

RISK RETURN RELATIONSHIP AND PERFORMANCE OF OPEN ENDED SCHEMES: A COMPARATIVE STUDY OF INDIAN EQUITY BASED MUTUAL FUNDS

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Abstract

This study examines the performance of 33 Open-ended Indian Mutual Fund Schemes taken from 11 Fund Houses belonging to Public, Private and Foreign Sector, and which represent a major share of the Assets under Management of the Industry. The study evaluates the risk and return profile of the sample schemes for a ten Year period from April 2006 to March 2016. The risk-adjusted returns are calculated using Sharpe's Index and Treynor's Index. The findings show that there is a high positive correlation between risk and return of the sample schemes over the sample period. Though a majority of sample schemes performed better than the benchmark, there was no significant difference between the performance of the Sample Schemes and the Market Portfolios.

Keywords: Risk Return, Mutual Fund Schemes, Equity Schemes, Portfolio Return.

Introduction

Mutual funds as an investment vehicle have gained immense popularity in the Indian Financial Sector, which is clearly reflected in the robust growth levels of assets under management. Since the 1990's when the mutual fund space opened up to the private sector, the industry has traversed a long path, adapting itself continuously, to the changes that have come along. Growth in Assets Under Management (AUM) experienced has been unprecedented, with country's mutual fund (MF) assets logging the highest growth in last seven years to reach a total corpus of around Rs.17 trillion in 2016. Although investor confidence was significantly eroded after the Financial downfall in the period from 2009 to 2011, and AUMs suffered a dent, the sale of mutual funds has revived over the last few years, which implies regained confidence of investors, striving to look at alternate investment opportunities and any attendant higher returns. In today's volatile market environment, mutual funds are looked upon as a transparent and low cost investment vehicle, which attracts a fair share of investor attention. Mutual funds have provided a better alternative to obtain benefits of expertise-based equity investments to all types of investors.

The present study attempts to evaluate the performance of the Open-ended Equity Mutual Fund Schemes against the performance of Market portfolio.

Literature Review

A considerable body of literature on the financial performance of mutual funds has accumulated beginning with the study by Friend, Brown, Herman, and Vickers (1962). Treynor and Mauzy (1966), Sharpe (1966) and Jensen (1968) pioneered the methods to evaluate the performance of Mutual fund schemes by adjusting risk. Fama (1972) and Henriksson (1984) brought up means to question and test the market timing and selectivity skills of the fund managers. The later years saw many researches evaluating the various facets of performance of Mutual Funds. Coming to the Indian arena, Jayadev (1996) evaluated the performance of two growth schemes offered by a same mutual

fund trust and found that one scheme reported better performance and the other poor performance. The fund with poor performance was well diversified and had reduced risk. He concluded that, growth oriented funds did not offer any advantage of diversification or professionalism to the investors. Kothari & Warner (2001) found abnormal fund performance particularly in style investment schemes. Chander (2002) analyzed the investment performance of 34 schemes against a benchmark of BSE Sensex. The study revealed that majority of the funds recorded higher average return as compared to benchmark. Sondhi and Jain (2010) examined the market risk and investment performance of 36 Indian equity mutual funds for a three-year period. The results of the study confirmed the empirical evidence produced by Fama (1992) that high beta funds (market risks) may not necessarily produce high returns. Bodla and Chauhan (2012) investigated the performance of 27 open-ended equity schemes and brought out that though the funds outperformed the market but there was no significant difference between the fund and the benchmark return. In another study, Revathy and Santhi (2013) found greater returns in equity schemes compared to their benchmark funds. Research work of Narayanasamy and Rathnamani (2013) reported superior scheme returns during their study period and related that to market movements.

Objective of the Study

The paper contributes to the existing literature by performing the following:

To compare the performance of select mutual fund schemes and respective market portfolio.

To analyze the excess return in relation to per unit risk evidenced by the select mutual fund schemes.

To examine risk adjusted return performance of the select mutual fund schemes

Methodology and Data

The study investigates 33 open-ended Equity schemes from 11 Asset management Companies. These Asset Management companies were so selected as to represent the Indian Mutual Fund Industry as well as represent the diverse ownership structure. Therefore 2 Public Sector, 3 Foreign sector and 6 private sector AMC's were chosen that represented almost 60 percent of the AUM of the Indian mutual fund industry (as of December 2015) spanning over April 2006 to March 2016. The sample schemes chosen also represent a calculated mix of Old age (Schemes with inception date before 2008), Middle age (Schemes with inception date between 2008 and 2012) and New age (Schemes with inception date after 2012) Mutual Fund Schemes. According to size of AUM, selected schemes belong to 3 Large Size Funds (AUM above Rs. 50,000 Cr.), 2 Medium Size Funds (AUM from Rs. 10,000 Cr. to 50,000 Cr.) and 6 Small Size Funds (AUM below Rs. 10,000 Cr.). From each fund house, 3 Equity schemes were selected leading to a total of 33 sample schemes. The data for the study was collected from websites of AMFI, RBI, Blue Chip India Ltd., and S&P CNX Nifty Index from the website of NSE. S&P CNX Nifty Index is used as benchmark and the weekly yields on 91-day Treasury bills (T-bills) are used as a surrogate for the risk-free rate of return.

The following measures were used for analysis of the sample schemes: Average daily percentage Return and Risk; (ii) Systematic Risk (Beta analysis), (iii) Risk Adjusted Performance Measures; namely:- Sharpe's Index and Treynor's Index. For evaluating yearly returns, daily returns of each scheme were calculated based on daily NAV data for 10 years without adjusting dividend and bonus. The Market return was also calculated in the same manner. Standard Deviation was used to measure the variation in individual returns from the average expected return over a certain period.

Beta coefficient was used to compare the variability of funds return to the market as a whole. The risk-return relationship was determined by using Karl Pearson Coefficient of Correlation. For a comprehensive analysis, the period of study has been divided in two parts: performance of Mutual Fund Schemes during 2006-11 and during 2011-16 before summarizing over the full ten year period.

Results

The performance of the selected sample of 33 Equity Schemes in terms of returns has been analyzed viz-a-viz the benchmark portfolio and the findings are presented in **Table 1**. The daily percentage returns for each scheme have been evaluated for ten years separately and are then presented along with the return over the complete study period. The **Table 1** also displays rankings of all the schemes in terms of returns. In order to compare the performance of funds with the benchmark return, the difference of portfolio return and market return have also been evaluated and ranked accordingly. It is evident from the Table 1 that out of 33 sample schemes under study, 28 Schemes have provided better return to the investors than the benchmark return. Thus 84% schemes are able to beat the benchmark. Only 05 schemes underperformed in terms of return. But this difference is not found significant, at 5% level of significance, except in case of one scheme. BNP Paribas Midcap Fund (0.0939) which provided highest return to investors for the period 2006 -2016 followed by BNP Paribas Dividend Yield Fund (0.0827) and Axis Mid Cap Fund (0.0766). JP Morgan India Mid & Small Cap Fund is the lowest performer during both the half periods and is ranked at the last position in terms of generating return for its investors. The return over the sample period varies from -0.0061 to 0.0939. The over-all average daily return stands at 0.0138 for the complete sample period. The year-wise return analysis indicates that year 2014-15 achieved the highest return followed by year 2013-14 over the five year period 2011-16. This period also provided better returns to the investors as compared to the period 2006-2011.

Table 2 presents the sample schemes with respect to the risk associated with them for the said period. The year wise rankings in terms of risk taken are also presented for each scheme. It is observed that only 4 schemes out of 33 have displayed less variability as compared to the Market during the study period. HDFC Equity Saving Fund is ranked as the least risky scheme to invest in and therefore, could not perform in terms of providing return as is ranked towards the end (Table 1). It is also observed from **Table 2**, that the overall risk for the sample period stands at 1.1125. Taurus Star Share and Taurus Discovery Fund have been the most risky schemes during the period 2006-16, followed by UTI Top 100, Taurus Bonanza Fund and Reliance Vision (in descending order of risk). The year 2015-16 comes out to be the most volatile with an average risk (1.08) almost same as of the entire study period (1.11). The table also presents the difference between risk assumed by the sample schemes and the market risk. The difference is found to be positive for 29 schemes out of the sample of 33. This indicates that majority of schemes assumed more risk than the benchmark, though this difference is not found to be significant in case of any sample equity scheme.

Table 1: Daily Returns (%) Of Equity Schemes (growth Option) Of Mutual Fund

S.No.	Name of the Schemes	Date of Launch	Sector	2015		2014		2013		2012		2011		2006-2011		2011-2016		2006-16		2006-16 Difference (Rp-Rm)
				R _p	Rank	R _p	Rank	R _p	Rank	R _p	Rank	R _p	Rank	R _p	Rank	R _p	Rank	R _p	Rank	
LARGE FUNDS																				
1	UTI Equity fund- Growth	20-Apr-92	PS	-0.0201	15	0.1546	20	0.0827	11	0.0339	14	-0.0018	14	0.0534	14	0.0499	15	0.0516	17	*0.0113
2	UTI Top 100 - Growth	17-Jan-93	PS	-0.0322	24	0.1573	18	0.0778	13	0.0205	24	-0.0054	16	0.0012	25	0.0435	19	0.0224	29	-0.0191
3	UTI Master Share - Growth	18-Jan-86	PS	-0.0305	24	0.1523	21	0.0717	19	0.0288	17	-0.0188	23	0.0570	12	0.0407	25	0.0488	20	0.0086
4	HDFC Equity Fund - Growth	24-Dec-94	PVT.	-0.0403	29	0.1506	23	0.0880	10	0.0184	25	-0.0251	28	0.0773	6	0.0825	2	0.0578	12	0.0178
5	HDFC Growth Fund - Growth	20-Jul-00	PVT.	-0.0140	11	0.1301	28	0.0497	29	0.0136	28	-0.0056	17	0.0711	7	0.0509	14	0.0529	16	0.0129
6	HDFC Equity Saving Fund	20-Aug-04	PVT.	0.00847	2	0.04948	33	0.04315	30	0.02317	22	0.04203	1	0.0356	19	0.0420	22	0.0345	27	-0.0066
7	Reliance Vision - Growth	25-Sep-95	PVT.	-0.0306	25	0.1866	12	0.0912	8	-0.0238	8	-0.0180	22	0.0569	13	0.0739	7	0.0490	19	0.0090
8	Reliance Equity Opportunities Fund	26-Dec-12	PVT.	-0.0429	30	0.1829	13	0.0814	12	-0.1409	31			0.0317	31	0.0201	31	0.0201	31	0.0080
9	Reliance Small Cap Fund - Growth	26-Aug-10	PVT.	0.0122	1	0.2541	5	0.1457	1	0.0121	29	-0.0126	19	-0.0344	26	0.0767	5	0.0628	5	0.0431
10	Franklin Build India Fund - Growth	10-Jul-09	F.S	-0.0217	17	0.2604	2	0.0941	7	0.0440	8	-0.0072	18	0.0594	11	0.0431	21	0.0698	4	0.0324
11	Franklin Asian Equity Fund - Growth	19-Nov-07	F.S	-0.0113	7	0.0650	32	0.0400	31	0.0416	9	0.0251	3	0.0037	24	0.0764	6	0.0192	32	0.0349
12	Franklin India Prima Fund - Growth	30-Oct-93	F.S	-0.0024	4	0.2235	6	0.1032	2	0.0523	6	0.0072	10	0.0567	18	0.0372	27	0.0567	13	0.0165
MEDIUM FUNDS																				
13	Axis Equity Fund - Growth	11-Nov-09	PVT.	-0.0216	16	0.1286	29	0.0757	17	0.0669	2	-0.0197	24	0.0442	16	0.0537	13	0.0455	23	0.0202
14	Axis Focused 25 Fund - Growth	11-Jun-12	PVT.	-0.0181	13	0.1500	24	0.0504	28	0.0587	4			0.0819	4	0.0602	8	0.0602	8	0.0161
15	Axis Midcap Fund - Growth	31/1/2011	PVT.	-0.0276	21	0.2158	9	0.0896	9	0.0609	3	0.0173	7	0.1034	2	0.0827	1	0.0766	3	-0.0072
16	Kotak Emerging Equity Scheme	12-Feb-07	PVT.	-0.0037	5	0.2582	4	0.0650	24	0.0228	23	0.0161	8	0.0248	22	0.0411	23	0.0508	18	0.0105
17	Kotak 50 - Growth	26-Dec-12	PVT.	-0.0133	9	0.1510	22	0.0605	25	0.0401	12	-0.0221	27	-0.0864	27	0.0201	33	0.0216	30	0.0143
18	Kotak Opportunities Fund	27-Jul-04	PVT.	-0.0175	12	0.1724	15	0.0769	15	0.0259	19	-0.0148	20	0.0611	9	0.0823	3	0.0549	14	0.0144
SMALL FUNDS																				
19	Canara Robeco Equity Diversified	11-Feb-05	P.S	-0.0056	6	0.2678	1	0.1010	3	0.0246	21	0.0247	4	0.0567	17	0.0383	26	0.0596	10	0.0196
20	Canara Robeco Emerging Equity	20-Jul-09	P.S	-0.0243	19	0.1717	16	0.0568	26	0.0556	5	-0.0053	15	0.0894	3	0.0347	28	0.0619	6	0.0267
21	Canara Robeco Infrastructure	29/08/2003	P.S	-0.0451	32	0.1457	27	0.0712	20	0.0306	16	0.0076	9	0.0655	8	0.0333	30	0.0538	15	0.0137
22	Edelweiss Emerging Leaders Fund	4-Aug-11	PVT.	-0.0257	20	0.1879	11	0.0978	6	0.0142	27	0.0220	5			0.0460	18	0.0592	11	0.0127
23	Edelweiss Dvrsfd Growth Equity	4-May-09	PVT.	-0.0278	22	0.1562	19	0.0679	22	0.0414	10	0.0019	12	0.0894	4	0.0602	11	0.0598	9	0.0187
24	Edelweiss Absolute Return Fund	29-Jan-09	PVT.	-0.0117	8	0.1284	30	0.0395	32	0.0285	15	-0.0204	6	0.0295	21	0.0712	9	0.0377	24	-0.0040
25	Taurus Star share Growth Option	29-Jan-94	PVT.	-0.0590	33	0.1489	25	0.0720	18	0.0325	18	-0.0221	26	0.0610	10	0.0717	8	0.0478	21	0.0087
26	Taurus Discovery Fund	30-Sep-94	PVT.	-0.0297	23	0.2198	8	0.0677	23	0.0708	1	-0.0148	21	0.0105	23	0.0432	20	0.0366	26	-0.0038
27	Taurus Bonanza Fund	31-Jan-95	PVT.	-0.0432	31	0.1466	26	0.0564	27	0.0174	26	-0.0390	29	0.0321	20	0.0486	16	0.0299	28	-0.0106
28	JPMorgan India Equity Fund	19-Apr-07	F.S	-0.0226	18	0.1582	17	0.0771	14	0.0230	20	0.0219	25	0.0511	15	0.0592	12	0.0467	22	0.0095
29	JPMorgan India Mid&Small Cap Fund	9-Nov-07	F.S	-0.0194	14	0.2583	3	0.1005	4	0.0402	11	0.0023	11	-0.1093	28	0.0479	17	-0.0061	33	0.0036
30	JPMorgan India Top 100 Fund	2-Jun-14	F.S	-0.0324	28	0.1069	31							0.0410	24	0.0372	25	0.0372	25	0.0221
31	BNP Paribas Equity Fund	9-Aug-04	F.S	-0.0318	26	0.1826	14	0.0764	16	0.0398	13	0.0014	13	0.0783	5	0.0345	29	0.0607	7	0.0162
32	BNP Paribas Mid Cap Fund	13-Mar-06	F.S	0.0021	3	0.2216	7	0.0989	5	0.0472	7	0.0400	2	0.1240	1	0.0628	10	0.0939	1	0.0494
33	BNP Paribas Dividend Yield Fund	26-Dec-12	F.S	-0.0136	10	0.1921	10	0.0698	21							0.0277	32	0.0827	2	0.0364
Overall Return				-0.0217		0.1737		0.0762		0.0280		-0.0009		0.0401		0.0524		0.0490		0.0138
* PS - Public Sector Fund				Private Sector Domestic Fund										FS*** - Foreign Sector Fund						
PVT*** -				Private Sector Domestic Fund										FS*** - Foreign Sector Fund						

Table 2 : Risk Based Ranking Of Equity Schemes (growth Option) Of Mutual Funds

S.No.	Name of Scheme	2015		2014		2013		2012		2011		2006-2011		2011-2016		2006-16		2006-16 Difference $\sigma_p - \sigma_m$
		σ_p	Rank	σ_p	Rank	σ_p	Rank	σ_p	Rank	σ_p	Rank	σ_p	Rank	σ_p	Rank	σ_p	Rank	
1	UTI Equity fund	1.0579	20	0.8524	28	0.9503	17	0.6929	21	1.0172	16	1.4518	16	0.9141	23	1.1830	16	0.0331
2	UTI Top 100	1.0458	24	0.8478	29	0.9331	18	0.7026	19	1.0411	15	2.0655	14	0.9141	24	1.4898	3	0.3391
3	UTI Master Share	1.0534	22	0.8623	25	0.9918	11	0.7181	16	1.0460	13	1.5946	11	0.9343	19	1.2645	13	0.1121
4	Canara Robeco Emerging Equities	1.2599	5	1.1215	1	0.8571	24	0.7036	18	0.9228	23	1.6175	13	0.9730	11	1.2953	12	0.1421
5	Canara Robeco FORCE Fund	1.1702	10	1.0016	9	1.1169	4	0.8247	6	1.0997	9	0.9441	22	1.0426	6	1.0145	19	0.1606
6	Canara Robeco Equity Diversified	1.2294	7	1.0289	6	0.9638	13	0.7376	14	0.9582	20	1.7631	8	0.9840	9	1.3735	7	0.2184
7	Franklin Build India Fund	1.1019	15	0.9846	11	0.9868	12	0.6694	25	1.0077	17	0.9219	23	0.9501	17	0.9420	24	0.0897
8	Franklin Asian Equity Fund	0.9456	31	0.5405	32	0.7526	30	0.7603	9	1.3036	1	1.3786	17	0.8605	29	1.0908	17	-0.1313
9	Franklin India Prima Fund	0.9871	28	0.8639	24	0.8492	26	0.6229	29	0.8888	26	1.6370	11	0.8424	31	1.2397	14	0.0880
10	JPMorgan India Equity Fund	1.0139	27	0.9751	12	1.0124	9	0.7496	11	1.0942	10	1.8144	5	0.9690	13	1.3448	9	0.1974
11	JPMorgan India Mid&Small Cap Fund	1.1028	14	1.0926	3	0.8267	27	0.6797	23	0.9702	19	1.8083	6	0.9344	18	1.3228	10	0.1284
12	JPMorgan India Top 100 Fund	1.0337	25	0.9267	17									0.9802	10	0.9802	22	0.1910
13	BNP Paribas Equity Fund	0.9686	30	0.8560	27	0.8958	21	0.6234	28	0.9188	24	1.1442	21	0.8525	30	0.9359	27	0.0676
14	BNP Paribas Mid Cap Fund	1.1010	17	0.9656	13	0.7789	29	0.6423	27	0.9157	25	1.1450	20	0.8807	27	0.9562	23	0.0879
15	BNP Paribas Dividend Yield Fund	0.9767	29	0.8749	23	0.8496	25							0.9004	26	0.9004	30	0.0360
16	Reliance Vision	1.2367	6	1.0129	7	1.0828	7	0.8730	4	1.2022	2	1.6897	9	1.0815	3	1.3856	5	0.2364
17	Reliance Equity Opportunities Fund	1.1016	16	0.9185	18	0.9302	19	0.7431	13					0.9234	21	0.9234	28	0.1432
18	Reliance Small Cap Fund	1.3133	2	1.0973	2	0.8218	28	0.6857	22	0.9408	21	0.7657	25	0.9718	12	0.9374	26	0.0641
19	HDFC Equity Fund	1.2923	3	1.0790	4	1.1456	2	0.8939	3	1.1948	3	1.6429	10	1.1211	1	1.3820	6	0.2327
20	HDFC Growth Fund	1.2048	8	1.0044	8	1.0890	6	0.8022	7	1.1123	6	1.5532	15	1.0425	7	1.2979	11	0.1486
21	HDFC Equity Saving Fund	0.4047	33	0.3372	33	0.2085	32	0.1564	31	0.2017	29	0.2407	28	0.2617	33	0.2512	33	-0.9091
22	Axis Equity Fund	1.0546	21	0.9109	20	0.9520	16	0.7343	15	1.1154	4	0.9110	24	0.9534	16	0.9413	25	0.0992
23	Axis Focused 25 Fund	1.1290	12	0.9097	21	0.9538	15	0.6622	26					0.9137	25	0.9137	29	0.1255
24	Axis Midcap Fund	1.1035	13	1.0015	10	0.8733	22	0.7744	8	0.8579	27	0.2895	27	0.9221	22	0.8167	31	-0.0648
25	Kotak Emerging Equity Scheme	1.0532	23	0.8622	26	0.8620	23	0.6700	24	0.9383	22	1.6312	12	0.8771	28	1.2123	15	0.0789
26	Kotak 50	1.0617	19	0.9083	22	1.1715	1	0.7119	17	0.9886	18	1.1734	19	0.9684	14	1.0026	20	0.0991
27	Kotak Opportunities Fund	1.0915	18	0.9160	19	0.9631	14	0.7524	10	1.0700	11	1.7728	7	0.9586	15	1.3657	8	0.2165
28	Ede&weiss Emerging Leaders Fund	1.3244	1	0.9471	15	0.9112	20	0.7493	12	1.0428	14			0.9949	8	0.9949	21	0.1165
29	Ede&weiss Dvrsd Growth Equity Top 100 Fund	1.0332	26	0.8222	30	1.0073	10	0.6962	20	1.0654	12	1.2451	18	0.9249	20	1.0163	18	0.1310
30	Ede&weiss Absolute Return Fund	0.5053	32	0.5679	31	0.5924	31	0.3020	30	0.3378	28	0.2913	26	0.4611	32	0.4126	32	-0.4428
31	Taurus Starshare	1.1787	9	0.9587	14	1.1127	5	0.8959	1	1.1147	5	2.0303	2	1.0521	4	1.5412	1	0.3910
32	Taurus Discovery Fund	1.2774	4	1.0701	5	1.0667	8	0.8948	2	1.1006	8	1.9903	3	1.0819	2	1.5361	2	0.3863
33	Taurus Bonanza Fund	1.1518	11	0.9345	16	1.1452	3	0.8714	5	1.1103	7	1.8554	4	1.0426	5	1.4490	4	0.2993
	Overall Risk	1.0777		0.9107		0.9268		0.7095		0.9854		1.3703		0.9238		1.1125		

To analyze the risk-return relationship of the sample schemes, correlation coefficients between daily percentage return and risk have been computed and presented in **Table 3**. The results indicate that the risk and return are highly correlated for all the schemes. JP Morgan India Top 100 Fund (0.7829), Kotak 50 (0.7750) and JP Morgan India Equity Fund (0.7714) display highest correlation in between the daily percentage return and risk profile. Franklin Asian Equity Fund (0.5485) and Edelweiss Absolute Return Fund (0.6163) stand as the funds exhibiting lowest correlation in between risk and return. The overall correlation coefficient for the sample period is found to be 0.7241 which represents a high positive correlation between risk and return. A further look at the table under reference indicates that the majority of sample schemes had space for more diversification as implied by R^2 which shows a value around 0.50 for majority of schemes. More the diversification, lesser is the risk associated with the schemes, and therefore all schemes have a scope of diversification on the part of fund managers

Table 4 presents the ranking of sample schemes based on the Beta value. It measures the Systematic risk which indicates the sensitivity of a scheme return in relation to market return. If a schemes beta is less than 1, it is considered to be defensive and if the schemes beta is more than 1 it is considered to be volatile and tends to move up and down with the market. It is observed from the Table 4 that Beta value of all the schemes ranges between 0.16 and 0.99 for the sample period. The average Beta value comes at 0.80 for this period, which is less than 1 implying that funds risk is less than the market risk. On the basis of size of Beta, Taurus Star share, JP Morgan India Top100 and Taurus Discovery Fund stand at first, second and third position respectively. HDFC Equity Saving Fund has the least value of beta (0.16) and therefore is the most defensive of all sample funds, followed on the upside by Edelweiss Absolute Return Fund with beta equal to 0.32.

The average beta value for both the sub-periods is close to each other. As all schemes have Beta value less than 1, it implies that the equity schemes tend to hold portfolios which are less risky than the market portfolio.

Table 3 : Correlation Between Return Of Select Equity Schemes And Market Return

S.No.	Name of Scheme	2015		2014		2013		2012		2011		2006-2011		2011-2016		2006-16		R ²
		R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	R	Std. Dev.	
1	UTI Equity fund	0.8050	1	0.7848	5	0.7928	7	0.7335	4	0.7873	1	0.7547	7	0.7807	2	0.7677	5	0.5894
2	UTI Top 100	0.7912	6	0.7899	3	0.7950	4	0.7217	8	0.7505	17	0.6739	25	0.7696	5	0.7217	20	0.5209
3	UTI Master Share	0.7906	7	0.7952	2	0.8066	1	0.7284	6	0.7804	5	0.7565	6	0.7803	3	0.7684	4	0.5904
4	Canara Robeco Emerging Equities	0.7620	26	0.6108	30	0.6762	29	0.6174	24	0.7125	26	0.7184	21	0.6758	30	0.6971	27	0.4859
5	Canara Robeco FORCE Fund	0.7589	27	0.6961	20	0.7866	10	0.6919	16	0.7212	24	0.6774	24	0.7310	20	0.7156	23	0.5121
6	Canara Robeco Equity Diversified	0.7733	18	0.7498	17	0.7813	12	0.7389	3	0.7649	9	0.7394	13	0.7616	13	0.7505	13	0.5633
7	Franklin Build India Fund	0.7541	29	0.6860	24	0.7773	15	0.7028	14	0.7593	12	0.7232	19	0.7359	18	0.7322	18	0.5362
8	Franklin Asian Equity Fund	0.6454	33	0.4921	33	0.3949	32	0.3834	31	0.6859	27	0.5836	27	0.5204	33	0.5485	33	0.3008
9	Franklin India Prima Fund	0.7660	22	0.6925	21	0.7274	23	0.5908	28	0.7324	20	0.7367	16	0.7018	23	0.7192	22	0.5173
10	JPMorgan India Equity Fund	0.7916	4	0.7772	8	0.7988	2	0.7198	9	0.7727	7	0.7707	3	0.7720	4	0.7714	3	0.5951
11	JPMorgan India Mid&Small Cap Fund	0.7745	17	0.6663	25	0.7302	22	0.6118	25	0.7254	23	0.7505	8	0.7017	24	0.7234	19	0.5232
12	JPMorgan India Top 100 Fund	0.7840	11	0.7817	7									0.7829	1	0.7829	1	0.6129
13	BNP Paribas Equity Fund	0.7790	14	0.7849	4	0.7445	18	0.6696	17	0.7549	15	0.7492	11	0.7466	17	0.7473	15	0.5585
14	BNP Paribas Mid Cap Fund	0.7748	16	0.6913	22	0.6588	30	0.6222	23	0.7416	18	0.6935	23	0.6977	25	0.6965	28	0.4852
15	BNP Paribas Dividend Yield Fund	0.7897	8	0.7715	9	0.7381	20							0.7664	7	0.7664	6	0.5874
16	Reliance Vision	0.7712	19	0.7250	19	0.7543	17	0.6581	20	0.7557	14	0.7385	14	0.7329	19	0.7357	17	0.5413
17	Reliance Equity Opportunities Fund	0.7832	12	0.6880	23	0.7399	19	0.6665	18					0.7194	21	0.7194	21	0.5176
18	Reliance Small Cap Fund	0.7424	30	0.5506	32	0.5380	31	0.5637	29	0.7695	8	0.7567	5	0.6329	32	0.6535	30	0.4271
19	HDFC Equity Fund	0.7626	25	0.7325	18	0.7870	9	0.7063	10	0.7747	6	0.7375	15	0.7526	16	0.7451	16	0.5551
20	HDFC Growth Fund	0.7693	20	0.7578	13	0.7778	14	0.7061	11	0.7842	2	0.7494	10	0.7590	15	0.7542	11	0.5688
21	HDFC Equity Saving Fund	0.7153	32	0.6373	29	0.6935	26	0.6600	19	0.6780	28	0.6151	26	0.6768	29	0.6459	31	0.4172
22	Axis Equity Fund	0.7796	13	0.7507	16	0.7957	3	0.7263	7	0.7808	4	0.7274	18	0.7666	6	0.7554	10	0.5706
23	Axis Focused 25 Fund	0.7638	24	0.7559	14	0.7795	13	0.7434	1					0.7607	14	0.7607	8	0.5786
24	Axis Midcap Fund	0.7648	23	0.6004	31	0.6891	27	0.6308	21	0.7301	21	0.7708	2	0.6830	27	0.6977	26	0.4876
25	Kotak Emerging Equity Scheme	0.7961	2	0.6538	26	0.7117	25	0.6082	26	0.7516	16	0.7222	20	0.7043	22	0.7122	25	0.5073
26	Kotak 50	0.7875	9	0.7977	1	0.7765	16	0.7038	13	0.7601	11	0.8244	1	0.7651	10	0.7750	2	0.6006
27	Kotak Opportunities Fund	0.7913	5	0.7657	10	0.7828	11	0.6999	15	0.7835	3	0.7591	4	0.7646	11	0.7619	7	0.5804
28	Edelweiss Emerging Leaders Fund	0.7264	31	0.6405	28	0.7131	24	0.6007	27	0.7274	22			0.6816	28	0.6816	29	0.4646
29	Edelweiss Divrsd Growth Equity Top 100 Fund	0.7934	3	0.7818	6	0.7906	8	0.7060	12	0.7588	13	0.7086	22	0.7661	8	0.7497	14	0.5620
30	Edelweiss Absolute Return Fund	0.7672	21	0.7600	11	0.6866	28	0.4830	30	0.5284	29	0.5445	28	0.6450	31	0.6163	32	0.3798
31	Taurus Star share	0.7847	10	0.7517	15	0.7942	6	0.7307	5	0.7646	10	0.7419	12	0.7652	9	0.7535	12	0.5678
32	Taurus Discovery Fund	0.7547	28	0.6408	27	0.7348	21	0.6289	22	0.7189	25	0.7290	17	0.6956	26	0.7123	24	0.5074
33	Taurus Bonanza Fund	0.7769	15	0.7584	12	0.7945	5	0.7397	2	0.7413	19	0.7503	9	0.7621	12	0.7562	9	0.5719
	Overall Correlation Coefficient	0.7688		0.7127		0.7359		0.6611		0.7413		0.7215		0.7260		0.7241		0.5268

Table 4 : Ranking Of Equity Schemes Based On Beta Value

S.No.	Name of Scheme	2015		2014		2013		2012		2011		2006-2011		2011-2016		2006-16	
		β	Rank	β	Rank	β	Rank	β	Rank	β	Rank	β	Rank	β	Rank	β	Rank
1	UTI Equity fund	0.9895	17	0.9175	22	0.7987	16	0.7520	15	0.7197	12	0.7836	22	0.8354	17	0.8095	22
2	UTI Top 100	0.9613	23	0.9202	21	0.7875	18	0.7505	16	0.7021	15	0.8984	9	0.8243	20	0.8613	13
3	UTI Master Share	0.9676	21	0.9365	16	0.8344	10	0.7739	14	0.7335	10	0.8526	13	0.8492	16	0.8509	17
4	Canara Robeco Emerging Equities	1.1154	5	0.9355	17	0.6045	27	0.6427	22	0.5908	25	0.8199	19	0.7778	23	0.7988	24
5	Canara Robeco FORCE Fund	1.0317	11	0.9563	12	0.9315	5	0.8442	5	0.7127	13	0.7724	23	0.8953	7	0.8602	15
6	Canara Robeco Equity Diversified	1.1045	7	1.0581	2	0.8000	14	0.8063	9	0.6540	18	0.8868	11	0.8846	9	0.8857	9
7	Franklin Build India Fund	0.9654	22	0.9263	18	0.8132	12	0.6961	20	0.6876	16	0.8106	21	0.8177	21	0.8157	20
8	Franklin Asian Equity Fund	0.7091	31	0.3648	32	0.3151	31	0.4313	29	0.8035	3	0.4972	25	0.5248	31	0.5125	31
9	Franklin India Prima Fund	0.8785	29	0.8205	29	0.6548	23	0.5445	28	0.5850	26	0.8512	14	0.6966	30	0.7739	27
10	JPMorgan India Equity Fund	0.9324	27	1.0394	4	0.8573	8	0.7983	11	0.7598	7	0.9306	6	0.8774	11	0.9011	7
11	JPMorgan India Mid&Small Cap Fund	0.9923	15	0.9983	7	0.6400	25	0.6133	24	0.6325	22	0.8386	17	0.7757	24	0.8036	23
12	JPMorgan India Top 100 Fund	0.9416	26	1.0094	5									0.9755	2	0.9755	2
13	BNP Paribas Equity Fund	0.8766	30	0.9215	20	0.7070	20	0.6176	23	0.6233	23	0.9789	3	0.7492	25	0.8148	21
14	BNP Paribas Mid Cap Fund	0.9910	16	0.9155	23	0.5440	28	0.5913	26	0.6102	24	0.9044	8	0.7304	28	0.7801	26
15	BNP Paribas Dividend Yield Fund	0.8962	28	0.9238	19	0.6648	22							0.8289	18	0.8289	19
16	Reliance Vision	1.1081	6	1.0072	6	0.8659	7	0.8501	4	0.8164	2	0.8868	10	0.9295	5	0.9082	6
17	Reliance Equity Opportunities Fund	1.0024	13	0.8667	25	0.7297	19	0.8428	6					0.8604	13	0.8604	14
18	Reliance Small Cap Fund	1.1327	2	0.8286	27	0.4687	29	0.5719	27	0.6506	19	0.6309	24	0.7305	27	0.7139	29
19	HDFC Equity Fund	1.1450	1	1.0840	1	0.9538	3	0.9341	3	0.8318	1	0.8488	15	0.9902	1	0.9195	5
20	HDFC Growth Fund	1.0768	8	1.0439	3	0.8980	6	0.8380	7	0.7839	4	0.8190	20	0.9281	6	0.8735	11
21	HDFC Equity Saving Fund	0.3325	33	0.2882	33	0.1524	32	0.1490	31	0.1204	29	0.1091	28	0.2085	33	0.1588	33
22	Axis Equity Fund	0.9551	24	0.9379	15	0.8031	13	0.7890	12	0.7826	5	0.8407	16	0.8535	15	0.8499	18
23	Axis Focused 25 Fund	1.0018	14	0.9431	13	0.7895	17	0.7988	10					0.8833	10	0.8833	10
24	Axis Midcap Fund	0.9805	18	0.8246	28	0.6379	26	0.7227	19	0.5629	27	0.2308	26	0.7457	26	0.6599	30
25	Kotak Emerging Equity Scheme	0.9741	19	0.7732	30	0.6504	24	0.6029	25	0.6338	21	0.8231	18	0.7269	29	0.7696	28
26	Kotak 50	0.9713	20	0.9937	8	0.9644	2	0.7412	2	0.6752	17	0.8804	12	0.8692	12	0.8711	12
27	Kotak Opportunities Fund	1.0034	12	0.9620	11	0.7993	15	0.7792	13	0.7533	8	0.9411	5	0.8594	14	0.9003	8
28	Edelweiss Emerging Leaders Fund	1.1177	4	0.8320	26	0.6888	21	0.6660	21	0.6410	20			0.7891	22	0.7891	25
29	Edelweiss Dvrsd Growth Equity Top 100 Fund	0.9524	25	0.8816	24	0.8444	9	0.7272	18	0.7264	11	0.9289	7	0.8264	19	0.8557	16
30	Edelweiss Absolute Return Fund	0.4504	32	0.5919	31	0.4312	30	0.2138	30	0.1604	28	0.1897	27	0.3699	32	0.3184	32
31	Taurus Star share	1.0691	9	0.9884	9	0.9368	4	0.9685	1	0.7659	6	1.0413	1	0.9457	3	0.9935	1
32	Taurus Discovery Fund	1.1199	3	0.9405	14	0.8310	11	0.8325	8	0.7111	14	1.0351	2	0.8870	8	0.9611	3
33	Taurus Bonanza Fund	1.0396	10	0.9719	10	0.9645	1	0.9537	2	0.7396	9	0.9679	4	0.9339	4	0.9509	4
	Overall Beta	0.9632		0.8911		0.7301		0.7048		0.6610		0.7857		0.7994		0.8033	

Table 5 presents the Sharpe ratios of the Schemes viz-z-viz the market. Higher the Sharpe ratio, higher is the performance of the fund in terms of return against the risk taken. The results indicate that none of the schemes have succeeded in providing the risk-premium to the investor, as all the Sharpe Ratios are negative. But it is also noticeable that the difference between the Sharpe ratio of the fund and the market is positive in all, but four, schemes which indicate that funds have definitely performed better than the market. The Sharpe ratio is found highest in case of BNP Paribas Dividend Yield Fund (-0.04) followed by BNP Paribas Midcap Fund (-0.06). To get further insights, t-test was applied to examine the significance of difference in the risk premium offered by the select schemes and the benchmark. The values of t-test indicate that such differences are significant in case of 11 schemes out of the 33.

Table 5 : Ranking of Equity Schemes on The Basis of Sharpe Ratio

S.No.	Name of Scheme	SR _p	RANK	SR _M	SR _p -SR _M	T-Value
1	UTI Equity fund	-0.0801	15	-0.0985	0.0184	*2.8904
2	UTI Top 100	-0.0957	21	-0.0975	0.0018	0.1234
3	UTI Master Share	-0.0798	14	-0.0984	0.0186	*2.7582
4	Canara Robeco Emerging Equities	-0.0688	4	-0.0984	0.0296	1.3995
5	Canara Robeco FORCE Fund	-0.0748	9	-0.1217	0.0469	*3.6543
6	Canara Robeco Equity Diversified	-0.0753	10	-0.0983	0.0230	*3.0422
7	Franklin Build India Fund	-0.0768	13	-0.1190	0.0422	1.4915
8	Franklin Asian Equity Fund	-0.1185	29	-0.1263	0.0078	-0.0412
9	Franklin India Prima Fund	-0.0760	12	-0.0984	0.0224	1.4851
10	JPMorgan India Equity Fund	-0.0806	16	-0.1039	0.0233	*3.0115
11	JPMorgan India Mid&Small Cap Fund	-0.0973	23	-0.1265	0.0292	1.3551
12	JPMorgan India Top 100 Fund	-0.1153	28	-0.1716	0.0564	N.A.
13	BNP Paribas Equity Fund	-0.1147	27	-0.1116	-0.0030	1.5916
14	BNP Paribas Mid Cap Fund	-0.0608	2	-0.1116	0.0508	2.3808
15	BNP Paribas Dividend Yield Fund	-0.0433	1	-0.1319	0.0886	2.8736
16	Reliance Vision	-0.0727	7	-0.0987	0.0261	2.1396
17	Reliance Equity Opportunities Fund	-0.1614	31	-0.2045	0.0431	1.7974
18	Reliance Small Cap Fund	-0.1077	25	-0.1512	0.0435	1.7279
19	HDFC Equity Fund	-0.0644	3	-0.0987	0.0343	*4.2662
20	HDFC Growth Fund	-0.0726	6	-0.0987	0.0262	*3.4032
21	HDFC Equity Saving Fund	-0.4903	33	-0.0962	-0.3941	-5.2456
22	Axis Equity Fund	-0.0970	22	-0.1349	0.0379	*2.9705
23	Axis Focused 25 Fund	-0.1084	26	-0.1475	0.0392	1.2723
24	Axis Midcap Fund	-0.0904	20	-0.0836	-0.0067	2.3477
25	Kotak Emerging Equity Scheme	-0.0807	17	-0.1020	0.0212	1.0309
26	Kotak 50	-0.1303	30	-0.1583	0.0281	2.0305
27	Kotak Opportunities Fund	-0.0740	8	-0.0984	0.0244	*2.6382
28	Edelweiss Emerging Leaders Fund	-0.1016	24	-0.1331	0.0316	1.9706
29	Edelweiss Dvrsd Growth Equity Top 100 Fund	-0.0896	19	-0.1160	0.0264	*2.7075
30	Edelweiss Absolute Return Fund	-0.2670	32	-0.1139	-0.1531	-3.4987
31	Taurus Starshare	-0.0696	5	-0.0998	0.0302	*4.5809
32	Taurus Discovery Fund	-0.0757	11	-0.0983	0.0226	0.9530
33	Taurus Bonanza Fund	-0.0841	18	-0.0983	0.0143	2.3478

* Significant at 0.05 Level

Similarly, **Table 6** indicates that the Treynor Ratio for all the schemes is observed to be negative. This indicates that none of the schemes has provided return in excess of the risk free return. Though 27 schemes have Treynor ratio better than that of the Benchmark but only two schemes- Canara Robeco FORCE Fund and BNP Paribas Dividend Yield Fund have significantly outperformed the Market. The number of schemes outperforming the market is higher according to Sharpe measure as compared to Treynor measure.

Table 6 : Ranking of Equity Schemes on The Basis of Treynor Ratio

S.No.	Name of Scheme	TR_p	RANK	TR_m	TR_p-TR_m	T-Value
1	UTI Equity fund	-0.1080	14	-0.1233	0.0153	*2.9561
2	UTI Top 100	-0.1414	27	-0.1182	-0.0233	-0.6963
3	UTI Master Share	-0.1061	12	-0.1164	0.0103	1.6662
4	Canara Robeco Emerging Equities	-0.1091	15	-0.1351	0.0260	0.8600
5	Canara Robeco FORCE Fund	-0.0912	3	-0.1236	0.0324	2.1929
6	Canara Robeco Equity Diversified	-0.0994	9	-0.1170	0.0177	2.1097
7	Franklin Build India Fund	-0.0930	4	-0.1305	0.0375	1.2156
8	Franklin Asian Equity Fund	-0.2364	31	-0.2861	0.0497	-0.5404
9	Franklin India Prima Fund	-0.1144	19	-0.1389	0.0245	1.1701
10	JPMorgan India Equity Fund	-0.1072	13	-0.1173	0.0101	1.6455
11	JPMorgan India Mid&Small Cap Fund	-0.1743	30	-0.1819	0.0077	0.6834
12	JPMorgan India Top 100 Fund	-0.1211	23	-0.1430	0.0220	N.A.
13	BNP Paribas Equity Fund	-0.1126	17	-0.1336	0.0210	2.0884
14	BNP Paribas Mid Cap Fund	-0.0768	1	-0.1401	0.0633	2.3195
15	BNP Paribas Dividend Yield Fund	-0.0987	7	-0.1380	0.0393	1.6645
16	Reliance Vision	-0.1019	11	-0.1116	0.0097	0.8096
17	Reliance Equity Opportunities Fund	-0.1600	29	-0.1697	0.0097	1.3472
18	Reliance Small Cap Fund	-0.1377	26	-0.1970	0.0593	1.6365
19	HDFC Equity Fund	-0.0849	2	-0.1053	0.0204	1.6319
20	HDFC Growth Fund	-0.0943	5	-0.1098	0.0155	2.0145
21	HDFC Equity Saving Fund	-0.9118	33	-0.8168	-0.0950	-0.0404
22	Axis Equity Fund	-0.1119	16	-0.1375	0.0256	1.9149
23	Axis Focused 25 Fund	-0.1129	18	-0.1296	0.0167	0.6081
24	Axis Midcap Fund	-0.1160	20	0.0227	-0.1387	2.5728
25	Kotak Emerging Equity Scheme	-0.1190	22	-0.1351	0.0161	0.7978
26	Kotak 50	-0.1588	28	-0.1748	0.0160	1.8304
27	Kotak Opportunities Fund	-0.0987	8	-0.1141	0.0153	1.9189
28	Edelweiss Emerging Leaders Fund	-0.1324	25	-0.1444	0.0121	1.0904
29	Edelweiss Dvrstd Growth Equity Top 100 Fund	-0.1010	10	-0.1232	0.0221	1.6902
30	Edelweiss Absolute Return Fund	-0.4100	32	-0.3877	-0.0223	0.6493
31	Taurus Starshare	-0.0985	6	-0.1135	0.0150	1.1070
32	Taurus Discovery Fund	-0.1283	24	-0.1179	-0.0104	-0.1478
33	Taurus Bonanza Fund	-0.1181	21	-0.1073	-0.0108	-0.3934

* Significant at 0.05 Level

Conclusion

On the whole, it can be concluded that majority of schemes have succeeded in providing a better return to the investor as compared to the benchmark portfolio. But there is no convincing evidence, which recommends that performance of mutual funds is significantly superior to the market during the study period. Further, it was found that the sample schemes are not adequately diversified and have low systematic risk. It is also evident that majority of schemes have been able to provide only risk free return to its investors and have not been found aggressively active in the market. It is further evident that there is scope of diversification on the part of fund managers as the schemes are not adequately diversified.

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