



Doi: 10.53790/ajmss.v5i4.109

ISSN: 2811-1613

Submitted: August 2024; Revised: September 2024; Accepted: November 2024

ARTICLE

Assessing the impact of Risk Levels and fund size on Collective Investment Performance of Selected Fund Managers in Nigeria

Saliyu L. Mairafi ^{1†}; Mohammad K. Mahmud^{2†}; Abubakar S. Adamu ^{1†*}

¹ Department of Banking & Finance, Nasarawa State University, Keffi.

² Department of Business Administration, Nasarawa State University, Keffi.

[†] Authors contributed equally

* Corresponding Author: turaki25@yahoo.com

Disclaimer: The contents of this paper are authors' sole responsibility. They do not represent the view of the institution

Abstract

Collective investment schemes are vital tools for wealth creation, providing investors access to professional fund management and diversification. This study examined the impact of risk levels and fund size on the performance of selected fund managers in Nigeria from 2014 to 2023. Secondary data from the top 10 collective investment schemes and the Securities and Exchange Commission (SEC) were analyzed using the Difference Generalized Method of Moments (GMM) to address endogeneity, serial correlation, and cross-sectional dependence. Results showed that higher risk levels significantly improved investment performance, with managers who embraced more risk achieving better returns. Fund size also had a positive effect, as larger funds benefited from economies of scale and broader diversification. Additionally, past performance strongly influenced future returns, highlighting persistence in fund managers' abilities. The study recommends that the SEC and fund management firms develop clearer risk management guidelines to encourage balanced risk-taking. Fund managers should focus on expanding their asset base through marketing and innovation, supported by SEC incentives to improve market liquidity. Enhanced transparency in performance reporting, aligned with global standards, is also advised to facilitate informed investor decisions and improve accountability.

Keywords: Net Asset Value, Risk Levels, Fund size, Generalized Method of Moments and Performance

Cite as: Mairafi, S. L., Mahmud, M. K., Adamu, A. S. (2024). Assessing the impact of risk levels and fund size on collective investment performance of selected fund managers in Nigeria. *Applied Journal of Economics, Management, and Social Sciences*, 5(4), 33-43

1. Introduction

The financial industry has witnessed significant transformation in recent years, with collective investment schemes (CIS), otherwise known as mutual funds (MFs), emerging as a cornerstone of modern portfolio management. Among the numerous factors influencing the success of these investment vehicles, risk levels and fund size stand out as critical determinants of performance. These attributes not only shape investor

perceptions but also play a crucial role in the strategic decisions made by fund managers globally, in sub-Saharan Africa, and particularly within Nigeria's growing financial market (Igbinsosa, 2020).

Globally, the risk-return trade-off forms the foundation upon which investment strategies are designed,

particularly for institutional investors and fund managers. Risk levels in collective investment schemes are a fundamental consideration for both investors and fund managers. Volatility and uncertainty in the returns of an investment are central to understanding how fund managers optimize portfolios for the best outcomes. On the other hand, fund size has been a subject of intense debate in financial circles. The assets under management (AUM) of global collective investment schemes have seen remarkable growth, with the Investment Company Institute (2023) reporting that worldwide regulated open-end fund assets reached \$63.08 trillion by the end of 2022. This substantial increase in fund sizes has sparked discussions about the optimal scale for investment efficiency.

Globally, fund managers in developed markets have demonstrated varying success in balancing these factors, with some evidence suggesting that larger funds tend to underperform smaller ones due to diminishing marginal returns (Chen et al., 2018). However, others argue that larger funds benefit from lower trading costs and better access to information, thereby offsetting the risks inherent in their size (Dangl et al., 2020).

In sub-Saharan Africa, the landscape of fund management has been evolving rapidly, though the region's markets remain less mature and more volatile compared to developed economies. Many fund managers operate in environments characterized by economic instability, regulatory challenges, and liquidity constraints, all of which amplify risk levels. As reported by the African Development Bank (2019), sub-Saharan Africa's capital markets are increasingly attracting foreign and local investment. However, fund managers face significant challenges in managing risks due to macroeconomic volatility. Fund sizes in the region tend to be smaller compared to their global counterparts. Nonetheless, the relative underdevelopment of capital markets has allowed nimble, smaller funds to achieve impressive returns. For instance, in Kenya and South Africa, evidence suggests that smaller funds often outperform their larger peers due to their agility and ability to capitalize on emerging opportunities (Mlachila, Park, & Yabara, 2020). Still, as fund size increases, fund managers face operational difficulties in navigating illiquid markets, which can dampen performance despite their ability to pool larger resources.

In Nigeria, the fund management industry has experienced considerable growth, driven by increasing demand for diversified investment vehicles such as mutual funds, pensions, and other forms of asset management. According to the Securities and Exchange Commission of Nigeria (SEC), the total assets under management in the country stood at NGN 2.093 trillion as of 2023 (SEC, 2023). Nigerian fund managers operate in a highly volatile environment, with factors such as currency risk, inflation, and regulatory changes contributing to the overall risk profile of investments. Data from the SEC shows that Nigerian mutual funds, which

comprise a large share of the fund management industry, have experienced fluctuating performance over the years, driven primarily by volatility in key sectors such as oil and gas, banking, and telecommunications. Larger funds, such as those managing pension assets, have had mixed success in maintaining superior performance due to liquidity challenges and the concentration of investments in a limited number of asset classes, primarily government bonds and equities (Eboh, 2020).

In an ideal financial ecosystem, collective investment schemes serve as powerful vehicles for wealth creation, offering investors opportunities to benefit from professional fund management and diversification. These schemes, particularly those managed by fund managers registered with the Securities and Exchange Commission (SEC) in Nigeria, should consistently deliver robust investment performance, measured primarily through Net Asset Value (NAV) growth. Such performance would not only meet but exceed investor expectations, contributing significantly to the overall development of Nigeria's financial markets and economy at large.

However, the reality on the ground shows that the investment performance of many fund managers in Nigeria has been inconsistent and, in many cases, underwhelming. According to a report by the Nigerian SEC (2023), while the total Net Asset Value of collective investment schemes in Nigeria grew to ₦2.093 trillion in 2023, the average annual return across various fund categories has been volatile, with many funds underperforming market benchmarks. This underperformance is particularly concerning given the critical role these investment vehicles play in channeling savings into productive sectors of the economy.

In response to these challenges, Nigerian policymakers and regulatory bodies have implemented various measures aimed at enhancing the performance of collective investment schemes. These include stricter reporting requirements, enhanced risk management guidelines, and initiatives to improve market liquidity. The SEC has also introduced reforms to increase transparency and protect investor interests, such as the recapitalization of fund management companies and the implementation of a risk-based supervision framework (SEC Nigeria, 2022). Despite these regulatory efforts and policy strategies, the performance of many fund managers remains suboptimal.

Therefore, this study seeks to conduct a comprehensive analysis of how risk levels and fund size have impacted the investment performance of selected fund managers in Nigeria from 2014 to 2023.

The seminar addressed the following research questions:

- i. How does the risk level of collective investment scheme affect their performance?

- ii. To what extent does the size of the collective investment scheme affect their performance?

2. Literature Review

2.1 Conceptual Review

Risk Level

Risk levels in finance generally refer to the uncertainty or potential volatility in the returns of an investment. Risk is inherent in all investment decisions, and its assessment is crucial for both investors and fund managers. Modern Portfolio Theory (MPT), pioneered by [Markowitz \(1952\)](#), asserts that risk can be minimized through diversification by balancing assets with different risk profiles. More recent studies emphasize that risk is of different forms, including both systematic and unsystematic components. Systematic risk, or market risk, is caused by factors that affect the entire market, such as inflation, interest rates, and geopolitical events, which cannot be mitigated through diversification ([Dangl et al., 2020](#)). Unsystematic risk, on the other hand, pertains to asset-specific risks and can be reduced through appropriate diversification. In emerging markets such as Nigeria, risk levels are particularly high due to factors like macroeconomic instability, currency fluctuations, and regulatory uncertainty ([Mlachila, et al., 2020](#)). The level of risk taken by a fund manager has a direct influence on investment performance, as high-risk portfolios may deliver higher returns but are also more volatile.

Fund Size

Fund size, commonly measured by net assets value (NAV), refers to the total market value of the investments that a fund controls. The size of a fund plays a significant role in shaping its investment strategies and performance. Larger funds typically benefit from economies of scale, which allow them to spread operational costs over a broader asset base, potentially reducing management fees and transaction costs relative to smaller funds ([Chen, et al., 2018](#)). However, larger funds may also face difficulties when executing trades, especially in illiquid markets. The larger the fund, the more its transactions can impact market prices, a phenomenon known as price impact, which can erode returns. Additionally, larger funds may struggle to maintain the same level of performance as they grow because their size limits their ability to invest in smaller, high-growth opportunities. As a result, some research indicates that fund performance tends to deteriorate as fund size increases, particularly in emerging and less-liquid markets ([Chen et al., 2018](#)).

Conversely, smaller funds may be more nimble and able to capitalize on market inefficiencies or invest in niche sectors, but they may also lack the resources and diversification capacity that larger funds possess ([Dangl et al., 2020](#)). In Nigeria, where markets are characterized by lower liquidity and higher volatility, fund size becomes a critical factor, with smaller funds often outperforming larger ones due to their ability to be more flexible in navigating volatile market conditions ([Eboh, 2020](#)).

Investment performance

Investment performance is a critical measure of how well a fund manager has managed a portfolio, balancing risk and return to meet the investment objectives. One of the most common measures for evaluating investment performance is the Net Asset Value (NAV), which represents the total value of a fund's assets minus its liabilities. NAV provides a snapshot of the value of a fund at any given time and serves as a key indicator for investors, especially those in mutual funds or other collective investment schemes. According to [Lee and Lee \(2021\)](#), NAV is a reliable and widely accepted measure of performance because it directly reflects the changes in the value of a fund's underlying assets. A rising NAV indicates successful asset growth and efficient fund management, while a falling NAV suggests poor performance or unfavourable market conditions. It is particularly useful in comparing the performance of funds over time or against benchmark indices. However, NAV alone does not account for the level of risk taken to achieve those returns, which is why performance assessments often include risk-adjusted return measures, such as the Sharpe ratio. In Nigeria, NAV is commonly used by fund managers to report performance, especially in mutual funds which are regulated by the Securities and Exchange Commission (SEC) ([Odusola & Akomolafe, 2020](#)). NAV fluctuations in Nigerian funds can be influenced by local economic factors, such as inflation, interest rate volatility, and exchange rate movements, which adds to investment performance.

2.2 Empirical Review

[Aggarwal and Gupta \(2021\)](#) conducted an insightful study titled *The Impact of Risk on Mutual Fund Performance: Evidence from the Indian Market*, covering a time frame of 2010 to 2020. The authors employed panel data regression models to analyse the relationship between risk levels and the performance of mutual funds in India. Their findings revealed that mutual funds with higher risk levels consistently outperformed those with lower risk, suggesting a positive risk-return trade-off, especially in an emerging market like India. The study highlights that Indian fund managers who embraced

greater risk, such as investing in volatile sectors like technology and small-cap stocks, achieved superior returns. However, their analysis focuses heavily on short-term risk-return dynamics and does not fully address the longer-term sustainability of such performance, which could be influenced by market conditions that are not always favorable for high-risk strategies. This limitation leaves room for further exploration of the long-term consequences of risk exposure in mutual funds.

Chen and Yu (2020), in their study titled *Fund Size and Performance in China's Mutual Funds: Evidence from Economies of Scale*, explored the performance of Chinese mutual funds between 2008 and 2018. The researchers used ordinary least squares (OLS) regression and fixed-effects models to assess how fund size influences performance. Their findings indicated that larger funds generally outperform smaller ones due to economies of scale, allowing them to reduce transaction costs and better diversify their portfolios. They argue that larger funds have more resources to access high-quality information and enter exclusive investment opportunities. However, while the study convincingly shows the benefits of size, it does not deeply investigate the challenges that large funds may face, such as diminishing returns or inefficiencies that come with managing larger asset pools, especially in more volatile and less liquid markets like China. As a result, the analysis could benefit from considering the trade-offs that large fund sizes might bring in dynamic market conditions.

Hassan and Syed (2023), in their work titled *Fund Size, Risk, and Performance: Evidence from Pakistani Mutual Funds*, examined data from 2012 to 2021 to explore the combined effect of fund size and risk on performance. Using difference GMM models to address potential endogeneity and cross-sectional dependence, their study found that larger funds with moderate risk levels performed better than both smaller, risk-averse funds and larger, high-risk funds. The findings suggest that in the Pakistani context, a balanced approach to risk management and leveraging fund size allows mutual funds to achieve optimal performance. Nevertheless, the study primarily focuses on funds operating in a developing market, which might not fully capture the dynamics of larger, more developed financial markets. Additionally, the research does not explore the potential downsides of mid-sized funds that may struggle to strike the right balance between risk and size, especially in rapidly changing market environments.

Oladele (2022) conducted a study titled *Determinants of Mutual Fund Performance in Nigeria: An Empirical Analysis*, focusing on the Nigerian mutual fund market from 2015 to 2020. The author applied panel data

regression techniques, including fixed and random effects models, to investigate the key factors that drive mutual fund performance in Nigeria. The study found that fund size, management efficiency, and market liquidity significantly influence fund performance, with larger funds outperforming smaller ones. Oladele argued that larger funds benefit from better diversification and lower transaction costs, which help mitigate risks in Nigeria's volatile market. However, the study's emphasis on fund size overlooks the potential for diminishing returns as funds grow too large, which can lead to operational inefficiencies. Additionally, while the research highlights the importance of market liquidity, it does not fully address how liquidity constraints, especially in an emerging market like Nigeria, might challenge larger funds' ability to sustain performance in periods of financial stress.

Tashjian and Zeldes (2022) explored the relationship between risk-taking behaviour and hedge fund performance during market crises in their paper titled *Risk-Taking Behaviour and Hedge Fund Performance During Market Crises*, covering the period from 2000 to 2020. Using a difference-in-differences approach and regression analysis, they examined how hedge funds adjusted their risk profiles during times of crisis, such as the 2008 financial crisis and the 2020 COVID-19 pandemic. Their findings showed that hedge funds that took on higher risk during market downturns often outperformed those that remained conservative. This suggests that in times of crisis, calculated risk-taking can yield substantial returns. However, the study does not extensively explore the long-term sustainability of such risk strategies, especially in periods of prolonged instability. Moreover, their focus on hedge funds, which typically operate with greater flexibility than mutual funds, may limit the generalizability of their findings to more regulated investment vehicles like mutual funds. The study also underplays the potential risks of extreme volatility and liquidity constraints that could negatively impact funds adopting aggressive strategies during crises.

2.3 Theoretical Framework

The theory that is underpin by this study is Modern Portfolio Theory (MPT), introduced by Harry Markowitz in 1952. MPT suggests that investors can construct an "efficient portfolio" by selecting a mix of assets that maximizes returns for a given level of risk or minimizes risk for a given expected return. The theory is rooted in the idea that diversification reduces the overall risk of a portfolio because assets with varying risk levels and returns do not perfectly correlate with each other. Markowitz's framework demonstrated mathematically that the risk of a diversified portfolio is lower than the risk of

any individual asset in that portfolio, which reshaped the way fund managers approach asset allocation (Markowitz, 1952).

The strength of Modern Portfolio Theory lies in its practicality and widespread application in investment management, particularly in the construction of diversified portfolios. By combining assets with different risk profiles, fund managers can achieve more consistent returns, minimizing exposure to unsystematic risk while only being affected by systematic risk, which cannot be diversified away. This aspect of MPT remains highly influential, as it provides a foundation for asset allocation models, risk management strategies, and the efficient frontier concept, which helps investors understand the trade-off between risk and return (Bodie, et al., 2019).

However, MPT has also faced significant criticisms. One major critique stems from its assumptions that investors are rational, markets are efficient, and asset returns follow a normal distribution. Critics argue that these assumptions are unrealistic, particularly in volatile or emerging markets where information asymmetries and irrational behaviours are more prevalent. Behavioural economists such as Daniel Kahneman and Richard Thaler argue that investor psychology and cognitive biases play significant roles in decision-making, which MPT does not account for (Thaler, 2016). Another criticism is that MPT's reliance on historical data to estimate future returns and correlations can be problematic, especially during periods of market stress when historical correlations break down. The 2008 global financial crisis, for example, showed that assets thought to be uncorrelated can suddenly move in the same direction, undermining the theory's assumptions about diversification (Taleb, 2007).

In the context of the present study, Modern Portfolio Theory offers a valuable framework for understanding how fund managers balance risk and return when managing portfolios of varying sizes. Larger funds often have the resources to diversify across more asset classes, which, according to MPT, should reduce their unsystematic risk and stabilize their performance. However, the criticisms of MPT, particularly its assumptions about market efficiency and rational investor behaviour, are also relevant. In emerging markets like Nigeria, where market inefficiencies, illiquidity, and economic volatility are common, MPT's application may be limited. Smaller funds, which are often less diversified, may face higher volatility in their Net Asset Value (NAV), yet they may also find opportunities for higher returns by exploiting market inefficiencies. This aligns with the reality that emerging market fund managers often face unique

challenges that require flexibility beyond MPT's classical framework (Mlachila, Park, & Yabara, 2020).

3. Methodology

This seminar employed a longitudinal research design, which involves collecting and analysing data over an extended period to observe changes and trends in the variables of interest—namely, risk levels, fund size, and investment performance (measured through Net Asset Value). The longitudinal approach allows the study to track the performance of selected fund managers over time, providing insights into how fluctuations in risk and fund size affect investment outcomes. This method is particularly useful in financial studies, as it enables researchers to identify long-term patterns and causal relationships (Menard, 2019).

The study utilized secondary data sourced from the annual statements of account of the top 10 collective investment scheme managers in the Nigerian Capital Market. These statements provide detailed financial performance indicators, including Net Asset Value (NAV), fund size, and risk levels. Additionally, data was gathered from the Securities and Exchange Commission (SEC) Nigeria, which offers regulatory filings, market reports, and performance summaries of registered fund managers for a period of ten years (2014-2023). By using these official financial documents and regulatory data, the study ensures accuracy and reliability, allowing for a comprehensive assessment of the relationship between risk levels, fund size, and investment performance over time.

The population of this study consisted of all 153 collective investment schemes operating in Nigeria as of December 2023. A purposive sampling technique was employed to select a total sample of 45 collective investment schemes, based on those that invested in Nigerian securities and to have been in existence for a minimum of three years. This approach ensured that the sample was representative of schemes with sufficient operational history and relevance to the Nigerian market. After applying these criteria, the final sample size was adjusted to 45 collective investment schemes for analysis.

The aim of this research is to determine the effect of risk levels and fund size on the investment performance of selected fund managers in Nigeria. To achieve this, the researcher presented the following explicit panel linear regression equation:

$$NAV_{it} = \alpha_0 + \alpha_1 RS_{it} + \alpha_2 FS_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

Where:

NAV = Net asset value (proxy for Performance)

RS = Risk

FS = Fund Size

α_0 = Intercept or autonomous parameter estimate

$\alpha_1 - \alpha_2$ = Coefficients of Risk (RS), and Fund Size (FS)

μ_i = unobserved individual effects (or fixed effect error term or unobserved heterogeneity)

ε_{it} = The white noise error term.

$i = 1, 2, \dots, N$ representing cross sections; $t = 1, 2, \dots, T$ representing time periods.

One of the prominent estimation techniques for dynamic panel data models particularly when dealing with short panels of $N \geq T$ is the Arellano and Bond Generalized Method of Moment (GMM). Essentially, the GMM estimator proposed by [Arellano and Bond \(1991\)](#) differences the dynamic model to get rid of the effects along with any time-invariant regressor. That explains why the Arellano and Bond GMM estimator is also referred to as Difference GMM dynamic panel data estimator.

The Difference GMM (Generalized Method of Moments) model, also known as the Arellano-Bond estimator, is a widely utilized technique in dynamic panel data analysis, especially useful for handling issues of endogeneity and unobserved individual effects. This study's empirical framework required a systematic approach to model specification, starting with an evaluation of data characteristics and the selection of appropriate estimation methods. In this context, we applied the [Pesaran \(2004\)](#) cross-sectional dependence test to identify any cross-sectional dependence within the dataset. Detecting this dependence is critical, as it can distort parameter estimates if ignored, often arising from unobserved common factors like global or regional shocks. Addressing this issue is essential for ensuring reliable and efficient coefficient estimates ([Pesaran, 2004](#); [Phillips & Sul, 2003](#)).

The [Pesaran \(2004\)](#) cross-sectional dependence test is specified as follows:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij} \quad (2)$$

Where:

T is the number of time periods.

N is the number of cross-sectional units.

$\hat{\rho}_{ij}$ is the sample correlation of the residuals between cross-sections i and j .

Building equation (1) into a panel Dynamic Difference GMM model we have:

$$\Delta NAV_{it} = \alpha \Delta NAV_{i,t-1} + \beta_1 \Delta RS_{it} + \beta_2 \Delta FS_{it} + \Delta \varepsilon_{it} \quad (3)$$

The Difference GMM is justified in this study as it effectively addresses potential endogeneity issues, which may arise from the dynamic relationship between fund size, risk levels, and investment performance. Additionally, it controls for unobserved individual effects and corrects for potential biases caused by autocorrelation and cross-sectional dependence, ensuring more reliable and efficient parameter estimates in the panel data analysis. This technique is especially suitable for the panel dataset, which covers multiple investment schemes over time, enabling control for fund-specific effects and dynamic relationships between risk, fund size, and investment performance, while accounting for interdependencies within the Nigerian fund management industry.

4. Results and Discussion

Descriptive Analysis

Descriptive statistics provide a concise summary of the main features of a dataset, offering insights into the distribution, central tendency, and variability of the variables under study. In this seminar on the impact of risk levels and fund size on the investment performance of selected fund managers in Nigeria, these statistics offer valuable preliminary insights into the nature of our data as shown in Table 1.

Table 1: Descriptive Statistics

| | NAV | RS | FS |
|--------------|----------|----------|----------|
| Mean | 1.78E+10 | 1.989127 | 813.3404 |
| Std. Dev. | 4.93E+10 | 1.922906 | 9402.446 |
| Skewness | 4.975856 | 1.284165 | 18.68398 |
| Kurtosis | 32.91934 | 4.603571 | 372.4985 |
| Jarque-Bera | 18517.04 | 170.7495 | 2568863. |
| Probability | 0.000000 | 0.000000 | 0.000000 |
| Observations | 447 | 447 | 447 |

Source: Researcher's Computation Using EViews-13 (2024)

The mean NAV is NGN 17.8 billion, reflecting the average size of the funds under consideration. However, the high standard deviation of NGN 49.3 billion suggests significant variation in the NAV among the funds, indicating that some funds are significantly larger than others. This is further supported by a skewness value of 4.98, indicating a highly positively skewed distribution. This skewness implies that while most funds have relatively lower NAVs, a few funds possess extremely high NAVs, which significantly influence the average. The kurtosis value of 32.92 is considerably higher than 3, indicating a leptokurtic distribution with a sharp peak and long tails, characteristic of distributions with extreme values. The Jarque-Bera test value of 18,517.04, with a probability of 0.0000, confirms that the distribution of NAV is not normal. This finding aligns with the earlier trend analysis, which highlighted significant differences in NAV among funds based on factors like fund size, expenses, and risk levels

The average risk (RS) value is 1.99, suggesting a moderate risk profile for most funds. The standard deviation of 1.92 indicates considerable variation in risk levels among the funds, which corresponds with the trend analysis where funds exhibited diverse risk profiles ranging from conservative to aggressive. A skewness value of 1.28 indicates a moderately right-skewed distribution, suggesting that a small number of funds are taking on significantly higher risks compared to the majority. The kurtosis value of 4.60, being greater than 3, suggests a leptokurtic distribution, implying that the data has a sharper peak and fatter tails than a normal distribution. This indicates that extreme values, such as exceptionally high-risk levels, are more common than in a normal distribution. The Jarque-Bera test statistic of

Table 2: Cross-Section Dependence Test

Null hypothesis: No cross-section dependence (correlation)

| Pesaran CD Test | | |
|-----------------------|-----------|--------|
| Variable | Statistic | Prob. |
| Net Asset Value (NAV) | 27.24272 | 0.0000 |
| Fund Size (FS) | 8.244076 | 0.0000 |
| Risk Taking (RS) | 85.47947 | 0.0000 |

Source: Researcher's Computation Using EViews-13 (2024)

The test results in Table 2 for Net Asset Value (NAV), Fund Size (FS), and Risk Taking (RS) indicate the presence of significant cross-sectional dependence in the dataset. For NAV, the Pesaran CD statistic is 27.24272 with a probability of 0.0000, strongly rejecting the null hypothesis of no cross-sectional dependence. This suggests that NAV values across different collective investment schemes are influenced by common factors, which could include economic or financial market

170.75, with a probability of 0.0000, further supports the non-normal distribution of risk, consistent with earlier discussions that higher risk levels correspond to larger fluctuations in NAV.

The mean fund size (FS) is 813.34, with a standard deviation of 9,402.45, indicating an enormous variability in fund sizes across the dataset. This high standard deviation suggests that while most funds are relatively small, a few funds are exceptionally large, creating a significant spread in the data. The skewness value of 18.68 indicates an extremely right-skewed distribution, meaning that there are a few very large funds skewing the average size upwards. This observation is supported by a very high kurtosis value of 372.50, indicating a highly peaked distribution with long tails, suggesting the presence of numerous outliers in fund size. The Jarque-Bera test statistic of 2,568,863, with a probability of 0.0000, confirms that the distribution is not normal. These findings align with the trend analysis, which showed that larger funds, like the *FBN Money Market Fund*, have a disproportionately high impact on NAV growth compared to smaller funds.

Cross-Section Dependence Test

The Cross-Section Dependence Test is a statistical procedure used to detect whether there is dependence across cross-sectional units in a panel data set. Ignoring such dependencies can lead to biased and inefficient estimates, making it crucial to identify and address cross-sectional dependence before proceeding with further analysis. The Pesaran CD Test, developed by Pesaran (2004), is one of the most widely used tests for detecting such dependence, particularly in panel data settings.

conditions that affect the performance of all funds simultaneously. The presence of such dependence indicates that shocks or changes in one fund's NAV are likely to be mirrored across other funds, likely due to shared exposure to the same market risks, such as fluctuations in the Nigerian capital market or macroeconomic variables like inflation and interest rates.

Similarly, for Fund Size (FS), the Pesaran CD statistic is 8.244076, with a probability of 0.0000, again indicating

significant cross-sectional dependence. This result implies that fund sizes across different investment schemes are not independent of each other, possibly due to common economic factors, regulatory policies, or investor behaviours that affect the growth and contraction of fund sizes simultaneously. For instance, a regulatory change that encourages investment in certain asset classes could lead to growth across multiple funds, while adverse macroeconomic conditions, such as an economic downturn, might lead to shrinkage in fund sizes across the board. The strong cross-sectional dependence in fund size suggests that fund managers operate in a shared environment where external shocks impact all funds in a similar way.

The results for Risk Taking (RS) show the highest level of cross-sectional dependence, with a Pesaran CD statistic of 85.47947 and a probability of 0.0000. This indicates an overwhelming presence of dependence across the risk-taking behaviours of different funds. The high degree of cross-sectional dependence in risk levels could be due to several factors. For example, fund managers may respond similarly to market-wide risks or macroeconomic trends, such as rising inflation or changes in interest rates,

Table 3: Panel Generalized Method of Moments (Differenced GMM)

Dep. Var.: NAV

Instrument specification: @DYN(NAV,-2) RS(-1) FS(-1)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| NAV(-1) | 0.7717 | 0.1683 | 4.5855 | 0.0000 |
| RS | 3.9800 | 1.0781 | 3.6918 | 0.0000 |
| FS | 20.0575 | 3.8466 | 5.2144 | 0.0000 |

| Effects Specification | | | |
|---|---------|--------------------|----------|
| Cross-section fixed (first differences) | | | |
| Root MSE | 3760000 | Mean dep. var | 4430000 |
| S.D. dep. var | 401000 | S.E. of regression | 3770000 |
| Sum squa. resid | 500223 | J-statistic | 38.95168 |
| Instrument rank | 38 | Prob(J-statistic) | 0.296431 |

Source: Researcher's Computation Using EViews-13 (2024)

The lagged NAV variable NAV(-1) shows a coefficient of 0.7717, with a t-statistic of 4.5855 and a probability value of 0.0000. The positive and highly significant coefficient indicates that past NAV significantly influences current NAV, suggesting strong persistence in investment performance over time. This result implies that fund managers who perform well in one period tend to maintain strong performance in subsequent periods, likely due to sustained investment strategies or continued favourable market conditions. The significance of NAV(-1) aligns with the dynamic nature of investment performance, where past success or failure can have a lasting impact on future

which affect their willingness to take on risk. In addition, common regulatory frameworks and market conditions may encourage or constrain similar risk-taking behaviours across funds. This strong cross-sectional dependence highlights that individual fund managers are likely influenced by the same market-wide factors when determining their risk exposure, suggesting that risk management strategies may not be entirely independent across the sector.

Model Estimation and Statistical Test of Hypotheses

The examination of the relationship between risk levels, fund size, and investment performance of selected fund managers in Nigeria revealed the presence of cross-sectional dependence, as confirmed by the Pesaran CD test results. Given this, the study proceeds to estimate the parameters using the Difference Generalized Method of Moments (GMM) regression technique. The Difference GMM is chosen for its robustness in delivering unbiased coefficient estimates that remain consistent, even in the presence of endogeneity, serial correlation, and cross-sectional dependence.

outcomes. The fact that the p-value is 0.0000 reinforces the reliability of this result, indicating that the relationship between past and present NAV is statistically significant at any conventional level of significance.

The coefficient for Risk Level (RS) is 3.98, with a t-statistic of 3.6918 and a probability value of 0.0000. This positive and significant result suggests that higher risk-taking is associated with higher investment performance, as measured by NAV. This finding is consistent with the risk-return trade-off theory, which posits that taking on greater risks typically offers the potential for higher rewards. In

this case, fund managers who adopt more aggressive investment strategies—perhaps by investing in volatile or high-growth sectors—experience greater improvements in their NAV. However, while the coefficient is positive, the magnitude of the relationship suggests that the impact of risk on performance is moderate, indicating that while higher risk is beneficial, it is not the sole driver of NAV growth.

For Fund Size (FS), the coefficient is 20.0575, with a t-statistic of 5.2144 and a probability value of 0.0000. This positive and highly significant coefficient indicates a strong relationship between fund size and investment performance. Larger funds tend to exhibit superior performance, which could be attributed to their ability to leverage economies of scale, better access to market information, and more diversified portfolios. Larger funds may also have more resources to invest in high-performing asset classes, enabling them to deliver more consistent and higher returns compared to smaller funds. The large coefficient suggests that fund size is a major determinant of investment performance, meaning that as funds grow, their ability to enhance NAV increases significantly. This aligns with theoretical expectations that larger funds, due to their size, have more bargaining power, access to capital, and influence in the market, which translates into better performance. Once again, the p-value of 0.0000 highlights the statistical reliability of this finding.

The J-statistic in the Difference Generalized Method of Moments (DGMM) estimation plays a crucial role in evaluating the validity of the instrument variables used in the model. Specifically, it tests whether the instruments are valid and uncorrelated with the error term, thereby confirming that the model is correctly specified. In this case, the J-statistic is 38.95168, with a probability value (Prob(J-statistic)) of 0.296431.

Discussion of Findings

Findings from the study revealed that the risk level of collective investment schemes has a positive and significant effect on the investment performance of selected fund managers in Nigeria. This outcome suggests that as fund managers take on higher risk, they tend to experience better investment performance, as measured by Net Asset Value (NAV). The implication of this result is that fund managers who are more aggressive in their investment strategies, possibly by diversifying into high-risk, high-return assets, see higher returns. This aligns with the risk-return trade-off theory, which suggests that higher risk often comes with the potential for higher rewards. In the Nigerian context, where market volatility and economic uncertainty are prevalent, taking on greater

risk may provide fund managers the opportunity to capitalize on high-yield investment opportunities, especially in sectors like oil and gas or telecommunications, which exhibit volatile but potentially lucrative returns. This finding is consistent with global research; for example, [Aggarwal and Gupta \(2021\)](#), in their study of mutual funds in India, also found that riskier funds tend to outperform more conservative ones, emphasizing that calculated risk-taking can be a crucial driver of investment performance in emerging markets. Similarly, [Tashjian and Zeldes \(2022\)](#), in their analysis of hedge fund performance in the United States, concluded that funds that strategically increase their risk exposure during periods of market instability tend to outperform those that adopt a more cautious approach. The positive effect of risk levels on performance highlights the importance of risk management strategies that balance potential rewards with the inherent risks, particularly in volatile markets like Nigeria.

Additionally, the study found that fund size has a positive and significant effect on the investment performance of collective investment schemes in Nigeria. Larger funds tend to perform better, likely due to their ability to leverage economies of scale, which allows them to spread costs across a larger asset base and gain access to more diversified and profitable investment opportunities. Larger funds also have more market power, enabling them to negotiate better terms and take advantage of more challenging financial instruments that may not be available to smaller funds. This finding is in line with previous studies conducted in both developed and emerging markets. [Chen and Yu \(2020\)](#), in their study of mutual funds in China, found that larger funds tend to outperform smaller ones, largely due to their ability to diversify more effectively and reduce transaction costs. Similarly, [Hassan and Syed \(2023\)](#), in a study on investment funds in Pakistan, observed that larger funds had better performance indices, attributing this to the greater financial resources and broader market access enjoyed by larger institutions. However, the positive impact of fund size on performance may also be moderated by other factors such as fund management efficiency and market liquidity. In the Nigerian context, where liquidity constraints and market inefficiencies are common, larger funds may have an advantage in navigating these challenges, allowing them to sustain better performance over time. This is supported by the findings of [Oladele \(2022\)](#), who noted that larger Nigerian mutual funds had a more stable and higher NAV growth compared to smaller funds, which were more susceptible to market shocks and liquidity issues.

5. Conclusion and Recommendations

In conclusion, the study effectively examined the impact of risk levels and fund size on the investment performance of selected fund managers in Nigeria, as measured by Net Asset Value (NAV). The findings revealed two major implications. First, the positive and significant effect of risk levels suggests that managers who adopt riskier investment strategies tend to experience higher returns, aligning with the risk-return trade-off theory. Second, the significant impact of fund size on investment performance highlights that larger funds benefit from economies of scale, enabling them to outperform smaller funds due to lower transaction costs and broader diversification. These outcomes provide critical insights into how risk management and fund size optimization drive performance in Nigeria's collective investment schemes.

Based on the findings, specific recommendations can be made to enhance the performance of collective investment schemes in Nigeria.

- i. First, the positive effect of risk levels on investment performance suggests that fund

managers should strategically embrace higher risk, particularly in sectors with growth potential, such as technology and telecommunications. However, the Securities and Exchange Commission (SEC) and fund management firms should establish clearer guidelines on risk management to prevent excessive risk-taking that could endanger investors' capital. By instituting regular risk assessments and encouraging diversification into both high- and low-risk assets, fund managers can better balance risk and reward.

- ii. Given the significant impact of fund size on performance, it is essential for fund management companies to focus on growing their asset base through innovative marketing strategies and expanding their product offerings to attract more investors. The Nigerian Securities and Exchange Commission (SEC) should support this by offering incentives for larger funds, such as reduced transaction costs, which will encourage their growth while ensuring they remain efficient.

References

- Aggarwal, V., & Gupta, N. (2021). The impact of risk on mutual fund performance: Evidence from the Indian market. *Journal of Financial Management, Markets and Institutions*, 8(2), 130-145.
- Chen, L., & Yu, H. (2020). Fund size and performance in China's mutual funds: Evidence from economies of scale. *International Journal of Financial Studies*, 10(3), 210-230.
- Hassan, M., & Syed, R. (2023). Fund size, risk, and performance: Evidence from Pakistani mutual funds. *Asia-Pacific Financial Markets*, 12(1), 67-85.
- Oladele, A. (2022). Determinants of mutual fund performance in Nigeria: An empirical analysis. *African Journal of Economics and Management Studies*, 13(4), 456-474.
- Tashjian, E., & Zeldes, M. (2022). Risk-taking behaviour and hedge fund performance during market crises. *Journal of Financial Research*, 45(1), 89-103.
- Bodie, Z., Kane, A., & Marcus, A. J. (2019). *Investments* (11th ed.). McGraw-Hill Education.
- Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77-91.
- Mlachila, M., Park, S. G., & Yabara, M. (2020). Banking in sub-Saharan Africa: The macroeconomic context and risks. *IMF Working Paper WP/20/54*.
- Taleb, N. N. (2007). *The black swan: The impact of the highly improbable*. Random House.
- Thaler, R. H. (2016). *Misbehaving: The making of behavioural economics*. W.W. Norton & Company.
- Chen, J., Hong, H., Huang, M., & Kubik, J. (2018). Size and skill in mutual fund management. *Journal of Financial Economics*, 86(1), 131-155.
- Dangl, T., Wu, Y., & Zechner, J. (2020). Market size, scale economies, and industry dynamics. *Review of Financial Studies*, 33(3), 1215-1252.
- Eboh, M. (2020). Nigeria's mutual funds hit record NGN 1.5 trillion in assets. *Vanguard Newspaper*.
- Lee, S., & Lee, K. (2021). The determinants of mutual fund performance in emerging markets: Evidence from NAV analysis. *Emerging Markets Finance and Trade*, 57(3), 986-1001.

- Mlachila, M., Park, S. G., & Yabara, M. (2020). Banking in sub-Saharan Africa: The macroeconomic context and risks. *IMF Working Paper WP/20/54*.
- Odusola, A., & Akomolafe, O. (2020). The determinants of mutual fund performance in Nigeria. *Journal of African Finance and Economic Development*, 5(2), 120-138.
- Igbinosa, S. O. (2020). Performance of mutual funds: evidence from Nigeria. *International Journal of Economics and Financial Management*, 5(2), 16-30.
- Investment Company Institute. (2023). 2023 Investment Company Fact Book: A Review of Trends and Activities in the Investment Company Industry. ICI.
- Menard, S. (2019). *Longitudinal research*. SAGE Publications.
- Mlachila, M., Park, S. G., & Yabara, M. (2020). Banking in sub-Saharan Africa: The macroeconomic context and risks. *IMF Working Paper WP/20/54*.
- Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels. *Cambridge Working Papers in Economics*.
- Phillips, P. C. B., & Sul, D. (2003). Dynamic panel estimation and homogeneity testing under cross section dependence. *Economics Journal*, 86(2), 217-259.
- Securities and Exchange Commission of Nigeria (SEC). (2023). *Annual report on fund management and regulatory framework in Nigeria*. SEC Nigeria.