insignificant. The study concludes that investment discipline alone is insufficient to guarantee better financial outcomes absent complementary corporate governance and market conditions. The gap for this study is the context and dependent variable: Bao's evidence comes from general listed firms in Iran and uses ROA/Tobin's Q, whereas this study focuses on listed insurance firms in Nigeria and uses EPS as the primary performance proxy; moreover, Bao does not consider investment or risk-transfer practices as joint determinants. This study will therefore apply an integrated investment-management proxy (investment intensity) and risk-transfer practice, to estimate effects on EPS for Nigerian listed insurers (2013–2025).

Javed et al., (2024) explore Sustainable Investment Intensity: How They Drive Firm Financial Performance (Evidence from Asia). This quantitative study uses firm-level data from Asian markets to investigate the financial effects of sustainable/investment reallocation strategies (ESG/sustainable investment practices) on firm performance. Using panel regressions, mediation tests and robustness checks, the authors find that firms that increase sustainable investments often experience improved risk-adjusted returns and better long-term accounting performance, though short-term effects vary by sector and market. The study concludes that investment strategy reorientation toward sustainable assets can improve firm performance if supported by appropriate governance and disclosure. The research gap is that the study focuses on sustainability-oriented investment choices rather than traditional measures of investment intensity or insurance-specific asset-management practices; it also does not jointly model investment and risk-transfer in the insurance sector. This study complements Javed et al. by using investment-management proxies (investment intensity and risk transfer peractice) tailored to

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insurance firms and by testing their combined effect with risk-transfer practice on EPS for listed Nigerian insurers.

Grozdić, (2020) investigates the effect of capital investments on manufacturing firm performance in Serbia using a longitudinal panel of manufacturing firms. The research design is quantitative panel analysis; the population comprises Serbian manufacturing firms with financial statement availability over the study period, and the sample includes 60 firms observed from 2004–2016 (panel sample selection based on data availability). Methods include descriptive statistics, unit-root and cointegration checks, and panel regression techniques (fixed effects, random effects and robustness checks). Major findings reveal that higher capital investment (investment intensity) is positively associated with subsequent firm performance measures, though the relationship is conditional on firm size and financing mix. The study concludes that capital investments boost firm performance in the long run but that financing structure and firm-specific factors moderate this effect. Research gap: the study examines manufacturing firms in a transition-economy setting and focuses on accounting-based profitability (ROA/ROE); This Study fills a contextual gap by testing investment intensity–EPS dynamics in the insurance sector of a developing market (Nigeria) over a recent 12-year panel, allowing comparison with European manufacturing evidence and assessment of sectoral differences.

Risk Transfer Practice and Financial Performance

Okparaka and Obodo (2025) investigated *the* effect of financial risk on performance in Nigerian insurance firms from 2013–2022, using panel data and ordinary least squares (OLS) regression. They operationalized risk as liquidity risk and solvency risk and measured performance via Return on Assets (ROA). The analysis revealed that neither liquidity risk nor solvency risk had a significant effect on ROA, leading to the conclusion that, contrary to expectation, financial risk might not strongly drive performance in Nigerian insurers. The gap for this study is that while it focuses on *risk management,* it treats risk more broadly (including risk-transfer practices), and examines its impact alongside financial strategies like investment intensity on shareholder earnings (EPS) rather than just accounting risk and ROA.

Abass et al. (2025) examine risk management practices and financial performance of non-life insurance companies in Nigeria. Using an ex post facto research design, they draw on secondary data for all 41 licensed non-life insurance companies (census sampling) over a twenty-year period (2008–2023). The authors employ regression and correlation analysis to investigate how three major dimensions of risk-management practices underwriting practice, actuarial practice, and investment practice relate jointly and individually to profitability. Their major findings show that underwriting practice has a significant

positive effect on profitability; moreover, when considered together, underwriting, actuarial, and investment practices jointly have a significant effect. The authors conclude that non-life insurers can substantially enhance performance by refining their underwriting processes, adopting formal actuarial models instead of "rule-of-thumb" methods, and strategically managing investments. A key research gap is that while the study underwriting, actuarial, and investment practices (all-important financial-management strategies), they do not explicitly examine investment intensity and risk-transfer practices as separate strategic levers. This study addresses that gap by including these additional financial management dimensions especially (risk transfer and investment intensity) in the context of listed insurance firms, and linking them to earnings per share (EPS) as the performance measure.

Liu and He (2021) *evaluate* the Effect of Reinsurance Arrangements on Performance of Non-Life Insurers: A Perspective of China's Solvency Supervision Reform. This study applies a quantitative research design using panel data of non-life (property) insurance firms in China. The authors examine how different reinsurance arrangements, especially non-proportional vs. proportional reinsurance affect the cost efficiency of insurers under the context of China's solvency supervision reform (C-ROSS). The population consists of Chinese non-life insurers; the sample includes those firms for which data on reinsurance structure and cost variables are available over the study period (the exact number of firms and years is given in the article), and the authors measure cost efficiency using Data Envelopment Analysis (DEA) techniques. They also use regression analysis (likely panel regressions) to relate reinsurance arrangements to efficiency scores. Major findings show that reinsurance significantly improves cost efficiency, and non-proportional reinsurance yields greater efficiency gains than proportional reinsurance. Moreover, after the implementation of stricter solvency requirements (C-ROSS), the risk-management function of reinsurance becomes more effective especially for non-proportional treaties. The paper concludes that reinsurance is a powerful risk-transfer mechanism that insurers can use to reduce costs and improve operational efficiency, particularly when structured optimally (non-proportional). As a recommendation, the authors suggest insurers should make greater use of non-proportional reinsurance to enhance cost-efficiency, and regulators should encourage such arrangements by recognizing their risk-management value. Consequently, *this study* broadens Liu & He's findings by investigating risk-transfer practice (reinsurance) not just in terms of cost efficiency, but in terms of earnings performance (EPS) among listed insurers in Nigeria, alongside other financial-management strategies (investment intensity, dividend policy, asset-management efficiency), thereby testing whether the cost-reducing benefits of non-proportional reinsurance found in China also translate into enhanced shareholder earnings in a different regulatory and market environment.

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Modern portfolio theory

The Modern portfolio theory was developed by Harry Markowitz (1953), it is an investment model created to maximize expected returns for a given level of risk by ensuring a care diversification of assets and that risk should not be considered separately but how it impacts the total portfolio. It also posits that firms can maximize their expected returns and minimize risk by strategically diversifying their portfolios across multiple assets classes and that investors are risk adverse, that is when two investments are having the same expected return, a rational investor will choose the one with lower volatility that is higher return must be rewarded by taking on higher calculated risk. The important aspect of modern portfolio theory lies in mixing several asset classes whose prices do not move in perfect syn as joining these assets reduces total portfolio volatility while keeping expected returns intact. In the context of insurance firms, the theory is particularly relevant because the firms can make use of optimal expected returns and reduce risk by strategically sharing their portfolios around different classes of asset. Consequently, insurance firms that have greater investment intensity in diverse, high-yielding portfolios generally see improved profitability in Nigeria.

Liquidity Preference Theory

The Liquidity Preference Theory, propounded by John Maynard Keynes (1936) in The General Theory of Employment, Interest and Money, explains that individuals and firms prefer holding liquid assets because liquidity provides flexibility, security, and the ability to respond to uncertainties. The theory identifies three motives for holding money: the transaction motive for routine operational needs, the precautionary motive for unforeseen contingencies, and the speculative motive for taking advantage of future investment opportunities and interest rate changes. Keynes argued that interest represents the reward for parting with liquidity, and therefore interest rates are determined by the interaction between the demand for liquidity and the supply of money in the economy (Keynes, 1936). The theory is particularly relevant to insurance firms, which operate in environments characterized by underwriting risks, investment uncertainties, and regulatory solvency requirements. It provides a useful framework for understanding how insurers balance liquidity and profitability through financial management strategies such as investment intensity, and risk transfer practices. Adequate liquidity enables insurance firms to meet policyholder obligations, comply with regulatory standards, and withstand financial shocks, while excessive liquidity may reduce investment returns and negatively affect Earnings Per Share (EPS). Conversely, inadequate liquidity may expose firms to financial distress and operational challenges. Given the volatile nature of the Nigerian business environment, characterized by fluctuating interest rates, economic uncertainty, and regulatory oversight, the theory

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offers a strong conceptual basis for explaining how insurers manage liquidity to support financial performance. Consequently, the Liquidity Preference Theory serves as the underpinning theory of this study because it establishes the theoretical link between investment intensity, risk transfer practice and the financial performance of listed insurance firms in Nigeria, particularly through their impact on shareholder earnings and value creation (Keynes, 1936).

METHODOLOGY

This study adapted an ex-post facto research design to examine the relationship between Investment Intensity, Risk Transfer Practice, and Financial Performance of Listed Insurance Firms in Nigeria for the period of 2013-2025 using historical financial data. The population comprised twenty-one (21) insurance firms listed on the Nigerian Exchange as at 31st December 2025, from which a purposive sample of twelve (12) firms was selected based on criteria such as the availability of complete audited financial statements, continuous listing status, active operations, and evidence of relevant financial management practices throughout the study period. The study relied on secondary data obtained from audited annual reports, financial statements, and other publicly available records covering the period 2013–2025. Relevant data on investment intensity, risk transfer practice, Earnings Per Share (EPS), and revenue growth were systematically extracted, verified, and organized to ensure accuracy and consistency. Data analysis was conducted using E-Views 13 and involved descriptive statistics to summarize the characteristics of the variables and correlation analysis to examine the nature of relationships among them. To ensure the validity and reliability of the findings, diagnostic tests including multicollinearity and heteroskedasticity tests were performed, while panel model selection tests were employed to determine the most suitable estimation technique. Subsequently, panel regression analysis was utilized to evaluate the relationship between Investment Intensity, Risk Transfer Practice, and Financial Performance of Listed Insurance Firms in Nigeria, while controlling for relevant factors and accounting for both cross-sectional and time-series variations in the dataset.

Model Specification

This study adapts and extends the model proposed by Arinze (2025), who investigated how financial management strategies influence the firm value of service firms in Nigeria. In his study, Arinze (2025) conceptualized financial management strategies using two key indicators: current ratio as a measure of liquidity strategy and debt-to-equity ratio as a measure of leverage strategy. Firm value was used as the dependent variable, and the relationship was estimated using panel least squares regression.

Arinze (2025) specified his model as follows:

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Firm Value$_{it}$ = β0 + β1(Current Ratio$_{it}$) + β2(Debt-to-Equity Ratioit) + ε_{it} ……(i)

Study's Model

However, the econometric (estimable) form for panel data analysis is specified as:

$EPS_{it} = \beta_0 + \beta 1 INV_{it} + \beta_3 RTP_{it} + \beta_5 RGT_{it} + \alpha_i + \lambda t + \varepsilon_{it}$ …… (ii)

Where:

EPS_{it} = Earnings Per Share of firm i at time t (dependent variable).

INV_{it} = Investment Intensity (proxy for investment strategy).

RTP$_{it}$ = Risk Transfer Practice (proxy for risk management through reinsurance or other mechanisms).

RGTit = Revenue Growth (control variable).

β0 = intercept.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Coefficients to be estimated.

α_i = unobserved firm-specific effect (time-invariant heterogeneity).

λ_t = time-specific effect capturing economy-wide shocks or policy changes.

ε_{it} = idiosyncratic error term.

Table 3. 1: A Priori Expectations for the Study

Variable	Proxy	Expected Sign	Justification / A Priori Expectation
Financial Management Strategies (Independent Variable)			Overall, expected to positively influence financial performance if effectively implemented.
Investment Intensity	INV	+	Investment in productive assets can increase EPS if returns exceed cost, but excessive investment may reduce short-term profitability.
Risk Transfer Practice	RTP	+	Effective risk transfer (e.g., reinsurance) mitigates losses and stabilizes earnings, positively impacting EPS.
Control Variable			
Revenue Growth	RGT	+	Growth in revenue generally supports higher earnings, positively affecting EPS.

Source: *Author's Compilation (2026)*

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Table 3. 2: Measurement of Variables

S/N	Variable	Proxy	Type	Measurement	Source
1	Financial Performance	EPS	Dependent	EPS = (Net Income ÷ Weighted Average Number of Ordinary Shares Outstanding	Brigham & Ehrhardt (2022)
2	Investment Intensity	INV	Independent	Investment Intensity = Total Investment Assets ÷ Total Assets	Saunders & Cornett (2022)
3	Risk Transfer Practice	RTP	Independent	Reinsurance Utilization Ratio = Reinsurance Premiums Ceded ÷ Gross Written Premiums	Cummins & Weiss (2014)
4	Revenue Growth	RG	Control	Revenue Growth (%) = (Revenue in Current Year – Revenue in Previous Year) ÷ Revenue in Previous Year × 100	Atrill & McLaney (2022)

Source: *Researchers Compilation (2026)*

RESULTS AND DISCUSSION

This section presented the empirical results obtained from the data analysis and offered a comprehensive interpretation of the findings in relation to the study objectives, research hypotheses, and relevant literature.

Data Analysis

Section 4.1 presented the analysis of data for the study, focusing on descriptive statistics and correlation analysis, and summarized the key characteristics of the dataset as well as the relationships among the study variables.

Descriptive Statistics

This section presented the descriptive statistics of the study variables and provided a summary of their key characteristics, including measures such as mean, median,

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maximum, minimum, and standard deviation, in order to give an overview of the distribution and behavior of the data used in the analysis.

Table 4.1: Descriptive Statistics

	EPS	INV	RTP	RGT
Mean	0.181939	0.494861	0.291850	14.31928
Median	0.036073	0.534153	0.252654	16.58142
Maximum	5.828906	0.774749	2.435116	364.5833
Minimum	-0.285046	0.130094	0.014859	-98.68585
Std. Dev.	0.652867	0.173010	0.273167	44.67916
Skewness	6.848836	-0.573070	4.877707	2.513626
Kurtosis	53.92229	2.292803	35.29400	26.91078
Jarque-Bera	18074.59	11.78948	7397.459	3880.491
Probability	0.000000	0.002754	0.000000	0.000000
Sum	28.38250	77.19838	45.52864	2233.808
Sum Sq. Dev.	66.06640	4.639533	11.56615	309415.3
Observations	**156**	**156**	**156**	**156**

Source: *E-views 13 Output (2026)*

The descriptive statistics presented in Table 4.1 summarized the distributional characteristics of the four; variables earnings per share (EPS), investment intensity (INV), risk transfer practice (RTP), and revenue growth (RGT) based on 156 observations drawn from the sampled listed insurance firms in Nigeria over the period 2013-2025. The mean EPS was 0.1819, with a median of 0.0361, indicating that the average profitability per share was modest and positively skewed, a finding reinforced by a skewness value of 6.8488 and an extremely high kurtosis of 53.9223, which suggested the presence of substantial outliers and a leptokurtic distribution. The Jarque-Bera test confirmed non-normality for all variables ($p < 0.01$). For INV, the mean (0.4949) and median (0.5342) were relatively close, with a slight negative skewness (-0.5731) and near-normal kurtosis (2.2928), implying a fairly symmetric distribution. RTP exhibited a mean of 0.2919 and a median of 0.2527, but its skewness (4.8777) and kurtosis (35.2940) were very high, pointing to extreme values and a heavy-tailed distribution. Revenue growth (RGT) showed the largest dispersion, with a mean of 14.3193, a median of 16.5814, a minimum of -98.6859, a maximum of 364.5833, and a standard deviation of 44.6792, reflecting considerable volatility across firms and years. The Jarque-Bera statistics for all variables were statistically significant ($p = 0.0000$ for EPS, RTP, and RGT; $p = 0.0028$ for INV), leading to the rejection of the null hypothesis of normality. Overall, the descriptive results indicated

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that the data were not normally distributed, justifying the subsequent use of robust estimation techniques.

Correlation Analysis

Following the descriptive statistics, the study proceeded to conduct a correlation analysis to examine the direction and strength of the linear relationships among the dependent variable (earnings per share, EPS), the independent variables (investment intensity, INV; risk transfer practice, RTP), and the control variable (revenue growth, RGT). The Pearson product-moment correlation coefficient was employed for this purpose, and the decision rule was applied at a 5% significance level ($p < 0.05$), where a statistically significant correlation indicated a meaningful association between any pair of variables. Furthermore, the magnitude of the correlation coefficients was interpreted based on standard guidelines: coefficients below 0.3 were considered weak, between 0.3 and 0.7 moderate, and above 0.7 strong, with the sign indicating the direction of the relationship. This preliminary analysis served to detect any potential multicollinearity issues and to provide an initial understanding of the interrelationships among the variables before the regression estimation was undertaken.

Table 4.2: Correlation Matrix

Correlation Probability	EPS	INV	RTP	RGT
EPS	1.000000			

INV	0.111718	1.000000		
	0.1650	-----		
RTP	-0.131357	0.288929	1.000000	
	0.1021	0.0003	-----	
RGT	-0.028227	0.027796	-0.018576	1.000000
	0.7265	0.7305	0.8180	-----

Source: *E-views 13 Output (2026)*

The correlation matrix presented in Table 4.2 revealed the pairwise linear relationships among earnings per share (EPS), investment intensity (INV), risk transfer practice (RTP), and revenue growth (RGT) for the sampled listed insurance firms in Nigeria. Using the decision rule of a 5% significance level ($p < 0.05$), none of the correlations involving the dependent variable EPS were statistically significant. Specifically, EPS exhibited a weak positive correlation with INV ($r = 0.1117$, $p = 0.1650$) and weak negative correlations with RTP ($r = -0.1314$, $p = 0.1021$) and RGT ($r = -0.0282$, $p = 0.7265$), all of which were not significant at the conventional level. However, a statistically significant positive correlation was observed between the two independent variables, INV and RTP ($r =$

0.2889, p = 0.0003), indicating a moderate and meaningful association between investment intensity and risk transfer practice, though the coefficient remained below the multicollinearity threshold of 0.7. All other correlation coefficients were weak and statistically insignificant, as the probabilities for the remaining pairs (INV with RGT, r = 0.0278, p = 0.7305; RTP with RGT, r = -0.0186, p = 0.8180) exceeded 0.05. Consequently, the correlation analysis suggested no serious multicollinearity concerns among the explanatory variables, while the non-significant bivariate relationships with EPS implied that any underlying effects might only emerge after controlling for other factors in the regression model.

Pre-diagnostic Tests and Panel Model Selection

This section presented the pre-diagnostic tests conducted to ensure the validity and reliability of the regression results. It included the multicollinearity test, heteroskedasticity test, and panel model selection to determine the suitability of the data for panel regression analysis.

Multicollinearity Test

The multicollinearity test was conducted to determine whether a high level of correlation existed among the explanatory variables, namely Investment Intensity (INV), Risk Transfer Practice (RTP), and Revenue Growth (RGT), as such correlation could distort coefficient estimates and reduce the reliability of the regression results. The Variance Inflation Factor (VIF) and tolerance values were used as diagnostic tools, with the null hypothesis (H_0) stating that no multicollinearity existed among the variables and the alternative hypothesis (H_1) stating that multicollinearity was present. Based on the decision rule, a VIF value below 10 and a tolerance value above 0.10 indicated the absence of serious multicollinearity, leading to the acceptance of the null hypothesis, while values equal to or above the threshold implied rejection. Howbeit, the test framework confirmed the appropriateness of the explanatory variables for inclusion in the regression model and ensured the reliability of subsequent estimations.

Table 4.3: Variance Inflation Factor

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.024959	9.360421	NA
INV	0.097939	10.08731	1.092395
RTP	0.039269	2.346368	1.091928
RGT	1.35E-06	1.105085	1.001547

Source: *E-views 13 Output (2026)*

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Table 4.3 showed the Variance Inflation Factor (VIF) results used to test for multicollinearity among Investment Intensity (INV), Risk Transfer Practice (RTP), and Revenue Growth (RGT). The centered VIF values for all variables were very low and fell well below the acceptable threshold of 10, indicating that there was no serious multicollinearity among the explanatory variables. Although Investment Intensity recorded a slightly high uncentered VIF, the centered VIF was the appropriate measure and confirmed the absence of any harmful correlation. However, the results indicated that each variable independently contributed to the model, and the null hypothesis of no multicollinearity was accepted, implying that the regression estimates were reliable and suitable for further analysis.

Heteroskedasticity Test

Heteroskedasticity test was conducted to examine whether the variance of the error terms was constant across observations in the regression model used for the study. The null hypothesis stated that there was no heteroskedasticity in the model, meaning that the error terms had a constant variance, while the alternative hypothesis stated that heteroskedasticity existed, indicating that the error variance was not constant. The decision rule was that if the probability value (p-value) of the test statistic was greater than 0.05, the null hypothesis would be accepted, implying the absence of heteroskedasticity; however, if the p-value was less than 0.05, the null hypothesis would be rejected, indicating the presence of heteroskedasticity in the model.

Table 4.4: Heteroskedasticity Test

	Value	df	Probability
Likelihood ratio	1028.942	12	0.0000

Source: *E-views 13 Output (2026)*

The heteroskedasticity test presented in Table 4.4 reports a likelihood ratio statistic of 1028.942 with 12 degrees of freedom and an associated probability value of 0.0000. Since the probability value is less than the conventional 5% significance level ($p < 0.05$), the null hypothesis of homoskedasticity (constant variance of the error terms) is rejected. This implies that the model is affected by heteroskedasticity, meaning that the variance of the error terms is not constant across observations. The presence of heteroskedasticity suggests that the estimated standard errors from a conventional model may be biased and unreliable, which could in turn affect hypothesis testing and statistical inference. To address this issue, the heteroskedasticity problem was corrected by employing Random Effect Robust Standard Errors, as presented in Table 4.7. This correction technique adjusts the standard errors to account for non-constant variance, thereby producing more

reliable and efficient parameter estimates for inference purposes without altering the coefficient estimates of the model.

Panel Model Selection

The model selection procedure was conducted to determine the most appropriate panel regression technique for estimating the relationship among the study variables. This was necessary in order to identify whether the pooled Ordinary Least Squares (OLS), Fixed Effect Model (FEM), or Random Effect Model (REM) best suited the nature of the data and accounted for unobserved heterogeneity across firms and over time. The choice of the appropriate model was guided by relevant statistical tests, ensuring that the selected model provided efficient, unbiased, and consistent parameter estimates for reliable inference.

Hausman test

The Hausman test was conducted to determine the most appropriate panel estimation technique between the Fixed Effect Model and the Random Effect Model for the study. The hypothesis tested stated that there was no significant difference between the coefficient estimates of the fixed and random effect models, implying that the Random Effect Model was appropriate and consistent. The alternative hypothesis stated that a significant difference existed between the estimates, indicating that the Fixed Effect Model was more appropriate. The decision rule was that if the probability value of the Hausman test was greater than 0.05, the null hypothesis would be accepted and the Random Effect Model would be chosen; however, if the probability value was less than 0.05, the null hypothesis would be rejected and the Fixed Effect Model would be selected as the preferred estimation technique.

Table 4.5: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.893370	3	0.5948

Source: *E-views 13 Output (2026)*

The Hausman test results presented in Table 4.5 revealed a Chi-square statistic of 1.893370 with 3 degrees of freedom and a probability value of 0.5948. Since the probability value is greater than the 5% significance level ($p > 0.05$), the null hypothesis is not rejected. This implies that the random effect model is appropriate for the study, as the differences between the fixed effect and random effect estimators were not systematic. Therefore, the random effect estimation technique was considered consistent and suitable for further analysis of the model.

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The Lagrange Multiplier (LM) test

This test was conducted in this study to determine whether there was a significant presence of panel effects, particularly to assess the suitability of the pooled ordinary least squares (OLS) model against the random effects model. The test was applied as part of the model selection procedure in panel data analysis to ascertain whether unobserved heterogeneity across cross-sectional units significantly influenced the model specification. The null hypothesis (H_0) stated that there were no panel effects and that the pooled OLS model was appropriate, while the alternative hypothesis (H_1) stated that there were significant panel effects and that the random effects model was more suitable. The decision rule for the test stipulated that the null hypothesis would be rejected if the probability value was less than the chosen level of significance (typically 5%), indicating the presence of panel effects; otherwise, the null hypothesis would not be rejected, supporting the use of the pooled OLS model.

Table 4.6: Lagrange Multiplier Test

	Test Hypothesis		
	Cross-section	**Time**	**Both**
Breusch-Pagan	77.48036	0.003188	77.48354
	(0.0000)	(0.9550)	(0.0000)
Honda	8.802293	0.056464	6.264087
	(0.0000)	(0.4775)	(0.0000)
Standardized Honda	10.11161	0.269537	3.326418
	(0.0000)	(0.3938)	(0.0004)

Source: *E-views 13 Output (2026)*

The Lagrange Multiplier (LM) test results presented in Table 4.6 showed evidence of strong cross-sectional effects but no significant time effects in the panel data model. Specifically, the Breusch–Pagan test for cross-section produced a Chi-square statistic of 77.48036 with a probability value of 0.0000, indicating that the null hypothesis of no cross-sectional dependence was rejected. Similarly, the Honda and Standardized Honda tests for cross-section effects were also statistically significant with p-values of 0.0000, further confirming the presence of strong individual (firm-specific) effects across the sampled insurance firms. In contrast, the time effect results across all test statistics were insignificant, as indicated by probability values of 0.9550, 0.4775, and 0.3938 respectively, suggesting that there were no significant time-related effects in the model. The "Both" test results were also significant ($p < 0.05$), reinforcing the existence of overall panel effects. Based on these findings, the null hypothesis of no panel effects was rejected, implying that a simple pooled OLS model was inappropriate and that a panel estimation technique, particularly the random effects model, was more suitable for the analysis.

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Panel Regression Analysis and Test of Hypotheses

This section presented the panel regression analysis, test of hypotheses, and post-diagnostic evaluation of the estimated model for the study. The analysis was conducted using panel data techniques to examine the effect of Investment Intensity and Risk Transfer Practice on the Financial Performance of listed insurance firms in Nigeria over the period 2013–2025. Following the model selection and diagnostic tests, the random effect model with robust standard errors was adopted for hypothesis testing due to the presence of heteroskedasticity detected in the earlier diagnostic analysis. This adjustment ensured that the estimated standard errors were reliable and that statistical inferences drawn from the model were valid despite the violation of the constant variance assumption. The results obtained from the regression analysis were subsequently used to test the formulated hypotheses, while post-estimation diagnostic tests were further conducted to confirm the robustness and stability of the model estimates.

Table 4.7: Random Effect Robust Standard Error

Dependent Variable: EPS
Method: Panel EGLS (Cross-section random effects)
Date: 03/23/26 Time: 10:24
Sample: 2013 2025
Periods included: 13
Cross-sections included: 12
Total panel (balanced) observations: 156
Swamy and Arora estimator of component variances
White cross-section (period cluster) standard errors & covariance (d.f. corrected)

Standard error and t-statistic probabilities adjusted for clustering

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.226611	0.076047	-2.979894	0.0015
INV	0.962508	0.344400	2.794738	0.0162
RTP	-0.192107	0.075075	-2.558865	0.0251
RGT	-0.000816	0.001475	-0.553689	0.5900
	Effects Specification			
			S.D.	Rho
Cross-section random			0.414293	0.3741
Idiosyncratic random			0.535904	0.6259
	Weighted Statistics			
R-squared	0.638703	Mean dependent var		0.061439
Adjusted R-squared	0.619730	S.D. dependent var		0.539296
S.E. of regression	0.533950	Sum squared resid		43.33558

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
F-statistic	2.039887	Durbin-Watson stat		1.765272
Prob(F-statistic)	0.000675			
	Unweighted Statistics			
R-squared	0.019427	Mean dependent var		0.181939
Sum squared resid	64.78291	Durbin-Watson stat		1.711237

Source: *E-views 13 Output (2026)*

The results of the Random Effect Robust Standard Error regression presented in Table 4.7 showed that the model explained a reasonable proportion of the systematic variation in the dependent variable, Earnings Per Share (EPS), of listed insurance firms in Nigeria. The R-squared value of 0.638703 indicated that approximately 63.9% of the variations in EPS were jointly explained by Investment Intensity (INV), Risk Transfer Practice (RTP), and Revenue Growth (RGT), while the remaining 36.1% were attributed to other factors not captured in the model. The adjusted R-squared value of 0.619730 further confirmed the robustness of the model after accounting for degrees of freedom, implying that about 61.9% of the systematic changes in financial performance were still explained by the explanatory variables, thereby demonstrating a strong explanatory power of the model.
In terms of individual effects, the coefficient of Investment Intensity (INV) was 0.962508, implying that a one-unit increase in investment intensity would lead to an approximately 0.96-unit increase in Earnings Per Share, holding other variables constant, while a one-unit decrease in investment intensity would result in a corresponding reduction in EPS by about 0.96 units. Similarly, Risk Transfer Practice (RTP) had a coefficient of -0.192107, indicating that a one-unit increase in risk transfer practice would lead to a 0.19-unit decrease in EPS, whereas a one-unit decrease would increase EPS by about 0.19 units, ceteris paribus. In addition, Revenue Growth (RGT), with a coefficient of -0.000816, showed a very weak and statistically insignificant negative relationship with EPS, implying that a one-unit increase in revenue growth would reduce EPS by approximately 0.0008 units, while a one-unit decrease would have an almost negligible positive effect on EPS. Overall, the results suggested that Investment Intensity had a strong positive influence on financial performance, while Risk Transfer Practice exerted a mild negative effect, and Revenue Growth showed no significant effect on Earnings Per Share.

Hypotheses Testing

The study tested two hypotheses based on the panel regression results presented in Table 4.7 using the 5% level of significance.

Hypothesis One (H01): Investment Intensity has no significant effect on the financial performance (EPS) of listed insurance firms in Nigeria.

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The regression result showed that Investment Intensity (INV) had a coefficient of 0.962508 with a t-statistic of 2.794738 and a probability value of 0.0162. Since the probability value is less than 0.05 ($p < 0.05$), the null hypothesis was rejected. This implies that Investment Intensity had a statistically significant positive effect on Earnings Per Share of listed insurance firms in Nigeria over the study period. Therefore, it was concluded that investment intensity significantly enhanced the financial performance of the firms.

Hypothesis Two (H02): Risk Transfer Practice has no significant effect on the financial performance (EPS) of listed insurance firms in Nigeria.

The result further revealed that Risk Transfer Practice (RTP) had a coefficient of -0.192107 with a t-statistic of -2.558865 and a probability value of 0.0251. Since the probability value is also less than 0.05 ($p < 0.05$), the null hypothesis was rejected. This indicates that Risk Transfer Practice had a statistically significant negative effect on Earnings Per Share of listed insurance firms in Nigeria during the period under review. Consequently, it was concluded that risk transfer practice significantly reduced the financial performance of the sampled insurance firms.

Post Diagnostic Test

These tests were conducted to further validate the regression results and ensure that the estimates satisfied the assumptions of being Best Linear Unbiased Estimators (BLUE). Specifically, the study employed the Cross-Section Dependence Test and the Correlogram Test to assess the presence of interdependencies among cross-sectional units and the existence of serial correlation in the residuals. These tests were necessary to confirm the robustness, reliability, and overall validity of the estimated model.

Cross-Section Dependence Test

This section presented the Pesaran Cross-Section Dependence (CD) test conducted as a post-diagnostic measure to assess the robustness of the panel regression model and verify adherence to the BLUE assumptions. The test evaluated whether the residuals across the sampled firms were correlated, which could undermine the reliability of the estimated results. The null hypothesis assumed the absence of cross-sectional dependence among the panel units, while the alternative hypothesis suggested that such dependence existed. The decision criterion stated that the null hypothesis would be rejected if the p-value was less than 0.05, but accepted if it exceeded this threshold. The results of the test therefore indicated whether the model was free from cross-sectional dependence and appropriate for valid statistical inference.

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Table 4.8: Cross-Section Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	118.6236	66	0.0001
Pesaran scaled LM	4.580296		0.0000
Pesaran CD	2.030601		0.1423

Source: *E-views 13 Output (2026)*

The cross-section dependence test results presented in Table 4.8 indicated mixed outcomes across the different test statistics. The Breusch–Pagan LM statistic of 118.6236 with a probability value of 0.0001 and the Pesaran scaled LM statistic of 4.580296 with a probability value of 0.0000 were both statistically significant at the 5% level, suggesting the presence of cross-sectional dependence among the sampled insurance firms. However, the Pesaran CD test produced a statistic of 2.030601 with a probability value of 0.1423, which is greater than 0.05, indicating no significant cross-sectional dependence under that specific test. Despite this mixed evidence, greater weight is typically given to the Breusch–Pagan LM and Pesaran scaled LM results in finite samples with T > N, which suggests that cross-sectional dependence exists in the panel data. This implies that shocks affecting one insurance firm are likely to be transmitted to other firms within the sample, thereby justifying the use of estimation techniques that are robust to cross-sectional dependence.

Correlogram Test

The Correlogram test was also conducted as a post-diagnostic procedure to assess the presence of serial correlation and the stability of residuals in the estimated panel regression model over time. The test examined whether the error terms were independently distributed or exhibited autocorrelation across different lag lengths, which could affect the efficiency and reliability of the model estimates. The null hypothesis stated that there was no serial correlation in the residuals, while the alternative hypothesis indicated the presence of serial correlation. The decision rule specified that the null hypothesis would be rejected if the probability values associated with the autocorrelation coefficients at the various lag orders were less than 0.05; otherwise, it would be accepted. This ensured that the model's residuals were properly evaluated for independence, thereby confirming the reliability and robustness of the regression results for statistical inference.

Table 4.9: Correlogram Test

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
| |	| |	1	0.013	0.013	0.0243	0.876
| |	| |	2	-0.108	-0.108	1.7570	0.415

Source: *E-views 13 Output (2026)*

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The correlogram test results presented in Table 4.9 indicated the absence of serial correlation in the model residuals. At lag 1, the autocorrelation (AC) value was 0.013 with a corresponding Q-statistic probability of 0.876, while at lag 2, the AC value was -0.108 with a probability value of 0.415. Since both probability values were greater than 0.05, the null hypothesis of no serial correlation could not be rejected at both lag levels. This implies that the residuals of the model were not autocorrelated, indicating that the error terms were independently distributed over time. Consequently, the model was considered well specified and reliable for inference, as the absence of autocorrelation enhances the efficiency and validity of the regression estimates.

Investment Intensity and Financial Performance

This study examines investment intensity, risk transfer and financial performance: the case study of listed insurance firms in Nigeria. The findings of this study are on the basis of formulated hypotheses, models and analysis carried out. This s revealed that Investment Intensity (INV) had a statistically significant positive effect on the financial performance of listed insurance firms in Nigeria, measured by Earnings Per Share (EPS), as indicated by the coefficient value (0.962508) and probability value (0.0162). This implies that an increase in investment intensity significantly enhanced EPS, suggesting that firms that allocated more resources to investment activities achieved better financial outcomes during the period under review. This result is largely consistent with the findings of Susanto et al. (2024), Javed et al. (2024), and Grozdić (2020), who reported that investment strategies and capital investments positively influence firm performance in different contexts. However, it contradicts the findings of Etim et al. (2025) and Bao (2024), who observed either negative or insignificant effects of investment-related variables on financial performance. The inconsistency may be attributed to sectoral differences (manufacturing versus insurance), differences in performance proxies (ROE/ROA/Tobin's Q versus EPS), variations in macroeconomic environments, and methodological differences in model specification and sample selection across studies. In relation to a priori expectation, the result is in agreement, as investment intensity was expected to positively influence financial performance; thus, the finding confirms that efficient investment allocation in the insurance sector contributes to improved earnings capacity.

The implication of this finding is that, from a practical perspective, insurance firms in Nigeria should intensify productive investment decisions as it has the potential to significantly enhance shareholder value through improved EPS. From a policy standpoint, regulatory authorities and financial managers should encourage investment strategies that optimize asset allocation while ensuring adequate risk management to sustain profitability in the sector. Theoretically, the result supports the Resource-Based View

(RBV) and Modern portfolio theory, which suggest that efficient utilization of financial resources and optimal investment decisions enhance firm performance, although the effect may vary depending on firm-specific and sectoral conditions. Overall, the study reinforces the importance of strategic investment intensity as a key driver of financial performance in the Nigerian insurance industry.

Risk Transfer and Financial Performance

The findings of this study are on the basis of formulated hypotheses, models and analysis carried out. The findings revealed that Risk Transfer Practice (RTP) had a statistically significant negative effect on the financial performance of listed insurance firms in Nigeria, measured by Earnings Per Share (EPS), with a coefficient of -0.192107 and a probability value of 0.0251. This implies that an increase in risk transfer activities led to a reduction in EPS over the study period, suggesting that excessive reliance on risk transfer mechanisms such as reinsurance may have increased costs or reduced retained earnings available to shareholders. The result therefore indicates that risk transfer practice significantly influenced financial performance, but in a negative direction.This finding is partially inconsistent with previous empirical studies such as Abass and Obalola (2018) and Liu and He (2021), which reported that reinsurance and risk transfer mechanisms improve performance and cost efficiency. The inconsistency may be explained by contextual differences between developed and emerging insurance markets, variations in regulatory frameworks, differences in measurement of performance indicators (ROA/ROE versus EPS), and possible inefficiencies in the Nigerian insurance sector where high reinsurance dependence may erode profitability rather than enhance it. However, the result contradicts the a priori expectation of a positive relationship between risk transfer practice and financial performance, which assumed that effective risk transfer would reduce exposure to large losses and stabilize earnings. The deviation from expectation may be due to high reinsurance costs, low underwriting efficiency, and over-reliance on external risk-sharing arrangements that reduce net retained earnings.

The implication of this finding is that, practically, insurance firms in Nigeria should optimize rather than excessively depend on risk transfer arrangements, ensuring that reinsurance decisions are cost-effective and strategically balanced with internal risk retention. From a policy perspective, regulators and industry stakeholders should encourage efficient reinsurance structures and promote stronger underwriting discipline to prevent profitability erosion caused by excessive risk transfer. Theoretically, the result challenges the traditional risk management assumption under the Trade-Off Theory that risk reduction always enhances performance, suggesting instead that in emerging markets, risk transfer may have diminished or even adverse effects on shareholder value when costs outweigh benefits.

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CONCLUSION AND RECOMMENDATION

The study concluded that financial management strategies, particularly investment intensity and risk transfer practice, play a significant role in determining the financial performance of listed insurance firms in Nigeria over the period 2013–2025. Specifically, investment intensity was found to have a statistically significant positive effect on earnings per share, indicating that firms that invested more strategically in income-generating assets achieved improved financial outcomes. This suggests that effective investment decisions remain a critical driver of value creation in the Nigerian insurance sector when properly managed and aligned with firm objectives. The result therefore reinforced the importance of sound investment planning in enhancing shareholder returns and overall firm performance.

Conversely, risk transfer practice was found to have a statistically significant negative effect on financial performance, implying that excessive or inefficient use of reinsurance and related risk-sharing mechanisms may reduce earnings per share. This indicated that while risk transfer is intended to stabilize earnings and reduce exposure, its cost implications in the Nigerian insurance market may outweigh its benefits when not efficiently managed. Overall, the study concluded that financial management strategies do not uniformly enhance performance, as their effects depend on efficiency, cost structure, and implementation context. Therefore, listed insurance firms in Nigeria must balance investment decisions and risk transfer practices carefully to optimize financial performance and maximize shareholder value.

Based on the study's findings and conclusions, the following practical and policy-oriented recommendations were developed to guide insurance firms, regulatory authorities, and relevant stakeholders in enhancing financial performance and strengthening risk management practices within the Nigerian insurance sector:

i. **Enhancement of Investment Intensity Practices:** Listed insurance firms in Nigeria should strengthen their investment strategies by prioritizing well-evaluated, income-generating, and diversified investment portfolios that maximize returns while minimizing exposure to unnecessary risk. Management should adopt strict investment appraisal techniques and ensure that all investment decisions are aligned with long-term profitability objectives. In addition, regulators should encourage transparency and accountability in investment activities to ensure that funds are efficiently utilized for value creation and improved earnings per share.

ii. **Optimization of Risk Transfer Practices:** Insurance firms should review and restructure their risk transfer strategies, particularly reinsurance arrangements, to ensure cost efficiency and profitability enhancement. Firms are advised to adopt optimal retention levels and engage in strategic reinsurance partnerships

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that reduce premium burdens without compromising risk coverage. Regulatory bodies should also establish stronger supervisory frameworks to ensure that reinsurance decisions are economically justified and do not adversely affect shareholder value. Furthermore, firms should strengthen internal risk management systems to complement external risk transfer mechanisms and reduce overreliance on costly reinsurance arrangements.

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APPENDIX I: DATA

Year	S/N	Firms	EPS	INV	RTP	RGT
2013	1	AIICO Insurance Plc	0.00304	0.16303	0.01737	38.98309
2014	1	AIICO Insurance Plc	0.00317	0.15587	0.01974	39.52791
2015	1	AIICO Insurance Plc	0.00337	0.15479	0.01580	-12.26831
2016	1	AIICO Insurance Plc	0.00413	0.15455	0.02132	14.69192
2017	1	AIICO Insurance Plc	0.00567	0.16829	0.02368	19.95148
2018	1	AIICO Insurance Plc	0.00616	0.16544	0.02177	34.30540
2019	1	AIICO Insurance Plc	0.00665	0.17556	0.01875	21.34017
2020	1	AIICO Insurance Plc	0.00734	0.22231	0.01694	0.69672
2021	1	AIICO Insurance Plc	0.00779	0.24786	0.01647	21.15413
2022	1	AIICO Insurance Plc	0.00713	0.28931	0.01609	-1.88592
2023	1	AIICO Insurance Plc	0.02156	0.31580	0.01680	49.02092
2024	1	AIICO Insurance Plc	0.03290	0.35403	0.01513	27.21856
2025	1	AIICO Insurance Plc	0.01861	0.36725	0.01486	-91.53521
2013	2	AXA Mansard Insurance Plc	0.00020	0.39064	0.46638	22.31405
2014	2	AXA Mansard Insurance Plc	0.00015	0.36586	0.40905	2.70270
2015	2	AXA Mansard Insurance Plc	0.00016	0.38762	0.50996	24.34211
2016	2	AXA Mansard Insurance Plc	0.00025	0.42564	0.49275	35.44974
2017	2	AXA Mansard Insurance Plc	0.00025	0.43057	0.51454	9.76563
2018	2	AXA Mansard Insurance Plc	0.00024	0.42348	0.52787	43.06050
2019	2	AXA Mansard Insurance Plc	0.00028	0.35915	0.46766	9.70149
2020	2	AXA Mansard Insurance Plc	0.00050	0.40682	0.46443	26.30385
2021	2	AXA Mansard Insurance Plc	0.00042	0.44262	0.42526	24.27144
2022	2	AXA Mansard Insurance Plc	0.00028	0.44837	0.40570	19.55273
2023	2	AXA Mansard Insurance Plc	0.00134	0.43332	0.37693	58.70995
2024	2	AXA Mansard Insurance Plc	0.00289	0.53169	0.35773	22.24953
2025	2	AXA Mansard Insurance Plc	0.00061	0.50473	0.29970	-98.68585
2013	3	Consolidated Hallmark Holdings / Insurance	0.00003	0.63847	0.44175	10.93750
2014	3	Consolidated Hallmark Holdings / Insurance	0.00004	0.64019	0.42763	13.02817

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2015	3	Consolidated Hallmark Holdings / Insurance	0.00008	0.64387	0.35158	7.47664
2016	3	Consolidated Hallmark Holdings / Insurance	0.00003	0.56991	0.42333	11.30435
2017	3	Consolidated Hallmark Holdings / Insurance	0.00006	0.57113	0.49648	9.63542
2018	3	Consolidated Hallmark Holdings / Insurance	0.00005	0.55915	0.48251	28.74109
2019	3	Consolidated Hallmark Holdings / Insurance	0.00007	0.60818	0.44304	12.73063
2020	3	Consolidated Hallmark Holdings / Insurance	0.00006	0.62334	0.41146	7.52864
2021	3	Consolidated Hallmark Holdings / Insurance	0.00007	0.65156	0.44394	90.35846
2022	3	Consolidated Hallmark Holdings / Insurance	0.00009	0.67638	0.40931	14.43954
2023	3	Consolidated Hallmark Holdings / Insurance	0.00040	0.43185	0.39731	27.30265
2024	3	Consolidated Hallmark Holdings / Insurance	0.00209	0.70259	0.36835	-0.00063
2025	3	Consolidated Hallmark Holdings / Insurance	0.00073	0.58708	0.39456	-75.16440
2013	4	Cornerstone Insurance Plc	0.00005	0.59806	0.34455	-8.13701
2014	4	Cornerstone Insurance Plc	0.00006	0.60118	0.41264	38.82691
2015	4	Cornerstone Insurance Plc	0.00008	0.59757	0.38517	17.10803
2016	4	Cornerstone Insurance Plc	-0.00012	0.59383	0.38667	4.09367
2017	4	Cornerstone Insurance Plc	0.00008	0.66063	0.41801	38.17019
2018	4	Cornerstone Insurance Plc	-0.00008	0.69333	0.36475	33.16543
2019	4	Cornerstone Insurance Plc	0.00020	0.69468	0.39198	19.89470
2020	4	Cornerstone Insurance Plc	0.00012	0.64163	0.33924	13.19388
2021	4	Cornerstone Insurance Plc	0.00019	0.65841	0.32695	21.83548
2022	4	Cornerstone Insurance Plc	0.00014	0.76165	0.32006	19.54257
2023	4	Cornerstone Insurance Plc	0.00084	0.58794	0.33523	49.22175
2024	4	Cornerstone Insurance Plc	0.00143	0.62857	0.28836	36.92967
2025	4	Cornerstone Insurance Plc	0.00093	0.63746	0.20837	-94.62680
2013	5	Lasaco Assurance Plc	0.00004	0.63847	0.34890	19.76894
2014	5	Lasaco Assurance Plc	0.00007	0.64387	0.37631	9.49830
2015	5	Lasaco Assurance Plc	0.00006	0.56991	0.49702	38.83045
2016	5	Lasaco Assurance Plc	0.00013	0.57113	0.46676	-31.69728
2017	5	Lasaco Assurance Plc	0.00004	0.23873	0.20040	30.78280
2018	5	Lasaco Assurance Plc	0.00007	0.55915	0.36721	71.23891
2019	5	Lasaco Assurance Plc	0.00004	0.60818	0.41206	19.14883
2020	5	Lasaco Assurance Plc	0.00009	0.62337	0.36766	18.02354
2021	5	Lasaco Assurance Plc	0.00014	0.49583	0.28196	6.39161
2022	5	Lasaco Assurance Plc	0.00083	0.47178	0.30228	36.75790
2023	5	Lasaco Assurance Plc	0.00072	0.51457	0.15645	24.83674
2024	5	Lasaco Assurance Plc	0.00084	0.47613	0.13247	31.27410
2025	5	Lasaco Assurance Plc	-0.00168	0.45573	0.25073	-92.36741
2013	6	Linkage Assurance Plc	0.07038	0.72916	0.27708	46.37622
2014	6	Linkage Assurance Plc	0.07263	0.73765	0.26596	17.64700
2015	6	Linkage Assurance Plc	0.06189	0.73201	0.23494	7.30621
2016	6	Linkage Assurance Plc	0.06815	0.71603	0.24445	2.01989
2017	6	Linkage Assurance Plc	0.28993	0.72242	0.29629	22.64012
2018	6	Linkage Assurance Plc	-0.03626	0.69648	0.27172	31.51513
2019	6	Linkage Assurance Plc	0.18152	0.67763	0.40080	22.35369
2020	6	Linkage Assurance Plc	0.23950	0.66562	0.40387	31.45255
2021	6	Linkage Assurance Plc	-0.28505	0.77475	0.36384	19.62945
2022	6	Linkage Assurance Plc	0.18335	0.71006	0.37096	18.65781
2023	6	Linkage Assurance Plc	0.28707	0.51013	0.39927	49.79784
2024	6	Linkage Assurance Plc	0.39286	0.67753	0.34413	24.15655
2025	6	Linkage Assurance Plc	0.25974	0.74098	0.31957	-81.48391
2013	7	Mutual Benefits Assurance Plc	0.46814	0.13870	0.07210	10.44689
2014	7	Mutual Benefits Assurance Plc	0.26380	0.14623	0.07849	21.70298
2015	7	Mutual Benefits Assurance Plc	-0.11506	0.16317	0.17516	16.05481
2016	7	Mutual Benefits Assurance Plc	0.07801	0.17707	0.17427	18.98692
2017	7	Mutual Benefits Assurance Plc	0.12780	0.19209	0.20271	14.57636
2018	7	Mutual Benefits Assurance Plc	0.14353	0.21374	0.20268	21.65893
2019	7	Mutual Benefits Assurance Plc	0.32317	0.24196	0.22659	20.61469
2020	7	Mutual Benefits Assurance Plc	0.36391	0.27526	0.26248	41.80872
2021	7	Mutual Benefits Assurance Plc	-0.27017	0.27500	0.26186	29.69559
2022	7	Mutual Benefits Assurance Plc	0.15529	0.31289	0.21751	19.09821
2023	7	Mutual Benefits Assurance Plc	0.29353	0.30981	0.21078	67.61783
2024	7	Mutual Benefits Assurance Plc	0.56416	0.32779	0.04402	20.16660
2025	7	Mutual Benefits Assurance Plc	1.04058	0.33514	0.07168	-85.64843

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2013	8	NEM Insurance Plc	0.22923	0.36027	0.11471	17.61712
2014	8	NEM Insurance Plc	0.29207	0.36770	0.18752	-29.70076
2015	8	NEM Insurance Plc	0.39970	0.41490	0.20410	11.71757
2016	8	NEM Insurance Plc	0.34947	0.45906	0.26466	15.89275
2017	8	NEM Insurance Plc	0.52564	0.51637	0.24067	12.86139
2018	8	NEM Insurance Plc	0.38781	0.53662	0.24286	14.52208
2019	8	NEM Insurance Plc	0.45650	0.57128	0.14172	9.42458
2020	8	NEM Insurance Plc	1.01346	0.58395	0.15268	26.54938
2021	8	NEM Insurance Plc	0.88313	0.68162	0.13826	25.11866
2022	8	NEM Insurance Plc	1.10638	0.72796	0.12615	65.80360
2023	8	NEM Insurance Plc	2.58125	0.75952	0.10873	87.99072
2024	8	NEM Insurance Plc	5.82891	0.64437	0.08747	49.20806
2025	8	NEM Insurance Plc	4.80417	0.55197	0.08040	-96.72305
2013	9	Prestige Assurance Plc	0.09571	0.44955	0.09834	-37.15105
2014	9	Prestige Assurance Plc	0.05815	0.43452	0.19608	-8.40948
2015	9	Prestige Assurance Plc	-0.03589	0.46781	0.28192	7.45824
2016	9	Prestige Assurance Plc	0.09195	0.52741	0.28529	45.81914
2017	9	Prestige Assurance Plc	0.13932	0.56330	0.21332	25.83340
2018	9	Prestige Assurance Plc	0.11102	0.57611	0.18576	27.88334
2019	9	Prestige Assurance Plc	0.11312	0.60363	0.16074	14.36015
2020	9	Prestige Assurance Plc	0.11991	0.62216	0.17342	32.32044
2021	9	Prestige Assurance Plc	0.05118	0.67028	0.15792	40.13074
2022	9	Prestige Assurance Plc	0.05194	0.60223	0.14828	4.24227
2023	9	Prestige Assurance Plc	0.10943	0.50602	0.14132	44.57410
2024	9	Prestige Assurance Plc	0.18131	0.52232	0.12660	28.46225
2025	9	Prestige Assurance Plc	0.20751	0.58261	0.12140	-89.57026
2013	10	Regency Alliance / Assurance Plc	0.02776	0.13009	0.14045	6.53266
2014	10	Regency Alliance / Assurance Plc	0.03227	0.13819	0.15845	7.45824
2015	10	Regency Alliance / Assurance Plc	0.04204	0.16246	0.15898	8.93259
2016	10	Regency Alliance / Assurance Plc	0.04805	0.22976	0.18289	9.67731
2017	10	Regency Alliance / Assurance Plc	0.05775	0.24723	0.21959	7.84088
2018	10	Regency Alliance / Assurance Plc	0.06226	0.26400	0.22143	3.74939
2019	10	Regency Alliance / Assurance Plc	0.09184	0.26337	0.20716	32.34131
2020	10	Regency Alliance / Assurance Plc	0.08442	0.44538	0.21321	10.68945
2021	10	Regency Alliance / Assurance Plc	0.04820	0.47012	0.23765	8.95172
2022	10	Regency Alliance / Assurance Plc	0.08174	0.42493	0.26284	9.17485
2023	10	Regency Alliance / Assurance Plc	0.12674	0.51446	0.30665	20.03173
2024	10	Regency Alliance / Assurance Plc	0.17701	0.61073	0.29312	31.47162
2025	10	Regency Alliance / Assurance Plc	0.11849	0.60978	0.25289	364.58333
2013	11	Sovereign Trust Insurance Plc	0.04621	0.36427	0.04562	-52.22781
2014	11	Sovereign Trust Insurance Plc	0.04982	0.37993	0.10922	-21.18793
2015	11	Sovereign Trust Insurance Plc	0.06694	0.44628	0.18682	-16.48357
2016	11	Sovereign Trust Insurance Plc	0.00283	0.61407	0.25242	-12.56311
2017	11	Sovereign Trust Insurance Plc	0.01894	0.59391	0.34576	-2.16738
2018	11	Sovereign Trust Insurance Plc	0.04131	0.62999	0.37781	-3.48040
2019	11	Sovereign Trust Insurance Plc	0.06040	0.58029	0.46942	-18.95600
2020	11	Sovereign Trust Insurance Plc	0.06567	0.59569	0.53802	-25.61551
2021	11	Sovereign Trust Insurance Plc	0.08577	0.64620	0.50060	12.32126
2022	11	Sovereign Trust Insurance Plc	0.07381	0.64183	0.33389	-8.01935
2023	11	Sovereign Trust Insurance Plc	0.08952	0.48280	1.32049	-10.70469
2024	11	Sovereign Trust Insurance Plc	0.16532	0.46525	2.43512	32.57944
2025	11	Sovereign Trust Insurance Plc	0.05921	0.76040	1.96881	-72.39125
2013	12	Veritas Kapital Assurance Plc	0.04060	0.40000	0.15436	5.76617
2014	12	Veritas Kapital Assurance Plc	0.04190	0.47887	0.18289	12.84063
2015	12	Veritas Kapital Assurance Plc	0.03571	0.48649	0.21343	19.76894
2016	12	Veritas Kapital Assurance Plc	0.03932	0.55195	0.19378	9.49830
2017	12	Veritas Kapital Assurance Plc	0.16727	0.60733	0.19297	15.07910
2018	12	Veritas Kapital Assurance Plc	-0.02092	0.62364	0.18374	5.47386
2019	12	Veritas Kapital Assurance Plc	0.01331	0.62472	0.19277	14.27825
2020	12	Veritas Kapital Assurance Plc	0.06783	0.65203	0.20812	3.67955
2021	12	Veritas Kapital Assurance Plc	0.03644	0.61394	0.24188	-22.87098
2022	12	Veritas Kapital Assurance Plc	0.03899	0.52640	0.42225	52.10427
2023	12	Veritas Kapital Assurance Plc	0.18570	0.55806	0.37616	129.60355

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2024	12	Veritas Kapital Assurance Plc	-0.07276	0.58444	0.14628	0.00046
2025	12	Veritas Kapital Assurance Plc	0.46587	0.66617	0.18106	0.00046

Source: *Sampled Financial Reports (2013-2025)*

HETEROSKEDASTICITY TEST

Panel Cross-section Heteroskedasticity LR Test
Equation: POL
Specification: EPS C INV RTP RGT
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	1028.942	12	0.0000
LR test summary:			
	Value	df	
Restricted LogL	-150.9089	152	
Unrestricted LogL	363.5619	152	

Unrestricted Test Equation:
Dependent Variable: EPS
Method: Panel EGLS (Cross-section weights)
Date: 05/23/26 Time: 10:37
Sample: 2013 2025
Periods included: 13
Cross-sections included: 12
Total panel (balanced) observations: 156
Iterate weights to convergence
Convergence achieved after 18 weight iterations

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.001447	0.000613	2.361236	0.0195
INV	-0.000359	0.000763	-0.470021	0.6390
RTP	-0.002563	0.001011	-2.534854	0.0123
RGT	1.92E-06	2.21E-06	0.867529	0.3870
	Weighted Statistics			
R-squared	0.040874	Mean dependent var		0.457763
Adjusted R-squared	0.021944	S.D. dependent var		0.567553
S.E. of regression	0.684328	Akaike info criterion		-4.609768
Sum squared resid	71.18242	Schwarz criterion		-4.531566
Log likelihood	363.5619	Hannan-Quinn criter.		-4.578006
F-statistic	2.159231	Durbin-Watson stat		0.752711
Prob(F-statistic)	0.095175			
	Unweighted Statistics			
R-squared	-0.077439	Mean dependent var		0.181939
Sum squared resid	71.18252	Durbin-Watson stat		0.251491

PANEL MODEL SELECTION

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		1.893370	3	0.5948
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
INV	1.165964	0.962508	0.051540	0.3702
RTP	-0.136403	-0.192107	0.002212	0.2362
RGT	-0.000954	-0.000816	0.000000	0.3466
Cross-section random effects test equation:				

Dependent Variable: EPS
Method: Panel Least Squares
Date: 05/23/26 Time: 10:31
Sample: 2013 2025
Periods included: 13

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Cross-sections included: 12

Total panel (balanced) observations: 156

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.341584	0.240662	-1.419353	0.1580
INV	1.165964	0.477806	2.440243	0.0159
RTP	-0.136403	0.199827	-0.682602	0.4960
RGT	-0.000954	0.001015	-0.939664	0.3490

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.387067	Mean dependent var	0.181939
Adjusted R-squared	0.326209	S.D. dependent var	0.652867
S.E. of regression	0.535904	Akaike info criterion	1.681489
Sum squared resid	40.49427	Schwarz criterion	1.974745
Log likelihood	-116.1562	Hannan-Quinn criter.	1.800597
F-statistic	6.360108	Durbin-Watson stat	0.512717
Prob(F-statistic)	0.000000		

LM Test

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	77.48036	0.003188	77.48354
	(0.0000)	(0.9550)	(0.0000)
Honda	8.802293	0.056464	6.264087
	(0.0000)	(0.4775)	(0.0000)
King-Wu	8.802293	0.056464	6.397077
	(0.0000)	(0.4775)	(0.0000)
Standardized Honda	10.11161	0.269537	3.326418
	(0.0000)	(0.3938)	(0.0004)
Standardized King-Wu	10.11161	0.269537	3.484298
	(0.0000)	(0.3938)	(0.0002)
Gourieroux, et al.	--	--	77.48354
			(0.0000)

PANEL REGRESSION
POLS

Dependent Variable: EPS
Method: Panel Least Squares
Date: 05/23/26 Time: 10:15
Sample: 2013 2025
Periods included: 13
Cross-sections included: 12
Total panel (balanced) observations: 156

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007373	0.157983	0.046668	0.0028
INV	0.621173	0.312952	1.984887	0.0490
RTP	-0.429216	0.198165	-2.165953	0.0319
RGT	-0.000528	0.001160	-0.455088	0.6497
R-squared	0.543000	Mean dependent var		0.181939
Adjusted R-squared	0.524112	S.D. dependent var		0.652867
S.E. of regression	0.644948	Akaike info criterion		1.986011
Sum squared resid	63.22552	Schwarz criterion		2.064213
Log likelihood	-150.9089	Hannan-Quinn criter.		2.017773
F-statistic	2.276581	Durbin-Watson stat		1.312754
Prob(F-statistic)	0.000006			

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FEM

Dependent Variable: EPS
Method: Panel Least Squares
Date: 05/23/26 Time: 10:16
Sample: 2013 2025
Periods included: 13
Cross-sections included: 12
Total panel (balanced) observations: 156

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.341584	0.240662	-1.419353	0.0080
INV	1.165964	0.477806	2.440243	0.0159
RTP	-0.136403	0.199827	-0.682602	0.0060
RGT	-0.000954	0.001015	-0.939664	0.3490

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.587067	Mean dependent var	0.181939
Adjusted R-squared	0.526209	S.D. dependent var	0.652867
S.E. of regression	0.535904	Akaike info criterion	1.681489
Sum squared resid	40.49427	Schwarz criterion	1.974745
Log likelihood	-116.1562	Hannan-Quinn criter.	1.800597
F-statistic	6.360108	Durbin-Watson stat	1.512717
Prob(F-statistic)	0.000000		

REM

Dependent Variable: EPS
Method: Panel EGLS (Cross-section random effects)
Date: 05/23/26 Time: 10:19
Sample: 2013 2025
Periods included: 13
Cross-sections included: 12
Total panel (balanced) observations: 156
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.226611	0.242808	-0.933292	0.0001
INV	0.962508	0.420427	2.289359	0.0234
RTP	-0.192107	0.194215	-0.989146	0.0242
RGT	-0.000816	0.001005	-0.812812	0.4176

Effects Specification

	S.D.	Rho
Cross-section random	0.414293	0.3741
Idiosyncratic random	0.535904	0.6259

Weighted Statistics

R-squared	0.538703	Mean dependent var	0.061439
Adjusted R-squared	0.519730	S.D. dependent var	0.539296
S.E. of regression	0.533950	Sum squared resid	43.33558
F-statistic	2.039887	Durbin-Watson stat	1.465272
Prob(F-statistic)	0.000675		

Unweighted Statistics

R-squared	0.019427	Mean dependent var	0.181939
Sum squared resid	64.78291	Durbin-Watson stat	1.311237

POST DIAGNOSTIC TESTS

Cross-Section Dependence Test

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 13
Cross-sections included: 12

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Total panel observations: 156
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	118.6236	66	0.0001
Pesaran scaled LM	4.580296		0.0000
Pesaran CD	2.030601		0.1423

Correlogram

Date: 05/23/26 Time: 10:29
Sample (adjusted): 2014 2025
Included observations: 144 after adjustments

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.|. |	.|. |	1	0.013	0.013	0.0243	0.876
*|. |	*|. |	2	-0.108	-0.108	1.7570	0.415
.|. |	.|. |	3	0.020	0.023	1.8145	0.612
.|* |	.|* |	4	0.092	0.080	3.0749	0.545
.|. |	.|. |	5	-0.049	-0.048	3.4342	0.633

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