








“An analysis of Indian mutual funds’ capacity for market timing during 2010–2023”

AUTHORS	Mafruz Sultana   Pooja Gupta  Asit K. Barma  Swarnalakshmi Umamaheswaran  Preetham Karthik M. Donti 
ARTICLE INFO	Mafruz Sultana, Pooja Gupta, Asit K. Barma, Swarnalakshmi Umamaheswaran and Preetham Karthik M. Donti (2025). An analysis of Indian mutual funds’ capacity for market timing during 2010–2023. <i>Investment Management and Financial Innovations</i> , 22(2), 218-237. doi: 10.21511/imfi.22(2).2025.18
DOI	http://dx.doi.org/10.21511/imfi.22(2).2025.18
RELEASED ON	Monday, 05 May 2025
RECEIVED ON	Thursday, 05 December 2024
ACCEPTED ON	Tuesday, 15 April 2025
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

34



NUMBER OF FIGURES

0



NUMBER OF TABLES

10

© The author(s) 2025. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 5th of December, 2024

Accepted on: 15th of April, 2025

Published on: 5th of May, 2025

© Mafruza Sultana, Pooja Gupta,
Asit K. Barma, Swarnalakshmi
Umamaheswaran, Preetham Karthik
M. Donti, 2025

Mafruza Sultana, Ph.D., Assistant
Professor, Finance and Economics
Department, Bharathidasan Institute of
Management, India. (Corresponding
author)

Pooja Gupta, Assistant Professor,
Finance Department, Jagdish Sheth
School of Management, India.

Asit K. Barma, Ph.D., Director &
Professor, Marketing Department,
Bharathidasan Institute of
Management, India.

Swarnalakshmi Umamaheswaran,
Assistant Professor, Business Analytics
Department, Symbiosis Institute of
Business Management, Symbiosis
International (Deemed University),
India.

Preetham Karthik M. Donti, Senior
Financial Analyst, Zscaler, India.



This is an Open Access article,
distributed under the terms of the
[Creative Commons Attribution 4.0
International license](https://creativecommons.org/licenses/by/4.0/), which permits
unrestricted re-use, distribution, and
reproduction in any medium, provided
the original work is properly cited.

Conflict of interest statement:

Author(s) reported no conflict of interest

Mafruza Sultana (India), Pooja Gupta (India), Asit K Barma (India),
Swarnalakshmi Umamaheswaran (India), Preetham Karthik M Donti (India)

AN ANALYSIS OF INDIAN MUTUAL FUNDS' CAPACITY FOR MARKET TIMING DURING 2010–2023

Abstract

The Indian economy, often described as cost-sensitive, has seen significant growth in investments in mutual funds and witnessed an increase in the number of investors and total assets under management from 2010 to 2023. This study aims to evaluate the effectiveness of mutual funds in India by identifying those that outperform benchmark indices, assessing the stock selection skills of fund managers, and examining their market timing abilities.

The study further investigates the function of market efficiency by looking into two major areas of fund management – market timing and stock selection. Stock selection measures a portfolio manager's skill in selecting stocks, and market timing measures a portfolio's ability to increase exposure to the portfolio in expectation of better movements during a defined period. The study uses the Sharpe ratio, Information Ratio, and Treynor-Mazuy model to analyze mutual fund data. The results indicate that over 80 percent of mutual funds are market independent, with high stock picking ability. Nonetheless, 8% of the funds that showed a market timing ability had little else in terms of active trading, indicating a long-term outlook of investments as opposed to short-term trade strategies. The study concludes that Indian mutual funds have exhibited market timing capabilities and generated positive alpha, signifying risk-adjusted outperformance relative to the market.

Keywords

mutual funds, stock selection, market timing, Treynor-Mazuy model

JEL Classification

G10, G11, G12, G19

INTRODUCTION

India has been seeing significant growth in the area of mutual funds within the past decade. The total amount of money invested in the Indian mutual funds increased from ₹7.43 trillion back in May 2010 up to ₹44.82 trillion in June 2023. This swift rise in the amount displays the faith that Indian investors have been developing in Indian mutual funds as a secure way of investment. Multiple driving forces make mutual funds the preferred place of investment for retail investors. These include increased financial planning awareness amongst the people, the regulations set to protect small investors, and more importantly, advancements in technology, which have made tracking of investments and analyzing the schemes much easier.

The consistent increase in MF volume and its value worldwide has shown how promising these investment schemes are. MFs take payment in return for professionally managing varied pools of funds, promoting economic growth. This is an inclusive investment strategy in which both retail and big investors hold trust. In India, mutual funds fall into different types depending on several characteristics, enabling investors better to align their choices with financial goals and risk appetite. The first way to classify MFs is based on liquidity or redemption

features. The MFs of India are mainly categorized into two different types of funds: open-ended and closed-ended. The first type, the open-ended fund, allows full liquidity, where investors have the flexibility to redeem their funds whenever they want. Whereas, in the case of closed-ended funds, there is a pre-fixed time duration for the maturity, before which the funds cannot be redeemed. The only option for liquidity of this type of fund is from the exchange of fund units done in the secondary market.

Mutual funds can also be categorized based on the financial instruments, namely equity and debt instruments, where the overall pooled money is invested. The investors who want high returns and are ready to take more risk put their money into equity-based MFs, which invest primarily in equity shares. The debt-based MFs give a steady but comparatively lower return and primarily invest in debt instruments like bonds issued by governments and corporations and other fixed-income securities. There is also a third category, hybrid funds, which combine equity and debt investments and appeal to investors with a moderate risk-taking capability.

The expertise and judgment of the fund managers broadly indicate how well the fund will perform. This entails that these managers are responsible for managing the fund in such a way that it is as profitable as possible for the investors. The performance of a mutual fund is determined, to a large extent, by the tactics that these fund managers apply, which are generally referred to as Stock Selection and Market Timing. Stock selection includes identifying the stocks to buy, which are likely to be undervalued in the market. Fund managers usually like such stocks as they provide a positive long-term return, which is why they maintain a buy position on them and sell out those stocks that are overvalued. For this, they need to do a thorough research of the prevalent economic environment and the core business fundamentals, along with the study of the market deviations.

The market timing ability of the fund manager brings out his real capability to anticipate the market and make subsequent changes to the portfolio with the market movement. This can be done by holding on to the equities when there is an expectation of market appreciation and cutting back when there is a declining trend. Thorough research analysis and prompt action are required to achieve a successful market timing and to book profit from the prevailing conditions of the market.

It is important to assess the performance of mutual fund managers in India to evaluate their stock selection and market timing abilities. Various measures, such as the Sharpe Ratio, Information ratio, and Treynor-Mazuy ratio, measure the performance of mutual funds. These performance measure ratios indicate the effectiveness of mutual fund managers.

1. LITERATURE REVIEW

The study of mutual fund performance has evolved over the years, with scholars exploring various aspects such as efficiency, risk-adjusted returns, and fund manager skill. Research in this area aims to understand whether mutual funds can consistently outperform the market and what factors contribute to their success or failure.

The performance of mutual funds is evaluated based on the Sharpe Ratio, Information Ratio, and Treynor's ratio. A seminal contribution to portfolio evaluation was made by Sharpe (1966), who proposed the "reward-to-variability" ratio. This

ratio is called the Sharpe Ratio and measures the performance of a portfolio in terms of its association with total risk. The numerator in the ratio was the portfolio returns over the real interest rate, and the denominator was the standard deviation of the returns. An alternative ratio that is used in portfolio evaluation is Treynor's Ratio. This ratio measures the excess portfolio returns with respect to systematic risk Treynor (1965). Portfolio beta is represented by the systematic risk.

The performance of the Mutual Fund was also measured through the Information Ratio (Goodwin, 1998). To determine the Information Ratio, the excess returns of the portfolio are divid-

ed by their standard deviation. This metric holds considerable importance as it exclusively computes the standard deviation of the excess returns, offering an alternative viewpoint on the variability of the portfolio returns. It is a good statistic to assess a portfolio's performance because the formula itself takes into account the returns that are earned above and beyond the market returns. A non-positive Information Ratio suggests that the MF or portfolio has not outperformed the market in terms of return.

A study evaluates the mutual fund performance in the aftermath of financial sector reforms Tripathy (2004). The results of the study indicated that fund managers under study had not been successful in reaping returns in excess of the market or in ensuring an efficient diversification of the portfolio. Deb et al. (2007) have taken 96 Indian mutual fund schemes as a sample and showed that Indian fund managers, both in unconditional and conditional approaches, missed the capacity of Market Timing ability and Stock Selection ability. These traditional or unconditional models (Deb et al., 2007) assume that any information correlated with future market returns represents superior information. However, these models are subject to biases. To mitigate these biases, conditional models have been introduced (Suvarna, 2022). When evaluating market timing ability, these models control for publicly available information, such as interest rates and market dividend yields. A particular study based on mutual funds from India investigated the performance of 29 open-ended, growth-oriented equity schemes (Bahl & Rani, 2012). The historical performance of the selected schemes was evaluated based on Sharpe, Treynor, and Jensen's measures. The study revealed that half of the mutual fund schemes had outperformed the benchmark index.

The choice between actively managed mutual funds and passively managed index funds showed that actively managed funds did better on stock selection ability but not market timing (Somasundaram, 2007). Deb (2019) examined the persistence in performance of actively managed equity mutual funds after controlling for market risk, size, value, momentum, and expenses, and whether such performance persistence depended on investor holding period, fund size, age, style, or

expense ratio. The paper found overall evidence of persistence over shorter time horizons. Zouaoui (2019) analyzed the investment approaches and long-term financial performance of Saudi funds managed by HSBC Saudi Arabia Limited, which are Islamic and conventional. All international, local, and Arab portfolios outperformed their respective benchmarks, which had a lower mean, according to the findings. Additionally, it was discovered that the manager's selection abilities in the Islamic Saudi HSBC portfolios are far more robust than those in traditional Saudi HSBC portfolios. A pertinent study on mutual funds in India has shown significant positive alpha within Indian Mutual Funds but low in Stock Selection Market Timing skills (Kaur, 2013). Musah et al. (2014) claimed that Mutual Fund managers are incapable of making wise decisions in Stock Selections. Additionally, the report showed that Ghanaian fund managers are not properly involved in Stock Selection, Macro Forecasts, or Market Timing. Several other models also measure portfolio performance. An attempt was made to analyze the performance of the equity mutual funds industry against the risk-free rate and the benchmark return for five years. Results were tested through risk-return analysis, Coefficient of Variation, Treynor's ratio, Sharpe's ratio, Jensen's measure, Fama's measure, and Regression analysis. The risk-return analysis revealed that 30% of the mutual funds underperformed the benchmark returns (Ashraf & Sharma, 2014).

There is a wealth of scholarly research covering the Market Timing (MT) ability of fund managers that spans several decades. The first model was contributed by Treynor and Mazuy (1966). This study devised a model by adding a quadratic term to the CAPM to test the MT skills of fund managers. They studied a sample of 57 fund portfolios, out of which only one fund depicted timing ability. Henriksson and Merton (1981) developed a qualitative model that introduced the concept of varying beta. This study was conducted on 116 funds, of which only three displayed positive and significant Market Timing capabilities.

Over the years, several studies have looked at the MT abilities of fund managers but have discovered that very few managers have been able to successfully time the markets (Kon & Jen, 1979). Another

study that looked at US-based MFs found that out of the 93 funds, only five MFs achieved positive Market Timing ability (Chen et al., 1992). A contrasting study (Bello & Janjigian, 1997), which used a modified Treynor Mazuy model on equity MFs in the US, found remarkable MT skills among the included fund managers. Over the years, many studies have modified the groundbreaking works of Treynor and Mazuy (1966) and Henriksson and Merton (1981), and have been able to develop modified models by conditioning or accounting for more variables in the traditional models.

While evaluating the performance of the US bond mutual fund industry using a comprehensive sample of bond funds over twenty years, it was found that some funds exhibited market timing ability (Clare et al., 2019). The analysis of market timing is not always straightforward. Some studies suggest that fund managers might misinterpret other factors as market timing (Alam & Ansari, 2020). They found strong evidence of market liquidity timing but no other style timing skills, highlighting the potential for misidentification of size timing as market timing if integrated liquidity measures are not employed. This explains the significant difference between advanced techniques, which will consider different sources that enable superior outcomes. At this exact moment, considering the assessment of market timing and the impact of macroeconomic factors on mutual fund performance cannot be neglected (Azis et al., 2022). It reveals that both exchange rates and inflation have affected the performance of mutual funds in Indonesia. It subsequently emphasizes reviewing such factors when evaluating market timing competencies. It further explains the complexity involved in differentiating market timing skills from other factors that affect the performance of mutual funds. The phenomenon of “mutual fund artificial market timing” (Busse et al., 2023) also requires attention. These authors prove that mutual fund betas have a strong relationship with prior market returns because fund feedback trading brings about artificial market timing. Such blurring can make it almost impossible to detect true market timing skills.

Examining the performance of mutual funds in different environments, that is, bull versus bear markets, may also improve the understanding of market timing skills (Mishra & Ahuja, 2016). They showed that many funds seem to have selectivity skills in up

markets, but that they do not prove to have strong market timing skills at other periods, thereby confirming that it is challenging to get consistent, effective market timing (Maheen (2021) even while concluding research on the mutual fund’s ability to time the market during the economic downturn precipitated by the COVID-19 pandemic, the similar finding suggests that market timing is indeed limited in times of stress.

The consequences of the COVID-19 pandemic for mutual fund performance also give a crucial viewpoint on market timing (Manurung & Sihombing, 2023; Ariswati et al., 2021). Manurung and Sihombing (2023) have confirmed that market timing significantly impacted equity fund performance in Indonesia during the pandemic. Ariswati et al. (2021) also report that Indonesian investment managers had poor market timing skills but excelled at stock picking during the pandemic. These studies are not explicitly related to India but demonstrate the need to consider business macroeconomic shocks when considering market timing.

The literature further examines various methods of making investments, especially the difference between the top-down and bottom-up approaches (Malhotra & Sinha, 2021). They investigated the top-down approach, focusing on industry selection based on macroeconomic trends. Their findings suggest that a significant portion of returns can be attributed to industry selection ability, indirectly indicating a contribution from market timing. This highlights the importance of considering the strategic allocation decisions made by fund managers as a potential indicator of market timing capabilities, beyond just individual stock selection.

Studies examining market timing in Indonesia highlight the influence of macroeconomic conditions (Azis et al., 2022; Ariswati et al., 2021). Zouaoui (2019) compares Islamic and conventional funds in Saudi Arabia, while Nabi et al. (2023) examine time-varying skills of fund managers in several Islamic countries. Malhotra (2023) analyzes technology mutual funds in the US, and Hasnaoui (2025) explores the relationship between ESG ratings and market timing in Eurozone tech funds. Malhotra (2024) examines real estate mutual funds in the US, showing that managers effectively timed the market during booming periods. Azam (2022) examines market

timing in Pakistan. These studies, while not directly about India, offer comparative perspectives on market timing abilities and methodological approaches across different contexts.

There is limited research available in the context of India that has examined fund managers' capacity to predict the MF management industry. Using the Treynor-Mazuy model, another study in 2014 also found that while Indian Mutual Funds (MFs) did not do well at timing the markets, they did perform well in terms of Stock Selection (Ramesh & Dhume, 2014). The significance of this study is limited because only 68 MF schemes were examined. To determine the fund managers' MT skills using the Treynor Mazuy model and the SS skills using Jensen's alpha and the Carhart four-factor model, Mehta (2014) examined 23 MFs in the Indian market, but significant Market Timing activity was not discovered in the Mutual Funds under this investigation.

There has not been a significant longitudinal study based on a wide variety of MF schemes in India regarding the Stock Selection abilities of the fund manager and the Market Timing abilities of the fund manager. This study wants to find out whether mutual funds have outperformed the markets and the reasons behind the outperformance.

This research aims to evaluate the effectiveness of mutual funds in India by identifying those that outperform benchmark indices, assessing the stock selection skills of fund managers, and examining their market timing abilities.

2. DATA AND METHODOLOGY

This study studied 135 Indian open-ended MF schemes over 14 years, from June 2010 to June 2023. The list is given in Appendix 1. The study calculated the Sharpe Ratio and Information Ratio to measure the fund's performance over the years. The Treynor-Mazuy model has been used to study the MT skills of fund managers. To examine the outperformance of Mutual Funds in the market, the following measures have been considered and calculated: the Sharpe Ratio and Information Ratio.

The three ratios used in the performance analysis are described below. The formulas used in the analysis

area are also explained. The ratios have been calculated, and the results are derived from them.

2.1. Sharpe Ratio

The Sharpe ratio is a metric utilized to evaluate the returns of a mutual fund in light of the associated risks. A Sharpe ratio of an index fund exceeding that of the benchmark market index indicates that the fund has generated superior returns in comparison to the market as a whole.

The formula for the Sharpe ratio is

$$\frac{\sum_1^n Ri}{n} - R_f, \quad (1)$$

$$\sigma_p$$

where R_i – daily of MF / portfolio, n – Number of observations, R_f – Risk-free rate, σ_p – Standard deviation (Std Dev) of the MF returns/portfolio returns.

2.2. Information Ratio (IR)

Information Ratio goes beyond just looking at returns. It considers how well a portfolio performs compared to a benchmark while also accounting for the risk taken. There are multiple ways to calculate IR. One of the most popular ways of calculating the Information Ratio is by considering historical data and measuring the performance to make judgments about active portfolio management.

In this study, the focus is on how the MFs have performed over time in the past.

$$Information\ Ratio = \frac{\sum_1^n (R_p - R_m)}{\sigma_{p-m}}, \quad (2)$$

where R_p – Returns from the portfolio or MF, R_m – Returns on the benchmark index, σ_{p-m} – Std Dev of the excess return, n = Number of data points.

In the present study, an MF is considered to have outperformed the markets if the Information Ratio is positive for the fund. MFs can also be divided into different groups by percentile. The higher the percentile, the better the ratings com-

pared to the benchmark, and the level of risk is shown in Table 1.

Table 1. Information ratio

Percentile	Information Ratio	Information Ratio Range
90	> (0.5) & < (1.0)	0.5
75	> (0.0) & < (0.5)	0.0
50	> (-5.0) & < (0.0)	-5.0
25	> (-1.0) & < (-0.5)	-1.0
10	< (-1.0)	-1.0

2.3. Treynor-Mazuy model

The Treynor-Mazuy model is a tool for measuring portfolio performance. It is a version of the Capital Asset Pricing Model (CAPM) that seeks to improve upon some of the shortcomings of the original CAPM. It aims to measure a portfolio's strength by analyzing the returns and the risk that comes with it. The basic CAPM model asserts that the return on a portfolio and the portfolio risk in the market are directly proportional.

The Treynor-Mazuy model accepts this understanding that it may not always be a straight line and attempts to account for this. It resolves this discrepancy by performing a quadratic analysis of the relationship between the market risk and the portfolio's excess return, where excess return is defined as the transaction return above the benchmark. Overall, the Treynor-Mazuy model provides a more nuanced view of portfolio performance by incorporating the potential for non-linearity in the risk-return relationship. To determine the SS skills and MT skills of their fund managers, the Treynor-Mazuy (TM) Model was applied to each of the MFs.

The Treynor-Mazuy model is explained below:

$$\left(\begin{array}{l} \text{Excess Returns} \\ \text{of the Portfolio} \\ \text{over Risk Free Return} \end{array} \right) = \alpha + \beta_p \times \left(\begin{array}{l} \text{Excess returns} \\ \text{of the Market over} \\ \text{the Risk Free Return} \end{array} \right) + \gamma \left(\begin{array}{l} \text{Excess returns} \\ \text{of the Market over} \\ \text{the Risk Free Return} \end{array} \right)^2$$

Excess Returns of the Portfolio over Risk Free Return = $\alpha + \beta_p$ * Excess returns of the Market over the Risk Free Return + γ * (Excess returns of the Market over the Risk Free Return)²

In this regression model, $(R_p - R_f)$ is the explained variable (regressand), and explanatory variables (regressor) are $(R_m - R_f)$ and $(R_m - R_f)^2$.

According to this model, it was proposed that Alpha (α) measures the active return of the portfolio compared to the benchmark (positive alpha indicates outperformance). It represents the Stock Selection skills of the MF manager. If α is positive, it indicates that fund managers have displayed positive SS skills, and if it is negative, then it is considered that the fund managers have not displayed SS skills. Beta (β) measures the systematic portfolio risk relative to the market. The gamma (γ) coefficient captures the curvature of the relationship between market risk and return. A positive gamma suggests the portfolio performs better than expected in up markets and worse than expected in down markets, potentially indicating some Market Timing ability. This indicates the fund manager's Market Timing ability. A positive ' γ ' parameter shows that the fund manager has positively timed the market.

NAV (Net Asset Value) of MFs was collected from the Association of Mutual Funds India website and the websites of respective Asset Management Companies (AMC). The dataset for the current study includes 135 equity MFs, which are open-ended funds, during the period June 2010 to June 2023, with a minimum requirement of 100 crores as AUM (Assets Under Management). The daily NAV data were collected from 135 MFs.

BSE SENSEX has been chosen as the benchmark index, and SENSEX data were collected from the BSE website. The summary of the dataset is explained in Table 2.

Table 2 summarizes the dataset, showing the annual MF returns over the last 13 years. The mean returns of the 135 MF returns are 12.35%, the standard deviation is 2.76%, and the dataset is positively skewed and has a negative kurtosis. Positive skewness in Mutual Fund returns indicates a distribution where most returns are clustered on the

lower end (positive side), with a longer tail extending towards the higher return side. This would lead to more frequent small losses with the possibility of experiencing significant positive returns, which can outweigh the smaller losses that exist.

Table 2. Annual MF returns during 2010–2023

Summary Statistics	
Mean of returns	12.35%
Standard Error of MF returns	0.02%
Median of MF returns	9.85%
Mode of MF returns	9.5%
Standard Deviation of MF returns	2.76%
Kurtosis of MF returns	-11%
Skewness of MF returns	5.7%
Range of MF returns	14%
Minimum returns	3.5%
Maximum returns	17.5%
Number of MFs	135

In the context of MF returns, negative kurtosis, also known as platykurtic distribution, means less volatility and fewer extreme returns (both positive and negative). Negative kurtosis flattens the peak of the bell curve and makes the tails on either end thinner. Negative kurtosis often suggests lower volatility. This means the returns fluctuate less dramatically than what a normal distribution would imply. There are fewer sharp spikes or dips in returns.

The same dataset is used to calculate all the metrics shown in the results section. There are approximately 550 MF schemes in India. For the present study, only the equity MFs were considered as the basis for comparison. Therefore, considering a minimum threshold of 100 crores under AUM and funds being open-ended, the data set was narrowed down to 178 equity open-ended MFs. For this study, only those MFs that existed from 01-06-2010 to 31-06-2023 were considered. This led to the choice of 135 MFs out of 178 MFs.

The analysis in the current study is based on daily and monthly data from 01-06-2010 to 31-06-2023. These data were taken from the AMFI website and PROWESS IQ database. Daily data were considered for the first portion of the analysis to determine if MFs outperform the market. For the risk-free rate (R_f), the yield of the government bond “7.80 % GOI BOND 2020” was taken. For the TM model, monthly data are being considered. For the risk-free rate (R_f) in the TM model, the monthly

yield on the 91-day treasury bills was considered. The yield on the treasury bill was 6% per annum.

3. RESULTS

BSE SENSEX has been selected as the benchmark market index to evaluate whether an MF has outperformed the market. Daily data were considered for the first portion of the analysis, which aims to determine if MFs outperform the market. For June 2010 to June 2023, daily closing prices of the SENSEX were considered, and the following were calculated:

- Expected returns: 0.045%
- Standard Deviation: 1.004%
- Sharpe Ratio: 0.0204

To check whether an MF outperformed the market, the Sharpe Ratio is utilized first.

3.1. Sharpe ratio

The Sharpe Ratio of the BSE SENSEX is 0.0204. An MF is considered to have outperformed the market if its Sharpe Ratio is greater than 0.0204.

Table 3 shows the Sharpe Ratios of all the MFs present in the dataset.

Table 3. Sharpe ratio descriptives for MFs

Sharpe Ratio	
Mean of Sharpe Ratios of all the MFs	0.02058
Standard Error	0.00080
Median Sharpe Ratios of all the MFs	0.01758
Mode of Sharpe Ratios of all the MFs	0.01721
Standard Deviation of Sharpe Ratios of all the MFs	0.01018
Sample Variance of Sharpe Ratios of all the MFs	0.00010
Kurtosis of the Sharpe Ratios of all the MFs	0.02155
Skewness of Sharpe Ratios of all the MFs	0.20824
Range of Sharpe Ratios	0.04835
Minimum Sharpe Ratio	-0.00378
Maximum Sharpe Ratio	0.04456
Number of MFs	135

Sharpe Ratio was calculated for each of the MFs in the dataset using their daily returns for the period under consideration. The study has shown that 105 MFs have resulted in a Sharpe Ratio value greater than 0.0204, which is the Sharpe Ratio of the benchmark index BSE SENSEX. This suggests that 105 out of 135 MFs have generated returns

Table 4. Top 5 MFs based on Sharpe Ratio

Asset Management Company	Mutual Fund Scheme	Sharpe Ratio
ICICI Prudential AMC Ltd.	FMCG Fund	0.045
Aditya Birla Sun Life AMC Ltd.	MNC Fund	0.043
SBI Mutual Funds Pvt. Ltd	Small Cap Fund	0.041
UTI AMC Ltd.	MNC Fund	0.040
Canara Robeco Mutual Fund	Emerging Equities Fund	0.040

greater than the markets, so they have performed the same. The remaining 30 MFs, however, did not justify the risk that was accompanied by investing in them. The top five MFs with the highest Sharpe Ratio are shown in Table 4.

3.2. Information ratio

Information Ratio is arrived at by calculating the excess returns generated by the MF above the market returns. Hence, when the Information Ratio is positive, it is considered to have outperformed the markets. Table 5 shows the summary statistics of Information Ratios of all 135 funds.

Table 5. Information ratio descriptives for MFs

Information Ratio	
Mean of Information Ratios of all MFs	0.01561
Standard Error	0.00152
Median of Information Ratios of all MFs	0.01442
Mode of Information Ratios of all MFs	0.0074
Standard Deviation of Information Ratios of all MFs	0.01717
Sample Variance	0.00029
Kurtosis of Information Ratios of all MFs	-0.00386
Skewness of Information Ratios of all MFs	0.04150
Range of Information Ratios of all MFs	0.09453
Minimum Information Ratio	-0.02712
Maximum Information Ratio	0.06741
Number of MFs	135

114 funds have a positive Information Ratio and have generated greater returns than the market. This suggests that 114 MFs have outperformed the markets. The funds can also be summarised by bucketing them under different percentiles, as shown in Table 6.

Table 7. Top 5 MFs based on Information ratio

Asset Management Company	Mutual Fund Scheme	Information Ratio
Mirae Asset Mutual Fund	Large Cap Fund	0.067
Aditya Birla Sun Life AMC Ltd.	India Gennext Fund	0.054
Canara Robeco Mutual Fund	Emerging Equities Fund	0.050
Kotak Mahindra AMC Ltd.	Multicap Fund	0.048
ICICI Prudential AMC Ltd.	Bluechip Fund	0.046

Table 6. Mutual funds ranked based on the Information ratio

Source: Author's calculation.

Percentile	Information Ratio	Number of Mutual Funds
90	1.0	0
75	0.5	0
50	0.0	114
25	-0.5	21
10	-1.0	0

The percentile division shows that the returns generated over and above the market returns were not significantly high, as most of the MFs' Information Ratios were below 0.5. The top five funds with the highest Information Ratio are shown in Table 7.

3.3. Market timing abilities of mutual fund management

From the pioneering work of Mazuy (1966) till recent studies, many have found that fund managers have not succeeded in timing the markets. However, they have all been affected by the limited sample size in their studies.

In this particular work, all the equity open-ended MFs that have been in operation since June 2010 have been studied. From the daily NAV of the MFs, the monthly closing NAV was filtered. Then the monthly returns were calculated for all the funds. Table 8 summarizes the results of the TM model.

Table 8 shows the number of MFs in each category at different significance levels. This study proves a valuable result that 10 out of the 135 MFs were

Table 8. Regression results for the TM model (only significant results considered)

Level of Significance	Coefficient of MT skills (γ)		Coefficient of SS skills (α)	
	Positive	Negative	Positive	Negative
1%	10	20	12	0
5%	18	47	36	2
10%	23	59	53	3

Note: Model: Excess Returns of the Portfolio over Risk Free Return = $\alpha + \beta_p$ * Excess returns of the Market over the Risk Free Return + γ * (Excess returns of the Market over the Risk Free Return)².

successfully able to time the market and reap the positive effects of timing the market. At a 99% confidence level, 12 MFs have displayed positive Stock Selection abilities. At a 95% confidence level, 36 MFs displayed positive Stock Selection abilities. At a 90% confidence level, 53 MFs have displayed positive Stock Selection abilities. The 10 MFs that displayed Market Timing ability are shown in Table 9.

Table 9. Top 10 MFs based on the TM Model

Asset Management Company	Mutual Fund Scheme	Returns
Baroda Asset Management India Ltd	Multi Cap Fund	6%
Canara Robeco Mutual Fund	Emerging Equities Fund	16%
	Consumer Trends Fund	12%
	Equity Diversified Fund	10%
DSP Mutual Funds	Equity Opportunities Fund	%
	India T.I.G.E.R. Fund	5%
	Equity Fund	10%
	Midcap Fund	13%
ICICI Prudential AMC Ltd.	Focused Equity Fund	9%
	Small cap Fund	8%

Note: The returns for the funds are yearly results over the last 13 years.

Contrary to the general notion that diversified funds are more likely to display market timing abilities, this study shows that even focused or thematic MFs have exhibited positive market timing. This set also includes even the small-cap and the mid-cap funds.

This study analyzed the profiles of the fund managers of these 10 MFs. There were 13 unique fund managers. Interestingly, 8 out of them had a background in equity research analyst before becoming fund managers. Hence, it might as well be concluded that a fund manager who has worked in the role of equity research analyst is more likely to time the markets and succeed.

4. DISCUSSION

The present study holds significant value for both academic research and practical applications within the Indian financial sector. By evaluating the returns of mutual funds and the market timing abilities of fund managers, the study offers a comprehensive insight into how effectively mutual funds are managed in India and what steps can be taken to further optimize performance.

From an academic standpoint, the study contributes to existing literature on mutual fund performance, particularly in emerging markets like India. It provides empirical evidence supporting the notion that Indian fund managers possess market timing capabilities and can generate positive alpha — a measure of risk-adjusted returns above the market average. This supports the efficient market hypothesis in a semi-strong form and raises important questions for further academic inquiry, including whether the results are consistent across market cycles and the sustainability of alpha over time.

According to the study, Indian mutual funds have exhibited market timing capabilities and generated positive alpha, signifying risk-adjusted out-performance relative to the market. One of the key managerial implications of this study is that Indian Mutual Fund managers need to focus on more positive alpha. This is possible by a detailed analysis of securities to identify undervalued securities and manage them properly. Furthermore, minimizing costs is another aspect that Mutual Fund managers need to give attention to, as a higher expense ratio means lower returns and loss of alpha.

This study adds another important consideration for managers that MF managers in India should follow: the relative tenacity of the market and re-

balancing of their portfolio. Changes in portfolio can be made by monitoring economic variables and market behaviors, as well as scenario analysis to determine possible risks and opportunities. In the same manner, the study also aims to establish the need for greater visibility and accountability in the MF sector in India. MF managers must ensure that adequate information is available to all stakeholders regarding investment policies, returns, and charges. This can result in confident

investor decisions and contribute to the growth of the Mutual Fund industry. The study indicates that the Indian Mutual Fund managers should work further on improving their Market Timing skills or focus on increasing them with skills they already possess. This can be done by increasing the number of good and experienced portfolio managers, as well as employing sophisticated decision-making systems and analysis techniques, which will help in better decision-making.

CONCLUSION

This research aims to evaluate the effectiveness of mutual funds in India by identifying those that outperform benchmark indices, assessing the stock selection skills of fund managers, and examining their market timing abilities.

It also examined fund managers' two most essential characteristics: stock selection and market timing abilities. The benchmark market index was the BSE SENSEX, and 135 open-ended mutual funds were included in the study. The study found that approximately 80% of the mutual funds outperformed the market. Numerous previous studies conducted in this field have consistently demonstrated that Indian mutual fund managers lack proficiency in market timing. In contrast to this belief, the present study found that ten mutual funds demonstrated market timing capabilities. The research concerning the market timing capabilities and performance of Indian mutual funds has significant managerial ramifications for the industry. To maintain competitiveness in the market, mutual fund managers ought to prioritize the generation of positive alpha, diligently monitor market movements, advocate for transparency and accountability, and further enhance their market timing capabilities. The current research is limited to many MFs and their schemes. The authors had considered the period when COVID-19 occurred, and the market was supposed to be volatile. In the future scope of this study, one can expand the number of MFs and their schemes. The study can also be developed and evaluated across different categories of MFs. The period covered in the current study is ten years. This period can be extended to get a more comprehensive result. An interesting extension of this research would be to compare the stock selection and market timing abilities of the Fund managers across the pre- and post-COVID era.

AUTHOR CONTRIBUTIONS

Conceptualization: Mafruz Sultana, Pooja Gupta, Asit K. Barma, Swarnalakshmi Umamaheswaran, Preetham Karthik M. Donti.

Data curation: Asit K. Barma, Preetham Karthik M. Donti.

Formal analysis: Mafruz Sultana, Pooja Gupta, Swarnalakshmi Umamaheswaran.

Methodology: Mafruz Sultana, Pooja Gupta, Asit K. Barma.

Supervision: Mafruz Sultana, Pooja Gupta, Swarnalakshmi Umamaheswaran.

Validation: Mafruz Sultana, Pooja Gupta, Asit K. Barma, Swarnalakshmi Umamaheswaran, Preetham Karthik M. Donti.

Writing – original draft: Mafruz Sultana, Pooja Gupta, Asit K. Barma, Swarnalakshmi Umamaheswaran, Preetham Karthik M. Donti.

Writing – review & editing: Mafruz Sultana, Pooja Gupta, Asit K. Barma, Swarnalakshmi Umamaheswaran, Preetham Karthik M. Donti.

REFERENCES

1. Alam, M., & Ansari, V. A. (2022). Do mutual fund managers' possess style liquidity timing abilities?. *International Journal of Emerging Markets*, 17(3), 747-765. <https://doi.org/10.1108/IJOEM-02-2020-0195>
2. Ariswati, L. D., Iskandar, R., & Azis, M. (2021). Performance Analysis of Mutual Funds Based On Market Timing Ability and Stock Selection Skill during Covid-19 Pandemic in Indonesia. *Saudi Journal of Business and Management Studies*, 6(7), 250-255. Retrieved from https://saudijournals.com/media/articles/SJBMS_67_250-255_Ch8nwDm.pdf
3. Ashraf, S. H., & Sharma, D. (2014). Performance evaluation of Indian equity mutual funds against established benchmarks index. *International Journal of Accounting Research*, 2(1), 1000113. Retrieved from https://www.researchgate.net/publication/309330828_Performance_Evaluation_of_Indian_Equity_Mutual_Funds_against_Established_Benchmarks_Index
4. Azam, M. (2022). Selectivity and Market-Timing Performance of Mutual Funds Using Human-Capital Augmented Various Asset-Pricing Models: Evidence from Pakistan. *International Journal of Management Research and Emerging Sciences*, 12(3). <https://doi.org/10.56536/ijmres.v12i3.173>
5. Azis, M., Iskandar, R., Ariswati, L. D., Sudirman, I. N., & Darma, D. C. (2022). The Treynor-Mazuy Conditional model: Overview of market timing and stock selection on equity mutual funds performance. *Economic Alternatives*, 2, 252-263. <https://doi.org/10.37075/EA.2022.2.05>
6. Bahl, S., & Rani, M. (2012). A comparative analysis of mutual fund schemes in India. *International Journal of Marketing, Financial Services & Management Research*. Retrieved from <https://www.yumpu.com/en/document/view/22660638/a-comparative-analysis-of-mutual-fund-schemes-in-india>
7. Bello, Z. Y., & Janjigian, V. (1997). A reexamination of the market-timing and security-selection performance of mutual funds. *Financial Analysts Journal*, 53(5), 24-30. <https://doi.org/10.2469/faj.v53.n5.2114>
8. Busse, J. A., Ding, J., Jiang, L., & Tang, Y. (2023). Artificial market timing in mutual funds. *Journal of Financial and Quantitative Analysis*, 58(8), 3450-3481. <https://doi.org/10.1017/S0022109022001363>
9. Chen, C., Lee, C., Rahman, S., & Chan, A.K. (1992). A cross-sectional analysis of mutual funds' market timing and security selection skill. *Journal of Business Finance & Accounting*, 19, 659-675. <https://doi.org/10.1111/j.1468-5957.1992.tb00650.x>
10. Clare, A., O'Sullivan, N., Sherman, M., & Zhu, S. (2019). The performance of US bond mutual funds. *International Review of Financial Analysis*, 61, 1-8. <https://doi.org/10.1016/j.irfa.2018.12.001>
11. Deb, S. G., Banerjee, A., & Chakrabarti, B. B. (2007). Market timing and stock selection ability of mutual funds in India: An empirical investigation. *Vikalpa*, 32(2), 39-52. <https://doi.org/10.1177/0256090920070204>
12. Deb, S. G. (2019). Persistence in performance of actively managed equity mutual funds: New Indian evidence. *IIMB Management Review*, 31(2), 145-156. <https://doi.org/10.1016/j.iimb.2019.03.014>
13. Goodwin, T. H. (1998). The information ratio. *Financial Analysts Journal*, 54(4), 34-43. <https://doi.org/10.2469/faj.v54.n4.2196>
14. Hasnaoui, A. (2025). ESG ratings and investment performance: evidence from tech-heavy mutual funds. *Review of Accounting and Finance*, 24(1), 59-70. <https://doi.org/10.1108/raf-02-2024-0069>
15. Henriksson, R. D., & Merton, R. C. (1981). On market timing and investment performance. II. Statistical procedures for evaluating forecasting skills. *Journal of Business*, 54(3), 513-533. Retrieved from <https://www.jstor.org/stable/2352722>
16. Kaur, I. (2013). Performance, timing and selectivity skills of Indian equity mutual funds: an empirical approach. *International Refereed Research Journal*, 4(4), 87-94. Retrieved from https://www.researchgate.net/publication/332863415_PERFORMANCE_TIMING_AND_SELECTIVITY_SKILLS_OF_INDIAN_EQUITY_MUTUAL_FUNDS_AN_EMPIRICAL_APPROACH
17. Kon, S. J., & Jen, F. C. (1979). The investment performance of mutual funds: An empirical investigation of timing, selectivity, and market efficiency. *Journal of Business*, 263-289. Retrieved from <https://ideas.repec.org/a/ucp/jnlbus/v52y1979i2p263-89.html>
18. Maheen, M. S. (2021). Impact of COVID-19 on the performance of emerging market mutual funds: evidence from India. *Future Business Journal*, 7, 1-8. <https://doi.org/10.1186/s43093-021-00081-w>
19. Malhotra, P., & Sinha, P. (2021). Top-bottom investing skill and the fund alpha in Indian mutual fund industry: an empirical investigation. *IIM Ranchi Journal of Management Studies*, 1(1), 4-20. <https://doi.org/10.1108/IR-JMS-06-2021-0015>
20. Malhotra, D. K. (2023). Market Timing, Selectivity, and Performance of Technology Exchange-Traded Funds and Mutual Funds. *Journal of Beta Investment Strategies*, 14(1). <https://doi.org/10.3905/jbis.2023.1.026>
21. Malhotra, D. (2024). Market Timing, Selectivity, and Performance of Real Estate Mutual Funds. *The Journal of Wealth Management*. <https://doi.org/10.3905/jwm.2024.1.226>
22. Manurung, A. H., & Sihombing, P. (2023). The Impact of Stock Selection, Market Timing and Equity Fund Size on Equity Funds Performance during Covid-19. *Kontigensi: Jurnal Ilmiah Manaje-*

- men, 11(1), 194-201. <https://doi.org/10.47191/jefms/v6-i4-21>
23. Mehta, D. (2014). Evaluating the stock selection skills and market timing abilities of Indian mutual fund managers. *International Journal of Research in Commerce & Management*, 5(4). Retrieved from https://ijrcm.org.in/article_info.php?article_id=4414
 24. Mishra, R., & Ahuja, V. (2016). Performance evaluation of Indian mutual funds during bull and bear periods. *Indian Journal of Finance*, 10(8), 24-42. <https://doi.org/10.17010/ijf/2016/v10i8/99318>
 25. Musah, A., Senyo, D. B., & Nuhu, E. (2014). Market timing and selectivity performance of mutual funds in Ghana. *Management Science Letters*, 4(7), 1361-1368. <https://doi.org/10.5267/j.msl.2014.6.036>
 26. Nabi, G., Ur Rehman, R., Ali, R., & Jadoon, A. (2023). Persistence of multidimensional time-varying skills of fund managers: A comparison of conventional and Islamic equity funds. *Managerial and Decision Economics*, 45(2), 880-895. <https://doi.org/10.1002/mde.4052>
 27. Ramesh, B., & Dhume, P. (2014). Market timing ability of fund managers: Indian experience. *Indian Journal of Commerce*. Retrieved from https://www.researchgate.net/publication/299410241_Market_Timing_Ability_of_Fund_Managers_-_Indian_Experience
 28. Sharpe, W. F. (1966). Mutual fund performance. *The Journal of Business*, 39(1), 119-138. <http://dx.doi.org/10.1086/294846>
 29. Somasundaram, S. (2007). The Quest for Alpha: How Far Does it Exist? – An Empirical Analysis of Relative Performance of the Management Strategies for Indian Equity Mutual Funds. *An Empirical Analysis of Relative Performance of the Management Strategies for Indian Equity Mutual Funds*. <http://dx.doi.org/10.2139/ssrn.1023922>
 30. Suvarna, A. (2022). Timing and selectivity performance of mutual fund managers: Application of conditional models to Indian equity diversified mutual funds. *Jindal Journal of Business Research*, 11(1), 81-98. <https://doi.org/10.1177/22786821221084937>
 31. Treynor, J. (1965). How to Rate Management of Investment Funds. *Harvard Business Review*, 63-75. <https://doi.org/info:doi/>
 32. Treynor, J., & Mazuy, K. (1966). Can mutual funds outguess the market. *Harvard Business Review*, 44(4), 131-136. Retrieved from <https://users.business.uconn.edu/jgolec/Treynor-Mazuy.pdf>
 33. Tripathy, N. P. (2004). An empirical analysis on performance evaluation of mutual funds in India: A study on equity linked saving schemes. *The ICAFI Journal of Applied Finance*, 10(7), 36-55. Retrieved from https://www.researchgate.net/publication/265509988_An_Empirical_Analysis_of_Performance_Evaluation_of_Mutual_Funds_in_India_-_A_study_on_equity_schemes
 34. Zouaoui, M. (2019). Selectivity and market timing ability of fund managers: Comparative analysis of Islamic and conventional HSBC Saudi mutual funds. *International Journal of Financial Studies*, 7(3), 48. <https://doi.org/10.3390/ijfs7030048>

APPENDIX A

Table A1. List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
ICICI Prudential AMC Ltd.
ICICI Prudential Bluechip Fund
ICICI Prudential Value Discovery Fund
ICICI Prudential Large & Mid Cap Fund
ICICI Prudential MidCap Fund
ICICI Prudential Smallcap Fund
ICICI Prudential Multicap Fund
ICICI Prudential Focused Equity Fund
ICICI Prudential ESG Fund
ICICI Prudential India Opportunities Fund
ICICI Prudential Exports and Services Fund
ICICI Prudential Banking & Financial Services Fund
ICICI Prudential Pharma Healthcare & Diagnostics (P.H.D) Fund
ICICI Prudential Technology Fund
ICICI Prudential FMCG Fund
ICICI Prudential Infrastructure Fund
ICICI Prudential Dividend Yield Equity Fund
ICICI Prudential Manufacturing Fund
ICICI Prudential Innovation Fund
ICICI Prudential Liquid Fund
ICICI Prudential Overnight Fund
ICICI Prudential Ultra Short Term Fund
ICICI Prudential Short Term Fund
ICICI Prudential Medium Term Bond Fund
ICICI Prudential Bond Fund
ICICI Prudential Corporate Bond Fund
ICICI Prudential Gilt Fund
ICICI Prudential Long Term Bond Fund
ICICI Prudential Banking & PSU Debt Fund
ICICI Prudential Savings Fund
ICICI Prudential Credit Risk Fund
ICICI Prudential Money Market Fund
ICICI Prudential Constant Maturity Gilt Fund
ICICI Prudential All Seasons Bond Fund
ICICI Prudential Balanced Advantage Fund
ICICI Prudential Equity & Debt Fund
ICICI Prudential Multi-Asset Fund
ICICI Prudential Asset Allocator Fund
ICICI Prudential Dynamic Bond Fund
ICICI Prudential Equity Savings Fund
ICICI Prudential Regular Savings Fund
ICICI Prudential Thematic Advantage Fund
ICICI Prudential Nifty 50 Index Fund
ICICI Prudential Nifty Next 50 Index Fund
ICICI Prudential Nifty Midcap 150 Index Fund
ICICI Prudential Nifty Smallcap 250 Index Fund
ICICI Prudential Sensex Index Fund
ICICI Prudential Nifty 100 Low Volatility 30 ETF
ICICI Prudential Bharat 22 ETF
ICICI Prudential Nifty IT ETF
ICICI Prudential Nifty Bank ETF
ICICI Prudential US Bluechip Equity Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
ICICI Prudential Global Stable Equity Fund
ICICI Prudential Global Advantage Fund
ICICI Prudential NASDAQ 100 Index Fund
ICICI Prudential Child Care Fund (Gift Plan)
ICICI Prudential Retirement Fund (Hybrid Aggressive & Hybrid Conservative Plans)
Canara Robeco Mutual Fund
Canara Robeco Bluechip Equity Fund
Canara Robeco Flexi Cap Fund
Canara Robeco Emerging Equities Fund
Canara Robeco Small Cap Fund
Canara Robeco Mid Cap Fund
Canara Robeco Equity Hybrid Fund
Canara Robeco Consumer Trends Fund
Canara Robeco Infrastructure Fund
Canara Robeco Focused Equity Fund
Canara Robeco Manufacturing Fund
Canara Robeco Banking & PSU Fund
Canara Robeco ESG Fund
Canara Robeco Multi Cap Fund
Canara Robeco Large Cap+ Fund
Canara Robeco Liquid Fund
Canara Robeco Ultra Short Duration Fund
Canara Robeco Short Duration Fund
Canara Robeco Medium Duration Fund
Canara Robeco Corporate Bond Fund
Canara Robeco Credit Risk Fund
Canara Robeco Banking & PSU Debt Fund
Canara Robeco Gilt Fund
Canara Robeco Income Fund
Canara Robeco Conservative Hybrid Fund
Canara Robeco Equity Hybrid Fund
Canara Robeco Multi Asset Allocation Fund
Canara Robeco Nifty 50 Index Fund
Canara Robeco Nifty Next 50 Index Fund
Canara Robeco Global Emerging Market Fund
Canara Robeco Retirement Savings Fund (Hybrid Conservative, Hybrid Aggressive, and Hybrid Progressive Plans)
SBI Mutual Funds Pvt. Ltd
SBI Bluechip Fund
SBI Flexicap Fund
SBI Focused Equity Fund
SBI Magnum Equity ESG Fund
SBI Contra Fund
SBI Large & Midcap Fund
SBI Multicap Fund
SBI Small Cap Fund
SBI Midcap Fund
SBI Long Term Equity Fund (ELSS - Tax Saving)
SBI Magnum Global Fund
SBI Healthcare Opportunities Fund
SBI Infrastructure Fund
SBI Technology Opportunities Fund
SBI Banking & Financial Services Fund
SBI Consumption Opportunities Fund
SBI Dividend Yield Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
SBI Liquid Fund
SBI Overnight Fund
SBI Ultra Short Duration Fund
SBI Short Term Debt Fund
SBI Magnum Medium Duration Fund
SBI Corporate Bond Fund
SBI Magnum Gilt Fund
SBI Dynamic Bond Fund
SBI Credit Risk Fund
SBI Banking & PSU Fund
SBI Savings Fund
SBI Treasury Advantage Fund
SBI Magnum Income Fund
SBI Magnum Constant Maturity Fund
SBI Equity Hybrid Fund
SBI Multi Asset Allocation Fund
SBI Balanced Advantage Fund
SBI Dynamic Asset Allocation Fund
SBI Equity Savings Fund
SBI Retirement Benefit Fund
SBI Nifty 50 Index Fund
SBI Nifty Next 50 Index Fund
SBI Sensex Index Fund
SBI Nifty Midcap 150 Index Fund
SBI ETF Nifty 50
SBI ETF Sensex
SBI ETF Nifty Bank
SBI ETF IT
SBI ETF Consumption
SBI ETF Healthcare
SBI International Access - US Equity Fund of Fund
SBI International Access - Global Advantage Fund of Fund
SBI Retirement Benefit Fund
SBI Child Investment Fund
Nippon Life India Asset Management Ltd.
Nippon India Large Cap Fund
Nippon India Flexi Cap Fund
Nippon India Multi Cap Fund
Nippon India Focused Equity Fund
Nippon India Growth Fund
Nippon India Small Cap Fund
Nippon India Midcap Fund
Nippon India Value Fund
Nippon India ELSS Tax Saver Fund
Nippon India Pharma Fund
Nippon India Banking & Financial Services Fund
Nippon India Consumption Fund
Nippon India Power & Infra Fund
Nippon India Dividend Yield Fund
Nippon India Innovation Fund
Nippon India Liquid Fund
Nippon India Overnight Fund
Nippon India Ultra Short Duration Fund
Nippon India Short Term Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
Nippon India Medium Term Fund
Nippon India Credit Risk Fund
Nippon India Corporate Bond Fund
Nippon India Gilt Securities Fund
Nippon India Banking & PSU Debt Fund
Nippon India Dynamic Bond Fund
Nippon India Balanced Advantage Fund
Nippon India Equity Hybrid Fund
Nippon India Multi Asset Fund
Nippon India Equity Savings Fund
Nippon India Nifty 50 Index Fund
Nippon India Nifty Next 50 Index Fund
Nippon India Sensex Index Fund
Nippon India ETF Nifty 50
Nippon India ETF Nifty Next 50
Nippon India ETF Bank BeES
Nippon India ETF Gold BeES
Nippon India ETF Consumption
Nippon India ETF Healthcare
Nippon India US Equity Opportunities Fund
Nippon India Japan Equity Fund
Nippon India Retirement Fund
Nippon India Child Care Fund
Aditya Birla Sun Life AMC Ltd.
Aditya Birla Sun Life Frontline Equity Fund
Aditya Birla Sun Life Flexi Cap Fund
Aditya Birla Sun Life Multi-Cap Fund
Aditya Birla Sun Life Focused Equity Fund
Aditya Birla Sun Life Mid Cap Fund
Aditya Birla Sun Life Small Cap Fund
Aditya Birla Sun Life ELSS Tax Relief 96 Fund
Aditya Birla Sun Life Dividend Yield Fund
Aditya Birla Sun Life Infrastructure Fund
Aditya Birla Sun Life Banking & Financial Services Fund
Aditya Birla Sun Life Pharma & Healthcare Fund
Aditya Birla Sun Life Digital India Fund (Technology)
Aditya Birla Sun Life MNC Fund
Aditya Birla Sun Life PSU Equity Fund
Aditya Birla Sun Life International Equity Fund
Aditya Birla Sun Life Liquid Fund
Aditya Birla Sun Life Overnight Fund
Aditya Birla Sun Life Ultra Short Term Fund
Aditya Birla Sun Life Savings Fund
Aditya Birla Sun Life Short Term Fund
Aditya Birla Sun Life Medium Term Fund
Aditya Birla Sun Life Corporate Bond Fund
Aditya Birla Sun Life Credit Risk Fund
Aditya Birla Sun Life Government Securities Fund
Aditya Birla Sun Life Banking & PSU Debt Fund
Aditya Birla Sun Life Dynamic Bond Fund
Aditya Birla Sun Life Money Manager Fund
Aditya Birla Sun Life Balanced Advantage Fund
Aditya Birla Sun Life Equity Hybrid Fund
Aditya Birla Sun Life Multi Asset Allocation Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
Aditya Birla Sun Life Equity Savings Fund
Aditya Birla Sun Life Nifty 50 Index Fund
Aditya Birla Sun Life Nifty Next 50 Index Fund
Aditya Birla Sun Life Sensex Index Fund
Aditya Birla Sun Life Nifty Midcap 150 Index Fund
Aditya Birla Sun Life Gold ETF
Aditya Birla Sun Life Nifty Bank ETF
Aditya Birla Sun Life Global Emerging Opportunities Fund
Aditya Birla Sun Life International Equity Fund
Aditya Birla Sun Life US Equity Fund
Aditya Birla Sun Life Retirement Fund
Aditya Birla Sun Life Child Wealth Plan
UTI AMC Ltd.
UTI Nifty 50 Index Fund
UTI Nifty Next 50 Index Fund
UTI Sensex Index Fund
UTI Flexi Cap Fund
UTI Large Cap Fund
UTI Mid Cap Fund
UTI Small Cap Fund
UTI Value Opportunities Fund
UTI Focused Equity Fund
UTI ELSS Tax Saver Fund
UTI Mastershare Fund
UTI Dividend Yield Fund
UTI Infrastructure Fund
UTI Transportation & Logistics Fund
UTI Banking & Financial Services Fund
UTI Healthcare Fund
UTI Liquid Fund
UTI Overnight Fund
UTI Ultra Short Term Fund
UTI Short Term Income Fund
UTI Medium Term Bond Fund
UTI Dynamic Bond Fund
UTI Corporate Bond Fund
UTI Credit Risk Fund
UTI Banking & PSU Debt Fund
UTI Gilt Fund
UTI Balanced Advantage Fund
UTI Hybrid Equity Fund
UTI Multi Asset Allocation Fund
UTI Equity Savings Fund
UTI Nifty 50 Exchange Traded Fund
UTI Nifty Next 50 Exchange Traded Fund
UTI Gold ETF
UTI Silver ETF
UTI S&P BSE Sensex ETF
UTI Nifty Midcap 150 ETF
UTI Global Advantage Fund
UTI US Equity Fund
UTI Global Innovation Fund
UTI Retirement Benefit Fund
UTI Children's Career Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
Mirae Asset Mutual Fund
Mirae Asset Large Cap Fund
Mirae Asset Flexi Cap Fund
Mirae Asset Focused Fund
Mirae Asset Midcap Fund
Mirae Asset Small Cap Fund
Mirae Asset Tax Saver Fund (ELSS – Tax Saving Fund)
Mirae Asset Emerging Bluechip Fund
Mirae Asset Great Consumer Fund
Mirae Asset Banking & Financial Services Fund
Mirae Asset Healthcare Fund
Mirae Asset Manufacturing Fund
Mirae Asset ESG Sector Leaders Fund
Mirae Asset Dividend Yield Fund
Mirae Asset Liquid Fund
Mirae Asset Overnight Fund
Mirae Asset Ultra Short Duration Fund
Mirae Asset Short Term Fund
Mirae Asset Banking & PSU Debt Fund
Mirae Asset Corporate Bond Fund
Mirae Asset Gilt Fund
Mirae Asset Dynamic Bond Fund
Mirae Asset Money Market Fund
Mirae Asset Balanced Advantage Fund
Mirae Asset Hybrid Equity Fund
Mirae Asset Equity Savings Fund
Mirae Asset Nifty 50 Index Fund
Mirae Asset Nifty Next 50 Index Fund
Mirae Asset Sensex Index Fund
Mirae Asset Nifty Midcap 150 Index Fund
Mirae Asset Nifty Financial Services ETF
Mirae Asset Nifty IT ETF
Mirae Asset NYSE FANG+ ETF Fund of Fund
Mirae Asset S&P 500 Top 50 ETF Fund of Fund
Mirae Asset Hang Seng Tech ETF Fund of Fund
Mirae Asset US Equity Fund
Mirae Asset Global Electric & Autonomous Vehicles ETF Fund of Fund
Mirae Asset Retirement Fund
Kotak Mahindra AMC Ltd.
Kotak Bluechip Fund
Kotak Flexicap Fund
Kotak Emerging Equity Fund (Mid Cap Fund)
Kotak Small Cap Fund
Kotak Equity Opportunities Fund (Large & Mid Cap Fund)
Kotak Multicap Fund
Kotak Focused Equity Fund
Kotak ELSS Tax Saver Fund (ELSS - Tax Saving Fund)
Kotak India EQ Contra Fund
Kotak Banking & Financial Services Fund
Kotak Infrastructure & Economic Reform Fund
Kotak Manufacturing Fund
Kotak Consumption Fund
Kotak Global Innovation Fund of Fund
Kotak Liquid Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
Kotak Overnight Fund
Kotak Ultra Short Term Fund
Kotak Low Duration Fund
Kotak Short Term Bond Fund
Kotak Banking & PSU Debt Fund
Kotak Corporate Bond Fund
Kotak Dynamic Bond Fund
Kotak Gilt Investment Fund
Kotak Savings Fund
Kotak Credit Risk Fund
Kotak Money Market Fund
Kotak Balanced Advantage Fund
Kotak Equity Hybrid Fund
Kotak Multi Asset Allocation Fund
Kotak Equity Savings Fund
Kotak Nifty 50 Index Fund
Kotak Nifty Next 50 Index Fund
Kotak Sensex Index Fund
Kotak Nifty Midcap 150 Index Fund
Kotak Nifty Bank ETF
Kotak Nifty IT ETF
Kotak Gold ETF
Kotak Silver ETF
Kotak Global Emerging Market Fund
Kotak NASDAQ 100 Fund of Fund
Kotak Global Innovation Fund of Fund
Kotak Retirement Fund
Kotak Child Investment Fund
Baroda Asset Management India Ltd
Baroda Large Cap Fund
Baroda Flexi Cap Fund
Baroda Mid Cap Fund
Baroda Small Cap Fund
Baroda ELSS Tax Saver Fund (ELSS – Tax Saving Fund)
Baroda Business Cycle Fund
Baroda Banking & Financial Services Fund
Baroda Liquid Fund
Baroda Ultra Short Duration Fund
Baroda Short Term Bond Fund
Baroda Dynamic Bond Fund
Baroda Banking & PSU Debt Fund
Baroda Gilt Fund
Baroda Money Market Fund
Baroda Credit Risk Fund
Baroda Balanced Advantage Fund
Baroda Hybrid Equity Fund
Baroda Multi Asset Allocation Fund
Baroda Equity Savings Fund
Baroda Nifty 50 Index Fund
Baroda Nifty Next 50 Index Fund
Baroda Global Equity Fund of Fund
Baroda Retirement Fund

Table A1 (cont.). List of 135 Indian open-ended mutual fund schemes for 14 years, June 2010 to June 2023

Asset Management Company / Mutual Fund
DSP Mutual Funds
DSP Flexi Cap Fund
DSP Equity Opportunities Fund (Large & Mid Cap Fund)
DSP Top 100 Equity Fund (Large Cap Fund)
DSP Midcap Fund
DSP Small Cap Fund
DSP Focus Fund
DSP ELSS Tax Saver Fund (ELSS – Tax Saving Fund)
DSP Quant Fund
DSP Value Fund
DSP Natural Resources & New Energy Fund
DSP Healthcare Fund
DSP Banking & Financial Services Fund
DSP Global Innovation Fund of Fund
DSP Equity & Bond Fund (Aggressive Hybrid Fund)
DSP Dynamic Asset Allocation Fund (Balanced Advantage Fund)
DSP Multi Asset Allocation Fund
DSP Equity Savings Fund
DSP Nifty 50 Index Fund
DSP Nifty Next 50 Index Fund
DSP S&P BSE Sensex ETF
DSP Gold ETF
DSP US Flexible Equity Fund
DSP Global Innovation Fund of Fund
DSP World Gold Fund
DSP Retirement Fund