

# Performance Evaluation of Selected Open Ended Equity Funds for the Post Recession Period: An Indian Perspective

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## Abstract

The Global recession has marred the countries worldwide. The ever-growing Indian economy is no exception and has finally encountered a slowdown and the results are crystal clear. The lower GDP, increased inflation rate, increased job searches are some of the highlighting factors signaling the impact of global recession. The present study attempts to unveil the performance of selected mutual funds during post global recession i.e. period from March 2009 - March 2012. Traditional performance measures like Sharpe ratio, Treynor ratio and Jensen's alpha are widely used performance measures based on mean variance framework and are used to evaluate the selected mutual fund schemes. The study discovered that on comparison of rate of return of sample schemes with the benchmark return, majority of the equity mutual funds have outperformed the benchmark. However, when the mean return of the entire sample is considered, it does not show significantly different return from that of the benchmark Sensex. However, an analysis based on risk-adjusted performance, showed a different picture where most of the funds in the sample have posted positive and better Sharpe, Treynor's ratio as well as Jenson's alpha, compared to the benchmark Sensex. In short, it can be said that although the study provides some evidence of satisfactory performance in terms of returns generated per unit of risk, yet a conclusive statement regarding the capabilities of mutual funds as an investment avenue is still obscure.

**Keywords:** Sharpe Ratio, Jensen Alpha, Treynor Ratio, Risk, Rate of Return, Sensex, Benchmark

## Introduction

The Global recession has marred the countries worldwide. The ever-growing Indian economy is no exception and has finally encountered a slowdown and the results are crystal clear. The lower GDP, increased inflation rate, increased job searches are some of the highlighting factors signaling the impact of global recession. The Indian financial system is sound and robust system as compared to all other financial systems. But during the period of global recession i.e. from 2008 onwards, Indian economy has shown volatility and during this period mutual fund industry has suffered a lot. Mutual funds are involved in the transformation of Indian capital market as they are playing a significant role in spreading equity culture. This industry is growing at a phenomenal rate and are known for the benefits of diversification and professional management on the basis of which they are propounded as better instruments than capital market instrument i.e. shares. But in the times of volatility or slowdown, it is always doubtful whether the mutual funds have the ability to withstand the situation and protect investors' investment? So it requires further attention in terms of evaluation of performance. Researchers in the field of financial economics have long recognized the importance of measuring the risk of a portfolio of financial assets or securities. Financial economists have designed various performance measures for the purpose, still there is no single argument regarding the best

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method for analyzing the performance of portfolio. Apart from this, a large number of academia believes that mutual funds cannot beat the market with their active managed portfolio efforts, while there are contradictions to the same too [25]. In order to assess whether by investing in a diversified equity scheme, the investor can feel free in terms of losses which can arise due to non diversification, present study has tried to unveil the performance of selected schemes of top asset management companies. The following table depicts a snapshot of Indian mutual fund industry since inception:



Fig 1: Snapshot of Growth of AUM in Mutual Fund Industry since Inception

(Source:www.amfiindia.com)

**Performance Measures**

In the present study, following measures have been used for evaluating the performance.

**Return:** On the basis of daily NAVs, daily log returns are computed for the different schemes and returns in the market index are calculated on basis of Sensex on the respective date for 3 years. The log return from a mutual fund scheme at time t, is calculated as follows. Scheme daily log return i.e.

$$L_{nR} = L_n(NAV_t/NAV_{t-1}) \dots\dots\dots Eq(1)$$

Where, NAV<sub>t</sub> and NAV<sub>t-1</sub> are net assets value for time period t and t-1, respectively.

The mean return of the mutual fund scheme over a period of time is given as follows:

$$Scheme\ Mean\ Return\ (SMR) = Average(L_{nR}) \dots\dots\dots Eq(2)$$

**Benchmark:** For evaluating the investment performance, it is necessary to choose a benchmark against which the performance of the sample schemes is compared. BSE sensex has been used as benchmark in this study as it is the widely used index by both practitioners and researchers.

The log return on the market (representative by a stock index) at time t, is given as follows:

$$Market\ Return\ (MR) = L_n(I_t/I_{t-1}) \dots\dots\dots Eq(3)$$

Where, L<sub>n</sub> stands for natural log, I<sub>t</sub> and I<sub>t-1</sub> are value of a benchmark at period t and t-1, respectively. In our case, Sensex as the benchmark stock index representing the broad market has been taken. The mean return of the market portfolio (PMR) over a period of time is given as follows:

$$Portfolio\ Mean\ Return\ (PMR) = \Sigma\ Market\ Return/n \dots\dots\dots Eq(4)$$

**Risk:** Without considering risk performance of mutual funds cannot be evaluated. In the present study, risk is calculated on the basis of daily NAV. For the purpose of calculating risk the following measures of risks have been calculated for the study:

- a) **Standard Deviation (SD):** Fund's volatility or variation from the average expected return over a certain period. Standard deviation is computed from logarithmic daily returns.
- b) **Beta:** Beta is defined as the measure of sensitivity of the security returns to the market index returns'. If the beta value of the fund is greater than one (> 1), it implies that for a given change in the market returns, the relative impact of the fund returns will be much higher than the proportionate change in the market returns. On the other hand, if the value of fund beta is lower than one (β < 1), the relative impact on the fund returns will be lower than the proportionate change in the market returns. For beta = 1, the market and fund returns will move in the tandem. A typical fund having beta equal to 1, will be an index fund.

**Risk Free Rate:** Risk free rate means that the asset has zero variability of returns. e.g government securities are considered to be risk less assets as the investor when buys such an asset knows the terminal value in the beginning. In this study, average daily yield on 91-days Treasury bill has been used as a proxy for risk free rate of return.

**Sharpe Ratio:** Sharpe (1966) devised an index of portfolio performance measure, referred to as reward to variability ratio. The Sharpe measure provides the reward to volatility tradeoff. It is the ratio of the fund portfolio's average excess return divided by the standard deviation of returns and is given by:

$$Sharpe\ Ratio = (R_{sm} - R_{fm})/\sigma \dots\dots\dots Eq(5)$$

Where  
R<sub>sm</sub> = average return on mutual fund portfolio over the sample period.

R<sub>fm</sub> = average risk free return over the sample period.

σ = standard deviation of excess returns over the sample period.

By dividing the average return of the portfolio in excess of the risk-free return by the standard deviation of the portfolio, we get the Sharpe ratio which measures the risk premium earned per unit of risk exposure. In other words, it measures the change in the portfolio's return with respect to a one unit change in the portfolio's risk. The higher this "Reward-to-Variability-Ratio" the more attractive is the evaluated portfolio because the investor

receives more compensation for the same increase in risk.

**Treynor Ratio:** Treynor (1965) conceived an index of portfolio performance measure based on systematic risk. The Treynor measure is similar to the Sharpe ratio, except that it defines reward (average excess return) as a ratio of the CAPM beta risk. Treynor's performance measure is defined as the risk premium earned per unit of risk taken. Thus, it is computed as the average return of the portfolio in excess of the risk-free return divided by the portfolio's beta. Treynor's ratio is given by the following equation:

$$\text{Treynor's Ratio} = (R_{sm} - R_{fm}) / \beta_p \dots\dots\dots \text{Eq(6)}$$

Where

$R_{sm}$  = average return on mutual fund portfolio over the sample period

$R_{fm}$  = average risk free return over the sample period,

$\beta_p$  = beta risk value for the mutual fund portfolio. The higher this ratio, the more attractive is the evaluated portfolio.

**Jensen alpha:** Jensen (1968) has given different dimension and confined his attention to the problem of evaluating a fund manager's ability of providing higher returns to the investors. He defines his measure of portfolio performance as the difference between the actual returns on a portfolio in any particular holding period and the expected returns on that portfolio conditional on the risk-free rate, its level of "systematic risk", and the actual returns on the market portfolio. Jensen's Alpha measure is given by the following equation:

$$\text{Jensen Alpha} = R_{sm} - (R_{fm} + \beta_p (R_{im} - R_{fm})) \dots\dots\dots \text{Eq(7)}$$

Where

$R_{sm}$  is the average mutual fund portfolio return over the time period

$R_{fm}$  is the average risk free return over the time period.

$R_{im}$  is the return on the market portfolio.

### Relevance of Simple and Risk Adjusted Measures

The most common way to analyze the performance of mutual funds is to evaluate its Net Asset Value (NAV). However, today's investor is not only interested in calculating return in isolation rather informed investors are always interested in comparing the performance with some alternative as well. Further to educate the investors for evaluating the performance well, the returns also need to be analyzed from the perspective of riskiness' of the funds, i.e., whether a fund is able to generate better return per unit of risk. The market portfolio, which is available with the investor, is a passive portfolio for a given level of risk and whether there is any additional advantage in terms of lower risk or higher returns by investing in mutual funds, which are actively managed, need to be addressed. The risk-adjusted performance measures are used to evaluate the funds from such perspective [7]. The risk is generally equated with variability of returns and investors generally expect a higher return for higher variability. The well-known Sharpe measure, which divides

average portfolio excess return over the risk-free rate during the sample period by the standard deviation of returns over that period ranks mutual funds based on reward per unit of variability of return and thus aids in performance evaluation. This method, however, presumes that the entire portfolio of an investor is invested in the fund and it is fully diversified. However, as investors typically do not invest their entire wealth in one single fund and hold fund shares as a part of diversified total wealth, standard deviation, which measures the total risk without distinguishing diversifiable risk and un-diversifiable risk, may not be appropriate. Therefore, Treynor (1965) has used the beta of a fund, which represents only non-diversifiable risk, to assess portfolio performance. His measure assesses risk adjusted returns in terms of "returns per unit of systematic risk". Treynor's ratio ignores the unsystematic risk or security specific risk element and assumes that the portfolio is perfectly diversified. In this study, both the Sharpe's measure and Treynor's measure have been used for performance evaluation. Further investor need to focus on capability of the fund manager to select a stock to invest as an investor should carefully select the fund while evaluating the fund manager's stock selection capability as well. Jensen has focused on this dimension of performance evaluation. So it is also used in the present study.

## Review of Literature

Mutual fund performance evaluation is an unending interest area for both the investors as well as the asset management companies as the success of products depends upon their performance. Large amount of research related to performance evaluation has been conducted in both developed and developing economies. However, the performance measures evolved over the years have been categorized below:

**Friend et al. (1962)** evaluated the performance of 152 mutual funds with annual data from 1953 to 1958. They found that over the period of their study, mutual funds earned an average annual return of 12.4%, while the benchmark index earned a return of 12.6%. Because the mutual funds in their sample nearly matched the market index, after subtracting expenses, the authors concluded that the overall results do not suggest widespread inefficiency in the industry.

**Sharpe (1967)** explained the portfolio selection problem faced by a mutual fund manager through Markowitz approach and explored the portfolios that are efficient in terms of predicted expected return and standard deviation of return subject to legal constraints in the form of upper bounds on the proportion of the fund invested in any single security.

**Jayadev (1996)** made an attempt to evaluate the performance of two growth oriented mutual funds (Mastergain and Magnum Express) on the basis of monthly returns compared to benchmark returns. For this purpose, risk adjusted performance measures suggested by Jensen, Treynor and Sharpe are employed. It is found that Mastergain has performed better according to Jensen and Treynor measures and on the basis of Sharpe ratio its performance is not upto the benchmark. The performance of Magnum Express is poor on the basis of all these three measures. However, Magnum Express is well diversified and has reduced its unique risk where as Mastergain did not. These two funds are found to be poor in earning better returns either adopting marketing or in selecting under priced securities. It can be

concluded that, the two growth oriented funds have not performed better in terms of total risk and the funds are not offering advantages of diversification and professionalism to the investors

**Basso and Funari (2001)** explored a model for defining a relative measure of performance evaluation by considering all the aspects taken by traditional measure indexes. Data Envelopment Approach (DEA) approach has been used by considering the various aspects considering subscription and redemption cost as well. The generalized performance techniques proposed are tested using data of Italian mutual fund market.

**Berk and Green (2002)** developed a simple rational model of active portfolio management that provides a natural benchmark against which to evaluate observed relationship between returns and fund flows. Further the model explains investments with active managers do not outperform passive benchmarks because of the competitive market for capital provision, combined with decreasing returns to scale in active portfolio management. Consequently, past performance cannot be used to predict future returns, or to infer the average skill level of active managers.

**Rao and Madava (2003)** carried out the performance evaluation of Indian mutual funds in a bear market through relative performance index (RPI), risk-return analysis, Treynor's ratio, Sharp's ratio, Sharp's measure, Jensen's measure, and Fama's measure by using monthly closing NAVs for the period September 98-April 02 (bear period). A sample of 269 open ended schemes (out of total schemes of 433) for computing relative performance index was studied. The results of performance measures suggested that most of the mutual fund schemes in the sample of 58 were able to satisfy investor's expectations by giving excess returns over expected returns based on both premium for systematic risk and total risk.

**Madhumathi and Panwar (2006)** used sample of public-sector sponsored & private-sector sponsored mutual funds of varied net assets to investigate the differences in characteristics of assets held, portfolio diversification, and variable effects of diversification on investment performance for the period May, 2002 to May, 2005. The study found that public-sector sponsored funds do not differ significantly from private-sector sponsored funds in terms of mean returns%. However, there is a significant difference between public-sector sponsored mutual funds and private-sector sponsored mutual funds in terms of average standard deviation, average variance and average coefficient of variation (COV).

**Anand and Murugiah (2006)** evaluated the performance of mutual funds keeping in view the fund managers ability to outperform the market and to identify a part of observed return which is due to the ability to pick up the best securities at given level of risk by using Fama's methodology. The study covered the period between April, 1999 and March 2003 and evaluates the performance of mutual funds based on 113 selected schemes having exposure more than 90 percent of corpus to equity stocks of 25 fund houses. The empirical results revealed the fact that the mutual funds were not able to compensate the investors for the additional risk that they have taken by investing in the mutual funds. The study concludes that the influence of market factor was more severe during negative performance of the funds while the impact selectivity skills of fund managers was more than the other factors on the fund performance in times of generating

positive return by the funds.

**Jagric et al. (2007)** evaluated the selected mutual funds and ranked them according to results and found the rankings obtained by performing both the Sharpe and Treynor rules to be almost the same, implying that funds are well diversified. The rankings reveal that all analyzed funds outperformed the market on a risk-adjusted basis.

**Sehgal and Jhanawar (2008)** examined if there is any short-term persistence in mutual funds performance in the Indian context. The study revealed no evidence that confirms persistence using monthly data. Using daily data, authors observed that for fund schemes sorted on prior period four-factor abnormal returns, the winners portfolio does provide gross abnormal returns of 10% per annum on post-formation basis.

**Chakarborty, et al. (2008)** attempted to evaluate the performance of mutual funds on the basis of rate of return as well as risk-adjusted methods. The performance of the mutual funds is compared with the risk free returns as well as the benchmark index (BSE 100). The results of the study showed that in comparison of rates of return of the benchmark index and the sample of mutual funds majority of the equity mutual funds (included in the sample) have outperformed the benchmark. However, when the mean return of the entire sample is considered, it does not show significantly different return from that of the benchmark BSE 100 index. An analysis based on risk-adjusted performance, however, shows a different picture where most of the funds (around 70%) in the sample have posted positive and better Sharpe as well as Treynor's ratio compared to the benchmark BSE 100 index.

**Swinkels (2008)** used well-known performance evaluation measures to investigate whether private investors in Poland have benefited from investing in mutual funds. Their analysis focused on returns over the period 2000-2007 for three categories of mutual funds: (1) equity, (2), bond, and (3) balanced mutual funds. Further the results indicate that mutual funds in each of these three categories have positive, but insignificant selectivity skill, indicating that a private investor would not have been worse off by investing in mutual funds.

**Jaiswal and Nigam (2010)** analyzed the performance of Indian mutual fund industry since the liberalization of economy till now. (i.e. from the year 1993 to the year 2009) using traditional measures of Sharpe, Jensen and Alpha.

**Nooney et al. (2011)** evaluated the mutual funds which have been operating for greater than five years and performing during the period of study (i.e. 2003-2007). The sample for the study consists of 340 mutual funds belonging to four categories - Money market category funds, debt category funds, equity category funds and balanced category funds. These are further classified into private and public mutual funds. The performance of selected funds is evaluated using average rate of return of fund, standard deviation, Risk/Return, Sharpe Ratio, Treynor ratio and Jensen ratio. Benchmark comparison is also made as it indicates to what extent the fund managers were able to produce better performance of managed portfolio compared to the market or index portfolios.

**Khurana and Bhavet (2011)** evaluated the performance and risk of monthly income plans of selected mutual funds with an

objective to identify the top performing monthly income plan amongst the selected plans. The study has analyzed growth performance on the basis of returns of 6 months, 1 year, 3 years and since inception returns. Growth performance of the funds have been compared with industry average, and its benchmark index i.e., CRISIL MIP Blended Index. The standard deviations, sharpe ratio and beta of the selected schemes have been compared to analyze volatility of the schemes and return per unit of risk.

**Bawa and Brar (2011)** evaluated the performance of a few selected income or debt mutual funds schemes of public sector and private sector sponsored mutual funds on the basis of their daily NAV for the period April 2000 upto 31st March 2010. As per the data collected it can be said that private sector mutual fund ICICI Prudential Income Fund (growth option) gave the maximum return as compared to other schemes considered in the study.

**Roy and Punia (2011)** utilized few selected performance evaluation techniques on a sample of 36 Indian mutual fund schemes, over the period of January 2001 to September 2009. The broad based S&P CNX NIFTY is used in the study as a benchmark. The study measures the performance using Capital Asset Pricing Model, Treynor-Mazuy model and Merton-Henriksson model. The results concluded that these 36 mutual fund managers were on average not able to predict security prices well enough to outperform a buy-the-market-and-hold policy.

**Agrawal (2011)** in his article provides an overview of mutual fund activity in emerging markets and tries to analyze the Indian Mutual Fund Industry pricing mechanism with empirical studies on its valuation. It also analyzes data at both the fund-manager and fund-investor levels. The study revealed that the performance is affecting saving and investment habits of the people and loyalty of the fund Manager and rewards affect the performance of the MF industry in India.

**Nimalathasan and Gandhi (2012)** focused on the financial performance analysis of mutual fund schemes (equity diversified schemes and equity mid-cap schemes) of selected banks (State Bank of India, Canara Bank-Public Bank, ICICI Bank, HDFC Bank-Private Bank) with the objectives of analyzing the financial performance of selected mutual fund schemes through the statistical parameters (Standard Deviation, Beta and Alpha) and ratio analysis i.e. Sharpe Ratio, Treynor Ratio, Jensen Ratio, Information Ratio.

Given the changing global and economic scenario an extrapolation of findings made in the distant past may not be appropriate and this motivates us for the present study, which humbly attempts to cork the gap by analyzing and comparing the performance of selected public and private sector growth funds in India in the recent past i.e. 2009-2012.

### Objectives of the Study

- To analyze the performance of selected public and private sector growth funds for the period 2009-2012 using simple and traditional risk adjusted measures.
- To compare the performance of selected funds using traditional risk adjusted measures viz: Sharpe Ratio, Jensen's Alpha and Treynors Ratio.

### Hypotheses of the Study

- Hypothesis 1 (H1):** Equity mutual funds have generated higher rates of return than those of the conventional risk free investments (91' day T-bills) during the period of study from 2009 to 2012.
- Hypothesis 2 (H2):** Equity funds have generated higher rates of return than the market portfolio i.e. Sensex during the period i.e 2009-2012.

### Description

The study used the daily NAV of 'equity mutual funds' over the period from April 2009- March 2012 for our analysis. These daily NAVs were taken from the official website of mutual fund i.e. AMFI. The data for market proxy i.e. BSE -Sensex has been obtained from official website of BSE. The data on risk free asset (91 day Treasury bill) has been taken from official website of RBI. The respective sources are cross-checked with other sources to ensure validity of the data but it is found to be the same. The daily NAVs have been used because the most commonly applied performance evaluation tool is NAV and it is computed by dividing the market value of fund's invested portfolio and cash in hand by the total number of outstanding units at that point of time [34]. Daily NAV has been used because results, timing ability, and to some extent stock selectivity improves when daily data is used instead of monthly data [30]. Further the study uses data of 3 year period and from the investors' point of view, the track record of three years is significantly a long period to judge the performance of mutual fund for investment purpose [7]. The funds have been selected for the study on the basis of highest Asset under Management (AUM) as on April 2009. The top ten mutual funds having highest AUM were selected and then out of ten, deliberately three funds of public sector sponsored funds and seven of private sector funds were finally taken for the study. Further, only those funds surviving throughout the study period and having reported all the daily NAV values during the study period were considered. The final number of equity mutual funds schemes with growth option in the sample, satisfying these criteria came out to be twenty.

The evaluation of performance based on mere simple measures of risk or return will not be sufficient for the investors as a investor always expect that his investment must bear a return which should be either equal to the minimum return generated by safest assets like government securities or return generated higher than the benchmark or maximum return per unit of risk [7]. So in order to assess the performance of the selected mutual funds on the basis of simple measures of return and risk, comparison with the benchmark and risk free asset as well as the risk adjusted models, given by Sharpe (1966), Treynor (1965) and Jensen (1968) have also been applied.

### Results and Discussions

#### Growth and Performance of Mutual Funds on Basis of Simple Measures of Risk and Return

In order to assess the performance based on simple measures of risk and return, Table I shows the mean return, standard deviation and beta for the sample schemes.

The analysis of Table 5.1 revealed that all the sample schemes have shown positive mean return except for UTI Top 100 fund. The highest average return of private sector fund is of Reliance equity fund (0.0015) followed by ICICI opportunity fund (0.0014) and further HDFC equity fund (0.0011). On the other hand average returns of public sample funds like UTI top 100 and LIC top 100 is worst. Further, Table I also revealed that during the tenure of 2009-2012, none of the sample funds have been able to give high average return than the conventional risk free investment of 91 day t bill.

Hence we can conclude that H1 has been rejected and mutual funds cannot take the place of risk free assets. This is a major reason that in India risk averts investors hesitate investment in mutual funds [36]. Simple return alone cannot be used for performance evaluation so standard deviation has been calculated. It is considered to be one of the most popular risk measures as it considers total risk into account i.e. both systematic and unsystematic risk. Table I revealed that among public sector funds, UTI equity has the least standard deviation followed by SBI multi-cap and then UTI top 100 funds. On the other hand among private sector funds, Kotak arbitrage fund has the least standard deviation followed by Reliance top 200 and ICICI opportunity fund. Beta for the funds have also been calculated and it revealed that majority of the schemes have negative beta. A negative beta means that the asset's returns generally move opposite to the market's returns: one will tend to be above its average when the other is below its average. On the other hand Birla equity scheme is having beta greater than one which indicates that the portfolio is more volatile than the market index. In other words it can be said it is almost 25% more volatile than market.

**Table 1: Mean Return, Standard Deviation and Beta of the Sample Schemes for the year 2009-2012**

Scheme Name	Mean Return	Beta	Standard Deviation ( $\sigma$ )
UTI equity	0.000972	.602	0.011466
UTI top 100	-0.00022	-.235	0.028138
SBI growth	0.000987	-.377	0.012506
SBI Multi	0.000705	.068	0.013117
LIC equity	0.000851	.287	0.018917
LIC top 100	0.000502	-.257	0.013723
Tata growth	0.001058	.065	0.044514
Tata pure equity	0.000891	-.351	0.013305
Kotak Opp.ort	0.000859	-.757	0.013379
Kotak Arbitrage	0.000257	.074	0.000994
ICICI Opp.ort	0.001356	0.06	0.012371
ICICI top 200	0.000831	-.005	0.012962
Birla equity	0.000811	1.245	0.013374
Birla top 100	0.000861	-.468	0.012841
Franklin Opp.ort	0.000748	.374	0.013955
Templeton India	0.000943	.037	0.012991
Reliance equity	0.001537	-0.04	0.023035

Reliance top 200	0.000788	-.490	0.013341
HDFC Equity	0.001139	1.503	0.013161
HDFC Top200	0.001007	-.319	0.013174
Maximum	0.001537		0.044514
Minimum	-0.00022		0.000994
Sensex	0.000827	1	0.015587
91 Day T Bill	0.0271701		

#### Performance on The Basis of Risk Adjusted Measures

The analysis based on average returns may not represent performance adequately as the returns may not be in synchronization with the degree of risk assumed by the fund manager. So in order to analyze the performance adequately it is required to consider the risk return analysis as well. In order to evaluate the performance on risk return basis Sharpe (1967), Jensen (1968) and Treynors Index (1965) are used.

**Table 2: Sharpe Ratio, Treynor's Ratio And Jensen's Alpha for the period 2009-2012**

Scheme Name	Sharpe ratio	Treynors Index	Jensen's Alpha
UTI equity	0.42	7.92	6.94
UTI top 100	0.19	2.33	3.05
SBI Magnum growth	0.25	3.68	3.97
SBI Multi	-0.04	-2.77	-0.99
LIC equity	-0.06	-3.19	-1.44
LIC top 100	-0.18	-5.66	-3.85
Tata growth	0.26	4.31	1.79
Tata pure equity	0.27	4.26	4.20
Kotak Opp.ort	0.14	1.31	2.30
Kotak Arbitrage	2.10	-1.22	-1.22
ICICI Opp.ort	0.38	3.12	2.22
ICICI top 200	0.20	2.05	3.79
Birla equity	0.02	-1.42	0.25
Birla top 100	0.24	3.32	4.19
Franklin Opp.ort	-0.00	-1.79	-0.25
Templeton India	0.16	1.38	3.22
Reliance equity	-0.31	-8.51	-6.32
Reliance top 200	0.13	0.75	2.44
HDFC Equity	0.37	6.21	6.93
HDFC Top200	0.24	3.13	4.24
Sensex	0.0040	0.0102	0

#### Sharpe Measure

The Sharpe ratio measures the return of a mutual fund compared to the risk free rate of return. It measures the risk premium of the portfolio relative to the total amount of risk in the portfolio. This risk premium is the difference between the portfolio's average rate of return and the riskless rate of return. The risk free rate of

return taken in the present study is the 91-day t-bill rate. It is the widely used performance measure for mutual funds. The Sharpe ratio is interpreted in a way that higher the ratio better it is. But it only tells about the historical performance it doesn't tell anything about future. In the present case the range of Sharpe ratios for the selected growth schemes varies from -0.000 to 0.42. Table II depicted that Kotak arbitrage fund has the highest Sharpe ratio and Franklin Opportunity fund has the least Sharpe ratio among private sector funds and UTI equity fund has highest Sharpe among public sector. Table I also indicates 75% (14 in number) of the sample mutual funds have outperformed the Sensex when their Sharpe ratios are compared.

#### Treynor Ratio

The Treynor ratio is similar to the Sharpe ratio with the only difference between the two measures is that Sharpe ratio considers total risk while Treynor Index considers only the non diversifiable risk. It compares the fund's risk adjusted performance of the relative index instead of comparing the fund's risk adjusted performance to the risk free return. Treynor (1965) has used the beta of a fund, which represents only the non-diversifiable risk, to assess portfolio performance. The Table II revealed that on the basis of Treynor ratio, UTI equity among public sector and HDFC equity fund among private sector has shown higher return per unit of systematic risk, The major laggard among public sector is LIC and among private sector is Reliance equity with negative treynors. Both on the basis of Sharpe and Treynor ratios it can be said that Reliance mutual fund and LIC have not been able to perform well during the time taken under study. So it can be said that investors should not rely on the brand names (Joes, 2006).

A look at Treynors Ratio revealed that 65% (13 in number) have outperformed the benchmark index i.e. sensex, while 35% (7 in number) of the sample schemes have failed to do the same. This is in line with the observation made for the other measure of risk adjusted return, i.e., Sharpe's ratio where 70% of the sample funds have posted better returns.

#### Jensen's Alpha

According to Jensen (1968), the measure alpha is the excess return provided by the portfolio over the expected (CAPM) returns. Equilibrium average return is the return of the portfolio by the market with respect to systematic risk (volatility) of the portfolio. Jensen's Alpha also helps in evaluating stock selection ability of the fund managers [28]. Higher value indicated better performance. UTI equity and HDFC equity have high value of alpha. This further validates that fund managers of the schemes have been able to select the right stock. From the 20 selected schemes, six schemes have shown negative alphas. Fourteen schemes which accounted for 70% of total schemes have shown positive alphas focusing on the ability of the fund managers to forecast security prices on time for taking better investment decision [26]. Further analysis of public and private sector schemes revealed that LIC and SBI have not been able to excel among public sector as they are having high negative alpha and Kotak arbitrage and Reliance equity are the major lazybones among private sector.

#### Overall Comparison of Public and Private Sector Funds

In order to make an overall comparison of selected public and private sector mutual funds, both simple return and risk measures as well as Sharpe, Treynor and Alphas of all the

schemes have been compared and shown in Table IIIa and Table IIIb respectively:

**Table 3a: Comparison of Selected Public Sector Mutual funds for period 2009-2012 on the basis of Risk Adjusted Measures**

Scheme Name	Sharpe	Treynor	Alpha	Overall Performance
<b>*Panel A funds</b>				
UTI equity	+ve	+ve	+ve	Good
UTI top 100	+ve	+ve	+ve	Good
SBI Magnum growth	+ve	+ve	+ve	Good
SBI Multi	-ve	-ve	-ve	Poor
LIC equity	-ve	-ve	-ve	Poor
LIC top 100	-ve	-ve	-ve	Poor

**Table 3b: Comparison of Selected Private Sector Mutual funds for period 2009-2012 on the basis of Risk Adjusted Measures**

Scheme Name	Sharpe	Treynor	Alpha	Overall Performance
<b>**Panel B Funds</b>				
Tata growth	+ve	+ve	+ve	Good
Tata pure equity	+ve	+ve	+ve	Good
Kotak Opp.ort	+ve	+ve	+ve	Good
Kotak Arbitrage	+ve	-ve	-ve	No single decision
ICICI Opp.ort	+ve	+ve	+ve	Good
ICICI top 200	+ve	+ve	+ve	Good
Birla equity	+ve	-ve	+ve	No single decision
Birla top 100	+ve	+ve	+ve	Good
Franklin Opp.ort	-ve	-ve	-ve	Poor
Templeton India	+ve	+ve	+ve	Good
Reliance equity	-ve	-ve	-ve	Poor
Reliance top 200	+ve	+ve	+ve	Good
HDFC Equity	+ve	+ve	+ve	Good
HDFC Top200	+ve	+ve	+ve	Good

**Table IV: Comparison of Selected Public and Private Sector Mutual funds for period 2009-2012 on the basis of Simple Return and Risk Measures**

Scheme Name	Mean Return	Beta	Standard Deviation
<b>*Panel A Funds</b>			
UTI equity	Good	Positive	Low
UTI top 100	Poor	Negative	High
SBI Magnum growth	Good	Negative	Low
SBI Multi	Poor	Positive	Low
LIC equity	Good	Positive	High
LIC top 100	Poor	Negative	Low
<b>**Panel B Funds</b>			
Tata growth	Good	Positive	Low
Tata pure equity	Good	Negative	Low
Kotak Opp.ort	Good	Negative	Low
Kotak Arbitrage	Poor	Positive	Low
ICICI Opp.ort	Good	Positive	Low
ICICI top 200	Good	Positive	Low
Birla equity	Poor	Positive	Low
Birla top 100	Good	Positive	Low
Franklin Opp.ort	Poor	Positive	Low
Templeton India	Good	Positive	Low
Reliance equity	Good	Positive	High
Reliance top 200	Poor	Positive	Low
HDFC Equity	Good	Positive	Low
HDFC Top200	Poor	Positive	Low

**Note:**

1. Good signifies that return is above the benchmark index Sensex, Poor signifies that return is below the benchmark.
2. Negative beta depicts that scheme move opposite to the benchmark and positive means in tandem with the benchmark.
3. High standard deviation signifies high risk and low standard deviation signifies low risk.

**Conclusion**

Present study used both the rate of return as well as the risk-adjusted methods to evaluate the mutual funds performance. The mutual fund performance has been compared with both the risk-free returns as well as benchmark index. On comparing the sample equity funds with risk free rate of return offered by 91 day T-bill, results clearly showed that none of the sample mutual funds have earned returns in excess of the risk-free rate during the study period 2009-2012. The comparison of rates of return of the benchmark index and the sample mutual funds indicated that majority of the equity mutual funds included in the sample have outperformed the benchmark. However, when the mean return of the entire sample is considered, it does not show significantly different return from that of the benchmark (Sensex) [7]. Comparing performance based on absolute returns doesn't show any laudable performance but risk adjusted performance showed a better picture. Performance on the basis of Sharpe, Treynor and Jensen's measure showed almost similar

results with minor variations due to difference in risk exposure of each fund.

However, on comprehensive basis, both the measures show nearly similar performance of equity mutual funds, in terms of risk-adjusted returns. Most of the funds (around 70%) in the sample have posted positive and better Sharpe ratio, Treynor's ratio and Jensen's alpha compared to the benchmark (Sensex). While interpreting the results, it has been kept in mind that the results have to be interpreted from the view that the study has been conducted for the period 2009-2012, when the economy was growing at slow pace because of the global recession. So, focus should be on the fact whether mutual funds have the potential to stand during tough times and also to produce high returns. It can be expressed that even during the tough period, mutual funds have been able to perform well on risk adjusted performance basis though not on absolute basis. Further it can be said that both private and public sector funds have almost given similar results. However, comparison of funds doesn't yield any clear cut results on the basis of which one can rank the public or private funds separately. It can be said that although the study, provides some evidence of satisfactory performance in terms of returns generated per unit of risk, yet a conclusive statement regarding the capabilities of mutual funds as an investment avenue is still obscure. To conclude, it is rightly said that a rational investor should invest in the bad times and be a long term investor as best returns are typically earned on investments made in bad times [14].

**Scope for Future Research**

It has to be kept in mind that lot many issues remain unaddressed in the study. Hence, there is large scope for further study. The data taken in the study is limited to only three years and of equity mutual funds only. Further data for more than three years and of various schemes viz. income scheme, balanced schemes can be taken and comparison can be made before and after recession period.

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