

PREDICTIVE ABILITY OF RISK-ADJUSTED PERFORMANCE MEASURES: EVIDENCE FROM INDIAN EQUITY MUTUAL FUNDS

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Abstract

This short paper examines whether widely used risk-adjusted performance measures possess forward-looking value in the context of Indian equity mutual funds. Using secondary daily NAV data for 30 large-cap and flexi-cap schemes over March 2021 to March 2026, the study evaluates Sharpe Ratio, Sortino Ratio, and Information Ratio in a two-stage design that separates estimation-period rankings from subsequent future returns. Funds are sorted into top and bottom portfolios on the basis of past risk-adjusted performance, and their later average returns are compared using portfolio spread analysis supplemented by simple statistical tests. The evidence indicates that higher-ranked funds generally deliver stronger future returns than lower-ranked funds, with average daily return spreads of about 0.031–0.032 percentage points across the three measures. Flexi-cap schemes also exhibit stronger category-level averages than large-cap schemes. The results suggest that risk-adjusted measures carry economically meaningful information for fund screening, although they should be interpreted together with fund style, market conditions, and other qualitative considerations.

Keywords: mutual funds, Sharpe Ratio, Sortino Ratio, Information Ratio, predictive ability, fund selection, India

INTRODUCTION

The evaluation of mutual fund performance remains one of the most practical questions in investment research because investors rarely choose funds on the basis of raw return alone. In the Indian context, the growth of the mutual fund industry, wider retail participation, and post-pandemic volatility have increased the need for performance measures that combine return with risk. Ratios such as the Sharpe Ratio, Sortino Ratio, and Information Ratio are therefore important because they condense complex risk-return trade-offs into indicators that investors can interpret more easily.

The unresolved issue is whether these measures are merely descriptive or whether they also possess predictive content. If funds that rank highly on such measures continue to outperform in later periods, these ratios become more than reporting tools; they become practical screening devices for portfolio construction. This paper addresses that issue through a concise ranking-based framework that resembles real investor behaviour more closely than highly technical asset-pricing models.

Problem Statement

Existing research provides mixed conclusions on persistence in mutual fund performance. Some studies document continuation, while others report reversal or weak associations between past and future outcomes. This lack of consensus makes it difficult for investors to judge whether commonly cited risk-adjusted metrics offer genuine forecasting value, particularly in the Indian equity mutual fund universe after the COVID-19 disruption.

Objectives of the Study

The paper has four linked objectives: to evaluate the risk-adjusted performance of selected Indian equity mutual funds; to compare the future returns of top- and bottom-ranked funds; to assess whether predictive ability varies across Sharpe, Sortino, and Information Ratios; and to examine whether large-cap and flexi-cap categories display different performance patterns.

Research Hypotheses

The central null hypothesis is that risk-adjusted performance measures do not significantly predict later mutual fund returns. The alternative hypothesis states that higher past Sharpe, Sortino, and Information Ratios are associated with stronger future performance. In operational terms, the study expects top-ranked portfolios to outperform bottom-ranked portfolios during the evaluation window.

Literature Review

Prior literature on mutual fund persistence can be grouped into three broad strands. First, Indian studies using risk-adjusted measures frequently show that historical rankings contain at least some information about future outcomes, although the strength and stability of that information differ across time periods and fund categories. Second, international studies from other emerging markets show that persistence is often episodic and sensitive to market cycles. Third, method-oriented work argues that the choice of metric matters because total risk, downside risk, and benchmark-relative consistency capture different aspects of managerial performance.

This study builds on that literature in two ways. It examines recent Indian data based on daily observations, and it places Sharpe, Sortino, and Information Ratios in a common comparative framework. That comparison is useful because investors and advisors frequently use these measures side by side, yet their relative predictive strength is rarely demonstrated in a compact, practice-oriented design.

Research Gap

Despite a substantial literature on mutual fund evaluation, three gaps remain relevant. Recent post-pandemic Indian evidence is limited; daily-data studies using a straightforward portfolio-sorting framework remain relatively scarce; and comparative evidence across large-cap and flexi-cap categories is not

adequately developed. The present paper addresses those gaps by combining recent data, category comparison, and a compact empirical design suited to publication as a short paper.

RESEARCH METHODOLOGY

The study adopts a quantitative, analytical, and longitudinal research design based on secondary data. Daily NAV series for 30 Indian equity mutual funds, comprising 15 large-cap and 15 flexi-cap schemes, were observed from 17 March 2021 to 17 March 2026. The total horizon was divided into an estimation period (17 March 2021 to 17 March 2023) and a future evaluation period (18 March 2023 to 17 March 2026). The benchmark used for relative performance assessment is NIFTY 50, while the annual 10-year Government bond yield of 6.717% was converted into a daily risk-free rate for ratio computation.

Daily logarithmic returns were calculated as $\ln(\text{NAV}_t/\text{NAV}_{\{t-1\}})$. Sharpe Ratio was used to measure excess return per unit of total volatility, Sortino Ratio to focus on downside deviation, and Information Ratio to measure benchmark-relative consistency. Funds were ranked by each ratio in the estimation period, and the top five and bottom five funds were then compared on average future daily return. To supplement the economic interpretation, one-tailed Welch t-tests were used to compare top-versus-bottom portfolio means, while simple correlation and regression summaries were used as robustness checks on the ranked sets reported in the paper.

Table 1. Category-wise average risk-adjusted performance

Category	Average Sharpe Ratio	Average Sortino Ratio	Average Information Ratio
Large Cap Funds	0.22	0.36	0.09
Flexi Cap Funds	0.34	0.54	0.62

Source: Author's calculations using AMFI daily NAV data and NIFTY 50 benchmark returns.

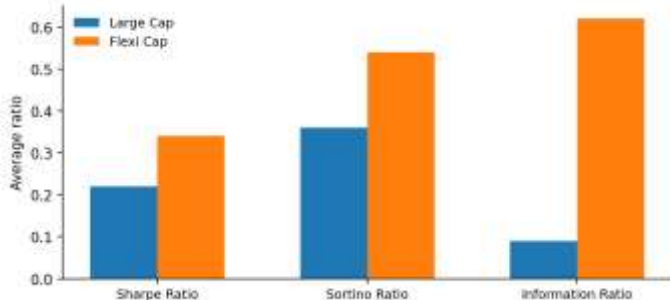


Figure 1. Category-wise comparison of average risk-adjusted performance

RESULTS AND DISCUSSION

The category-level evidence shows that flexi-cap funds outperform large-cap funds across all three average risk-adjusted measures. The difference is especially striking in the Information Ratio, where flexi-cap schemes record an average of 0.62 against 0.09 for large-cap schemes. This pattern suggests that greater allocation flexibility may have helped managers respond better to changing market conditions over the study period. It also indicates that benchmark-relative consistency was stronger in the flexi-cap segment than in the large-cap segment.

When the ranked portfolios are examined, the predictive signal remains positive across all three measures. Funds placed in the top portfolio on the basis of past Sharpe, Sortino, or Information Ratio generate stronger average future returns than the corresponding bottom portfolios. In economic terms, this means that a simple ranking-based strategy would have identified groups of funds with meaningfully different subsequent performance.

Table 2. Predictive signal from top and bottom portfolios

Measure	Top portfolio average future return	Bottom portfolio average future return	Return spread
Sharpe Ratio	0.074%	0.042%	0.032%
Sortino Ratio	0.074%	0.042%	0.032%
Information Ratio	0.074%	0.042%	0.031%

Source: Computed from the top-five and bottom-five funds reported in the revised study tables.

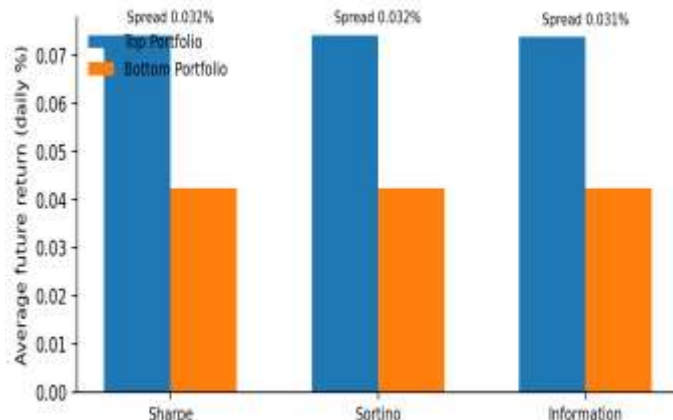


Figure 2. Comparative future return spreads across the three measures

Detailed Ranked Fund Evidence

To preserve the structure of the revised source document while fitting a short-paper format, Tables 3 through 8 present the reported top-five and bottom-five fund groups for each performance measure. These tables show that the same high-performing flexi-cap schemes frequently appear among the top-ranked portfolios, whereas several large-cap schemes and a few weaker flexi-cap schemes recur in the bottom group. This repetition lends credibility to the interpretation that the predictive signal is not being driven by a single idiosyncratic fund.

Table 3. Top 5 funds based on Sharpe Ratio

Fund Name	Category	Sharpe Ratio	Average Future Return
Quant Flexi Cap Fund	Flexi Cap	0.86	0.071%
HDFC Flexi Cap Fund	Flexi Cap	0.75	0.078%
Nippon India Large Cap Fund	Large Cap	0.59	0.072%
Parag Parikh Flexi Cap Fund	Flexi Cap	0.58	0.073%
JM Flexi Cap Fund	Flexi Cap	0.47	0.077%

Source: Author's calculations using the ranked fund groups reported in the revised study.

Table 4. Bottom 5 funds based on Sharpe Ratio

Fund Name	Category	Sharpe Ratio	Average Future Return
DSP Large Cap Fund	Large Cap	0.08	0.021%
Tata Flexi Cap Fund	Flexi Cap	0.05	0.066%
Franklin India Large Cap Fund	Large Cap	0.03	0.009%
Axis Flexi Cap Fund	Flexi Cap	-0.07	0.067%
Axis Large Cap Fund	Large Cap	-0.12	0.049%

Source: Author's calculations using the ranked fund groups reported in the revised study.

Table 5. Top 5 funds based on Sortino Ratio

Fund Name	Category	Sortino Ratio	Average Future Return
Quant Flexi Cap Fund	Flexi Cap	1.30	0.071%
HDFC Flexi Cap Fund	Flexi Cap	1.18	0.078%
Parag Parikh Flexi Cap Fund	Flexi Cap	0.95	0.073%
Nippon India Large Cap Fund	Large Cap	0.93	0.072%
JM Flexi Cap Fund	Flexi Cap	0.75	0.077%

Source: Author's calculations using the ranked fund groups reported in the revised study.

Table 6. Bottom 5 funds based on Sortino Ratio

Fund Name	Category	Sortino Ratio	Average Future Return
DSP Large Cap Fund	Large Cap	0.13	0.021%
Tata Flexi Cap Fund	Flexi Cap	0.08	0.066%
Franklin India Large Cap Fund	Large Cap	0.06	0.009%

Axis Flexi Cap Fund	Flexi Cap	-0.11	0.067%
Axis Large Cap Fund	Large Cap	-0.19	0.049%

Source: Author's calculations using the ranked fund groups reported in the revised study.

Statistical Validation

The short-paper version supplements the portfolio evidence with simple tests based on the return series visible in the ranked tables. The one-tailed Welch t-test results indicate that the top portfolios outperform the bottom portfolios at conventional significance levels for all three measures. While these tests are based on the reported top and bottom groups rather than the full 30-fund panel, they strengthen the interpretation that the observed return spread is not merely random in direction.

Table 9. Portfolio mean comparison and t-test results

Measure	Top mean	Bottom mean	Spread	t-value	p-value
Sharpe Ratio	0.074%	0.042%	0.032%	2.679	0.027
Sortino Ratio	0.074%	0.042%	0.032%	2.679	0.027
Information Ratio	0.074%	0.042%	0.031%	2.636	0.028

Note: p-values are one-tailed Welch t-test probabilities under the directional hypothesis that the top portfolio outperforms the bottom portfolio.

From an investor perspective, the findings support the use of risk-adjusted rankings as an initial filter in mutual fund selection. A manager or retail investor screening the universe for high Sharpe, high Sortino, or high Information Ratio funds would, on average, have selected a group with better subsequent returns than a group drawn from the bottom of the rankings. From an industry perspective, the results also underline the importance of communicating benchmark-relative consistency rather than emphasizing raw return alone.

CONCLUSION

This short paper concludes that risk-adjusted performance measures possess meaningful predictive relevance in the sampled universe of Indian equity mutual funds. Across Sharpe, Sortino, and Information Ratios, the top-ranked funds delivered stronger future returns than the bottom-ranked funds, with economically material spreads of roughly 8% per annum when the daily differences are annualized on a 252-trading-day basis. Flexi-cap funds also displayed superior category-level averages across all three measures. Among the metrics, Information Ratio appears to provide the strongest practical signal because it reflects benchmark-relative discipline, while Sortino Ratio adds value by focusing on downside risk. The evidence does not imply that investors should rely only on ratio rankings, but it does support their use as effective first-stage tools in fund evaluation and shortlist formation.

Limitations and Future Scope

The short-paper version is intentionally compact and therefore relies on the ranked groups and summary values available in the revised document. The broader thesis includes a larger narrative and supporting material that could be extended through full-panel regressions, additional fund categories, and longer multi-cycle horizons. Future work may incorporate panel data methods, rolling windows, and macro-financial controls to determine whether the predictive strength of each ratio remains stable across changing market regimes.

Policy and Managerial Implications

The findings carry implications for investors, fund houses, and regulators. For investors, the results support the disciplined use of risk-adjusted screens before considering qualitative factors such as mandate clarity, portfolio turnover, and manager tenure. For asset management companies, the evidence suggests that performance communication should highlight benchmark-relative consistency and downside-risk control rather than focusing only on raw trailing returns. For regulators and investor-education initiatives, the results underscore the value of teaching investors how to interpret risk-adjusted measures in a simple ranking framework. A better understanding of these measures can improve fund comparison quality and reduce overreliance on short-term headline returns.

Contribution to Literature

This article contributes to the literature by translating a longer empirical report into a compact publication-ready argument without losing the central evidence. It shows that a ranking-based approach can still generate decision-relevant insights for investors even when the analysis is condensed into a short-paper format. That is important because many academic studies use models that are analytically strong but harder for practitioners to apply in routine fund screening.

The study also highlights that predictive ability is not uniform across all forms of risk adjustment. Although the three measures move in the same direction in this sample, Information Ratio appears to provide the most direct signal because it focuses on benchmark-relative consistency. The short-paper framing therefore helps distinguish between broad descriptive performance and practically useful persistence in relative terms, which is central to active fund evaluation.

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