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An application of Sharpe's, Jenson and Treynor's models to analyse the performance of growth funds

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Abstract

In the moderate development of Indian capital business sector and private cooperation in the Indian shared asset industry, the test to survive and hold speculator certainty has been a prime region of sympathy toward common asset administrators and scientists. This paper assesses the execution of 5 chose common asset plans with the use of Sharpe, Treynors and Jenson models which additionally brings out which plan is beating or failing to meet expectations amid the study period from 2002 to 2012. The outcome demonstrates that three out of the 5 chose shared asset plans 2 have lower danger when contrasted and alternate plans.

Keywords: Sharpe Ratio, Treynor's Index, Mutual Funds

Introduction

The Indian common asset industry has made some amazing progress from its origin in 1964. There is parcel of basic change in the business throughout the years. The opposition is serious in the present situation as there is an assortment of players in a wide range of asset plans. At present, there are four players in the business viz. UTI, Public segment banks, Insurance organizations and the private area. The business has seen colossal development as far as size, operations, financial specialist base, and assortment of plans. It is further extending in order to the requirements of the speculators and market weights. At this point, there is a requirement for the common asset financial specialists to assess the execution of plans before settling on speculations. Past execution is taken as reference by numerous speculators, however it may not be a genuine marker of future execution. Factual measures are accessible which uses past information to think about the value of plans in a logical way. This paper endeavors to assess select Indian open end common asset plans by utilizing such measures to toss light on the danger and returns of the plans. A cross segment of different sorts of plans is taken for investigation, by considering their NAV's. The consequences of different factual measures are organized and united to get an exhaustive photo of the execution of the select plans. Over the previous decade, common assets have turned into the financial specialist's vehicle of decision for long haul contributing. A Mutual Fund pools the reserve funds of various speculators who share a typical budgetary objective. Common Fund is on the of the most favored venture options for the danger deflect speculators as it offers opportunity to put resources into a broadened, professionally took care of portfolio requiring little to no effort. With accentuation on expansion in household reserve funds and increment in venture through capital markets, the need and extension for common asset operation has expanded immensely. Development and advancements of different common assets items in the Indian capital business sector has shown to be a standout amongst the most imperative instruments in producing critical development in the capital business sector. In this setting, assessment of shared assets has gotten to be fundamental. It gets to be significant to think about the execution of the Indian shared asset industry. The connection between danger return decides the execution of a common asset plan.

Review of Literature

Survey of past studies gives the need and legitimization to the examination work to be attempted, and investigate philosophy clarifies the exploration process. Specialist and professionals have delivered writing covering diverse parts of common assets.

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An assortment of specialized and quantitative measures has been created to survey and think about the money related execution of common asset plans and in addition the execution of assets directors. These measures give the strategies for contrasting danger balanced returns of a portfolio with different portfolios or with benchmarks. Warren Bailey, Haitao Li, and Xiaoyan Zhang (2004) [1] analyze hedge fund performance, using the stochastic discount factor (SDF) approach and imposing the arbitrage-free requirement to correctly value the derivatives and dynamic trading strategies used by hedge funds. Using SDFs of many asset-pricing models, we evaluate hedge fund portfolios based on style and characteristics. Without the arbitrage-free requirement, pricing errors are relatively small and a few models can explain hedge fund returns. With this requirement, pricing errors are much bigger, and all models fail to price style and volatility portfolios. Fund manager characteristics like age, experience, and education explain some of the mispricing of our best risk model. K. Pendaraki *et al*. (2004) [2] studied construction of mutual fund portfolios, developed a multi-criteria methodology and applied it to the Greek market of equity mutual funds. The methodology is based on the combination of discrete and continuous multicriteria decision aid methods for mutual fund selection and composition. UTADIS multi-criteria decision aid method is employed in order to develop mutual fund's performance models. Goal programming model is employed to determine proportion of selected mutual funds in the final portfolios. Zakri Y. Bello (2005) [3] matched a sample of socially responsible stock mutual funds matched to randomly selected conventional funds of similar net assets to investigate differences in characteristics of assets held, degree of portfolio diversification and variable effects of diversification on investment performance. The study found that socially responsible funds do not differ significantly from conventional funds in terms of any of these attributes. Moreover, the effect of diversification on investment performance is not different between the two groups. Both groups underperformed the Domini 400 Social Index and S & P 500 during the study period. Dimitri Margaritis, Roger Otten and Alireza Tourani-Rad (2007) [4] apply data envelopment (DEA), a mathematical programming technique, to measure the performance of equity retail funds in New Zealand over the period 1998–2003. An analysis of fifty-two equity mutual funds, national and international, shows significant differences in their performances, with an average DEA efficiency score of 0.72. The application of regression analysis further shows that funds with an international asset allocation strategy have had lower efficiency scores, and that larger funds have had higher efficiency scores. Ken L. Bechmann and Jesper Rangvid (2007) [5] examine Danish mutual funds. The authors describe what is special about Danish mutual funds, as well as the dimensions along which Danish funds are comparable to other European funds. They discuss how Danish mutual funds have performed in absolute terms and in relation to other European mutual funds, and focus also on the costs to the investor of purchasing Danish mutual funds certificates. Finally, the authors compare Danish fund costs with the mutual fund costs in other European countries.

Objectives of the Study
To analyse the performance of selected growth funds in the Indian Mutual Fund Industry

Research Methodology
This study is based on descriptive analysis and the study was performed for a period of study is 10 years from 2002 to 2012.The samples selected for the study are
- Baroda Pioneer Fund
- Franklin India Bluechip Fund
- HSBC Dynamic Fund
- Kotak 50 – Growth
- SBI Blue Chip Fund

Tools for Analysis
Average Return = (Current price – Previous price)/ Previous price
Beta, the coefficient of systematic risk was calculated using the formula

$$\beta = \frac{N.\sum XY - \sum X.\sum Y}{N.\sum X^2 - (\sum X)^2}$$

Standard Deviation: Standard deviation is a statistical measure of spread or variability. The standard deviation is the root mean square (RMS) deviation of the values from their arithmetic mean.

$$S = \sqrt{\frac{\sum(X-M)^2}{n}}$$

Correlation Coefficient: The Correlation co-efficient measures the nature and the extent of relationship between the market return and the stock return in a particular period of time

$$Correlation = \frac{[N\Sigma XY - (\Sigma X)(\Sigma Y)]}{\sqrt{([N\Sigma X^2-(\Sigma X)^2]} \sqrt{[N\Sigma Y^2-(\Sigma Y)^2])]}}$$

Sharpe's index: Sharpe's Index (St) is based on the scheme's total risk and is a summary measure of scheme's performance adjusted for risk.

St = [(Portfolio Return – Risk-free Rate of Return) / Total Risk of Portfolio]

Treynor's index: Treynor's Index uses beta as a risk surrogate. It evaluates excess returns with regard to systematic risk. Schemes with higher Treynor's index imply better performance. Treynor index is used to rank the desirability of portfolios and individual assets together, since diversifiable risk is ignored. Treynor single-parameter investment performance index is used for ranking mutual funds based on systematic risk.

Treynor's Index = [(Return from the Portfolio – Risk free rate of return) / Beta of the Portfolio]

Jensen measure: The Sharpe and Treynor's models provide measures for ranking the relative performance of various portfolios on a risk-adjusted basis. Jensen developed a measure of absolute performance on a risk-adjusted basis, with equilibrium average return on a portfolio as the benchmark.

Expected Return = Riskfreereturn + (Beta*Risk Premium)

Jensen Alpha is the gap between the scheme's expected return and its actual returns.

Results and Discussions

Table 1: Average Return of Selected Mutual Fund Schemes

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund	Market
2002	0.8658	0.5366	0.4649	0.2813	0.39	0.5777
2003	0.1441	0.033	0.1032	0.132	0.0352	0.1059
2004	0.0913	0.0835	0.0301	0.0409	0.047	0.0539
2005	0.451	0.3873	0.2223	0.2544	0.2802	0.317
2006	0.0042	0.0049	0.0057	0.0069	0.0211	0.0267
2007	0.0355	0.0319	0.0095	0.0363	0.024	0.0259
2008	0.0075	0.0004	0.0016	0.0186	0.0083	0.0056
2009	0.018	0.002	0.0062	0.0116	0.0216	0.029
2010	0.0869	0.0354	0.0524	0.0188	0.0362	0.0578
2011	0.0103	0.0015	0.01	0.004	0.0005	0.0154
2012	0.0375	0.0226	0.0202	0.0169	0.0147	0.0228
Total	1.7521	1.1391	0.9261	0.8218	0.8787	1.2377

Table 2: Total Risk (Sd) Of Selected Mutual Fund Schemes

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	0.0269	0.0211	0.0197	0.0153	0.018
2003	0.011	0.0052	0.0093	0.0105	0.0054
2004	0.0087	0.0083	0.005	0.0058	0.0063
2005	0.0194	0.018	0.0136	0.0146	0.0153
2006	0.0019	0.002	0.0022	0.0024	0.0042
2007	0.0054	0.0052	0.0028	0.0055	0.0045
2008	0.0025	0.0006	0.0012	0.0039	0.0026
2009	0.0039	0.0013	0.0023	0.0031	0.0042
2010	0.0085	0.0054	0.0066	0.004	0.0055
2011	0.0029	0.0011	0.0029	0.0018	0.0006
2012	0.0056	0.0043	0.0041	0.0037	0.0035
Total	0.0966	0.0726	0.0696	0.0707	0.0701

Table 3: Sharpe's Index

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund	Market
2002	0.29842	0.2234	0.2036	0.1418	0.1807	0.234
2003	0.08396	-0.0363	0.0551	0.0762	-0.0313	0.0572
2004	0.02647	0.0184	-0.076	-0.0467	-0.0339	-0.0214
2005	0.19597	0.176	0.1111	0.1259	0.1368	0.1513
2006	-0.38465	-0.3553	-0.3245	-0.2898	-0.1316	-0.1051
2007	-0.07967	-0.0909	-0.2464	-0.0772	-0.1223	-0.1139
2008	-0.24978	-1.212	-0.5911	-0.1303	-0.2355	-0.2978
2009	-0.15083	-0.5708	-0.309	-0.2084	-0.1295	-0.0965
2010	0.00714	-0.0836	-0.0429	-0.1566	-0.0812	-0.0332
2011	-0.25988	-0.7562	-0.2655	-0.4509	-1.3357	-0.1988
2012	-0.0824	-0.1403	-0.1543	-0.1778	-0.1963	-0.1392
Total	-0.5952	-2.8276	-1.64	-1.1938	-1.9798	-0.5633

From the above tables it is inferred that, the return of Baroda Pioneer Fund ranges between -0.079 to 0.298, this indicates that the fund has outperformed the index in most of the years. The positive sharpie's index indicates that the fund has obtained better returns when compared to the risk free asset. The portfolio return of the Franklin India Bluechipfund is less than the market returns which means the fund has underperformed than that of the index. A positive Sharpe's index indicates that the fund has outperformed the risk free asset in some of the years. In certain years the fund has negative returns. The portfolio return of the HSBC Dynamic fund is less than the market returns which means the fund has underperformed than that of the index. A negatives Sharpe's index indicates that the fund has underperformed the risk free asset in some of the years. In certain years the fund has negative returns. The portfolio return of the Kotak 50 – Growth fund is less than the market returns which means the fund has underperformed than that of the index. A negatives Sharpe's index indicates that the fund has underperformed the risk free asset in some of the years. In certain years the fund has negative returns. The portfolio return of the SBI Blue Chip fund is less than the market return which means the fund has underperformed than that of the index. A negatives Sharpe's index indicates that the fund has underperformed the risk free asset in some of the years. In certain years the fund has negative returns.

Table 4: Beta of the Selected Schemes

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	0.7454	0.9566	0.7356	0.8338	0.7221
2003	0.3946	0.6544	0.3256	0.5593	0.7817
2004	0.4501	0.7292	0.4251	0.8502	0.7822
2005	0.4273	0.9304	0.4273	0.8826	0.8532
2006	0.5032	0.9331	0.5002	0.778	0.8514
2007	0.623	0.9034	0.6235	0.6954	0.7956
2008	0.8305	0.91	0.7521	0.7622	0.8556
2009	0.8451	0.9344	0.9432	0.8195	0.6528
2010	0.8625	0.9458	0.9256	0.9625	0.7896
2011	0.9243	0.9624	0.9854	0.9526	0.9556
2012	0.8299	1.003	1.147	1.177	1.145
Total	7.4359	9.8627	7.7906	9.2731	9.1848

Table 5: Treynor's Index

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	1.0754	0.4938	0.5448	0.2604	0.4511
2003	0.2332	-0.0291	0.1569	0.1428	-0.0217
2004	0.0513	0.021	-0.0895	-0.0321	-0.0271
2005	0.8892	0.3398	0.3539	0.2077	0.245
2006	-0.1433	-0.0766	-0.1412	-0.0892	-0.0648
2007	-0.0695	-0.0519	-0.1112	-0.0611	-0.0688
2008	-0.0752	-0.0765	-0.0909	-0.0674	-0.0722
2009	-0.0692	-0.0797	-0.0745	-0.0792	-0.0841
2010	0.007	-0.048	-0.0307	-0.0644	-0.0565
2011	-0.0824	-0.0883	-0.0777	-0.0866	-0.09
2012	-0.0555	-0.0607	-0.0552	-0.0566	-0.0601
Total	1.7609	0.3439	0.3847	0.0743	0.1509

From the table it's inferred that, the positive beta of Baroda Pioneerfund indicates that fund has outperformed the market index. A positive treynor's index implies that the fund has provided better returns than that of the risk free asset. On an average the fund has outperformed the index in most of the years. The Franklin India Bluechipfund had positive beta values, the treynor's index is negative. This implies that has not provided adequate returns to the investors. Though the HSBC Dynamic fund had positive beta values, the treynor's index is negative. This implies that has not provided adequate returns to the investors. The Kotak 50 – Growth fund had positive beta values, the treynor's index is negative. This implies that has not provided adequate returns to the investors. Though the SBI Blue Chip fund had positive beta values, the treynor's index is negative. This implies that has not provided adequate returns to the investors.

Table 6: Expected Return of Selected Schemes

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	0.447	0.5554	0.4419	0.4924	0.435
2003	0.0733	0.0873	0.0696	0.0822	0.0941
2004	0.0618	0.0578	0.0621	0.056	0.057
2005	0.1762	0.2999	0.1762	0.2882	0.2809
2006	0.0513	0.03	0.0515	0.0377	0.0341
2007	0.0458	0.031	0.0458	0.042	0.0367
2008	0.0165	0.0114	0.0216	0.0209	0.0149
2009	0.0364	0.0321	0.0317	0.0376	0.0455
2010	0.0609	0.059	0.0595	0.0586	0.0626
2011	0.0208	0.018	0.0164	0.0187	0.0185
2012	0.0331	0.0226	0.0139	0.0121	0.014
Total	1.0231	1.2046	0.9902	1.1464	1.0934

Table 7: Jenson Alpha

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	0.4188	-0.0189	0.023	-0.2111	-0.0451
2003	0.0708	-0.0542	0.0336	0.0498	-0.059
2004	0.0295	0.0258	-0.032	-0.0151	-0.01
2005	0.2749	0.0874	0.0461	-0.0338	-0.0008
2006	-0.0471	-0.0252	-0.0458	-0.0308	-0.013
2007	-0.0104	0.0009	-0.0363	-0.0057	-0.0127
2008	-0.009	-0.011	-0.02	-0.0023	-0.0067
2009	-0.0183	-0.0301	-0.0255	-0.026	-0.0239
2010	0.0259	-0.0236	-0.0071	-0.0398	-0.0264
2011	-0.0104	-0.0165	-0.0064	-0.0147	-0.018
2012	0.0043	0	0.0063	0.0048	0.0007
Total	0.7289	-0.0655	-0.0641	-0.3246	-0.2147

Table 8: Jenson Index

Year	Baroda Pioneer Fund	Franklin India Bluechip Fund	HSBC Dynamic Fund	Kotak 50 – Growth	SBI Blue Chip Fund
2002	0.0349	-0.0016	0.0019	-0.0176	-0.0038
2003	0.0059	-0.0045	0.0028	0.0042	-0.0049
2004	0.0025	0.0021	-0.0027	-0.0013	-0.0008
2005	0.0229	0.0073	0.0038	-0.0028	-0.0001
2006	-0.0039	-0.0021	-0.0038	-0.0026	-0.0011
2007	-0.0009	0.0001	-0.003	-0.0005	-0.0011
2008	-0.0008	-0.0009	-0.0017	-0.0002	-0.0006
2009	-0.0015	-0.0025	-0.0021	-0.0022	-0.002
2010	0.0022	-0.002	-0.0006	-0.0033	-0.0022
2011	-0.0009	-0.0014	-0.0005	-0.0012	-0.0015
2012	0.0004	-0.000002	0.0005	0.0004	0.0001
Total	0.0607	-0.0055	-0.0053	-0.0271	-0.0179

From the tables it's inferred that the Baroda Pioneer fund has anegative Jensen's alpha implies that the fund has shown poor performance when compare d to the expectations of the investors. The fund shows negative performance in certain years though it has outperformed the market returns. The Franklin India Bluechip fund hasa negative Jensen's alpha implies that the fund has shown poor performance when compare d to the expectations of the investors. The fund shows negative performance in 2002, 2003, 2006, 2008-and 2011, though it has outperformed the market returns. The HSBC Dynamic fund carriesa negative Jensen's alpha implies that the fund has shown poor performance when compare d to the expectations of the investors. The fund shows negative performance in 2004, 2006, 2007-and 2011, though it has outperformed the market returns Kotak 50 – Growth fundhas a negative Jensen's alpha implies that the fund has shown poor performance when compare d to the expectations of the investors. The fund shows negative performance in 2002, 2004 to 2011, though it has outperformed the market returns. The SBI Blue Chip fund carriesa negative Jensen's alpha implies that the fund has shown poor performance when compare d to the expectations of the investors. The fund shows negative performance in 2002 to 2011, though it has outperformed the market returns

Table 9: Comparison of Sharpe Index of Schemes

Scheme	Return	Risk	Sharpe Index	Rank
Baroda Pioneer Growth Fund	1.7521	0.0966	-0.5952	1
Franklin Bluechip	1.1391	0.0726	-2.8276	5
HSBC Dynamic Fund	0.9261	0.0696	-1.6400	3
Kotak 50	0.8218	0.0707	-1.1938	2
SBI Bluechip Fund	0.8787	0.0701	-1.9798	4

From the table it's inferred that based on the sharpe's index the Baroda Pioneer Growth Fund is ranked top since it outperformed the risk free asset when compare to other funds.

Table 10: Comparison of Treynor's Index of Schemes

Scheme	Return	Beta	Treynor's Index	Rank
Baroda Pioneer Growth Fund	1.7521	7.4359	1.7609	1
Franklin Bluechip	1.1391	9.8627	0.3439	3
HSBC Dynamic Fund	0.9261	7.7906	0.3847	2
Kotak 50	0.8218	9.2731	0.0743	5
SBI Bluechip Fund	0.8787	9.1848	0.1509	4

From the table it's inferred that based on the Treynor's index the Baroda Pioneer Growth Fund is ranked top since it out per formed the risk free asset when compared to other funds.

Table 11: Comparison of Jensen's Index of Schemes

Scheme	Return	Expected Return	Jensen's Index	Rank
Baroda Pioneer Growth Fund	1.7521	1.0231	0.7289	1
Franklin Bluechip	1.1391	1.2046	-0.0655	3
HSBC Dynamic Fund	0.9261	0.9902	-0.0641	2
Kotak 50	0.8218	1.1464	-0.3246	5
SBI Bluechip Fund	0.8787	1.0934	-0.2147	4

From the table it's inferred that based on the Jensen's index the Baroda Pioneer Growth Fund is ranked top since it outperformed the risk free asset when compare to other funds.

Findings and Suggestions
The analysis of the sample investors' opinion shows that majority were moderately satisfied with the performance, investment opportunities and services offered by the Indian mutual funds industry. However, the sample mutual fund schemes were also not performing up to their expectations and do not provide adequate returns commensurate with the risk involved. Hence, for the better future of the Indian Mutual Fund Industry the following suggestions are made: It is absolutely necessary to harness the savings of the nation especially from rural and semi-urban areas into financial assets and the units of mutual funds should certainly become one such asset that can attract these savings through a wide spread and efficient network of operations. Mutual funds should build confidence in the existing unit holders as well as the public not covered so far. Mutual funds have to prove as deal investment vehicle for retail investors by way of assuring better returns in relation to the risk involved and by way of better customer services. Mutual funds as institutional investors have to ensure professional market analysis,

optimum diversification of portfolio, minimizing of risk and optimizing of return. The fund managers have to provide the benefits of professional management by way of market timing and stock selection skills. Investors have to make self-analysis of one's needs, risk-bearing capacity, and expected returns so as to develop a prudent investment ideology. Investors have to be aware of the mutual fund regulations, the channelling of money, objectives of schemes, besides ensuring better diversification of investment. Above from the study, the better performance of the fund is Baroda Pioneer Growth Fund. Is manager's ability also gives some good return for investment. So, the investors can get the expected return through made investment in mutual funds like Baroda Pioneer Growth funds.

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