

Performance Evaluation of Mutual Funds: A Study of Selected Diversified Equity Mutual Funds in India

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Abstract---A mutual fund is a trust that pools the savings of a number of investors who share a common financial goal. The money thus collected is then invested in capital market instruments such as shares, debentures and other securities. The income earned through these investments and the capital appreciation realized is shared by its unit holders in proportion to the number of units owned by them. Thus, a mutual fund is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed basket of securities at a relatively low cost. The mutual fund industry in India was started in the year 1963 with the formation of Unit Trust of India. This industry was privatized in the year 1993. The wide variety of schemes floated by these mutual fund companies gave wide investment choice for the investors. Among wide variety of funds equity diversified fund is considered as substitute for direct stock market investment. In this research paper an attempt is made to analyze the performance of the growth oriented equity diversified schemes on the basis of return and risk evaluation. The analysis was achieved by assessing various financial tests like Average Return, Sharpe Ratio, Treynor Ratio, Standard Deviation, Beta and Coefficient of Determination (R^2). The data has been taken from various websites of mutual fund schemes and from amfiindia.com. The analysis depicts that majority of funds selected for study have outperformed under Sharpe Ratio as well as Treynor Ratio.

Keywords--- Mutual Fund, Average Return, Standard Deviation, Beta, Coefficient of Determination.

I. INTRODUCTION

INVESTMENT is the sacrifice of certain present value for some uncertain future reward. In other words an investment can be defined as commitment of funds to one or more assets that will be held over some future time period. Broadly, an investment decision is a tradeoff between risk and return. A mutual fund is a special type of institution that acts as an investment instrument. Apart from the many advantages that investing in mutual funds provide like diversification, professional management, the ease of investment process has proved to be a major enabling factor.

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However, with the introduction of innovative products, the world of mutual funds nowadays has a lot to offer to its investors. A mutual fund is a pure intermediary that performs a basic function of buying and selling securities on behalf of its unit holders. Mutual fund is a body corporate which pools up the money from different types of investors and invests those funds on behalf of the investors in diversified securities. In other words, a mutual fund allows an investor to take a position indirectly in a basket of assets.

According to Association of Mutual Funds in India (AMFI),

“A mutual fund is a trust that pools the savings of a number of investors who share common financial goal. Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds. This investor buys units of a particular mutual fund scheme that has a defined investment objective and strategy.”

II. REVIEW OF LITERATURE

Jensen Michael (1968) developed a composite portfolio evaluation technique concerning risk-adjusted returns. He evaluated the ability of 115 fund managers in selecting securities during the period 1945-66. Analysis of net returns indicated that, 39 funds had above average returns, while 76 funds yielded abnormally poor returns. Using gross returns, 48 funds showed above average results and 67 funds below average results. Jensen concluded that, there was very little evidence that funds were able to perform significantly better than expected as fund managers were not able to forecast securities price movements.

Nalini Prava Tripathy (1996) concluded that the Indian capital market has been increasing tremendously during last few years. With the reforms of economy, reforms of industrial policy, reforms of public sector and reforms of financial sector, the economy has been opened up and many developments have been taking place in the Indian money market and capital market.

M. Vijay Anand (2000) focused on the schemes of Birla Sunlife and the competitor's schemes available in the market. Author studied the analysis of Performance of Equity fund for 3 years and SWOT Analysis of Birla Sunlife by Literature survey and Delphi technique. In depth financial review the author identifies among the selected equity funds that earns

higher returns than benchmark and competitors and concluded that Birla Sunlife performs well compared to the benchmarks and competitors.

Gupta & Agarwal (2009) found very little research on the construction of best mutual fund portfolio. Their objective of the research was to construct the best portfolio using cluster method, taking industry concentration as a variable and compares the performance of two types of portfolios with selected benchmarks. Results are found to be encouraging, as far as risk mitigation is concerned. The results expected to help in the construction of best portfolio of mutual funds.

III. OBJECTIVES OF THE STUDY

- To study the performance of Selected Diversified Equity Mutual Funds in India.
- To compare the performance of Selected Diversified Equity Mutual Funds in India.

IV. RESEARCH METHODOLOGY

A. Scope of Study

The period of the study is for 8 Years (2005-2013). The study uses a sample of 8 mutual fund schemes comprising of all equity diversified funds.

B. Sources of Data

To gain an overview of the current performance trends of the Indian mutual fund industry, secondary data have been used and collected from the fact sheets, newspapers, journals, books and periodicals. The data were also collected from various websites of AMCs, AMFI, moneycontrol.com etc. The NAVs of the sample mutual fund schemes have been collected on monthly basis over a period of eight years. BSE Sensex has been used as a benchmark for performance evaluation of different schemes and provides the time series data over a fairly long period of time. Further, the monthly yields on 91-day treasury bills of Government of India have been used as a surrogate for risk free rate.

C. Tools

To analyze whether mutual funds under-perform or over perform the market index, the following statistical methods and techniques have been used:

D. For Risk Analysis

Standard deviation (Total Risk), Beta (Systematic Risk) and Coefficient of Determination were calculated.

E. For Return Analysis

Average Return was calculated for analysing return on mutual funds.

Performance Evaluation by Risk Adjusted measures

For this purpose, Sharpe Ratio and Treynor Ratio were calculated.

V. ANALYSIS OF DATA

A. Average Returns

The performance evaluation is done by comparing the returns of a mutual fund scheme with returns of a benchmark portfolio. In this study, the returns have been called as average returns. Average return is obtained by taking the simple mean of monthly returns, whereby monthly returns are calculated by using the NAVs of the mutual fund scheme.

B. Standard Deviation (SD)

Its significance lays in the fact that sample is free from defects of sampling, it measures the absolute dispersion, the greater the SD; greater will be magnitude of the deviation of the values from their mean. Small SD means high degree of uniformity & homogeneity of a series. The total risk is measured in terms of standard deviation.

C. Beta

Beta is a fairly commonly used measure of risk. It basically indicates the level of volatility associated with the fund as compared to the benchmark. The success of beta is heavily dependent on the correlation between a fund and its benchmark. If the fund portfolio doesn't have relevant benchmark index then the beta would be inadequate. A beta that is greater than one means that fund is more volatile than the benchmark, while a beta of less than one means that the fund is less volatile than the index. A fund with a beta very close to 1 means the fund's performance closely matches the index or benchmark.

D. Coefficient of Determination (R^2)

The R^2 is a measure of a security's diversification in relation to the market. The closer the R^2 is to 1.00, the more completely diversified the portfolio (Reilly and Brown, 2003). R^2 is ranging from 1 to 100, gives an idea about how well a fund's performance correlates with that of the benchmark. An R^2 of 0 means that a fund's returns have no correlation with the market and an R^2 of 1.00 indicates that a fund's returns are completely in sync-up and down-with the benchmark (Contas and Shim, 2006).

E. The Sharpe Measure

The Sharpe Ratio measures the fund's excess return per unit of its risk (i.e. total risk). This ratio indicates the relationship between the portfolio's additional return over risk-free return and total risk of the portfolio, which measured in terms of standard deviation. A high and positive Sharpe Ratio shows a superior risk-adjusted performance of a fund while low and negative Sharpe Ratio is an indication of unfavorable performance. Generally, if Sharpe Ratio is greater than the benchmark comparison, the fund's performance is superior over the market and vice-versa. According to Sharpe, it is the total risk of the fund that the investor are concerned about so, the model evaluates fund on the basis of reward per unit of total risk, symbolically, it can be return as :

$$S_p = \frac{R_p - R_f}{\sigma_p}$$

Where,

S_p stands for Sharpe ratio of the mutual fund schemes

R_p stands for average return on portfolio

R_f stands for average risk-free rate of return

σ_p stands for total risk or standard deviation of the returns of portfolio.

The benchmark comparison with this measure of performance

$$\frac{R_m - R_f}{\sigma_m}$$

Where,

R_m stands for average return on the market or benchmark portfolio

σ_m stands for the total risk on market

While a high and positive Sharpe Ratio shows a superior risk adjusted performance of a fund, a low and negative Sharpe Ratio is an indication of unfavorable performance.

F. The Treynor's Performance Index

Treynor ratio measures the relationship between fund's additional return over risk-free return and market risk is measured by beta. The larger the value of Treynor ratio, the better the portfolio has performed. Generally, if the Treynor ratio is greater than the benchmark comparison, the portfolio has outperformed the market and indicating superior risk-adjusted performance. Using the beta, rather than the standard deviation (as in the Sharpe Index), we are assuming that the portfolio is a well diversified portfolio.

$$T_p = \frac{R_p - R_f}{\beta_p}$$

Where,

T_p stands for Treynor ratio of the mutual fund schemes.

R_p is the average return on portfolio

R_f is the average risk-free rate of return

β_p stands for sensitivity of fund return to market return

The benchmark comparison with this measure of performance is measured by:

$$T_m = \frac{R_m - R_f}{\beta_m}$$

Where,

T_m stands for Treynor ratio of the benchmark portfolio

R_m is the average return on the market

β_m is the market beta which is equal to 1.0

If the Treynor ratio is greater than the benchmark comparison ($R_m - R_f$), then the portfolio has outperformed the market and indicating superior risk-adjusted performance.

VI. RESULTS AND FINDINGS

A. Performance in terms of Average Returns, Standard Deviation, Beta and R^2

The performance of selected funds is evaluated using average return, standard deviation, Beta and R^2 . Return alone should not be considered as the basis of measurement of the performance of a mutual fund scheme, it should also include the risk taken by the fund manager because different funds will have different levels of risk attached to them. Risk associated with a fund, in a general, can be defined as variability or fluctuations in the returns generated by it. The

higher the fluctuations in the returns of a fund during a given period, higher will be the risk associated with it.

TABLE I.1
RETURN AND RISK OF MUTUAL FUND SCHEMES

1	2	3	4	5	6
S.No	Schemes	Average Return (Monthly)	Total Risk (Std. Deviation)	Beta	R^2
1	SBI Contra Fund	0.01636010	0.07867989	0.9627420*	0.88430215
2	Kotak Opportunities Fund	0.01679639	0.08156093	0.9863392*	0.86435148
3	Birla Sunlife Dividend Yield Plus Fund	0.01427274	0.07138482	0.8148696*	0.76892085
4	HDFC Growth Fund	0.01610818	0.07210499	0.8962191*	0.91155583
5	ICICI Prudential Dynamic Fund	0.01735794	0.07055911	0.8444962*	0.84475441
6	Tata Ethical Fund	0.01554503	0.08130379	0.9683483*	0.83740327
7	UTI MNC Fund	0.01395328	0.05950732	0.6634898*	0.73192174
8	HSBC India Opportunities Fund	0.01300302	0.07242593	0.8812375*	0.87462856
	BSE SENSEX	0.01412505	0.07685304	1	1

Note: R^2 is a coefficient of determination for a portfolio.

* indicates statistical significance at the five percent level.

1.1.A. Interpretation

An analysis of Table 1.1 reveals that in case of all Equity option schemes of Diversified funds, six out of eight funds have earned higher returns (average returns and average annual returns) in comparison to their benchmark portfolio returns. The top performers in terms of returns, in decreasing order are ICICI Prudential Dynamic Fund, Kotak Opportunities Fund, SBI Contra Fund, HDFC Growth Fund, Tata Ethical Fund and Birla Sunlife Dividend Yield Plus Fund. The remaining two funds have shown inferior returns than the market returns and have thus been unsuccessful in beating the market. These schemes were UTI MNC fund and HSBC India Opportunities fund.

1.1.B. Performance in terms of Sharpe Ratio

The Sharpe Ratio measures the fund's excess return per unit of its risk (i.e. total risk). This ratio indicates the relationship between the portfolio's additional return over risk-free return and total risk of the portfolio, which measured in terms of standard deviation. The results of the Sharpe Ratios of the selected mutual fund schemes of all the growth option with the benchmark portfolio have been presented below:

TABLE I.2
SHARPE RATIOS OF MUTUAL FUND SCHEMES-GROWTH OPTION

1	2	3
S.No	Schemes	Sharpe Ratio
1	SBI Contra Fund	0.137560337
2	Kotak Opportunities Fund	0.138050489
3	Birla Sunlife Dividend Yield Plus Fund	0.12237715
4	HDFC Growth Fund	0.146609976
5	ICICI Prudential Dynamic Plan Fund	0.167534359
6	Tata Ethical Fund	0.123095806
7	UTI MNC Fund	0.14143495
8	HSBC India Opportunities Fund	0.103086736
	Sharpe Ratio of the BSE Sensex	0.111748137

1.2 .A. Interpretation

The Sharpe Ratio measures the fund's excess return per unit of its risk (i.e. total risk). This ratio indicates the relationship between the portfolio's additional return over risk-free return and total risk of the portfolio, which measured in terms of standard deviation. A high and positive Sharpe Ratio shows a superior risk-adjusted performance of a fund while low and negative Sharpe Ratio is an indication of unfavorable performance. Generally, if Sharpe Ratio is greater than the benchmark comparison, the fund's performance is superior over the market and vice-versa. The results of the Sharpe Ratios of the selected mutual fund schemes of all the growth/equity options with the benchmark portfolios have been presented in the table 1.2. Seven selected funds have the greater value than the Sharpe ratio benchmark which shows their superior performance. Top performing fund schemes as per Sharpe ratio analysis were ICICI Prudential Dynamic Plan fund, HDFC Growth fund, UTI MNC fund, Kotak Opportunities fund, SBI Contra fund, Tata Ethical fund, Birla Sunlife Dividend Yield Plus fund. Thus, it can be concluded that the performance in terms of Sharpe Ratio of most of the selected mutual funds have been satisfactory and have outperformed the market index during the study period.

1.2.B. Performance in terms of Treynor Ratio

Treynor ratio measures the relationship between fund's additional return over risk-free return and market risk is measured by beta. The higher the value of Treynor Ratio, the better is the performance of portfolio.

TABLE I.3
TREYNOR RATIOS OF MUTUAL FUND SCHEMES-GROWTH OPTION

1	2	3
S.No	Schemes	Treynor Ratio
1	SBI Contra Fund	0.011242089
2	Kotak Opportunities Fund	0.011415471
3	Birla Sunlife Dividend Yield Plus Fund	0.010720575
4	HDFC Growth Fund	0.011795453
5	ICICI Prudential Dynamic Plan Fund	0.013997783
6	Tata Ethical Fund	0.010335285
7	UTI MNC Fund	0.012685071
8	HSBC India Opportunities Fund	0.00847235
	Treynor Ratio of BSE Sensex	0.008588184

1.3.A. Interpretation

Treynor ratio measures the relationship between fund's additional return over risk-free return and market risk is measured by beta. The larger the value of Treynor ratio, the better is the performance of portfolio. Generally, if the Treynor ratio is greater than the benchmark comparison, the portfolio is supposed to have outperformed the market and indicates superior risk-adjusted performance. Table 2.3 presents the results of Treynor Ratio from the selected mutual fund schemes with their respective benchmark portfolios. The analysis reveals that seven out of eight diversified fund schemes are greater than the benchmark comparison which means the portfolio has outperformed the market and indicates the superior risk-adjusted performance.

VII. CONCLUSION

The study has compared the various equity diversified mutual funds. Summary of results is presented in different tables. In India, innumerable mutual fund schemes are available to general investors which generally confound them to pick the best out of them. This study provides some insights on mutual fund performance so as to assist the common investors in taking the rational investment decisions for allocating their resources in correct mutual fund scheme. The data employed in the study consisted of monthly NAVs for the open-ended schemes. The study utilized benchmark portfolios according to the scheme objective such as BSE Sensex for all growth/equity schemes. The performance of sample mutual fund schemes has been evaluated in terms of return and risk analysis, and risk adjusted performance measures such as Sharpe ratio and Treynor ratio. In nut shell, the performance of mutual fund in terms of Average returns, seventy five percent of the diversified fund schemes have shown higher and superior returns and remaining have shown inferior returns. In terms of standard deviation, sixty two percent of the selected schemes are less risky than the market. All the funds have beta less than one and positive which imply that they were less risky than the market portfolio and in terms of coefficient of determination (R^2), all eight funds were near to one which indicates higher diversification of portfolio. Seven out of eight funds have shown superior performance under the Sharpe ratio as well as Treynor Ratio.

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