

# Moderating Effect of Risk Management on Pension Fund Investment Strategies and Financial Performance of Pension Fund Administrators (PFAs) in Nigeria

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## ABSTRACT

Risk management plays a moderating role by ensuring that the inherent risks associated with asset classes such as equities, real estate, and offshore investments are properly identified, quantified, monitored, and controlled. In the Nigerian context, the limited uptake of risk-based asset allocation frameworks hinders the ability of PFAs to exploit high-yield investment opportunities. The study examined whether risk management has moderating effect in the relationship between pension fund investment strategies and performance of pension fund administration (PFAs) in Nigeria. An ex-post-facto research design was employed for this investigation encompassing the ten-year period from 2014 to 2023. This duration was selected to evaluate the effect of risk management and the financial performance of Pension Fund Administrators (PFAs) in Nigeria. The population consist of all the 21 registered pension fund administrators (PFAs) in Nigeria using 10-years study time frame from (2014-2023). While filtering criteria were used and 14 out of 21 meet the criteria: The study finds that risk management has a positive but statistically insignificant effect on the return on equity (ROE) of Pension Fund Administrators (PFAs) in Nigeria. This suggests that while improved risk management practices are directionally associated with better equity returns, this relationship is not strong enough to be statistically validated within the dataset and timeframe used in the analysis. In conclusion, the study finds that moderating role of risk management requires refinement, especially in relation to real estate investments, where it was found to negatively influence the financial outcomes. The study acknowledges its limitations and suggests that future research should explore more nuanced aspects of risk management practices and their broader implications for pension fund performance.

**Keyword:** Risk Management, Pension Fund Investment Strategies, Performance and Pension Fund Administration (Pfas) in Nigeria

## INTRODUCTION

### Background to the Study

Beyond government securities, Nigerian PFAs are permitted to invest in other asset classes such as Nigerian Exchange, real estate development, private equity, infrastructure funds, and mutual funds. However, the proportion of pension assets allocated to these asset classes remains relatively low. As of 2023, investment in quoted ordinary shares constituted less than 8% of total pension assets, while investment in real estate development accounted for only about 2% (PenCom, 2024). Investment in units of any investment vehicle outside Nigeria is also permitted under strict guidelines but remains significantly underutilized due to concerns over foreign exchange volatility, political risk, and regulatory bottlenecks. These figures reveal a persistent under-diversification of pension portfolios in Nigeria, which limits growth potential and financial performance. The skewed preference for government instruments suggests a risk-averse investment culture among PFAs, exacerbated by weak capacity in risk analytics and asset management.

Risk management plays a moderating role by ensuring that the inherent risks associated with asset classes such as equities, real estate, and offshore investments are properly identified, quantified, monitored, and controlled. In the Nigerian context, the limited uptake of risk-based asset allocation frameworks hinders the ability of PFAs

to exploit high-yield investment opportunities. Most PFAs rely heavily on regulatory investment guidelines rather than robust internal risk management systems to guide their asset allocation decisions (Adegbite & Oyelade, 2021). This results in suboptimal portfolio performance and raises concerns about the long-term sustainability of pension funds, especially in an inflationary economic environment where real returns are eroded.

The integration of risk management into the pension asset investment strategy is further complicated by macroeconomic instabilities in Nigeria, including double-digit inflation, fluctuating exchange rates, and fiscal imbalances. These economic headwinds increase the risk profile of domestic investments and reduce the real return on government securities. The use of dynamic risk management tools such as value-at-risk (VaR), stress testing, scenario analysis, and portfolio rebalancing is vital to navigating these uncertainties. However, evidence suggests that many Nigerian PFAs lack the institutional capacity, technological infrastructure, and skilled manpower to implement these advanced risk management frameworks (Onifade *et al.*, 2022). This capacity gap undermines the potential benefits of investment diversification and negatively affects financial performance. A robust risk management structure would not only guide PFAs in selecting appropriate asset classes but also ensure that investments are aligned with the risk appetite and retirement objectives of contributors.

### Statement of the Problem

Investment in real estate development a critical inflation-hedging instrument is constrained by illiquidity, valuation risks, and a poorly regulated sector. Real estate investments accounted for a mere 2.1% of pension assets in 2023, suggesting suboptimal deployment of funds (PenCom, 2024). Notably, the regulation permitting investment in units of offshore instruments remains largely underutilized, with foreign asset exposure capped at 20% and actual allocations consistently below 1%. This is despite evidence that international diversification offers potential for improved risk-adjusted returns (WTW, 2023). The disproportionately low exposure to high-yield asset classes reflects an inherent misalignment between current investment strategies and the long-term sustainability of pension fund performance.

A compounding issue is the weak institutionalization of risk management in the Nigerian pension industry. While risk management frameworks have been embedded in the regulatory guidelines by the National Pension Commission (PenCom), actual implementation remains largely cosmetic in many PFAs, undermining their capacity to anticipate, absorb, and respond to investment risks. For instance, investment-related losses resulting from poor portfolio diversification and market timing have occasionally been reported (Adegbite & Oyelade, 2021). Furthermore, PFAs often operate under rigid compliance-based investment strategies rather than dynamic risk-based frameworks. This exposes the pension industry to concentration risks and systemic vulnerabilities, especially in the face of macroeconomic shocks such as exchange rate instability, commodity price volatility, and fiscal imbalances. The absence of robust enterprise-wide risk management systems diminishes the ability of PFAs to optimize investment returns while preserving capital, ultimately compromising their financial performance.

A critical gap remains in empirically understanding how components of pension investment strategies influence financial performance when moderated by risk management. While previous research has examined the direct link between asset allocation and fund returns, few studies have explored how the scope and rigor of risk management practices alter this relationship (Mwaura & Ngugi, 2022; Onifade *et al.*, 2022). Existing literature including work by Oluwalana and Ibiwoye (2020), Iziegbejian and Onyekachukwu (2023), Fadun and Oye (2020), Temitope *et al.* (2018), and Sorin and Anca (2020) has largely overlooked the moderating role of risk management (Onifade *et al.*, 2022).

### Objectives of the Study

The study examined whether risk management has moderating effect in the relationship between pension fund investment strategies and performance of pension fund administration (PFAs) in Nigeria., objectives is to;

Evaluate Whether Risk Management Has Moderating Effect In The Relationship Between Pension Fund Investment Strategies And Performance Of Pension Fund Administration (Pfas) In Nigeria.

## Research Question

The research questions is presented in line with the objectives of the study as follows:

To what extent does risk management moderate the relationship between pension fund investment strategies and performance of pension fund administration (PFAs) in Nigeria?

## Research Hypotheses

The research hypotheses is presented in null form in line with the objectives of the study as follows:

**H<sub>01</sub>:** Risk management have no significance effect on the relationship between pension fund investment strategies and performance of pension fund administrators (PFAs) in Nigeria.

## LITERATURE REVIEW

### Conceptual Review

Return on Equity (ROE) is widely recognized as one of the most important indicators used in evaluating a firm's financial performance and profitability. Fraser and Ormiston (2004) describe ROE as a ratio that measures the return generated for common shareholders, emphasizing its importance in assessing how efficiently management utilizes shareholders' equity to maximize profits. This perspective is consistent with the explanation provided by Fernando (2023), where ROE is defined as a metric that indicates the amount of profit earned for every dollar of shareholders' equity invested in the business. The author further notes that ROE is particularly useful for comparing the performance of firms operating within the same industry.

In the same vein, Bernstein (2022) views ROE as a financial performance measure that reflects the effectiveness with which a company generates profits from shareholders' capital. According to the author, a higher ROE generally signifies improved operational efficiency, stronger managerial effectiveness, and greater potential for internal business growth.

Despite its significance, some scholars have criticized ROE as an imperfect measure of financial performance. De Wet and du Toit (2007) argue that ROE can sometimes present a misleading picture of corporate performance because it may be artificially increased through share repurchase activities without corresponding improvements in actual firm value. They also contend that ROE does not adequately account for intangible assets, which have become increasingly important in modern business organizations and corporate valuation.

In relation to pension fund administration, effective risk management remains essential for ensuring long-term sustainability and protecting pension assets from economic uncertainties and market fluctuations. Key risk management practices include the integration of Environmental, Social, and Governance (ESG) principles into investment decisions, as well as strict adherence to sound governance structures and regulatory frameworks. Moreover, efficient supervision by experienced and independent trustees is necessary to minimize political interference and encourage diversification into stable and secure investment portfolios, thereby enhancing the financial stability and resilience of pension funds.

### Real Estate Investment

Real estate investment refers to the commitment of financial resources to land and property assets with the objective of generating returns through rental income, capital appreciation, or a combination of both. Ling and Archer (2022) explain that real estate investments function not only as income-generating assets but also as an effective hedge against inflation within a diversified investment portfolio.

Similarly, Geltner et al. (2021) define real estate investment as the process of allocating capital to various segments of the property market, including residential, commercial, and industrial real estate. The authors further

note that such investments may take the form of direct property ownership or indirect investment vehicles such as Real Estate Investment Trusts (REITs), which enable investors to participate in property markets without directly owning physical assets.

In the same vein, Adams and Fuss (2020) describe real estate investment as an alternative asset class that provides investors with long-term financial stability, portfolio diversification, and protection against market volatility through the ownership of tangible property-based assets. This highlights the growing importance of real estate within modern investment strategies, particularly among institutional investors seeking stable and predictable returns.

Furthermore, Brounen and Eichholtz (2019) argue that real estate investment involves strategic decision-making in which investors carefully evaluate the relationship between risk and return. According to the authors, factors such as property location, regulatory policies, market conditions, and broader economic cycles significantly influence property values and investment performance. Therefore, successful real estate investment requires careful analysis and effective risk management to ensure sustainable returns over time.

### **Investment Outside Nigeria**

Investment outside Nigeria refers to the outward flow of capital from Nigeria into foreign economies, encompassing both foreign direct investment and portfolio allocations in international markets. Adegbite and Ayadi (2020) describe this as the direct acquisition of assets or portfolio diversification undertaken to enhance returns and reduce exposure to domestic economic risks. Complementing this view, OECD (2022) highlights the broader strategic value of such outward investment, noting that it provides opportunities for global expansion, technology transfer, and access to higher yield potentials.

### **Risk Management Strategy and Measures**

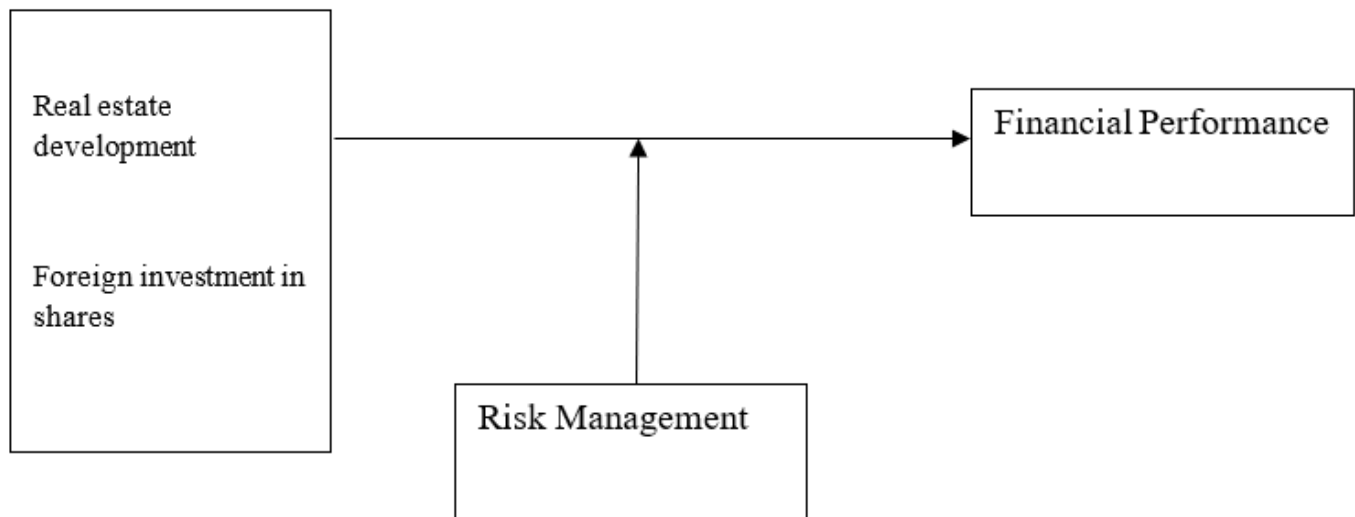
Effective risk management hinges on the ability of organizations to systematically identify, evaluate, and respond to uncertainty through well-structured strategies and measurement frameworks. At the organizational level, Enterprise Risk Management (ERM) provides a holistic approach by embedding risk processes across all functions and aligning them with strategic objectives. Frameworks such as COSO operationalize this by incorporating risk appetite, scenario analysis, and financial hedging, ensuring that risk considerations are integrated into decision-making rather than treated in isolation. Strategic Risk Management (SRM) narrows this focus to risks that directly threaten the achievement of strategic goals, employing tools such as heat maps and probability-impact analyses to prioritize exposures based on their likelihood and potential consequences.

Beyond identification, organizations deploy a range of mitigation strategies to limit adverse impacts. Risk transfer mechanisms, such as insurance, and portfolio diversification remain foundational approaches, while the growing prevalence of emerging risks — particularly cyber threats — demands more specialized responses, including predictive modelling and robust data protection protocols. Measurement frameworks complement these strategies by providing quantifiable and qualitative bases for risk assessment. Quantitative tools such as Value at Risk (VaR), stress testing, and Monte Carlo simulations allow organizations to model potential losses under varying conditions, while qualitative instruments like risk maps address exposures that resist numerical measurement, including reputational risk. Together, these are benchmarked against key metrics such as risk appetite thresholds and solvency ratios to ensure financial soundness.

In the context of pension fund administration, these strategies and measurement frameworks play a particularly critical moderating role. By aligning risk management practices with regulatory requirements, risk tolerance levels, and long-term financial stability objectives, they help determine the extent to which risk management efforts translate into improved financial performance.

### Independent Variables

### Dependent Variables



### Moderating Variables

### Empirical Review

Fadun and Oye (2020) examined the influence of operational risk management on the financial performance of commercial banks in Nigeria, with particular focus on risks arising from fraud, IT failures, and compliance breaches. Their findings demonstrate that the effective management of such operational risks plays a significant role in shaping a bank's financial stability. Specifically, banks equipped with robust operational risk management frameworks are better positioned to protect their assets, limit exposure to financial losses, and sustain customer confidence.

Through empirical analysis, the study establishes a positive relationship between strong operational risk management practices and improved financial outcomes, evidenced by enhanced profitability and reduced earnings volatility. These findings carry important implications for both bank managers and regulatory authorities, underscoring the need to embed comprehensive risk management strategies within institutional operations. Fadun and Oye (2020) conclude that such integration is not merely a compliance imperative but a strategic necessity for ensuring the long-term sustainability of the Nigerian financial sector.

The implementation and sustainability of contributory pension schemes in Nigeria have attracted scholarly attention, particularly regarding the risks arising from structural and operational deficiencies. Ahmed (2023) examined the rollout of the contributory pension scheme among Lagos State public servants, revealing significant implementation challenges rooted in inadequate sensitisation and institutional pressure. The study found that fear of job loss compelled many government workers including those initially exempt to enrol in the scheme, undermining the voluntary foundation of the policy. Drawing on correlation analysis of data from 187 attendees of a pre-retirement seminar, the study established a positive relationship between employee contributions and remittances, as well as a moderate positive correlation between accrued rights and retirement benefits, suggesting that while the scheme yields measurable outcomes, its structural vulnerabilities warrant closer attention.

Complementing this, Obasa (2023) broadened the scope of inquiry to the global pension industry, arguing that dynamic investment strategies and proactive risk management are indispensable to the long-term survival of defined contributory schemes, particularly in the face of unforeseen disruptions. The study stressed the importance of systematically identifying and evaluating both actual and potential risk areas in pension administration determining in each case whether risks should be mitigated, transferred, accepted, or eliminated. Employing an exploratory research approach, Obasa (2023) also addressed the scepticism among retirees toward the Contributory Pension Scheme (CPS), framing it as a challenge that can be overcome through sound

institutional design. The study ultimately recommended the development of a robust regulatory framework for the pension fund industry, supported by extensive market surveillance, as effective mechanisms for managing operational risks in funded pension schemes within emerging economies.

The intersection of governance structures, risk management frameworks, and financial performance has been examined across several empirical studies, yielding important insights into how organisations can strengthen institutional resilience. Yusuf et al. (2023) investigated the moderating role of the risk management committee in the relationship between board attributes and firm survival among 34 listed manufacturing firms in Nigeria between 2011 and 2022. Using Generalised Least Squares analysis, the study found that board independence, size, and expertise were positive and significant predictors of firm survival, while gender diversity did not yield a significant effect. Notably, the risk management committee did not exert a significant moderating influence, leading the authors to conclude that board characteristics themselves constitute the more critical governance mechanism for ensuring organisational survival. They consequently recommend that shareholders prioritise the appointment of members with relevant expertise and the maintenance of an optimal board composition, rather than focusing narrowly on independence, as a more effective pathway to innovation and sustainable growth.

While Yusuf et al. (2023) examined governance at the board level, Samuel et al. (2023) shifted focus to the operational dimension of risk management within pension fund administration. Their case study of ARM pension fund administration evaluated security risk assessment practices, finding that the identification and management of risks are foundational to the financial health and credibility of pension systems. Through the application of comprehensive risk frameworks, significant vulnerabilities were identified within existing management processes, and targeted strategies were proposed to strengthen security protocols. The study affirmed that effective risk management is essential not only for safeguarding fund assets but also for sustaining stakeholder confidence in pension institutions.

These findings align with the broader argument advanced by Berry-Stolzle et al. (2018), who examined how Enterprise Risk Management (ERM) influences a firm's cost of capital. Their empirical evidence demonstrated that effective ERM practices reduce investors' perceived risk, positioning firms with robust risk management frameworks as more stable and predictable in the eyes of the market. This enhanced perception translates into tangible financial benefits, including lower equity and debt costs and reduced risk premiums. Berry-Stolzle et al. (2018) thus conclude that ERM serves not merely as a risk control mechanism but as a strategic instrument for improving financial performance and optimising firms' overall financial outcomes.

The relationship between risk management practices and long-term financial sustainability has been examined at both the institutional and firm levels, with consistent evidence pointing to the strategic value of structured risk frameworks. Bikker et al. (2012) investigated risk management practices in pension funds, situating them within a complex landscape of market volatility, demographic shifts, and evolving regulatory pressures. The study demonstrated that strategies such as asset-liability matching, diversification, and the use of hedging instruments are essential tools for mitigating financial risks and preserving fund stability over time. Beyond technical strategies, Bikker et al. (2012) emphasised that strong governance structures and sound decision-making processes are equally indispensable, arguing that regulatory frameworks and broader economic conditions materially shape the risk exposure of pension funds and must therefore be accounted for in any comprehensive risk management approach.

The strategic importance of risk management extends beyond institutional funds to firm-level competitiveness, as demonstrated by Qinzha (2023), who examined how financial risk management strategies influence firms' market position in volatile business environments. The study identified portfolio diversification, hedging, and effective liquidity management as particularly critical mechanisms for protecting competitive advantage and sustaining financial performance under market fluctuations. Taken together, these findings reinforce a consistent theme in the literature: that the integration of comprehensive risk management frameworks into organisational strategy is not merely a defensive measure but a proactive enabler of long-term competitiveness and sustainability. Qinzha (2023) further underscores the policy dimension of this argument, highlighting the responsibility of both managers and regulators to embed risk management thinking into the broader architecture of corporate governance and strategic planning.

The evolution and practical application of Enterprise Risk Management (ERM) as a strategic organisational tool has received considerable scholarly attention. Sorin and Anca (2020) conducted a comprehensive review of ERM, tracing its development and examining its implementation across various industries. Their analysis of core ERM elements encompassing risk identification, assessment, mitigation, and integration into strategic decision-making demonstrated consistent positive effects on organisational performance, resilience, and value creation. Importantly, the authors identified persistent gaps in the literature, particularly the limited availability of empirical research and industry-specific studies, and proposed a future research agenda that addresses technological innovations, behavioural factors in risk management, and the integration of ERM with sustainability frameworks. This contribution is significant not only for what it affirms about ERM's value but also for the directions it opens for further inquiry.

Translating these broader ERM principles into the specific context of pension fund administration, Idowu and Ibrahim (2021) examined the impact of risk management and internal control systems on the efficacy of pension fund administration in Nigeria. Their findings reinforced the view that rigorous risk mitigation strategies and robust internal controls are vital to enhancing both the performance and long-term sustainability of pension funds. The study identified governance deficiencies and weak regulatory frameworks as the primary obstacles to optimal fund management, and called for strengthened compliance mechanisms, greater institutional accountability, and more comprehensive risk management practices as necessary correctives. These findings carry direct implications for policymakers and sector stakeholders seeking to raise the standard of pension administration in Nigeria.

Building on this institutional perspective, Ahmed et al. (2023) narrowed the focus further to public sector pension administration in Lagos State, identifying funding shortfalls, mismanagement, and demographic pressures as the most significant risks threatening the sustainability of the pension system. The study argued that addressing these challenges requires not only robust risk management frameworks but also a culture of transparency, stakeholder collaboration, and proactive planning in fund allocation and regulatory compliance. Together, the findings of Idowu and Ibrahim (2021) and Ahmed et al. (2023) converge on a shared conclusion: that structural and governance weaknesses remain the central vulnerability of pension fund administration in Nigeria, and that their resolution demands both policy reform and the deliberate integration of risk management into the operational and strategic fabric of public sector pension institutions.

Notwithstanding the growing body on risk management in pension fund administration, a critical gap persists. While existing studies have examined risk management practices, governance structures, and financial performance as largely independent concerns, the specific function of risk management strategies and measurement frameworks as a moderating variable in the relationship between risk management and the financial performance of Pension Fund Administrators (PFAs) in Nigeria remains inadequately explored. The reviewed literature, though rich in its coverage of operational risks, ERM frameworks, and institutional governance, has not sufficiently interrogated how risk management intervenes in and shapes this critical relationship within the Nigerian pension context. This study therefore seeks to address that gap directly, by empirically examining the moderating role of risk management strategies and measurements in the risk management–financial performance nexus among PFAs in Nigeria. The anticipated outcomes are expected to contribute meaningfully to the refinement of governance practices, the enhancement of investment decision-making, and the advancement of long-term sustainability within the Nigerian pension sector.

## RESEARCH METHOD

### Research Design

Given its focus on empirically measurable variables and the statistical examination of relationships between them, this study adopts a quantitative research design. This methodological choice is consistent with the study's objective of determining the moderating effect of risk management on the financial performance of Pension Fund Administrators (PFAs) in Nigeria, as quantitative methods provide the analytical rigour necessary to test such relationships systematically and draw generalisable conclusions.

The study covers a ten-year period spanning 2014 to 2023, a timeframe deliberately selected to capture the operational trajectory of PFAs in the decade following the implementation of the Pension Reform Act Amendment. This longitudinal scope serves a dual purpose: it enables the collection of historical and multidimensional data across a sufficiently extended period, and it provides a robust empirical foundation for evaluating how risk management practices have influenced financial performance over time. By anchoring the analysis within this post-reform decade, the study ensures that its findings are both contextually grounded and policy-relevant.

This study employs an ex-post-facto research design, a methodological choice particularly well-suited to impact analysis given its reliance on pre-existing data. Rooted in the social sciences, the approach was pioneered by Chapin (1937), a student of Giddings, and has since become a widely adopted framework for investigating phenomena where direct manipulation of variables is neither feasible nor appropriate. Kerlinger (1964) defines ex-post-facto research as inquiry in which the independent variables have already occurred prior to the commencement of the study, distinguishing it from experimental designs where conditions can be controlled and manipulated. Consistent with this definition, the researcher begins by observing the dependent variable and works retrospectively to examine the independent variables, with the aim of identifying plausible causal relationships and estimating the direction and magnitude of their effects. This design is therefore particularly appropriate for the present study, where the financial performance outcomes of Pension Fund Administrators (PFAs) are examined in relation to risk management practices that have already unfolded over the study period.

### Population of the Study and Sample Size

The population consist of all the 21 registered pension fund administrators (PFAs) in Nigeria using 10-years study time frame from (2014-2023). the following filtering criteria were used and 14 out of 21 meet the criteria:

#### Exclusion Criteria:

- Any PFA that fails to provide complete data for the study period (2014-2023) due to reasons such as non-reporting or data unavailability.
- Exclude PFAs with missing or irregularly audited financial reports, as this could compromise the validity of the analysis.
- Exclude PFAs that underwent mergers, acquisitions, or were deregistered during the study period, as their financial data may not accurately reflect the performance of the original entity.
- Exclude PFAs that have faced significant regulatory issues or sanctions during the study period, as their performance may be significantly influenced by these factors.

### Descriptive Statistics

This section presents the descriptive statistics for all variables examined in the study, which investigates the moderating effect of risk management on the financial performance of Nigerian Pension Fund Administrators (PFAs). The reported metrics encompassing the mean, standard deviation, minimum, and maximum values provide a systematic characterisation of each variable's central tendency, dispersion, and distributional range. Collectively, these measures offer a foundational understanding of the dataset's statistical properties and underlying patterns, establishing the necessary empirical basis for interpreting the results of the inferential statistical analyses that follow.

**Table 1: Descriptive statistics**

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
ROE	140	0.4884805	1.087835	-6.230762	3.878092
RID	140	0.8961597	1.715005	0.0007217	13.37679
FID	140	0.000381	0.0008853	0	.0041209

**Source: Generated using STATA, 2025**

The Return on Equity (ROE) recorded the highest standard deviation among the variables examined, at 1.09, indicating considerable volatility in the returns generated for shareholders across the sampled Pension Fund Administrators (PFAs). The minimum value of -6.23 reveals that certain firms experienced severe losses during the study period, a pattern attributable to poor investment decisions, excessive leverage, or adverse market conditions. Conversely, the maximum value of 3.88 suggests that a subset of firms achieved notably strong returns, reflective of well-managed investment strategies or favourable market positioning. The wide dispersion between these extremes underscores the financial risk inherent in the sector, demonstrating that equity returns are neither stable nor uniformly distributed across PFAs. This variability further implies that some firms may be disproportionately reliant on debt financing, a structure that amplifies both gains and losses and thereby heightens exposure to financial instability.

The Real Estate Development (RID) variable presents a mean value of 0.89, indicating that, on average, PFAs in Nigeria allocate less than one unit of investment to real estate relative to other asset classes. This modest average suggests that while real estate constitutes a recognised component of the pension investment portfolio, it does not represent a dominant allocation preference across the industry. Such restrained exposure is consistent with the inherent characteristics of real estate as an asset class notably its illiquidity, extended gestation periods, regulatory constraints, and the specialised expertise required for effective management.

The minimum value of 0.0007 reveals that certain PFAs maintain a near-zero allocation to real estate development, reflecting either a highly conservative investment posture or a deliberate strategy to avoid the sector's associated risks. This marginal exposure may also be attributable to limited fund size or a strategic preference for more liquid, short-term instruments such as government securities and money market assets. At the opposite end of the distribution, the maximum value of 13.37 indicates that some PFAs hold a significantly concentrated position in real estate, suggestive of an aggressive investment approach premised on expectations of long-term capital appreciation or sustained rental income.

The wide range between the minimum and maximum values spanning from near-zero to 13.37 points to substantial heterogeneity in real estate investment strategies across PFAs, reflecting divergent risk appetites, fund sizes, and interpretations of the asset class's long-term value within the broader portfolio.

The Foreign Investment (FID) variable records a mean value of 0.0003, reflecting an extremely limited allocation to foreign assets across the sampled PFAs and confirming that international investment exposure remains negligible within the Nigerian pension industry. This near-zero average is corroborated by the minimum value of 0.00, which indicates that certain PFAs maintain no foreign investment whatsoever a pattern consistent with a domestically oriented investment strategy and strict adherence to local regulatory guidelines. The complete absence of international exposure among some funds may further reflect institutional risk aversion toward the complexities and uncertainties inherent in global markets, particularly given the volatility associated with currency fluctuations and cross-border regulatory environments.

At the upper end of the distribution, the maximum value of 0.004, though marginally higher, remains exceptionally low, suggesting that even the most internationally exposed PFAs have ventured into foreign markets only with considerable caution. Such limited allocations are likely targeted at low-risk instruments such as sovereign bonds or international mutual funds with the primary objectives of portfolio diversification or hedging against domestic economic risks. Critically, the fact that even the highest recorded value falls significantly below 1% reinforces the conclusion that foreign investment does not constitute a meaningful strategic component of pension asset allocation in Nigeria. Taken together, the distributional properties of the FID variable point to a sector that remains overwhelmingly domestically anchored, with foreign diversification representing an underutilised avenue for risk mitigation and return optimisation.

**Table 2: Correlation matrix**

Variables	ROE	FGB	ORD	RID	FID	RM	FGBINT	ORDINT	RIDINT	FIDINT
ROE	1.0000									
RID	-0.1864	0.3370	-0.0110	1.0000						
FID	0.2053	0.1044	-0.1509	-0.1247	1.0000					

RIDINT	-0.1681	0.3150	-0.0114	0.6545	-0.0945	0.059	0.3383	0.0202	1.0000	
FIDINT	0.1949	0.1023	-0.1374	-0.0973	0.9013	0.070	0.1831	-0.1215	-0.0469	1.0000

**Source: Generated using STATA, 2025**

Table 2 presents the correlation results, which indicate the nature and strength of the relationships between Return on Equity (ROE) and the various investment categories, both in their direct forms and under the influence of moderating variables. The findings reveal that Real Estate Investment (RID) has a weak negative relationship with ROE ( $r = -0.1864$ ), suggesting that increases in real estate investment are slightly associated with reductions in firm profitability, although the relationship is relatively weak. In contrast, Investment Outside Nigeria (FID) shows a weak positive correlation with ROE ( $r = 0.2053$ ), implying that foreign investments contribute positively, though marginally, to firm performance.

With respect to the moderating effects, Moderated Real Estate Investment (RIDINT) also exhibits a weak negative association with ROE ( $r = -0.1681$ ), which is consistent with the direction of the relationship observed in the original real estate investment variable. On the other hand, Moderated Investment Outside Nigeria (FIDINT) maintains a positive relationship with ROE ( $r = 0.1949$ ), further supporting the argument that foreign investment activities may enhance profitability.

The correlation matrix also reveals notable interrelationships among the independent and moderating variables. A strong positive correlation exists between RID and RIDINT ( $r = 0.6545$ ), while an even stronger positive association is observed between FID and FIDINT ( $r = 0.9013$ ). These high correlations are expected because the moderated variables are derived from their respective base variables. Additionally, FGB demonstrates a moderate positive relationship with RID ( $r = 0.3370$ ). Collectively, these relationships suggest the possibility of interaction effects and potential multicollinearity issues, which should be carefully examined and controlled for during regression analysis to ensure the reliability of the estimated results.

**Table 3: Multicollinearity Test**

The Variance Inflation Factor (VIF) is employed to assess multicollinearity in regression analysis. Multicollinearity arises when two or more independent variables in a model are highly correlated, potentially distorting coefficient estimates and undermining the reliability of the results.

**Variance inflation factor**

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Variable	VIF	1/VIF (Tolerance)
fid	7.88	0.126900
fidint	7.69	0.129999
rid	1.66	0.603177
int	1.19	0.839277

| **Mean VIF** | **6.25** | — |

Heteroskedasticity

Breusch–Pagan/Cook–Weisberg test for heteroskedasticity

Assumption: Normal error terms

Variable: Fitted values of roe

H0: Constant variance

$$\text{chi2}(1) = 19.48$$

Prob > chi2 = 0.0000

**Source: Generated using STATA, 2025**

**Table 4: Regression Result/ Test of Hypotheses**

roe	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
rid	.1436107	.0667304	2.15	0.033	.0114663	.2757551
fid	-127.6991	186.1641	-0.69	0.494	-496.3547	240.9564
ridint	-.0032905	.0016106	-2.04	0.043	-.0064799	-.0001012
fidint	6.850507	8.018107	0.85	0.395	-9.027528	22.72854
sigma_u	.267079					
sigma_e	.46191671					
rho	.25055017 (fraction of variance due to u_i)					

F test that all  $u_i=0$ :  $F(13, 118) = 2.45$                       Prob > F = 0.0057

**Source: Generated using STATA, 2025**

The results indicate that pension asset investment strategy accounts for 50.55% of the variation in financial performance, measured by Return on Equity (ROE), of Pension Fund Administrators (PFAs) in Nigeria, with the remaining variation attributed to other factors not included in the model. The model is considered a good fit, as evidenced by a Prob >  $\chi^2$  p-value below 0.05.

**Investment in Real Estate Development and Financial Performance**

The analysis reveals a positive and statistically significant relationship between real estate development and the Return on Equity (ROE) of pension fund administrators in Nigeria. This finding suggests that investments in real estate development contribute meaningfully to improved financial performance. The positive effect can largely be attributed to the ability of real estate investments to generate stable rental income and long-term capital appreciation, both of which enhance the overall value of investment portfolios. Consequently, the increase in ROE indicates that greater investment in real estate development represents an effective and profitable strategy for improving the returns, profitability, and financial sustainability of pension funds in Nigeria.

**Investment in Foreign Shares and Financial Performance**

The study reveals that foreign investment has a negative but statistically insignificant effect on the Return on Equity (ROE) of pension fund administrators in Nigeria. This implies that although foreign investment appears to have an inverse relationship with ROE, the effect is too weak to exert any meaningful influence on financial performance. In practical terms, variations in the level of foreign investment undertaken by pension fund administrators do not significantly translate into changes in profitability as measured by ROE.

The insignificant nature of the relationship suggests that foreign investments may not constitute a major determinant of profitability for pension fund administrators within the Nigerian environment. This outcome may be attributed to several factors, including exposure to external economic risks, exchange rate fluctuations, political and regulatory uncertainties in foreign markets, and possible inconsistencies between foreign

investment strategies and the conservative, long-term investment objectives typically associated with pension fund management. Consequently, while foreign investments may offer diversification benefits, their contribution to improving the financial performance of pension fund administrators appears to be limited within the context of this study.

This finding reflects the challenges and risks associated with foreign investment, particularly within developing economies where exchange rate volatility, regulatory constraints, and limited access to stable and reliable international markets can negatively influence investment performance. In addition, pension fund administrators may face institutional and technical limitations, including inadequate infrastructure, insufficient expertise, and weak capacity for managing foreign investment portfolios effectively, which may result in lower or suboptimal returns.

Although the relationship between foreign investment and ROE is statistically insignificant, its negative direction suggests the presence of underlying inefficiencies or unfavorable market conditions that may reduce investment profitability if not properly addressed. Consequently, while foreign investments may provide opportunities for portfolio diversification and risk spreading, their overall contribution to the financial performance of Nigerian pension funds appears to remain limited under the prevailing economic and operational conditions.

### **Risk Management and Financial Performance**

The study finds that risk management has a positive but statistically insignificant effect on the Return on Equity (ROE) of Pension Fund Administrators (PFAs) in Nigeria. This suggests that improved risk management practices are associated with better financial performance and higher equity returns, the relationship is not sufficiently strong to achieve statistical significance within the period and dataset examined.

The positive direction of the relationship indicates that effective risk management may contribute to improved profitability by enhancing investment decision-making, reducing exposure to financial uncertainties, and promoting the stability of pension fund portfolios. However, the insignificant effect implies that the impact of risk management on ROE may be limited or influenced by other external and institutional factors not fully captured in the study.

This outcome may also suggest that the benefits of risk management practices are more long-term in nature and may not immediately translate into measurable increases in profitability. Additionally, variations in the quality of implementation, regulatory compliance, operational capacity, and market conditions among pension fund administrators could weaken the overall effect of risk management on financial performance. Consequently, while risk management remains essential for ensuring the safety and sustainability of pension funds, its direct contribution to profitability, as measured by ROE, appears modest within the context of this study.

### **Moderated Investment in Real Estate Development and Financial Performance**

Interaction between risk management and real estate development has a negative and statistically significant effect on the Return on Equity (ROE) of pension fund administrators in Nigeria highlights an important concern in investment and portfolio management. Although real estate investments are generally regarded as stable and profitable long-term assets, the moderating influence of risk management appears to reduce their positive contribution to financial performance.

This significant negative interaction suggests that excessively stringent or conservative risk management practices may constrain the profitability potential of real estate investments. In an attempt to minimize exposure to risk, pension fund administrators may adopt restrictive investment policies, delay investment decisions, or avoid potentially high-yield real estate opportunities, thereby limiting the returns that could otherwise enhance ROE.

Furthermore, the implementation of intensive risk control measures may increase operational and compliance costs associated with managing real estate portfolios, which could further reduce overall profitability. The result therefore implies that while risk management is essential for safeguarding pension assets, an overly cautious approach may unintentionally weaken the financial benefits derived from real estate development investments.

Consequently, pension fund administrators need to maintain a balanced approach to risk management that protects investments without excessively limiting growth and return opportunities.

### **Moderated Investment in Foreign Shares and Financial Performance**

The moderating effect of risk management on the relationship between foreign investment and Return on Equity (ROE) is negative but statistically insignificant. This indicates that, although a negative association is observed under specific risk management conditions, the effect lacks statistical substantiation. Consequently, it can be concluded that the prevailing risk management frameworks do not exert a significant influence on the impact of foreign investments on the financial performance of pension fund administrators.

## **DISCUSSION OF FINDINGS**

### **Investment in Real Estate Development and Financial Performance**

The finding shows that real estate development has a positive and statistically significant effect on the Return on Equity (ROE) of pension fund administrators in Nigeria underscores the increasing importance of real estate as a strategic asset class within pension fund portfolios. Real estate investments, particularly those involving development projects, provide pension funds with the combined benefits of stable rental income and long-term capital appreciation. These characteristics make real estate investments particularly attractive to pension fund administrators who are required to balance profitability with the need to meet long-term financial obligations to contributors and retirees.

The positive effect on ROE indicates that pension fund administrators with greater investment exposure to real estate development tend to achieve stronger financial performance. This may be attributed to the ability of real estate assets to generate consistent cash flows, preserve value against inflation, and create opportunities for long-term portfolio growth. Consequently, increased allocation to real estate development appears to enhance both the profitability and financial sustainability of pension funds.

This finding is consistent with existing empirical literature on institutional investment behavior. For instance, Akintoye et al. (2020) found that pension fund administrators in Nigeria that invested more heavily in real estate recorded improved portfolio returns due to regular income generation and increases in property values over time. Similarly, Olalekan and Adegbite (2021) observed that real estate investments in prime urban locations generate higher rental yields and long-term capital gains, thereby contributing positively to the financial performance and overall stability of pension funds.

### **Investment in Foreign Shares and Financial Performance**

The finding shows that foreign investment exerts a negative but statistically insignificant effect on the Return on Equity (ROE) of pension fund administrators in Nigeria suggests that foreign investment may have a slight adverse influence on financial performance; however, the effect is not strong enough to be regarded as statistically meaningful within the study period. This implies that foreign investments, as currently structured and managed by pension fund administrators, do not significantly contribute to the profitability of pension funds.

The absence of statistical significance may be linked to several challenges commonly associated with foreign investments in emerging economies such as Nigeria. These include exchange rate volatility, foreign exchange risks, repatriation constraints, and regulatory limitations that can negatively affect investment outcomes. When such risks are not adequately hedged or effectively managed, they may reduce the real value of returns generated from foreign assets, thereby weakening their overall contribution to equity performance.

Furthermore, uncertainties in global financial markets and differences in economic and regulatory environments may make it difficult for pension fund administrators to achieve stable and predictable returns from foreign investments. As a result, although foreign investments may provide diversification opportunities and access to international markets, their direct impact on improving ROE appears limited under the prevailing economic and operational conditions in Nigeria.

## Summary

This study examines how risk management influences the relationship between investment strategies and financial performance among Nigerian Pension Fund Administrators (PFAs) from 2014 to 2023. It highlights the critical role of pension funds in Nigeria's economy and the necessity of sound investment approaches to improve financial outcomes for PFAs. The research focuses on investments in real estate, analysing how risk management moderates their effect on financial performance. The results aim to guide policy and investment practices in the pension sector.

The results from the data analysis reveal that Real estate investment also shows a positive impact, although its interaction with risk management results in mixed effects, with some negative moderating effects observed. Foreign investments, however, show a negative, albeit insignificant, impact on ROE. The relationship between risk management and these investment strategies is complex, with risk management moderating some of these relationships in a negative direction, especially in the case of real estate investments.

In conclusion, the study finds that moderating role of risk management requires refinement, especially in relation to real estate investments, where it was found to negatively influence the financial outcomes. The study acknowledges its limitations and suggests that future research should explore more nuanced aspects of risk management practices and their broader implications for pension fund performance.

## CONCLUSION

The moderating role of risk management yields varied insights: its interaction with federal government securities and ordinary shares is negative but insignificant, suggesting that additional risk controls may be redundant or misaligned for these asset classes. However, risk management has a significantly negative effect when applied to real estate investments, implying that current strategies may be overly restrictive or ill-suited to real estate dynamics, thereby limiting returns. For foreign investments, risk management also shows an insignificant negative effect, highlighting potential shortcomings in adapting these practices to international market complexities.

## REFERENCE

1. Adams, Z., & Fuss, R. (2020). Real estate as an asset class: Returns, risks, and role in diversified portfolios. *Journal of Real Estate Finance and Economics*, 60(3), 345–367. <https://doi.org/10.1007/s11146-019-09732-5>
2. Adebajo, F., & Lawal, T. (2020). Equity instruments and capital market performance in developing economies. *International Journal of Finance and Banking Research*, 6(4), 65–73. <https://doi.org/10.11648/j.ijfbr.20200604.11>
3. Adegbite, E., & Ayadi, R. (2020). Institutional voids, institutional complementarity and economic development: Outward foreign direct investment from Nigeria. *Journal of Business Research*, 108, 466–476. <https://doi.org/10.1016/j.jbusres.2019.09.040>
4. Adegbite, O. E., & Oyelade, A. O. (2021). Risk management practices and investment performance of pension fund administrators in Nigeria. *Journal of African Financial Studies*, 13(2), 145–164.
5. Ahmed, I. K. (2023). Managing pension risks in the public sector: A study of Lagos State Government public service. *Journal of Financial Risk Management*, 12, 275–293.
6. Ajibade, A. T., Jayeoba, O., & Aghahowa, E. O. (2018). Pension fund characteristics and financial performance in Nigeria. *International Journal of Research and Innovation in Social Science*, 2(12), 540–546.
7. Akintoye, I., Ojo, I., & Adebayo, O. (2020). Pension fund investment in real estate development: An analysis of the Nigerian market. *Nigerian Journal of Financial Management*, 39(4), 312–330. <https://doi.org/10.1016/j.njfm.2020.03.002>
8. Bernstein, C. (2022). Return on equity (ROE). TechTarget. Retrieved from TechTarget
9. Berry-Stölzle, T., Thomas, R., & Xu, J. (2018). Enterprise risk management and the cost of capital. *Journal of Risk and Insurance*, 85, 159–201.

10. Bikker, J., Broeder, D., & De Dreu, J. (2012). Risk management in pension funds. *Journal of Banking and Finance*.
11. Brounen, D., & Eichholtz, P. (2019). The economics of real estate markets. *Oxford Review of Economic Policy*, 35(1), 145–168. <https://doi.org/10.1093/oxrep/grz002>
12. Fadun, O. S., & Oye, D. (2020). Impact of operational risk management on financial performance: A case of commercial banks in Nigeria. *International Journal of Finance and Banking Studies*, 9(1), 22–35.
13. Fapohunda, T. M. (2013). Pension system and retirement planning in Nigeria. *Mediterranean Journal of Social Sciences*, 4(2), 25–34.
14. Fernando, J. (2023). Return on equity (ROE): Definition and formula. Investopedia. Retrieved from [Investopedia](#)
15. Fraser, L. M., & Ormiston, A. (2004). *Understanding financial statements* (6th ed.). Pearson Prentice Hall.
16. Geltner, D., Miller, N., Clayton, J., & Eichholtz, P. (2021). *Commercial real estate analysis and investments* (4th ed.). Cengage Learning.
17. Gladys, M., & Omagwa, J. (2017). Asset structure and financial performance: A case of firms quoted under commercial and services sector at the Nairobi Securities Exchange, Kenya. *Research Journal of Finance and Accounting*, 8(4).
18. Idowu, K. A., & Ibrahim, J. (2021). Effect of risk management and internal controls on pension management in Nigeria. *Gusau International Journal of Management and Social Science*, 4(3).
19. International Labour Organization (ILO). (2022). *World social protection report 2021–22: Social protection at the crossroads – In pursuit of a better future*. Geneva: ILO. [ILO](#)
20. Iziegbefian, D., & Onyekachwuku, K. D. (2023). Problems in investigating how corporate governance affects the effective performance of contributory pension scheme in Nigeria. *International Journal of Management and Business Studies*.
21. Kerlinger, F. N. (1964). *Foundations of behavioral research*. Holt, Rinehart and Winston.
22. Ling, D. C., & Archer, W. R. (2022). *Real estate principles: A value approach* (6th ed.). McGraw-Hill Education.
23. Mwaura, K., & Ngugi, R. (2022). Pension asset allocation and risk management in sub-Saharan Africa: Evidence from Ghana and Kenya. *African Journal of Economic Policy*, 29(1), 88–107.
24. National Pension Commission (PenCom). (2024). *First quarter 2024 report*. Retrieved from [PenCom Report](#)
25. Obasa, S. O. (2023). Pension management risk and investment strategies: A study of the contributory pension scheme in Nigeria. *Journal of Management and Social Science*, 11(1).
26. OECD. (2020). *OECD business and finance outlook 2020: Sustainable and resilient finance*. OECD Publishing. <https://doi.org/10.1787/61b85b6b-en>
27. OECD. (2021). *Pension fund governance challenges and potential solutions*. OECD Publishing.
28. OECD. (2023). *Pension funds' assets*. Organisation for Economic Co-operation and Development. Retrieved from [OECD Data](#)
29. Okparaka, V. C. (2018). Effect of contributory pension scheme on Nigerian capital market. *International Journal of Advanced Research in Management and Social Sciences*, 7, 266–284.
30. Olalekan, A. O. (2021). Risk mitigation strategies and pension fund performance in Nigeria. *African Journal of Economic Policy*, 28(1), 88–105.
31. Oluwalana, O. K., & Ibiwoye, A. (2020). Governance and funds investment: The experience in Nigerian pension industry. *Nigerian Journal of Risk and Insurance*, 10(1), 33–58.
32. Oluyinka, I. O., Olusola, E. I., Alani, O. E., Omotayo, O. E., & Niyi, O. O. (2022). Assets holding and financial performance of pension fund administrators in Nigeria. *Journal of Business Administration and Business Economics*, 18(3).
33. Onifade, S. T., Akinlo, T., & Alimi, R. S. (2022). Financial sector development, pension reform, and fund performance: Nigeria's experience. *International Journal of Social Economics*, 49(4), 522–538. <https://doi.org/10.1108/IJSE-04-2021-0259>
34. PenCom. (2024). *Annual report 2023*. National Pension Commission of Nigeria. [PenCom](#)
35. Pradip, K. D. (2017). Impact of return on capital employed on company performance: An introspection in Indian companies. *Saudi Journal of Business and Management Studies*.

36. Qinzhao, X. (2023). The impact of financial risk management strategies on firm market competitiveness. *Academic Journal of Business and Management*. <https://doi.org/10.25236/052007>
37. Samson, A. (2020). Life after retirement and the struggle for pension in Osun State, Nigeria. *Eurasian Journal of Economics and Finance*, 8(3).
38. Sorin, A., & Anca, E. A. (2020). Enterprise risk management: A literature review and agenda for future research. *Journal of Risk and Financial Management*, 13(11), 281.
39. Udom, C. A., & Nwakanma, E. (2018). Pension administration in Nigeria and implications for retiree wellbeing: A political economy approach. *Port Harcourt Journal of Social Sciences*, 8, 387–403.
40. Ukpong, M., & Olowokudejo, F. (2021). Asset liability management and the profitability of the life insurance industry in Nigeria. *Journal of Risk Management and Insurance*, 25(2), 11–35.
41. Willis Towers Watson (WTW). (2023). Global pension assets study 2023. London: WTW. Retrieved from [WTW](#)
42. World Bank. (2021). Pensions in Africa: Fostering inclusive growth. World Bank Publications. [World Bank](#)
43. Xu, G., Liu, F. C., Hsu, H. T., & Lin, J. W. (2019). The impact of pension governance practices on public defined benefit pension performance. *International Journal of Accounting and Information Management*, 27(1), 192–214.
44. Yusuf, A., Ali, A. I., & Lukman, B. (2024). Effect of pension fund attributes on pension fund administrators' financial performance in Nigeria. *International Journal of Intellectual Discourse*, 7(1).
45. Yusuf, L. A., Ibrahim, M. B., & Aliyu, S. K. (2023). Moderating effect of risk management committee on board attribute and firm survival among listed manufacturing companies. *Malete Journal of Accounting and Finance*, 4(1).