



PERFORMANCE EVALUATION OF SELECTED DIVIDEND INFRASTRUCTURE MUTUAL FUND SCHEMES

Dr. I. Francis Gnanasekar*

R. Malini**

Abstract: *Mutual fund companies collect the savings from small investors and make a big corpus of these savings and invested in a well-diversified portfolio of different companies. It is generally believed that mutual funds are able to diversify the risk. Mutual funds provide more return with less risk. Infrastructure is the basic physical and organizational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. It is an important term for judging a country or region's development.*

This paper attempts to study the performance evaluation of selected dividend infrastructure mutual fund schemes in terms of risk and return relationship. The main objective is to evaluate the performance of selected infrastructure schemes on the basis of dividend by using various performance measures and also rankings of selected schemes by their outstanding performance with its benchmark portfolio. The study period has been taken from 1st April 2010 to 31st March 2015. NAV values were collected from the AMFI India. R_p and R_m were calculated on Quarterly returns. The data relating to S&P CNX Nifty index is collected from the NSE India. It has been used as a benchmark portfolio to study the performance of selected dividend infrastructure mutual fund schemes. For analysing the selected dividend infrastructure mutual fund schemes Standard Deviation, Covariance, Beta, Sharpe's, Treynor's and Jensen's Alpha measures has been used. This study is very much helpful for the small investors to assess the fund's performance.

Key words: *Net Asset Value, Benchmark, Infrastructure, Dividend, Beta, Covariance, Standard Deviation, Sharpe's, Treynor's, Jensen's Alpha and Performance.*

*Vice Principal & Associate Professor, PG & Research Department of Commerce, St. Joseph's College (Autonomous), Tiruchirappalli.

**Assistant Professor, PG & Research Department of Commerce, Srimad Andavan Arts and Science College (Autonomous), Tiruvanaikovil.



INTRODUCTION

Mutual funds provide a mechanism to invest in the stock market without knowing the complexities of stock market. It provides the best option to the investors who have no knowledge of the stock market. Mutual fund is just the connecting bridge or a financial intermediary that allows a group of investors to pool their money together with a predetermined investment objective. Mutual funds provide more return with less risk. The main advantage of mutual fund is to diversify the risk. Small investors can take benefits of stock market growth by investing in equity and debt instruments through mutual fund.

Portfolios contain a wide range of securities that are selected to achieve the highest return for a given level of risk. The portfolio performance evaluation refers to the determination of how a particular investment portfolio has performed relative to some comparison benchmarks. The evaluation can indicate the extent to which the portfolio has outperformed or underperformed or it has performed at par with the benchmark. The evaluation of portfolio performance is important because, the investors and the fund managers whose funds have been invested or managed need to know the relative performance of the portfolio. It will generate and provide information that will help the investor and fund manager to assess any need for rebalancing of the investments and it also helps for the small investors to make selection of a fund for their investment.

STATEMENT OF THE PROBLEM

Mutual Fund is an investment which is pool of funds collected from many small investors for the purpose of investing in high value securities such as stocks, bonds, money market instruments and so on. Mutual funds are operated by professionals, who invest the fund's capital and attempt to produce capital gains and income for the small investors.

Present scenario mutual fund industry offering various innovative schemes in order to attract the small investors. Moreover small Investors are also having great expectations from mutual fund industry. In mutual fund industry one of the innovative schemes is infrastructure schemes which are really emerging sector in global scenario. Small companies and tiny industries are very much eager to invest these infrastructure mutual fund schemes, because they are wanted to develop their infrastructural facilities in their organisation. In order to improve the infrastructure these infrastructure mutual fund schemes are essential one. Apart from that all dividend incomes in the hands of investors are fully tax free. So this



paper makes an attempt to study the performance of selected infrastructure schemes on the basis of dividend in the framework of risk and return during the period 1st April 2010 to 31st March 2015.

OBJECTIVES OF THE STUDY

- 1) To analyse the performance of selected infrastructure schemes on the basis of dividend with the tools of return, standard deviation, covariance and beta;
- 2) To evaluate the selected infrastructure schemes on the basis of various performance measures (Sharpe's, Treynor's, Jensen Alpha); and
- 3) To compare Birla, DSPBR, ICICI, Kotak and SBI selected infrastructure mutual fund on the basis of dividend schemes performance with the S&P CNX Nifty Index, to give rankings of mutual funds by their outstanding performance.

HYPOTHESIS OF THE STUDY

- H_0 1: There is no significant difference between scheme returns and Benchmark returns of sample schemes of selected mutual funds.
- H_0 2: There is no significant difference between different risk adjusted portfolio evaluation measures of sample schemes.

METHODOLOGY OF THE STUDY

The sample consists of NAV of selected infrastructure mutual fund schemes on the basis of dividend and S&P CNX NIFTY index is used as a proxy. The required data for the research study were collected from the secondary sources. R_p and R_m were calculated on Quarterly returns.

- The data relating to **NAV** of selected infrastructure mutual fund schemes on the basis of dividend were collected from the **AMFI India (Association of Mutual Funds in India) website i.e., www.amfiindia.com**
- The data relating to S&P CNX NIFTY index is collected from the NSE India (National Stock Exchange India) website **i.e., www.nseindia.com**

SAMPLE OF THE STUDY

This paper consists of five infrastructure mutual fund schemes which are in dividend basis as a sample. All schemes are dividend option schemes and selected using systematic sampling



method. The period of the study is 5 years i.e. 1st April 2010 to 31st March 2015. The sample five infrastructure mutual fund schemes on the basis of dividend are as follows:

S.No	Name of the Schemes
1	Birla Sun Life Infrastructure Fund (D)
2	DSPBR India T.I.G.E.R Infrastructure Fund (D)
3	ICICI Prudential Infrastructure Fund (D)
4	Kotak Infrastructure Eco Reform Fund (D)
5	SBI Infrastructure Fund (D)

TECHNIQUES OF ANALYSIS

To evaluate the performance of selected infrastructure mutual fund schemes on the basis of dividend by using the tools namely Risk, Return, Standard Deviation, Covariance, Beta, Sharpe's, Treynor's and Jensen's Measure.

SAMPLING TOOLS USED FOR ANALYSIS

Calculation of Return	$(P1-P0/P0)100$
Standard deviation	$\sqrt{D^2 / N}$
β (Beta value)	$\text{covariance}/\sigma_m \times \sigma_m$
Sharpe's Measure	$(R_m - R_f)/\sigma$
Treynor's Measure	$(R_m - R_f)/\beta$
Jensen's Measure	$(R - R_m)$

REVIEW OF LITERATURE

Mr. Sunil M. Adhav, Dr. Pratap M. Chauhan (2015), their research is an attempt to study comparative performance of mutual funds of selected Indian companies. The study focus on mutual fund schemes of selected Indian companies comprising Equity, Debt and Hybrid Schemes. The total of 390 schemes comprising of 178 equity mutual funds, 138 debt schemes and 74 hybrid schemes are selected for the study. The performance is analysed with the help of Return, risk (standard Deviation), and Sharpe ratio. Also the selected mutual funds are compared with their respective benchmark. Thus it is concluded that Equity, Debt and Hybrid mutual funds have performed better than their benchmark and generated better returns for the investors.

Shalini Sharma (2014), their research study was to evaluate the return with risk associated in the mutual fund and compares the performance of various mutual fund schemes on the basis of benchmark index so as to bring out whether the scheme is outperforming or



underperforming the benchmark is measured by using secondary data Sharpe's and Treynor's portfolio performance measure is used to find the risk premium of portfolio relative to the total amount of risk in the portfolio.

Mohamed Zaheerudin et.al (2013) examines the performance of mutual funds based on their fund return, risk and performance ratios. Further they compare their fund performance with the S&P CNX Nifty Index, to give rankings of mutual funds by their outstanding performance. The period of the study was July 2009 to April 2012. Rm calculated on quarterly returns. The present study was confined to evaluate the performance of mutual funds on the basis of quarterly returns. Finally, they conclude this study helpful for the investors to assess the best funds.

Prajapati and Patel (2012) examined the performance evaluation of Indian mutual funds is carried out through relative performance index, risk-return analysis, Treynor's ratio, Sharp's ratio, Sharp's measure, Jensen's measure, and Fama's measure. For this daily closing NAVs for the period is 1st January 2007 to 31st December, 2011 had been used. The results of performance measures suggested that most of the mutual fund have given positive return during 2007 to 2011.

M.Radhakrishnan (2011), he analyse the performance of mutual funds. In this paper is an attempt to study the performance evaluation of selected open ended schemes in terms of risk and return relationship. For this rate of return method, Beta, Standard Deviation, Sharpe ratio and Treynor ratio has been used. BSE-30 has been used as a benchmark to study the performance of mutual funds in India.

Duggimpudi.R.R, Abdou.H.A & Zaki.M (2010) they evaluate the performance of Indian equity diversified mutual funds. A subsidiary aim is to analyse the relationship between risk and return of these funds based on total risk and systematic risk. Two different overlapping data sets have been used in this paper, from 2000 to 2009, covering seventeen mutual funds. The evaluation relies on three techniques, namely, the Treynor, the Sharp and the Jensen techniques. These techniques have been compared with the Indian market index (BSE SENSEX) to evaluate the performance of each individual mutual fund. The results indicate a positive relation between risk and return of these mutual funds.

Sathya Swaroop Debasish (2009) evaluated the performance of equity-based mutual fund schemes in Indian scenario. In this paper, an attempt has been made to study the



performance of selected schemes of mutual funds based on risk-return relationship models and measures. The period of the study was April 1996 to March 2009 (13 years). The analysis has been made on the basis of mean return, beta risk, and coefficient of determination, Sharpe ratio, Treynor ratio and Jensen Alpha.

S.Durga (2007), she made an attempt to evaluate the performance of Indian mutual fund tax saving schemes during the period 2003-2007. One, three and five-year absolute returns were calculated. Since the absolute returns do not account for overall market movements during the period we have calculated excess returns for one, three and five-years. Performance measures used are Sharpe ratio, Treynor ratio and Jensen measure.

TABLE - 1

Average Quarterly Returns & Risks, covariance of Birla Sun Life & S&P CNX Nifty

MONTH	BIRLA NAV	R	D	D2 (RISK)	QUARTERLY S&P	R	D	d2 (MARKET RISK)	D^d = COV
APR10-JUN10	13.01				5176.80				
JUL10-SEP10	13.25	1.84	0.14	0.02	5538.69	6.99	4.10	16.81	0.58
OCT10-DEC10	13.74	3.76	2.06	4.24	6039.83	9.05	6.16	37.92	12.68
JAN11-MAR11	11.78	-14.28	-15.98	255.52	5572.87	-7.73	-10.62	112.81	169.78
APR11-JUN11	11.26	-4.43	-6.13	37.53	5585.97	0.24	-2.65	7.05	16.26
JUL11-SEP11	10.42	-7.45	-9.15	83.66	5229.64	-6.38	-9.27	85.92	84.78
OCT11-DEC11	9.19	-11.79	-13.49	181.97	4944.26	-5.46	-8.35	69.67	112.60
JAN12-MAR12	9.60	4.45	2.75	7.58	5202.95	5.23	2.34	5.49	6.45
APR12-JUN12	9.46	-1.52	-3.22	10.38	5093.83	-2.10	-4.99	24.87	16.07
JUL12-SEP12	9.76	3.23	1.53	2.35	5341.49	4.86	1.97	3.89	3.02
OCT12-DEC12	10.61	8.65	6.95	48.33	5752.01	7.69	4.80	23.00	33.34
JAN13-MAR13	10.56	-0.47	-2.17	4.69	5907.52	2.70	-0.19	0.03	0.40
APR13-JUN13	9.89	-6.36	-8.06	64.89	5859.06	-0.82	-3.71	13.77	29.89
JUL13-SEP13	8.86	-10.38	-12.08	145.93	5747.16	-1.91	-4.80	23.04	57.98
OCT13-DEC13	9.93	12.04	10.34	106.89	6153.52	7.07	4.18	17.48	43.22
JAN14-MAR14	10.40	4.77	3.07	9.43	6280.58	2.06	-0.83	0.68	-2.53
APR14-JUN14	13.75	32.23	30.53	932.34	7145.52	13.77	10.88	118.41	332.26
JUL14-SEP14	14.08	2.36	0.66	0.43	7841.68	9.74	6.85	46.96	4.51
OCT14-DEC14	15.12	7.39	5.69	32.37	8232.42	4.98	2.09	4.38	11.91
JAN15-MAR15	16.36	8.22	6.52	42.53	8642.37	4.98	2.09	4.37	13.63
TOTAL		32.28		1971.08		54.97		616.55	946.84

Source: www.amfiindia.com, www.nseindia.com (Computed on Quarterly Basis)

Calculation of Birla Sun Life Return = $R = \sum R/N = 32.28/19 = 1.70$

Calculation of S&P CNX Nifty Return = $MR = \sum R/N = 54.97/19 = 2.89$



Calculation of Birla Sun Life (S.D) Risk = $\sqrt{D^2 / N} = \sqrt{1971.08/19} = 10.19$

Calculation of S&P Nifty's (S.D) Risk = $\sqrt{MD^2 / N} = \sqrt{616.55/19} = 5.70$

Calculation of Covariance = Avg. covariance = $946.84/19 = 49.83$

Calculation of (β) Beta value = $\text{covariance} / \sigma_m \times \sigma_m = 49.83 / (5.70 \times 5.70) = 1.54$

R_m calculated on Quarterly returns.

R_f = 10 taken as annual rate of interest, hence convert it into Quarterly, $10/4 = 2.5$

Calculation of Sharpe's ratio = $(R_m - R_f) / \sigma = (1.70 - 2.5) / 10.19 = -0.08$

Calculation of Treynor's ratio = $(R_m - R_f) / \beta = (1.70 - 2.5) / 1.54 = -0.52$

Calculation of Jensen's Alpha = $(R - R_m) = (1.70 - 2.89) = -1.19$

TABLE - 2

Average Quarterly Returns & Risks, covariance of DSPBR India & S&P CNX Nifty

MONTH	DSPBR NAV	R	D	D2 (RISK)	QUARTERLY S&P	R	D	d2 (MARKET RISK)	D^d = COV
APR10-JUN10	18.49				5176.80				
JUL10-SEP10	19.95	7.91	7.01	49.08	5538.69	6.99	4.10	16.81	28.73
OCT10-DEC10	19.85	-0.51	-1.41	1.99	6039.83	9.05	6.16	37.92	-8.68
JAN11-MAR11	17.02	-14.26	-15.16	229.94	5572.87	-7.73	-10.62	112.81	161.06
APR11-JUN11	16.98	-0.23	-1.13	1.29	5585.97	0.24	-2.65	7.05	3.01
JUL11-SEP11	15.98	-5.87	-6.77	45.83	5229.64	-6.38	-9.27	85.92	62.75
OCT11-DEC11	14.35	-10.20	-11.10	123.31	4944.26	-5.46	-8.35	69.67	92.69
JAN12-MAR12	15.00	4.52	3.62	13.08	5202.95	5.23	2.34	5.49	8.47
APR12-JUN12	13.79	-8.04	-8.94	79.85	5093.83	-2.10	-4.99	24.87	44.56
JUL12-SEP12	14.41	4.48	3.58	12.78	5341.49	4.86	1.97	3.89	7.05
OCT12-DEC12	15.83	9.89	8.99	80.77	5752.01	7.69	4.80	23.00	43.10
JAN13-MAR13	15.45	-2.41	-3.31	10.95	5907.52	2.70	-0.19	0.03	0.62
APR13-JUN13	13.85	-10.39	-11.29	127.40	5859.06	-0.82	-3.71	13.77	41.88
JUL13-SEP13	11.84	-14.53	-15.43	238.07	5747.16	-1.91	-4.80	23.04	74.06
OCT13-DEC13	12.88	8.80	7.90	62.43	6153.52	7.07	4.18	17.48	33.03
JAN14-MAR14	12.96	0.66	-0.24	0.06	6280.58	2.06	-0.83	0.68	0.20
APR14-JUN14	15.76	21.56	20.66	426.64	7145.52	13.77	10.88	118.41	224.77
JUL14-SEP14	17.79	12.93	12.03	144.64	7841.68	9.74	6.85	46.96	82.41
OCT14-DEC14	18.89	6.19	5.29	27.93	8232.42	4.98	2.09	4.38	11.06
JAN15-MAR15	20.13	6.54	5.64	31.85	8642.37	4.98	2.09	4.37	11.79
TOTAL		17.01		1707.89		54.97		616.55	922.56

Source: www.amfiindia.com, www.nseindia.com (Computed on Quarterly Basis)

Calculation of DSPBR India Return = $R = \sum R / N = 17.01 / 19 = 0.90$

Calculation of S&P CNX Nifty Return = $MR = \sum R / N = 54.97 / 19 = 2.89$



Calculation of DSPBR India (S.D) Risk = $\sqrt{D^2 / N} = \sqrt{1707.89/19} = 9.48$

Calculation of S&P Nifty's (S.D) Risk = $\sqrt{MD^2 / N} = \sqrt{616.55/19} = 5.70$

Calculation of Covariance = Avg. covariance = $922.56/19 = 48.56$

Calculation of (β) Beta value = covariance / $\sigma_m \times \sigma_m = 48.56 / (5.70 \times 5.70) = 1.50$

Rm calculated on Quarterly returns.

Rf = 10 taken as annual rate of interest, hence convert it into Quarterly, $10/4 = 2.5$

Calculation of Sharpe's ratio = $(R_m - R_f) / \sigma = (0.90 - 2.5) / 9.48 = -0.17$

Calculation of Treynor's ratio = $(R_m - R_f) / \beta = (0.90 - 2.5) / 1.50 = -1.07$

Calculation of Jensen's Alpha = $(R - R_m) = (0.90 - 2.89) = -2.00$

TABLE - 3

Average Quarterly Returns & Risks, covariance of ICICI Prudential & S&P CNX Nifty

MONTH	ICICI NAV	R	D	D2 (RISK)	QUARTERLY S&P	R	D	d2 (MARKET RISK)	D^d = COV
APR10-JUN10	12.05				5176.80				
JUL10-SEP10	12.60	4.57	2.66	7.09	5538.69	6.99	4.10	16.81	10.92
OCT10-DEC10	12.83	1.85	-0.06	0.00	6039.83	9.05	6.16	37.92	-0.38
JAN11-MAR11	11.68	-8.98	-10.89	118.52	5572.87	-7.73	-10.62	112.81	115.63
APR11-JUN11	11.63	-0.43	-2.34	5.46	5585.97	0.24	-2.65	7.05	6.20
JUL11-SEP11	10.88	-6.44	-8.35	69.80	5229.64	-6.38	-9.27	85.92	77.44
OCT11-DEC11	9.75	-10.41	-12.32	151.88	4944.26	-5.46	-8.35	69.67	102.87
JAN12-MAR12	10.18	4.46	2.55	6.48	5202.95	5.23	2.34	5.49	5.96
APR12-JUN12	9.65	-5.27	-7.18	51.55	5093.83	-2.10	-4.99	24.87	35.81
JUL12-SEP12	10.07	4.38	2.47	6.10	5341.49	4.86	1.97	3.89	4.87
OCT12-DEC12	10.76	6.89	4.98	24.78	5752.01	7.69	4.80	23.00	23.87
JAN13-MAR13	10.79	0.26	-1.65	2.73	5907.52	2.70	-0.19	0.03	0.31
APR13-JUN13	10.03	-6.99	-8.90	79.27	5859.06	-0.82	-3.71	13.77	33.03
JUL13-SEP13	9.09	-9.42	-11.33	128.34	5747.16	-1.91	-4.80	23.04	54.38
OCT13-DEC13	10.03	10.35	8.44	71.30	6153.52	7.07	4.18	17.48	35.30
JAN14-MAR14	10.26	2.30	0.39	0.15	6280.58	2.06	-0.83	0.68	-0.32
APR14-JUN14	13.52	31.75	29.84	890.18	7145.52	13.77	10.88	118.41	324.67
JUL14-SEP14	14.80	9.45	7.54	56.83	7841.68	9.74	6.85	46.96	51.66
OCT14-DEC14	14.91	0.74	-1.17	1.36	8232.42	4.98	2.09	4.38	-2.44
JAN15-MAR15	15.98	7.17	5.26	27.70	8642.37	4.98	2.09	4.37	11.00
TOTAL		36.22		1699.52		54.97		616.55	890.77

Source: www.amfiindia.com, www.nseindia.com (Computed on Quarterly Basis)

Calculation of ICICI Prudential Return = $R = \sum R / N = 36.22 / 19 = 1.91$

Calculation of S&P CNX Nifty Return = $MR = \sum R / N = 54.97 / 19 = 2.89$



Calculation of ICICI Prudential (S.D) Risk = $\sqrt{VD^2 / N} = \sqrt{1699.52/19} = 9.46$

Calculation of S&P Nifty's (S.D) Risk = $\sqrt{VMD^2 / N} = \sqrt{616.55/19} = 5.70$

Calculation of Covariance = Avg. covariance = $890.77/19 = 46.88$

Calculation of (β) Beta value = $\text{covariance} / \sigma_m \times \sigma_m = 46.88 / (5.70 \times 5.70) = 1.44$

R_m calculated on Quarterly returns.

R_f = 10 taken as annual rate of interest, hence convert it into Quarterly, $10/4 = 2.5$

Calculation of Sharpe's ratio = $(R_m - R_f) / \sigma = (1.91 - 2.5) / 9.46 = -0.06$

Calculation of Treynor's ratio = $(R_m - R_f) / \beta = (1.91 - 2.5) / 1.44 = -0.41$

Calculation of Jensen's Alpha = $(R - R_m) = (1.91 - 2.89) = -0.99$

TABLE - 4

Average Quarterly Returns & Risks, covariance of Kotak & S&P CNX Nifty

MONTH	KOTAK NAV	R	D	D2 (RISK)	QUARTERLY S&P	R	D	d2 (MARKET RISK)	D^d = COV
APR10-JUN10	9.05				5176.80				
JUL10-SEP10	9.60	6.08	2.76	7.64	5538.69	6.99	4.10	16.81	11.33
OCT10-DEC10	9.81	2.14	-1.18	1.40	6039.83	9.05	6.16	37.92	-7.30
JAN11-MAR11	8.82	-10.01	-13.33	177.72	5572.87	-7.73	-10.62	112.81	141.60
APR11-JUN11	9.08	2.85	-0.47	0.22	5585.97	0.24	-2.65	7.05	1.23
JUL11-SEP11	9.16	0.93	-2.39	5.74	5229.64	-6.38	-9.27	85.92	22.20
OCT11-DEC11	8.29	-9.47	-12.79	163.64	4944.26	-5.46	-8.35	69.67	106.77
JAN12-MAR12	8.47	2.18	-1.14	1.29	5202.95	5.23	2.34	5.49	-2.66
APR12-JUN12	7.94	-6.31	-9.63	92.73	5093.83	-2.10	-4.99	24.87	48.02
JUL12-SEP12	8.29	4.36	1.04	1.09	5341.49	4.86	1.97	3.89	2.06
OCT12-DEC12	8.93	7.83	4.51	20.38	5752.01	7.69	4.80	23.00	21.65
JAN13-MAR13	8.48	-5.12	-8.44	71.27	5907.52	2.70	-0.19	0.03	1.57
APR13-JUN13	8.18	-3.52	-6.84	46.82	5859.06	-0.82	-3.71	13.77	25.39
JUL13-SEP13	7.34	-10.22	-13.54	183.40	5747.16	-1.91	-4.80	23.04	65.00
OCT13-DEC13	7.88	7.37	4.05	16.38	6153.52	7.07	4.18	17.48	16.92
JAN14-MAR14	8.34	5.77	2.45	6.02	6280.58	2.06	-0.83	0.68	-2.02
APR14-JUN14	10.86	30.27	26.95	726.13	7145.52	13.77	10.88	118.41	293.23
JUL14-SEP14	13.00	19.70	16.38	268.26	7841.68	9.74	6.85	46.96	112.24
OCT14-DEC14	14.40	10.79	7.47	55.74	8232.42	4.98	2.09	4.38	15.62
JAN15-MAR15	15.49	7.54	4.22	17.85	8642.37	4.98	2.09	4.37	8.83
TOTAL		63.16		1863.69		54.97		616.55	881.68

Source: www.amfiindia.com, www.nseindia.com (Computed on Quarterly Basis)

Calculation of Kotak Return = $R = \sum R / N = 63.16 / 19 = 3.32$

Calculation of S&P CNX Nifty Return = $MR = \sum R / N = 54.97 / 19 = 2.89$

Calculation of Kotak (S.D) Risk = $\sqrt{VD^2 / N} = \sqrt{1863.69/19} = 9.90$



Calculation of S&P Nifty's (S.D) Risk = $\sqrt{MD^2 / N} = \sqrt{616.55/19} = 5.70$

Calculation of Covariance = Avg. covariance = $881.68/19 = 46.40$

Calculation of (β) Beta value = covariance / $\sigma_m \times \sigma_m = 46.40 / (5.70 \times 5.70) = 1.43$

R_m calculated on Quarterly returns.

R_f = 10 taken as annual rate of interest, hence convert it into Quarterly, $10/4 = 2.5$

Calculation of Sharpe's ratio = $(R_m - R_f) / \sigma = (3.32 - 2.5) / 9.90 = 0.08$

Calculation of Treynor's ratio = $(R_m - R_f) / \beta = (3.32 - 2.5) / 1.43 = 0.58$

Calculation of Jensen's Alpha = $(R - R_m) = (3.32 - 2.89) = 0.43$

TABLE - 5

Average Quarterly Returns & Risks, covariance of SBI & S&P CNX Nifty

MONTH	SBI NAV	R	D	D2 (RISK)	QUARTERLY S&P	R	D	d2 (MARKET RISK)	D^d = COV
APR10-JUN10	10.11				5176.80				
JUL10-SEP10	10.71	6.01	4.91	24.09	5538.69	6.99	4.10	16.81	20.13
OCT10-DEC10	10.93	2.02	0.92	0.85	6039.83	9.05	6.16	37.92	5.66
JAN11-MAR11	9.25	-15.37	-16.47	271.14	5572.87	-7.73	-10.62	112.81	174.90
APR11-JUN11	9.11	-1.48	-2.58	6.64	5585.97	0.24	-2.65	7.05	6.84
JUL11-SEP11	8.64	-5.20	-6.30	39.66	5229.64	-6.38	-9.27	85.92	58.37
OCT11-DEC11	7.77	-10.11	-11.21	125.61	4944.26	-5.46	-8.35	69.67	93.55
JAN12-MAR12	7.82	0.65	-0.45	0.20	5202.95	5.23	2.34	5.49	-1.05
APR12-JUN12	7.28	-6.87	-7.97	63.47	5093.83	-2.10	-4.99	24.87	39.73
JUL12-SEP12	7.68	5.50	4.40	19.40	5341.49	4.86	1.97	3.89	8.69
OCT12-DEC12	8.26	7.55	6.45	41.59	5752.01	7.69	4.80	23.00	30.93
JAN13-MAR13	7.97	-3.50	-4.60	21.18	5907.52	2.70	-0.19	0.03	0.86
APR13-JUN13	7.48	-6.16	-7.26	52.69	5859.06	-0.82	-3.71	13.77	26.93
JUL13-SEP13	6.54	-12.53	-13.63	185.82	5747.16	-1.91	-4.80	23.04	65.43
OCT13-DEC13	7.07	8.00	6.90	47.65	6153.52	7.07	4.18	17.48	28.86
JAN14-MAR14	7.01	-0.78	-1.88	3.55	6280.58	2.06	-0.83	0.68	1.55
APR14-JUN14	8.98	28.09	26.99	728.67	7145.52	13.77	10.88	118.41	293.74
JUL14-SEP14	10.20	13.56	12.46	155.28	7841.68	9.74	6.85	46.96	85.39
OCT14-DEC14	10.64	4.30	3.20	10.25	8232.42	4.98	2.09	4.38	6.70
JAN15-MAR15	11.41	7.28	6.18	38.15	8642.37	4.98	2.09	4.37	12.91
TOTAL		20.98		1835.87		54.97		616.55	960.12

Source: www.amfiindia.com, www.nseindia.com (Computed on Quarterly Basis)

Calculation of SBI Return = $R = \sum R / N = 20.98 / 19 = 1.10$

Calculation of S&P CNX Nifty Return = $MR = \sum R / N = 54.97 / 19 = 2.89$

Calculation of SBI (S.D) Risk = $\sqrt{VD^2 / N} = \sqrt{1835.87/19} = 9.83$

Calculation of S&P Nifty's (S.D) Risk = $\sqrt{MD^2 / N} = \sqrt{616.55/19} = 5.70$



Calculation of Covariance = Avg. covariance = $960.12/19 = 50.53$

Calculation of (β) Beta value = $\text{covariance} / \sigma_m \times \sigma_m = 50.53 / (5.70 \times 5.70) = 1.56$

R_m calculated on Quarterly returns.

$R_f = 10$ taken as annual rate of interest, hence convert it into Quarterly, $10/4 = 2.5$

Calculation of Sharpe's ratio = $(R_m - R_f) / \sigma = (1.10 - 2.5) / 9.83 = -0.14$

Calculation of Treynor's ratio = $(R_m - R_f) / \beta = (1.10 - 2.5) / 1.56 = -0.90$

Calculation of Jensen's Alpha = $(R - R_m) = (1.10 - 2.89) = -1.79$

TABLE – 6

Performance of Selected Infrastructure Mutual Fund Schemes

S.NO	NAME OF FUNDS	AVERAGE RETURN	RISK	BETA	SHARPE'S RATIO	TREYNOR'S RATIO	JENSEN'S ALPHA
1	Birla Sun Life Infrastructure Fund (D)	1.70	10.19	1.54	-0.08	-0.52	-1.19
2	DSPBR India T.I.G.E.R Infrastructure Fund (D)	0.90	9.48	1.50	-0.17	-1.07	-2.00
3	ICICI Prudential Infrastructure Fund (D)	1.91	9.46	1.44	-0.06	-0.41	-0.99
4	Kotak Infrastructure Eco Reform Fund (D)	3.32	9.90	1.43	0.08	0.58	0.43
5	SBI Infrastructure Fund (D)	1.10	9.83	1.56	-0.14	-0.90	-1.79

Source: www.amfiindia.com, www.nseindia.com

Table 6 indicates the performance of selected infrastructure mutual fund schemes. In this table Kotak Infrastructure Eco Reform Fund (D) shows high returns (R) among the selected funds. When compared to companies' risk (σ) and the market risk (β) Birla sun life mutual fund has higher risk and ICICI and Kotak has low risk. The above performance measures ratio of five companies Kotak Infrastructure Eco Reform Fund (D) performance is better when compared to selected funds.

TABLE – 7

Ranking of Selected Infrastructure Mutual Fund Schemes

NAME OF FUNDS	SHARPE'S RATIO	RANK	TREYNOR'S RATIO	RANK	JENSEN'S ALPHA	RANK
Birla Sun Life Infrastructure Fund (D)	-0.08	3	-0.52	3	-1.19	3
DSPBR India T.I.G.E.R Infrastructure Fund (D)	-0.17	5	-1.07	5	-2.00	5
ICICI Prudential Infrastructure Fund (D)	-0.06	2	-0.41	2	-0.99	2
Kotak Infrastructure Eco Reform Fund (D)	0.08	1	0.58	1	0.43	1
SBI Infrastructure Fund (D)	-0.14	4	-0.90	4	-1.79	4

Source: www.amfiindia.com, www.nseindia.com



Table 7 describes the ranking of selected infrastructure mutual fund schemes. When compared to Sharpe's, Treynor's and Jensen's Alpha performance measures the top perform scheme is Kotak Infrastructure Eco Reform Fund (D). This scheme ranked as first. The second outperformed scheme is ICICI Prudential Infrastructure Fund (D), Birla Sun Life Infrastructure Fund (D) is ranked as third position and the remaining two schemes are ranked as fourth and fifth position, because these schemes are not performed well and also having high risk and low return.

FINDINGS

- Kotak Infrastructure Eco Reform Fund (D) shows high returns (R) among the selected funds.
- When compared to companies' risk (σ) and the market risk (β) Birla sun life mutual fund has higher risk.
- ICICI Prudential Infrastructure Fund and Kotak Infrastructure Eco Reform Fund have low risk.
- Kotak Infrastructure Eco Reform Fund (D) performance is better when compared to selected funds.
- When compared to Sharpe's, Treynor's and Jensen's Alpha performance measures the first top perform scheme is Kotak Infrastructure Eco Reform Fund (D).
- DSPBR India T.I.G.E.R Infrastructure Fund (D) scheme is not performed well and also having high risk and low return.

CONCLUSION

The Mutual funds are one of the best investment source available for Indian small investors to make an investment, if thoroughly assessed it may give big returns with little savings. Generally people in India prefer to invest in government securities and fixed deposits of nationalize banks where they can have complete safety of their funds though they get less returns. The mutual fund industry needs to develop products to fulfil the needs of customers and help customer understand how the products cater to their needs. The people are not aware of the new innovative products which are offered by mutual fund industries.

In mutual fund industry one of the innovative schemes is infrastructure schemes which are really emerging one. Small companies and tiny industries are very much eager to invest



these infrastructure mutual fund schemes, because they are wanted to develop their infrastructural facilities in their organisation. The results shows that all the parameters of performance evaluation measures it can be said that out of the selected five dividend infrastructure mutual fund schemes, the Kotak Infrastructure Eco Reform Fund (D) is outperformed scheme and marked as first rank in Sharpe's, Treynor's and Jensen's Alpha measures. DSPBR India T.I.G.E.R Infrastructure Fund (D) scheme is not performed well and its shows high risk and low return. The above performance ratios are very much helpful for the small investors and evaluator to assess the dividend infrastructure mutual fund schemes performance.

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