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RISK-ADJUSTED PERFORMANCE EVALUATION OF INFRASTRUCTURE FUNDS IN INDIA**G. ARUNA****ASSOCIATE PROFESSOR****MALLA REDDY INSTITUTE OF MANAGEMENT****MAISAMMAGUDA, SECUNDERABAD****ABSTRACT**

Asset Management Companies or fund houses constantly come out with different schemes. A lot has been written about performance of equity diversified funds, debt funds, large cap funds, mid cap funds and small cap funds but not much is known about infrastructure funds and their performance. Infrastructure funds also called infra funds invest in stocks of companies related to the infrastructure space and ancillary industries like banking and financial services, energy utilities, media and consumer goods. The total assets managed by these funds shows that the corpus grew to almost Rs 19,000 crores at the end of March 2008, reached its peak Rs. 20,000 crores in September 2009 and are now down to just around Rs. 7,600 crores at the end of February 2013. Hence the need to evaluate the performance of infra funds. The data is collected from official website of Association of Mutual Funds in India (AMFI), National Stock Exchange (NSE) and from respective websites of Asset Management Companies (AMCs). 'Descriptive Statistics' is employed. Annualised mean, annualised standard deviation and Systematic risk are calculated. Finally, risk adjusted performance using Sharpe Index is measured and funds are ranked. The returns from all the funds are disappointing. With the disappointing returns of infrastructure funds, many unit holders may have redeemed their units. Among all the funds, Canara Robeco Infrastructure fund performed better. High portfolio turnover ratio of Canara Robeco Infrastructure fund shows that fund manager has been very aggressive in holding the funds of a portfolio.

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KEYWORDS

Assets under Management, Infrastructure funds, Portfolio turnover ratio, Standard deviation, Systematic risk.

INTRODUCTION

Asset Management Companies or fund houses constantly come out with different schemes. A lot has been written about performance of equity diversified funds, debt funds, large cap funds, mid cap funds and small cap funds but not much is known about infrastructure funds and their performance. But before knowing about infrastructure funds, one should know what does infrastructure actually mean? It refers to all those services and facilities that constitute the basic support system of an economy. It is the network of power, telecom, ports, airports, roads, civil aviation, railways and transportation in a country. Infrastructure in any country plays a vital role for the economy's growth and development. Infrastructure is the base on which all economic activities of the country depend. Infrastructure is the key to production of goods and services, trade and investment, regional integration. Infrastructure promotes income generation, education, health and sharing the benefits of growth. In other words, we can say that Infrastructure development mirrors the overall health of the organization. On the other hand, to ensure cruded growth rate, development of adequate infrastructure is essential. The main industries that come under infrastructure industry are eight. They include crude oil, petroleum refinery products, natural gas, fertilizers, coal, electricity, cement and steel. In India, these eight core infrastructure industries registered a robust 6.8% growth in output in Feb 2012.

The performance of infrastructure is largely a reflection of the performance of an economy. With globalization, urbanization and increasing involvement of foreign investments, Infrastructure industry in India has been experiencing a rapid growth rate in different sectors. The Indian government has taken initiatives to develop the infrastructure sector with major emphasis on construction, power, engineering, health, information technology, telecommunications transportation etc. But investment in new infrastructure projects involves huge capital, long payback periods, high risk and low returns. Hence in order to bring in adequate resources for setting up efficient infrastructure base, the government has entered into "Public Private Partnership" (PPP) program.

Although the sector is booming, there are certain hindrances like:

- Paucity of funds
- Mismatch of supply and demand in construction equipment
- Import duty on construction equipment
- Increase in prices of materials like steel, cement, diesel and coal etc.
- Large time gap in obtaining approvals and delays in awarding contracts .
- Shortage of skilled manpower

Now back to our topic Infrastructure funds .Infrastructure funds ,also called infra funds are type of mutual funds that are categorized as thematic funds. Unlike sectoral funds which invest in particular sectors like banks, IT, power, pharma etc, the thematic funds invest in stocks of companies related to the infrastructure space and ancillary industries like banking and financial services, energy utilities, media and consumer goods. This shows that the investment universe of these funds is quite large and diversified. The first thematic fund was launched by UTI in April 2004. But these funds gained momentum in the year 2006 and 2007. Among the five best performing equity diversified funds, three were infrastructure funds. The best performing equity fund in 2006 was UTI Infrastructure fund with a 61.5% return, followed by Tata Infrastructure fund and ICICI prudential Infrastructure fund delivering 60.5 % and 60.3% returns respectively. In couple of years almost every fund house came out with new funds in this category. Seeing these returns, the investors too gave an overwhelming response.

If we observe the number of funds in thematic category, there were only 5 funds with sizeable money under management before 2006. These include DSP ML Tiger fund, Prudential ICICI Infrastructure fund, Tata Infrastructure fund, UTI Thematic fund and Sundaram BNP Paribas Capex Opportunities fund. Around six new infra funds were launched during the year 2007, followed by another three fund launches in 2008. As of Sep 2010, there are about 22 infrastructure funds in the thematic category.

A look at the total assets managed by these funds shows that the corpus was around Rs 5,000 crores at the end of 2006, which grew to almost Rs 19,000 crores at the end of March 2008. However, as the financial crisis set in (US subprime mortgage crisis and the Lehman Brother bankruptcy), the assets of infrastructure funds fell sharply to Rs 10,000 crores in late 2008. Also it was a disappointing year for these funds, as they delivered an average return of -59% in 2008, compared to -52% return delivered by Nifty Index. On the other hand, with the market recovery of 2009, Fund companies launched new funds and investors once again started to pour money into these funds. The total assets of these funds grew to almost Rs. 20,000 crores in September 2009, which was its peak. The funds also delivered superior returns of about 80% compared with 76% returns returned by Nifty in the year. The subsequent year 2010 was disappointing as infra funds could deliver only average returns of 7% compared with 18% returns returned by Nifty in that year. It has been mostly downfall for these funds since then. The condition still worsened in 2011 with these funds decline by 33% compared to Nifty's 25% decline during the year. Many investors got disappointed and started pulling out the money from these schemes. As a result, the assets of all large infrastructure funds have shrunk over the years. Total assets of infrastructure funds are now down to just around Rs. 7,600 crores at the end of February 2013, making it the lowest level of assets these funds have managed since mid-2007. At the same time, the companies in the infra space are under pressure and are impacted by the following factors

1. Rising Interest rates
2. Working capital management problems
3. Delay in resource procurement
4. Availability and increase in price of raw materials
5. Intense competition among similar firms

OBJECTIVES OF THE STUDY

1. To analyse the performance of infrastructure funds using mean return and variance analysis.
2. To find out the systematic risk for the funds under study.
3. To evaluate the performance of infrastructure funds using risk adjusted measure as suggested by Sharpe.

METHODOLOGY

DATA

Funds which are in existence for a period of 3 years or more are only considered for the study. All the funds chosen for the sample are of growth option. The data is collected from official website of Association of Mutual Funds in India (AMFI), National Stock Exchange (NSE) and from respective websites of Asset Management Companies (AMCs). Three years data from April 1 2010 to March 31 2013 for these selected funds (11 infrastructure funds) is collected. Nifty is considered as Proxy for the market. Risk free rate is taken as 6 %.

The performance of Infra funds is evaluated using daily NAVs. Daily returns are computed making use of daily Navs. Further, 'Descriptive Statistics' is employed to obtain mean and standard deviation. Thereafter annualised mean and annualised standard deviation are calculated. Systematic risk (beta) for the funds is calculated with respect to Nifty. Finally, risk adjusted performance using Sharpe Index is measured.

The following formulae are used

$$\text{Return } R_t = \ln(\text{NAV}_t - \text{NAV}_{t-1}) * 100$$

Where

R_t = Return for the period t

\ln = log normal or natural logarithm

NAV_t = Net Asset Value of fund in period t

NAV_{t-1} = Net Asset Value of fund in period t-1

For computing annualised returns and annualised standard deviation, the following formulae are used.

$$\text{Annualised returns} = (\text{avg daily returns} * T)/3$$

$$\text{Annualised std deviation} = (\text{std deviation} * \sqrt{T})/3$$

Where T = number of trading days.

Systematic risk is calculated as

$$\beta = (\sum(X - X_i)(Y - Y_i)) / \sum(X - X_i)^2$$

Where β = beta

(Y - Y_i) = deviation of fund return and fund mean return

Sharpe Index is computed as

$$S_i = (r_p - r_f) / \sigma_p$$

Where S_i = Sharpe index

r_p = return on portfolio

r_f = risk free rate

σ_p = total risk of portfolio

FINDINGS

From table 1, it is clearly evident that the returns of all the funds are disappointing. Among the 11 funds, Canara Robeco infrastructure fund is performing better, followed by ICICI prudential infrastructure fund and HDFC infrastructure fund. The least performance is given by Reliance Infrastructure fund. The standard deviation or the risk associated with the fund is least for Canara Robeco infrastructure fund and highest for Reliance Infrastructure fund.

Beta coefficient is a measure of sensitivity of a share price to movement in the market price. Table 2 depicts that the systematic risk is highest for LIC infrastructure fund and lowest for Canara Robeco infrastructure fund.

TABLE 1: ANNUALISED RETURN AND ANNUALISED STANDARD DEVIATION OF SELECTED FUNDS

Sno	Scheme Name	Annualised Return	Annualised Std Dev
1	Canara Robeco Infrastructure - Regular Plan – Growth	-0.82	7.62
2	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	-5.83	9.57
3	HDFC Infrastructure-Growth Option	-5.83	10.77
4	Birla Sun Life Infrastructure Fund-Growth	-6.19	9.65
5	LIC Nomura MF Infrastructure Fund - Growth Option	-6.92	10.75
6	Taurus Infrastructure Fund -Growth Option	-8.17	10.20
7	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	-9.24	9.41
8	L&T Infrastructure Fund - Growth Option	-9.63	9.92
9	UTI Infrastructure Fund-Growth Option	-10.02	10.21
10	SBI Infrastructure Fund Series I - Regular Plan –Growth	-12.39	9.32
11	Reliance Infrastructure Fund -Growth Option	-22.89	11.64

TABLE 2: SYSTEMATIC RISK OF SELECTED FUNDS

Sno	Fund Name	Beta
1	LIC Nomura MF Infrastructure Fund - Growth Option	1.0323
2	Reliance Infrastructure Fund -Growth Option	1.0139
3	UTI Infrastructure Fund-Growth Option	0.9438
4	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	0.9428
5	HDFC Infrastructure-Growth Option	0.9425
6	L&T Infrastructure Fund - Growth Option	0.9172
7	Taurus Infrastructure Fund -Growth Option	0.9068
8	Birla Sun Life Infrastructure Fund-Growth	0.8859
9	SBI Infrastructure Fund Series I - Regular Plan –Growth	0.8279
10	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	0.8110
11	Canara Robeco Infrastructure - Regular Plan – Growth	0.6691

TABLE 3: SHARPE INDEX OF SELECTED FUNDS

Sno	Fund Name	Sharpe Measure
1	Canara Robeco Infrastructure - Regular Plan – Growth	-0.11533
2	HDFC Infrastructure-Growth Option	-0.54706
3	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	-0.61553
4	Birla Sun Life Infrastructure Fund-Growth	-0.64773
5	LIC Nomura MF Infrastructure Fund - Growth Option	-0.64954
6	Taurus Infrastructure Fund -Growth Option	-0.80723
7	L&T Infrastructure Fund - Growth Option	-0.97717
8	UTI Infrastructure Fund-Growth Option	-0.98756
9	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	-0.98795
10	SBI Infrastructure Fund Series I - Regular Plan –Growth	-1.33694
11	Reliance Infrastructure Fund -Growth Option	-1.97252

Table 3 gives picture about the performance of infrastructure funds based on Sharpe Index. Of all the funds, Sharpe index is highest for Canara Robeco fund and ranks in first position, followed by HDFC infrastructure fund and ICICI Prudential infrastructure fund. On the other hand Reliance infrastructure has got the least reward to variability ratio.

DISCUSSION

TABLE 4: ASSETS UNDER MANAGEMENT OF SELECTED FUNDS (in crores)

Sno	Fund Name	As on April 30 2010	As on April 30 2011	As on April 30 2012
1	Canara Robeco Infrastructure - Regular Plan – Growth	176.77	140.52	119.22
2	SBI Infrastructure Fund Series I - Regular Plan –Growth	N.A	N.A	720.24
3	UTI Infrastructure Fund-Growth Option	N.A	2646.05	2073.76
4	LIC Nomura MF Infrastructure Fund - Growth Option	231.43	162.35	81.82
5	L&T Infrastructure Fund - Growth Option		3143.99	3263.72
6	Reliance Infrastructure Fund -Growth Option	2149.54	1104	701
7	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	1316.83	887.37	698.76
8	Taurus Infrastructure Fund -Growth Option	27.76	17.79	13.92
9	Birla Sun Life Infrastructure Fund-Growth	561.26	NA	NA
10	HDFC Infrastructure-Growth Option	N.A	1115.14	746
11	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	3854.96	N.A	2153.67

TABLE 5: PORTFOLIO TURNOVER RATIOS OF SELECTED FUNDS (in times)

Sno	Fund Name	As on April 30 2010	As on April 30 2011	As on April 30 2012
1	Canara Robeco Infrastructure - Regular Plan – Growth	0.13	1.02	0.51
2	SBI Infrastructure Fund Series I - Regular Plan –Growth	N.A	1.19	1.97
3	UTI Infrastructure Fund-Growth Option	N.A	1.03	0.39
4	LIC Nomura MF Infrastructure Fund - Growth Option	N.A	N.A	0.29
5	L&T Infrastructure Fund - Growth Option	N.A	0.29	0.04
6	Reliance Infrastructure Fund -Growth Option	N.A	0.18	0.18
7	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	2.63	1.71	1.54
8	Taurus Infrastructure Fund -Growth Option	N.A	N.A	N.A
9	Birla Sun Life Infrastructure Fund-Growth	N.A	N.A	N.A
10	HDFC Infrastructure-Growth Option	N.A	0.38	0.07
11	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	1.23	N.A	0.31

TABLE 6: STANDARD DEVIATION OF SELECTED FUNDS

Sno	Fund Name	As on April 30 2010	As on April 30 2011	As on April 30 2012
1	Canara Robeco Infrastructure - Regular Plan – Growth	51.65	10.41	7.37
2	SBI Infrastructure Fund Series I - Regular Plan –Growth	N.A	36.75	27.69
3	UTI Infrastructure Fund-Growth Option	N.A	17	21.1
4	LIC Nomura MF Infrastructure Fund - Growth Option	N.A	N.A	1.67
5	L&T Infrastructure Fund - Growth Option	N.A	5.23	5.69
6	Reliance Infrastructure Fund -Growth Option	N.A	2.74	3.19
7	Sahara Infrastructure Fund -Variable Pricing Option -Growth Option	38.59	34.29	30.4
8	Taurus Infrastructure Fund -Growth Option	40.36	17.92	19.95
9	Birla Sun Life Infrastructure Fund-Growth	41.42	37.73	31.64
10	HDFC Infrastructure-Growth Option	N.A	10.5	9.3
11	ICICI Prudential Infrastructure Fund - Regular Plan - Growth	34.28	N.A	22.89

Assets under management is generally looked at as a measure of success against the competition. Table 4 gives a glimpse about assets under management of selected funds. It is observed that almost all the funds AUM has declined over the period. The reasons for the decline in AUM could be following:

1. With the disappointing returns of infrastructure funds, many unit holders may have redeemed their units.
2. The share prices of the stocks held by the infrastructure funds have plunged.

A look at decline in AUM reveals that AUM of Canara Robeco Infrastructure fund declined by 32% while that of Reliance Infrastructure fund declined by 67%. This could be one of the reasons for Canara Robeco Infrastructure fund performing better, inspite of negative returns. Turnover ratio denotes the percentage of the holdings of the fund that changes each time. Higher turnover ratio implies higher the volume of trading performed by the fund. In the year 2011, for most of the funds, portfolio turnover ratio is high, indicating that more trading activity has taken place. High portfolio turnover ratio of Canara Robeco Infrastructure fund shows that fund manager has been very aggressive in holding the funds of a portfolio. Standard deviation is the most appropriate measure for measuring the risk of a fund. The fund with higher standard deviation implies greater volatility. Table 6 depicts the information about standard deviation of all sample funds. High standard deviation of Canara Robeco Infrastructure fund indicates that the stocks of this particular fund have been more volatile. To reduce the risk, the fund manager might have opted for frequent changes in the portfolio resulting in more volatility and high turnover.

CONCLUSION

Thematic funds or infrastructure funds are subject to higher risk. Infrastructure funds had delivered an average return of 53.38% and 82.73% in 2006 and 2007 respectively. However, in the recent past, there has been downhill for infrastructure funds. The poor performance of sectors like capital goods, construction, realty, metals, power and oil & gas attributed to the underperformance of those funds. Over the period, the asset base of all infra funds declined. The main reason could be disappointing returns of infrastructure funds compelled the unit holders to redeem their units. A look at portfolio turnover ratio reveals that active trading has taken place and the fund manager has been aggressive in holding the stocks of portfolio.

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