EVALUATING THE SOUNDNESS OF SELECTED INFRASTRUCTURE MUTUAL FUND SCHEME OF STATE BANK OF INDIA FROM 2010 TO 2014

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ABSTRACT

*Portfolio means a range of investments. It includes shares, bonds, debentures, and mutual funds. A Mutual fund is a pool of financial resources. It collects the savings from small investors, invest them in Government and other corporate securities and earn income through interest and dividends besides capital gains. It works on the principle of, "**Small drops of water make a big Ocean**". (Gordon and Natarajan, 2007).*

The range of investments gives importance to Mutual funds, which play a significant role in financial intermediation development of capital markets and growth of the financial sector. In the investment market, one fund is not suitable to meet the vast requirements of all investors. Therefore, many types of funds are available to the investor. The main two types of mutual funds are Open-ended and Close-ended funds. This paper evaluates the Open-ended infrastructure mutual fund schemes in State Bank of India.

The infrastructure sector is one of growing sector in Indian economy. The power of Indian economy lies on the development of infrastructure. If we have the proper infrastructure in the form of transport, power, bridges and so on, we can easily reach the target of our GDP in the forthcoming 12th plan. In this paper, an attempt is made to evaluate the performance of SBI

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infrastructure mutual fund schemes, on the basis of portfolio returns compared to benchmark returns. NAV values were collected from the AMFI India. The data relating to S&P CNX Nifty index is collected from the NSE India. Thus, it is analyzed by using Risk-return analysis, Sharpe's Measure and Treynor's Measure to evaluate the performance. Sharpe Measure and Treynor Measure are often used to rank the performance of the portfolio or mutual fund managers. The study shows that investors have made quite good returns in Mutual Funds.

Keywords: Portfolio, Mutual Funds, Performance Evaluation, Net Asset Value, Sharpe's, Treynor measure and Benchmark.

MUTUAL FUND – INTRODUCTION

Investment is referred as the utilization of resources in order to increase income and production output in the future. In Broad sense, an investment is sacrificing of current money or other resources for future benefits. The Securities and Exchange Board of India (Mutual Funds) Regulations, 1993 defines a mutual fund as "a fund established in the form of a trust by a sponsor, to raise monies by the trustees through the sale of units to the public, under one or more schemes, for investing in securities in accordance with these regulations".

A mutual fund is a trust or an investment company that pools resources from thousands of investors who share common investment goal and then diversifies its investments into different types of securities in order to provide potential returns and reasonable safety. It has become a major vehicle for mobilization of savings, especially from the small and household savers for investments in the capital market. A mutual fund is a professionally managed type of collective investment scheme that pools money from many investors and invests it in stocks, bonds, short-term money market instruments, and or other securities. The mutual fund will have a fund manager that trades the pooled money on a regular basis. The net proceeds or losses are then typically distributed to the investors annually.

The mutual fund helps the small and medium size investors to participate in today's complex and modern financial scenario. The investors can participate in the mutual fund by buying the units of the fund. The income earned through these investments and capital appreciation realized by the scheme is shared by its unit holders in proportion to the number of units owned by them. Mutual fund plays a vital role in the mobilization of resources and their efficient allocation. These funds played a significant role in financial intermediation, development of capital markets and growth of the financial sector as a whole. The active involvement of mutual funds in economic development can be seen by their dominant presence in the money and capital market.

STATEMENT OF THE PROBLEM

Mutual funds provide the much-needed fund requirements for the corporate sector. In the present day scenario, most of the corporate have been reportedly tapping the mutual fund route as a reliable source of finance. It provides a minimum or reasonable but assured rate of return would be sufficient in the case of mutual funds to satisfy the investors.

The infrastructure sector is one of growing sector in Indian economy; as a result in this paper we select SBI infrastructure schemes for our study. In the selected SBI infrastructure schemes, which infrastructure mutual fund schemes will help the investors to get regular return based on the NAV performance. For that, this paper studies the Risk-return analysis, Sharpe's Measure and Treynor's Measure to evaluate the performance of SBI infrastructure schemes.

OBJECTIVES OF THE STUDY

1) to evaluate the investment performance of SBI Infrastructure mutual fund schemes in terms of risks and returns;
2) to analyze the investment performance of SBI Infrastructure mutual fund schemes during the period 2010, 2011, 2012, 2013, 2014 and 2015 by using performance measures;
3) to rank the target and acquirer SBI Infrastructure Mutual Fund schemes by using Sharpe and Treynor measures; and
4) to identify the outperformed Mutual Fund schemes by compare with benchmark portfolio.

HYPOTHESIS OF THE STUDY

- H_o 1: The fund's return is significantly more than expected return.
- H_o 2: There is a relationship between the value of Sharpe's measure and Treynor's measure.

METHODOLOGY OF THE STUDY

The sample consists NAV of SBI Infrastructure mutual fund schemes in India, the broad S&P CNX NIFTY index is used as a proxy to find out whether the schemes and funds are able to beat the market or not, and Risk-free rate. The required data for the research study were collected from the secondary sources.

- The data relating to **NAV** of SBI infrastructure mutual funds schemes 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

For the purpose of this paper, All the SBI Infrastructure schemes were selected as samples. The sample SBI infrastructure schemes are as follows:

S.No	Name of the Schemes
1	SBI Infrastructure Fund (D)
2	SBI Infrastructure Fund (DP)
3	SBI Infrastructure Fund (G)
4	SBI Infrastructure Fund (G) - Direct Plan
5	SBI Infrastructure Fund (D) - Direct Plan

TECHNIQUES OF ANALYSIS

To evaluate the performance of SBI infrastructure mutual fund schemes by using the tools namely **Sharpe's Measure and Treynor's Measure.**

The **Sharpe ratio** characterizes how well the return of an asset compensates the investor for the risk taken. When comparing two assets versus a common benchmark, the one with a higher Sharpe ratio provides better return for the same risk. . When examining the investment performance of assets with smoothing of returns the Sharpe ratio should be derived from the performance of the underlying assets rather than the fund returns.

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

Where, R_p = Portfolio Average Return, **R_f** = Risk-Free Rate, **σ_p** = Standard Deviation of the Portfolio Return.

The **Treynor ratio** is a measurement of the returns earned in excess of that which could have been earned on an investment that has no diversifiable risk. It relates over the risk-free rate to the additional risk taken; however, systematic risk is used instead of total risk. The higher the Treynor ratio, the better the performance of the portfolio under analysis.

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

Where, R_p = Portfolio Average Return, **R_f** = Risk Free Rate, **β_p** = Beta Coefficient of Portfolio.

REVIEW OF LITERATURE

The mutual funds employ professional experts and investment consultants to conduct investment analysis and then select the portfolio of securities where the funds are a pool of funds contributed by individual investors having common investment preferences. (Rustagi. R.P, 2008).

Mutual funds are financial intermediaries that collect funds from individual investors and invest those funds in a potentially wide range of securities or other assets. Pooling of assets is the key idea behind investment companies. Each investor has a claim to the portfolio established by the investment company in proportion to the amount invested. These companies thus provide a mechanism for small investors to "team up" to obtain the benefits of large scale investing. (ZVI Bodie, *et al.*, 2006).

Mutual funds are trusts or associations of public members who wish to make investments in financial instruments or investments in assets of corporate sector for mutual benefits of its members. A mutual fund is a concept of the mutual help of subscribers for portfolio investment and management of these investments by experts in the field. (Donald E.Fischer and Ronald J.Jordon, 2004).

Narayan Rao.S (2002) in his article entitled "Performance evaluation of Indian Mutual funds in a bear market" examined the performance through relative performance index, risk-return analysis, Treynor's ratio, Sharpe's Ratio, Sharpe's measure, Jensen's measure. The results of performance measures suggest that most of the mutual fund schemes in the sample were able to satisfy investor's expectations by giving excess returns over expected returns based on both premia for systematic risk and total risk.

A mutual fund is an investment vehicle that pools together funds from investors to purchase stocks, bonds or other securities. An investor can participate in the mutual fund by buying the units of the fund. Each unit is backed by a diversified pool of assets, where the funds have been invested. (Punithavathi Pandian, 2009).

J. Lilly & Dr. D.Anusuya (2014), they analyzed the performance of ELSS mutual fund schemes. ELSS is a dedicated mutual fund scheme that allows investors to save tax. ELSS falls under section 80C, one can claim up to Rs. 1, 00,000 from his/her investment as a deduction from his/her gross total income. It also provides an opportunity for long-term capital appreciation. Since it is an equity fund, the returns from this scheme are market determined. In this study performance of 49 open-ended taxes saving ELSS schemes were examined for the period between April 2008 to March 2013. Sharpe ratio, Treynor ratio, Sortino ratio and Jensen's Alpha are used in performance evaluation of funds. It was found that LIC Nomura MF growth and dividend schemes has outperformed the market and are risk borne when compared to other schemes.

TABLE - 1

PERFORMANCE OF SBI INFRASTRUCTURE FUND (D)

Year	Sharpe		Treynor	
	Portfolio	Index	Portfolio	Index
2010	-3.073	**-2.580**	0.764	**-0.029**
2011	-1.416	**-1.188**	-0.136	**-0.015**
2012	-1.074	**-1.248**	-0.066	**-0.010**
2013	-0.396	**-0.409**	-0.028	**-0.005**
2014	-0.844	**-1.405**	-0.013	**-0.012**

Source: www.amfiindia.com

During the year 2010 and 2011, the Sharpe measures prove that Sp < Sm that is the fund earn a pour out the amount of return than the risk premium. In the year 2012, 2013 and 2014, the Sharpe measure shows Sp > Sm which means the fund performance was good. Treynor's measure shows that Tp < Tm during the year 2011, 2012, 2013 and 2014. This indicates that the fund provided insufficient return per unit of systematic risk. In 2010, the funds perform very well in Treynor measures. Sharpe's measures give better performance and the Treynor's measures give a low down performance.

TABLE - 2

PERFORMANCE OF SBI INFRASTRUCTURE FUND (DP)

Year	Sharpe	Treynor

	Portfolio	Index	Portfolio	Index
2010	-3.083	**-2.580**	0.782	**-0.029**
2011	-1.425	**-1.188**	-0.131	**-0.015**
2012	-1.078	**-1.248**	-0.062	**-0.010**
2013	-0.391	**-0.409**	-0.025	**-0.005**
2014	-0.847	**-1.405**	-0.015	**-0.012**

Source: www.amfiindia.com

The performance of SBI Infrastructure Fund (DP) indicates that the overall performance of the Sharpe's measure was excellent. During the year 2012, 2013 and 2014, the Sharpe's measure shows the better performance (i.e: Sp > Sm). In Treynor's measures, except 2010 the remaining year's performance was very low. The fund performance was lower than the benchmark.

TABLE - 3

PERFORMANCE OF SBI INFRASTRUCTURE FUND (G)

Year	Sharpe		Treynor	
	Portfolio	Index	Portfolio	Index
2010	-3.071	**-2.580**	0.815	**-0.029**
2011	-1.423	**-1.188**	-0.132	**-0.015**
2012	-1.075	**-1.248**	-0.067	**-0.010**
2013	-0.398	**-0.409**	-0.030	**-0.005**
2014	-0.845	**-1.405**	-0.018	**-0.012**

Source: www.amfiindia.com

In the year, 2012 and 2013 Sharpe's measure of the portfolio were higher than the benchmark measure (i.e: Sp > Sm). During the period 2010 the Treynor's portfolio was higher than the market index and the rest of 2011, 2012, 2013 and 2014 the portfolio performance was lower than the benchmark (i.e: Tp < Tm).

TABLE - 4

PERFORMANCE OF SBI INFRASTRUCTURE FUND (G) – DIRECT PLAN

Year	Sharpe		Treynor	
	Portfolio	Index	Portfolio	Index
2010	Nil	**-2.580**	Nil	**-0.029**
2011	Nil	**-1.188**	Nil	**-0.015**
2012	Nil	**-1.248**	Nil	**-0.010**
2013	-0.393	**-0.409**	-0.027	**-0.005**
2014	-0.841	**-1.405**	-0.014	**-0.012**

Source: www.amfiindia.com

During the year 2013 and 2014 the Sharpe's portfolio was higher than the benchmark. The fund performance was excellent in Sharpe's measure. But, in Treynor's measure the Treynor's portfolio was lower than the benchmark. The fund performance was poor in Treynor's measure.

TABLE - 5

PERFORMANCE OF SBI INFRASTRUCTURE FUND (D) – DIRECT PLAN

Year	Sharpe		Treynor	
	Portfolio	Index	Portfolio	Index
2010	Nil	**-2.580**	Nil	**-0.029**
2011	Nil	**-1.188**	Nil	**-0.015**
2012	Nil	**-1.248**	Nil	**-0.010**
2013	-0.392	**-0.409**	-0.022	**-0.005**
2014	-0.843	**-1.405**	-0.020	**-0.012**

Source: www.amfiindia.com

Table 5 describes the performance of SBI infrastructure Fund Dividend - Direct Plan. In the Period 2013 and 2014, the Sharpe's measure indicate Sharpe Portfolio > Sharpe Market Index Sp > Sm (-0.392 > -0.409) and (-0.843 > -1.405) that the fund earn high winning return than the risk premium. It denotes superior performance. In Treynor's measures, the asset earns not as much of than the risk premium and it also indicated the low-grade performance for both the years. In the year 2013 the fund shows the depressing value. It denotes the lesser performance of the Performance of SBI Infrastructure Fund Dividend – Direct Plan.

TABLE - 6

SHARPE & TREYNOR RATIOS OF SBI INFRASTRUCTURE MUTUAL FUND SCHEMES IN THE YEAR 2010

Sample Schemes SBI Infrastructure Fund	Sharpe Ratio	Benchmark	Rank	Treynor Ratio	Benchmark	Rank
SBI Infrastructure Fund (D)	-3.073	**-2.580**	**2**	0.764	**-0.029**	**2**
SBI Infrastructure Fund (DP)	-3.083	**-2.580**	**3**	0.782	**-0.029**	**3**
SBI Infrastructure Fund (G)	-3.071	**-2.580**	**1**	0.815	**-0.029**	**1**
SBI Infrastructure Fund (G) Direct Plan	Nil	**-2.580**	**Nil**	Nil	**-0.029**	**Nil**
SBI Infrastructure Fund (D) Direct Plan	Nil	**-2.580**	**Nil**	Nil	**-0.029**	**Nil**

Source: www.amfiindia.com

Sharpe and Treynor ratios of SBI infrastructure mutual fund schemes in the year 2010 were ranked in Table 6. In Sharpe ratios for SBI Infrastructure schemes in the year 2010 as well as for their benchmark portfolios. It can be noted that out of 5 infrastructure schemes 3 schemes were outperformed their benchmarks. The top two good performed schemes are SBI Infrastructure Fund (G), SBI Infrastructure Fund (D) and remaining scheme underperformed their index. In Treynor's measure, the top two performers are SBI Infrastructure Fund (G) and SBI Infrastructure Fund (D). In both Sharpe and Treynor measure the top performed scheme was SBI Infrastructure Fund (G). This scheme was performed well and its portfolio was a greater return than the benchmark.

TABLE - 7

SHARPE & TREYNOR RATIOS OF SBI INFRASTRUCTURE MUTUAL FUND SCHEMES IN THE YEAR 2011

Sample Schemes SBI Infrastructure Fund	Sharpe Ratio	Benchmark	Rank	Treynor Ratio	Benchmark	Rank
SBI Infrastructure Fund (D)	-1.416	**-1.188**	**1**	-0.136	**-0.015**	**1**
SBI Infrastructure Fund (DP)	-1.425	**-1.188**	**3**	-0.131	**-0.015**	**3**
SBI Infrastructure Fund (G)	-1.423	**-1.188**	**2**	-0.132	**-0.015**	**2**
SBI Infrastructure Fund (G) Direct Plan	Nil	**-1.188**	**Nil**	Nil	**-0.015**	**Nil**
SBI Infrastructure Fund (D) Direct Plan	Nil	**-1.188**	**Nil**	Nil	**-0.015**	**Nil**

Source: www.amfiindia.com

Table 7 indicates the ranking order during the year 2011. In 2011, both Sharpe's measure and Treynor's measures indicate the identical consequence. It can be noted that all schemes were underneath performed their benchmark. In that, the better performance schemes are SBI Infrastructure Fund (D) and SBI Infrastructure Fund (G). The remaining three schemes were performed not up to the benchmark. In 2011, SBI offers three infrastructure schemes. SBI Infrastructure Fund (G) - Direct Plan, SBI Infrastructure Fund (D) - Direct Plan infrastructure schemes was not introduced during that period. One essential point from the above table states that a Treynor and Sharpe measure denotes the indistinguishable outcome.

TABLE - 8

SHARPE & TREYNOR RATIOS OF SBI INFRASTRUCTURE MUTUAL FUND SCHEMES IN THE YEAR 2012

Sample Schemes SBI Infrastructure Fund	Sharpe Ratio	Benchmark	Rank	Treynor Ratio	Benchmark	Rank
SBI Infrastructure Fund (D)	-1.074	**-1.248**	**1**	-0.066	**-0.010**	**2**
SBI Infrastructure Fund (DP)	-1.078	**-1.248**	**3**	-0.062	**-0.010**	**1**
SBI Infrastructure Fund (G)	-1.075	**-1.248**	**2**	-0.067	**-0.010**	**3**
SBI Infrastructure Fund (G) Direct Plan	Nil	**-1.248**	**Nil**	Nil	**-0.010**	**Nil**
SBI Infrastructure Fund (D) Direct Plan	Nil	**-1.248**	**Nil**	Nil	**-0.010**	**Nil**

Source: www.amfiindia.com

Table 8 pointed out that, the top performed infrastructure scheme was SBI Infrastructure Fund (D) in Sharpe ratio, but in Treynor ratio the top performed infrastructure scheme was SBI Infrastructure Fund (DP). In 2012, SBI offers three infrastructure schemes. SBI Infrastructure Fund (G) - Direct Plan, SBI Infrastructure Fund (D) - Direct Plan infrastructure schemes was not launched during that period. One essential point from the above table states that a Treynor and Sharpe measure denotes the dissimilar outcome.

TABLE - 9

SHARPE & TREYNOR RATIOS OF SBI INFRASTRUCTURE MUTUAL FUND SCHEMES IN THE YEAR 2013

Sample Schemes SBI Infrastructure Fund	Sharpe Ratio	Benchmark	Rank	Treynor Ratio	Benchmark	Rank
SBI Infrastructure Fund (D)	-0.396	**-0.409**	**4**	-0.028	**-0.005**	**4**
SBI Infrastructure Fund (DP)	-0.391	**-0.409**	**1**	-0.025	**-0.005**	**2**
SBI Infrastructure Fund (G)	-0.398	**-0.409**	**5**	-0.030	**-0.005**	**5**
SBI Infrastructure Fund (G) Direct Plan	-0.393	**-0.409**	**3**	-0.027	**-0.005**	**3**
SBI Infrastructure Fund (D) Direct Plan	-0.392	**-0.409**	**2**	-0.022	**-0.005**	**1**

Source: www.amfiindia.com

Table 9 denotes the performance of SBI infrastructure schemes during the year 2013. In 2013, SBI launched two new schemes namely SBI Infrastructure Fund (G) - Direct Plan and SBI Infrastructure Fund (D) - Direct Plan. In Treynor measure the top performed scheme was SBI Infrastructure Fund (D) - Direct Plan. Regarding Sharpe measure the top first rank scheme was

SBI Infrastructure Fund (DP). During that period, the poorly performed scheme was SBI Infrastructure Fund (G) for both Sharpe and Treynor measures.

TABLE - 10

SHARPE & TREYNOR RATIOS OF SBI INFRASTRUCTURE MUTUAL FUND SCHEMES IN THE YEAR 2014

Sample Schemes SBI Infrastructure Fund	Sharpe Ratio	Benchmark	Rank	Treynor Ratio	Benchmark	Rank
SBI Infrastructure Fund (D)	-0.844	**-1.405**	**3**	-0.013	**-0.012**	**2**
SBI Infrastructure Fund (DP)	-0.847	**-1.405**	**5**	-0.015	**-0.012**	**3**
SBI Infrastructure Fund (G)	-0.845	**-1.405**	**4**	-0.018	**-0.012**	**4**
SBI Infrastructure Fund (G) Direct Plan	-0.841	**-1.405**	**1**	-0.014	**-0.012**	**1**
SBI Infrastructure Fund (D) Direct Plan	-0.843	**-1.405**	**2**	-0.020	**-0.012**	**5**

Source: www.amfiindia.com

Table 10 clearly states that during the year 2014, SBI launched two new infrastructure schemes namely SBI Infrastructure Fund (G) - Direct Plan and SBI Infrastructure Fund (D) - Direct Plan. The top first rank scheme was SBI Infrastructure Fund (G) - Direct Plan during that period. The second rank was SBI Infrastructure Fund (D) - Direct Plan and in Treynor measures SBI Infrastructure Fund (D) was in the second position. The remaining three infrastructure schemes were in the position of third, fourth and fifth places. During that period the poorly performed schemes were SBI Infrastructure Fund DP) for Sharpe measures and SBI Infrastructure Fund (D) - Direct Plan was lower performance scheme and got the fifth rank in Treynor measures.

RESULTS

1. In 2010, the performance of SBI infrastructure mutual fund scheme (D) was performed well than the market portfolio in Treynor measures.
2. The performance of SBI Infrastructure Fund (DP) indicates that the overall performance of the Sharpe’s measure was excellent.
3. In the year, 2012 and 2013 Sharpe's measure of the portfolio were higher than the benchmark measure (i.e: Sp > Sm).

4. The SBI Infrastructure funds (G) – Direct Plan schemes performance were excellent in Sharpe's measure.
5. In the year 2013 the fund shows the depressing value. It denotes the lesser performance of the Performance of SBI Infrastructure Fund Dividend – Direct Plan.
6. During 2010, the top two good performed schemes are SBI Infrastructure Fund (G), SBI Infrastructure Fund (D) and remaining scheme underperformed their index.
7. In 2011, both Sharpe's measure and Treynor's measures indicate the identical consequence.
8. During the period 2012, the top performed infrastructure scheme was SBI Infrastructure Fund (D) in Sharpe ratio, but in Treynor ratio the top performed infrastructure scheme was SBI Infrastructure Fund (DP).
9. In 2013, the poorly performed scheme was SBI Infrastructure Fund (G) for both Sharpe and Treynor measures.
10. The top first rank scheme was SBI Infrastructure Fund (G) - Direct Plan during 2014.

CONCLUSION

Mutual funds are the intermediaries in the investment business that indirectly connect the public and the corporate sector. The public invest their savings in the mutual funds and the fund managers invest the money so collected in a diversified portfolio of securities in various high rated companies. Net Asset Value (NAV) is considered as the most reliable indicator of the performance of a mutual fund.

The analytical results further reveal that SBI Infrastructure Fund Dividend and SBI Infrastructure Fund Growth schemes were a superior performance. Evaluating the performance of mutual fund helps the investors to know the best investment company. The result of the present study clearly shows that the mutual funds give better returns to the investors.

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