

# Composite Portfolio Performance: An Investigation into Indian Mutual Funds

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## Abstract

Earlier in the 1960s, though they were aware of the concept of risk, the portfolio managers did not know as to how to measure and hence their performance was measured only in terms of rate of return. Though quite a few measures were developed in 1960s, it was Friend, Blume and Crockett who developed a mechanism to group portfolios into similar risk class. This in fact helped the portfolio managers to compare the performance of various funds more meaningfully in terms of risk-return relationship. Keeping the importance of two sides of investment coin: the Risk and the Return, we, in this paper attempted to analyze the performance of equity linked and diversified funds. We also tested if the portfolio managers' stock selection ability enhanced the performance. We have used measures like Treynor's, Sharpe's, Jensen's Alpha, the Information Ratio and Net Selectivity. Using these measures, we attempted to find out if the portfolio managers could generate above-average rate of return for a given risk class. The sample comprised equity linked savings and diversified funds in Indian context. The analysis was done on quarterly, half yearly, yearly and five yearly basis for each fund. This facilitated us to identify if the time factor played a role in the performance of a given fund. The results revealed that the performance of the fund managers primarily depended on the type of measure. While the fund(s) performed better according to a given method, than that of others in a given risk class, it was vice versa according to other measures. This reveals that the selection of performance measure matters a lot while assessing the performance of a fund. Analysis of Variance (ANOVA) revealed that the performance of a fund depended on time factor also. The results of our study carry very significant implications with respect to portfolio performance analysis.

**Keywords:** *Portfolio Performance, Net Selectivity, Portfolio Beta, Portfolio Standard Deviation, Portfolio Alpha*

## 1. Introduction and Review of Literature

'Unity Creates Strength' is the quote that stands as the foundation for the emergence of mutual funds. While there is no proof with 100% reliability as to when and how the mutual funds industry emerged, it is believed that King William I launched first mutual fund in the Netherlands in 1822. A few others also believe that Adriaan Van Ketwich, a Dutch merchant, created the investment trust and gave an idea to King William I to establish the concept of diversification. It is also believed that this idea of diversification would have come up primarily to increase the appeal of investments

to smaller investors with highly limited capital. The idea of pooling the resources and spreading the risk component came up in Britain and France which in turn moved on to United States. The first closed-end fund was formed by Boston Personal Property Trust way back in 1893. However, the creation of the Alexander Fund in Philadelphia in 1893 remains as an important milestone in the history of mutual funds. Followed by this, creation of the Massachusetts Investors' Trust in Boston in 1924, which eventually went public in 1928 laid the foundation for wide spread popularity of modern

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mutual funds industry. With not many developments after this, the period between 1960 and 1969 saw the launching of many mutual fund schemes by several companies which resulted in huge inflow and out flow of funds through mutual funds vehicle. A few firms like, Wells Fargo thereafter laid the strongest foundation for index fund. With bull market mania in US markets, in 1980s the fund managers like Max Heine, Michael Price and Peter Lynch became very popular as top fund managers. Though the mutual funds industry took off in a stunning way, it was not free of scandals. The burst of technology bubbles made the investment in mutual funds as not always benign but could malign at times. Though there were mutual funds scandals and global financial crisis in 2003 and 2008–2009 respectively, the industry is still growing at a reasonable rate.

### 1.1 Mutual Funds in India

As a result of the far sighted vision of the then finance minister, T T Krishnamachari, and the prime minister Jawaharlal Nehru, Unit Trust of India was formed with an enactment of UTI Act 1963 in the parliament. Though Reserve Bank of India had the control over it in the initial stage, Industrial Development Bank of India (IDBI) took over the control in 1978. Entry of public sector funds in 1987 raised the quantum of assets under management of Rs. 6,700 crores in 1988 by UTI to the tune of Rs. 47,004 crores by the end of the year 1993. These figures translate into Compounded Annual Growth Rate (CAGR) of 47.64%. This indicates a phenomenal growth rate in mutual funds industry in India. A few of the popular public sector undertakings that contributed to such a rate are Life Insurance Corporation of India (LIC), State Bank of India (SBI) and General Insurance Corporation of India (GIC). In order to boost the industry further, private sector funds and foreign mutual funds were allowed to enter the industry since 1993 which resulted in further enhancement of assets under management to the extent of Rs. 1,21,805 crores held by around thirty three mutual funds by the end of the year 2003. However, the CAGR in assets under management between 1993 and 2003 was only 10% being lower than that of between the years 1988 and 1993. During these phases it was only UTI which had a lion share in assets under management (Rs. 44,541 crore by

the end of the year 2003). As it was reported by Centre for Monitoring Indian Economy (CMIE), total assets under management in India touched all time high of Rs. 8.68 trillion by the end of May 2013. This implies a CAGR of 21.7% in assets under management between the years 1993 and 2013 which is almost double the rate that of between the years 1988 and 1993. The observed trend in the growth of mutual funds industry in India reveals its importance and role that it plays in Indian investment world. This also implies that the investors on an aggregate basis want to spread the risk across many less risky assets than that of only equity.

The increasing magnitude of focus on mutual funds, as discussed in earlier paragraphs, implies a lot to the fund managers as well as the investors in terms of risk-return relationship. As it is known unlike equity, investment in mutual funds is less absorbent to the sudden market shocks. The prime reason adduced to this is diversification of funds across various asset classes. The risk and the return are the two sides of an investment coin. While assessing the performance of a mutual fund manager, the risk return relationship is a key aspect and hence the returns of a portfolio should always be adjusted to the risk. In the absence of risk measurement tools, the return alone was used to assess the performance. This may make sense if the investor does not bother about the volatility of the returns. But in the light of enhanced awareness and competition, volatility in the returns gained prominence over a period of time and today the risk is in-separable from the return. However there is no any common agreement among the experts about the way the volatility or so called risk is measured in an investment. While a few believed in standard deviation (or variance which measures total risk) others believed only in non-diversifiable risk which is a part of total risk. While there are various schools of thought as to how to measure a fund's performance, the most popular ones that are in vogue are Sharpe ratio, Treynor ratio, Jensen's alpha, Modigliani squared ( $M^2$ ) and Information ratio (also known as appraisal ratio). The use of any specific measure would depend on examination of circumstances. We will elaborate on this aspect in a later section called research methodology.

The paper is organized into four sections, dealing with introduction and literature review (section I), objectives, methodology and hypotheses (section II), results, discussions and findings (section III) and conclusions and scope for further study (section IV).

Having understood the importance of investment in mutual funds and the measurement of fund's performance, we turn our focus onto the research available in this area. For a better understanding of the developments, we have reviewed the research papers in chronological order. We also tried our level best to focus more on the developments in portfolio performance during the recent past. In fact, the concept of risk-adjusted performance evaluation came into limelight along with popularly known Capital Asset Pricing Model (CAPM) way back in 1966.

Treynor (1965) and Sharpe (1966) used mean variance to measure the performance, recognizing the implications of CAPM, Michael Jensen (1969) used excess of actual return of the portfolio over its CAPM based expected one. He coined this excess return as "Alpha" of the portfolio. Followed by these developments, the academicians started investigating, at an increasing rate, into the performance of various mutual funds.

Examining the relationship between market timing skills and the performance of mutual fund, Chang and Lewellen (1984) concluded that attribution of the performance is always a subjective matter. They evidenced that the collective performance of the fund is relevant to efficient market hypothesis. This in turn reveals that the implications of efficient hypothesis and differential investment strategies of the manager matter a lot while assessing and attributing the performance.

Testing the Efficient Market Theory (EMT), Ippolito (1993) evidenced in his study that incurring more expenses on research and trading in strong form of the market is a matter of wasting resources as it never resulted in beating the market. His findings were in line with the hypothesis that the fund managers are successful in finding new information and using

such information for generating return to offset fund expenses. He attributed his findings to modified version of EMT proposed by Grossman and Stiglitz (1980).

Investigating about the mutual fund managers' attitude towards risk and the return, Vos (1997) found that 40% of the sample investors did not believe the rates of return published by the most of the funds. They identified that the fund managers did little to incorporate the risk into the return while reporting their performance. This finding reveals that the performance as reported by the fund manager may not fully be reliable and hence there always exists the need for the investors to re-look into such reported risk-adjusted performance measures.

Measuring mutual fund performance with characteristic-based benchmarks, Daniel et al. (1997) evaluated the performance of 125 passive funds and evidenced selectivity ability of fund managers but no timing ability. The findings of their study, like that of many, reveal that the fund managers could not possess any market timing skills in order to optimize the portfolio return.

Studying the effect of stock selection, trading, cost reduction, marketing and risk taking ability on the performance of the fund, Ang et al. (1998) evidenced that in case of poorly performing funds high frequency trading and more risk of loss lead towards lower returns while expense reduction ability lead to higher portfolio returns. The study revealed very weak relationship between selectivity and performance.

Focusing on style investing of 770 actively managed funds, Indro Daniel et al. (1998) evidenced that the funds that changed the style strategies performed worst when compared to the ones that were stable in style. They also found that large-cap funds were the most mean-variance efficient style consistent when compared the S&P 500 index.

Testing the market timing abilities of 570 funds during 1987–1996, Rao (2000) found that majority of the fund managers did not possess market timing skills even in

bull market. The results of this study did not support the hypothesis that the fund managers have the ability to successfully time their portfolio returns on the market portfolio return.

Yet in another study with respect to the link between style and performance, Davis (2001) also evidenced that the long-term performance of the fund was not persistent with style investing. He however found some evidence that style had some impact on short-term performance.

Taking top five growth funds and ten index funds in India, Patil and Rao (2011) analyzed the performance during the years 2007 through 2010. They found out that the mutual funds performed better while compared to other investments like equity and bonds portfolios.

Examining if Indian fund managers could select and time the market correctly, Chopra (2011) measured the performance of 36 mutual funds in India during the years 2001 through 2009. Their study revealed little evidence that any specific fund manager could use timing skills to outperform the market.

Huang, Sialm and Zhang (2011) attempted to investigate into the effect of risk shifting behavior of fund managers on the performance. Having used holdings-based measures as the representation of risk shifting, they found that the funds that increased the risk did perform worse than the funds that kept the risk level stable over a period of time. Their study thus suggest that risk shifting behavior is an indication of inferior ability or may be, the fund managers could get motivated to do so by agency costs. This paper holds greater significance in terms of studying the risk return relationship of funds.

Cuthbertson, Nitzsche and O'Sullivan (2012) in their study on UK mutual funds evidenced that most of the funds could not perform better than the market and instead there was false discovery rate in the performance of the funds. Using false discovery rate as the measure they evidenced that only 3.7% of the total funds in UK outperformed the market.

Based on the monthly data of twenty eight equity diversified Indian funds, Kumar (2012) evidenced that 60% of the select fund managers were not able to time and beat the market only in terms of security selection. The study revealed that almost all the fund managers failed to exhibit the skills to time the market and enhance the portfolio return.

Barron and Ni (2013) investigated the effect of Morningstar's rating on the replacement of fund manager. They found that mutual fund investors respond positively to the Morningstar measure of performance and therefore the Morningstar rating was considered as the better predictor of fund manager replacement.

## 2. Objectives, Methodology and Hypotheses of the Study

Considering the importance of portfolio performance evaluation as evidenced in earlier section, the study aims:

1. To Investigate and empirically analyze quarterly, half yearly, yearly, three yearly and five yearly performance analysis of select mutual funds in India and trace out if the frequency matters in performance measurement.
2. To compare traditional versus composite performance measurements and trace out the contrast and implications.
3. To empirically prove if there were any specific funds the performance of which was superior according to all or at least major measures.
4. To investigate if the performance of sample funds was consistent over the years 2008–09 through 2012–12.

The measures used to measure and analyze the performance of mutual funds are as follows.

Measure	Equation
Sharpe Ratio (S.R)	$(R_p - R_f)/\sigma_p$ (EQ. 1)
Treynor Ratio (T.R)	$(R_p - R_f)/\beta_p$ (EQ. 2)

Jensen's Alpha (J.A)	$\alpha_p = R_p - \{R_f + \beta_p (R_m - R_f)\}$ (EQ. 3)
Information Ratio (I.R)	$\alpha_p / \sigma(e_p)$ (EQ. 4)
Modigliani Squared (M <sup>2</sup> )	$R_{p^*} - R_m$ (EQ. 5)
Fama's Net Selectivity (N.S)	$R_p - R_m(\sigma(R_p))$ (EQ. 7)

where,

$R_p$  = Portfolio average return

$R_f$  = Average risk free return

$\sigma_p$  = portfolio standard deviation

$\beta_p$  = portfolio beta

$\alpha_p$  = portfolio alpha (portfolio excess return over expected return)

$R_{p^*}$  = adjusted portfolio return

$\sigma(e_p)$  = portfolio un-systematic or tracking error

Though we presume that every finance professional would be aware of the above measures and terms involved in, we would like to throw some light on the differences and implications of the above measures for better understanding. While Sharpe and Treynor measure the performance almost on similar grounds they vary in terms of risk adjustment. Sharpe takes total risk ( $\sigma$ ) into account and Treynor considers only systematic risk ( $\beta$ ). Picking up on Sharpe's CAPM based expected return; Jensen looks into the excess of actual return over such expected return. Jensen's alpha thus indicates and helps to find out market imperfections if any in the market. While higher the alpha better it is for the investor, such higher and lower alphas reveal the stocks/portfolios being undervalued and overvalued. Jensen's alpha is also used to test if CAPM holds good to any specific security. Again taking on Sharpe's ratio, Goodwin (1998) noted that Sharpe ratio is a special case of Information Ratio (IR) or also known as Appraisal Ratio (AR). The information ratio divides portfolio excess return by non-systematic risk ( $\sigma(e_p)$ ) also known as tracking error. The credit of information ratio development however goes to Treynor and Black (1973). Another measure as equivalent to Sharpe's measure developed by

Graham and Harvey (1994) is M<sup>2</sup> (for Modigliani squared). They suggested looking into diversifiable portion of the risk in a portfolio by comparing the standard deviation of portfolio return with that of market. If there is any possibility of diversifying portfolio non-systematic risk, we need to adjust the portfolio accordingly and there by compare the adjusted portfolio return with of market. If adjusted portfolio return is more than market return, it is understood as the portfolio did perform better than the market and vice-versa. Despite having these many measures, the performance of the fund may also depend on many other factors, circumstances in which a fund is operated and frequency of the time during which performance is assessed. It may therefore be noted that there is no single method which is perfect and no performance measurement is hundred percent reliable. These measures only provide a particular direction to understand the performance of a fund in comparison with the market and its peer group funds.

Apart from the above measures and equations, we also use multiple 'R' in order to study the extent of correlation between the performance of the fund and the market and R<sup>2</sup> to find out the explained and unexplained portions of the volatility. Out of many a fund in India, we have taken fifty star rated funds at random for study purpose falling in eight different indices (or Benchmark). Most of the funds selected fall in BSE 100 and BSE 200 indices while there was only one fund each from BSE 500 and BSE Midcap indices. The list of the selected funds and the index concerned could be found in Annexure 'A'. The data required has been sourced from 'navindia.com' for the financial years 2008–09 through 2012–13. We presume that five years data is sufficient enough for the study in order to bring out the latest trends in the performance of the sample funds. We have analyzed the performance of the funds in the frequencies of quarterly, half yearly, yearly and five yearly. We also have computed the returns in terms of two yearly and three yearly and five yearly rolling Compounded Annual Growth Rates (CAGR). However, when it comes to the performance measurement using various ratios (like Sharpe Ratio, Treynor Ratio, and Jensen's Alpha etc.) we have computed on yearly basis. Thus, we have attempted to analyze the performance in

terms of pure return (without adjusting to the risk) and risk-adjusted return. This facilitates us also to compare and see as to how traditional performance measurement differs from composite performance measurement. We have captured the computations in form of tables and graphs. As a part of the study, we test the following hypotheses at 5% significance level through one-way ANOVA. MS-Excel software has been used extensively to compute various ratios and test the hypotheses. It may please be noted that instead of pasting entire table, we have taken only observed 'P' value form ANOVA table concerned in case of each hypothesis.

$H_{0_1}$ : Yearly mean returns (Average Return, A.R) of sample mutual funds in India did not vary over the years 2008–09 and 2012–13 (i.e.  $A.R_{50, 2008-2009} = A.R_{50, 2009-2010} = A.R_{50, 2010-2011} = A.R_{50, 2011-2012} = A.R_{50, 2012-2013}$ )

$H_{0_2}$ : Mean Sharpe Ratio of sample mutual funds in India did not vary over the years 2008–09 and 2012–13 (i.e.  $S.R_{50, 2008-2009} = S.R_{50, 2009-2010} = S.R_{50, 2010-2011} = S.R_{50, 2011-2012} = S.R_{50, 2012-2013}$ )

$H_{0_3}$ : Mean Treynor Ratio of sample mutual funds in India did not vary over the years 2008–09 through 2012–13 (i.e.  $T.R_{50, 2008-2009} = T.R_{50, 2009-2010} = T.R_{50, 2010-2011} = T.R_{50, 2011-2012} = T.R_{50, 2012-2013}$ )

$H_{0_4}$ : Mean Jensen's Alpha of sample mutual funds in India did not vary over the years 2008–09 through 2012–13 (i.e.  $Alpha_{50, 2008-2009} = Alpha_{50, 2009-2010} = Alpha_{50, 2010-2011} = Alpha_{50, 2011-2012} = Alpha_{50, 2012-2013}$ )

$H_{0_5}$ : Mean Information Ratio (I.R) of sample mutual funds in India did not vary over the years 2008–09 through 2012–13 (i.e.  $I.R_{50, 2008-2009} = I.R_{50, 2009-2010} = I.R_{50, 2010-2011} = I.R_{50, 2011-2012} = I.R_{50, 2012-2013}$ )

$H_{0_6}$ : Mean Modigliani Squared ( $M^2$ ) of sample mutual funds in India did not vary over the years 2008–09 through 2012–13 (i.e.  $M^2_{50, 2008-2009} = M^2_{50, 2009-2010} = M^2_{50, 2010-2011} = M^2_{50, 2011-2012} = M^2_{50, 2012-2013}$ )

$H_{0_7}$ : Mean Net selectivity (N.S) of sample mutual funds in India did not vary over the years 2008–09 through 2012–13 (i.e.  $N.S_{50, 2008-2009} = N.S_{50, 2009-2010} = N.S_{50, 2010-2011} = N.S_{50, 2011-2012} = N.S_{50, 2012-2013}$ ).

### 3. Results, Discussions and Findings

As we mentioned earlier, we first discuss the quarterly performance of sample funds over 2008–09 through 2012–13.

#### 3.1 Quarterly performance

The quarterly performance computations of sample and benchmark funds are summarized in Table 1. As we observe, all sample funds and benchmark funds have performed exceptionally high during the first two quarters of the financial year 2009–10, while they performed negatively during all the quarters of the fiscal 2008–09. Also third and fourth quarters of the fiscal 2010–11 and first three quarters of the fiscal 2011–12 were found to be very bad for all the funds including benchmark funds. Considering the quarterly average during 2008–09 through 2012–13 a few funds like ICIC Discovery fund, Reliance Equity Opportunity fund, IDFC Premier Equity fund and DSPBR Small & Midcap fund have performed better than other funds. The quarterly mean values of the returns indicate that all the funds including benchmark funds have generated positive return. There is of course a serious limitation of high volatility of the returns during the quarters. When we look into fifty funds quarterly average returns of sample funds, it was in Q1 and Q2 of the fiscal 2009–10 and Q4 of the fiscal 2011–12 the returns were very high. Barring these quarters, the funds' average return during the rest of the quarters was very bad. The computations pertaining to benchmark funds reveal that all the benchmark funds have performed badly except for the first three quarters of the year 2009–10. Barring these three quarters, the performance in the rest of the quarters is not impressive at all. The quarterly average return of the benchmark funds has also been on the lower side compared to that of sample funds. Table 1 provides very meaningful information to understand as to how each and every fund has performed over all the quarters during the years 2008-09-2012-13. We believe this information is of great use to the concerned in terms of diagnosing the past performance of the sample and benchmark funds on quarterly basis.



Table 1 Continued

Year→ Fund ↓ Quarter→	2008-09				2009-10				2010-11				2011-12				2012-13				Mean
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
UTI Midcap	-11.86	-7.12	-25.71	-6.50	54.52	31.66	10.77	1.99	7.79	11.87	-3.29	-8.26	2.21	-4.83	-14.74	19.13	0.53	8.94	8.50	-13.37	3.11
Sundaram Smile	-12.63	-4.64	-24.52	-7.62	67.77	31.05	8.52	-2.80	5.04	13.45	-4.85	-12.83	-0.78	-7.09	-16.28	22.25	11.06	6.65	-4.98	-13.92	2.64
ICICI Dynamic	-10.40	-2.23	-19.18	-3.11	40.23	20.63	9.78	3.51	4.55	8.95	2.85	-2.11	-1.20	-11.26	-7.16	17.05	1.09	5.89	4.21	-4.80	2.87
Sundaram Select Focus	-10.97	-8.23	-19.16	-8.85	43.69	19.10	5.09	-1.05	-0.04	15.40	-1.17	-7.09	-4.02	-7.84	-6.56	7.39	-2.29	9.43	5.78	-6.55	1.10
SBI Magnum Equity	-16.25	-4.01	-22.28	-0.77	52.51	16.86	6.27	2.47	4.48	11.77	-1.12	-4.14	-0.68	-9.97	-6.33	15.87	-0.23	6.83	5.18	-3.07	2.67
Reliance Equity	-12.43	0.31	-16.49	-5.23	39.79	15.18	1.39	-2.22	1.14	4.26	-2.74	-7.41	-2.60	-13.54	-10.36	19.30	0.31	12.36	5.07	-7.66	0.92
Franklin India Bluechip	-14.86	2.21	-21.38	1.20	48.69	14.77	6.82	4.64	1.10	14.30	1.69	-4.04	-1.15	-8.05	-6.27	14.25	-1.76	6.72	5.84	-4.79	3.00
HDFC Growth	-13.96	1.99	-23.63	-7.02	47.74	19.66	6.61	2.07	9.07	14.72	0.00	-5.66	-0.13	-9.57	-7.56	16.38	-1.69	8.02	3.43	-6.60	2.69
HDFC Long Term Adv	-11.51	-3.24	-25.37	-3.58	52.45	19.93	7.14	2.65	6.18	15.56	1.91	-6.64	0.29	-10.79	-8.38	17.43	-1.72	7.56	3.78	-2.37	3.06
Tata PE Fund	-9.37	-9.00	-21.30	-1.69	46.45	28.97	9.64	0.67	4.46	10.41	0.63	-6.49	-1.71	-10.26	-7.56	19.66	-5.35	9.23	4.70	-9.38	2.64
Tata Pure Equity	-12.06	-5.68	-17.26	-2.89	43.82	17.34	8.11	2.28	4.48	13.17	-1.63	-8.84	0.18	-7.87	-6.38	13.44	1.05	8.65	3.15	-4.26	2.44
Tata Tax Saving	-16.03	-3.86	-23.34	-2.00	46.32	9.18	7.53	-9.71	2.96	11.11	1.96	-5.77	0.15	-7.58	-10.89	8.20	-0.42	8.29	2.04	-5.11	0.65
Fund Average	-13.04	-4.83	-22.31	-3.12	49.85	22.53	7.94	1.94	3.98	12.86	-0.36	-7.55	-0.26	-9.41	-9.71	17.06	-0.66	9.02	6.11	-7.92	2.60
<b>Index</b>																					
BSE 100	-15.25	-4.81	-25.46	-0.91	53.19	17.95	3.35	0.76	1.53	12.55	0.45	-5.43	-2.89	-12.14	-7.96	15.59	-0.68	8.00	4.81	-4.97	1.88
BSE 200	-15.51	-5.38	-25.65	-1.40	54.95	18.55	4.07	0.88	2.21	12.56	0.14	-6.13	-2.69	-12.37	-8.75	16.59	-0.92	7.93	5.06	-5.63	1.93
BSE 500	-15.84	-6.09	-26.56	-2.04	55.87	19.31	4.42	1.13	2.50	12.58	-0.29	-6.58	-2.31	-12.11	-9.51	16.98	-1.14	7.84	5.20	-6.55	1.84
BSE Midcap	-16.35	-10.92	-32.58	-8.62	71.72	24.58	6.22	1.32	5.04	13.08	-3.48	-11.91	-0.28	-10.57	-16.23	23.59	-3.04	7.37	7.65	-13.65	1.65
CNX 500	-17.01	-4.52	-24.94	-0.04	51.20	18.70	5.11	-0.37	2.49	11.41	0.32	-6.37	-2.24	-12.04	-9.57	17.35	-1.21	8.00	5.31	-6.43	1.76
CNX Midcap	-16.70	-6.65	-23.62	-8.78	59.28	23.70	10.72	3.66	5.53	12.71	-3.35	-9.22	-0.85	-11.01	-13.84	26.17	-4.66	6.65	8.48	-12.97	2.26
CNX Nifty	-14.68	-2.95	-24.53	2.09	42.04	18.48	2.30	0.92	1.21	13.50	1.73	-4.90	-3.19	-12.47	-6.45	14.52	-0.31	8.04	3.49	-3.72	1.76
SENSEX	-14.65	-4.47	-24.98	0.63	49.29	18.17	1.97	0.36	0.99	13.38	2.19	-5.19	-3.08	-12.69	-6.07	12.61	0.15	7.65	3.54	-3.04	1.84



### 3.2 Half Yearly Performance

Table 2 contains the data pertaining half yearly performance of sample and bench mark funds. The data in Table 2 reveals all sample and benchmark funds have performed extremely well during H1, H2 of the fiscal 2009–10, and H1 of the fiscal 2010–11 followed by reasonable performance during H2 of 2011–12 and H1 of 2012–13. The performance of all the funds has been found to be very bad with very high negative returns particularly in H1 and H2 of the year 2008–09. Like in the case of mean return of all quarters (Table 1), the mean return of the halves of all the years indicate that it were ICICI Discovery fund, Reliance Equity Opportunity fund, IDFC Classic Equity fund and DSPBR Small & Midcap fund that topped the list. The key finding here is thus these funds have performed consistently on both quarterly and half-yearly basis. The data in Table 2 also reveal that all the funds, including benchmark ones, have performed very well on an aggregate basis. Again, like in case of quarterly performance, this is primarily due to exceptionally high returns in the year 2009–10. When we focus on the half yearly performance of benchmark funds (Table 2), we notice that all the funds have performed equally well on an aggregate basis. This better performance again is due to exceptionally high returns in 2009–10. We also observe that there is no fund, either sample or benchmark, that yielded positive return during H1 and H2 of 2008–09. Also same is the case during H2 of 2010–11 and H1 of 2011–12 barring ICICI Dynamic fund. The key observation out of half yearly performance analysis is the performance of a few funds has been the same when compared to that of quarterly. However bench mark funds performed better on half yearly basis when compared to that of quarterly. Table 2 thus provides summary of half yearly performance of sample and benchmark funds which, we feel, may be useful in diagnosing the performance of the funds on half yearly basis and then compare with quarterly performance in Table 1.

### 3.3 Yearly Performance

Having made some key observations out of quarterly and half yearly performance of the funds, we now turn our focus on to yearly performance measurement and analysis. The relevant data in this regard is summarized in Table 3. Like in the case of quarterly and half

yearly performance, all the funds have done extremely bad in the year 2008–09 and extremely well in the year 2009–10. When we observe the data in Table 3 the return was as low as -56.01% in 2008–09 (in case of ICICI Midcap fund) and as high as 159.35% in 2009–10 (in case of ICICI Discovery fund). It may be noted that these two funds fall under same Asset Management Company (AMC). This kind of extremes could be found even in case of many funds. Similar to quarterly and half yearly returns, ICICI Discovery fund, Reliance Equity Opportunity fund and IDFC Premier fund have topped the list in terms of yearly performance. This reveals that these funds have exhibited consistent performance irrespective of measurement frequency. A few funds that fall in such category are Sundaram Select Midcap, Franklin India Prima, UTI Dividend Yield, SBI Magnum Equity, Birla Advantage, ICICI Midcap and Sundaram Growth Fund. In case of other funds there was however some deviation in the quarterly, half yearly and yearly performance. We therefore observe that measurement frequency may not matter in case of a few funds and it matters in case of majority of the funds. As we mentioned earlier we tested if the yearly mean return of sample funds varied across study period. As calculated 'p' value (0.00) is less than the critical 'p' (0.05), we reject  $H_0$  and conclude that the mean return of sample funds varied over the years 2008–09 and 2012–13. This implies that the time factor played a role in the returns generated by the by the sample funds over a period of time.

### 3.3 Rolling Compounded Annual Growth Rate

Apart from quarterly, half yearly and yearly analysis, we also have computed rolling compounded annual growth rates in the returns of both sample funds and benchmark funds. The superiority of rolling returns over yearly return is that the rolling return reflects the cumulative return on a continuously investment over a period of time. We have computed the CAGR in rolling returns on two yearly (2008–10, 2009–11, 2010–12 and 2011–13), three yearly (2008–11, 2009–12 and 2010–13) and five yearly (2008–2013) bases. This sort of computation is useful to the investors to know as to what could have been the return if the investment was held for a specified period. The results are summarized

**Table 2.** Half yearly returns (in %) of sample and index funds

Year→ Fund ↓	H →	2008–09		2009–10		2010–11		2011–12		2012–13		Mean
		H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	
DSPBR Tiger		-22.63	-21.21	69.81	5.43	16.57	-14.41	-12.75	3.49	6.41	-7.73	2.30
DSPBR Top 100		-10.85	-17.46	66.37	5.55	15.71	-4.08	-10.18	9.00	5.13	-2.37	5.68
UTI Dividend Yield		-10.31	-13.44	66.18	12.56	19.84	-3.18	-7.09	4.03	5.38	-3.55	7.04
UTI Equity		-13.76	-19.69	70.19	7.33	17.93	-2.60	-8.89	7.91	9.25	-1.08	6.66
SBI Magnum Tax Gain		-20.85	-23.53	75.12	6.78	12.72	-7.80	-9.61	7.46	9.79	-2.28	4.78
SBI Contra		-18.75	-20.01	77.99	5.55	12.36	-11.19	-12.66	6.28	5.95	3.49	4.90
Reliance Equity Opp		-18.63	-23.43	91.92	19.76	24.71	-7.88	-6.53	9.08	13.79	-0.64	10.22
Reliance Growth		-15.40	-26.31	89.91	11.66	16.01	-9.84	-10.96	6.06	6.77	-4.98	6.29
Reliance Regular Savings		-18.15	-24.79	90.97	11.48	16.42	-9.07	-13.24	5.24	13.55	-5.62	6.68
Reliance Tax Saver		-13.26	-19.89	70.58	12.99	24.18	-9.10	-8.51	10.15	9.15	-7.87	6.84
Reliance Vision Fund		-18.66	-20.15	77.72	6.03	18.50	-9.52	-12.07	6.89	4.77	-10.81	4.27
Principal Large Cap		-19.33	-19.75	84.65	8.65	17.88	-5.45	-13.70	5.92	9.82	-3.03	6.57
Birla Advantage		-19.74	-27.67	90.49	5.03	15.13	-9.53	-11.81	2.04	6.92	-2.92	4.79
Birla Equity		-21.05	-26.65	85.67	10.17	15.39	-11.00	-12.43	4.00	9.47	-2.44	5.11
Birla Frontline Equity		-16.10	-20.89	80.64	9.31	15.63	-4.13	-11.27	4.58	10.97	2.69	7.14
HDFC Top 200		-9.72	-22.06	85.59	6.96	22.34	-4.56	-12.56	7.37	6.41	-1.78	7.80
IDFC Classic Equity		-20.26	-22.27	129.77	3.66	14.21	-8.70	-12.66	3.30	10.61	1.81	9.95
Tata Equity Opp		-22.28	-30.45	85.56	11.34	10.29	-9.55	-8.17	7.80	7.78	-0.36	5.20
Sundaram Growth Fund		-16.15	-36.65	89.84	2.04	20.85	-9.82	-13.97	8.03	6.56	-5.59	4.51
Sundaram Tax Saver		-5.94	-21.86	53.39	23.65	-0.73	-2.82	2.08	-10.60	8.03	13.11	5.83
Principal Growth		-25.72	-27.48	67.86	5.92	12.04	-9.46	-14.69	8.71	10.53	-0.06	2.76
Principal Tax Savings		-32.53	-32.62	68.07	6.65	12.46	-9.55	-14.15	8.98	11.06	-0.03	1.83
IDFC Premier Equity		-16.22	-23.01	85.10	22.62	19.62	-11.01	2.77	3.01	10.96	-0.11	9.37
Sundaram Select Midcap		-17.76	-32.09	114.34	11.34	22.14	-11.11	-3.08	3.37	12.90	-6.06	9.40
DSPBR Equity		-13.02	-20.57	76.58	9.08	20.59	-6.93	-9.02	5.44	4.88	-4.68	6.23
DSPBR Opp		-19.34	-20.75	75.64	7.04	23.56	-8.40	-10.10	0.65	6.81	0.76	5.59
DSPBR Tax Saver		-17.82	-24.20	79.36	10.97	19.13	-9.20	-11.99	6.11	10.55	-0.07	6.28
Franklin India Prima		-22.15	-31.53	98.10	17.10	17.41	-11.14	-6.04	7.28	9.80	3.08	8.19
Franklin India Taxshield		-13.89	-22.21	68.36	13.63	16.23	-2.00	-6.04	6.72	6.39	0.68	6.79
HDFC Capital Builder		-16.59	-26.45	84.42	13.10	21.22	-5.18	-10.99	6.14	7.97	-0.99	7.27
HDFC Equity		-12.10	-25.30	94.60	11.54	25.55	-4.51	-13.37	6.63	5.69	-1.97	8.68
HDFC Tax Saver		-12.72	-26.85	88.85	12.21	21.85	-7.07	-10.50	6.98	3.50	-2.37	7.39
Sundaram Equity Multiplier		-18.83	-25.18	79.55	2.56	12.92	-8.03	-7.35	2.12	9.92	-7.76	3.99
Principal Div Yield		-15.89	-24.62	71.00	9.95	22.97	-6.61	-12.08	9.06	6.85	-3.31	5.73
Birla Midcap		-22.91	-31.02	118.27	15.25	12.83	-12.31	-6.90	6.35	6.86	-3.46	8.30
DSPBR Small & Midcap		-20.63	-26.56	103.41	17.98	25.22	-10.15	-4.12	2.78	8.44	-6.29	9.01
ICICI Discovery		-16.62	-24.17	122.25	16.69	18.41	-5.80	-11.00	12.49	10.38	1.92	12.46
ICICI Midcap		-29.22	-37.85	94.34	21.51	16.27	-16.78	-8.52	6.75	5.37	-4.38	4.75
UTI Midcap		-18.14	-30.54	103.44	12.97	20.59	-11.28	-2.73	1.57	9.51	-6.01	7.94
Sundaram Smile		-16.68	-30.27	119.87	5.49	19.17	-17.06	-7.82	2.34	18.44	-18.20	7.53
ICICI Dynamic		-12.39	-21.70	69.17	13.64	13.90	0.68	-12.32	8.67	7.05	-0.78	6.59

*Continued*

Table 2 Continued

Year→		2008-09		2009-10		2010-11		2011-12		2012-13		Mean
Fund ↓	H →	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	
SBI Magnum Equity		-19.61	-22.88	78.23	8.90	16.77	-5.21	-10.59	8.54	6.58	1.96	6.27
Reliance Equity		-12.15	-20.86	61.01	-0.86	5.44	-9.94	-15.78	6.94	12.71	-2.98	2.35
Franklin India Bluechip		-12.98	-20.43	70.66	11.77	15.56	-2.42	-9.11	7.09	4.85	0.77	6.58
HDFC Growth		-12.25	-28.98	76.79	8.82	25.12	-5.66	-9.69	7.58	6.19	-3.40	6.45
HDFC Long Term Adv		-14.38	-28.04	82.84	9.98	22.71	-4.85	-10.53	7.59	5.71	1.32	7.23
Tata PE Fund		-17.53	-22.63	88.89	10.38	15.33	-5.90	-11.80	10.61	3.39	-5.13	6.56
Tata Pure Equity		-17.05	-19.65	68.76	10.57	18.24	-10.33	-7.70	6.21	9.79	-1.24	5.76
Tata Tax Saving		-19.28	-24.87	59.75	-2.91	14.39	-3.92	-7.45	-3.58	7.83	-3.17	1.68
Fund Average		-17.33	-24.76	83.46	10.08	17.38	-7.87	-9.62	5.63	8.29	-2.30	6.29
<b>Index Fund</b>												
BSE 100		-19.33	-26.14	80.68	4.14	14.27	-5.00	-14.68	6.40	7.27	-0.40	4.72
BSE 200		-20.06	-26.69	83.70	4.99	15.05	-6.00	-14.73	6.39	6.94	-0.85	4.87
BSE 500		-20.97	-28.06	85.97	5.60	15.39	-6.85	-14.14	5.85	6.61	-1.69	4.77
BSE Midcap		-25.49	-38.39	113.93	7.62	18.78	-14.98	-10.82	3.54	4.11	-7.04	5.13
CNX 500		-20.76	-24.97	79.47	4.72	14.19	-6.06	-14.01	6.12	6.69	-1.47	4.39
CNX Midcap		-22.23	-30.33	97.02	14.77	18.94	-12.27	-11.77	8.70	1.67	-5.60	5.89
CNX Nifty		-17.20	-22.96	68.29	3.25	14.88	-3.25	-15.26	7.13	7.70	-0.36	4.22
SENSEX		-18.46	-24.51	76.41	2.34	14.50	-3.11	-15.38	5.78	7.81	0.39	4.58

Table 3. Annual returns (in %) and five yearly CAGR of sample and index funds

Fund ↓	Year→	2008-09	2009-10	2010-11	2011-12	2012-13	Mean
DSPBR Tiger		-39.04	79.04	-0.23	-9.70	-1.81	5.65
DSPBR Top 100		-26.41	75.60	10.99	-2.09	2.64	12.15
UTI Dividend Yield		-22.36	87.05	16.03	-3.35	1.64	15.80
UTI Equity		-30.74	82.66	14.87	-1.69	8.07	14.63
SBI Magnum Tax Gain		-39.48	86.99	3.93	-2.86	7.28	11.17
SBI Contra		-35.01	87.87	-0.22	-7.17	9.64	11.02
Reliance Equity Opp		-37.69	129.84	14.89	1.95	13.07	24.41
Reliance Growth		-37.65	112.06	4.59	-5.56	1.45	14.98
Reliance Regular Savings		-38.44	112.90	5.87	-8.70	7.17	15.76
Reliance Tax Saver		-30.52	92.75	12.88	0.78	0.56	15.29
Reliance Vision Fund		-35.05	88.44	7.22	-6.01	-6.56	9.61
Principal Large Cap		-35.26	100.62	11.46	-8.59	6.49	14.94
Birla Advantage		-41.95	100.08	4.15	-10.01	3.81	11.22
Birla Equity		-42.09	104.55	2.70	-8.92	6.80	12.61
Birla Frontline Equity		-33.63	97.46	10.85	-7.21	13.95	16.29
HDFC Top 200		-29.64	98.51	16.76	-6.12	4.52	16.80
IDFC Classic Equity		-38.01	138.18	4.27	-9.78	12.61	21.45
Tata Equity Opp		-45.94	106.60	-0.25	-1.01	7.39	13.36
Sundaram Growth Fund		-46.89	93.70	8.99	-7.06	0.60	9.87
Sundaram Tax Saver		-26.50	89.67	-3.53	-8.74	22.19	14.62
Principal Growth		-46.13	77.79	1.44	-7.26	10.47	7.26
Principal Tax Savings		-54.54	79.25	1.72	-6.44	11.03	6.20
IDFC Premier Equity		-35.50	126.97	6.45	5.86	10.84	22.92
Sundaram Select Midcap		-44.14	138.65	8.57	0.19	6.06	21.86
DSPBR Equity		-30.91	92.62	12.24	-4.07	-0.04	13.97
DSPBR Opp		-36.08	88.00	13.18	-9.52	7.61	12.64
DSPBR Tax Saver		-37.71	99.03	8.17	-6.61	10.47	14.67

Continued

Table 3 Continued

Fund ↓	Year →	2008–09	2009–10	2010–11	2011–12	2012–13	Mean
Franklin India Prima		-46.69	131.98	4.33	0.80	13.18	20.72
Franklin India Taxshield		-33.02	91.30	13.91	0.28	7.12	15.92
HDFC Capital Builder		-38.65	108.59	14.94	-5.53	6.90	17.25
HDFC Equity		-34.34	117.06	19.89	-7.63	3.61	19.72
HDFC Tax Saver		-36.15	111.90	13.24	-4.26	1.05	17.16
Sundaram Equity Multiplier		-39.27	84.14	3.85	-5.38	1.38	8.94
Principal Div Yield		-36.60	88.01	14.84	-4.11	3.31	13.09
Birla Midcap		-46.82	151.55	-1.06	-1.00	3.16	21.17
DSPBR Small & Midcap		-41.72	139.99	12.51	-1.46	1.62	22.19
ICICI Discovery		-36.77	159.35	11.55	0.12	12.50	29.35
ICICI Midcap		-56.01	136.15	-3.24	-2.35	0.76	15.06
UTI Midcap		-43.14	129.82	6.99	-1.20	2.93	19.08
Sundaram Smile		-41.90	131.93	-1.16	-5.66	-3.12	16.02
ICICI Dynamic		-31.40	92.24	14.67	-4.72	6.21	15.40
Sundaram Select Focus		-39.80	77.97	5.92	-11.24	5.70	7.71
SBI Magnum Equity		-38.00	94.09	10.69	-2.95	8.66	14.50
Reliance Equity		-30.48	59.63	-5.04	-9.94	9.35	4.70
Franklin India Bluechip		-30.76	90.74	12.77	-2.67	5.66	15.15
HDFC Growth		-37.68	92.38	18.04	-2.85	2.59	14.50
HDFC Long Term Adv		-38.39	101.09	16.76	-3.75	7.10	16.56
Tata PE Fund		-36.19	108.49	8.53	-2.44	-1.91	15.30
Tata Pure Equity		-33.35	86.60	6.03	-1.97	8.42	13.15
Tata Tax Saving		-39.36	55.10	9.91	-10.76	4.41	3.86
Fund Average		-37.68	102.14	8.14	-4.61	5.77	14.75
<b>Index Fund</b>							
BSE 100		-40.42	88.17	8.55	-9.23	6.84	10.78
BSE 200		-41.40	92.87	8.15	-9.28	6.03	11.27
BSE 500		-43.14	96.38	7.48	-9.11	4.81	11.28
BSE Midcap		-54.09	130.23	0.99	-7.67	-3.22	13.25
CNX 500		-40.55	87.95	7.26	-8.75	5.13	10.21
CNX Midcap		-45.82	126.12	4.35	-4.09	-4.02	15.31
CNX Nifty		-36.21	73.76	11.14	-9.23	7.31	9.35
SENSEX		-38.44	80.54	10.94	-10.50	8.23	10.15

in Table 4. As we observed in Tables 1, 2 and 3 earlier, exceptionally higher returns caused two year rolling CAGR (Table 4) of all the funds be the highest across all CAGR. To be specific as far as two year rolling CAGR is concerned ICICI Discovery fund, DSPBR Small & Midcap fund and Reliance Equity Opportunity have topped the list with 70.09 CAGR, 64.32 CAGR and 62.5 CAGR respectively. CAGR of all rolling frequencies also reveal that ICICI Discovery fund, Reliance Equity Opportunity fund and DSPBR Small & Midcap fund have exhibited consistent performance across all rolling periods. These funds could sustain the volatility in the market and perform better. This in turn implies that the investment in these funds have earned better returns on any frequency basis during the observed period. Barring a few funds, majority of the funds have generated negative CAGR in two yearly returns during 2010–12. If we compare five yearly CAGR with that of

two yearly and three yearly, we notice that the CAGR is regressed over a period of time (i.e. 2008–13) implying that the investors could not make any exceptional returns if the investment held for such long period of time. This observation goes in line with the hypothesis that no investor could make abnormal returns in the long-run. Among the benchmark funds it is only in case of CNX Nifty that CAGR of returns was positive except during 2011–13. Even on five yearly CAGR basis this benchmark fund performed better than other benchmark funds and topped the list.

Apart from analyzing the returns on the basis of various frequencies, we also have computed some of the key statistical measures to understand the risk element in the returns. Some of such measures we have are Standard Deviation (S.D), beta co-efficient ( $\beta$ ), multiple 'R' and  $R^2$ . It may be noted that beta co-efficient,

multiple 'R' and  $R^2$  (Table 5) are arrived at by running regression analysis between fund's return and the return of the concerned benchmark fund for the years 2008–09 through 2012–12. The values are summarized in Table 6. As we observe, the beta co-efficient of the majority of the funds was more than 1 in the year 2012–13 indicating very high sensitivity of the funds return to that of benchmark. It is interesting to note that the beta of Sundaram Tax Saver fund was negative in the years 2008–09, 2009–10 and 2012–13 while no other fund had negative beta any time during the study period. Comparison of annual betas with the annual returns (in Table 3) indicates a bit contrasting observation. In the sense that the returns in the year 2009–10 were exceptionally high but the beta values (Table 6) of the same were not very high. This observation is true in case of almost all sample funds. This implies that the funds generated higher returns for lower risk when compared to the return-risk relationship in the rest of the years. However the standard deviation in the year 2009–10 was found to be higher in case of most of the funds. The performance of the majority of the funds was almost in line with that of the benchmark during all the years barring 2012–13. There is no fund with zero betas implying that the performance of every fund depended on market's performance. This is also supported by multiple 'R'. The values of multiple 'R' reveal that there existed very strong significant correlation between the return of the funds and that of benchmark. The values of 'R' across all the funds and all the years were very close to 1. This reveals very high dependency of funds performance on that of benchmark. Even the ' $R^2$ ' values of almost all the funds are found to be very close

to 1 during the study period. This also implies that the variability in the returns of the sample funds was largely explained by the market performance. This means that the explained portion of the total risk in the returns of the sample funds was very high, almost close to 1. This in turn implies that the fund managers seem to have diversified non-systematic to the fullest extent making their portfolios almost fully diversified in line with the market.

Having discussed the performance of the funds, in terms of only the return without adjusting it for the risk, we now move on to discussing the risk-adjusted performance of sample funds. As we mentioned earlier we discuss this measure-wise that we chose.

### 3.4 Sharpe Measure

As suggested by Sharpe, the yearly return of the fund has been adjusted to total risk measured in terms of standard deviation and the results are summarized in Table 6. Higher the Sharpe ratio, better is the performance of the fund and vice versa. The fund's performance is also ranked and mentioned next to Sharpe ratio for every fund during the study period. Like in the case of annual fund returns (in Table 3), the Sharpe Ratio of all the funds in 2008–09 and 2011–12 is found to be negative. This is of course obvious because the excess return of the fund over risk free return is adjusted to the standard deviation and the standard deviation can never be negative. This is in fact one of the serious limitations of Sharpe measure. Out of five years of the study period, almost all the funds have performed extremely well in the year 2009–10. This observation is same like

**Table 4.** Rolling returns (in %) of sample and index funds

Fund ↓	Year→	2 Year Rolling CAGR				3 Year Rolling CAGR			5 Year CAGR
		2008–10	2009–11	2010–12	2011–13	2008–11	2009–12	2010–13	2008–2013
DSPBR Tiger		4.47	33.65	-5.09	-5.84	2.88	17.27	-4.01	-0.70
DSPBR Top 100		13.68	39.61	4.24	0.25	12.77	24.03	3.71	7.59
UTI Dividend Yield		20.51	47.32	5.90	-0.88	19.00	28.01	4.46	10.61
UTI Equity		12.47	44.85	6.27	3.07	13.27	27.30	6.86	9.07
SBI Magnum Tax Gain		6.39	39.41	0.47	2.08	5.56	23.59	2.69	4.16
SBI Contra		10.50	36.92	-3.76	0.88	6.81	20.28	0.52	4.40
Reliance Equity Opp		19.67	62.50	8.23	7.36	18.05	39.11	9.82	13.66

*Continued*

Table 4 Continued

Fund ↓	Year→	2 Year Rolling CAGR				3 Year Rolling CAGR			5 Year CAGR
		2008–10	2009–11	2010–12	2011–13	2008–11	2009–12	2010–13	2008–2013
Reliance Regular Savings		14.48	50.13	-1.68	-1.08	11.54	27.20	1.18	6.31
Reliance Tax Saver		15.73	47.50	6.66	0.67	14.77	29.91	4.59	8.91
Reliance Vision Fund		10.63	42.14	0.39	-6.28	9.48	23.83	-1.98	2.88
Principal Large Cap		13.96	49.54	0.94	-1.34	13.12	26.91	2.76	7.10
Birla Advantage		7.77	44.35	-3.19	-3.35	6.55	23.31	-0.91	2.48
Birla Equity		8.84	44.94	-3.29	-1.38	6.75	24.14	-0.04	3.42
Birla Frontline Equity		14.48	47.94	1.42	2.83	13.26	26.64	5.44	8.97
HDFC Top 200		18.18	52.24	4.70	-0.94	17.70	29.58	4.64	9.86
IDFC Classic Equity		21.51	57.59	-3.01	0.79	15.47	30.85	1.94	9.36
Tata Equity Opp		5.68	43.56	-0.63	3.11	3.67	26.83	1.98	3.44
Sundaram Growth Fund		1.43	45.30	0.64	-3.31	3.89	25.19	0.63	0.95
Principal Growth		-2.14	34.29	-3.01	1.22	-0.96	18.70	1.29	-0.09
Principal Tax Savings		-9.73	35.03	-2.45	1.92	-6.06	19.49	1.85	-2.95
IDFC Premier Equity		21.00	55.44	6.15	8.32	15.94	36.76	7.69	12.83
Sundaram Select Midcap		15.45	60.97	4.29	3.08	13.11	37.43	4.88	8.99
DSPBR Equity		15.36	47.03	3.76	-2.08	14.31	27.52	2.48	7.45
DSPBR Opp		9.62	45.87	1.20	-1.32	10.80	24.40	3.29	5.78
DSPBR Tax Saver		11.35	46.73	0.51	1.57	10.28	26.21	3.72	6.71
Franklin India Prima		11.20	55.57	2.55	6.81	8.86	34.62	5.98	8.04
Franklin India Taxshield		13.20	47.62	6.88	3.64	13.43	29.77	6.96	9.41
HDFC Capital Builder		13.12	54.84	4.20	0.49	13.73	31.33	5.10	8.24
HDFC Equity		19.38	61.32	5.24	-2.17	19.55	33.96	4.69	10.34
HDFC Tax Saver		16.32	54.90	4.12	-1.64	15.28	31.95	3.09	8.19
Sundaram Equity Multiplier		5.75	38.29	-0.87	-2.06	5.11	21.86	-0.13	2.18
Principal Div Yield		9.18	46.94	4.94	-0.47	11.03	27.45	4.39	6.28
Birla Midcap		15.66	57.76	-1.03	1.06	9.80	35.07	0.35	6.21
DSPBR Small & Midcap		18.27	64.32	5.29	0.07	16.32	38.57	4.05	9.52
ICICI Discovery		28.06	70.09	5.68	6.13	22.30	42.55	7.91	15.56
ICICI Midcap		1.92	51.16	-2.79	-0.81	0.17	30.68	-1.62	-0.22
UTI Midcap		14.32	56.81	2.81	0.84	11.82	34.43	2.85	7.29
Sundaram Smile		16.08	51.41	-3.44	-4.40	10.02	29.32	-3.33	4.01
ICICI Dynamic		14.84	48.47	4.53	0.60	14.78	28.07	5.09	8.88
Sundaram Select Focus		3.51	37.30	-3.04	-3.14	4.31	18.72	-0.21	1.26
SBI Magnum Equity		9.70	46.57	3.64	2.69	10.03	27.75	5.29	7.03
Reliance Equity		5.35	23.12	-7.52	-0.76	1.76	10.93	-2.21	0.75
Franklin India Bluechip		14.92	46.66	4.77	1.41	14.20	27.93	5.06	8.90
HDFC Growth		9.49	50.69	7.09	-0.17	12.27	30.18	5.57	7.12
HDFC Long Term Adv		11.31	53.23	6.01	1.53	13.09	31.23	6.37	8.32
Tata PE Fund		15.34	50.42	2.90	-2.18	13.02	30.21	1.27	6.68
Tata Pure Equity		11.52	40.66	1.95	3.09	9.66	24.71	4.06	6.98
Tata Tax Saving		-3.01	30.56	-0.97	-3.47	1.11	15.01	0.79	-0.75
<b>Index Fund</b>									
BSE 100		5.89	42.92	-0.73	-1.52	6.77	22.85	1.73	3.37
BSE 200		6.31	44.42	-0.95	-1.93	6.92	23.69	1.32	3.29
BSE 500		5.67	45.28	-1.16	-2.40	6.27	24.26	0.79	2.71
BSE Midcap		2.81	52.48	-3.44	-5.47	2.20	29.00	-3.36	-0.94
CNX 500		5.71	41.99	-1.07	-2.05	6.22	22.53	0.96	2.83
CNX Midcap		10.69	53.61	0.04	-4.05	8.53	31.29	-1.33	3.31
CNX Nifty		5.28	38.96	0.44	-1.30	7.20	20.57	2.68	3.71
SENSEX		5.42	41.52	-0.35	-1.58	7.23	21.48	2.43	3.61

**Table 5.** Standard deviation, beta, multiple 'R' and 'R<sup>2</sup>' of sample and benchmark funds

Fund Name	2008-09					2009-10					2010-11					2011-12					2012-13				
	S.D	Beta	R	R <sup>2</sup>	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	
DSPBR Tiger	10.88%	0.94	0.96	0.91	0.91	22.49%	0.93	1.00	0.99	0.99	9.70%	1.21	0.94	0.88	0.88	15.41%	1.23	0.98	0.95	0.95	10.28%	1.75	0.98	0.98	0.96
DSPBR Top 100	9.03%	0.82	1.00	1.00	1.00	17.55%	0.72	0.99	0.97	0.97	7.04%	0.93	1.00	0.99	0.99	11.88%	0.97	1.00	1.00	1.00	7.11%	1.21	0.98	0.98	0.96
UTI Dividend Yield	7.88%	0.71	1.00	0.99	0.99	14.50%	0.57	0.95	0.91	0.91	7.66%	1.01	0.99	0.97	0.97	9.00%	0.72	0.97	0.95	0.95	5.86%	1.02	1.00	1.00	1.00
UTI Equity	9.61%	0.87	1.00	1.00	1.00	16.46%	0.63	0.92	0.84	0.84	7.54%	0.99	0.98	0.97	0.97	10.55%	0.86	1.00	1.00	1.00	6.24%	1.07	0.99	0.99	0.98
SBI Magnum Tax Gain	10.72%	0.96	0.99	0.98	0.98	21.06%	0.87	1.00	0.99	0.99	7.25%	0.93	0.96	0.93	0.93	11.84%	0.96	0.99	0.98	0.98	6.79%	1.17	0.99	0.99	0.98
SBI Contra	10.36%	0.93	0.99	0.97	0.97	21.84%	0.90	1.00	0.99	0.99	7.89%	1.02	0.97	0.94	0.94	13.63%	1.11	0.99	0.99	0.99	6.18%	1.03	0.96	0.93	0.93
Reliance Equity Opp	7.68%	0.69	0.99	0.99	0.99	19.14%	0.77	0.98	0.95	0.95	10.60%	1.38	0.98	0.96	0.96	14.39%	1.15	0.98	0.96	0.96	7.88%	1.34	0.98	0.98	0.96
Reliance Growth	8.33%	0.71	0.94	0.88	0.88	24.44%	1.01	1.00	1.00	1.00	8.29%	1.05	0.95	0.90	0.90	13.93%	1.12	0.98	0.96	0.96	10.26%	1.76	0.98	0.98	0.97
Reliance Regular Savings	10.34%	0.93	0.99	0.98	0.98	25.29%	1.05	1.00	1.00	1.00	8.91%	1.16	0.98	0.96	0.96	14.51%	1.17	0.99	0.98	0.98	11.60%	1.99	0.99	0.99	0.98
Reliance Tax Saver	8.10%	0.70	0.95	0.91	0.91	18.74%	0.77	0.99	0.99	0.99	10.39%	1.29	0.93	0.87	0.87	17.30%	1.37	0.97	0.94	0.94	10.18%	1.73	0.98	0.98	0.95
Reliance Vision Fund	8.09%	0.68	0.93	0.86	0.86	20.80%	0.85	0.99	0.98	0.98	8.65%	1.09	0.94	0.89	0.89	16.41%	1.32	0.98	0.97	0.97	7.91%	1.33	0.97	0.94	0.94
Principal Large Cap	13.65%	1.20	0.97	0.95	0.95	21.33%	0.88	0.99	0.98	0.98	7.40%	0.93	0.94	0.88	0.88	12.18%	1.00	1.00	1.00	1.00	7.44%	1.27	0.98	0.98	0.96
Birla Advantage	8.21%	0.73	0.96	0.93	0.93	30.94%	1.24	0.99	0.98	0.98	9.11%	1.17	0.99	0.99	0.99	11.10%	0.85	0.99	0.98	0.98	8.57%	1.40	0.99	0.99	0.99
Birla Equity	7.36%	0.65	0.96	0.93	0.93	27.24%	1.09	0.99	0.98	0.98	9.83%	1.27	1.00	1.00	1.00	12.68%	0.98	0.99	0.98	0.98	8.45%	1.39	1.00	1.00	1.00
Birla Frontline Equity	8.47%	0.76	0.97	0.95	0.95	24.80%	0.99	0.99	0.99	0.99	7.89%	1.01	1.00	0.99	0.99	10.86%	0.84	1.00	1.00	1.00	6.63%	1.09	1.00	1.00	1.00
HDFC Top 200	11.38%	1.01	0.96	0.93	0.93	24.51%	0.99	1.00	1.00	1.00	8.73%	1.11	0.99	0.98	0.98	13.31%	1.03	1.00	1.00	1.00	6.54%	1.07	0.99	0.99	0.99
IDFC Classic Equity	7.86%	0.70	0.97	0.94	0.94	30.82%	0.69	0.55	0.31	0.31	8.53%	1.10	1.00	1.00	1.00	11.15%	0.86	1.00	0.99	0.99	7.96%	1.30	0.99	0.98	0.98
Tata Equity Opp	10.10%	0.89	0.96	0.93	0.93	19.73%	0.77	0.97	0.94	0.94	7.28%	0.94	1.00	1.00	1.00	13.16%	1.01	0.99	0.98	0.98	5.53%	0.91	0.99	0.99	0.99
Sundaram Growth Fund	10.59%	0.82	0.84	0.71	0.71	25.20%	1.01	0.99	0.98	0.98	11.88%	1.53	1.00	1.00	1.00	12.45%	0.96	1.00	0.99	0.99	9.69%	1.59	1.00	0.99	0.99
Sundaram Tax Saver	15.14%	-0.40	-0.29	0.08	0.08	16.28%	-0.05	-0.07	0.01	0.01	10.79%	0.71	0.51	0.26	0.26	5.33%	0.08	0.19	0.04	0.04	2.69%	-0.01	-0.02	0.00	0.00
Principal Growth	13.09%	1.15	0.96	0.92	0.92	17.89%	0.71	0.99	0.98	0.98	8.09%	1.00	0.96	0.93	0.93	15.01%	1.16	1.00	0.99	0.99	8.92%	1.45	0.99	0.97	0.97
Principal Tax Savings	10.17%	0.91	0.97	0.94	0.94	17.84%	0.71	0.99	0.98	0.98	8.50%	1.07	0.97	0.95	0.95	14.82%	1.14	1.00	0.99	0.99	8.93%	1.45	0.99	0.98	0.98
IDFC Premier Equity	8.74%	0.76	0.96	0.91	0.91	19.61%	0.78	1.00	0.99	0.99	11.79%	1.47	1.00	0.99	0.99	10.90%	0.74	0.89	0.79	0.79	8.73%	1.33	0.99	0.97	0.97
Sundaram Select Midcap	8.65%	0.77	0.96	0.92	0.92	31.85%	0.99	1.00	0.99	0.99	11.00%	1.02	1.00	0.99	0.99	13.24%	0.74	0.98	0.96	0.96	11.12%	1.00	0.91	0.82	0.82
DSPBR Equity	8.80%	0.75	0.98	0.96	0.96	18.96%	0.81	0.99	0.98	0.98	8.79%	1.17	0.98	0.96	0.96	13.56%	1.01	0.99	0.98	0.98	9.17%	1.40	1.00	0.99	0.99
DSPBR Opp	9.77%	0.85	1.00	1.00	1.00	19.51%	0.84	0.99	0.99	0.99	9.89%	1.31	0.97	0.95	0.95	10.04%	0.74	0.99	0.97	0.97	8.42%	1.28	0.99	0.97	0.97
DSPBR Tax Saver	7.76%	0.63	0.93	0.87	0.87	20.09%	0.87	1.00	0.99	0.99	8.96%	1.19	0.98	0.95	0.95	12.76%	0.96	1.00	1.00	1.00	8.01%	1.22	0.99	0.98	0.98
Franklin India Prima	10.33%	0.87	0.96	0.93	0.93	24.03%	1.04	1.00	1.00	1.00	9.68%	1.31	0.99	0.98	0.98	12.48%	0.93	0.99	0.98	0.98	9.82%	1.48	0.98	0.97	0.97
Franklin India Taxshield	9.97%	0.85	0.97	0.94	0.94	19.03%	0.82	0.99	0.98	0.98	7.49%	0.99	0.97	0.94	0.94	9.81%	0.73	0.99	0.99	0.99	6.12%	0.94	1.00	0.99	0.99
HDFC Capital Builder	10.83%	0.92	0.97	0.95	0.95	20.11%	0.87	1.00	0.99	0.99	8.44%	1.13	0.99	0.97	0.97	12.26%	0.92	1.00	0.99	0.99	4.97%	0.72	0.94	0.89	0.89

Continued

Table 5 Continued

Fund Name	2008-09				2009-10				2010-11				2011-12				2012-13			
	S.D	Beta	R	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>	S.D	Beta	R	R <sup>2</sup>
HDFC Tax Saver	13.80%	1.13	0.93	0.87	21.45%	0.92	1.00	0.99	9.16%	1.23	0.98	0.97	12.04%	0.90	0.99	0.98	6.88%	1.05	0.99	0.98
Sundaram Equity Multiplier	6.28%	0.45	0.82	0.68	21.70%	0.93	0.99	0.98	7.26%	0.98	1.00	0.99	12.06%	0.87	0.96	0.91	11.05%	1.69	0.99	0.99
Principal Div Yield	7.80%	0.57	0.84	0.71	17.78%	0.76	0.99	0.99	9.01%	1.19	0.97	0.93	15.53%	1.16	0.99	0.98	9.11%	1.36	0.97	0.95
Birla Midcap	6.74%	0.86	0.99	0.98	33.73%	1.36	0.99	0.99	9.38%	0.93	0.96	0.92	13.75%	0.75	1.00	0.99	8.76%	0.85	0.98	0.98
DSPB Small & Midcap	7.74%	0.96	0.96	0.92	24.40%	0.98	1.00	1.00	10.84%	1.11	0.99	0.98	16.15%	0.87	0.98	0.96	12.31%	1.20	0.99	0.97
ICICI Discovery	17.56%	1.82	0.80	0.65	26.98%	1.07	0.98	0.97	7.91%	0.81	0.99	0.97	15.48%	0.84	0.99	0.97	6.83%	0.67	0.99	0.97
ICICI Midcap	10.24%	1.21	0.92	0.85	22.75%	0.92	1.00	1.00	10.47%	1.08	1.00	0.99	18.75%	1.02	0.99	0.99	7.54%	0.73	0.98	0.96
UTI Midcap	8.93%	1.08	0.94	0.89	23.43%	0.93	0.98	0.95	9.39%	0.96	0.99	0.98	14.27%	0.76	0.97	0.94	10.42%	1.00	0.97	0.94
Sundaram Smile	8.76%	1.10	0.98	0.95	31.12%	1.25	0.99	0.98	11.46%	1.18	1.00	1.00	16.43%	0.89	0.99	0.97	11.32%	0.43	0.38	0.15
ICICI Dynamic	7.87%	0.64	0.97	0.94	16.10%	0.83	0.99	0.98	4.57%	0.57	0.95	0.91	12.50%	1.07	1.00	0.99	4.70%	0.88	0.95	0.90
Sundaram Select Focus	5.04%	0.38	0.91	0.82	19.87%	1.03	1.00	0.99	9.60%	1.24	0.99	0.99	6.95%	0.59	0.99	0.98	7.31%	1.42	0.98	0.97
SBI Magnum Equity	10.13%	0.84	0.99	0.99	22.82%	1.17	0.99	0.97	6.99%	0.85	0.94	0.87	11.42%	0.98	1.00	0.99	4.62%	0.89	0.97	0.95
Reliance Equity	7.47%	0.55	0.88	0.78	19.04%	0.99	1.00	1.00	5.04%	0.59	0.90	0.80	14.80%	1.26	0.99	0.98	8.40%	1.65	0.99	0.99
Franklin India Bluechip	11.76%	1.00	0.96	0.93	20.45%	0.89	0.99	0.98	7.80%	1.00	1.00	0.99	10.14%	0.93	0.98	0.97	5.66%	1.17	0.95	0.90
HDFC Growth	10.84%	0.82	0.86	0.74	20.55%	0.90	1.00	1.00	9.11%	1.02	0.87	0.76	11.79%	1.08	0.98	0.96	6.33%	1.38	1.00	0.99
HDFC Long Term Adv	10.36%	0.88	0.96	0.93	22.50%	0.99	1.00	1.00	9.23%	1.14	0.96	0.91	12.78%	1.17	0.98	0.96	4.72%	1.00	0.97	0.94
Tata PE Fund	8.11%	0.67	0.94	0.88	20.44%	0.87	0.96	0.93	7.08%	0.85	0.93	0.87	13.56%	1.24	0.98	0.97	8.64%	1.85	0.98	0.96
Tata Pure Equity	6.46%	0.57	1.00	1.00	18.37%	0.80	0.99	0.99	9.33%	1.13	0.94	0.87	9.72%	0.89	0.98	0.96	5.34%	1.15	0.99	0.98
Tata Tax Saving	10.15%	0.89	0.99	0.98	23.60%	0.99	0.95	0.91	6.90%	0.87	0.98	0.96	8.52%	0.70	0.88	0.78	5.58%	1.21	0.99	0.98
Index Fund																				
BSE 100	11.04%				24.13%				7.50%				12.23%				5.76%			
BSE 200	10.88%				24.78%				7.77%				12.90%				6.07%			
BSE 500	10.94%				25.07%				7.98%				13.15%				6.47%			
BSE Midcap	10.81%				32.11%				10.78%				17.59%				10.13%			
CNX 500	11.42%				23.12%				7.34%				13.31%				6.51%			
CNX Midcap	7.77%				24.73%				9.67%				18.24%				10.08%			
CNX Nifty	11.96%				19.14%				7.69%				11.60%				5.06%			
SENSEX	11.36%				22.70%				7.73%				10.73%				4.59%			



**Table 6.** Risk-adjusted performance and rank of sample funds according to Sharpe Ratio (S.R)

Fund ↓	Year →	2008-09		2009-10		2010-11		2011-12		2012-13	
Fund Name		S.R	Rank	S.R	Rank	S.R	Rank	S.R	Rank	S.R	Rank
Birla Advantage		-5.97	42	3.10	48	-0.23	36	-1.66	46	-0.01	35
Birla Equity		-6.68	47	3.68	44	-0.36	40	-1.36	42	0.02	20
Birla Frontline Equity		-4.81	25	3.76	42	0.59	21	-1.43	44	0.08	6
Birla Midcap		-8.01	49	4.37	25	-0.78	45	-0.68	10	0.05	14
DSPBR Equity		-4.32	17	4.66	19	0.69	16	-0.92	18	-0.04	41
DSPBR Opp		-4.42	21	4.29	29	0.70	15	-1.78	47	0.03	15
DSPBR Small & Midcap		-6.31	46	5.56	6	0.58	22	-0.61	7	0.08	5
DSPBR Tax Saver		-5.78	39	4.72	17	0.22	26	-1.17	37	0.06	11
DSPBR Tiger		-4.24	16	3.33	47	-0.67	44	-1.17	36	-0.08	48
DSPBR Top 100		-3.71	7	4.07	36	0.68	17	-0.88	17	-0.04	39
Franklin India Bluechip		-3.22	5	4.23	31	0.84	11	-1.09	32	-0.03	37
Franklin India Prima		-5.21	30	5.32	9	-0.20	34	-0.61	6	0.10	3
Franklin India Taxshield		-4.03	11	4.58	20	1.03	9	-0.82	14	0.02	18
HDFC Capital Builder		-4.23	15	5.19	12	1.03	8	-1.13	33	0.01	25
HDFC Equity		-3.77	9	4.48	23	1.43	2	-1.08	30	-0.01	33
HDFC Growth		-4.13	14	4.29	30	1.30	3	-0.95	21	-0.06	46
HDFC Long Term Adv		-4.39	19	4.31	27	1.14	7	-0.95	19	-0.01	30
HDFC Tax Saver		-3.14	4	5.02	14	0.77	13	-1.05	28	-0.04	40
HDFC Top 200		-3.23	6	3.85	40	1.21	5	-1.09	31	-0.01	34
ICICI Discovery		-2.50	2	5.75	4	0.67	18	-0.53	4	0.12	2
ICICI Dynamic		-4.90	27	5.47	7	1.85	1	-1.05	27	-0.01	31
ICICI Midcap		-6.17	44	5.80	3	-0.90	48	-0.57	5	0.02	21
IDFC Classic Equity		-5.74	38	4.35	26	-0.23	37	-1.63	45	0.07	7
IDFC Premier Equity		-4.88	26	6.26	2	0.02	30	-0.23	1	0.07	8
Principal Div Yield		-5.60	36	4.71	18	0.96	10	-0.80	13	-0.01	29
Principal Growth		-4.07	13	4.11	34	-0.59	42	-1.04	26	0.05	13
Principal Large Cap		-3.11	3	4.52	21	0.71	14	-1.39	43	0.00	28
Principal Tax Savings		-6.06	43	4.20	33	-0.53	41	-1.00	24	0.06	12
Reliance Equity		-5.03	28	2.91	49	-2.23	50	-1.24	39	0.03	17
Reliance Equity Opp		-5.84	40	6.56	1	0.82	12	-0.45	3	0.07	10
Reliance Growth		-5.37	34	4.41	24	-0.20	35	-1.00	25	-0.04	43
Reliance Regular Savings		-4.41	20	4.30	28	-0.04	33	-1.18	38	0.02	19
Reliance Tax Saver		-4.65	24	4.72	16	0.64	19	-0.44	2	-0.05	45
Reliance Vision Fund		-5.21	31	4.05	37	0.12	28	-0.88	16	-0.13	50
SBI Contra		-4.07	12	3.83	41	-0.82	46	-1.14	35	0.03	16
SBI Magnum Equity		-4.45	22	3.94	38	0.64	20	-0.99	23	0.01	23
SBI Magnum Tax Gain		-4.35	18	3.93	39	-0.32	38	-0.95	20	0.01	26
Sundaram Equity Multiplier		-7.39	48	3.68	45	-0.33	39	-1.14	34	-0.02	36
Sundaram Growth Fund		-5.10	29	3.55	46	0.23	25	-1.24	40	-0.04	42
Sundaram Select Focus		-9.30	50	3.71	43	-0.03	32	-2.82	49	-0.01	32
Sundaram Select Midcap		-5.93	41	4.22	32	0.21	27	-0.62	8	0.09	4
Sundaram Smile		-5.60	35	4.10	35	-0.64	43	-0.85	15	-0.06	47
Sundaram Tax Saver		-2.22	1	5.25	10	-0.90	49	-3.21	50	0.14	1
Tata Equity Opp		-5.25	32	5.19	11	-0.89	47	-0.71	11	0.01	24
Tata PE Fund		-5.34	33	5.10	13	0.33	24	-0.80	12	-0.10	49
Tata Pure Equity		-6.27	45	4.49	22	-0.02	31	-1.06	29	0.00	27
Tata Tax Saving		-4.58	23	2.16	50	0.53	23	-2.25	48	-0.04	38
UTI Dividend Yield		-3.74	8	5.71	5	1.28	4	-1.30	41	-0.05	44
UTI Equity		-3.94	10	4.76	15	1.15	6	-0.95	22	0.01	22
UTI Midcap		-5.63	37	5.36	8	0.08	29	-0.67	9	0.07	9

that of quarterly, half yearly and yearly performance even without risk consideration. While there is no fund that maintained consistent Sharpe ratio and rank, a few funds have exhibited such behavior. For instance, ICICI Discovery fund maintained consistent rank 2, rank 4, rank 18 (an exception), rank 4 and rank 2 during five years respectively. If we recollect our discussions earlier, we observe that this fund has been found to have performed consistently. Followed by this DSPBR Equity fund also maintained such kind of consistency with an exception in the last year. The performance of a few funds (like that of ICICI Midcap) showed the improvement and decline year on year basis. Thus the values in Table 6 reveal that the performance of a given fund according to Sharpe measure varied over the years. Most of the funds performed better in some years and bad in other years. Also this is evidenced by the rank in every year. Having run ANOVA to test  $H_{0_2}$ , we find observed 'p' value (0.00) being less than critical 'p' value (0.05) and therefore reject the hypothesis and conclude that the performance of sample funds, according to Sharpe measure varied during the years 2008–09 through 2012–13. This implies that the time factor played a role in the performance of a fund.

### 3.5 Treynor Ratio

While Treynor also considers excess return of the fund to measure its performance, unlike Sharpe, he considers adjusting such excess return to systematic risk only. Treynor ratio and the rank accordingly of the sample funds have been captured in Table 7. Treynor ratio of all the funds in the years 2008–09 and 2011–12 tended to be negative implying negative performance even according to this measure. ICICI Discovery fund, like in case of Sharpe measure, sustained the consistency in its performance. In fact it ranked excellent throughout the period. Sundaram Tax Saver fund performed very badly in all the years with an exception in the first year. It ranked as the top fund in the first year but as the last fund in the rest of the years. Reliance Equity Opportunity fund also has done very well throughout, again, with an exception in the first year. Thus Treynor ratios in Table 7 reveal mixed performance of the funds during the observed period. In order to find out if the performance of the funds according to Treynor measure varied over the years, we have tested  $H_{0_3}$ . As the

calculated 'p' value (0.00) is less than the critical 'p' value (0.05) we reject  $H_{0_3}$  and conclude that the performance of the sample funds varied over the years 2008–09 through 2012–13. This implies that the time factor played a role performance of the funds even in case of Treynor ratio.

### 3.6 Jensen's Alpha

While Sharpe and Treynor adjust the excess return to total risk and systematic risk respectively, Jensen considers abnormal return (excess of realized return over CAPM based expected return) known as alpha. Higher the alpha value better is the performance of the fund and vice versa. The negative alphas indicate under performance of the fund when compared to the expected return. The alpha values of the sample funds have been depicted in Table 8. Similar to Sharpe ratio and Treynor ratio, alpha value of most of the funds in the year 2008–09 are found to be negative indicating that the funds in this year under performed when compared to their systematic risk-adjusted expected return. ICICI Discovery fund again posted positive alphas in all the years varying ranking. The performance of UTI Dividend Yield was among the top ten funds during the first three years but dropped drastically in the last two years. It is found that UTI Equity fund also has performed consistently during the first three years but slightly lower in the last two years. When compared to the rest of the funds, this fund has done better on an aggregate basis. The alpha values and ranks in Table 8 reveal that performance of the most of the sample funds varied over the years. This observation is also proven through hypothesis testing. As the observed 'p' value (0.00) with regard to  $H_{0_4}$ , is less than the critical 'p' value we reject  $H_{0_4}$  and conclude that the performance of the sample funds according to Jensen's alpha varied over the years 2008–09 through 2012–13. This in turn implies that the time factor played a role in the performance, as measured by Jensen's alpha, of sample funds. Thus, even according to Jensen's alpha the performance of the most of the funds was not consistent.

### 3.7 Information Ratio

Information ratio indicates fund manager's ability to beat the benchmark. This is computed by dividing the

excess return of fund (over that of benchmark) by the tracking error (standard deviation of the excess returns of fund over the benchmark return). Higher the ratio, better is the fund manager's performance and vice versa. The information ratios of sample funds are summarized in Table 9. Unlike the performance according to Sharpe, Treynor and Jensen, the performance of the most of the funds according to this ratio is positive in the years 2008–09. The ratio of four funds, DSPBR Top 100, UTI Dividend Yield, UTI Equity and Tata Pure Equity was very high in this year. This implies that these funds have performed extremely well in the first year while the same did not according other measures that we discussed so far. Interestingly the performance of ICICI Discovery fund was lower than that of many other funds where as it maintained its top position according other measures. Even in the rest of the years this fund could maintain its position and the rank. This example proves that the performance of the fund depends primarily on the selection of the measure. Thus a fund being the best according to one measure may not be, if not the worst, according another measure. The performance of many funds like that of Tata Pure Equity, UTI Dividend Yield, DSPBR Top 100 and Birla Frontline Equity, a few to quote, has been found to be very volatile over the period. A closer look into the ratios and the ranks reveals that there was no any fund that performed consistently during the years. This observation is contrasting with that of according to Sharpe, Treynor and Jensen measures. We also observe that the variance in the performance and ranking of the funds over five years is higher than that of Sharpe, Treynor and Jensen. This observation is also proved by hypothesis testing. As the observed 'p' value (0.00) with respect to  $H_{0_5}$ , is less than critical 'p' value (0.05) we reject  $H_{0_5}$  and conclude that the performance of sample funds varied over the years 2008–09 through 2012–13. This implies that the time factor played in the performance of the funds according to information ratio.

### 3.8 Modigliani Squared ( $M^2$ )

$M^2$  attempts to test the performance in terms of the possible diversification of non-systematic risk in the portfolio. For this purpose, the original portfolio will be adjusted to such possible diversification and

therefore return of adjusted portfolio is taken into consideration. The adjusted portfolio return is then compared with the concerned benchmark portfolio return. Higher is the excess of adjusted portfolio return over the benchmark portfolio return better is the performance of the fund manager and vice versa. The increasing difference indicates the fund manager's ability to outperform the benchmark return. The  $M^2$  values of the sample funds over the years are mentioned in Table 10. Like in the case of Sharpe and Treynor measures,  $M^2$  values of all the funds in the years 2008–09 and 2011–12 were negative indicating that all the sample funds underperformed the benchmark portfolio concerned. The funds however, have outperformed the benchmark in the rest of the years. If we again focus our attention on ICICI Discovery fund, we observe that his fund performed better in many years. As we observe, its rank is 1, 4, 11, 7 and 2 during five years respectively. This is quite good when we compare with other funds. Of course the performance of the majority of the funds has been found to be inconsistent over the years. To quote a few, we find this kind of scenario in case of UTI Dividend Yield fund, Sundaram Tax Saver fund, SBI Contra fund, Principal Large Cap fund and a few more which could be traced out from Table 10. Barring a few cases as discussed above, the outperforming ability of the most of the fund managers varied over the period as it has been indicated by ranks. This is also proved through hypothesis testing. As the observed 'p' value (0.00), with respect to  $H_{0_6}$ , is less than the critical 'p' value (0.05) we reject  $H_{0_6}$  and conclude that the performance of sample funds, according to  $M^2$ , varied over the years 2008–09 through 2012–13. This again implies that the time factor played a role in the performance of sample funds according to  $M^2$ .

### 3.9 Net Selectivity

The net selectivity indicates the fund manager's ability to justify the loss of diversification. This measure also indicates as to how much return comes from stock selection the credit of which goes to the fund manager. Higher the net selectivity greater is the stock selection ability of the manager and vice versa. The returns that are due to stock selection ability of sample fund managers are summarized in Table 11. Surprisingly the

**Table 7.** Risk-adjusted performance and rank of sample funds according to Treynor Ratio (T.R)

Fund Name	2008-09		2009-10		2010-11		2011-12		2012-13	
	T.R	Rank	T.R	Rank	T.R	Rank	T.R	Rank	T.R	Rank
Birla Advantage	-0.675	42	0.775	45	-0.018	37	-0.215	46	-0.031	28
Birla Equity	-0.755	47	0.924	41	-0.028	40	-0.177	43	-0.010	19
Birla Frontline Equity	-0.537	27	0.937	39	0.046	22	-0.185	44	0.053	2
Birla Midcap	-0.629	35	1.086	21	-0.078	47	-0.125	24	-0.059	44
DSPBR Equity	-0.505	20	1.091	20	0.051	20	-0.124	23	-0.059	43
DSPBR Opp	-0.506	21	1.000	31	0.053	17	-0.241	47	-0.004	15
DSPBR Small & Midcap	-0.511	22	1.379	7	0.057	15	-0.114	16	-0.054	40
DSPBR Tax Saver	-0.707	45	1.094	19	0.016	27	-0.156	37	0.019	8
DSPBR Tiger	-0.490	17	0.807	44	-0.053	43	-0.147	35	-0.057	42
DSPBR Top 100	-0.410	7	0.994	32	0.051	21	-0.108	11	-0.046	37
Franklin India Bluechip	-0.380	5	0.972	36	0.065	12	-0.119	21	-0.021	26
Franklin India Prima	-0.617	33	1.231	12	-0.014	34	-0.082	4	0.034	5
Franklin India Taxshield	-0.475	15	1.068	22	0.078	8	-0.110	14	-0.011	21
HDFC Capital Builder	-0.496	19	1.205	13	0.077	9	-0.151	36	-0.018	24
HDFC Equity	-0.458	12	1.035	27	0.107	3	-0.144	32	-0.043	35
HDFC Growth	-0.544	29	0.976	35	0.115	2	-0.104	9	-0.041	34
HDFC Long Term Adv	-0.518	23	0.979	34	0.092	6	-0.104	8	-0.011	20
HDFC Tax Saver	-0.383	6	1.166	15	0.057	14	-0.141	31	-0.068	46
HDFC Top 200	-0.364	4	0.953	37	0.095	5	-0.141	30	-0.034	30
ICICI Discovery	-0.242	2	1.447	4	0.066	11	-0.099	7	0.065	1
ICICI Dynamic	-0.604	32	1.055	24	0.149	1	-0.122	22	-0.022	27
ICICI Midcap	-0.520	24	1.437	6	-0.088	48	-0.105	10	-0.101	47
IDFC Classic Equity	-0.645	37	1.950	1	-0.018	36	-0.211	45	0.034	4
IDFC Premier Equity	-0.558	30	1.575	3	0.002	30	-0.034	1	0.020	6
Principal Div Yield	-0.761	48	1.096	18	0.073	10	-0.108	12	-0.036	31
Principal Growth	-0.462	13	1.029	28	-0.048	42	-0.135	28	0.016	9
Principal Large Cap	-0.352	3	1.101	17	0.056	16	-0.170	42	-0.013	22
Principal Tax Savings	-0.680	43	1.051	25	-0.042	41	-0.129	27	0.020	7
Reliance Equity	-0.683	44	0.558	48	-0.192	50	-0.145	33	0.007	11
Reliance Equity Opp	-0.648	39	1.623	2	0.063	13	-0.056	3	0.037	3
Reliance Growth	-0.633	36	1.067	23	-0.015	35	-0.125	25	-0.038	32
Reliance Regular Savings	-0.490	18	1.039	26	-0.003	33	-0.145	34	-0.005	16
Reliance Tax Saver	-0.538	28	1.148	16	0.051	19	-0.055	2	-0.044	36
Reliance Vision Fund	-0.621	34	0.986	33	0.009	28	-0.109	13	-0.111	48
SBI Contra	-0.455	11	0.927	40	-0.063	45	-0.140	29	0.014	10
SBI Magnum Equity	-0.536	26	0.765	46	0.053	18	-0.116	17	0.006	12
SBI Magnum Tax Gain	-0.485	16	0.952	38	-0.025	39	-0.117	20	-0.008	17
Sundaram Equity Multiplier	-1.025	49	0.860	43	-0.024	38	-0.159	39	-0.040	33
Sundaram Growth Fund	-0.658	40	0.887	42	0.018	26	-0.160	40	-0.048	38
Sundaram Select Focus	-1.228	50	0.714	47	-0.002	32	-0.331	49	-0.017	23
Sundaram Select Midcap	-0.667	41	1.361	8	0.023	25	-0.111	15	-0.021	25
Sundaram Smile	-0.446	10	1.023	30	-0.062	44	-0.158	38	-0.264	49
Sundaram Tax Saver	0.846	1	-17.693	50	-0.138	49	-2.153	50	-14.541	50
Tata Equity Opp	-0.593	31	1.329	10	-0.069	46	-0.093	6	-0.009	18
Tata PE Fund	-0.647	38	1.203	14	0.027	24	-0.087	5	-0.055	41
Tata Pure Equity	-0.713	46	1.024	29	-0.002	31	-0.117	18	0.002	13
Tata Tax Saving	-0.525	25	0.514	49	0.042	23	-0.273	48	-0.031	29
UTI Dividend Yield	-0.415	8	1.444	5	0.097	4	-0.163	41	-0.064	45
UTI Equity	-0.435	9	1.254	11	0.087	7	-0.117	19	-0.001	14
UTI Midcap	-0.464	14	1.358	9	0.008	29	-0.126	26	-0.052	39

**Table 8.** Risk-adjusted performance and rank of sample funds according to Jensen's Alpha (J.A)

Fund Name	2008-09		2009-10		2010-11		2011-12		2012-13	
	J.A	Rank	J.A	Rank	J.A	Rank	J.A	Rank	J.A	Rank
Birla Advantage	-13.81	41	-13.78	47	-4.32	36	-3.31	46	-1.36	35
Birla Equity	-17.59	46	4.06	41	-5.96	41	-0.08	41	1.61	20
Birla Frontline Equity	-3.90	23	5.06	40	2.68	20	-0.75	43	8.12	6
Birla Midcap	-8.56	30	-18.02	48	-5.54	40	-0.01	40	5.33	14
DSPBR Equity	-2.09	21	20.55	22	4.80	17	4.77	21	-3.94	41
DSPBR Opp	-2.52	22	13.61	29	5.60	14	-5.16	47	3.33	15
DSPBR Small & Midcap	1.74	13	15.76	28	8.37	3	0.96	37	8.12	5
DSPBR Tax Saver	-14.59	43	22.27	17	0.71	24	1.41	35	6.00	11
DSPBR Tiger	-1.35	18	-3.03	45	-9.28	48	3.55	28	-7.65	48
DSPBR Top 100	5.32	8	11.12	33	2.59	21	6.60	11	-3.92	39
Franklin India Bluechip	7.58	6	18.57	27	1.81	23	6.49	12	-2.57	37
Franklin India Prima	-12.22	38	40.84	5	-3.25	32	8.29	9	9.52	3
Franklin India Taxshield	0.19	16	18.81	26	6.66	10	4.44	22	1.79	18
HDFC Capital Builder	-1.77	20	31.85	9	7.54	5	1.81	33	0.92	25
HDFC Equity	1.73	14	21.58	18	12.34	1	3.05	29	-1.32	33
HDFC Growth	-7.30	29	19.21	25	6.99	8	9.13	6	-5.66	46
HDFC Long Term Adv	-5.48	27	21.40	19	5.15	16	9.94	5	-1.12	30
HDFC Tax Saver	10.55	4	30.38	10	5.74	12	2.72	30	-3.93	40
HDFC Top 200	12.19	3	6.62	39	8.40	2	3.71	25	-1.35	34
ICICI Discovery	52.25	1	24.43	13	6.84	9	2.18	31	12.47	2
ICICI Dynamic	-10.91	34	30.04	11	5.67	13	5.79	15	-1.20	31
ICICI Midcap	1.19	15	20.02	23	-7.44	45	2.02	32	1.54	21
IDFC Classic Equity	-11.17	36	73.07	2	-4.06	34	-2.93	44	7.22	7
IDFC Premier Equity	-4.24	25	50.92	4	-1.63	29	10.34	4	7.13	8
Principal Div Yield	-16.32	45	19.79	24	7.39	7	7.31	10	-0.71	29
Principal Growth	2.70	11	10.22	34	-6.71	44	4.85	20	5.40	13
Principal Large Cap	14.89	2	22.92	16	3.07	19	0.56	39	0.01	28
Principal Tax Savings	-17.66	47	11.74	32	-6.56	43	5.39	18	5.97	12
Reliance Equity	-13.75	40	-13.65	46	-14.15	50	3.95	24	2.61	17
Reliance Equity Opp	-11.96	37	60.67	3	5.45	15	13.85	2	6.68	10
Reliance Growth	-11.14	35	22.98	15	-4.08	35	5.72	16	-4.38	43
Reliance Regular Savings	-1.37	19	20.87	21	-3.07	31	3.61	27	1.65	19
Reliance Tax Saver	-4.40	26	23.77	14	3.64	18	16.53	1	-5.31	45
Reliance Vision Fund	-9.87	33	12.50	31	-1.54	28	8.87	7	-12.96	50
SBI Contra	1.88	12	7.93	38	-8.81	47	3.96	23	2.85	16
SBI Magnum Equity	-8.62	31	8.20	37	0.28	25	5.92	14	1.26	23
SBI Magnum Tax Gain	-0.92	17	9.83	36	-4.46	37	5.67	17	0.67	26
Sundaram Equity Multiplier	-24.82	48	2.09	42	-3.39	33	1.08	36	-1.65	36
Sundaram Growth Fund	-14.20	42	0.06	44	-0.17	26	1.55	34	-4.16	42
Sundaram Select Focus	-30.36	49	1.93	43	-6.40	42	-9.18	49	-1.24	32
Sundaram Select Midcap	-4.24	24	9.95	35	7.66	4	3.66	26	9.25	4
Sundaram Smile	9.22	5	-24.44	49	-5.17	38	-2.97	45	-6.07	47
Sundaram Tax Saver	-52.92	50	89.72	1	-11.11	49	-15.71	50	14.00	1
Tata Equity Opp	-9.66	32	34.08	8	-8.27	46	8.42	8	1.16	24
Tata PE Fund	-12.81	39	38.15	6	-1.72	30	12.67	3	-10.18	49
Tata Pure Equity	-14.59	44	21.00	20	-5.52	39	6.39	13	0.19	27
Tata Tax Saving	-6.14	28	-24.70	50	-0.43	27	-5.91	48	-3.83	38
UTI Dividend Yield	4.30	9	34.67	7	7.46	6	0.91	38	-5.18	44
UTI Equity	3.48	10	25.93	12	6.34	11	5.09	19	1.32	22
UTI Midcap	7.13	7	12.83	30	2.57	22	-0.14	42	6.98	9

**Table 9.** Risk-adjusted performance and rank of sample funds according to Information Ratio

Fund	2008-09		2009-10		2010-11		2011-12		2012-13	
	I.R	Rank	I.R	Rank	I.R	Rank	I.R	Rank	I.R	Rank
Birla Advantage	-0.25	39	1.72	29	-3.95	41	-0.50	47	-2.51	37
Birla Equity	-0.35	40	2.79	24	-24.18	48	0.22	41	2.23	16
Birla Frontline Equity	4.11	8	1.70	30	3.78	9	2.75	22	16.96	1
Birla Midcap	-0.99	43	7.11	15	-2.05	35	2.88	20	3.74	9
DSPBR Equity	5.32	6	1.59	31	2.83	14	2.19	26	-5.70	45
DSPBR Opp	6.61	5	0.02	38	2.63	16	-0.45	46	1.80	20
DSPBR Small & Midcap	1.87	18	8.72	13	5.97	4	0.78	39	2.69	15
DSPBR Tax Saver	1.02	26	7.34	14	0.46	25	3.46	13	4.51	5
DSPBR Tiger	0.43	35	-4.15	46	-2.57	38	-0.14	44	-4.15	42
DSPBR Top 100	41.33	1	-4.51	47	3.61	11	9.30	2	-2.83	39
Franklin India Bluechip	2.45	16	3.31	21	2.41	18	4.24	8	-1.43	34
Franklin India Prima	-2.23	48	37.13	3	-2.45	37	5.04	5	4.45	6
Franklin India Taxshield	3.06	13	1.30	33	3.64	10	8.08	3	3.32	12
HDFC Capital Builder	0.76	33	11.23	9	5.32	7	3.24	16	1.09	24
HDFC Equity	1.64	22	51.51	2	7.83	1	1.34	32	-2.12	35
HDFC Growth	0.14	37	9.39	11	1.58	21	3.39	14	-11.39	49
HDFC Long Term Adv	0.02	38	13.92	7	2.13	19	2.71	23	-1.01	32
HDFC Tax Saver	0.89	30	11.47	8	3.56	12	2.77	21	-4.62	43
HDFC Top 200	3.92	10	68.34	1	6.50	3	4.72	6	-2.28	36
ICICI Discovery	0.87	31	6.60	17	5.73	5	1.61	29	14.72	2
ICICI Dynamic	2.45	15	8.84	12	2.56	17	3.96	11	-0.73	30
ICICI Midcap	-2.57	49	6.90	16	-8.83	46	0.90	37	3.38	11
IDFC Classic Equity	1.74	20	1.76	28	-26.46	49	-0.61	49	6.06	3
IDFC Premier Equity	2.98	14	19.22	4	-1.13	30	2.98	18	4.03	7
Principal Div Yield	0.94	28	0.03	37	3.24	13	2.22	25	-0.89	31
Principal Growth	-1.27	44	-5.93	49	-3.07	39	1.58	30	2.96	13
Principal Large Cap	1.69	21	4.17	20	1.15	24	1.30	34	-0.23	29
Principal Tax Savings	-5.30	50	-5.86	48	-3.31	40	2.12	28	3.61	10
Reliance Equity	1.62	23	-12.99	50	-7.22	45	-0.37	45	2.05	18
Reliance Equity Opp	3.18	11	9.88	10	2.82	15	3.77	12	3.91	8
Reliance Growth	0.95	27	16.88	6	-1.55	34	1.33	33	-3.01	40
Reliance Regular Savings	1.55	24	16.99	5	-1.51	33	0.26	40	0.20	27
Reliance Tax Saver	4.02	9	2.12	27	1.16	23	2.35	24	-2.82	38
Reliance Vision Fund	1.77	19	0.10	36	-0.46	27	1.12	35	-6.80	47
SBI Contra	3.14	12	-0.17	39	-4.53	42	1.38	31	1.67	21
SBI Magnum Equity	-1.64	45	5.24	18	-0.18	26	5.64	4	1.26	23
SBI Magnum Tax Gain	0.60	34	-0.60	42	-2.35	36	4.17	9	0.45	25
Sundaram Equity Multiplier	0.36	36	-1.29	44	-5.10	44	0.95	36	-3.18	41
Sundaram Growth Fund	-0.96	42	0.26	35	1.19	22	2.14	27	-7.31	48
Sundaram Select Focus	-1.68	46	2.18	26	-5.03	43	-2.00	50	-1.23	33
Sundaram Select Midcap	4.11	7	2.83	23	7.21	2	3.12	17	1.99	19
Sundaram Smile	2.06	17	1.47	32	-12.91	47	-0.57	48	0.09	28
Sundaram Tax Saver	1.03	25	-0.20	40	-1.26	31	0.10	42	6.01	4
Tata Equity Opp	-1.68	47	2.77	25	-26.65	50	4.12	10	2.22	17
Tata PE Fund	0.79	32	5.03	19	-0.94	29	3.37	15	-6.15	46
Tata Pure Equity	16.97	4	3.03	22	-1.48	32	4.30	7	0.24	26
Tata Tax Saving	-0.64	41	-3.55	45	-0.72	28	-0.07	43	-5.38	44
UTI Dividend Yield	25.79	2	-0.26	41	5.68	6	2.93	19	-12.83	50
UTI Equity	21.96	3	-0.84	43	4.77	8	11.51	1	1.44	22
UTI Midcap	0.90	29	0.73	34	2.08	20	0.81	38	2.71	14

**Table 10.** Risk-adjusted performance and rank of sample funds according to M<sup>2</sup>

Fund	2008-09		2009-10		2010-11		2011-12		2012-13	
	M <sup>2</sup>	Rank	M <sup>2</sup>	Rank	M <sup>2</sup>	Rank	M <sup>2</sup>	Rank	M <sup>2</sup>	Rank
Birla Advantage	-0.58	44	0.81	46	0.05	36	-0.13	46	0.05	29
Birla Equity	-0.66	48	0.96	42	0.03	40	-0.09	43	0.07	20
Birla Frontline Equity	-0.45	28	0.97	40	0.11	22	-0.10	44	0.14	3
Birla Midcap	-0.55	39	1.12	20	-0.01	48	-0.04	26	0.02	44
DSPBR Equity	-0.42	23	1.12	21	0.11	19	-0.04	22	0.02	45
DSPBR Opp	-0.43	25	1.04	32	0.11	17	-0.15	47	0.08	17
DSPBR Small & Midcap	-0.42	22	1.42	6	0.12	15	-0.03	16	0.03	41
DSPBR Tax Saver	-0.59	46	1.13	18	0.08	27	-0.07	39	0.10	9
DSPBR Tiger	-0.40	16	0.85	45	0.01	43	-0.06	32	0.03	43
DSPBR Top 100	-0.34	7	1.02	33	0.11	18	-0.02	13	0.04	38
Franklin India Bluechip	-0.30	6	1.00	37	0.13	12	-0.03	21	0.06	28
Franklin India Prima	-0.52	36	1.27	11	0.05	34	0.00	4	0.12	6
Franklin India Taxshield	-0.39	15	1.10	24	0.14	8	-0.03	15	0.07	21
HDFC Capital Builder	-0.41	20	1.24	12	0.14	9	-0.07	36	0.07	24
HDFC Equity	-0.36	9	1.08	28	0.17	2	-0.06	34	0.04	37
HDFC Growth	-0.40	17	1.02	36	0.16	3	-0.02	8	0.04	35
HDFC Long Term Adv	-0.43	24	1.02	34	0.15	6	-0.02	9	0.07	22
HDFC Tax Saver	-0.29	5	1.20	13	0.12	14	-0.06	30	0.01	47
HDFC Top 200	-0.28	4	1.00	38	0.16	5	-0.06	31	0.05	31
ICICI Discovery	-0.12	1	1.46	4	0.13	11	-0.01	7	0.15	2
ICICI Dynamic	-0.51	34	1.09	25	0.21	1	-0.04	23	0.06	27
ICICI Midcap	-0.41	18	1.48	3	-0.03	49	-0.02	10	-0.02	48
IDFC Classic Equity	-0.55	40	1.12	22	0.04	37	-0.13	45	0.12	5
IDFC Premier Equity	-0.46	30	1.61	2	0.06	30	0.05	1	0.10	8
Principal Div Yield	-0.57	42	1.13	19	0.13	10	-0.02	12	0.05	32
Principal Growth	-0.37	13	1.06	29	0.02	42	-0.05	28	0.10	10
Principal Large Cap	-0.27	3	1.13	17	0.12	16	-0.09	42	0.07	23
Principal Tax Savings	-0.59	45	1.08	26	0.02	41	-0.05	27	0.10	7
Reliance Equity	-0.53	37	0.60	49	-0.11	50	-0.06	35	0.09	12
Reliance Equity Opp	-0.57	43	1.63	1	0.12	13	0.03	3	0.12	4
Reliance Growth	-0.52	35	1.11	23	0.05	35	-0.04	24	0.04	33
Reliance Regular Savings	-0.42	21	1.08	27	0.06	33	-0.06	33	0.08	16
Reliance Tax Saver	-0.44	26	1.18	16	0.11	21	0.03	2	0.04	36
Reliance Vision Fund	-0.50	33	1.02	35	0.07	28	-0.02	11	-0.03	50
SBI Contra	-0.38	14	0.97	41	0.00	44	-0.06	29	0.10	11
SBI Magnum Equity	-0.46	29	0.80	47	0.11	20	-0.03	18	0.09	13
SBI Magnum Tax Gain	-0.41	19	0.99	39	0.04	38	-0.03	19	0.07	18
Sundaram Equity Multiplier	-0.77	49	0.89	44	0.04	39	-0.07	37	0.04	34
Sundaram Growth Fund	-0.48	31	0.92	43	0.08	26	-0.08	41	0.03	39
Sundaram Select Focus	-1.04	50	0.75	48	0.06	32	-0.24	49	0.07	25
Sundaram Select Midcap	-0.57	41	1.40	7	0.09	25	-0.03	14	0.06	26
Sundaram Smile	-0.36	11	1.06	31	0.00	45	-0.07	38	-0.02	49
Sundaram Tax Saver	-0.17	2	1.34	9	-0.01	47	-0.33	50	0.40	1
Tata Equity Opp	-0.50	32	1.33	10	-0.01	46	-0.01	6	0.07	19
Tata PE Fund	-0.54	38	1.20	14	0.09	24	0.00	5	0.03	42
Tata Pure Equity	-0.64	47	1.06	30	0.06	31	-0.03	17	0.08	14
Tata Tax Saving	-0.45	27	0.53	50	0.10	23	-0.16	48	0.05	30
UTI Dividend Yield	-0.34	8	1.42	5	0.16	4	-0.08	40	0.02	46
UTI Equity	-0.36	10	1.19	15	0.15	7	-0.03	20	0.08	15
UTI Midcap	-0.37	12	1.37	8	0.07	29	-0.04	25	0.03	40

performance of the most of the sample funds is very good in the years 2008–09 and 2011–12 unlike in case of Sharpe and Treynor measures. The data reveals that almost all sample fund managers exhibited their stock selection ability and maximized the portfolio return during the entire period of study. There were however a few funds managers (like that of Birla Midcap, Birla Equity, Principal Tax Savings, reliance Equity and a few others) whose stock selectivity ability had negative impact on portfolio return during a couple of years. However we observe extremely varying stock selection ability of the fund managers over the years. For instance, in case of Sundaram Tax Saver fund, the selection ability was the best in 2008–09 and 2012–13 and was worst in 2010–11 and 2011–12. Also in case of UTI Midcap, it was good in the first and the last years and otherwise during three years in between. Again the most talked about fund in our study, ICICI Discovery fund exhibited very good stock selection ability almost during all the years. Barring the first year's ability, Reliance Equity Opportunity funds also falls in this category. We have been talking about these funds throughout our discussions for their superior performance among the sample funds. On an aggregate basis, however the stock selection ability of the fund managers varied over the years and we observe that majority of the fund managers failed to maintain the consistency in this regard. The variance in the performance of funds over the years is tested through  $H_0$ . As the observed 'p' value (0.00) is less than the critical 'p' value (0.05) we reject  $H_0$ , and conclude that the performance of the sample funds according to net selectivity varied over the years 2008–09 through 2012–13. This implies that time factor played a role in the performance of sample funds even according to net selectivity.

### 3.10 Overall Composite Ranking

The ranks of all the funds according to all selected performance measures over five years have been captured in Table 12. Though these ranks are not different from the ones available in earlier tables concerned, Table 12 provides a consolidated picture of fund-wise and measure-wise rankings for each and every year. This facilitates us to scout if there were any funds that maintained consistent ranking according to all

measures in a year or more. As we have discussed a lot about, ICICI Discovery fund again has been ranked as one of top performing funds according to all measures almost during the entire period of study. However Jensen's alpha and information ratio of this fund reveal that it did not perform better in the years 2009–10 through 2011–12. Two funds HDFC Top 200 and DSPBR Top 100 have been ranked among top 10 in the year 2008–09. Similarly some funds like Franklin India Prima, Birla Frontline Equity, HDFC Capital Builder, HDFC Equity, IDFC Premier Equity and few more performed equally well according to all measures in a particular year or the other. On an aggregate basis, there is no fund that performed either equally well or equally bad according to all measures during the study period. Thus the observation we make is that selection of the measure plays a role in evaluating and analyzing the performance of a given fund. We understand this observation through a deeper look into Table 12.

## 4. Conclusions and Scope for Further Study

Portfolio performance evaluation is very critical while choosing a fund for investment and we understand that there is no any best method available to evaluate the performance. Apart from a measure, a host of other factors also influence the performance. Some of such factors are time period and market conditions. The performance thus gets influenced by the market factors and the factors specific to the fund. The variability caused by these factors is classified into systematic and non-systematic risks. Thus our study reveals that performance of a fund primarily depends on the selection of the measure. The study also reveals that frequency of measurement and the time factor play a crucial role in the performance analysis of the funds. Despite very interesting findings, the study suffers from a few limitations such as sample selection and limited literature review. However the study provides a basis for proving a few hypotheses with empirical analysis and thereby contributes its own to the body of knowledge. The study may be continued further in any possible direction and hence we sincerely invite the prospective researchers to take ahead.



**Table 11.** Risk-adjusted performance and rank of sample funds according to Net Selectivity

Fund	2008–09		2009–10		2010–11		2011–12		2012–13	
	N.S	Rank	N.S	Rank	N.S	Rank	N.S	Rank	N.S	Rank
Birla Advantage	-0.05	44	-0.11	47	0.00	37	0.05	46	0.07	35
Birla Equity	-0.09	47	0.07	41	-0.02	41	0.08	41	0.10	21
Birla Frontline Equity	0.04	27	0.09	40	0.07	20	0.08	43	0.16	5
Birla Midcap	-0.01	33	-0.15	48	-0.01	38	0.08	42	0.14	12
DSPBR Equity	0.06	22	0.24	23	0.09	16	0.13	20	0.04	42
DSPBR Opp	0.05	25	0.17	30	0.09	13	0.03	48	0.12	14
DSPBR Small & Midcap	0.11	14	0.20	29	0.12	3	0.10	38	0.17	4
DSPBR Tax Saver	-0.05	45	0.26	16	0.05	24	0.10	36	0.14	11
DSPBR Tiger	0.08	18	0.03	45	-0.06	48	0.13	24	0.01	48
DSPBR Top 100	0.13	10	0.15	33	0.07	18	0.15	13	0.04	39
Franklin India Bluechip	0.16	8	0.22	28	0.06	22	0.15	11	0.06	38
Franklin India Prima	-0.04	39	0.45	4	0.00	33	0.17	9	0.18	3
Franklin India Taxshield	0.09	17	0.22	27	0.11	8	0.13	23	0.10	18
HDFC Capital Builder	0.07	20	0.36	8	0.12	5	0.10	33	0.09	26
HDFC Equity	0.12	12	0.26	18	0.16	1	0.11	29	0.07	33
HDFC Growth	0.06	23	0.23	26	0.10	11	0.18	6	0.03	47
HDFC Long Term Adv	0.03	28	0.26	19	0.09	15	0.19	5	0.07	32
HDFC Tax Saver	0.22	4	0.34	9	0.10	12	0.11	30	0.04	40
HDFC Top 200	0.21	5	0.11	39	0.12	2	0.12	28	0.07	36
ICICI Discovery	0.83	1	0.26	17	0.11	6	0.11	31	0.21	2
ICICI Dynamic	-0.03	36	0.34	10	0.11	9	0.14	17	0.07	31
ICICI Midcap	0.14	9	0.24	24	-0.03	45	0.11	32	0.10	20
IDFC Classic Equity	-0.03	37	0.28	12	0.00	34	0.06	45	0.15	7
IDFC Premier Equity	0.05	24	0.55	2	0.02	30	0.20	4	0.15	8
Principal Div Yield	-0.04	42	0.24	25	0.11	7	0.16	10	0.08	30
Principal Growth	0.12	11	0.14	35	-0.03	42	0.13	21	0.14	13
Principal Large Cap	0.24	3	0.26	15	0.07	17	0.09	39	0.08	29
Principal Tax Savings	-0.09	48	0.15	32	-0.03	43	0.14	18	0.14	10
Reliance Equity	-0.03	38	-0.10	46	-0.10	50	0.13	25	0.11	16
Reliance Equity Opp	-0.05	43	0.63	1	0.09	14	0.23	2	0.15	9
Reliance Growth	-0.02	35	0.27	14	0.00	35	0.15	14	0.04	44
Reliance Regular Savings	0.06	21	0.25	21	0.01	32	0.12	27	0.10	19
Reliance Tax Saver	0.04	26	0.28	13	0.07	19	0.26	1	0.03	46
Reliance Vision Fund	0.00	31	0.16	31	0.02	29	0.18	7	-0.05	50
SBI Contra	0.10	16	0.12	37	-0.05	47	0.12	26	0.11	15
SBI Magnum Equity	-0.01	34	0.11	38	0.04	25	0.14	15	0.10	24
SBI Magnum Tax Gain	0.07	19	0.14	36	0.00	36	0.14	16	0.09	27
Sundaram Equity Multiplier	-0.13	49	0.06	43	0.01	31	0.10	34	0.07	37
Sundaram Growth Fund	0.00	30	0.04	44	0.03	27	0.10	35	0.04	43
Sundaram Select Focus	-0.22	50	0.06	42	-0.03	44	-0.01	49	0.07	34
Sundaram Select Midcap	-0.04	41	0.47	3	0.05	23	0.13	22	0.10	22
Sundaram Smile	0.18	7	-0.22	49	-0.01	39	0.06	44	0.11	17
Sundaram Tax Saver	0.41	2	0.31	11	-0.09	49	-0.01	50	0.23	1
Tata Equity Opp	-0.01	32	0.36	7	-0.04	46	0.17	8	0.09	25
Tata PE Fund	-0.04	40	0.40	5	0.02	28	0.21	3	-0.02	49
Tata Pure Equity	-0.07	46	0.25	22	-0.02	40	0.15	12	0.08	28
Tata Tax Saving	0.01	29	-0.24	50	0.04	26	0.04	47	0.04	41
UTI Dividend Yield	0.12	13	0.37	6	0.12	4	0.10	37	0.03	45
UTI Equity	0.11	15	0.25	20	0.11	10	0.14	19	0.10	23
UTI Midcap	0.18	6	0.14	34	0.07	21	0.09	40	0.16	6

Table 12. Year-wise rank comparison of sample funds

Fund Name	2008-09					2009-10					2010-11					2011-12					2012-13											
	S.R	T.R	J.A	I.R	M2	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S		
Birla Advantage	42	42	27	39	44	44	48	45	47	29	46	47	36	37	36	41	36	41	36	37	46	46	47	46	46	35	28	35	37	29	35	
Birla Equity	47	47	41	40	48	47	44	41	41	24	42	41	48	40	41	48	40	41	43	41	42	43	41	41	43	41	20	19	20	16	20	21
Birla Frontline Equity	25	27	12	8	28	27	42	39	40	30	40	40	20	22	20	9	22	20	44	43	22	44	43	22	44	43	6	2	6	1	3	5
Birla Midcap	49	35	48	43	39	33	25	21	48	15	20	48	35	48	40	35	48	38	10	24	40	20	26	42	14	44	14	9	44	12	12	
DSPBR Equity	17	20	4	6	23	22	19	20	22	31	21	23	16	20	17	14	19	16	18	23	21	26	22	20	41	43	41	45	45	42	42	
DSPBR Opp	21	21	21	5	25	25	29	31	29	38	32	30	15	17	14	16	17	13	47	47	47	46	47	48	15	15	15	20	17	14	14	
DSPBR Small & Midcap	46	22	40	18	22	14	6	7	28	13	6	29	22	15	3	4	15	3	7	16	37	39	16	38	5	40	5	15	41	4	4	
DSPBR Tax Saver	39	45	17	26	46	45	17	19	17	14	18	16	26	27	24	25	27	24	37	37	35	13	39	36	11	8	11	5	9	11	11	
DSPBR Tiger	16	17	34	35	16	18	47	44	45	46	45	45	44	43	48	38	43	48	36	35	28	44	32	24	48	42	48	42	43	48	48	
DSPBR Top 100	7	7	3	1	7	10	36	32	33	47	33	33	17	21	21	11	18	18	17	11	11	2	13	13	39	37	39	39	38	39	39	
Franklin India Bluechip	5	5	9	16	6	8	31	36	27	21	37	28	11	12	23	18	12	22	32	21	12	8	21	11	37	26	37	34	28	38	38	
Franklin India Prima	30	33	47	48	36	39	9	12	5	3	11	4	34	34	32	37	34	33	6	4	9	5	4	9	3	5	3	6	6	3	3	
Franklin India Taxshield	11	15	11	13	15	17	20	22	26	33	24	27	9	8	10	10	8	8	14	14	22	3	15	23	18	21	18	12	21	18	18	
HDFC Capital Builder	15	19	31	33	20	20	12	13	9	9	12	8	8	9	5	7	9	5	33	36	33	16	36	33	25	24	25	24	24	26	26	
HDFC Equity	9	12	14	22	9	12	23	27	18	2	28	18	2	3	1	1	2	1	30	32	29	32	34	29	33	35	33	35	37	33	33	
HDFC Growth	14	29	25	37	17	23	30	35	25	11	36	26	3	2	8	21	3	11	21	9	6	14	8	6	46	34	46	49	35	47	47	
HDFC Long Term Adv	19	23	33	38	24	28	27	34	19	7	34	19	7	6	16	19	6	15	19	8	5	23	9	5	30	20	30	32	22	32	32	
HDFC Tax Saver	4	6	24	30	5	4	14	15	10	8	13	9	13	14	12	12	14	12	28	31	30	21	30	30	40	46	40	43	47	40	40	
HDFC Top 200	6	4	6	10	4	5	40	37	39	1	38	39	5	5	2	3	5	2	31	30	25	6	31	28	34	30	34	36	31	36	36	
ICICI Discovery	2	2	26	31	1	1	4	4	13	17	4	17	18	11	9	5	11	6	4	7	31	29	7	31	2	1	2	2	2	2	2	
ICICI Dynamic	27	32	5	15	34	36	7	24	11	12	25	10	1	1	13	17	1	9	27	22	15	11	23	17	31	27	31	30	27	31	31	
ICICI Midcap	44	24	50	49	18	9	3	6	23	16	3	24	48	48	45	46	49	45	5	10	32	37	10	32	21	47	21	11	48	20	20	
IDFC Classic Equity	38	37	19	20	40	37	26	1	2	28	22	12	37	36	34	49	37	34	45	45	44	49	45	45	7	4	7	3	5	7	7	
IDFC Premier Equity	26	30	20	14	30	24	2	3	4	4	2	2	30	30	29	30	30	30	1	1	4	18	1	4	8	6	8	7	8	8	8	
Principal Div Yield	36	48	23	28	42	42	18	18	24	37	19	25	10	10	7	13	10	7	13	12	10	25	12	10	29	31	29	31	32	30	30	
Principal Growth	13	13	45	44	13	11	34	28	34	49	29	35	42	42	44	39	42	42	26	28	20	30	28	21	13	9	13	13	10	13	13	

Continued

Table 12 Continued

Fund Name	2008-09						2009-10						2010-11						2011-12						2012-13					
	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S	S.R	T.R	J.A	I.R	M <sup>2</sup>	N.S
Principal Tax Savings	43	43	49	50	45	48	33	25	32	48	26	32	41	41	43	40	41	43	24	27	18	28	27	18	12	7	12	10	7	10
Reliance Equity	28	44	7	23	37	38	49	48	46	50	49	46	50	50	50	45	50	50	39	33	24	45	35	25	17	11	17	18	12	16
Reliance Equity Opp	40	39	30	11	43	43	1	2	3	10	1	1	12	13	15	15	13	14	3	3	2	12	3	2	10	3	10	8	4	9
Reliance Growth	34	36	29	27	35	35	24	23	15	6	23	14	35	35	35	34	35	34	25	25	16	33	24	14	43	32	43	40	33	44
Reliance Regular Savings	20	18	32	24	21	21	28	26	21	5	27	21	33	33	31	33	33	32	38	34	27	40	33	27	19	16	19	27	16	19
Reliance Tax Saver	24	28	8	9	26	26	16	16	14	27	16	13	19	19	18	23	21	19	2	2	1	24	2	1	45	36	45	38	36	46
Reliance Vision Fund	31	34	16	19	33	31	37	33	31	36	35	31	28	28	28	27	28	29	16	13	7	35	11	7	50	48	50	47	50	50
SBI Contra	12	11	15	12	14	16	41	40	38	39	41	37	46	45	47	42	44	47	35	29	23	31	29	26	16	10	16	21	11	15
SBI Magnum Equity	22	26	28	45	29	34	38	46	37	18	47	38	20	18	25	26	20	25	23	17	14	4	18	15	23	12	23	23	13	24
SBI Magnum Tax Gain	18	16	36	34	19	19	39	38	36	42	39	36	38	39	37	36	38	36	20	20	17	9	19	16	26	17	26	25	18	27
Sundaram Equity Multiplier	48	49	38	36	49	49	45	43	42	44	44	43	39	38	33	44	39	31	34	39	36	36	37	34	36	33	36	41	34	37
Sundaram Growth Fund	29	40	46	42	31	30	46	42	44	35	43	44	25	26	26	22	26	27	40	40	34	27	41	35	42	38	42	48	39	43
Sundaram Select Focus	50	50	35	46	50	50	43	47	43	26	48	42	32	32	42	43	32	44	49	49	49	50	49	49	32	23	32	33	25	34
Sundaram Select Midcap	41	41	44	7	41	41	32	8	35	23	7	3	27	25	4	2	25	23	8	15	26	17	14	22	4	25	4	19	26	22
Sundaram Smile	35	10	39	17	11	7	35	30	49	32	31	49	43	44	38	47	45	39	15	38	45	48	38	44	47	49	47	28	49	17
Sundaram Tax Saver	1	1	2	25	2	2	10	50	1	40	9	11	49	49	49	31	47	49	50	50	50	42	50	50	1	50	1	4	1	1
Tata Equity Opp	32	31	42	47	32	32	11	10	8	25	10	7	47	46	46	50	46	46	11	6	8	10	6	8	24	18	24	17	19	25
Tata PE Fund	33	38	22	32	38	40	13	14	6	19	14	5	24	24	30	29	24	28	12	5	3	15	5	3	49	41	49	46	42	49
Tata Pure Equity	45	46	13	4	47	46	22	29	20	22	30	22	31	31	39	32	31	40	29	18	13	7	17	12	27	13	27	26	14	28
Tata Tax Saving	23	25	37	41	27	29	50	49	50	45	50	50	23	23	27	28	23	26	48	48	48	43	48	47	38	29	38	44	30	41
UTI Dividend Yield	8	8	1	2	8	13	5	5	7	41	5	6	4	4	6	6	4	4	4	41	41	38	19	40	37	44	44	50	46	45
UTI Equity	10	9	10	3	10	15	15	11	12	43	15	20	6	7	11	8	7	10	22	19	19	1	20	19	22	14	22	22	15	23
UTI Midcap	37	14	43	29	12	6	8	9	30	34	8	34	29	29	22	20	29	21	9	26	42	38	25	40	9	39	9	14	40	6

## 5. References

- Ang, J. S., Chen, C. R., & Lin, J. W. (1998). Mutual fund managers' efforts and performance. *Journal of Investing*, 7, 68–75.
- Barron, J. M., & Ni, J. (2013). Morningstar ratings and mutual fund manager turnover. *Journal of Applied Finance*, 23, 95–110.
- Chang, E. C., & Lewellen, W. G. (1984). Market timing and mutual fund investment performance. *The Journal of Business*, 57, 57–72.
- Chopra, M. P. (2011). Do Indian mutual fund managers select the stock and time the market correctly? *IUP Journal of Applied Finance*, 17, 77–86.
- Cuthbertson, K., Nitzsche, D., & O'Sullivan, N. (2012). False discovery in uk mutual fund performance. *European Financial Management*, 18, 444–463.
- Davis, J. L. (2001). Mutual Fund performance and manager style. *Financial Analysts Journal*, 57, 19–27.
- Goodwin, T. H. (1998). The information ratio. *Financial Analysts Journal*, 54, 34–43.
- Graham, J. R., & Harvey, C. R. (1994). Market timing ability and volatility implied in investment advisors' asset allocation recommendations. National Bureau of Economic Research Working Paper 4890.
- Grossman, S., & Stiglitz, J. (1980). On the impossibility of informationally efficient markets. *American Economic Review*, 70, 393–408.
- Huang, J., Sialm, C., & Zhang, H. (2011). Risk shifting and mutual fund performance. *Review of Financial Studies*, 24, 2575–2616.
- Indro D. C., Jiang, C. X., Hu, M. Y., & Lee, W. Y. (1998). Mutual fund performance: a question of style. *Journal of Investing*, 7, 46–53.
- Ippoliti, A. R. (1993). On studies of mutual fund performance. *Financial Analysts Journal* 49, 42.
- Kent, D., Grinblatt, M., Titman, S. & Wermers, R. (1997). Measuring mutual fund performance with characteristic-based benchmarks. *The Journal of Finance*, 52, 1035–1058.
- Kumar, R. (2012). Market timing, selectivity and mutual fund performance: an empirical investigation of selective equity diversified schemes in India. *IUP Journal of Financial Economics*, 10, 62–84.
- Patil, S. R., & Rao, P. (2011). An empirical study on performance of mutual fund in India. *Journal of Contemporary Research in Management* 6, 91–103.
- Rao U. (2000). Market timing and mutual fund performance. *American Business Review*, 18, 75–79.
- Sharpe, W. F. (1966). Mutual fund performance. *Journal of Business* 39, 119–138.
- Treynor, J. L. (1966). How to rate management investment funds. *Harvard Business Review*, 43, 63–75.
- Treynor, J. L., & Black, F. (1973). How to use security analysis to improve security selection. *Journal of Business*, 46, 66–86.
- Vos W. (1997). Measuring mutual fund performance. *Canadian Investment Review*, 10, 33.

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**Appendix 'A': List of sample funds selected from the index concerned**

Index	Funds selected	Index	Funds selected		
BSE 100	DSPBR Tiger	CNX 500	DSPBR Equity		
	DSPBR Top 100		DSPBR Opp		
	UTI Dividend Yield		DSPBR Tax Saver		
	UTI Equity		Franklin India Prima		
	SBI Magnum Tax Gain		Franklin India Taxshield		
	SBI Contra		HDFC Capital Builder		
	Reliance Equity Opp		HDFC Equity		
	Reliance Growth		HDFC Tax Saver		
	Reliance Regular Savings		Sundaram Equity Multiplier		
	Reliance Tax Saver		Principal Div Yield		
	Reliance Vision Fund		CNX Midcapcap	Birla Midcap	
	Principal Large Cap			DSPBR Small & Midcap	
	BSE 200		Birla Advantage	CNX Nifty	ICICI Discovery
			Birla Equity		ICICI Midcap
Birla Frontline Equity		UTI Midcap			
HDFC Top 200		Sundaram Smile			
IDFC Classic Equity		ICICI Dynamic			
Tata Equity Opp		Sundaram Select Focus			
Sundaram Growth Fund		SBI Magnum Equity			
Sundaram Tax Saver		Reliance Equity			
BSE 500	IDFC Premier Equity	SENSEX	Franklin India Bluechip		
			HDFC Growth		
			HDFC Long Term Adv		
BSE Midcap	Sundaram Select Midcap		Tata PE Fund		
			Tata Pure Equity		
			Tata Tax Saving		

