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Research Article

Evaluating The Performance Of Selected Asset Management Companies In India: An Empirical Analysis

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ABSTRACT

This study examines the financial performance of NIFTY 50, HDFC Mutual Fund, and SBI Mutual Fund from 2018 to 2023, focusing on risk-adjusted returns using the Sharpe and Treynor ratios. The research highlights the fluctuations in these ratios over the years, particularly during significant market events such as the COVID-19 pandemic. The study finds that all three entities experienced notable volatility in their risk-adjusted performance, with NIFTY 50, HDFC, and SBI posting negative ratios in 2018, followed by a strong recovery in 2019. The pandemic in 2020 caused significant declines, with the Sharpe and Treynor ratios plummeting to their lowest levels across the board. However, the second half of 2020 and 2021 marked a remarkable recovery, with HDFC and SBI outperforming NIFTY 50 in terms of risk-adjusted returns. The analysis also reveals that while HDFC exhibited more pronounced fluctuations, it delivered the highest returns during periods of recovery. The study concludes that despite market volatility, all three entities demonstrated resilience, with strong recoveries in 2021 and renewed stability in 2023, underscoring their capacity to generate positive risk-adjusted returns. These findings offer valuable insights into the performance dynamics of asset management companies (AMCs) in India and provide a basis for informed investment decisions.

Keywords: Sharpe ratio, Treynor ratio, NIFTY 50, HDFC Mutual Fund, SBI Mutual Fund

Introduction

The Indian financial market has undergone substantial growth and transformation over the past few decades, with the mutual fund industry emerging as a significant pillar in this evolution. Asset Management Companies (AMCs) are at the forefront of this industry, responsible for managing and administering the assets of various mutual fund schemes on behalf of investors. The performance of AMCs is crucial not only for investors seeking optimal returns but also for financial analysts and policymakers aiming to foster a robust and resilient financial ecosystem (Association of Mutual Funds in India [AMFI], 2023).

Background of the Indian Mutual Fund Industry

The genesis of the Indian mutual fund industry dates back to 1963 with the establishment of the Unit Trust of India (UTI), which laid the foundational framework for mutual fund operations in the country (SEBI, 2022). The liberalization of the Indian economy in 1991 marked a pivotal shift, opening the doors to private and foreign entrants. This deregulation spurred competition, innovation, and diversification within the industry, leading to the introduction of a myriad of mutual fund products tailored to diverse investor needs (Bogle, 2016). According to AMFI (2023), the Assets Under Management (AUM) of the Indian mutual fund industry surged from INR 4.17 trillion in 2008 to INR 36.59 trillion in 2023, underscoring the sector's rapid expansion and the growing confidence of investors.

The Role of Asset Management Companies

AMCs are instrumental in managing mutual fund schemes by strategically investing in a variety of securities, including equities, bonds, and money market instruments. Their primary objective is to maximize returns for investors while effectively managing associated risks (Sharpe, 1966). The performance of an AMC is typically

evaluated based on its ability to generate consistent returns, maintain low expense ratios, and manage risk efficiently. These performance metrics are critical as they directly influence the attractiveness of the mutual fund schemes managed by the AMC, thereby shaping investor perceptions and decisions (Markowitz, 1952).

Importance of Performance Evaluation

Evaluating the performance of AMCs is essential for multiple stakeholders. For investors, performance evaluation provides insights into the effectiveness of fund managers in achieving investment objectives, thereby guiding informed investment decisions (Morningstar, 2023). Financial analysts utilize these evaluations to identify trends and patterns that may inform future investment strategies and market forecasts. From a regulatory standpoint, performance assessments ensure that AMCs adhere to the standards set by regulatory bodies such as the Securities and Exchange Board of India (SEBI), promoting transparency and accountability within the industry (SEBI, 2022). Moreover, performance evaluation fosters healthy competition among AMCs, driving them to enhance their operational efficiencies and service quality (AMFI, 2023).

Key Performance Indicators

This study focuses on four key performance indicators (KPIs) to evaluate the performance of selected AMCs in India: Net Asset Value (NAV) growth, risk-adjusted returns, fund size, and expense ratios. These KPIs are selected for their relevance and significance in assessing the financial health and operational efficiency of AMCs.

1. **Net Asset Value (NAV) Growth**: NAV represents the per-unit value of a mutual fund scheme, serving as a primary indicator of the fund's performance. Consistent NAV growth signifies effective fund management and positive returns on investments, reflecting the AMC's capability to enhance shareholder value over time (AMFI, 2023).
2. **Risk-Adjusted Returns**: Risk-adjusted return metrics, such as the Sharpe ratio, Treynor ratio, and Jensen's alpha, measure the returns generated by a mutual fund relative to the risk undertaken. These metrics provide a nuanced understanding of whether the returns justify the risks, thereby assisting investors in making balanced investment choices (Sharpe, 1966).
3. **Fund Size**: The size of a mutual fund, typically measured by its AUM, can significantly influence its performance. Larger funds benefit from economies of scale, which can reduce operational costs and enhance investment efficiency. However, managing larger portfolios can also pose challenges, such as reduced flexibility in investment decisions and potential difficulties in capital deployment (Markowitz, 1952).
4. **Expense Ratios**: The expense ratio encompasses the annual fees charged by an AMC for managing a mutual fund, including management fees, administrative costs, and other operational expenses. Lower expense ratios are generally favorable as they translate to higher net returns for investors. However, it is crucial to assess whether lower expenses correlate with superior performance or if they result in compromised fund management quality (Morningstar, 2023).

The Indian Context

The Indian mutual fund industry is characterized by a diverse array of AMCs, including public sector entities, private domestic firms, and foreign joint ventures. This diversity has cultivated a competitive landscape where fund managers employ various strategies to distinguish themselves and attract investors. Additionally, the Indian market is influenced by macroeconomic factors such as inflation rates, interest rates, and government policies, which can significantly impact mutual fund performance (AMFI, 2023).

The rapid growth of the 14922ndustryy, coupled with the increasing sophistication of investors, has amplified the demand for empirical studies evaluating AMC performance in India. Such studies provide critical insights into the effectiveness of different fund management strategies and aid investors in making informed decisions. Furthermore, they contribute to the academic literature by offering a comprehensive analysis of the determinants of mutual fund performance within the Indian context (SEBI, 2022).

Significance of the Study

Understanding the performance dynamics of AMCs is vital for several reasons. For investors, it ensures the alignment of investment choices with their financial goals and risk tolerance. For AMCs, performance evaluation serves as a benchmark for assessing managerial effectiveness and operational efficiency, fostering continuous improvement and innovation. Policymakers can utilize the insights from performance evaluations to formulate regulations that enhance market stability, protect investor interests, and promote industry growth (Bogle, 2016).

Moreover, this study addresses a gap in the existing literature by providing an empirical analysis focused specifically on the Indian mutual fund industry. While numerous studies have examined mutual fund performance in developed markets, there is a relative scarcity of research concentrating on emerging economies like India, where market dynamics and investor behavior exhibit unique characteristics (Markowitz, 1952).

Literature Review

Asset Management Companies (AMCs) in India

Asset management companies are integral to India's financial ecosystem, managing a variety of investment vehicles, including mutual funds. According to recent findings by Nair and Reddy (2022), the growth of AMCs has been driven by an increase in retail participation and rising income levels across India. Additionally, the introduction of digital platforms has made mutual funds more accessible to first-time investors (Mehta & Kapoor, 2023).

Performance Evaluation of AMCs

The use of risk-adjusted performance measures, such as the Sharpe ratio, Treynor ratio, and Jensen's alpha, remains central in evaluating AMC performance. Gupta et al. (2022) noted that the Sharpe ratio remains a dominant metric for comparing mutual fund returns. Sharma and Iyer (2023) argued that while the Treynor ratio is more suitable for funds with higher market risk, Jensen's alpha is increasingly used to assess the ability of fund managers to generate excess returns.

Impact of Regulatory Framework

The Securities and Exchange Board of India (SEBI) continues to play a critical role in regulating AMCs. Recent reforms, including the introduction of swing pricing in 2022, aim to protect long-term investors by penalizing short-term traders during periods of high volatility (SEBI, 2022). According to Bhattacharya (2023), these regulatory changes are pivotal in maintaining investor confidence, particularly in volatile market conditions.

Market Efficiency and AMC Performance

Market efficiency is a significant determinant of AMC performance in India. A recent study by Sharma and Ramesh (2022) found that while the Indian stock market has evolved towards semi-strong efficiency, information asymmetry still allows skilled fund managers to exploit short-term opportunities. Mishra et al. (2021) echoed this view, highlighting that AMCs with larger research teams tend to outperform during periods of market inefficiency.

Role of Fund Managers

Fund managers continue to be a vital factor in AMC performance. Research by Bansal et al. (2022) suggests that fund managers with international experience and credentials from global financial institutions tend to produce higher returns for their investors. In contrast, Iyer and Desai (2021) found that local expertise and a deeper understanding of Indian market dynamics can also result in superior fund performance, particularly in mid- and small-cap funds.

Comparison of Public and Private AMCs

Recent comparisons between public and private AMCs show that private sector AMCs consistently outperform their public counterparts due to greater flexibility in decision-making and a more aggressive investment approach (Sharma & Verma, 2023). On the other hand, Kumar and Srivastava (2022) argue that public sector AMCs, such as SBI Mutual Fund, are more focused on long-term capital preservation and cater to conservative investors.

Diversification and Portfolio Management

Diversification remains a key strategy for AMCs. In a 2022 study, Singh and Bhatia found that diversified funds, particularly those with a balanced allocation between equity and debt instruments, delivered more stable returns during market downturns. In contrast, sector-specific funds exhibited higher volatility but offered superior returns during economic expansions (Mehta & Rao, 2021).

Digital Transformation in AMCs

The digital revolution has significantly impacted asset management in India. According to Mehta and Kapoor (2023), the rise of digital advisory platforms and robo-advisors has enabled AMCs to attract younger, tech-savvy investors. Bansal and Sharma (2022) also highlight that digital platforms reduce costs, allowing AMCs to provide personalized financial services to retail investors at a lower price point.

Risk Management Practices

Risk management has become more sophisticated in response to growing market volatility. Kumar and Gupta (2022) suggest that Indian AMCs are increasingly adopting machine learning algorithms to predict market downturns and adjust portfolio allocations dynamically. Additionally, Mishra (2022) discusses the increasing use of Value at Risk (VaR) models and scenario analysis to better manage portfolio risks.

Investor Behavior and AMC Performance
Investor behavior, particularly during market downturns, continues to affect AMC performance. Recent studies show that while Indian investors tend to redeem funds during market volatility, long-term investors who hold on to their investments tend to realize superior returns (Gupta et al., 2021). Mehta and Sharma (2023) found that AMCs with robust investor education programs experience less panic selling during downturns, thereby improving fund stability.

International Comparisons
Recent studies comparing Indian AMCs with international counterparts highlight some key differences. According to Patel et al. (2023), Indian AMCs have lower expense ratios and offer competitive returns compared to U.S. and European funds. However, the lack of a well-developed derivative market in India limits the ability of AMCs to hedge risk effectively, a challenge that international AMCs do not face (Singh & Verma, 2022).

Challenges Facing Indian AMCs
Despite recent growth, Indian AMCs continue to face several challenges. According to Verma (2022), regulatory changes like the reintroduction of long-term capital gains tax in 2022 have dampened investor enthusiasm for equity funds. Moreover, Kumar and Srivastava (2023) argue that the rise of alternative investment vehicles, such as direct equity investments and cryptocurrencies, poses a threat to the traditional AMC business model.

Research Methodology
This section outlines the methodology adopted to evaluate the performance of selected asset management companies (AMCs) in India over a five-year period. The study employs a quantitative and descriptive research design to analyze the risk-adjusted performance of the top 5 AMCs using financial metrics such as the Sharpe ratio, Treynor ratio, Jensen's alpha, and expense ratios. By using data sourced from both AMCs and the Securities and Exchange Board of India (SEBI), this methodology provides a detailed and systematic assessment of performance across different market conditions. The following subsections outline the data sources, sample selection, performance metrics, and analytical techniques employed in the study.

2. Research Design
This study utilizes a quantitative research design to evaluate the financial performance of the top 2 asset management companies (AMCs) in India. The research design is descriptive in nature, focusing on the measurement and comparison of performance using risk-adjusted metrics. The goal is to provide a comprehensive understanding of how these AMCs perform over a specified period without testing specific hypotheses or establishing causal relationships. The analysis aims to offer insights into the effectiveness of the investment strategies employed by these companies.

2. Data Collection

2.1 Data Sources
The data for this study is obtained from secondary sources. Financial performance data, including returns, risk measures, and expense ratios, will be sourced from the official websites of the selected AMCs and their annual reports. Additionally, regulatory and industry-specific data will be gathered from the Securities and Exchange Board of India (SEBI), which provides insights into industry trends, guidelines, and benchmarks relevant to mutual funds and asset management in India.

2.2 Time Period
The analysis covers a five-year period, from 2018 to 2023. This timeframe captures both stable and volatile market conditions, providing a balanced view of AMC performance over a significant period, including the financial impacts of events like the COVID-19 pandemic.

3. Sample Selection
The sample for this study consists of the top 2 asset management companies (AMCs) in India based on assets under management (AUM). These AMCs are selected because they represent the largest and most influential firms in the Indian asset management industry. By focusing on these companies, the study aims to evaluate the performance of the key players that hold a significant share of the market.
The selected AMCs for this study are:

1. **SBI Mutual Fund (SBI Equity Hybrid Reg Gr):** This is the largest AMC in India, backed by the State Bank of India (SBI).
2. **HDFC Mutual Fund (HDFC Top 100 Fund Gr):** A joint venture between HDFC and Standard Life Investments.

4. Performance Metrics

The theoretical underpinning of this study is grounded in Modern Portfolio Theory (Markowitz, 1952) and the Capital Asset Pricing Model (Sharpe, 1966). Modern Portfolio Theory emphasizes the importance of diversification and risk management in achieving optimal returns, providing a foundation for assessing risk-adjusted performance metrics. The Capital Asset Pricing Model elucidates the relationship between expected returns and systematic risk, offering a framework for evaluating the efficacy of AMCs in generating returns commensurate with the risks undertaken. To assess the performance of the selected AMCs, the study utilizes the following financial metrics:

4.1 Sharpe Ratio

The **Sharpe ratio** measures the risk-adjusted return of an investment by evaluating how much excess return is generated for each unit of risk. This ratio is essential for comparing the performance of AMCs on a risk-adjusted basis.

Sharpe Ratio = Rp−Rf / σp

Where:

- Rp = Portfolio return
- Rf = Risk-free rate
- σp = Standard deviation of portfolio return

4.2 Treynor Ratio

The **Treynor ratio** measures risk-adjusted returns in relation to market risk, represented by beta. This ratio is useful for evaluating the performance of AMCs with varying levels of exposure to market volatility.

Treynor Ratio = Rp−Rf / βp

Where:

- Rp = Portfolio return
- Rf = Risk-free rate
- βp = Beta of the portfolio (market risk)

5. Results & Discussions

The data collected will be analyzed using **descriptive statistics** to provide insights into key performance indicators such as average returns, standard deviations, and beta coefficients. The **Sharpe, Treynor, and Jensen's alpha ratios** will be calculated for each AMC's portfolio to assess risk-adjusted performance. In addition, the **expense ratio** will be analyzed to determine its impact on overall fund returns.

The study will conduct **comparative analysis** across the selected AMCs to determine which companies have outperformed or underperformed over the five-year period. Statistical software will be used to process and analyze the data, with particular emphasis on identifying trends, patterns, and performance variations across different market conditions.

Table No – 1: Sharp ratio values of Nifty 50, HDFC and SBI

Date	NIFTY Sharpe Ratio	HDFC Sharpe Ratio	SBI Sharpe Ratio
31-03-2018			
30-06-2018	-12.93%	-74.33%	-42.05%
30-09-2018	52.86%	25.58%	-1.49%
31-12-2018	-104.43%	-43.12%	-94.80%
31-03-2019	22.10%	7.19%	17.24%
30-06-2019	61.56%	73.48%	69.58%
30-09-2019	-79.23%	-67.60%	-33.24%
31-12-2019	48.81%	-9.55%	56.20%
31-03-2020	-99.20%	-80.38%	-16.15%
30-06-2020	-228.16%	-270.32%	-267.17%
30-09-2020	209.55%	170.43%	175.35%
31-12-2020	150.85%	86.84%	94.16%
31-03-2021	187.65%	247.38%	219.31%
30-06-2021	14.39%	20.09%	30.04%
30-09-2021	101.45%	80.04%	118.11%
31-12-2021	56.63%	69.61%	67.76%
31-03-2022	-51.19%	-38.69%	-56.03%
30-06-2022	-85.68%	-46.61%	-80.61%
30-09-2022	25.54%	29.71%	7.84%
31-12-2022	45.55%	49.62%	26.15%
31-03-2023	-56.59%	-23.56%	-84.81%
30-06-2023	22.56%	24.79%	20.05%
30-09-2023	69.68%	92.91%	85.87%

31-12-2023	6.50%	43.95%	24.23%

Source: Calculated from NSE, HDFC and SBI and assuming 8% risk free rate of return

NIFTY 50 Analysis

NIFTY 50 exhibited significant volatility between 2018 and 2020. In the second quarter of 2018, the Sharpe ratio was **-12.93%**, indicating underperformance, as the market was not providing sufficient returns to compensate for the risks. By the third quarter of 2018, the Sharpe ratio rebounded to **52.86%**, highlighting a temporary recovery. However, this was short-lived as the fourth quarter of 2018 witnessed a significant drop, with the ratio plummeting to **-104.43%**, reflecting high market instability.

In 2019, NIFTY 50 experienced a mix of performance. The first quarter showed some positive risk-adjusted returns with a **22.10% Sharpe ratio**, followed by a stronger performance in the second quarter (**61.56%**). However, the trend reversed by the end of 2019, with the Sharpe ratio plunging to **-79.23%**, most likely driven by economic and political uncertainty.

The onset of the COVID-19 pandemic in 2020 had a severe impact on NIFTY 50, with the first quarter seeing a **-99.20%** Sharpe ratio as global markets faced unprecedented shocks. The second quarter was even worse, with the Sharpe ratio hitting **-228.16%**, marking the lowest point in this period. However, the latter half of 2020 saw a strong recovery, with the ratio surging to **209.55%** in the third quarter and **150.85%** in the fourth quarter, driven by global market recovery and accommodative fiscal policies. The momentum continued into 2021, with NIFTY achieving an impressive Sharpe ratio of **187.65%** in the first quarter, reflecting the bullish market conditions. Afterward, the ratio stabilized, although it declined to **14.39%** in the second quarter.

In 2022, NIFTY 50 faced high volatility, with the Sharpe ratio turning negative again in the first quarter (**-51.19%**) and worsening in the second quarter (**-85.68%**), likely influenced by inflationary pressures and geopolitical factors. However, by the third quarter of 2023, NIFTY showed signs of recovery with a Sharpe ratio of **69.68%**, indicating a better risk-return profile. The fourth quarter of 2023 saw the ratio drop to **6.50%**, signalling moderate performance as the market sought stability.

HDFC Analysis

HDFC's performance in 2018 was marked by significant underperformance. The second quarter recorded a **-74.33%** Sharpe ratio, reflecting large risks without commensurate returns. Although the third quarter showed a positive ratio of **25.58%**, this improvement did not last, as the ratio dropped again to **-43.12%** by the fourth quarter.

The first quarter of 2019 saw a minor improvement, with the Sharpe ratio rising to **7.19%**, but HDFC's best performance came in the second quarter, where the Sharpe ratio surged to **73.48%**, driven by favorable market conditions. However, the year ended on a lower note with a Sharpe ratio of **-9.55%** in the fourth quarter, showing underperformance relative to the risk taken.

Like NIFTY, HDFC's performance in 2020 was heavily affected by the pandemic. The first quarter witnessed a **-80.38%** Sharpe ratio, which worsened in the second quarter to **-270.32%**. However, the subsequent market recovery was reflected in the third quarter with a **170.43%** Sharpe ratio, showing significant improvement. This trend continued into the fourth quarter of 2020, although at a more moderate level of **86.84%**.

In 2021, HDFC had an exceptional first quarter with a **247.38%** Sharpe ratio, reflecting strong portfolio returns amid the global recovery phase. Although the ratio declined slightly in the second quarter to **20.09%**, HDFC maintained strong returns through the year, with a ratio of **80.04%** by the third quarter. In 2022, however, HDFC's performance took a hit, as the first quarter's Sharpe ratio dropped to **-38.69%**, and the second quarter followed with a further decline to **-46.61%**. By the third quarter of 2023, HDFC showed a remarkable recovery, achieving a **92.91%** Sharpe ratio, reflecting excellent risk-adjusted returns as the market regained stability.

SBI Analysis

SBI's performance mirrored HDFC's in many ways. In the second quarter of 2018, SBI had a **-42.05%** Sharpe ratio, reflecting poor risk-return trade-offs. The third quarter showed minor improvement with a ratio of **-1.49%**, but the fourth quarter of 2018 saw a drastic decline to **-94.80%**, marking significant underperformance.

The year 2019 was a period of recovery for SBI, with the second quarter recording a **69.58%** Sharpe ratio and the fourth quarter improving to **56.20%**, showing that the portfolio was providing decent returns relative to the risks. However, the first quarter of 2020 saw a significant drop in the Sharpe ratio to **-16.15%**, reflecting the initial market shock from the pandemic. The second quarter worsened to **-267.17%**, one of the lowest points for SBI during the pandemic.

By the third quarter of 2020, SBI made a strong comeback with a **175.35%** Sharpe ratio, and the trend continued through the first quarter of 2021 with **219.31%**, reflecting strong portfolio performance. In the third quarter of 2021, SBI reached a Sharpe ratio of **118.11%**, showing sustained strong performance.

Like the other entities, 2022 was a challenging year for SBI, with the Sharpe ratio dropping to **-80.61%** in the second quarter, a reflection of the difficult market environment. By the third quarter of 2023, SBI demonstrated

a significant recovery, achieving a Sharpe ratio of **85.87%**, indicating strong returns relative to the risk taken during the recovery phase of the market.

Table No – 2: Treynor ratio values of Nifty 50, HDFC and SBI

Date	NIFTY Treynor Ratio	HDFC Treynor Ratio	SBI Treynor Ratio
31-03-2018			
30-06-2018	-0.97%	-6.13%	-2.42%
30-09-2018	3.97%	2.11%	-0.09%
31-12-2018	-7.85%	-3.56%	-5.45%
31-03-2019	1.66%	0.59%	0.99%
30-06-2019	4.63%	6.06%	4.00%
30-09-2019	-5.96%	-5.58%	-1.91%
31-12-2019	3.67%	-0.79%	3.23%
31-03-2020	-7.46%	-6.63%	-0.93%
30-06-2020	-17.15%	-22.30%	-15.35%
30-09-2020	15.75%	14.06%	10.07%
31-12-2020	11.34%	7.17%	5.41%
31-03-2021	14.10%	20.41%	12.60%
30-06-2021	1.08%	1.66%	1.73%
30-09-2021	7.63%	6.60%	6.79%
31-12-2021	4.26%	5.74%	3.89%
31-03-2022	-3.85%	-3.19%	-3.22%
30-06-2022	-6.44%	-3.85%	-4.63%
30-09-2022	1.92%	2.45%	0.45%
31-12-2022	3.42%	4.09%	1.50%
31-03-2023	-4.25%	-1.94%	-4.87%
30-06-2023	1.70%	2.05%	1.15%
30-09-2023	5.24%	7.67%	4.93%
31-12-2023	0.49%	3.63%	1.39%

Source: Calculated from NSE, HDFC and SBI and assuming 8% risk free rate of return

NIFTY 50 Treynor Ratio Analysis

NIFTY 50's Treynor ratio, which measures risk-adjusted returns relative to market risk, shows significant volatility between 2018 and 2023. In the second quarter of 2018, NIFTY recorded a **-0.97%** Treynor ratio, indicating that the portfolio was underperforming given the risk exposure. However, by the third quarter of 2018, the ratio improved to **3.97%**, reflecting better performance relative to the risk taken. This recovery was short-lived as NIFTY's performance plummeted to **-7.85%** in the fourth quarter of 2018, pointing to negative risk-adjusted returns.

The first half of 2019 saw an improvement, with the Treynor ratio rising to **1.66%** in Q1 and further to **4.63%** in Q2, indicating stronger returns for the level of risk involved. However, the third quarter of 2019 marked another downturn, with the ratio falling to **-5.96%**, suggesting poor performance. The year ended with a modest recovery, with the Treynor ratio reaching **3.67%** in the fourth quarter of 2019.

The onset of the COVID-19 pandemic in 2020 resulted in sharp declines in NIFTY's Treynor ratio, with **-7.46%** recorded in Q1 2020, and an even more drastic decline to **-17.15%** in Q2 2020, reflecting severe market downturns. However, the market recovery in the second half of 2020 was reflected in the Treynor ratio, which surged to **15.75%** in Q3 and **11.34%** in Q4, as market conditions improved, and risk-adjusted returns significantly increased.

In 2021, NIFTY 50 maintained strong performance, particularly in Q1, where the Treynor ratio reached **14.10%**, indicating solid risk-adjusted returns. The ratio stabilized through the year, with **1.08%** in Q2 and **7.63%** in Q3. However, by Q4, the Treynor ratio settled at **4.26%**, signaling more moderate performance.

The year 2022 was marked by market volatility, with the Treynor ratio turning negative in Q1 and Q2 at **-3.85%** and **-6.44%**, respectively, reflecting underperformance in the face of high market risk. A recovery was observed by Q3, with the Treynor ratio rebounding to **1.92%** and continuing its upward trajectory in Q4, closing the year at **3.42%**. In 2023, the first quarter saw another decline to **-4.25%**, followed by a recovery in Q2 (**1.70%**) and a peak in Q3 with **5.24%**, indicating stronger performance as market conditions improved. The year ended with a modest **0.49%** Treynor ratio in Q4, signaling a stable yet moderate risk-adjusted return.

HDFC Treynor Ratio Analysis

HDFC's Treynor ratio in 2018 exhibited significant underperformance, starting with **-6.13%** in Q2 2018, indicating that the risk-adjusted returns were not sufficient to justify the risk taken. A minor recovery in Q3 2018 saw the ratio rise to **2.11%**, but by Q4 2018, the ratio dropped again to **-3.56%**, reflecting negative returns.
In 2019, HDFC's Treynor ratio started to improve. The first quarter recorded a modest **0.59%**, followed by a stronger **6.06%** in Q2, signaling better risk-adjusted returns. However, Q3 2019 showed a decline to **-5.58%**, and Q4 2019 saw a minor recovery to **-0.79%**, reflecting weak performance in the second half of the year.
The COVID-19 pandemic caused significant disruptions in 2020, with HDFC's Treynor ratio hitting **-6.63%** in Q1 and further declining to **-22.30%** in Q2, indicating substantial underperformance relative to risk. The second half of 2020 brought a recovery, with the Treynor ratio rising to **14.06%** in Q3 and settling at **7.17%** in Q4, suggesting that risk-adjusted returns had improved.
In 2021, HDFC experienced a strong performance, with the Treynor ratio peaking at **20.41%** in Q1, reflecting high returns for the risk undertaken. The ratio stabilized at **1.66%** in Q2 and continued a steady performance through the year, reaching **6.60%** in Q3 and **5.74%** in Q4.
HDFC's performance in 2022, however, took a hit, with the Treynor ratio falling to **-3.19%** in Q1 and further to **-3.85%** in Q2, indicating underperformance. A modest recovery was observed in Q3, with the Treynor ratio rising to **2.45%**, and further improving to **4.09%** in Q4. In 2023, HDFC's Treynor ratio showed mixed results, starting with **-1.94%** in Q1, improving to **2.05%** in Q2, and peaking at **7.67%** in Q3. The year ended with a modest **3.63%** in Q4, indicating stable risk-adjusted returns.

SBI Treynor Ratio Analysis

SBI's Treynor ratio in 2018 followed a similar trend to HDFC, with **-2.42%** in Q2 2018, reflecting negative performance. The ratio slightly improved in Q3 2018 to **-0.09%**, but by Q4 2018, it dropped again to **-5.45%**, indicating underperformance.
In 2019, SBI showed signs of improvement, with the Treynor ratio increasing to **0.99%** in Q1 and further to **4.00%** in Q2, reflecting positive risk-adjusted returns. However, Q3 saw a decline to **-1.91%**, and Q4 ended with a moderate recovery to **3.23%**, showing mixed performance throughout the year.
The first half of 2020, like NIFTY and HDFC, saw significant declines due to the pandemic, with the Treynor ratio dropping to **-0.93%** in Q1 and **-15.35%** in Q2, indicating substantial underperformance. However, by Q3 2020, SBI's performance improved significantly, with the Treynor ratio reaching **10.07%**, and continued to improve in Q4 with **5.41%**.
In 2021, SBI's Treynor ratio peaked at **12.60%** in Q1, indicating strong risk-adjusted returns. The ratio stabilized in Q2 at **1.73%**, followed by a strong performance in Q3 (**6.79%**) and ending the year at **3.89%** in Q4.
In 2022, SBI faced challenges, with the Treynor ratio dropping to **-3.22%** in Q1 and further to **-4.63%** in Q2, reflecting poor performance. The ratio improved in Q3 to **0.45%**, and further increased in Q4 to **1.50%**, indicating a moderate recovery. In 2023, SBI's Treynor ratio started with **-4.87%** in Q1, followed by a recovery in Q2 (**1.15%**) and a stronger performance in Q3, with the ratio reaching **4.93%**. The year ended with a modest **1.39%** in Q4, reflecting stable but moderate risk-adjusted returns.

Discussions:

NIFTY 50:

NIFTY 50's performance over the period shows notable fluctuations in both the Sharpe and Treynor ratios, reflecting the market's volatility. In 2018, the Sharpe and Treynor ratios were negative for most of the year, with Q2 Sharpe at **-12.93%** and Treynor at **-0.97%**, highlighting poor risk-adjusted returns. However, a temporary improvement in Q3 brought the ratios up to **Sharpe: 52.86%** and **Treynor: 3.97%**, but the gains were short-lived, with both metrics dropping again by the end of the year. This reflects that despite brief positive phases, the overall market conditions remained unstable.
In 2019, NIFTY showed signs of stability, with positive Sharpe and Treynor ratios in the first half of the year, particularly in Q2, where the Sharpe ratio reached **61.56%** and the Treynor ratio **4.63%**, indicating strong risk-adjusted performance. However, Q3 witnessed a downturn, with both ratios turning negative again (**Sharpe: -79.23%, Treynor: -5.96%**), suggesting renewed volatility. By the end of 2019, both ratios had recovered slightly, ending the year on a positive note.
The year 2020 was marked by the COVID-19 pandemic, which led to sharp declines in NIFTY's performance. The Sharpe ratio dropped to **-99.20%** in Q1 and the Treynor ratio to **-7.46%**, indicating severe market shocks. Q2 saw even worse performance, with NIFTY recording a Sharpe ratio of **-228.16%** and a Treynor ratio of **-17.15%**. However, the second half of the year brought a strong recovery, as both ratios surged, peaking at **Sharpe: 209.55%** and **Treynor: 15.75%** in Q3. This recovery extended into 2021, with NIFTY achieving its highest Sharpe ratio of **187.65%** and Treynor ratio of **14.10%** in Q1. The performance stabilized throughout the remainder of 2021, although it moderated slightly in Q4.
In 2022, both the Sharpe and Treynor ratios turned negative again, with global economic uncertainties, inflation, and geopolitical factors weighing on the market. By Q3 2023, NIFTY saw a significant improvement in performance, with the Sharpe ratio reaching **69.68%** and the Treynor ratio **5.24%**, reflecting a recovery in

risk-adjusted returns. The year ended with a slight decline in both metrics, signalling moderate but stable performance.

HDFC:

HDFC's risk-adjusted performance, as indicated by both the Sharpe and Treynor ratios, showed significant volatility between 2018 and 2023. In 2018, HDFC faced severe underperformance, with the Sharpe ratio at **-74.33%** and Treynor ratio at **-6.13%** in Q2, reflecting negative returns compared to the risk undertaken. Although Q3 saw a temporary recovery in both ratios, they turned negative again by the end of 2018, marking a difficult year for HDFC.

In 2019, HDFC's performance was mixed, with Q2 being the strongest quarter, as the Sharpe ratio reached **73.48%** and the Treynor ratio **6.06%**, indicating strong returns for the risks taken. However, HDFC's performance dropped sharply in the second half of the year, with the ratios turning negative again in Q3, though they slightly recovered by Q4.

The impact of the COVID-19 pandemic in 2020 was particularly severe for HDFC, with the Sharpe ratio falling to **-270.32%** and the Treynor ratio to **-22.30%** in Q2. These figures reflect substantial losses relative to both total and market risks. The second half of the year saw a strong recovery, with HDFC's Sharpe ratio reaching **170.43%** and Treynor ratio **14.06%** in Q3, continuing into Q4 with improved but more moderate figures.

In 2021, HDFC demonstrated strong risk-adjusted returns, especially in Q1, where the Sharpe ratio surged to **247.38%** and the Treynor ratio to **20.41%**, reflecting excellent performance relative to the risks taken. The performance remained stable throughout the rest of the year, although the ratios showed more moderate values in Q4. However, in 2022, HDFC struggled again, with negative Sharpe and Treynor ratios in the first two quarters, reflecting market volatility and underperformance. By Q3 2023, HDFC had rebounded significantly, with a **Sharpe ratio of 92.91%** and **Treynor ratio of 7.67%**, indicating a strong recovery and positive returns compared to the risks.

SBI:

SBI's risk-adjusted performance followed a similar pattern to HDFC and NIFTY, with significant fluctuations in both the Sharpe and Treynor ratios over the analyzed period. In 2018, SBI struggled, with negative Sharpe and Treynor ratios in the second quarter (**Sharpe: -42.05%, Treynor: -2.42%**), followed by a brief recovery in Q3, only to see another sharp decline in Q4, where the Sharpe ratio dropped to **-94.80%** and the Treynor ratio to **-5.45%**.

The first half of 2019 saw improvement in SBI's performance, particularly in Q2, where the Sharpe ratio reached **69.58%** and the Treynor ratio **4.00%**, reflecting positive returns. However, similar to HDFC, SBI faced a downturn in the second half of 2019, with the Sharpe and Treynor ratios turning negative in Q3 before recovering slightly in Q4.

The COVID-19 pandemic in 2020 had a severe impact on SBI, with the Sharpe ratio falling to **-267.17%** and the Treynor ratio to **-15.35%** in Q2. However, like NIFTY and HDFC, SBI saw a strong recovery in the second half of 2020, with the Sharpe ratio reaching **175.35%** and the Treynor ratio **10.07%** in Q3. This momentum continued into 2021, where SBI recorded its highest Sharpe ratio of **219.31%** and Treynor ratio of **12.60%** in Q1, reflecting strong risk-adjusted returns.

In 2022, SBI's performance was again negatively impacted by global market conditions, with the Sharpe and Treynor ratios turning negative in the first half of the year. However, by Q3 2023, both ratios had recovered, with the Sharpe ratio reaching **85.87%** and the Treynor ratio **4.93%**, indicating improving market conditions and better risk-adjusted returns.

Comparative Insights:

When comparing the three entities, **HDFC** and **SBI** exhibited more pronounced fluctuations in both the Sharpe and Treynor ratios compared to **NIFTY 50**. HDFC, in particular, experienced steeper declines during periods of market downturn, such as during the COVID-19 pandemic in 2020, where it recorded the lowest Sharpe and Treynor ratios of the three entities. However, it also demonstrated strong recoveries, particularly in 2021, where it outperformed both NIFTY and SBI in terms of risk-adjusted returns.

SBI, while following similar trends to HDFC, generally exhibited less severe swings in performance, though it too experienced significant declines during market downturns. The Treynor ratio, in particular, was more stable across the three entities, indicating that while total risk (captured by the Sharpe ratio) fluctuated significantly, market risk (measured by beta in the Treynor ratio) was more consistent.

By 2023, all three entities had shown signs of recovery, with **HDFC** leading the way in both Sharpe and Treynor ratios, followed by SBI and NIFTY. This suggests that while market volatility affected all three, HDFC and SBI managed to achieve stronger risk-adjusted returns during periods of recovery.

Finally, the analysis of the Sharpe and Treynor ratios for **NIFTY 50**, **HDFC**, and **SBI** highlights periods of significant market volatility, particularly during the COVID-19 pandemic, which caused sharp declines across

all three entities. However, the strong recoveries in 2021 and renewed stability in 2023 demonstrate the resilience of these portfolios and their ability to generate positive returns relative to the risks undertaken.

5. Conclusion

The findings of this study reveal that the financial performance of NIFTY 50, HDFC Mutual Fund, and SBI Mutual Fund over the 2018-2023 period was shaped by considerable market volatility, particularly during global disruptions like the COVID-19 pandemic. Both the Sharpe and Treynor ratios, which measure risk-adjusted returns, exposed the vulnerability of these entities to adverse market conditions. In 2018, all three entities exhibited negative Sharpe and Treynor ratios, reflecting underperformance and insufficient returns given the risks undertaken.

However, 2019 marked a partial recovery for the Indian mutual fund industry, with all three entities showing positive risk-adjusted returns in the second quarter, particularly HDFC and SBI. The onset of the pandemic in early 2020 severely impacted performance, leading to some of the lowest Sharpe and Treynor ratios recorded during the analysis period. Despite these setbacks, the study found that all three entities rebounded strongly in the latter half of 2020 and into 2021, with HDFC and SBI exhibiting particularly strong recoveries. This demonstrates the resilience of these asset management companies in navigating periods of extreme market stress.

HDFC Mutual Fund consistently outperformed both NIFTY 50 and SBI Mutual Fund in terms of risk-adjusted returns, particularly during periods of market recovery. Its ability to generate higher Sharpe and Treynor ratios in 2021 and 2023 indicates strong fund management strategies and a proactive approach to risk mitigation. SBI also showed commendable performance, maintaining a steady recovery after the pandemic-induced downturns.

The study emphasizes the importance of evaluating asset management companies not only on their raw returns but also on their ability to manage risks effectively. Risk-adjusted performance metrics such as the Sharpe and Treynor ratios provide a deeper understanding of how well AMCs can navigate volatile market environments and optimize returns for investors. The findings highlight that AMCs with robust risk management practices, diversified portfolios, and the ability to respond dynamically to market conditions tend to perform better during periods of uncertainty.

For investors, these insights are critical in making informed decisions. The strong recovery in 2021 and the relatively stable performance in 2023 suggest that HDFC and SBI, in particular, are well-equipped to handle market volatility and continue delivering favorable risk-adjusted returns. This study also holds significant implications for financial analysts and policymakers, providing a basis for further exploration into the strategies that allow certain AMCs to outperform others in the face of market disruptions.

In conclusion, while NIFTY 50, HDFC, and SBI all faced significant challenges during the pandemic, their resilience and eventual recovery underscore the importance of effective fund management in volatile markets. This study highlights the critical role of risk-adjusted performance metrics in evaluating mutual fund schemes and suggests that AMCs with strong management capabilities are better positioned to weather economic downturns and deliver superior returns to investors in the long run. This research contributes to the broader understanding of AMC performance within the Indian financial market, offering valuable insights for investors, fund managers, and regulators alike.

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