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A Comparative Study of Rolling versus Benchmark Performance Returns in Selected Mutual Funds

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Abstract: - This study offers a comparative analysis of rolling returns versus benchmark performance in seven large-cap mutual funds in India's mutual fund industry from 2014 to 2024. Focusing on performance consistency, risk-adjusted returns, and expense ratios, it highlights that the Mirae Asset Large Cap Fund consistently outperforms its benchmark, while the Franklin Blue-chip Fund and LIC MF Large Cap Fund show underperformance and higher volatility. The findings underscore the importance of considering rolling returns, risk profiles, and expense ratios in investment decisions, recommending funds with consistent outperformance and lower expenses. The research emphasizes portfolio diversification and regular fund performance monitoring to align investments with financial goals and risk tolerance.

I. INTRODUCTION

The Indian mutual fund industry has grown significantly, driven by increased investor awareness, regulatory support, and strong performance, making mutual funds a preferred choice for diversification and potential higher returns. Mutual funds are categorized into active and passive funds; active funds aim to outperform benchmarks through strategic management, while passive funds replicate benchmark performance with cost efficiency. Rolling returns offer a detailed view of a fund's consistency across various market cycles by calculating returns over different periods, smoothing out volatility. Benchmarks like the Nifty 100 or BSE Sensex serve as performance standards, helping investors gauge a fund's success in surpassing or lagging behind the market. This project will compare rolling returns and benchmark performance in active and passive large-cap mutual funds in India, focusing on return consistency, risk-adjusted performance, and the ability to meet or exceed benchmarks, providing a thorough analysis of how these funds perform across different market cycles.

NEED FOR THE STUDY

This study is essential to clarify the performance of active mutual funds compared to benchmarks across different market conditions. By analyzing rolling returns and risk-adjusted returns, it aims to identify the more effective investment approach. The research addresses the current gap in comparative analysis, helping investors make informed decisions aligned with their risk tolerance and goals.

LITERATURE REVIEW

Bhupendra Singh Hada, Ashish Kumar Suri, Babita Jha (2016) - A Critical Analysis of Performance of Active and Passive Investment Strategy of Indian Mutual Fund Schemes:
This review compares active and passive funds in India. Passive funds show lower costs and consistent performance; active funds incur higher risks.

Nandini Seal, Soumya Mukherjee (2022) - A Study on the Performance of Mutual Funds on Indian AMCs:

Highlighted India's asset management industry's growth and challenges. Suggested exploring fund performance versus investor parameters.

Hitesh Doshi, Redouane Elkamhi and Mikhail Simutin (2018) - Managerial Activeness and Mutual Fund Performance:
Actively managed funds often underperform benchmarks, boosting interest in passive investments. The study introduces "active weight" to better predict fund performance.

Pat Akey, Adriana Robertson and Mikhail Simutin (2021) - Closet Active Management of Passive Funds:
The measure captures differences in fund weights. Highlights "closet active management" and simplifies evaluation methods.

Da Huang (2022) - Passive Investing, Mutual Fund Skill, and Market Efficiency:
The model suggests passive investing boosts learning. Empirical tests confirm improved market efficiency and narrowed performance distribution.

Nicolae Garleanu and Lasse Heje Pedersen (2020) - Active and Passive Investing:
Analyzing the increased passive management boosts market efficiency. Suggests skilled managers are crucial for efficiency.

Lubos Pastor and Blair Vorsatz (2020) - Mutual Fund Performance and flows during the Covid-19 Crisis:
Examined mutual fund performance during COVID-19. Active funds underperformed benchmarks, no significant outflows.

Sabare, Sanjakumar, Nikesh, Panda, Mishra (2022) - Performance of Active and Passive Mutual Fund Schemes in India:
Study spans 15 years, comparing funds. Active funds outperform long-term, passive funds excel short-term, risk-averse investors need broader evaluation.

M. S. Narasimhan and Manas Shah (2015) - An Analysis of Active Fund Allocation Decision of Mutual Funds in India:
Evaluating 772 mutual funds, active strategies underperform by 0.18%. Passive allocation generally outperforms active strategies across categories.

Priyanka Khanzode, K Dinesh Reddy, and Gaurav Singh (2022) - Investigating Performance of Equity-Mutual Fund Schemes in India:
Evaluated equity mutual funds using Sharpe ratio. Highlights importance of metrics for investment decisions.

Rajan Raju and Ananya Mittal (2020) - Active versus Index Equity Investing – Early Evidence from India:
Evaluated active equity funds versus low-cost ETFs using Information Ratio and R-square. Findings highlight competitive performance of ETFs, "closet indexing" in active funds.

Jeffry Haber (2019) - Can Active Fund Managers be replaced with Exchange Traded Funds:
Finds that actively managed portfolios outperformed ETFs in 2017, suggesting that active management can deliver superior returns despite the growing popularity of ETFs.

Gaurav Shreekant, R.S. Rai, T.V. Raman, and Gurendra Nath Bhardwaj (2020) - Performance Evaluation of Actively managed and Passive(Index) Mutual Funds in India:
Analyzed 25 active funds versus 22 passive funds. Found no significant outperformance, except in Jensen alpha.

Shilpi Pal and Arti Chandani (2014) - A Critical Analysis of Selected Mutual Funds in India:

Performance analysis shows debt funds grew from 91 to 506 schemes. Statistical measures and NAV analysis guide investor decisions.

Joshi Girish Balkrishna and Ranjan Dash (2023) - Analysis of active vs passive investment behavior in emerging markets:
Explores and Found Indian mutual fund investors exhibit more biases. Highlights growing passive investments, suggests policy interventions.

Henning Boganes and Alexander Vium Olesen (2019) - Active vs passive investing in emerging markets:
Explored mutual fund performance in emerging markets. Revealing no significant difference between "closet indexers" and truly active funds.

Rahul M, ChhutaniGopwani (2019) - Active vs Passive investment. The optimal diversification effect:
The thesis argues ETFs outperform active investments long-term. Advocates for passive investments due to optimal diversification.

Das S and Seth S (2023) - A Study on the changing landscape of Mutual Fund industry in India:
Analyzed Indian mutual fund industry dynamics and growth. Identified issues and offered recommendations for continued development.

Raghunandan Helwade (2023) - A Study ETF as an investment avenue for passive wealth growth in India with reference to Nifty50:
Examined growing popularity of ETFs related to Nifty50. Suggests further research into ETF performance and investor behavior.

Gaurav S. Chauhan (2023) - Mutual funds' performance and relative strength of factor exposures:
Investigated mutual fund performance focusing on selectivity and allocation. Suggests passive strategies offer better long-term benefits.

II. OBJECTIVES OF THE STUDY

- To compare rolling returns of active mutual funds with benchmarks to spot performance trends.
- To assess consistency in long-term performance using correlation and statistical methods.
- To evaluate risk-adjusted returns to gauge suitability for different investors.
- To employ ARIMA models to forecast future NAVs of active mutual funds.
- Provide actionable insights by analyzing performance, risk factors, and expense ratios.

III. DATA ANALYSIS AND INTERPRETATION

Rolling Return vs Benchmark

Year	ICICI Prudential Bluechip Fund	Franklin Bluechip Fund	Mirae Asset Large Cap	HDFC Top 100 Fund	Edelweiss Large Cap	LIC MF Large Cap	Baroda BNP Paribas Large Cap	Benchmark Return
2014-2017	16.77%	17.09%	**22.83%**	17.37%	16.89%	15.87%	19.08%	14.37%
2015-2018	9.69%	7.79%	**12.54%**	8.78%	8.41%	6.23%	6.68%	8.82%
2016-2019	15.07%	11.69%	**18.74%**	17.93%	14.71%	12.08%	12.41%	15.95%
2017-2020	-4.53%	-7.05%	-2.07%	-6.16%	-1.34%	-1.42%	**-0.07%**	-3.44%

2018-2021	10.76%	11.11%	**13.52%**	9.98%	13.06%	11.78%	13.70%	12.59%
2019-2022	17.03%	15.31%	17.33%	13.67%	17.92%	18.46%	**19.21%**	17.14%
2020-2023	31.22%	29.04%	29.42%	**31.86 %**	29.75%	24.95%	26.96%	29.23%
2021-2024	21.62%	15.47%	15.59%	**22.71 %**	19.82%	15.85%	20.94%	17.59%

Analysis:
Mirae Asset Large Cap consistently delivered the highest rolling returns, especially from 2014-2017 and 2019-2022. HDFC Top 100 and Baroda BNP Paribas also showed strong performance, while Franklin Blue-chip and LIC MF Large Cap underperformed more frequently.
Interpretation:
Mirae Asset Large Cap excels in outperforming the benchmark, reflecting strong management. Despite occasional underperformance, HDFC Top 100 and Baroda BNP Paribas show potential. Consistency in returns and benchmark performance are key for investors.

Expenses Ratio

Factors	**Baroda BNP Paribas Large Cap**	**ICICI Prudential Blue-chip Fund**	**Mirae Asset Large Cap**	**Edelweiss Large Cap**	**HDFC Top 100 Fund**	**LIC MF Large Cap**	**Franklin Blue-chip Fund**
Return %	**17.12**	16.97	16.98	16.55	15.73	14.17	13.9
Risk Free Rate	7.03	7.03	7.03	7.03	7.03	7.03	7.03
Benchmark Return % (Nifty 100 TRI)	14.65	14.65	14.65	14.65	14.65	14.65	14.65
Standard Deviation	11.69	11.29	11.19	11.78	12.11	12.39	**10.82**
Beta	0.91	0.87	0.87	0.93	0.93	0.97	**0.83**
Sharpe Ratio	0.86	0.88	**0.89**	0.81	0.72	0.58	0.63
Treynor Ratio	11.09	11.43	**11.44**	10.24	9.35	7.36	8.28
Jenson Alpha	3.16	3.31	**3.32**	2.43	1.61	-0.25	0.55
Mean	18.43	**19.3**	13.61	17.6	19.07	14.24	10.82
Expenses Ratio %	0.89	0.9	**0.55**	0.65	1.04	1.02	0.96

Interpretation:

Mirae Asset Large Cap stands out as the best-performing fund when considering the overall metrics:

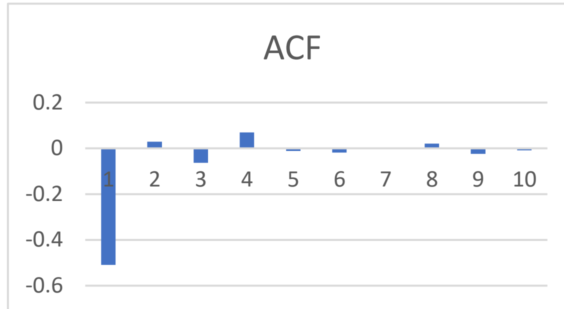
- It has the highest Sharpe Ratio, Treynor Ratio, and Jenson Alpha, indicating excellent risk-adjusted and market risk-adjusted returns.
- It has a competitive return percentage (16.98%) and the lowest expense ratio (0.55%), making it cost-efficient.
- Its mean performance is lower compared to ICICI Prudential Bluechip Fund and Baroda BNP Paribas Large Cap, but the high risk-adjusted performance metrics make it a strong Fund.

ICICI Prudential Bluechip Fund and **Baroda BNP Paribas Large Cap** also perform well, particularly in terms of mean performance and returns, but their expense ratios are higher compared to Mirae Asset Large Cap.
Therefore, based on the comprehensive evaluation, **Mirae Asset Large Cap** is the best among the funds listed.

Analysis of Mirae Asset Fund Using the ARIMA Model

Step – 1 Testing of AR or MA

Lag	Acf
1	-0.50955
2	0.028887
3	-0.06378
4	0.069174
5	-0.01084
6	-0.01838
7	-0.00039
8	0.020894
9	-0.02355
10	-0.00812



Step – 2 Arima Testing and Forecasting

Model Statistics

Index	Phi	theta
1	0	-0.95341
Const	0.000936	0.000936

SSE	478.1607
P	0
Q	1
D	2
res mean	0.01322
res s.d.	0.774938
sqrt mse	0.774565
data mean	-0.00023
data s.d.	1.082532
Size	797
LL	-927.297
AIC	-401.194
BIC	-387.151
AIC aug	1860.594
BIC aug	1874.637

Forecasted Values

Date	Forecast
01-Jul-24	118.70
02-Jul-24	118.98
03-Jul-24	119.27
04-Jul-24	119.55
05-Jul-24	119.84
08-Jul-24	120.12
09-Jul-24	120.41
10-Jul-24	120.70
11-Jul-24	120.99
12-Jul-24	121.28

Interpretation:

- The ARIMA(0,1,2) model is fitted to the data, with one moving average term and the data differenced twice.
- The model has a good fit, as indicated by the AIC and BIC values.
- The residuals' mean and standard deviation are close to zero, showing that the model's predictions are unbiased and have a reasonable error margin.
- The log-likelihood value indicates a decent fit of the model to the data.

Arima model has been used to forecast 10 future values of the time series, assuming the underlying patterns remain consistent.

CORRELATION ANALYSIS

Factors	Return %	Standard Deviation	Beta	Expenses Ratio %	Sharpe Ratio	Treynor Ratio	Jenson Alpha
Return %	1.00000						
Standard Deviation	-0.09842	1.00000					
Beta	-0.04924	0.98294	1.00000				
Expenses Ratio %	-0.58423	0.35742	0.21977	1.00000			
Sharpe Ratio	0.96780	-0.34306	-0.29178	-0.64753	1.00000		
Treynor Ratio	0.95882	-0.36891	-0.32760	-0.61651	0.99803	1.00000	
Jenson Alpha	0.96777	-0.34186	-0.29918	-0.61356	0.99817	0.99862	1.00000

Interpretation:

The strong positive correlations between return percentage and risk-adjusted metrics (Sharpe Ratio: 0.9678, Treynor Ratio: 0.9588, Jensen Alpha: 0.9678) suggest that higher returns correspond to better risk-adjusted performance. The high correlation between Standard Deviation and Beta (0.9829) indicates that increased volatility is linked to greater market sensitivity, impacting an asset's risk profile. Negative correlations with Expense Ratio (Sharpe Ratio: -0.6475) highlight that higher costs reduce returns and risk-adjusted performance, underscoring the importance of cost-efficient investment strategies.

IV. FINDINGS

- Mirae Asset Large Cap stands out as the best fund due to its high returns across multiple periods, including 22.83% (2014-2017) and 29.42% (2020-2023). Despite some underperformance in 2021-2024 (15.59%), it consistently outperforms peers like Franklin Bluechip Fund and LIC MF Large Cap, with superior risk-adjusted metrics and manageable volatility.

- Mirae Asset Large Cap is the best fund due to its top Sharpe Ratio (0.89), Treynor Ratio (11.44), and Jensen Alpha (3.32), reflecting superior risk-adjusted returns. It also has the lowest expense ratio (0.55%) and offers strong returns (16.98%) with manageable volatility (standard deviation: 11.19%).

- The ARIMA(0,2,1) model, which focuses on recent data points rather than past trends, provides accurate predictions with minimal errors, making it a reliable tool for forecasting future values of the Mirae Asset Fund.

- The correlation analysis reveals that higher expenses are negatively correlated with both returns (-0.5842) and risk-adjusted performance measures like the Sharpe Ratio (-0.6475), Treynor Ratio (-0.6165), and Jensen Alpha (-0.6136), indicating that higher expenses generally lead to poorer performance.

V. SUGGESTIONS

Based on the analysis, the following recommendations are made to achieve optimal investment outcomes:

- Investors should consider funds like Mirae Asset Large Cap Fund, which consistently outperform benchmarks, as they demonstrate strong management efficacy and market responsiveness.

- Focus on funds with favorable risk-adjusted return metrics such as high Sharpe and Treynor Ratios, like the Mirae Asset Large Cap Fund, to ensure better returns relative to the level of risk taken.

- Evaluate the long-term performance consistency of mutual funds. Funds with stable and predictable returns over extended periods are generally more reliable for long-term investment.

- Opt for funds with lower expense ratios to maximize net returns. Funds like Mirae Asset Large Cap Fund, with a moderate expense ratio, offer better value for investors.

- Choose funds that perform well across different market conditions. Funds like Mirae Asset Large Cap Fund, which show resilience in downturns and strong performance in bullish periods, can provide balanced returns regardless of market volatility.

V. CONCLUSION

Investment is crucial for growing individual wealth, yet many people stick to traditional investments that fail to outpace inflation and erode purchasing power despite tax benefits. Modern alternatives such as mutual funds, insurance, debt instruments, and stocks offer potential for higher returns and inflation protection. When choosing large-cap mutual funds, it’s important to evaluate rolling returns against benchmark returns, with funds like Mirae Asset Large Cap and HDFC Top 100 standing out for their consistent outperformance. Assessing risk profiles and expense ratios is also key, as higher returns often come with increased volatility, while lower expense ratios can boost net returns. Diversification across multiple funds helps balance risk and reward, contributing to stable growth. Regular monitoring and portfolio adjustments are essential to stay aligned with financial goals. Understanding and strategically investing in mutual funds can maximize returns while managing risks effectively. For newcomers, expert advice is recommended to ensure a secure investment strategy. By comprehensively understanding various options and adopting a well-informed approach, individuals can optimize their investments, manage risks, and achieve their financial goals.

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