

CAN EQUITY MUTUAL FUNDS OUTPERFORM THE BENCHMARK AND SIMPLE PASSIVE PORTFOLIOS?

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Abstract

How to cite this paper: Ajadi, A. (2024). Can equity mutual funds outperform the benchmark and simple passive portfolios? *Business Performance Review*, 2(1), 8–15.
<https://doi.org/10.22495/bprv2i1p1>

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ISSN Online: 3005-6829
ISSN Print: 3005-6810

Received: 05.02.2024
Accepted: 03.06.2024

JEL Classification: G11, G12, G14, G23
DOI: 10.22495/bprv2i1p1

This study evaluates the risk-adjusted performance of equity mutual funds in Nigeria against the market benchmark and two alternative passive portfolios available to investors. Data on monthly net asset values (NAVs) of 30 actively managed, equity-based mutual funds that operated in Nigeria between 2012 and 2021 were collected and analyzed. Risk-adjusted performance measures including the Treynor ratio, Sharpe ratio, Jensen's alpha, information ratio, Modigliani-Modigliani (M^2) measure, Sortino ratio, and the Fama-French 3-factor regression model are used to evaluate the performance of mutual funds. Evidence shows that the Nigerian equity mutual fund portfolio does not deliver excess risk-adjusted returns, and underperforms the three simple passive portfolios against which it was benchmarked. However, mutual fund portfolios provide robust, low-cost diversification benefits and could be considered as part of a well-diversified portfolio of assets. This study explores investment strategies, with practical implications for investors, industry professionals, regulation, and academia. It provides a useful guide to retail investors and their advisers on managing their investment portfolios in the Nigerian stock market. In addition, it validates the veracity of the efficient-market hypothesis (EMH), implying that, on average, seeking alpha is, perhaps, a futile effort.

Keywords: Mutual Funds, Risk-Adjusted Returns, Nigeria Exchange Limited, Efficient-Market Hypothesis, Portfolio Management, Diversification, Fama-French 3-Factor Model

Authors' individual contribution: The Author is responsible for all the contributions to the paper according to CRediT (Contributor Roles Taxonomy) standards.

Declaration of conflicting interests: The Author declares that there is no conflict of interest.

Acknowledgements: This paper is based on some sections of an unpublished PhD thesis by Dr. Adedeji Ajadi under the supervision of Dr. Adeoye Afolabi, submitted to Unicaf University, Zambia.

1. INTRODUCTION

Mutual funds have witnessed exponential growth globally, with net total assets increasing by 127% from 2008 to 2017 (Investment Company Institute [ICI], 2018), and global assets under management are projected to reach \$145.4 trillion by 2025 from \$111.2 trillion in 2020 (PricewaterhouseCoopers [PwC], n.d.). The Nigerian mutual fund industry has

mirrored this growth, with total net asset value (NAV) rising to \$2.174 billion in 2019 from a mere \$38.000 in 1991 (Nigeria Investment Promotion Commission [NIPC], 2019).

Despite this growth, a conundrum persists within the literature on mutual fund performance: while evidence suggests that actively managed mutual funds consistently fail to outperform passive funds and their benchmarks (Gruber, 1996),

the mutual fund industry continues to expand. Consequently, various aspects of mutual fund performance have been a focal point of intense intellectual debate over the years. Early scholars, such as Treynor and Mazuy (1966), Sharpe (1966), and Jensen (1968), laid the groundwork for research in this area. Subsequent researchers have delved into topics such as risk-adjusted performance and the persistence of mutual fund performance.

A large body of work across different jurisdictions has reported that, on average, mutual funds do not generate excess risk-adjusted returns, suggesting that the average alpha of mutual funds is zero (Sharpe, 1966; Jensen, 1968; Ippolito, 1989; Malkiel, 1995; Tan, 2015; Dawe et al., 2014; Panda et al., 2015; Hussain et al., 2016; Biplob, 2017; Koutsokostas et al., 2019; Pilbeam & Preston, 2019, Leković et al., 2020). However, several studies have validated the superior performance of actively managed mutual funds (Hendricks et al., 1993; Malkiel, 1995; Pástor & Stambaugh, 2002; Wermers, 2000; Berk & Green, 2004; Kosowski et al., 2006; Fama & French, 2010; Rao et al., 2018; Lin & Yu, 2009), leading to a lack of consensus among researchers.

In Nigeria, only a few studies have been undertaken on mutual funds. While most presented evidence that mutual funds did not deliver excess risk-adjusted returns (Oduwale, 2015; Ilo et al., 2018), a few others found evidence that mutual funds generated excess risk-adjusted returns to beat the benchmark (Igbinsosa, 2020). This presents a justification for further studies.

This study aims to assess the performance of mutual funds and investigate whether actively managed funds can consistently outperform passive funds. The main research question, therefore, is:

RQ: Do actively managed equity-based mutual funds in Nigeria consistently deliver excess risk-adjusted returns compared to passive funds and alternative portfolio strategies from 2012 to 2021?

To address this question, we utilize the Fama-French 3-factor model alongside several single-factor performance measures, including Treynor ratio, Sharpe ratio, Jensen's alpha, information ratio, Modigliani-Modigliani (M^2) measure, and Sortino ratio. Unlike previous studies in Nigeria, we use a more comprehensive database and compare the performance of equity mutual fund portfolios with several alternative portfolio strategies implementable in the Nigerian stock market. Our methodology involves analyzing the monthly NAVs of 30 actively managed equity-based mutual funds in Nigeria from 2012 to 2021. We evaluate their performance against three benchmarks: the All-Share Index, the NGX 30 Index of the Nigeria Exchange Limited, and the 90/10 retirement portfolio strategy endorsed by Warren Buffet in 2013.

This study is significant for investors, financial analysts, academics, and market regulators. It addresses the debate surrounding active versus passive management and contributes to financial literacy by helping investors understand the trade-offs between actively managed and passive investments.

Additionally, it adds to the body of knowledge on investment performance, portfolio management, and financial market efficiency, encouraging further academic research and discussion.

The remaining part of the paper is organized as follows. Section 2 reviews relevant literature. Section 3 presents the methodology. Section 4 discusses the results and findings. Section 5 concludes the study, makes policy recommendations, and suggests future research directions.

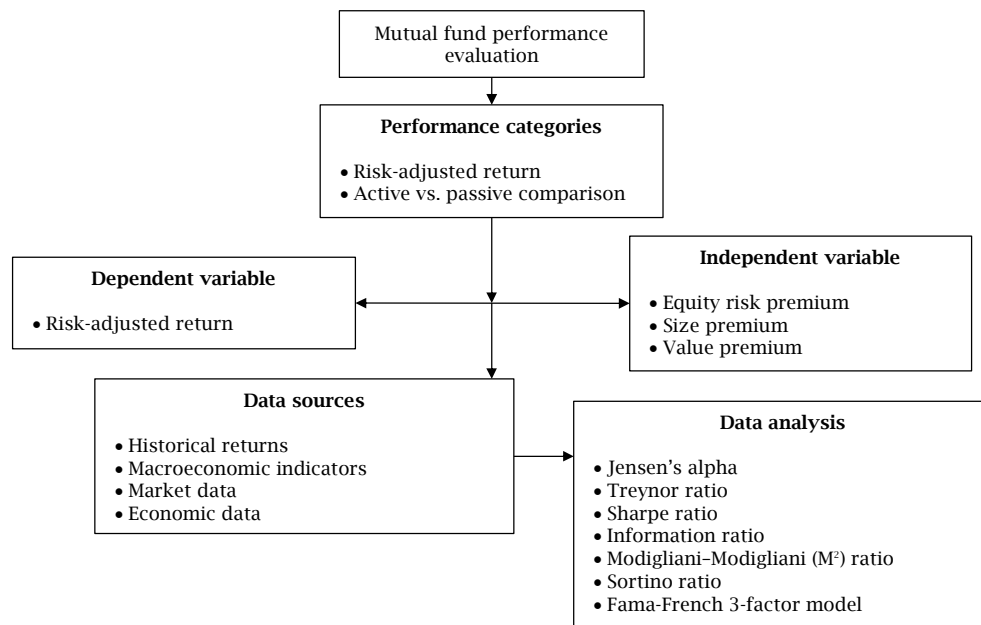
2. LITERATURE REVIEW

The literature review provided offers an overview of studies related to the efficient-market hypothesis (EMH), modern portfolio theory (MPT), and the performance of mutual funds across different regions and periods. These theories serve as foundational frameworks for understanding market efficiency and portfolio management strategies.

According to Malkiel (2003), EMH suggests that market prices reflect all available information, making it impossible for investors to consistently outperform the market. This theory implies that even a random selection of securities could yield comparable results to expertly constructed portfolios, as market prices adjust rapidly to new information. The random walk theory further emphasizes the unpredictability of price movements, attributing them solely to new information flow. MPT complements EMH by providing a framework for constructing portfolios that balance risk and return. It suggests that investors can optimize returns by diversifying across assets with uncorrelated returns, thereby minimizing portfolio risk.

Evaluating the risk-adjusted performance of mutual funds necessitates the use of a comprehensive conceptual structure that integrates multiple factors to offer a perspective on how a fund has performed in relation to the risks it has undertaken. The conceptual framework employed in this study is illustrated in Figure 1.

This framework can be divided into several core components. First, it clearly defines the specific aspect of the performance of interest. In this study, the focus is on evaluating the risk-adjusted performance of mutual funds and comparing the performance of actively managed funds with passive alternatives. It also involves the selection of suitable benchmarks for the assessment process. The NGX All-Share Index is used for this purpose. Further, the data sources for empirical analysis are explicitly delineated, covering historical returns of mutual funds, stock market data, and relevant economic indicators. For the regression analysis employed, the dependent variable is identified as risk-adjusted returns, while the independent variables are the equity risk premium, value premium, and style premium observed in the stock market. Finally, the framework includes the selection of appropriate models for the analysis. In the context of this study, these models include the Treynor ratio, Sharpe ratio, Jensen's alpha, information ratio, M^2 measure, Sortino ratio, and the Fama-French 3-factor model.

Figure 1. Conceptual framework for the assessment of the risk-adjusted performance of mutual funds

The literature review outlines various empirical studies examining the risk-adjusted performance of mutual funds. Oduwole (2015) finds that Nigerian mutual funds generally underperform market indices, a conclusion supported by Ilo et al. (2018). Similarly, studies by Cai et al. (2018) in the United States (US) and Pilbeam and Preston (2019) in Japan demonstrate consistent underperformance of mutual funds relative to benchmarks. Kooli and Stetsyuk (2021) suggest that while hedge fund managers exhibit skill, investors do not benefit from their expertise. Leković et al. (2020) find similar results in Serbia, while Omokehinde (2021) observes the underperformance of mutual funds in Nigeria. Contrary evidence exists, as indicated by studies such as those of Malkiel (1995) and Pástor and Stambaugh (2002), suggesting that mutual funds can generate alpha. However, a consensus emerges among many researchers, including Artikis (2003) and Tripathy (2006), that mutual funds generally fail to outperform the market. Therefore, based on the weight of evidence from previous studies, we propose the first hypothesis of the study in null form as follows:

H1₀: Actively managed equity mutual funds do not deliver excess risk-adjusted returns.

Recent studies by Armour et al. (2023) reveal mixed findings on the performance of active versus passive funds in the US. The debate continues, with Pace et al. (2016) and Fahling et al. (2019) highlighting the cost efficiency of passive funds compared to active ones. Božović (2021) adds to this discourse by showing that European mutual funds often underperform passive strategies. These findings contribute to the growing body of evidence suggesting that actively managed funds struggle to justify their fees.

In conclusion, while some studies present evidence of mutual fund outperformance, the prevailing consensus is that mutual funds tend to underperform market benchmarks. This review underscores the importance of considering cost

efficiency and passive strategies in portfolio management. Further research is necessary to explore the dynamics of active versus passive investing across different markets and periods. Consequently, building on the evidence from previous studies, we propose the second hypothesis of this study as follows:

H2₀: Actively managed equity mutual funds do not outperform simple, passive portfolio strategies.

3. RESEARCH METHODOLOGY

3.1. Mutual fund data

All available historical data on monthly NAVs of actively managed, equity-based mutual funds in Nigeria, useful for the study, were collected from the website of the Securities and Exchange Commission (SEC). This covers a period of ten years, from 2012 to 2021. Similarly, return data were collected over the same period for the NGX All-Share Index, and NGX 30 Index. The returns of the 90/10 portfolio were created from 90% of the NGX All-Share Index and 10% of the Federal Government of Nigeria (FGN) 2-year bond. The NGX All-Share Index was used as the benchmark portfolio while the 5-year government bond return was used as the risk-free rate.

The purposive sampling method (selective or subjective sampling) was used in sample selection, and all actively managed equity mutual funds during the study period were selected. This ensured that funds with similar characteristics were selected for the sample, thereby enhancing comparability which is fundamental to the study. In addition, to address the potential risk of survivorship bias the return data of all funds that operated during the study period were used. Only actively managed equity funds were included, to avoid selecting funds into a sample with vastly different characteristics, as active portfolios are constructed and designed to outperform the market.

3.2. Performance evaluation models

Several performance evaluation models are used in this study to provide a robust assessment of the performance of equity mutual funds. These are the Sharpe ratio, Treynor ratio, information ratio, M² ratio, Sortino ratio, Omega ratio, and Fama-French 3-factor model. This choice is motivated by the fact that several researchers have used a combination of these models to evaluate the performance of mutual funds and other portfolios of assets over time (Babar et al., 2013; Ünal & Tan, 2015; Hussain et al., 2016; Rao et al., 2018; Biplob, 2017; Gao et al., 2020; Koutsokostas et al., 2019; Azimova, 2021; Ozkan & Ozturk, 2021). In addition, in aggregate, they provide a comprehensive and robust analysis of the performance of the portfolios.

The Sharpe ratio measures a portfolio's excess returns per unit of the portfolio's total risk as measured by the standard deviation. It has a benchmark in the slope of the capital market line (CML) which is defined as the market risk premium divided by standard deviation. If the Sharpe ratio is greater than the CML, then the portfolio has exhibited superior performance relative to the benchmark and vice-versa. We compute the Sharpe ratio as follows.

$$SR = \frac{R_p - R_f}{\sigma_p} \quad (1)$$

where,

- SR — reward-to-variability ratio of portfolio p ;
- R_p — expected return of portfolio p ;
- R_f — risk-free rate of return;
- σ_p — portfolio's total risk.

The Treynor ratio is a useful model for evaluating the performance of a portfolio against the benchmark portfolio and other actively managed portfolios. The Treynor measure is best suited to appraise a well-diversified portfolio. If the Treynor ratio of a portfolio is lower than the excess return of the market then the portfolio under consideration underperforms the market. Following Treynor and Mazuy (1966), we define the Treynor ratio thus:

$$TR = \frac{R_p - R_f}{\beta_p} \quad (2)$$

where,

- TR — reward-to-volatility ratio of portfolio p ;
- R_p — expected return of portfolio p ;
- R_f — risk-free rate of return;
- β_p — portfolio's systematic risk.

The information ratio measures the performance of a portfolio relative to a chosen benchmark and in relation to the volatility of those returns. It is, therefore, useful in assessing the skill of the portfolio manager in achieving excess returns above the benchmark.

$$IR = \frac{R_p - R_b}{\text{Tracking error}} \quad (3)$$

where,

- IR — information ratio ratio of portfolio p ;
- R_p — return of portfolio p ;
- R_b — return of the benchmark.

The M² ratio is similar to the Sharpe ratio. However, it adjusts the risk of the portfolio to match that of the benchmark, so they can be compared on a more objective basis.

$$M^2 = SR * \sigma_{\text{benchmark}} + R_f \quad (4)$$

where,

- M^2 — Modigliani-Modigliani ratio;
- SR — Sharpe ratio;
- R_f — risk-free rate of return;
- $\sigma_{\text{benchmark}}$ — benchmark's risk.

The Sortino ratio is a variant of the Sharpe ratio which separates good and bad volatility in evaluating portfolio performance. It analyses the downside risk of a portfolio, by evaluating the volatility of the downside.

$$\text{Sortino ratio} = \frac{R_p - R_f}{\sigma_d} \quad (5)$$

where,

- R_p — expected return of portfolio p ;
- R_f — risk-free rate of return;
- σ_d — standard deviation of negative returns (downside).

The study also used the Jensen's alpha, a further development of the well-known capital asset pricing model by Jensen (1968). It is a single-factor regression model defined by the following specifications.

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + \varepsilon_{pt} \quad (6)$$

where,

- α_p — portfolio's excess risk-adjusted return;
- R_{pt} — portfolio's returns at time t ;
- R_{ft} — risk-free rate at time t ;
- R_{mt} — return on the market portfolio at time t ;
- β_p — portfolio's systematic risk;
- ε_{pt} — an excess return of portfolio p , at time t unexplained by the other terms in the equation.

Using the Jensen's model, the performance of a mutual fund is evaluated by regressing the excess returns of the portfolio on the excess return of the market. If the assumption holds that the market beta or slope co-efficient is constant, then the unconditional Alpha obtained from the analysis is a measure of average mutual fund performance. A positive alpha indicates that the portfolio's actual return is greater than the expected return as predicted by the portfolio's beta, while a negative alpha indicates that the return of the portfolio is lower than expected given the beta value of the portfolio's returns.

Fama-French 3-factor model (Eq. 7) comprises additional variables besides the return on the market portfolio which has been shown to influence the cross-section of average returns in the market. This model is based on three factors, the first being the market risk premium ($R_m - R_f$). The second factor is the size premium. This is effectively modeled as the difference between the return of small-capitalization stocks and big-capitalization stocks (SMB). The third factor is the book-to-market premium which is the difference between the return on value stocks and growth stocks.

$$R_t = R_{ft} + \beta_1(R_{mt} - R_{ft}) + \beta_2SMB + \beta_3HML + \varepsilon \quad (7)$$

4. RESULTS AND DISCUSSION

Table 1 shows basic descriptive statistics of the mutual funds in our sample. Twenty-five of the funds (83%) in our sample recorded a lower standard deviation of returns than the benchmark (NGX All-Share Index). This shows that mutual funds are well-diversified. Table 1 also shows that the mutual funds in our sample exhibited systematic risk levels lower than the market benchmark based on their betas. Furthermore, the rankings of the 30 mutual funds based on their Sharpe and Treynor ratios

are shown. Using Spearman's rank correlation methodology, we found evidence of a strong, statistically significant correlation between the rankings generated by the Sharpe and Treynor ratios, with a correlation coefficient of 0.9635. In addition, our result in Table 1 shows that 24 out of 30 funds (80%) recorded negative Sharpe and Treynor ratios, respectively, implying that the majority of the mutual funds, on a risk-adjusted basis do not yield positive risk-adjusted returns and do not beat the benchmark.

Table 1. Descriptive statistics, Sharpe ratio, and Treynor ratio performance measures for 30 Nigerian equity mutual funds

Fund	Average annual returns (Raw)	Std. dev.	Beta	Sharpe ratio	Sharpe ranking	Treynor ratio	Treynor ranking
Fund 1	-2.389%	16.401%	0.60225	-0.98341	26	-0.26781	24
Fund 2	14.134%	25.237%	0.60340	0.10237	6	0.04282	6
Fund 3	4.403%	21.464%	0.68371	-0.41974	16	-0.13177	15
Fund 4	-3.703%	18.151%	0.58743	-1.07125	27	-0.33101	26
Fund 5	12.652%	18.676%	0.60009	-0.15000	10	-0.04668	9
Fund 6	3.951%	18.406%	0.69495	-0.62481	20	-0.16548	18
Fund 7	-0.483%	8.474%	0.10331	-1.91346	29	-1.56959	29
Fund 8	8.207%	20.189%	0.67339	-0.35883	13	-0.10758	11
Fund 9	27.124%	24.464%	0.80829	0.57870	2	0.17515	4
Fund 10	9.799%	14.976%	0.24673	-0.37201	14	-0.22581	20
Fund 11	18.638%	10.503%	0.36339	-0.05264	8	-0.01521	7
Fund 12	4.173%	23.744%	0.84995	-0.47511	17	-0.13273	16
Fund 13	12.004%	18.026%	0.70925	-0.21285	12	-0.05410	10
Fund 14	6.303%	18.285%	0.57822	-0.50093	19	-0.15841	17
Fund 15	-15.071%	4.688%	0.17935	-6.60582	30	-1.72656	30
Fund 16	21.400%	15.343%	0.14523	0.35943	4	0.37973	2
Fund 17	2.864%	17.034%	0.48099	-0.73815	23	-0.26141	22
Fund 18	8.918%	38.208%	0.58357	-0.17046	11	-0.11161	13
Fund 19	28.086%	5.921%	0.14434	2.05840	1	0.84447	1
Fund 20	15.553%	25.109%	0.14277	-0.01601	7	-0.02816	8
Fund 21	6.239%	10.436%	0.37753	-0.95331	25	-0.26351	23
Fund 22	4.206%	16.697%	0.31145	-0.70270	22	-0.37672	27
Fund 23	14.246%	16.662%	0.15541	-0.10503	9	-0.11261	14
Fund 24	5.942%	19.114%	0.55752	-0.49499	18	-0.16970	19
Fund 25	4.669%	12.454%	0.45658	-0.89325	24	-0.24364	21
Fund 26	7.647%	19.806%	0.71593	-0.39403	15	-0.10901	12
Fund 27	20.055%	23.439%	0.66352	0.33304	5	0.11765	5
Fund 28	26.371%	19.291%	0.36783	0.53782	3	0.28206	3
Fund 29	0.550%	12.553%	0.27096	-1.18712	28	-0.54997	28
Fund 30	4.792%	16.688%	0.33825	-0.65921	21	-0.32524	25

Source: Author's elaboration.

Table 2 highlights the comparative descriptive statistics of the aggregate equity mutual funds portfolio and three passive portfolios, while Table 3 displays the result of the risk-adjusted performance measures applied. From Table 3 we can observe that

an equally weighted portfolio of all the mutual funds generated negative Sharpe and Treynor ratios of -0.4348 and -0.1137, respectively, an indication that mutual funds underperformed the risk-free rate.

Table 2. Comparative statistics of the NGX All-Share Index, NGX 30 Index, the Warren Buffet 90/10 portfolio, and Nigerian equity mutual funds portfolio

Statistical variable	Equity mutual funds portfolio	NGX All-Share Index	NGX 30 Index	Warren Buffet's strategy (90/10)
Risk-free rate	13.31%	13.31%	13.31%	13.31%
Raw returns	7.19%	7.02%	6.20%	6.92%
Beta	0.54	1.00	1.02	0.88
Adjusted beta	0.69	1.00	1.01	0.92
Total risk	14.08%	21.96%	23.10%	19.68%
Non-diversifiable risk	13.13%	19.98%	21.06%	18.00%
Diversifiable risk	0.95%	1.98%	2.04%	1.68%
Tracking error	12.698%	0.00%	5.483%	4.462%
Downside deviation	8.39%	13.07%	14.05%	11.37%

Source: Author's elaboration.

Table 3. Comparative risk-adjusted performance of Nigerian equity mutual funds, the NGX All-Share Index, NGX 30 Index, and Warren Buffet 90/10 portfolio

Risk-adjusted measure	Equity mutual funds portfolio	NGX All-Share Index	NGX 30 Index	Warren Buffet's strategy (90/10)
Sharpe ratio	-0.4348	-0.2864	-0.3079	-0.3246
Rank	4	1	2	3
Treynor ratio	-0.1137	-0.0629	-0.0696	-0.0725
Rank	4	1	2	3
M ²	3.760%	7.020%	6.548%	6.180%
Rank	4	1	2	3
Information ratio	1.308%	0.000%	-15.013%	-2.241%
Rank	1	2	4	3
Sortino	-0.7298	-0.4811	-0.5063	-0.5619
Rank	4	1	2	3
Jensen's alpha	-1.769%	0.000%	-0.730%	-0.599%
Rank	4	1	3	2

Source: Author's elaboration.

Based on the evidence presented above we do not reject the first hypothesis ($H1_0$) of this study which states that actively managed equity mutual funds do not deliver excess risk-adjusted returns. This is consistent with evidence from a large body of work in the literature on the performance of mutual funds (Sharpe, 1966; Jensen, 1968; Ippolito, 1989; Malkiel, 1995; Tan, 2015; Dawe et al., 2014; Panda et al., 2015; Oduwole, 2015; Hussain et al., 2016; Biplob, 2017; Ilo et al., 2018; Koutsokostas et al., 2019; Pilbeam & Preston, 2019, Leković et al., 2020).

In addition, when compared to three passive alternative portfolio strategies, the mutual fund portfolio ranked fourth in all the risk-adjusted measures except for the Information ratio where it ranked first. The good performance recorded on this metric can be attributed to the fact that the mutual fund portfolio generated higher excess returns per unit of risk undertaken when compared directly with the NGX All-Share Index. However, all the portfolios evaluated underperformed the risk-free rate, hence they all recorded negative Sharpe, Treynor and Sortino ratios.

Table 4. The output of the Fama-French 3-factor model for evaluating the risk-adjusted returns of equity mutual funds and three passive portfolios

Independent variable	Equity mutual funds portfolio	NGX All-Share Index	NGX 30 Index	Warren Buffet's strategy (90/10)
Coefficient				
Constant/Intercept	-0.00283	-9.2E-19	-0.00027	-0.0010
$R_m - R_f$	0.54769**	1**	1.02292**	0.88135**
SMB	-0.04996	-1.6E-17	-0.02541	-0.02994
HML	-0.05974	3.65E-17	-0.02013	0.018936

Note: ** indicates statistical significance at the 95% level.

Source: Author's elaboration.

Table 4 shows the performance of the mutual fund portfolio, the NGX All-Share Index, the NGX 30 Index, and a 90/10 equity index/bond portfolio. The result highlights that only the coefficients of the market risk premium ($R_m - R_f$) for all the portfolios are positive and statistically significant. The intercepts, representing alpha for all the portfolios are negative and statistically insignificant, indicating that all the portfolios do not generate excess returns on a risk-adjusted basis. Particularly noteworthy is the fact that the coefficients of small minus big (SMB) and high minus low (HML) of the Fama-French 3-factor model for the four portfolios are statistically insignificant. This implies that the SMB and HML as independent variables are not different from zero in explaining the risk-adjusted returns of the portfolios.

Consequently, based on the findings above, we do not reject the second hypothesis ($H2_0$) of the study which states that actively managed equity mutual funds do not outperform simple, passive portfolio strategies. The result corroborates evidence from a couple of studies that found that actively managed mutual fund portfolios could not beat passive portfolio strategies (Pace et al., 2016; Fahling et al., 2019; Božović, 2021).

Overall, our result provides evidence that the Nigerian equity mutual fund portfolio does not generate excess risk-adjusted returns

and underperforms the three passive portfolios compared with it on a risk-adjusted basis. This is in line with evidence in the literature.

5. CONCLUSION

Evidence from this study affirms conclusively that mutual funds do not, on average, generate excess risk-adjusted returns, using several statistical models. Therefore, statistically, the average alpha of mutual funds is zero. This result corroborates evidence from a large body of work in the literature on the performance of mutual funds.

In addition, we obtained evidence that mutual fund portfolios underperform the NGX All-Share Index, NGX 30 Index, and a 90/20 equity index/short-term bond portfolio, in all performance indicators, except for the Information ratio. However, there is clear evidence that the mutual fund portfolio is the most diversified among the four portfolios evaluated. Diversification reduces a portfolio's overall risk and provides stability during market downturns. It, therefore, seems that the reduction of downside risk is a sufficient motivation for investors to patronize mutual funds as an investment vehicle. This is in line with the prospect theory (Kahneman & Tversky, 1979).

Overall, our result corroborates a version of the EMH developed by Grossman (1976) and

Grossman and Stiglitz (1980) in relation to mutual funds which proposed that informed investors can trade at prices that merely compensate them for the cost incurred to obtain information, ultimately resulting in a situation where active mutual funds managers underperform passive portfolios.

Further, our result shows that the widely reported size and value effects in the literature did not significantly influence the pricing of securities in the Nigerian market during the period of study as highlighted by the results obtained from the Fama-French 3-factor model

Based on our evidence, we make the following policy recommendations. First, as part of their strategic asset allocation, retail investors (and their advisers) should consider including mutual funds in a well-diversified portfolio of assets to take advantage of their diversification benefits. Retail investors and their advisers should incorporate mutual funds into their portfolios to exploit these investment benefits.

Further, the impressive growth of the Nigerian mutual fund industry has shown that it is an effective means of inculcating the saving and investing culture in society. This could be a catalyst to help the country gradually break free from the debilitating cycle of poverty. Moreover, given the huge infrastructural deficit in Nigeria today, it is recommended that infrastructure funds should be established to address the challenge, as the mutual fund industry has demonstrated its potential as a viable platform to catalyze the mobilization of savings and investment.

The limitations of the study include a relatively small sample period covering 2012 to 2021. This is due to data unavailability and the short history of mutual funds in Nigeria. Further, the study's exclusive focus on the Nigerian mutual fund industry limits generalizability to other markets. We recommend that future studies should seek to address some of these inadequacies.

REFERENCES

- Armour, B., Jackson, R., & Boyadzhiev, D. (2023). *Active vs passive investing U.S. barometer report*. Morningstar. <https://www.morningstar.com/lp/active-passive-barometer>
- Artikis, G. P. (2003). Performance evaluation: A case study of the Greek balanced mutual funds. *Managerial Finance*, 29(9), 1–18. <https://doi.org/10.1108/03074350310768436>
- Azimova, T. (2021). *Risk-adjusted performance of mutual funds, evidence from Borsa Istanbul*. <https://www.researchgate.net/publication/349279934>
- Babar, S., Nawaz, S., & Ashraf, S. (2013). A comparative study on performance evaluation of Pakistani mutual funds. *International Journal of Business and Management Review*, 1(1), 151–165. <https://ejournals.org/ijbmr/vol-1-issue-3-september-2013/a-comparative-study-on-performance-evaluation-of-pakistani-mutual-funds/>
- Berk, J. B., & Green, R. C. (2004). Mutual fund flows and performance in rational markets. *Journal of Political Economy*, 112(6), 1269–1295. <https://doi.org/10.1086/424739>
- Biplob, M. N. K. (2017). Performance evaluation of Bangladeshi mutual fund: An analysis of monthly return based on net asset value. *International Journal of Economics & Management Sciences*, 6(3), Article 1000428. <https://pdfs.semanticscholar.org/9d46/cd15f461cdc7d729519e5dcde5292b6f10d4.pdf>
- Božović, M. (2021). Mutual fund performance: Some recent evidence from European equity funds. *Economic Annals*, 66(230), 7–33. <https://doi.org/10.2298/EKA2130007B>
- Cai, B., Cheng, T., & Yan, C. (2018). Time-varying skills (versus luck) in U.S. active mutual funds and hedge funds. *Journal of Empirical Finance*, 49, 81–106. <https://doi.org/10.1016/j.jempfin.2018.09.001>
- Dawe, M., Pokhariyal, G., & Mwaura, M. (2014). The performance persistence of equity and blended mutual funds in Kenya. *International Journal of Economics and Finance*, 6(8). <https://doi.org/10.5539/ijef.v6n8p153>
- Estrada, J. (2016). Buffett's asset allocation advice: Take it ... with a twist. *The Journal of Wealth Management*, 18(4), 59–64. <https://doi.org/10.3905/jwm.2016.18.4.059>
- Fahling, E. J., Steurer, E., & Sauer, S. (2019). Active vs. passive funds — An empirical analysis of the German equity market. *Journal of Financial Risk Management*, 8(2), 73–91. <https://doi.org/10.4236/jfrm.2019.82006>
- Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3–56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5)
- Fama, E. F., & French, K. R. (2010). Luck versus skill in the cross-section of mutual fund returns. *The Journal of Finance*, 65(5), 1915–1947. <https://doi.org/10.1111/j.1540-6261.2010.01598.x>
- Gao, J., O'Sullivan, N., & Sherman, M. (2020). An evaluation of Chinese securities investment fund performance. *The Quarterly Review of Economics and Finance*, 76, 249–259. <https://doi.org/10.1016/j.qref.2019.08.007>
- Grossman, S. (1976). On the efficiency of competitive stock markets where trades have diverse information. *The Journal of Finance*, 31(2), 573–585. <https://doi.org/10.1111/j.1540-6261.1976.tb01907.x>
- Grossman, S. J., & Stiglitz, J. E. (1980). On the impossibility of informationally efficient markets. *American Economic Review*, 70(3), 393–408. <https://www.jstor.org/stable/1805228>
- Gruber, M. J. (1996). Another puzzle: The growth in actively managed mutual funds. *The Journal of Finance*, 51(3), 783–810. <https://doi.org/10.1111/j.1540-6261.1996.tb02707.x>
- Hendricks, D., Patel, J., & Zeckhauser, R. (1993). Hot hands in mutual funds: Short-run persistence of relative performance, 1974–1988. *The Journal of Finance*, 48(1), 93–130. <https://doi.org/10.2307/2328883>
- Hussain, R. Y., Hussain, H., & Hassan, A. (2016). Risk adjusted performance evaluation of mutual funds and selection abilities of fund managers in Pakistan. *Pakistan Business Review*, 18(1), 76–98. <https://core.ac.uk/download/pdf/268591366.pdf>
- Igbino, S. O. (2020). Performance of mutual funds: Evidence from Nigeria. *International Journal of Economics and Financial Management*, 5(2), 16–30. <https://www.iiardjournals.org/abstract.php?j=IJEFM&pn=Performance%20of%20Mutual%20Funds%20Evidence%20from%20Nigeria%20&id=2288>
- Ilo, B. M., Yinusa, O. G., & Elumah, L. O. (2018). Performance of mutual funds in Nigeria. *AESTIMATIO: The IEB International Journal of Finance*, 17, 8–25. <https://www.researchgate.net/publication/317083649>
- Investment Company Institute (ICI). (2018). *2018 Investment company fact book: A review of trends and activities in the investment company industry* (58th ed.). https://www.ici.org/doc-server/pdf%3A2018_factbook.pdf

- Ippolito, R. A. (1989). Efficiency with costly information: A study of mutual fund performance, 1965–1984. *The Quarterly Journal of Economics*, 104(1), 1–23. <https://doi.org/10.2307/2937832>
- Jensen, M. C. (1968). The performance of mutual funds in the period 1945–1964. *The Journal of Finance*, 23(2), 389–416. <https://doi.org/10.1111/j.1540-6261.1968.tb00815.x>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–292. <https://doi.org/10.2307/1914185>
- Kooli, M., & Stetsyuk, I. (2021). Are hedge fund managers skilled? *Global Finance Journal*, 49, Article 100574. <https://doi.org/10.1016/j.gfj.2020.100574>
- Kosowski, R., Timmermann, A., Wermers, R., & White, H. (2006). Can mutual fund “stars” really pick stocks? New evidence from a bootstrap analysis. *The Journal of Finance*, 61(6), 2551–2595. <https://doi.org/10.1111/j.1540-6261.2006.01015.x>
- Koutsokostas, D., Papathanasiou, S., & Balios, D. (2019). Adjusting for risk factors in mutual fund performance and performance persistence: Evidence from the Greek market during the debt crisis. *Journal of Risk Finance*, 20(4), 352–369. <https://doi.org/10.1108/JRF-07-2018-0108>
- Leković, M., Jakšić, M., & Gnjatović, D. (2020). Ocena performansi portfolija investicionih fondova u Republici Srbiji [Portfolio performance evaluation of mutual funds in the Republic of Serbia]. *Serbian Journal of Management*, 15(2), 295–318. <https://doi.org/10.5937/sjm15-21145>
- Lin, E., & Yu, M. (2009). *Evaluating performance persistence in US open-end mutual funds* [Master’s project, Simon Fraser University]. Summit Research Repository. <https://summit.sfu.ca/item/707>
- Malkiel, B. G. (1995). Returns from investing in equity mutual funds 1971 to 1991. *The Journal of Finance*, 50(2), 549–572. <https://doi.org/10.1111/j.1540-6261.1995.tb04795.x>
- Malkiel, B. G. (2003). *A random walk down Wall Street: The time-tested strategy for successful investing*. W. W. Norton & Company.
- Nigeria Investment Promotion Commission (NIPC). (2019, December 20). *Nigeria’s mutual fund asset value hits N1 trillion*. <https://nipc.gov.ng/2019/12/20/nigerias-mutual-fund-asset-value-hits-n1-trillion/>
- Oduwole, O. (2015). The performance of Nigerian mutual funds in the period 2011–2014. *Mathematical Theory and Modelling*, 5(3), 85–95. <https://www.iiste.org/Journals/index.php/MTM/article/view/20424>
- Omokehinde, J. (2021). Mutual funds behavior and risk-adjusted performance in Nigeria. *Investment Management and Financial Innovations*, 18(3), 277–294. [http://doi.org/10.21511/imfi.18\(3\).2021.24](http://doi.org/10.21511/imfi.18(3).2021.24)
- Ozkan, T., & Ozturk, H. (2021). Does performance persistence exist in mutual and pension funds? Evidence from Turkey. *Investment Management and Financial Innovations*, 18(4), 326–339. [http://doi.org/10.21511/imfi.18\(4\).2021.27](http://doi.org/10.21511/imfi.18(4).2021.27)
- Pace, D., Hili, J., & Grima, S. (2016). Active versus passive investing: An empirical study on the US and European mutual funds and ETFs. *Contemporary Issues in Bank Financial Management*, 97, 1–35. <https://doi.org/10.1108/S1569-375920160000097006>
- Panda, B., Mahapatra, R. P., & Moharana, S. (2015). Myth of equity mutual fund performance. *Vision*, 19(3), 200–209. <https://doi.org/10.1177/0972262915593658>
- Pástor, L., & Stambaugh, R. F. (2002). Investing in equity mutual funds. *Journal of Financial Economics*, 63(3), 351–380. [https://doi.org/10.1016/S0304-405X\(02\)00065-X](https://doi.org/10.1016/S0304-405X(02)00065-X)
- Pilbeam, K., & Preston, H. (2019). An empirical investigation of the performance of Japanese mutual funds: Skill or luck? *International Journal of Financial Studies*, 7(1), Article 6. <https://doi.org/10.3390/ijfs7010006>
- PricewaterhouseCoopers (PwC). (n.d.). *Global assets under management to rise to \$145.4 trillion by 2025*. <https://www.pwc.com/ng/en/press-room/global-assets-under-management-set-to-rise.html>
- Rao, Z.-u-R., Ahsan, T., Tauni, M. Z., & Umar, M. (2018). Performance and persistence in performance of actively managed Chinese equity funds. *Journal of Quantitative Economics*, 16, 727–747. <https://doi.org/10.1007/s40953-017-0104-5>
- Sharpe, W. F. (1966). Mutual fund performance. *The Journal of Business*, 39(1, Part 2), 119–138. <https://doi.org/10.1086/294846>
- Tan, Ö. F. (2015). Mutual fund performance: Evidence from South Africa. *Emerging Markets Journal*, 5(2), 49–57. <https://doi.org/10.5195/emaj.2015.83>
- Treynor, J. L., & Mazuy, K. K. (1966). Can mutual funds outguess the market? *Harvard Business Review*, 131–136. <https://users.business.uconn.edu/jgolec/Treynor-Mazuy.pdf>
- Tripathy, N. P. (2006). Market timing abilities and mutual fund performance — An empirical investigation into equity linked saving schemes. *Vilakshan — XIMB Journal of Management*, 3(2), 127–138. <https://www.researchgate.net/publication/281844782>
- Ünal, G., & Tan, Ö. F. (2015). Selectivity and market timing ability of Polish fund managers: Analysis of selected equity funds. *Procedia — Social and Behavioral Sciences*, 213, 411–416. <https://doi.org/10.1016/j.sbspro.2015.11.559>
- Wermers, R. (2000). Mutual fund performance: An empirical decomposition into stock-picking talent, style, transactions costs, and expenses. *The Journal of Finance*, 55(4), 1655–1695. <https://doi.org/10.1111/0022-1082.00263>