



## “Performance measurement of Top 10 Mutual Funds with the help of Sharpe, Treynor & Jensen Model”

\* Monal Patel \*\* Dr. Deepak H. Tekwani

\* MBA Scholar, Late Smt. S. G. Patel Inst. of Mgt. Studies, Gujarat

\*\* Assistant Professor, Late Smt. S. G. Patel Inst. of Mgt. Studies, Gujarat Technological University, Gujarat

### ABSTRACT

Mutual fund performance can be analyzed through performance measurement ratios which are used in portfolio analysis. Here we have used Treynor, Sharpe, and Jensen ratio to evaluate mutual funds and rank them accordingly for the Mutual Fund investors. Composite portfolio performance measures have the flexibility of combining risk and return performance into a single value. The most commonly used composite measures are: Treynor, Sharpe and Jensen measures. While Treynor measures only the systematic risk summarized by beta, Sharpe concentrates on total risk of the mutual fund.

**Keywords :** Treynor Model, Sharpe Model, Jensen Model and MTP

### Introduction:

Mutual funds are one of the most highly growing instruments in financial services market. Mutual funds are suitable for all types of investors from risk adverse to risk bearer.

Size of the Industry	This industry has indeed come a very long way with only 34 players in the market and more than 480 schemes.
Geographical distribution	All the major cities of the country
Output per annum	The industry has grown in size and manages total assets of more than \$30351 million.
Percentage in world market	Assets under management as a percentage of GDP is less than 5% in India as compared to 70% in the US, 67% in France and 37% in Brazil.
Market capitalization	The Indian mutual funds retail market, is growing at a CAGR of about 30%.

In order to apply the measure of performance evaluation, I have chosen top ten Mutual Funds based on Blue chip companies list as per market return for equity large, mid, & small cap fund, for debt large, mid, small cap & balanced schemes to representing portfolio, these are Principal Large Cap Fund, DSP Black rook Micro Cap Fund, Religare mid Cap Fund, HDFC Monthly Income Plan, Templeton India Short Term Income Plan, UTI Charitable Religious Trust Society, ICICI Prudential Child Care Gilt Plan, DSP Black rook Savings Manager Fund, ICICI Prudential Child Care Gilt Plan, Baroda Pioneer Gilt Fund, Gold Benchmark Exchange Traded Scheme.

### Latest Developments in Mutual Fund Industry:

- ◆ The Indian mutual funds retail market, growing at a CAGR of about 30%, is forecasted to reach US\$ 300 Billion by 2015.
- ◆ Income and growth schemes made up for majority of Assets under Management (AUM) in the country. At about 84% (as on March 31, 2008), private sector Asset Management Companies account for majority of mutual fund sales in India.

### Objectives of the study:

- ◆ To know the mutual fund investors awareness about investing into mutual fund schemes

- ◆ To evaluate investment performance of selected mutual funds in terms of risk and return.
- ◆ Also to analyze the performance of mutual fund schemes on the basis of various parameters.

### Development of Hypothesis:

Hypothesis 1: There is significant difference between Risk & Return.

$H_0$ : There is significant difference between Risk & Return.

$H_1$ : There is no significant difference between Risk & Return.

Hypothesis 2: 67% of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

$H_0$ : 67% of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

$H_1$ : More than 67% of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

### Testing of Hypothesis:

#### Chi Square Test

**Hypothesis 1: Their risk-return pattern is towards investment in mutual fund scheme**

#### Step 1:

$H_0$ : There is significant difference between Risk & Return.

$H_1$ : There is no significant difference between Risk & Return.

No.	O <sub>i</sub>	E <sub>i</sub>	O <sub>i</sub> -E <sub>i</sub>	(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup>	(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>
1	26	12.35	13.65	186.3225	15.0868
2	9	16.53	-7.53	56.7009	3.4302
3	3	9.12	-6.12	37.4544	4.1068
4	31	35.1	-4.1	16.8100	0.4789
5	61	46.98	14.02	196.5604	4.1839
6	16	25.92	-9.92	98.4064	3.7965
7	8	17.55	-9.55	91.2025	5.1967
8	17	23.49	-6.49	42.1201	1.7931
9	29	12.96	16.04	257.2816	19.8520
Total					<b>57.9250</b>

$$c2cal = \sum_{i=1}^n \frac{(oi - Ei)^2}{Ei} = 57.9250$$

$$\begin{aligned} d.f &= (r-1) (c-1) \\ &= (3-1) (3-1) \\ &= 2 * 2 \\ &= 4 \end{aligned}$$

Step 3:  $\alpha = 5\%$

Step 4:  $\chi^2_{tab} = 9.488$

Step 5:  $\chi^2_{cal} > \chi^2_{tab}$

**Conclusion**

H0 is rejected, H1 is accepted, and i.e. there is no significant relationship between risk & return. This shows that risk & return are directly correlated with each other, if investors take more risk than they can get more returns.

**Hypothesis 2: For taking lower risk**

X=127                      n=200                      p^=127/200=0.635  
 p=0.67                      q=0.33

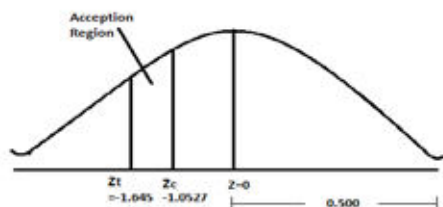
**Step 1:**

H0: 67% of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

H1: More than 67% of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

**Step 2:**

$$Zcal = \frac{P^{\wedge} - p}{\sqrt{pq/n}} = \frac{0.635 - 0.67}{\sqrt{0.67 * 0.33 / 200}} = -1.0527$$



(Figures are for 1 year)

Sr. No.	Schemes	Return on portfolio Rp	Risk free rate Rf	Beta β	Std. deviation σ	Market return Rm	Sharpe Ratio Rp-Rf/σ	Treynor Ratio Rp-Rf/β	Jenson Ratio (Rf+(Rm-Rp)*β)
1	Principal Large Cap Fund	31.07	12.36	1.50	53.99	4.0868	30.8411	22.8300	-0.0498
2	DSP Black rook Micro Cap Fund	19.40	7.72	1.10	33.71	4.47866	19.1710	12.3818	4.1545
3	Religare mid Cap Fund	51.36	8.86	1.20	55.49	6.38138	51.2003	43.9767	5.8857
4	HDFC Monthly Income Plan	15.52	7.67	0.87	17.87	6.94548	15.0908	6.7039	7.0397
5	Templeton India Short Term Income Plan	9.70	4.79	0.54	11.17	5.36742	9.2711	0.8900	5.1039
6	UTI Charitable Religious Trust Society	8.34	7.58	0.47	9.33	9.79923	7.5276	-7.7877	8.6230
7	ICICI Prudential Child Care Gilt Plan	24.00	7.72	1.25	26.38	6.47441	23.7074	17.8240	6.1630
8	DSP Black rook Savings Manager Fund	18.70	6.42	0.82	22.45	4.54783	18.4140	10.8707	4.8848
9	Baroda Pioneer Gilt Fund	13.29	12.13	0.58	15.96	11.9776	12.5300	-7.6238	12.0416
10	Gold Benchmark Exchange Traded Scheme	26.45	6.00	1.16	31.75	10.2875	26.2610	21.2776	10.9735

Source: [www.bluechip.co.in/mutualfund/returnscalculator](http://www.bluechip.co.in/mutualfund/returnscalculator)

Step 3:  $\alpha=5\%$

Step 4: Ztab at  $\alpha=5\%$  from the normal distribution table is = - 1.645

Step 5: Zcal < Ztab

Conclusion: here, we can fail to reject our null hypothesis

So, we can reject H1, it means not more than 67% (less than 67%) of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

It means not more than 67% (less than 67%) of investors are highest influenced by taking lower risk regarding investment in mutual fund schemes.

**Analysis and Discussion:**

The most important and widely used measures of performance are:

- The Treynor Measure
- The Sharpe Measure
- Jenson Model

In order to determine the risk-adjusted returns of investment portfolios, several well-known authors have worked since 1960s to develop composite performance indices to evaluate a portfolio by comparing alternative portfolios within a particular risk class. The most important and widely used measures of performance are: The Treynor Measure, The Sharpe Measure, and Jenson Model.

First We can see the performance of various funds by using Treynor, Sharpe and Jensen ratio and then we have assigned ranks to these funds according to all ratios, higher ratio of fund get higher rank and so on.

**Interpretation:**

Above table shows performance of various funds by using Treynor, Sharpe and Jensen ratio. Now we can rank funds according to all ratios, higher ratio of fund get higher rank and so on. The table on next page shows rank of funds according to each ratio.

Rank	Sharpe	Treynor	Jenson
1	Religare mid cap fund (51.2003)	Religare mid cap fund (43.9767)	Baroda Pioneer Gilt (12.0416)
2	Principal Large cap fund (30.8411)	Principal Large cap fund (22.8300)	Gold Benchmark ETF (10.9735)
3	Gold Benchmark ETF (26.2610)	Gold Benchmark ETF (21.2776)	UTI Charitable Trust (8.6230)
4	ICICI - Child care (23.7074)	ICICI - Child care (17.8240)	HDFC MIP (7.0397)
5	DSP BR Micro cap (19.1710)	DSP BR Micro cap (12.3818)	ICICI - Child care (6.1630)
6	DSP BR Saving fund (18.4140)	DSP BR Saving fund (10.8707)	Religare mid cap fund (5.8857)
7	HDFC MIP (15.0908)	HDFC MIP (6.7039)	Templeton SIP (5.1039)
8	Baroda Pioneer Gilt (12.5300)	Templeton SIP (0.8900)	DSP BR Saving fund (4.8848)
9	Templeton SIP (9.2711)	Baroda Pioneer Gilt (-7.6238)	DSP BR Micro cap (4.1545)
10	UTI Charitable Trust (7.5276)	UTI Charitable Trust (-7.7877)	Principal Large cap fund (-0.0498)

**Key findings of the study:**

From the above evaluation, we can conclude that Religare mid cap fund-Growth get highest rank in two ratios that are according to Sharpe and Treynor method, and there is also good correlation between all ratio results. This study shows the performance analysis by using measurement ratio's, we can define well diversified funds among all funds. We have used the same method for all funds available in market and rank accordingly. Arrange funds according to ascending order of Sharpe ratio, Treynor ratio, and Jensen ratio and then give first rank to highest ratio, second to second highest and so on. In this study, you can see that well diversified fund rank among some number of selected funds. Top five funds in ranking are almost same in all three measurements. So from our analysis we found that Religare mid cap fund-Growth secure highest rank in two ratios and it must be a value added Fund in a normal Investors portfolio.

**Conclusion:**

By using top ten schemes as per market return for equity large, mid, & small cap fund; for debt large, mid, small cap & balanced schemes to representing portfolio.

**Religare mid cap fund:**

- Well diversified, because it invests almost in all sectors. In addition, top 10 holdings do not contribute more than 30%, no any sector, other than banking; contribute more than 10% holding. So it decrease standard deviation i.e. risk.
- It invests in all three areas i.e. large, mid, and small cap companies.
- Banking, agriculture, pharmaceutical, and I.T. are major contributor in this fund. As per our opinion, these sectors always show high growth and it will give good return in future also.
- Mutual fund is subject to market risk, despite of that it have low risk than stock market. This is proved in performance evaluation section of this report. Performance evaluation measurement ratios i.e. Treynor, Sharps and Jensen's are used by fund managers to take decision of investment and to diversify portfolio.
- Thus by looking to top 5 schemes as per Sharpe, Treynor & Jensen model of performance measurement tools for their portfolio selection, Investors can maximize their return.

**REFERENCES**

- 1) Arugaslan and Ajay (2008) "performance of international mutual fund investors" Journal of finance, volume. 51, no. 5 | 2) Dietze, Oliver and Macro (2009) "On persistence in mutual funds' performance." Journal of Finance, vol. 52, no. 1 (March): 57-82. | 3) INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE & MANAGEMENT-VOLUME NO. 1 (1995), ISSUE NO. 8 (DECEMBER) | 4) Leite and Cortez (2006) Mutual fund Research team, journal of finance, (June 2004) | 5) Dr. Rao, Narayan "Performance Evaluation of Indian Mutual Funds", www.ssrn.com, paper no.433100 and PP.1-24 | 6) Panwar,Sharad and Dr. Madhumathi (2006), "Characteristics and performance evaluation of selected mutual funds in India", www.ssrn.com, paper no.876402 and PP. 1-19 | 7) Stehle,Richard and Grewe,Olaf (2001), "Long-Run Performance of German Stock Mutual Funds", www.ssrn.com, paper no.271452 and PP. 1-32 | 8) Carlos,Juan (2005), "Portfolio Performance: Factors or Benchmarks?", www.ssrn.com, paper no.760204 and PP. 1-26 | 9) Rao,D.N (2006), "Investment styles and Performance of Equity Mutual Funds India", www.ssrn.com, paper no. 922595 and PP. 1-30
- Books and magazines: 1) Security analysis & Portfolio management by Prasanna Chandra | 2) Portfolio Management by S. Kevin | 3) For getting knowledge regarding performance measurement of investors' portfolio with 10 different mutual fund schemes I used "INVESTMENT ANALYSIS & PORTFOLIO MENAGEMENT" by Reilly & Brown, 8th Edition, Cengage Learning India Private Ltd. | 4) Research methodology: methods & technique [2nd edition] by C.R.Kothari, new AGE International Ltd, publishers.
- Websites:
1. <http://www.investopedia.com/articles/mutualfund/09/analyzing-mutual-fund-risk.asp#ixzz1WEBg4pMK>
  2. [www.moneycontrol.com](http://www.moneycontrol.com)
  3. [www.mutualfundindia.com](http://www.mutualfundindia.com)
  4. [www.bluechip.co.in/mutualfund/returnscalculator](http://www.bluechip.co.in/mutualfund/returnscalculator)
  5. <http://www.raosoft.com/samplesize.html>
  6. [http://www.mutualfundsindia.com/div\\_home.asp](http://www.mutualfundsindia.com/div_home.asp)
  7. <http://www.moneycontrol.com/mutual-funds/performance-tracker/returns>