

Performance Analysis of Indian Mutual Funds with a Special Reference to Sector Funds

POURNIMA S. SHENVI DHUME AND PROF. B. RAMESH

Mutual Fund industry in India has emerged as the most dynamic segment of the Indian financial system. The industry grew by leaps and bounds during the last few years. With the plethora of schemes available for the investors to choose, it becomes essential for a retail investor to know the performance of the mutual funds in order to make an informed decision. In this paper, we have carried out the performance evaluation of open-ended equity sector mutual funds using five approaches of performance measures viz, Sharpe Ratio, Treynor Ratio, Jensen's Measure, Information Ratio and M-squared measure. The sectors selected for the purpose of the study are banking sector, FMCG sector, infrastructure sector, pharma sector & technology sector. All the schemes are selected from the respective sectors which were existing during the period of the study. The period adopted for the study is from 1st April 2008 to 31st March 2011.

Introduction

Mutual funds play an extremely crucial role in Indian economy. They are the vehicles for mobilisation and channelization of savings from individuals and households towards the capital markets. Mutual funds have shown a tremendous improvement in the quantum of their assets under management over the last couple of years. The concept of mutual funds was conceived to pool the resources of small and retail investors and deploy the same in the capital markets through participation in equity and debt instruments. Mutual funds offer several benefits to the investors like diversification, professional management, tax benefits, transparency, liquidity, flexibility, choice of schemes, low cost etc. Every mutual fund is managed by a fund manager, who is using his investment management skills and necessary research works ensures much better returns than what the investors can manage on his/her own.

The Indian mutual fund industry has come a long way from a single player monopoly in 1964 for almost 45 years to a vibrant, competitive, fast growing sector. The industry has emerged as the most dynamic segment of the Indian financial system. The industry has witnessed surprising growth in terms of products and services offered, returns generated, volumes generated and international players who have contributed to the growth of the industry.

Ms Pournima S. Shenvi Dhume is Assistant Professor, Department of Commerce, Goa University, Taleigao Goa and **Prof. B. Ramesh** is Professor, Head & Dean, Faculty of Commerce, Goa University, Taleigao Plateau, Goa.

Mutual funds have time and again responded to the changing market dynamics. They have tried to capture every pocket of the market and encourage greater investor participation. Till some years back, equity diversified funds were the only choice available, sectoral funds were launched as a new genre of equity funds. Today, we have Technology Funds allocating primarily to IT Stocks, Pharma Funds focussing on healthcare sector, Banking Funds specifically investing in Banking stocks and many more. This study analyses the performance of the sector mutual funds.

Literature Review

Block & French (2000) emphasised the importance to use multiple indexes while evaluating the performance of equity mutual funds. Saidov (2007) analysed the performance of mutual funds by using seven different approaches of performance measures. These seven measures were Jensen's Alpha, Sharpe Ratio, Treynor Ratio, Sortino Ratio, Fama Ratio, Information Ratio and Fama-French Three Factor Model. His study concluded that the different measures have no significant effect on the ranking results of German Equity Mutual Funds. Gali (1995) evaluated the past performance of the mutual funds and assessed the factors that have an influence on the performance. The factors considered were portfolio turnover, timing and stock selection skills, organisational structure, research, size and expenses charged to the fund. He found that mutual funds in general do not provide risk-adjusted returns. It was also found that mutual funds do not have market timing ability. Rao (2003) studied the performance evaluation of Indian mutual funds in bear market through relative performance index. He found that most of the mutual fund schemes were able to satisfy investor's expectations by giving excess returns over expected returns.

Objectives Of The Study

The major objectives of the study are:

- i. To evaluate the performance of the sector mutual funds in relation with the market performance using different approaches of performance measures.
- ii. To study the risk-return analysis of the sector funds.

Methodology

Data sources: For the purpose of the study, we have selected 40 open-ended equity sector funds. Five Sectors viz., Banking Sector, FMCG Sector, Infrastructure Sector, Pharma Sector and Technology Sector are chosen for the study. All funds are selected from the respective sectors which were existing during our period of the study. The funds launched after 1st April 2008 are not been selected. Growth option and Dividend option are considered as separate funds in the study. 6 funds are selected from Banking Sector, 5 from FMCG Sector, 34 from Infrastructure Sector, 8 funds from Pharma Sector and 7 funds from Technology Sector. The Net Asset Value (NAV) of the funds are obtained from fact sheets and websites. The data for the study is mainly derived from AMFI Website.

Data On Indices: Since our study includes only open-ended equity sector funds, the respective indices are used as benchmarks for evaluating the performance. The benchmarks used for the analysis is obtained from BSE website. The benchmark indices for the sector funds are as follows: Banking Funds – BSE BANKEX, FMCG Funds – BSE FMCG INDEX, Infrastructure Funds – BSE CAPITAL GOODS INDEX, Pharma Funds – BSE HEALTHCARE INDEX, and Technology Funds – BSE IT INDEX

Data On Risk-Free Rate Of Return: The risk-free rate is the rate of return of the 365-days Treasury Bills obtained from Reserve Bank of India Website.

Performance Measures

Standard Deviation: is a measure of dispersion in return. A higher value of standard deviation means higher risk.

Beta (β): measures the relationship between index return and the fund's return. It measures the systematic risk. It relates the return of the fund to the market index. It reflects the sensitivity of the fund's return to fluctuations in the market index. A beta greater than 1, means that the fund is more volatile than the benchmark index, while beta less than 1 means the fund is less volatile than the index.

R-Squared (R^2): It measures how close all the points on the XY Graph are to the best-fit line. If all points were on the line, a fund would have an R-squared of 1, indicating perfect correlation with the chosen index. A R-squared of zero would indicate no correlation. The lower the R-squared, the less reliable beta is as a measure of fund's volatility.

Sharpe's Ratio: It is a measure of risk-adjusted return on a portfolio developed by William Sharpe. It is a ratio of excess return to the standard deviation of portfolio. It is relevant for performance evaluation when comparing mutually portfolios. It measures reward to variability. The Sharpe measure of performance denoted by S is given by

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

where, R_p = portfolio rate of return during a specified period; R_f = risk-free rate of return during the same period; σ_p = standard deviation

A fund with a higher Sharpe Ratio in relation to another is preferable as it indicates that the fund has higher risk premium for every unit of standard deviation risk.

Treynor's Ratio: developed by Jack Treynor. It adjusts excess return for systematic risk. This ratio of return generated by the fund over and above risk-free rate of return. The Treynor's measure is denoted by T is given by

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

where, R_p = portfolio rate of return during a specified period; R_f = risk-free rate of return during the same period; β_p = beta of the fund

While a high and positive Treynor's measure shows a superior risk-adjusted performance of a fund, a low and negative Treynor's measure is an indication of unfavourable performance.

Alpha: is the most commonly used method of determining the return that should have been earned by the scheme at a given level of risk.

$$\alpha = (R_p - R_f) - \beta_p (R_m - R_f)$$

where, α = The Jensen Measure (Alpha); R_p = portfolio rate of return during a specified period; R_f = risk-free rate of return during the same period; β_p = beta of the fund; R_m = Market Return

A positive alpha means that the return tends to be higher than expected given the beta statistic. A negative alpha indicates that the fund is underperformer. Alpha measures the value-added of the portfolio given its level of systematic risk. It is popularly known as Jensen's Alpha.

M_2 Measure: Franco Modigliani and Lea Modigliani derived another risk-adjusted performance measure in 1997, by adjusting the risk of a particular portfolio so that it matches the risk of the market portfolio and then calculate the appropriate return for that portfolio. It operates on the concept that scheme's portfolio can be levered or de-levered to reflect a standard deviation that is identical with that of the market. The return that this adjusted portfolio earns is called M^2 .

$$M^2 = (\alpha_m / \alpha_{mf}) \times (R_{mf} - R_f) + R_f$$

Where, α_m = the standard deviation of the market; α_{mf} = the standard deviation of the scheme; R_{mf} = return on the scheme; R_f = risk free rate of return

A high M^2 indicates that the portfolio has outperformed the market portfolio whereas; a low M^2 indicates that the portfolio has underperformed the market portfolio.

Information Ratio: was developed by William Sharpe. It measures the excess return over benchmark index of an investment divided by its tracking error. It can be calculated as follows:

$$IR = \frac{R_p - R_m}{TE}$$

Where, IR = Information Ratio; R_p = Portfolio Return; R_m = Market return; TE = Tracking Error

Tracking error is defined as the time-series standard deviation of the difference between a fund return and its market index return. It is expressed as follows:

$$TE = \alpha (R_p - R_m)$$

The information ratio expresses how effectively a stock generates active return relative to the amount of risk taken.

Funds Selected For The Study

Table 1: Selected funds

Sl. No.	Name of the Scheme	Option	Launch Date
1	Jm Financial Services Sector	Div	Nov-06
2	Jm Financial Services Sector	GR	Nov-06
3	Reliance Banking	DIV	May-03
4	Reliance Banking	GR	May-03
5	Uti Banking Sector	DIV	Apr-04
6	Uti Banking Sector	GR	Apr-04
FMCG Sector			
1	Franklin FMCG	CDIVI	Mar-99
2	Franklin FMCG	CGRG	Mar-99
3	Icici Prudential FMCG	CDIVI	Mar-99
4	Icici Prudential FMCG	CGRG	Mar-99
5	Sbi Msfu FMCGCG	-	Jul-99
Infrastructure Sector			
1	Aig Infrastructure and Economic Reform	DIV	Jan-08
2	Aig Infrastructure and Economic Reform	GR	Jan-08
3	Birla Sunlife Infrastructure	DIV	Feb-06
4	Birla Sunlife Infrastructure	GR	Feb-06
5	Canara Robeco Infra	DIV	Nov-05
6	Canara Robeco Infra	GR	Nov-05
7	DSPBRT.I.G.E.R.	DIV	May-04
8	DSPBRT.I.G.E.R.	GR	May-04
9	ICICI Prudential Infra	DIV	Aug-05
10	ICICI Prudential Infra	GR	Aug-05
11	JM HI FI	DIV	Mar-06
12	JM HI FI	GR	Mar-06
13	Kotak Indo World Infra	DIV	Dec-07
14	Kotak Indo World Infra	GR	Dec-07
15	LIC Nomura Mf Infra	DIV	Feb-08
16	LIC Nomura Mf Infra	GR	Feb-08
17	Religare Infra	DIV	Oct-07
18	Religare Infra	GR	Oct-07
19	Sahara Infra Fixed Pricing	DIV	Mar-06
20	Sahara Infra Fixed Pricing	GR	Mar-06

contd...

contd...

21	Sahara Infra Variable Pricing	DIV	Mar-06
22	Sahara Infra Variable Pricing	GR	Mar-06
23	Tata Infra	DIV	Dec-04
24	Tata Infra	GR	Dec-04
25	Taurus Infra	DIV	Mar-07
26	Taurus Infra	GR	Mar-07
27	UTI infra	DIV	Apr-04
28	UTI Infra	GR	Apr-04

Pharma Sector

1	Franklin Pharma	DIV	Mar-99
2	franklin Pharma	GR	Mar-99
3	SBI Msfu Pharma	DIV	Jul-99
4	SBI Msfu Pharma	GR	Jul-99
5	Reliance Pharma	DIV	May-04
6	Reliance Pharma	GR	May-04
7	UTI Pharma & Healthcare	DIV	Jun-99
8	UTI Pharma & Healthcare	GR	Jun-99

Technology Sector

1	Birla Sunlife New Millenium	DIV	Jan-00
2	Birla Sunlife New Millenium	GR	Jan-00
3	DSPBR Techology.com	DIV	Apr-00
4	DSPBR Techology.com	GR	Apr-00
5	Franklin Infotech	DIV	Aug-98
6	Franklin Infotech	GR	Aug-98
7	SBI MSFU IT		Jul-99

Source: Mutual Fund Insight, Volume VIII, Number 8

Results Of Performance Evaluation

Standard Deviation of the market is 2.623. Sharpe ratio of the market is 0.015.

The analysis of Sharpe's measure shown in Table 2 reveals that, Reliance Banking Fund and UTI Banking Fund has outperformed the market whereas JM financial services sector fund has underperformed the market as the sharpe ratio is less than the market. Among the six funds, Reliance Banking Growth Fund is the best performer as its value is highest (0.029).

The analysis of Treynor's ratio reveals that, Reliance Banking Fund and UTI Banking Fund has outperformed the market as their value is greater than the treynor's ratio of the market, whereas JM financial services sector fund has underperformed the market.

Table 2: Banking sector funds analysis

Name of the Scheme	Std Dev	Beta	Correlation	R-Squared	(Fund) Sharpe	(Fund) Treynor	(Market) Treynor	Jensen	Information	M-Squared
Jm Financial Services Sector (DIV)	2.279	0.296	0.340	0.116	-0.030	-0.229	-0.159	-0.079	9.555038817	-0.015
JM Financial Services SECTOR (GR)	2.570	0.331	0.329	0.108	-0.025	-0.194	-0.142	-0.078	8.877230606	-0.003
Reliance Banking (DIV)	2.156	0.327	0.397	0.158	0.020	0.133	-0.144	0.030	19.45701388	0.115
Reliance Banking (GR)	2.128	0.326	0.401	0.161	0.029	0.191	-0.144	0.049	24.43517174	0.139
UTI Banking Sector (DIV)	2.319	0.326	0.369	0.136	0.006	0.043	-0.144	0.001	14.15261268	0.078
UTI Banking Sector (GR)	2.241	0.329	0.385	0.148	0.022	0.151	-0.143	0.037	19.26559205	0.121

As per Jensen's measure, Reliance Banking Growth Fund is the best performer among all the six funds, with the highest Jensen's ratio.

As per Information Ratio, Reliance Banking Growth Fund is the best performer whereas JM financial services sector dividend fund has worse performance.

M² measure shows the similar results. Overall, we can say that, Reliance Banking Growth Fund is the best performer and JM financial services sector fund is the underperformer.

Standard deviation of the market is 1.469. Sharpe ratio of the market is 0.001.

The analysis of Sharpe's measure shown in Table 3 reveals that, Franklin FMCG Fund and SBI FMCG fund has outperformed the market whereas ICICI Prudential FMCG fund has underperformed the market as the sharpe ratio shows a negative value. Among the five funds, SBI FMCG fund is the best performer as its value is highest (0.033).

The analysis of Treynor's ratio reveals that, Franklin FMCG Fund and SBI FMCG fund has outperformed the market as their value is greater than the treynor's ratio of the market, whereas ICICI Prudential FMCG fund has underperformed the market with negative Treynor's ratio.

As per Jensen's measure, SBI FMCG Fund is the best performer among all the five funds, with the highest Jensen's ratio (0.036).

As per Information Ratio, Franklin FMCG Growth Fund is the best performer whereas SBI FMCG Fund has performance badly.

Franklin FMCG Dividend Fund is the best performer as per M² measure with the higher value of 0.086 among all five funds.

Standard deviation of the market is 1.313. Sharpe ratio of the market is 0.005.

The analysis of Sharpe's measure shown in Table 4 reveals that, all pharma funds have outperformed the market. Among 8 funds, Franklin Pharma Growth Fund has been the best performer with highest Sharpe ratio of 0.056.

The analysis of Treynor's ratio and Jensen's measure reveals that, all pharma funds have outperformed the market. Franklin pharma dividend fund has been the best performer.

As per Information Ratio, Franklin pharma growth fund has been the best performer among 8 pharma funds. M² measure also shows the similar results.

Table 3: FMCG analysis

Name of the Scheme	Std Dev	Beta	Correlation	R-Squared	(Fund) Sharpe Ratio	(Fund) Treynor Ratio	(Market) Treynor Ratio	Jensen Ratio	Information Ratio	M-Squared
Franklin Fmcg (DIV)	0.981	0.227	0.340	0.116	0.016	0.069	-0.270	0.015	41.311	0.086
Franklin Fmcg (GR)	0.980	0.296	0.444	0.197	0.014	0.047	-0.207	0.013	75.910	0.083
ICICI Prudential Fmcg (DIV)	1.246	0.368	0.433	0.187	-0.038	-0.127	-0.163	-0.048	17.198	0.007
ICICI Prudential FMCG (GR)	1.181	0.365	0.452	0.205	-0.011	-0.037	-0.164	-0.015	25.931	0.046
SBI MSFU FMCG	1.121	0.383	0.499	0.249	0.033	0.097	-0.157	0.036	-10.836	0.111

Table 4: Pharma sector analysis

Name of the Scheme	Std Dev	Beta	Correlation	R-Squared	(Fund) Sharpe	(Fund) Treynor	(Market) Treynor	Jensen	Information	M-Squared
Franklin Pharma (DIV)	1.552	0.309	0.258	0.066	0.047	0.236	-0.187	0.071	17.252	0.124
Franklin Pharma (GR)	1.019	0.241	0.311	0.097	0.056	0.235	-0.240	0.055	48.383	0.135
SBI Msfu Pharma (DIV)	1.477	0.369	0.327	0.107	0.005	0.020	-0.157	0.005	22.317	0.069
SBI Msfu Pharma (GR)	1.476	0.369	0.327	0.107	0.005	0.019	-0.157	0.005	22.256	0.069
Reliance Pharma (DIV)	1.395	0.313	0.295	0.087	0.036	0.162	-0.184	0.049	27.116	0.110
Reliance Pharma (GR)	1.349	0.321	0.312	0.097	0.050	0.212	-0.180	0.066	34.767	0.128
UTI Pharma & Healthcare (DIV)	1.135	0.281	0.326	0.106	0.009	0.038	-0.205	0.009	24.499	0.075
UTI Pharma & Healthcare (GR)	1.081	0.282	0.343	0.117	0.026	0.098	-0.205	0.026	32.394	0.096

Table 5: Infrastructure sector analysis

Name of the Scheme	Std Dev	Beta	Correlation	R-Squared	(Fund) Sharpe	(Fund) Treynor	(Market) Treynor	Jensen	Information	M-Squared
AIG Infrastructure and Economic Reform (DIV)	1.602	0.283	0.421	0.177	-0.025	-0.144	-0.284	-0.029	167.1363579	0.002
AIG Infrastructure and Economic Reform (GR)	1.602	0.283	0.421	0.177	-0.025	-0.144	-0.284	-0.029	167.1363579	0.002
Birla Sunlife Infrastructure (DIV)	1.174	0.030	0.049	0.002	-0.024	-0.942	-2.694	-0.027	23.2659492	0.005
Birla Sunlife Infrastructure (GR)	1.187	0.021	0.034	0.001	-0.030	-1.685	-3.844	-0.034	20.55166098	-0.008
Canara Robeco Infra (DIV)	1.844	0.276	0.356	0.127	-0.016	-0.105	-0.291	-0.017	238.6697914	0.025
Canara Robeco Infra (GR)	1.830	0.273	0.356	0.127	-0.011	-0.072	-0.294	-0.008	-4915.616316	0.037
DSPBR T.I.G.E.R (DIV)	1.849	0.279	0.359	0.129	-0.031	-0.207	-0.288	-0.046	57.42503557	-0.012
DSPBR T.I.G.E.R. (GR)	1.782	0.339	0.453	0.205	-0.020	-0.105	-0.237	-0.021	304.4179683	0.015
ICICI Prudential Infra (DIV)	1.900	0.453	0.568	0.322	-0.035	-0.145	-0.177	-0.046	45.32595619	-0.020
ICICI Prudential Infra (GR)	1.766	0.435	0.587	0.345	-0.019	-0.076	-0.184	-0.014	-261.416002	0.018
JM HI FI (DIV)	2.157	0.349	0.385	0.149	-0.066	-0.410	-0.230	-0.128	18.48036513	-0.096
JM HI FI (GR)	2.157	0.349	0.385	0.149	-0.066	-0.410	-0.230	-0.128	18.47798919	-0.096
Kotak Indo World Infra (DIV)	1.754	0.041	0.055	0.003	-0.027	-1.150	-1.968	-0.045	41.85079368	-0.001
Kotak Indo World Infra (GR)	1.754	0.041	0.055	0.003	-0.027	-1.150	-1.968	-0.045	41.85079368	-0.001
LIC Nomura Mf Infra (DIV)	2.244	-0.031	-0.033	0.001	-0.016	1.185	2.587	-0.038	48.26788824	0.023

contd...

contd...

LIC Nomura Mf Infra (GR)	2.244	-0.031	-0.033	-0.001	-0.016	1.185	2.587	-0.038	48.26785046	0.023
Religare Infra (DIV)	1.459	0.035	0.057	0.003	-0.032	-1.341	-2.301	-0.045	64.7463308	-0.014
Religare Infra (GR)	1.456	0.036	0.058	0.003	-0.032	-1.311	-2.246	-0.045	64.90585781	-0.014
Sahara Infra Fixed Pricing (DIV)	1.619	0.248	0.365	0.133	-0.027	-0.175	-0.324	-0.033	106.8678517	-0.002
Sahara Infra Fixed Pricing (GR)	1.619	0.248	0.365	0.133	-0.027	-0.175	-0.324	-0.033	106.96844	-0.002
Sahara INFRA Variable Pricing (DIV)	1.619	0.248	0.365	0.133	-0.025	-0.162	-0.324	-0.030	131.3077921	0.003
Sahara INFRA Variable Pricing (GR)	1.619	0.248	0.365	0.133	-0.025	-0.162	-0.324	-0.030	131.3077921	0.003
Tata INFRA (DIV)	1.896	0.329	0.412	0.170	-0.026	-0.150	-0.244	-0.035	78.37103211	0.000
Tata INFRA (GR)	1.888	0.328	0.414	0.171	-0.021	-0.121	-0.245	-0.026	129.3425704	0.012
Taurus INFRA (DIV)	2.064	0.338	0.390	0.152	-0.015	-0.092	-0.238	-0.017	183.0152715	0.026
Taurus INFRA (GR)	2.053	0.338	0.392	0.154	-0.011	-0.067	-0.237	-0.008	694.6923045	0.036
UTI INFRA (DIV)	1.585	0.224	0.319	0.102	-0.031	-0.220	-0.359	-0.040	17.62251224	-0.012
UTI INFRA (GR)	1.467	0.214	0.342	0.117	-0.035	0.020	-0.375	-0.042	27.40632328	-0.021

Table 6: Technology sector analysis

Name of the Scheme	Std Dev	Beta	Correlation	R-Squared	(Fund) Sharpe	(Fund) Treynor	(Market) Treynor	Jensen	Information	M-Squared
Birla Sunlife New Millenium (DIV)	1.688	0.381	0.484	0.234	-0.041	-0.179	-0.121	-0.082	9.940819462	-0.024
Birla Sunlife New Millenium (GR)	1.614	0.227	0.302	0.091	-0.020	-0.139	-0.204	-0.039	11.82937459	0.021
DSPBR Technology.com (DIV)	1.527	0.366	0.514	0.264	-0.013	-0.054	-0.126	-0.032	15.11604365	0.035
DSPBR Technology.com (GR)	1.532	0.308	0.432	0.186	-0.012	-0.058	-0.150	-0.029	14.25673318	0.037
Franklin Infotech (DIV)	2.044	0.178	0.187	0.035	0.004	0.047	-0.260	0.002	12.23846714	0.071
Franklin Infotech (GR)	1.908	0.172	0.193	0.037	0.023	0.258	-0.270	0.038	13.79500651	0.112
SBI MSFU IT	1.803	0.235	0.279	0.078	-0.004	-0.029	-0.197	-0.015	12.5190963	0.054

Standard deviation of the market is 2.283. Sharpe Ratio of the market is -0.018.

The analysis of Sharpe's measure shown in Table 6 reveals that, all infrastructure funds have outperformed the market. Among 28 funds, JM Hi-Fi Fund has been the best performer. The analysis of Treynor's ratio reveals that, LIC Nomura Fund has outperformed the market as well as it has been the best performer among 28 infrastructure funds. As per Jensen's measure, JM Hi-Fi Fund has been the best performer.

As per Information Ratio, Taurus Infra Growth Fund has been the best performer whereas Canara Robeco Infra Dividend Fund has shown worse performance. M^2 measure shows the similar results. Standard deviation of the market is 2.142. Sharpe Ratio of the market is -0.004.

The analysis of Sharpe's measure shown in Table 7 reveals that, Franklin Infotech Fund with the highest Sharpe ratio i.e. 0.023. The analysis of Treynor's ratio reveals the same results as that of Sharpe's ratio. As per Jensen's measure, Franklin Infotech Growth Fund has been the best performer among the 7 funds, with the highest Jensen's ratio (0.038). As per Information Ratio, DSP Black Rock Technology.com Dividend Fund has performed well whereas, Bila Sun Life New Millenium Dividend Fund has shown underperformance. Franklin Infotech Growth Fund is the best performer as per M^2 measure with the higher value of 0.112 among all 7 funds. Overall, we can say that, Franklin Infotech Fund has been the best performer.

Conclusion

The evaluation of the performance of the open-ended equity sector mutual funds reveal that, all the sector funds have outperformed the market according to the Sharpe and Treynor's Ratio except Infrastructure Sector funds. FMCG sector is the lowest volatility sector with low standard deviation and beta value having lower risk whereas Banking and Infrastructure sector shows highest degree of volatility subject to high risk among all the sectors considered together.

REFERENCES

- Block & French. 2000. *The effect of portfolio weighing on investment performance evaluation: The case study of actively managed mutual funds*. New Mexico State University.
- Gali Kanti Kumar. 1995. *Mutual funds - performance appraisal and organizational factors: An analysis based on risk-adjusted returns*. Indian Institute of Management. Bangalore
- Mutual Fund Insight, Volume VIII, Number 8, 15th April - 14th May
- Rao. 2003. *Investment Styles and Performance of Equity Mutual Funds in India*.
- Sadhak H. 1997. *Mutual funds in India, marketing strategies and investment practices*. Sage Publications.
- Sahadevan & Thiripalraju. 1997. *Mutual funds, data, interpretation and analysis*. New Delhi: Prentice Hall India.
- Saidov. 2007. *Performance evaluation of German mutual funds*. University of Ulm