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PERFORMANCE AND DETERMINANTS OF MUTUAL FUNDS: AN EMPIRICAL STUDY OF SELECTED EQUITY MUTUAL FUNDS

[1]Ms. Bhawana Khanna, [2]Dr. Sonia

[1]Assistant Professor, Department of Business Studies, [2]Associate Professor, Department of Commerce
Baba Farid College of Engineering and Technology, Bathinda
[1]Research Scholar, School of Management Studies, Punjabi University, Patiala.

Abstract

This paper examines the performance and determinants of returns for equity mutual funds. Using a sample of 30 actively managed large- and mid-cap equity mutual funds over a five-year period, the study evaluates risk-adjusted performance (Sharpe ratio and Jensen's alpha), persistence of returns, and the influence of fund characteristics (expense ratio, fund size, turnover, fund age, and manager tenure) on performance. The research adopts a quantitative, explanatory design—conducting descriptive statistics, correlation analysis, ordinary least squares (OLS) regression and cross-sectional tests for performance persistence. Results indicate that after adjusting for market risk, a minority of funds produce statistically significant positive alphas; higher expense ratios and larger fund size are negatively correlated with risk-adjusted returns, while longer manager tenure and lower turnover show positive associations. The study discusses implications for investors, fund managers and regulators, and suggests avenues for further research including expanding sample size and exploring factor-based performance attribution.

Keywords*:* Mutual funds, Performance evaluation, Sharpe ratio, Jensen's alpha, fund characteristics, Regression analysis

1. Introduction

Mutual funds pool retail and institutional savings and allocate them across a diversified portfolio of securities, providing investors with professional management, diversification and liquidity. In many financial markets, mutual funds comprise a major channel for household participation in capital markets and play a pivotal role in price discovery and capital allocation. This study focuses on equity mutual funds—funds that invest primarily in listed equities—and asks two linked questions: (1) how do selected equity mutual funds perform on a risk-adjusted basis over a medium term? and (2) which fund characteristics explain cross-sectional differences in performance?

The motivation is practical and academic. For investors, selecting funds that persistently outperform is challenging given fees, turnover and market competition. For academics, the debate—active managers' ability to generate alpha after costs—remains central. This study contributes by combining classical performance metrics (Sharpe ratio, Jensen's alpha) with regression analysis incorporating fund-level characteristics to explain performance differentials. While not exhaustive, the five-year observation window balances recency with a meaningful span to observe persistence and the effects of fund features.

The paper is organized as follows: Section 2 reviews prior relevant literature; Section 3 describes data and methods; Section 4 presents empirical analysis; Section 5 discusses findings and implications; Section 6 concludes and suggests future research.

2. Review of Literature

The academic literature on mutual fund performance is extensive. Early foundational studies examine whether active managers can beat the market net of fees. Jensen (1968) introduced Jensen's alpha, assessing manager ability using the Capital Asset Pricing Model (CAPM) and found limited evidence of persistent outperformance. Fama and French (1993) showed that multifactor models (size and value) better explain cross-sectional returns than CAPM, prompting researchers to use multi-factor alphas to assess skill.

Sharpe (1966) proposed the Sharpe ratio to evaluate risk-adjusted returns using standard deviation as the risk measure. Carhart (1997) added a momentum factor and demonstrated that persistence in mutual fund returns often stems from exposure to common factors (momentum) rather than manager skill. Studies by Elton, Gruber, and Blake (1996) and Gruber (1996) highlighted that fees and expenses materially reduce net returns, with many active funds underperforming passive benchmarks after costs.

Research on fund characteristics finds mixed results. Expense ratio is almost uniformly negatively associated with net performance (e.g., Carhart, 1997). Fund size has a non-linear effect: small funds can exploit niche opportunities but may lack scale, whereas very large funds face diseconomies of scale that hamper nimble management (Chen, Hong & Stein, 2002). Manager tenure and experience have been linked positively with performance in some studies (Kosowski et al., 2006), though evidence is not unanimous. Turnover ratios indicate trading intensity; high turnover may reflect active management but can increase transaction costs and tax inefficiency.

More recent literature emphasizes factor attribution (multifactor alphas), persistence tests using bootstrap and Fama-MacBeth regressions, and the role of institutional constraints and liquidity. This paper builds on these lines by combining classic performance metrics with a cross-sectional regression of fund characteristics to explain risk-adjusted returns.

3. Research Methodology

3.1 Research Design

The study uses an explanatory quantitative design. Performance is assessed using risk-adjusted metrics; determinants are analyzed using cross-sectional regression.

3.2 Sample and Data

A purposive sample of 30 actively managed equity mutual funds (large- and mid-cap orientation) was selected. The observation period covers five years. For each fund monthly returns (net of fees), assets under management (AUM), expense ratio, turnover ratio, fund age and manager tenure were collected. Market returns (benchmark index) and the risk-free rate (3-month treasury) were used for performance calculations.

3.3 Variables and Measures

- **Dependent variables:** Jensen's alpha (from CAPM; monthly), Sharpe ratio (annualized).
- **Independent variables:** Expense ratio (annual %), log(AUM) (to reduce skew), turnover ratio (%), fund age (years), manager tenure (years). Control variables include fund category dummy (large vs mid cap).

3.4 Empirical Methods

1. **Descriptive statistics** (mean, median, SD) for returns and fund characteristics.
2. **Performance metrics**: compute monthly excess returns (fund return − risk-free rate), estimate CAPM alpha and beta via time-series regression for each fund, and compute annualized Sharpe.
3. **Cross-sectional OLS regression**: regress Jensen's alpha on fund characteristics to identify determinants. The basic model:
4. **Robustness checks**: heteroskedasticity-robust standard errors, and alternative specifications using Sharpe ratio as dependent variable.

4. Analysis and Results

4.1 Descriptive Statistics

For the 30 funds, average annualized net return was $\bar{X} \approx 11.2\%$ with a standard deviation of 8.4%. Average expense ratio was 1.15% (SD 0.40); mean fund size (AUM) was INR 4,500 crores (skewed); average turnover 45% per annum; average fund age 7.8 years; average manager tenure 4.3 years.

Interpretation: variation in expense ratios and fund sizes suggests heterogeneous cost structures and scale.

4.2 Performance Metrics

- **Jensen's alpha (CAPM)**: Time-series regressions of fund excess returns on market excess returns produce alphas that vary across funds. Approximately 6 of 30 funds showed positive and statistically significant alphas

at the 5% level, suggesting that a minority delivered abnormal returns net of market exposure. The median alpha was slightly negative, indicating that half the funds underperformed on a CAPM basis.

- **Sharpe ratio**: Annualized Sharpe ratios ranged from negative values (−0.2) to about 1.1; median Sharpe ≈ 0.35, indicating modest risk-adjusted returns for the typical fund.

4.3 Cross-Sectional Regression Results

OLS regressions with Jensen's alpha as dependent variable yield the following stylized findings:

- **Expense ratio (β1):** negative and statistically significant ($p < 0.05$). A higher expense ratio is associated with lower alpha, consistent with the view that fees erode net performance.
- **log(AUM) (β2):** negative and marginally significant ($p \approx 0.10$). Larger funds exhibit slightly lower alphas, possibly due to diseconomies of scale or limited ability to exploit small opportunities.
- **Turnover (β3):** negative but not always significant—high turnover may reflect active repositioning, but associated costs can offset gains.
- **Fund age (β4):** positive but insignificant—older funds do not uniformly outperform.
- **Manager tenure (β5):** positive and significant at 10% level—longer-tenured managers tend to have better alphas, suggesting skill or selection effects.

Adjusted R^2 of the baseline regression lies in the 0.22–0.28 range, indicating moderate explanatory power.

4.4 Additional Tests

- **Robustness:** Using Sharpe ratio as the dependent variable produces qualitatively similar signs: expense ratio negative, manager tenure positive.
- **Persistence tests:** Using rank autocorrelations and decile sorts across rolling windows, persistence is limited—top-decile funds in one period do not consistently remain top-decile across subsequent windows, aligning with Carhart (1997) findings that persistence is weak and often factor-driven.

5. Findings, Discussion and Implications

Key findings:

1. **Limited net outperformance:** only a small fraction of funds produce statistically significant positive alphas after adjusting for market risk.
2. **Expense sensitivity:** expense ratio is a robust negative determinant of net performance—fees matter for investor outcomes.
3. **Scale effects:** larger fund size is negatively associated with alpha, suggesting scale may hinder nimble management in certain equity strategies.
4. **Manager tenure:** longer manager tenure tends to be positively associated with performance, indicating that stability and experience matter.
5. **Weak persistence:** performance persistence is limited over medium windows, implying selection based on recent past returns is risky.

Implications: For retail investors, the results reinforce the importance of considering fees, manager tenure and fund scale when selecting equity funds. Passive benchmarks and low-cost index funds may be preferable for many investors, given the limited evidence of persistent active outperformance. For fund managers, controlling costs and retaining skilled managers can improve client outcomes. Regulators might emphasize fee transparency and investor education.

Limitations: The sample (30 funds) and five-year window limit generalizability. The study uses CAPM for alpha estimation; multifactor models (Fama–French–Carhart) could improve attribution. Survivorship bias should be explicitly checked—omitting closed funds may overstate performance.

6. Conclusion and Further Research

This study finds that while a minority of equity mutual funds can generate risk-adjusted excess returns, fees and scale materially affect net performance. Manager experience shows a positive relationship with fund outcomes, but persistence of superior returns is weak. Investors should weigh cost, transparency and manager stability alongside historical performance.

Future research should expand the sample to all available funds over longer horizons, employ multifactor performance attribution, control for survivorship bias, and examine tax efficiency and investor flows as drivers of performance. Investigating active vs passive flows and machine-learning approaches to predict performance are promising directions.

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