

## PERFORMANCE EVALUATION OF OPEN ENDED SCHEMES OF MUTUAL FUNDS IN INDIA WITH SPECIAL REFERENCE TO RELIANCE MUTUAL FUND

---

Ankit Srivastava\*  
Dr. R. S. Sohane\*\*

### Abstract

This study aims to examine the performance of Open ended schemes of Mutual Funds in India with special reference to Reliance Mutual Funds. To evaluate the performance a sample of 12 schemes have been selected which has growth option on the basis of daily returns compared to benchmark returns. For this purpose statistical tools like average, standard deviation, beta, models suggested by Sharpe(1966) and Treynor (1965) are used. The return analysis reveals that 10 schemes out of 12 selected for the study has shown better average return as compared to the market return BSE100. Whereas the risk factor is taken that is calculated by Standard Deviation it was found that 2 schemes was less risky then the market benchmark and the rest 10 schemes was more risky. Considered for the purpose of this study 7 out of the 12 scheme have beta less than 1 (i.e. market beta) implying thereby that these schemes tended to hold portfolios that were less risky than the market portfolio. Sharpe ratio shows the excess return earned over risk free return per unit of risk involved, i.e. per unit of standard deviation. Positive value of the index shows good performance it could be seen that 11 out of 12 schemes have recorded better Sharpe index than the BSE National Index. This indicates that above 90 percent schemes have outperformed the BSE national index. Treynor at lastly shows the excess return over risk free return per unit of systematic risk i.e. beta. Here, too all the schemes recorded positive value indicating there by that the schemes provided adequate returns as against the level of risk involved in the investment.

**Keywords:** Average return; standard deviation; beta; Sharpe and Treynor.

### Introduction

Household savings play an important role in domestic capital formation. Only a small part of the household savings in India is channelized to the capital market. Attracting more household savings to the capital market requires efficient intermediation. Mutual funds have emerged as one of the important class of financial intermediaries

---

\* Research Scholar, G.S. College of Commerce and Economics, Jabalpur, M.P.

\*\* Professor, Head & Dean, G.S. College of Commerce and Economics, Jabalpur, M.P.

which cater to the needs of retail investors. Mutual funds have become an important vehicle for mobilization of savings particularly from the household sector. Mutual funds are one of the most favored investment routes for the small and medium investors across the world. Ideally, Mutual funds provide opportunities for small investors to participate in the capital market without assuming a very high degree of risk. An important principle of investment in capital market is that **do not put all the eggs in a single basket** i.e. diversification. A small investor is not able to have a diversified portfolio mainly due to paucity of resources. However, a mutual fund pools together with the savings of such small investors and invests the same in the capital market and passes the benefits to the investors. Thus, investors can indirectly participate in the capital market by subscribing to the units of mutual funds. Mutual funds employ professional fund managers to manage the investment activities. Therefore, investors also get benefits of professional expertise of these managers.

The Indian mutual funds have witnessed major transformation and structural changes since its inception in 1964, more so during the past decade. The transformation is the result of policy initiatives taken by the Government of India to break the monopoly of the UTI in 1987 by permitting public sector banks and financial institutions to launch their own funds. Later, in 1993, in the wake of policies of liberalization and globalization, the Government also permitted the private sector to enter into the mutual funds. As a result, the mutual funds have now become more competitive. At present, the mutual funds have three types of players viz., the UTI, Public Sector and Private Sector. At the end of 2011, there were over 14,000 mutual funds in the United States with combined assets of \$13 trillion, according to the Investment Company Institute (ICI). Thus, during the past four and a half decades of its existence, the mutual funds have grown several folds in terms of size, operations and investor base. Therefore, it is vital for both the fund managers as well as investors to know as to how mutual funds have performed over the years.

### **Need of the Study**

Evaluating historical performance of mutual funds is important both for investors as well as portfolio managers. It enables an investor to access as to how much return has been generated by the portfolio manager and what risk level has been assumed in generating such returns. Further, an investor can also appraise the comparative performance of different fund managers. Similarly fund managers would also be able to know their performance over time and also vis-a-vis that of other competitors in the industry. The evaluation also provides a mechanism for identifying strengths and weaknesses of fund managers in the investment process, which helps them to take corrective actions.

### **Objectives of the Study**

To evaluate the performance of the mutual funds, the following are the main objectives of the present study:

- To examine the funds sensitivity to the market fluctuation in the terms of Beta.
- To appraise the performance of mutual funds with regard to risk-return adjustment, the model suggested by Sharp and Treynor.

### **Scope of the Study**

The present study comprises of 12 mutual fund schemes launched by Reliance Mutual Fund. The time period for the research work is from 1<sup>st</sup> January 2014 to 31<sup>st</sup> December 2014. The daily returns are compiled on the basis of NAV. Then these schemes are compared with BSE100 to evaluate the performance of these schemes.

### **Sample Selection**

This study examines 12 open-ended schemes being launched by Reliance mutual fund has been taken. These schemes have been selected on the basis of regular data availability during the period of Jan. 2014 to Dec. 2014. Daily Net Asset Value (NAV) data has been used and the period of the data considered is from the date 1st January, 2014 of the scheme or from the date of availability till December 31, 2014.

### **Data Collection**

The present study is based on secondary data which is collected from various sources like published journals, books, magazines, brochures, newspapers and other published and online material. The daily data for the mentioned schemes have been collected from the website [www.mutualfundsindia.com](http://www.mutualfundsindia.com). The data has been collected from 1st January, 2014 to December 31, 2014.

### **Limitations of the Study**

For the purpose of performance evaluation, those schemes have been selected which are in operation since last 10 years. 12 schemes of Reliance Mutual Fund have only be taken for the study which have Growth option. Only open ended schemes have been considered for this purpose. Data of only past 1 year has been taken for the study from 1st January, 2014 to December 31, 2014. Performance evaluation of all the schemes operated by selected mutual funds was not possible because of non availability of sufficient data.

### **Methodology**

In the present study an attempt has been made to analyze and interpret the behavior of different mutual fund schemes with the market during the period under study. In order to achieve the pre-determined objectives an analysis has been made to compare these schemes with the market on the basis of risk and return. Different statistical and financial tools are used to evaluate the performance of these mutual fund schemes under the present study. These tools and techniques include percentage method, arithmetic mean, standard deviation, beta, Sharpe and Treynor measure.

### **Average Return**

The most common method of calculating the return is average simple return. This method is easy to compute and understand. Hence, schemes are compared on the basis of average daily return generated by the schemes under the study as:

Average Scheme Return has been computed as:

$$ARp = \Sigma Rp/n$$

Where

ARp = Average Portfolio Return

Rp = portfolio return

n = number of observations

Average Market Return has been computed as:

$$ARm = \Sigma Rm/n$$

Where

ARm = Average Market Return

Rm = Market Return

n = number of observations

### Standard Deviation

It is measure of total risk of a fund. It measures the fluctuation of the NAV as compared to the average returns of the schemes during a particular period. A higher standard deviation characterize that the returns of the fund have been more unstable and risky than fund having lower standard deviation. Hence, low standard deviation means low risk in funds return. The formula for the calculation is:

$$\sigma_p = \sqrt{\frac{\sum_{t=1}^T (r_{pt} - ar_p)^2}{T-1}}$$

$\sigma_p = \sigma$  of the portfoliic

$r_{pt}$  = Return on the portfolio during time period

$ar_p$  = Average return in the folio

$T$  = Total number of time periods in the study

### Beta

Beta is a measure of systematic risk of a portfolio. It determines the volatility of a fund in comparison to that of its index or benchmark. Where the beta value of fund is very close to 1, it indicates that the fund's performance closely matches the market index. Beta value of fund less than 1 indicates less volatility of the fund than the market index. For example, if stock's beta is 1.3, it is theoretically 30% more volatile than the market. Negative beta reflects an inverse relationship between the security and the market.

Beta is computed by following formula:

$$\beta_p = \frac{(T \times \Sigma xy) - (\Sigma y \times \Sigma x)}{(T \times \Sigma x^2) - (\Sigma x)^2}$$

$x = er_{mt}$

$y = er_{pt}$

### Sharpe Ratio

It is developed by Nobel laureate William F. Sharpe to measure risk adjusted performance. It is a measure of a fund's return per unit of risk assumed. Sharpe ratio is calculated by deducting the risk free rate of return from the average weekly return for a portfolio and dividing the result by the standard deviation of the portfolio returns. Higher ratio indicates the better the fund's historical risk-adjusted performance. The Sharpe ratio tells us whether the portfolio's returns are due to smart investment decisions or a result of excess risk. This measurement is very useful because although one portfolio can reap higher returns than its peers, it is treated as a good investment if those higher returns do not come with too much additional risk.

The greater a portfolio's Sharpe ratio, the better is its risk adjusted performance. A negative Sharpe ratio indicates that a risk - less asset would perform better than the security being analyzed. If fund's Sharpe ratio is greater than the benchmark, the fund's performance is superior over the market. If it is less than the benchmark, the fund's performance is not good in the market. Sharpe ratio is calculated with the usage of following equation:

$$S_p = (AR_p - AR_f) / \sigma_p$$

Where,

$AR_p$  = Average Fund Return

$AR_f$  = Average risk-free return

$\sigma_p$  = Standard deviation of fund returns

The benchmark comparison is

$$S_m = (AR_m - AR_f) / \sigma_m$$

### Trey nor Ratio

Trey nor ratio is developed by Jack Trey nor that measures return per unit of systematic risk. It is similar to the Sharpe ratio, with the difference that the Trey nor ratio uses beta as the measurement of volatility. The scheme with the higher Trey nor ratio offers a better risk-reward equation for the investor. It is also known as the "reward-to-volatility ratio". It is more appropriate for diversified funds, where the systematic risks have been eliminated. For a completely diversified portfolio, one without any unsystematic risk, the two measures give identical ranking. Alternatively, a poorly diversified portfolio could have a high ranking based on Trey nor ratio and a low ranking based on Sharpe ratio. The difference in rank is because of the difference in diversification. Hence, both ratios provide complementary yet different information. Trey nor ratio is calculated for various funds as:

$$T_p = AR_p - AR_f / \beta_p$$

Where,

$AR_p$  = Average fund return

$AR_f$  = Average risk- free return

$\beta_p$  = beta of the fund

The benchmark comparison is  $(AR_m - AR_f)$

### Return Analysis

The performance of equity schemes have been analysed through averages and these tools are applied to NAV of selected specific equity fund schemes. The results of these applications are shown as per Table 1. The average daily return is calculated on the basis of NAV. The performance of ten schemes (83 percent) out of total 12 schemes is above the market index whereas in case of 2 schemes (17 percent) it is on the lower side. It clearly shows that 83 percent schemes performed well compared to the market from the selected study. The average return of benchmark BSE100 is calculated as 0.00119.

Table 1  
**Average Return Earned by the Schemes**

Name of the Scheme	Average Return
Reliance Vision Fund	0.00202
Reliance Top 200 Fund	0.00187
Reliance Quant Plus Fund	0.00124
Reliance NRI Equity Fund	0.00138
Reliance Focused Large Cap Fund	0.00137
Reliance Index Fund- Nifty Plan	0.00119
Reliance Index Fund- Sensex Plan	0.00109
Reliance Growth Fund	0.00186
Reliance Long Term Equity Fund	0.00251
Reliance Small Cap Fund	0.00287
Reliance Regular Savings Fund	0.00189
Reliance Equity Opportunities Fund	0.00200

### Risk Analysis

It shows the standard deviation of selected schemes. it is the most common expression to measure risk of the fund return. Higher the value of standard deviation of the fund returns, greater will be the total risk carried by the fund. It is observed that the maximum deviation of funds return is shown by Reliance Small Cap Fund 0.01077 followed by Reliance Growth Fund 0.01032, Reliance Long Term Equity Fund 0.01028. Reliance Index Fund- Sensex Plan was least risky scheme with lowest standard deviation 0.00772. Standard Deviation of benchmark BSE 100 index is 0.00836.

Table 2  
**Standard Deviation**

Name of the Scheme	S.D.
Reliance Vision Fund	0.00952
Reliance Top 200 Fund	0.00884
Reliance Quant Plus Fund	0.00844
Reliance NRI Equity Fund	0.00896
Reliance Focused Large Cap Fund	0.00935
Reliance Index Fund- Nifty Plan	0.00797
Reliance Index Fund- Sensex Plan	0.00772
Reliance Growth Fund	0.01032
Reliance Long Term Equity Fund	0.01028
Reliance Small Cap Fund	0.01077
Reliance Regular Savings Fund	0.01066
Reliance Equity Opportunities Fund	0.00890

Of all the schemes selected for study and compared from standard deviation of BSE 100 Index. It shows that Reliance Index Fund- Sensex Plan and Reliance Index Fund- Nifty Plan is less risky than benchmark index, but rest schemes are more risky.

### Beta

Table 3 shows the systematic risk of 12 schemes. Considered for the purpose of this study 7 out of the 12 scheme have beta less than 1 (i.e. market beta) implying thereby that these schemes tended to hold portfolios that were less risky than the market portfolio. It was observed that highest beta in the case of Reliance Growth Fund 1.06477 followed by Reliance Vision Fund 1.05004, Reliance Focused Large Cap Fund 1.04846 and lowest beta in the case of Reliance Index Fund - Nifty Plan 0.09423.

Table 3  
Beta of the Scheme

Name of the Scheme	BETA
Reliance Vision Fund	1.05004
Reliance Top 200 Fund	0.98993
Reliance Quant Plus Fund	0.98184
Reliance NRI Equity Fund	1.00833
Reliance Focused Large Cap Fund	1.04846
Reliance Index Fund- Nifty Plan	0.09423
Reliance Index Fund- Sensex Plan	0.90433
Reliance Growth Fund	1.06477
Reliance Long Term Equity Fund	0.92146
Reliance Small Cap Fund	0.88894
Reliance Regular Savings Fund	1.04504
Reliance Equity Opportunities Fund	0.92251

### Application of Sharpe Model

Table 4  
Sharpe of the Scheme

Name of the Scheme	Sharpe
Reliance Vision Fund	0.17595
Reliance Top 200 Fund	0.17248
Reliance Quant Plus Fund	0.10636
Reliance NRI Equity Fund	0.11620
Reliance Focused Large Cap Fund	0.11033
Reliance Index Fund- Nifty Plan	0.10678
Reliance Index Fund- Sensex Plan	0.09660
Reliance Growth Fund	0.14715

Reliance Long Term Equity Fund	0.21133
Reliance Small Cap Fund	0.23496
Reliance Regular Savings Fund	0.15270
Reliance Equity Opportunities Fund	0.18677

Table 4 depicts value of Sharpe's reward to variability ratio. It is an excess return earned over risk free return per unit of risk involved, i.e. per unit of standard deviation. Positive value of the index shows good performance it could be seen that 11 out of 12 schemes have recorded better Sharpe index than the BSE National Index. This indicates that above 90 percent schemes have outperformed the BSE national index. One scheme Reliance Index Fund- Sensex plan 0.09660 is less than BSE 100 national index Sharpe ratio i.e. 0.10111. The top performance is shown by Reliance Small Cap Fund 0.23496. This implies that the funds decision for diversified portfolio in a falling market has proved successful in earning higher excess returns per unit of risk as compared to the market.

#### **Application of Treynor Model**

Table 5 shows Treynor of the scheme it is the excess return over risk free return per unit of systematic risk i.e. beta. Here, too, all the schemes recorded positive value indicating there by that the schemes provided adequate returns as against the level of risk involved in the investment. Analysis of table 1.7 reveals that all the mutual funds schemes have positive values. In terms of Treynors ratio, the top performers are Reliance Top 200 Fund 0.015416, Reliance Small Cap Fund 0.002847, Reliance Long Term Equity Fund 0.002358 and Reliance Index Fund- Sensex Plan 0.000826. A higher Treynor Index as compared to market indicates that investor who invested in mutual fund to form well diversified portfolio did receive adequate return per unit of systematic risk undertaken

Table 5  
**Treynor of the Schemes**

<b>Name of the Scheme</b>	<b>TREYNOR</b>
Reliance Vision Fund	0.00159
Reliance Top 200 Fund	0.01541
Reliance Quant Plus Fund	0.00091
Reliance NRI Equity Fund	0.00103
Reliance Focused Large Cap Fund	0.00098
Reliance Index Fund- Nifty Plan	0.00090
Reliance Index Fund- Sensex Plan	0.00082
Reliance Growth Fund	0.00142
Reliance Long Term Equity Fund	0.00235
Reliance Small Cap Fund	0.00284
Reliance Regular Savings Fund	0.00148
Reliance Equity Opportunities Fund	0.00180



### Conclusion

As far as the schemes are concerned, Reliance Small Cap Fund was at the top with highest average daily return 0.00287 followed by Reliance Long Term Equity Fund(0.00251), Reliance Vision Fund(0.00202) and Reliance Index Fund- Sensex Plan (0.00109) as the lowest Return. Calculation of total risk as measured by standard deviation shows that Reliance Small Cap Fund Plan was the most risky scheme with highest standard deviation 0.01077, followed by Reliance Regular Savings Fund (0.01066), Reliance Growth Fund(0.01032). Reliance Index Fund- Sensex Plan was least risky scheme with lowest standard deviation 0.00772. Calculation of systematic risk as measured by beta shows that 5 equity schemes found low systematic risk as beta less than 1, Reliance Growth Fund has highest beta 1.06477 followed by Reliance Vision Fund (1.05004) and have Reliance Index Fund- Nifty Plan as lowest beta (0.09423).

As per Sharpe ratio Reliance Small Cap Fund maintain 1<sup>st</sup> Rank followed by Reliance Long Term Equity Fund, Reliance Equity Opportunities Fund. Lowest Sharpe ratio found in the case of Reliance Index Fund-Sensex Plan. As per Treynor Ratio Reliance Top 200 Fund has the highest ratio with Treynor as 0.01541, followed by Reliance Small Cap Fund (0.002284), Reliance Long Term Equity Fund (0.00235) and Reliance Index Fund- Sensex Plan with lowest Treynor ratio of 0.00082.

### References

- Jensen, Michal, C. (1968), "The Performance of Mutual Funds in the period 1954-1964", *Journal of Finance*, Volume 23, pp. 389-416.
- Khurana Ajay, (1996), "Top Management turnover-An Empirical Investigation of Mutual Fund Managers", *Journal of Financial Economics*, Volume 3
- Mohanan, S. (2006), "Mutual Fund Industry in India: Development and Growth", *Global Business and Economic Review*, Volume 8, Number 3/4, pp. 280-289.
- Sharpe, William F. (1966), "Mutual Fund Performance", *Journal of Business*, Volume 39, Supplement, pp. 119-138.
- Singh, Y.P. and Vanita (2002), "Mutual Fund Investors' Perceptions and Preferences- A Survey", *The Indian Journal of Commerce*, Volume 55, Number 3, pp.8.
- Treynor, J. (1965), "How to Rate Management of Investment Funds", *Harvard Business Review*, Volume 43, pp. 63-75.
- Williamson, J. (1972), "Measuring and Forecasting of Mutual Fund Performance Choosing and Investment Strategy", *Financial Analysis Journal*, pp. 78-84.
- Yadav, R.A. (1992), "Mutual Funds in India: Some Issues", *MDI, Management Journal*, Volume 5, pp. 16

