

CHAPTER 5

PERFORMANCE ANALYSIS

OF SELECTED INDIAN

MUTUAL FUND SCHEMES

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CHAPTER 5

PERFORMANCE ANALYSIS OF SELECTED INDIAN MUTUAL FUND SCHEMES

5.1 INTRODUCTION

This chapter discusses the empirical results pertaining to the investment performance of Indian mutual fund schemes. Before discussing the empirical results it would be worthwhile to recall that the study used 137 open ended schemes during the period from January 2000 to December 2009 (i.e. ten year period). As on 1st January 2000, total 325 schemes were in operation. But out of 325 schemes, total 188 schemes matured during the period January 2000 to December 2009. And as on December 2009 total 819 schemes were in operation. But the schemes launched after January 2000 (i.e. total 494 schemes) were not selected for the study. Hence out of all the available schemes, the schemes for which data were available for the entire span of study period are selected. For 137 schemes such data were available for the entire span of the study period. Data used in the study consist of month end Net Asset Values (NAV) for each of the sample schemes and the NAVs have been adjusted for any dividend, bonus and right issues to obtain the scheme return. These schemes are from public as well as private sectors. The details of the 137 schemes selected for the analysis are given by the way of Appendix- I. The summary is presented in the Table 5.1.

Schemes Characteristics	Scheme Category-wise Classification				
Scheme Sponsorship-wise classification	Growth	Income	Balanced	Tax-Planning	Total Sample Size
Bank Sponsored: Joint Ventures - Predominantly Indian (BS-JV-PI)	7	4	1	2	14
Bank Sponsored: Joint Ventures - Predominantly Foreign (BS-JV-PF)	1	-	-	1	2
Bank Sponsored: Others (BS-O)	2	3	3		8
Institutions (INST.)	2	6	3	1	12
Private Sector: Indian (PS-I)	15	11	4	3	33
Private Sector: Foreign (PS-F)	11	4	2		17
Private Sector: Joint Ventures - Predominantly Indian (PS-JV-PI)	18	17	6	3	44
Private Sector: Joint Ventures - Predominantly Foreign (PS-JV-PF)	1	2	2	2	7
Total Sample Size	57	47	21	12	137

Two benchmark proxies viz., BSE30 and Nifty50 have been used and 91 days t-bills rate has been used as a proxy for risk free return.

HYPOTHESES

The researcher has attempted to test the following hypotheses in respect of performance evaluation of the different mutual fund schemes:

H₀₁: There is no significant difference between the average return of the selected sample mutual fund schemes and average return of the benchmark portfolio viz., BSE30 and Nifty50.

H₀₂: There is no significant difference between the average risk of the selected sample mutual fund schemes and average risk of the benchmark portfolio viz., BSE30 and Nifty50.

H₀₃: There is no significant difference in the return of the selected sample mutual fund schemes according to their objectives.

H₀₄: There is no significant difference in the risk of the selected sample mutual fund schemes according to their objectives.

H₀₅: There is no significant difference in the systematic risk of the selected sample mutual fund schemes according to their objectives.

H₀₆: There is no significant difference between the average return earned by private sector mutual fund schemes and public sector mutual fund schemes.

H₀₇: The mutual fund schemes are not reasonably diversified.

H₀₈: There is no significant difference in the unique risk of the selected sample mutual fund schemes according to their objectives.

H₀₉: There is no significant difference in the Treynor ratio of the selected sample mutual fund schemes according to their objectives.

H₀₁₀: There is no significant difference in the Sharpe ratio of the selected sample mutual fund schemes according to their objectives.

H₀₁₁: The RCC derived between Sharpe and Treynor ratio for each group of the selected sample mutual fund schemes according to their objectives is not significant.

H₀₁₂: The observed value of Jensen Differential Measure (alpha) for the same sample schemes is not different from zero.

H₀₁₃: There is no significant difference in the Appraisal ratio of the selected sample mutual fund schemes according to their objectives.

- H₀₁₄:** There is no significant difference in the Information ratio of the selected sample mutual fund schemes according to their objectives.
- H₀₁₅:** There is no significant difference in the M² measure of the selected sample mutual fund schemes according to their objectives.
- H₀₁₆:** The RCC is not significant between different types of schemes.
- H₀₁₇:** There is no significant difference in the performance of sample schemes across the different measurement criteria.

PERFORMANCE MEASURES

Investment performance of the sample mutual fund schemes have been carried out by using the following measures given in Table 5.2:

Table 5.2 : Performance Measures	
1)	Rate of Return Measure
2)	Risk Adjusted Performance Measures
A)	Return per unit of Risk measure (Relative measures of performance)
a)	Treynor ratio (1965)
b)	Sharpe ratio (1966)
B)	Differential return measure (Absolute measures of performance)
a)	Jensen Differential measure (1968)
b)	Sharpe Differential measure
C)	Fama's Components of investment performance measure (1972)
D)	Others
a)	Appraisal ratio (1973)
b)	Information ratio (1994)
c)	M ² measure: Modigliani and Modigliani (1997)

The chapter is divided into three sections. Section 1 presents the empirical results based on performance measures. Section 2 presents the ranking of mutual fund schemes across benchmark criteria and ranking of mutual fund schemes across different measurement criteria. And Section 3 gives the summary and conclusion of the results.

5.2 SECTION 1: EMPIRICAL RESULTS

5.2.1 RISK AND RETURN OF THE SAMPLE SCHEMES

To calculate monthly return of the scheme, following formula is used:

$$R_{jt} = [(NAV_t - NAV_{t-1} + D_{jt}) / NAV_{t-1}] * 100 \quad \text{----- (1)}$$

The monthly returns so computed for different single periods have been compounded to get compounded monthly rates of return of mutual fund scheme. The following formula has been used to compute monthly compounded rates of return, R_p , for fund "j" :

$$R_p = (R_{j1} * R_{j2} * R_{j3} * \dots * R_{jn})^{1/n} - 1 \quad \text{----- (2)}$$

Analogously, the monthly returns for the market index (BSE 30 and Nifty 50) have been computed. The 91 days T-Bills rate has been used as a surrogate for the risk free rate of return. The return on the risk free asset i.e. the monthly yields on 91 days T-Bills have been calculated by using the same methodology as mentioned in Chapter 4. The total risk of the sample schemes has been measured by standard deviation of the return distribution and market risk of the sample schemes has been measured by beta. Thus, the following para presents the empirical outcome about the returns for each selected scheme over a selected time frame, group-wise for schemes viz. Balanced, Growth, Income, and Tax-Planning. In addition to fund return, fund risk (σ), fund beta (β) with reference to BSE30 and Nifty50 are also computed. The results are presented in Table 5.3.

5.2.1.1 RISK AND RETURN ANALYSIS

Table 5.3 reveals the return and risk statistics for the sample schemes and for the market portfolio.

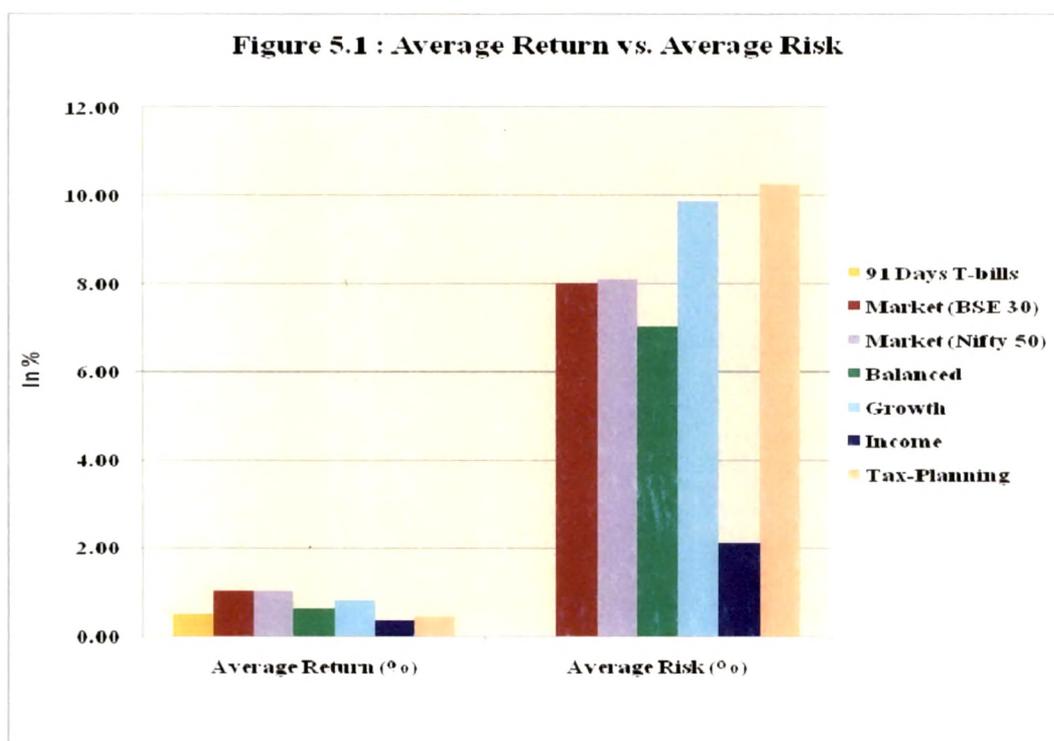
Table 5.3 : Risk and Return of Sample Schemes vs. Benchmark Portfolio					
Sr. No.	Scheme Name	Fund Return (%)	Fund Risk (%)	Fund Beta	
				BSE 30	Nifty 50
Balanced					
1	Birla Sun Life'95 Fund (G)	1.2262	6.7922	0.7470	0.7387
2	Birla Sun Life'95 Fund (D)	0.5927	7.1407	0.7477	0.7392
3	DSP Blackrock Balanced Fund (G)	1.2500	5.9349	0.6933	0.6871
4	Templeton India Pension Plan (G)	1.0720	3.0416	0.3480	0.3418
5	Templeton India Pension Plan (D)	0.2268	4.0021	0.3662	0.3578
6	HDFC Prudence Fund (D)	0.4579	7.3191	0.7011	0.6895
7	HDFC Prudence Fund (G)	1.7041	6.3036	0.7028	0.6890
8	ICICI Prudential Balanced Fund (G)	0.8975	6.1568	0.6869	0.6848
9	JM Balanced Fund (G)	0.0545	8.3169	0.6667	0.6564
10	JM Balanced Fund (D)	0.1360	7.0876	0.7666	0.7546
11	Kotak Mahindra Balance (G)	0.5358	6.1739	0.6270	0.6149
12	LIC Mf Balance Fund (D)	0.0044	6.5394	0.6778	0.6765
13	LIC Mf Balance Fund (G)	0.6907	6.1543	0.6629	0.6615
14	LIC MF Unit Linked Insurance Scheme (D)	-0.1636	6.3939	0.5380	0.5355
15	Principal Balanced Fund (D)	0.2929	13.9352	0.5938	0.5877
16	Principal Balanced Fund (G)	0.8705	14.4012	0.7646	0.7685
17	SBI Magnum Balanced Fund (G)	0.6298	8.9573	0.8171	0.8197
18	Tata Balanced Fund (G)	1.1075	6.7511	0.7482	0.7481
19	UTI Balanced Fund (D)	0.2300	6.3185	0.5791	0.5824
20	UTI Balanced Fund (G)	1.2460	5.8100	0.6236	0.6234

Sr. No.	Scheme Name	Fund Return (%)	Fund Risk (%)	Fund Beta	
				BSE 30	Nifty 50
21	UTI Ulip (G)	0.1681	4.0408	0.3506	0.3476
	Average	0.6300	7.0272	0.6385	0.6336
Growth					
22	Baroda Pioneer Diversified fund (G)	0.9780	8.9906	1.0301	1.0185
23	Birla Sun Life Advantage Fund (G)	0.7041	9.1811	1.0508	1.0366
24	Birla Sun Life Equity (G)	1.4413	9.5164	1.0665	1.0584
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	12.0088	1.0820	1.0709
26	Birla Sun Life India Opportunities Fund (G)	0.4950	10.1612	1.0295	1.0169
27	Birla Sun Life M N C Fund (G)	1.2274	6.7673	0.7157	0.7144
28	Birla Sun Life M N C Fund (D)	0.5564	7.7982	0.7308	0.7368
29	DSP Blackrock Equity Fund (G)	-0.5888	11.4696	0.9673	0.9614
30	Franklin Fmcg Fund (G)	1.0133	5.8441	0.5449	0.5426
31	Franklin India Bluechip Fund (G)	1.6583	7.9523	0.9522	0.9383
32	Franklin India Bluechip Fund (D)	0.4704	9.2707	0.9450	0.9184
33	Franklin India Prima Fund (G)	1.6337	9.7071	1.0123	0.9986
34	Franklin India Prima Fund (D)	0.3068	10.0954	0.9982	0.9812
35	Franklin India Prima Plus (G)	1.5592	7.9706	0.9333	0.9217
36	Franklin India Prima Plus (D)	0.1364	8.8882	0.9012	0.8888
37	Franklin Infotech Fund (D)	-0.5774	11.2626	0.9555	0.9277
38	Franklin Infotech Fund (G)	0.3098	10.7649	0.9321	0.9116
39	Franklin Pharma Fund (G)	1.0571	6.8995	0.5929	0.5916
40	Templeton India Growth Fund (G)	1.6338	8.2109	0.9687	0.9539
41	HDFC Capital Builder Fund (D)	0.4275	8.9143	0.8265	0.8132
42	HDFC Capital Builder Fund (G)	1.5476	7.8442	0.8530	0.8429
43	HDFC Equity Fund (G)	1.8742	8.2567	0.9657	0.9513
44	HDFC Equity Fund (D)	0.6901	8.9330	0.8634	0.8575
45	HDFC Top 200 Fund (D)	0.4735	9.3011	0.9664	0.9448
46	HDFC Top 200 Fund (G)	1.7062	8.3890	0.9722	0.9624
47	ICICI Prudential FMCG Fund (G)	1.2200	7.0393	0.6236	0.6215
48	ICICI Prudential Growth Plan (G)	1.1316	8.0641	0.9349	0.9290
49	ICICI Prudential Growth Plan (D)	-0.2782	9.2321	0.9107	0.9111
50	ICICI Prudential Power (G)	1.3557	48.5703	0.3370	0.3159
51	JM Basic Fund (G)	-0.1654	13.1351	1.2060	1.1960
52	JM Equity Fund (D)	-0.0146	9.5449	1.0321	1.0339
53	JM Equity Fund (G)	0.6492	9.3968	1.0858	1.0719
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	8.4262	0.9792	0.9645
55	LIC M F Growth Fund (G)	0.6915	9.0641	0.9733	0.9637
56	LIC MF Equity Fund (G)	0.6787	9.1046	1.0659	1.0600
57	Principal Index Fund (G)	0.9265	7.9996	0.9879	0.9866
58	Reliance Growth Fund (D)	0.2575	9.8610	0.9073	0.9098
59	Reliance Growth Fund (G)	2.0028	9.0251	0.9765	0.9675
60	Reliance Vision Fund (G)	1.8995	8.4412	0.9290	0.9200

Sr. No.	Scheme Name	Fund Return (%)	Fund Risk (%)	Fund Beta	
				BSE 30	Nifty 50
61	SBI Magnum Contra Fund (G)	1.1866	10.0539	0.9292	0.9221
62	SBI Magnum Equity Fund (G)	-0.0331	10.4463	1.0868	1.0735
63	SBI Magnum F M C G Fund (G)	0.3504	7.3083	0.6001	0.5805
64	SBI Magnum Global Fund-1994 (G)	0.7598	10.8498	1.1460	1.1246
65	SBI Magnum I T Fund (G)	-0.5079	11.5765	1.0630	1.0434
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	10.2735	1.1029	1.0911
67	SBI Magnum Pharma Fund (G)	0.7789	8.8141	0.7808	0.7843
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	8.9555	1.0348	1.0192
69	Tata Equity Opportunities Fund (D)	0.7587	8.7566	0.8930	0.8955
70	Tata Growth Fund (G)	1.6644	8.0220	0.8667	0.8618
71	Tata Life Sciences & Technology Fund (G)	0.9985	9.0942	0.9281	0.9249
72	Tata Pure Equity Fund (G)	1.4529	8.4361	0.9849	0.9764
73	Tata Select Equity Fund (G)	1.0232	10.1507	1.0910	1.0895
74	Taurus Bonanza (G)	1.2000	9.5141	1.0129	1.0045
75	Taurus Discovery (G)	0.5899	11.0549	1.1198	1.1158
76	Taurus Starshare (G)	1.1773	10.7849	1.1431	1.1334
77	UTI Master Value Fund (G)	0.4889	9.4503	0.8837	0.8754
78	UTI Mastershare (G)	0.6314	7.7026	0.8961	0.8842
	Average	0.8101	9.8692	0.9363	0.9265
Income					
79	Birla Sun Life Cash-Manager-Ret (G)	0.5488	0.1462	-0.0050	-0.0042
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	0.1487	-0.0059	-0.0050
81	Birla Sun Life Income Plus-Ret (G)	0.7411	1.8513	0.0346	0.0357
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	2.2445	0.0401	0.0428
83	DBS Chola Triple Ace (G)	0.4701	1.3786	0.0008	-0.0016
84	DSP Blackrock Bond Fund (G)	0.6443	1.2771	0.0227	0.0231
85	DSP Blackrock Bond Fund (QD)	-0.0015	2.2602	0.0201	0.0190
86	Templeton India Income Fund (G)	0.6468	1.0752	0.0262	0.0251
87	Templeton India Income Fund (QD)	0.0181	1.5424	0.0385	0.0389
88	Templeton India Treasury Management Account (G)	0.5548	0.1564	-0.0058	-0.0050
89	Templeton India Treasury Management Account (WD)	0.0788	0.2194	-0.0023	-0.0020
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	3.2845	0.0320	0.0305
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	4.2666	-0.0286	-0.0264
92	HDFC High Interest Fund (QD)	0.0595	2.1341	0.0431	0.0466
93	HDFC High Interest Fund (AD)	0.1148	2.4640	0.0224	0.0262
94	HDFC High Interest Fund (HD)	0.0571	2.1509	0.0253	0.0277
95	HDFC High Interest Fund (G)	0.6568	7.9133	-0.0872	-0.0839
96	ING Vysya Income Fund-Ret (QD)	0.0707	2.0893	0.0702	0.0704
97	ING Vysya Income Fund-Ret (G)	0.6725	1.4021	0.0237	0.0247
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	2.3413	0.0179	0.0138
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	3.3474	0.0051	0.0034
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	1.0064	0.0013	0.0021

Sr. No.	Scheme Name	Fund Return (%)	Fund Risk (%)	Fund Beta	
				BSE 30	Nifty 50
101	ICICI Prudential Income Plan (G)	0.7525	1.8003	0.0306	0.0309
102	JM G-Sec Fund -Regular (D)	0.2494	2.3108	0.0330	0.0369
103	JM High Liquidity Fund (G)	0.5515	0.1851	-0.0061	-0.0051
104	JM High Liquidity Fund (WD)	-0.0701	1.5613	-0.0087	-0.0093
105	JM Income Fund (G)	0.4816	0.9182	0.0230	0.0241
106	JM Income Fund (D)	-0.0282	3.6370	0.0490	0.0571
107	Kotak Mahindra Gilt- Savings (G)	0.5304	0.3490	-0.0015	-0.0018
108	LIC Bond Fund (G)	0.7048	1.1152	0.0121	0.0127
109	LIC Bond Fund (D)	0.0016	1.5928	0.0167	0.0187
110	LIC Monthly Income Plan (MD)	0.0025	1.7619	0.1429	0.1452
111	LIC Monthly Income Plan (G)	0.7686	9.4933	0.2362	0.2347
112	LIC MF Govt. Securities Fund-Regular (G)	0.6295	1.8705	0.0297	0.0291
113	LIC MF Govt. Securities Fund-Regular (D)	-0.0073	2.5320	0.0088	0.0070
114	SBI Magnum Income Fund-1998 (D)	-0.0121	2.1040	0.0440	0.0446
115	SBI Magnum Income Fund-1998 (G)	0.5336	1.2717	0.0320	0.0314
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	1.3600	0.0023	0.0014
117	SBI Magnum Insta Cash Fund (G)	0.5399	0.6945	-0.0069	-0.0049
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	1.1240	0.0282	0.0288
119	Tata Gilt RIP (G)	0.7694	2.0682	0.0392	0.0385
120	Tata Gilt RIP (D)	0.1208	2.2021	0.0500	0.0540
121	Tata Income Fund (G)	0.5584	1.3507	0.0086	0.0094
122	Tata Income Fund (HD)	0.0330	1.7166	0.0244	0.0253
123	UTI Bond Fund (D)	-0.0647	3.6219	0.0722	0.0819
124	UTI Bond Fund (G)	0.6411	1.6047	0.0184	0.0174
125	UTI Money Market Fund (WD)	0.4258	6.3704	-0.0377	-0.0452
	Average	0.3598	2.1131	0.0240	0.0248
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	0.1446	9.9382	1.0458	1.0399
127	Canara Robeco Equity Tax Saver (G)	-0.1356	10.4029	1.0544	1.0316
128	HDFC Tax Saver (D)	0.3479	9.6974	0.8848	0.8608
129	HDFC Tax Saver (G)	1.3374	9.4920	0.9700	0.9652
130	ICICI Prudential Tax Plan (G)	1.4729	9.7149	1.0441	1.0279
131	LIC MF Tax Plan (G)	0.3959	9.1539	0.9722	0.9714
132	Principal Personal Tax Saver Fund (G)	0.3428	10.6725	1.0102	0.9987
133	Principal Tax Savings Fund (G)	0.9005	9.1890	0.9979	0.9881
134	SBI Magnum Tax Gain'93 (G)	0.1462	11.1491	1.0579	1.0440
135	Sahara Tax Gain Fund (G)	-0.8226	12.4704	1.0684	1.0486
136	Tata Tax Saving Fund (G)	0.6381	9.4524	1.0083	0.9987
137	Taurus Tax shield (G)	0.4555	11.4827	1.0889	1.0834
	Average	0.4353	10.2346	1.0169	1.0049
	Overall Average	0.5952	6.8047	0.5847	0.5791
Note: Risk Free Return (91 Days T-bills) = 0.5038 ; Market Return (BSE 30) = 1.0224 and Market Risk (BSE 30) = 8.0094 ; Market Return (Nifty 50) = 1.0246 and Market Risk (Nifty 50) = 8.1004					

Aim	No. of Schemes	Average Return (%)	Average Risk (%)	Market Risk	
				BSE 30	Nifty 50
Balanced	21	0.6300	7.0272	0.6385	0.6336
Growth	57	0.8101	9.8692	0.9363	0.9265
Income	47	0.3598	2.1131	0.0240	0.0248
Tax-Planning	12	0.4353	10.2346	1.0169	1.0049



To examine whether the average return of the selected mutual fund schemes is significantly different than the benchmark return or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁: There is no significant difference between the average return of the selected sample mutual fund schemes and average return of the benchmark portfolio viz., BSE30 and Nifty50.

Based on the results of the returns presented in Table 5.3, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference between the average return of the selected sample mutual fund schemes and average return of the benchmark portfolio viz., BSE30 and Nifty50		
Fund Return	BSE30	Nifty50
t-stat (* Significant at the 0.05 level, 2-tailed)	-8.9085*	-8.9544*

On comparing the same with the Table Value, it was found that there is a significant difference in the average return of mutual fund schemes and average return of the benchmark portfolio. The negative significant **t-value** indicates that the average return on mutual fund schemes was significantly lower than the average return on the benchmark portfolio.

To examine whether the average risk of the selected mutual fund schemes is significantly different than the benchmark risk or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₂: There is no significant difference between the average risk of the selected sample mutual fund schemes and average risk of the benchmark portfolio viz., BSE30 and Nifty50.

Based on the results of the risk presented in Table 5.3, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference between the average risk of the selected sample mutual fund schemes and average return of the benchmark portfolio viz., BSE30 and Nifty50		
Fund Return	BSE30	Nifty50
t-stat (* Significant at the 0.05 level, 2-tailed)	-2.7195*	-2.9250*

On comparing the same with the Table Value, it was found that there is a significant difference in the average risk of mutual fund schemes and average risk of the benchmark portfolio. The negative significant **t-value** indicates that the average risk on mutual fund schemes was significantly lower than the average risk on the benchmark portfolio.

According to the modern investment theories return and risk are positively related. Therefore, one would expect that return and risk on mutual fund schemes should be in tandem with their investment policies. The sample schemes have been classified into four major categories based on their aims: (1) Balanced schemes, (2) Growth schemes, (3) Income schemes, and (4) Tax-planning schemes. The growth schemes and tax-planning schemes invest majority of their corpus in equity or stock market. As higher amount risk is attached to the stock market investment, these schemes are expected to earn higher amount of return. Income funds are low risk profile funds that seek to generate fixed current income (and not capital appreciation) to investors expected to earn low return with low risk. While balanced schemes which are having combine features of growth funds and income funds are expected to earn moderate

return with moderate risk. Hence, it will be useful to examine if the risk characteristics of the schemes are consistent with their stated objectives. The relationship between scheme objectives and risk has been examined in terms of total risk (standard deviation) and systematic risk (beta).

5.2.1.2 RETURN AND FUND OBJECTIVES

An examination of Table 5.3 and Table 5.4 indicates that the average return earned by the mutual fund schemes is 0.5952. It also reveals that out of 137 mutual fund schemes, 119 schemes (86.86 %) have earned positive return, while only 18 schemes (13.14 %) have earned negative return. Out of 137 schemes, 65 schemes (47.45 %) have earned the return more than the average return earned by mutual fund schemes. Fund Objective wise highest average return is earned by growth schemes (0.8101%) and which is followed by balanced schemes (0.6300 %), tax-planning schemes (0.4353%) and income schemes (0.3598%). Thus in terms of returns top five performers are, Reliance Growth Fund (G), Reliance Vision Fund (G), HDFC Equity Fund (G), HDFC Top 200 Fund (G) and HDFC Prudence Fund (G). While bottom five laggards are Sahara Tax Gain Fund (G), DSP Blackrock Equity Fund (G), Franklin Infotech Fund (D), SBI Magnum IT Fund (G) and Birla Sun Life India Opportunities Fund (D).

From Table 5.3, it can be seen that the average risk free return is 0.5038. Here, the average risk free return is less than the average fund return i.e. 0.5952. Of 137 schemes, 78 (56.93%) mutual fund schemes have earned returns more than the risk free return. This implies that the sample schemes, on an average, performed better than the risk free return. The average market returns for BSE30 and Nifty 50 are 1.0224 and 1.0246 respectively. Here the average market returns are more than the average fund return. This implies that the sample schemes, on an average, performed poorer than the market return. There are only 31 (22.63%) and 30 (21.90%) schemes which earned more monthly compounding return than the monthly compounding market returns with respect to BSE30 and Nifty 50 respectively.

To examine whether the return of the selected mutual fund schemes is significantly different according to their objectives or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₃: There is no significant difference in the return of the selected sample mutual fund schemes according to their objectives.

As the sample is divided into four groups according to their objectives viz. Balanced, Growth, Income and Tax-Planning. Hence to examine a difference if any, total six combinations were there. Based on the results of the return presented in Table 5.3, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference in the Return of the selected sample mutual fund schemes according to their objectives	
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)
Balanced vs. Growth	-1.1475
Balanced vs. Income	2.7224*
Balanced vs. Tax-Planning	0.9792
Growth vs. Income	4.3675*
Growth vs. Tax-Planning	1.8301
Income vs. Tax-Planning	-0.6025

On comparing the same with the Table Value, it was found that in case of Balanced & Income schemes and Growth & Income schemes there is a significant difference. The positive significant t-value indicates that the average return earned by Balanced schemes and Growth schemes was significantly higher than the average return earned by the Income schemes. This goes in line with the objectives of the scheme.

5.2.1.3 TOTAL RISK AND FUND OBJECTIVES

Table 5.3 reveals that the average risk of the sample scheme is 6.8047 percent per month whereas for the market it is 8.0094 and 8.1004 per month for BSE30 and Nifty50 respectively. 63 (45.99%) and 61(44.53%) schemes depicted higher than monthly total risk with respect to BSE30 and Nifty50 benchmark proxy. Table 5.4 reveals that risk and return characteristics for the Indian mutual fund schemes are to more extent in conformity with their stated objectives. It is clearly examined from the Table 5.4 that average return for the growth schemes is 0.8101 percent per month with 9.8692 percent average monthly risk. Growth schemes have earned highest average return with higher risk. So it is matched with their stated objective. Balanced schemes also earned the moderate average monthly return of 0.6300 percent with moderate risk of 7.0272 percent. And as mentioned earlier income schemes are having low return with low risk kind of characteristics, the result is matched with their stated objective. The average monthly return for the income schemes is 0.3598 percent with average monthly risk of 2.1131, which is lowest compare to all the other sample schemes and matched with their stated objective. While in case of tax-planning schemes, the average risk is highest i.e. 10.2346 percent but have earned average return of 0.4353

percent per month, which is lower than the balanced schemes. Only in case of tax-planning schemes the result is not in conformity with their stated objectives. Thus, it may be concluded that risk and return of the mutual fund schemes are in conformity with their stated objectives except for Tax-Planning Schemes.

To examine whether the risk of the selected mutual fund schemes is significantly different according to their objectives or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₄: There is no significant difference in the risk of the selected sample mutual fund schemes according to their objectives.

Based on the results of the risk presented in Table 5.3, t-value was derived. The computed value of t is shown below.

Significance of difference in the Risk of the selected sample mutual fund schemes according to their objectives	
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)
Balanced vs. Growth	-2.3015*
Balanced vs. Income	8.7518*
Balanced vs. Tax-Planning	-3.9012*
Growth vs. Income	9.4128*
Growth vs. Tax-Planning	-0.2324
Income vs. Tax-Planning	-14.7387*

On comparing the same with the Table Value, it was found that only in case of Growth & Tax-Planning schemes there is a no significant difference. It indicates that the average risk of Growth schemes and Tax-Planning schemes are similar. This indicates that even though there is no significant difference in return between Balanced & Growth scheme, there is a significant difference in risk between Balanced & Growth schemes. Same is the case with Balanced & Income schemes, Balanced & Tax-Planning schemes, Growth & Income schemes and Income & Tax-Planning schemes.

5.2.1.4 SYSTEMATIC RISK AND FUND OBJECTIVES

Systematic risk, which is popularly known as beta, is also called the market risk. If one takes beta as a measure of risk, then growth schemes and tax-planning schemes reflecting an aggressive investment objective with higher systematic risk. The balanced schemes on the other hand reflect a moderate amount of systematic risk. While income schemes are considered to have a conservative risk profile.

Table 5.3 and Table 5.4 reveal the overall result and the data regarding the betas of schemes according to their investment objectives. The average systematic risk is

0.5847 and 0.5791 across both the benchmark criteria viz., BSE 30 and Nifty 50 respectively. In case of growth schemes, beta varies from a minimum of 0.3370 (BSE30) and 0.3159(Nifty50) for ICICI Prudential Power (G) to maximum 1.2060 (BSE30) and 1.1960 (Nifty50) for JM Basic Fund (G) and the average beta for the sample schemes being 0.9363 and 0.9265 for BSE30 and Nifty50 benchmark proxy respectively. The tax-planning schemes that are being managed as growth schemes also showed highest beta values. The beta values ranged from a minimum 0.8848 (BSE30) and 0.8608 (Nifty50) for HDFC Tax Saver (D) to maximum 1.0889 (BSE30) and 1.0834 (Nifty50) for Taurus Tax shield (G) and the average beta for the sample schemes being 1.0169 and 1.0049 for BSE30 and Nifty50 benchmark proxy respectively. As expected, the income schemes did not have much relationship with the market; their beta values are small in comparison to all other schemes. For income schemes beta ranged between 0.2362(BSE30) and 0.2347 (Nifty50) for LIC Monthly Income Plan (G) to -0.0872 (BSE30) and -0.0839(Nifty50) for HDFC High Interest Fund (G). An average value of beta is 0.0240 and 0.0248 for BSE30 and Nifty50 benchmark proxy. While balanced schemes are having moderate risk and the results also matched with the objective. For balanced schemes beta ranged between 0.8171 (BSE30) and 0.8197 (Nifty50) SBI Magnum Balanced Fund (G) to 0.3480 (BSE30) and 0.3418 (Nifty50) for Templeton India Pension Plan (G). An average value of beta is 0.6385 and 0.6336 for BSE30 and Nifty50 benchmark proxy. Thus, the betas for different types of schemes ranged from a minimum of -0.0872 (BSE30) and -0.0839 (Nifty50) and maximum of 1.2060 (BSE30) and 1.1960 (Nifty50). This is clearly reflected that the data are in conformity with their stated objectives in case of all the sample schemes.

To examine whether the systematic risk of the selected mutual fund schemes is significantly different according to their objectives or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀: There is no significant difference in the systematic risk of the selected sample mutual fund schemes according to their objectives.

Based on the results of the systematic risk presented in Table 5.3, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference in the Systematic Risk of the selected sample mutual fund schemes according to their objectives		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-7.5591*	-7.4721*
Balanced vs. Income	27.7737*	27.4059*
Balanced vs. Tax-Planning	-9.1113*	-8.9081*
Growth vs. Income	37.7883*	37.5547*
Growth vs. Tax-Planning	-1.7134	-1.6745
Income vs. Tax-Planning	-64.3119*	-62.6841*

On comparing the same with the Table Value, it was found that only in case of Growth & Tax-Planning schemes there is a no significant difference. It indicates that the average systematic risk of Growth schemes and Tax-Planning schemes are similar.

5.2.1.5 RETURN AND FUND SPONSORSHIP

In the study, there have been some cases where superior performance has surely been reflected. Table 5.5 revealed that the average return of the private sector mutual fund schemes (101 schemes) was found to be 0.6680 and for the public sector mutual fund schemes (36 schemes) was 0.3907. Thus, the private sector mutual fund scheme performed far better than the public sector mutual fund schemes. These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., B. Mishra (2001)¹, H. J. Sondhi and P.K. Jain (2005)².

To examine whether the average return earned by private sector mutual fund schemes is significantly different than public sector mutual fund schemes or not, **t**, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀: There is no significant difference between the average return earned by private sector mutual fund schemes and public sector mutual fund schemes.

Based on the results of the return presented in Table 5.3, **t-value** was derived. The computed value of **t** is shown below.

Fund Sponsorship	No. of Schemes	Average Return
Public Sector	36	0.3907
Private Sector	101	0.6680

Note: t-value at 5% level of significance = 3.0895*

On comparing the same with the Table Value, it was found that there is a significant difference in the average return earned by private sector mutual fund schemes and public sector mutual fund schemes. The positive significant **t-value** indicates that the

average return earned by the private sector mutual fund schemes was significantly higher than the average return earned by the public sector mutual fund schemes.

5.2.1.6 UNIQUE RISK AND DIVERSIFICATION

The potential advantage of mutual fund investment to the retail investors is diversification of the portfolio. The modern portfolio theory considers that diversification reduces risk of a portfolio. Diversification reduces the unique (unsystematic) risk and not the market (systematic) risk, which in any case has to be borne by the fund managers. So it will be worthwhile to examine as to what extent Indian mutual fund managers have been able to diversify their portfolios. Table 5.6 reveals information regarding the unique risk of mutual funds and the extent of diversification of sample schemes. As mentioned in the chapter of 'Research Methodology'- to examine the unique risk Variance of mutual fund scheme return, Variance of market return and Beta coefficient of the scheme are computed.

Out of 137 schemes, 80 schemes (58.39 %) show less than the average unique risk, while 53 and 52 mutual fund schemes reflect less than average degree of diversification with respect to both BSE 30 and Nifty 50 benchmark proxy. However, 36 schemes have lower than average unique risk but have higher degree of diversification, as it was higher than the average. While 7 schemes (5.11 %) have higher than average unique risk but have lower degree of diversification with respect to both BSE 30 and Nifty 50 benchmark proxy viz., JM Balanced Fund (G), Principal Balanced Fund (D), ICICI Prudential Power (G), SBI Magnum FMCG Fund (G), HDFC High Interest Fund (G), LIC Monthly Income Plan (G), UTI Money Market Fund (WD).

Table 5.6 : Unique Risk and Diversification of Mutual Fund Schemes					
Sr. No.	Scheme Name	Unique Risk (%)		Diversification (R ²)	
		BSE 30	Nifty 50	BSE 30	Nifty 50
Balanced					
1	Birla Sun Life'95 Fund (G)	3.2146	3.2141	0.7760	0.7761
2	Birla Sun Life'95 Fund (D)	3.8898	3.8907	0.7033	0.7031
3	DSP Blackrock Balanced Fund (G)	2.0955	2.0612	0.8753	0.8794
4	Templeton India Pension Plan (G)	1.2174	1.2589	0.8398	0.8287
5	Templeton India Pension Plan (D)	2.7225	2.7597	0.5372	0.5245
6	HDFC Prudence Fund (D)	4.6939	4.7299	0.5887	0.5824
7	HDFC Prudence Fund (G)	2.8371	2.9296	0.7974	0.7840
8	ICICI Prudential Balanced Fund (G)	2.7638	2.6710	0.7985	0.8118
9	JM Balanced Fund (G)	6.3760	6.3952	0.4123	0.4087

Sr. No.	Scheme Name	Unique Risk (%)		Diversification (R ²)	
		BSE 30	Nifty 50	BSE 30	Nifty 50
10	JM Balanced Fund (D)	3.5406	3.5872	0.7505	0.7438
11	Kotak Mahindra Balance (G)	3.5915	3.6480	0.6616	0.6509
12	LIC Mf Balance Fund (D)	3.6461	3.5682	0.6891	0.7023
13	LIC Mf Balance Fund (G)	3.1119	3.0265	0.7443	0.7582
14	LIC MF Unit Linked Insurance Scheme (D)	4.7236	4.6971	0.4542	0.4603
15	Principal Balanced Fund (D)	13.0986	13.0969	0.1165	0.1167
16	Principal Balanced Fund (G)	13.0342	12.9864	0.1808	0.1868
17	SBI Magnum Balanced Fund (G)	6.1155	6.0122	0.5339	0.5495
18	Tata Balanced Fund (G)	3.1084	2.9761	0.7880	0.8057
19	UTI Balanced Fund (D)	4.2906	4.2035	0.5389	0.5574
20	UTI Balanced Fund (G)	2.9675	2.8734	0.7391	0.7554
21	UTI Ulip (G)	2.9057	2.8982	0.4829	0.4856
	Average	4.4736	4.4516	0.6194	0.6224
Growth					
22	Baroda Pioneer Diversified fund (G)	3.5724	3.5731	0.8421	0.8421
23	Birla Sun Life Advantage Fund (G)	3.6677	3.7123	0.8404	0.8365
24	Birla Sun Life Equity (G)	4.1939	4.1305	0.8058	0.8116
25	Birla Sun Life India Opportunities Fund (D)	8.3129	8.3046	0.5208	0.5218
26	Birla Sun Life India Opportunities Fund (G)	5.9377	5.9498	0.6585	0.6571
27	Birla Sun Life M N C Fund (G)	3.5966	3.5080	0.7175	0.7313
28	Birla Sun Life M N C Fund (D)	5.1524	5.0189	0.5635	0.5858
29	DSP Blackrock Equity Fund (G)	8.4576	8.4203	0.4563	0.4610
30	Franklin Fmcg Fund (G)	3.8870	3.8513	0.5576	0.5657
31	Franklin India Bluechip Fund (G)	2.2521	2.3396	0.9198	0.9134
32	Franklin India Bluechip Fund (D)	5.3530	5.5315	0.6666	0.6440
33	Franklin India Prima Fund (G)	5.3374	5.3666	0.6977	0.6944
34	Franklin India Prima Fund (D)	6.1639	6.2245	0.6272	0.6198
35	Franklin India Prima Plus (G)	2.7654	2.7915	0.8796	0.8773
36	Franklin India Prima Plus (D)	5.1863	5.2124	0.6595	0.6561
37	Franklin Infotech Fund (D)	8.2633	8.3889	0.4617	0.4452
38	Franklin Infotech Fund (G)	7.7552	7.8329	0.4810	0.4706
39	Franklin Pharma Fund (G)	5.0056	4.9640	0.4737	0.4824
40	Templeton India Growth Fund (G)	2.6876	2.7778	0.8929	0.8855
41	HDFC Capital Builder Fund (D)	5.9704	6.0062	0.5514	0.5460
42	HDFC Capital Builder Fund (G)	3.8542	3.8612	0.7586	0.7577
43	HDFC Equity Fund (G)	2.8894	2.9655	0.8775	0.8710
44	HDFC Equity Fund (D)	5.6549	5.6167	0.5993	0.6047
45	HDFC Top 200 Fund (D)	5.1570	5.2853	0.6926	0.6771
46	HDFC Top 200 Fund (G)	3.1202	3.0977	0.8617	0.8636
47	ICICI Prudential FMCG Fund (G)	4.9600	4.9202	0.5035	0.5114
48	ICICI Prudential Growth Plan (G)	2.9942	2.8975	0.8621	0.8709
49	ICICI Prudential Growth Plan (D)	5.6591	5.5465	0.6243	0.6391

Sr. No.	Scheme Name	Unique Risk (%)		Diversification (R ²)	
		BSE 30	Nifty 50	BSE 30	Nifty 50
50	ICICI Prudential Power (G)	48.4953	48.5029	0.0031	0.0028
51	JM Basic Fund (G)	8.9012	8.8697	0.5408	0.5440
52	JM Equity Fund (D)	4.7716	4.5782	0.7501	0.7699
53	JM Equity Fund (G)	3.5592	3.5938	0.8565	0.8537
54	Kotak Mahindra 30 Unit Scheme (G)	3.0805	3.1561	0.8663	0.8597
55	LIC M F Growth Fund (G)	4.6242	4.6061	0.7397	0.7418
56	LIC MF Equity Fund (G)	3.1633	3.0279	0.8793	0.8894
57	Principal Index Fund (G)	1.1766	0.3460	0.9784	0.9981
58	Reliance Growth Fund (D)	6.6655	6.5521	0.5431	0.5585
59	Reliance Growth Fund (G)	4.5038	4.4759	0.7510	0.7540
60	Reliance Vision Fund (G)	3.9861	3.9642	0.7770	0.7795
61	SBI Magnum Contra Fund (G)	6.7598	6.7301	0.5479	0.5519
62	SBI Magnum Equity Fund (G)	5.7750	5.7892	0.6944	0.6929
63	SBI Magnum F M C G Fund (G)	5.5051	5.5947	0.4326	0.4140
64	SBI Magnum Global Fund-1994 (G)	5.7853	5.8930	0.7157	0.7050
65	SBI Magnum I T Fund (G)	7.8437	7.9110	0.5409	0.5330
66	SBI Magnum Multiplier Plus-1993 (G)	5.2454	5.2369	0.7393	0.7402
67	SBI Magnum Pharma Fund (G)	6.2114	6.1098	0.5034	0.5195
68	Sundaram B N P Paribas Growth Fund (G)	3.3923	3.4694	0.8565	0.8499
69	Tata Equity Opportunities Fund (D)	5.0519	4.9049	0.6672	0.6862
70	Tata Growth Fund (G)	4.0209	3.9514	0.7488	0.7574
71	Tata Life Sciences & Technology Fund (G)	5.2394	5.1550	0.6681	0.6787
72	Tata Pure Equity Fund (G)	2.9905	2.9342	0.8743	0.8790
73	Tata Select Equity Fund (G)	5.1651	5.0155	0.7411	0.7559
74	Taurus Bonanza (G)	4.9701	4.9306	0.7271	0.7314
75	Taurus Discovery (G)	6.4624	6.3648	0.6583	0.6685
76	Taurus Starshare (G)	5.6995	5.6587	0.7207	0.7247
77	UTI Master Value Fund (G)	6.2619	6.2470	0.5609	0.5630
78	UTI Mastershare (G)	2.7967	2.8332	0.8682	0.8647
	Average	5.7177	5.6929	0.6843	0.6861
Income					
79	Birla Sun Life Cash Manager-Ret (G)	0.1406	0.1421	0.0761	0.0552
80	Birla Sun Life Cash Plus-Ret (G)	0.1411	0.1430	0.0995	0.0754
81	Birla Sun Life Income Plus-Ret (G)	1.8304	1.8285	0.0224	0.0244
82	Birla Sun Life Income Plus-Ret (QD)	2.2214	2.2176	0.0204	0.0238
83	DBS Chola Triple Ace (G)	1.3786	1.3785	0.0000	0.0001
84	DSP Blackrock Bond Fund (G)	1.2641	1.2633	0.0203	0.0215
85	DSP Blackrock Bond Fund (QD)	2.2544	2.2549	0.0051	0.0046
86	Templeton India Income Fund (G)	1.0545	1.0558	0.0380	0.0356
87	Templeton India Income Fund (QD)	1.5112	1.5098	0.0400	0.0418
88	Templeton India Treasury Management Account (G)	0.1494	0.1510	0.0872	0.0675
89	Templeton India Treasury Management Account (WD)	0.2186	0.2188	0.0073	0.0056

Sr. No.	Scheme Name	Unique Risk (%)		Diversification (R ²)	
		BSE 30	Nifty 50	BSE 30	Nifty 50
90	HDFC Cash Management Fund - Savings Plan (WD)	3.2745	3.2752	0.0061	0.0057
91	HDFC Cash Management Fund - Savings Plan (G)	4.2604	4.2612	0.0029	0.0025
92	HDFC High Interest Fund (QD)	2.1060	2.1004	0.0261	0.0313
93	HDFC High Interest Fund (AD)	2.4575	2.4549	0.0053	0.0074
94	HDFC High Interest Fund (HD)	2.1413	2.1391	0.0089	0.0109
95	HDFC High Interest Fund (G)	7.8825	7.8841	0.0078	0.0074
96	ING Vysya Income Fund-Ret (QD)	2.0123	2.0099	0.0723	0.0746
97	ING Vysya Income Fund-Ret (G)	1.3892	1.3878	0.0183	0.0203
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	2.3369	2.3386	0.0038	0.0023
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	3.3471	3.3473	0.0001	0.0001
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	1.0063	1.0062	0.0001	0.0003
101	ICICI Prudential Income Plan (G)	1.7835	1.7828	0.0186	0.0194
102	JM G-Sec Fund -Regular (D)	2.2957	2.2914	0.0131	0.0168
103	JM High Liquidity Fund (G)	0.1786	0.1804	0.0688	0.0498
104	JM High Liquidity Fund (WD)	1.5597	1.5595	0.0020	0.0023
105	JM Income Fund (G)	0.8996	0.8973	0.0401	0.0450
106	JM Income Fund (D)	3.6158	3.6075	0.0117	0.0162
107	Kotak Mahindra Gilt- Savings (G)	0.3487	0.3486	0.0012	0.0018
108	LIC Bond Fund (G)	1.1110	1.1104	0.0076	0.0085
109	LIC Bond Fund (D)	1.5872	1.5856	0.0071	0.0091
110	LIC Monthly Income Plan (MD)	1.3393	1.3116	0.4222	0.4459
111	LIC Monthly Income Plan (G)	9.3029	9.3010	0.0397	0.0401
112	LIC MF Govt. Securities Fund-Regular (G)	1.8553	1.8556	0.0162	0.0159
113	LIC MF Govt. Securities Fund-Regular (D)	2.5311	2.5314	0.0008	0.0005
114	SBI Magnum Income Fund-1998 (D)	2.0743	2.0727	0.0280	0.0295
115	SBI Magnum Income Fund-1998 (G)	1.2456	1.2460	0.0405	0.0399
116	SBI Magnum Insta Cash Fund (WD)	1.3598	1.3599	0.0002	0.0001
117	SBI Magnum Insta Cash Fund (G)	0.6923	0.6933	0.0063	0.0033
118	Sundaram B N P Paribas Bond Saver (G)	1.1011	1.0995	0.0404	0.0432
119	Tata Gilt RIP (G)	2.0442	2.0446	0.0231	0.0227
120	Tata Gilt RIP (D)	2.1653	2.1583	0.0331	0.0394
121	Tata Income Fund (G)	1.3490	1.3486	0.0026	0.0032
122	Tata Income Fund (HD)	1.7055	1.7043	0.0130	0.0142
123	UTI Bond Fund (D)	3.5755	3.5606	0.0255	0.0336
124	UTI Bond Fund (G)	1.5980	1.5985	0.0084	0.0077
125	UTI Money Market Fund (WD)	6.3632	6.3598	0.0022	0.0033
	Average	2.0864	2.0846	0.0306	0.0304
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	5.3482	5.2735	0.7104	0.7184
127	Canara Robeco Equity Tax Saver (G)	6.0748	6.1966	0.6590	0.6452
128	HDFC Tax Saver (D)	6.6190	6.7394	0.5341	0.5170
129	HDFC Tax Saver (G)	5.4528	5.3828	0.6700	0.6784

Sr. No.	Scheme Name	Unique Risk (%)		Diversification (R ²)	
		BSE 30	Nifty 50	BSE 30	Nifty 50
130	ICICI Prudential Tax Plan (G)	4.9437	5.0045	0.7410	0.7346
131	LIC MF Tax Plan (G)	4.8120	4.6768	0.7237	0.7390
132	Principal Personal Tax Saver Fund (G)	6.9597	6.9612	0.5747	0.5746
133	Principal Tax Savings Fund (G)	4.5340	4.5142	0.7565	0.7587
134	SBI Magnum Tax Gain'93 (G)	7.2460	7.2648	0.5776	0.5754
135	Sahara Tax Gain Fund (G)	9.0714	9.1301	0.4708	0.4640
136	Tata Tax Saving Fund (G)	4.9124	4.8889	0.7299	0.7325
137	Taurus Tax shield (G)	7.4692	7.4052	0.5769	0.5841
	Average	6.1203	6.1198	0.6437	0.6435
	Over All Average	4.3165	4.3022	0.4465	0.4477

To examine whether the mutual fund schemes are reasonably diversified or not, the null hypothesis as follows was framed.

H₀₇: The mutual fund schemes are not reasonably diversified.

The average unique risk of the mutual fund schemes is 4.3165 and 4.3022 per month with respect to BSE 30 and Nifty 50 benchmark proxy. While average diversification for BSE 30 and Nifty 50 benchmark proxy comes to 44.65% and 44.77% respectively. This entails that sample mutual fund schemes are not reasonably diversified. These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Gupta (2003)³, Chandel and Verma (2005)⁴, Muthappan and Damodharan (2006)⁵, Debasish (2007)⁶ etc.

To examine whether the unique risk of the selected mutual fund schemes is significantly different according to their objectives or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₈: There is no significant difference in the unique risk of the selected sample mutual fund schemes according to their objectives.

Based on the results of the unique risk presented in Table 5.6, t-value was derived.

The computed value of t is shown below.

Significance of difference in the Unique Risk of the selected sample mutual fund schemes according to their objectives		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-0.9033	-0.8992
Balanced vs. Income	3.9898*	3.9587*
Balanced vs. Tax-Planning	-1.7375	-1.7579
Growth vs. Income	3.9938*	3.9594*
Growth vs. Tax-Planning	-0.2296	-0.2428
Income vs. Tax-Planning	-7.1788*	-7.1633*

On comparing the same with the Table Value, it was found that in case of Balanced & Growth schemes, Balanced & Tax-planning schemes and Growth & Tax-Planning schemes there is a no significant difference.

5.2.2 RESULT OF TREYNOR RATIO (1965)⁷

Treynor conceives an index of portfolio performance measure called as 'reward to volatility ratio', based on systematic risk. The performance measure is the excess return over the risk free rate per unit of systematic risk, in other words it indicates risk premium per unit of systematic risk.

Table 5.7 : Treynor Ratios of Mutual Fund Schemes across Benchmark Criteria					
Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Treynor Ratio	Rank	Treynor Ratio	Rank
Balanced					
1	Birla Sun Life'95 Fund (G)	0.9671	35	0.9780	36
2	Birla Sun Life'95 Fund (D)	0.1189	69	0.1203	70
3	DSP Blackrock Balanced-Fund (G)	1.0764	33	1.0861	34
4	Templeton India Pension Plan (G)	1.6329	19	1.6625	20
5	Templeton India Pension Plan (D)	-0.7564	101	-0.7742	102
6	HDFC Prudence Fund (D)	-0.0654	79	-0.0665	80
7	HDFC Prudence Fund (G)	1.7079	18	1.7420	18
8	ICICI Prudential Balanced Fund (G)	0.5733	50	0.5750	51
9	JM Balanced Fund (G)	-0.6738	98	-0.6844	99
10	JM Balanced Fund (D)	-0.4797	93	-0.4873	94
11	Kotak Mahindra Balance (G)	0.0512	73	0.0522	74
12	LIC Mf Balance Fund (D)	-0.7368	99	-0.7381	100
13	LIC Mf Balance Fund (G)	0.2820	59	0.2826	60
14	LIC MF Unit Linked Insurance Scheme (D)	-1.2405	109	-1.2462	110
15	Principal Balanced Fund (D)	-0.3551	90	-0.3588	91
16	Principal Balanced Fund (G)	0.4797	52	0.4773	53
17	SBI Magnum Balanced Fund (G)	0.1543	65	0.1538	66
18	Tata Balanced Fund (G)	0.8068	43	0.8070	44
19	UTI Balanced Fund (D)	-0.4728	92	-0.4702	93
20	UTI Balanced Fund (G)	1.1901	27	1.1906	28
21	UTI Ulip (G)	-0.9575	105	-0.9658	105
	Average	0.1573		0.1589	
Growth					
22	Baroda Pioneer Diversified fund (G)	0.4604	54	0.4656	55
23	Birla Sun Life Advantage Fund (G)	0.1906	63	0.1932	64
24	Birla Sun Life Equity (G)	0.8790	41	0.8858	42
25	Birla Sun Life India Opportunities Fund (D)	-0.7506	100	-0.7585	101

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Treynor Ratio	Rank	Treynor Ratio	Rank
26	Birla Sun Life India Opportunities Fund (G)	-0.0086	74	-0.0087	75
27	Birla Sun Life M N C Fund (G)	1.0110	34	1.0129	35
28	Birla Sun Life M N C Fund (D)	0.0720	72	0.0714	73
29	DSP Blackrock Equity Fund (G)	-1.1295	107	-1.1364	108
30	Franklin Fmcg Fund (G)	0.9352	37	0.9391	40
31	Franklin India Bluechip Fund (G)	1.2124	26	1.2305	27
32	Franklin India Bluechip Fund (D)	-0.0353	77	-0.0363	78
33	Franklin India Prima Fund (G)	1.1162	32	1.1315	32
34	Franklin India Prima Fund (D)	-0.1973	84	-0.2007	85
35	Franklin India Prima Plus (G)	1.1309	30	1.1452	31
36	Franklin India Prima Plus (D)	-0.4076	91	-0.4133	92
37	Franklin Infotech Fund (D)	-1.1316	108	-1.1654	109
38	Franklin Infotech Fund (G)	-0.2081	85	-0.2128	86
39	Franklin Pharma Fund (G)	0.9333	38	0.9353	41
40	Templeton India Growth Fund (G)	1.1665	28	1.1846	29
41	HDFC Capital Builder Fund (D)	-0.0923	80	-0.0938	81
42	HDFC Capital Builder Fund (G)	1.2237	25	1.2384	26
43	HDFC Equity Fund (G)	1.4192	22	1.4406	23
44	HDFC Equity Fund (D)	0.2158	61	0.2173	62
45	HDFC Top 200 Fund (D)	-0.0313	76	-0.0320	77
46	HDFC Top 200 Fund (G)	1.2368	24	1.2494	25
47	ICICI Prudential FMCG Fund (G)	1.1485	29	1.1525	30
48	ICICI Prudential Growth Plan (G)	0.6716	46	0.6758	47
49	ICICI Prudential Growth Plan (D)	-0.8587	102	-0.8583	103
50	ICICI Prudential Power (G)	2.5280	16	2.6969	17
51	JM Basic Fund (G)	-0.5549	96	-0.5595	97
52	JM Equity Fund (D)	-0.5022	95	-0.5013	96
53	JM Equity Fund (G)	0.1339	67	0.1357	68
54	Kotak Mahindra 30 Unit Scheme (G)	0.6299	47	0.6395	48
55	LIC M F Growth Fund (G)	0.1929	62	0.1948	63
56	LIC MF Equity Fund (G)	0.1641	64	0.1650	65
57	Principal Index Fund (G)	0.4279	55	0.4285	56
58	Reliance Growth Fund (D)	-0.2714	87	-0.2707	88
59	Reliance Growth Fund (G)	1.5351	20	1.5494	21
60	Reliance Vision Fund (G)	1.5024	21	1.5171	22
61	SBI Magnum Contra Fund (G)	0.7348	44	0.7405	45
62	SBI Magnum Equity Fund (G)	-0.4940	94	-0.5001	95
63	SBI Magnum F M C G Fund (G)	-0.2556	86	-0.2642	87
64	SBI Magnum Global Fund-1994 (G)	0.2234	60	0.2276	61
65	SBI Magnum I T Fund (G)	-0.9517	104	-0.9696	107

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Treynor Ratio	Rank	Treynor Ratio	Rank
66	SBI Magnum Multiplier Plus-1993 (G)	0.0863	70	0.0873	71
67	SBI Magnum Pharma Fund (G)	0.3524	57	0.3508	58
68	Sundaram B N P Paribas Growth Fund (G)	0.6282	48	0.6378	49
69	Tata Equity Opportunities Fund (D)	0.2855	58	0.2847	59
70	Tata Growth Fund (G)	1.3392	23	1.3467	24
71	Tata Life Sciences & Technology Fund (G)	0.5331	51	0.5349	52
72	Tata Pure Equity Fund (G)	0.9637	36	0.9721	37
73	Tata Select Equity Fund (G)	0.4761	53	0.4767	54
74	Taurus Bonanza (G)	0.6874	45	0.6931	46
75	Taurus Discovery (G)	0.0770	71	0.0772	72
76	Taurus Starshare (G)	0.5892	49	0.5942	50
77	UTI Master Value Fund (G)	-0.0168	75	-0.0170	76
78	UTI Mastershare (G)	0.1424	66	0.1443	67
	Average	0.3747		0.3801	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	-8.9493	121	-10.6272	125
80	Birla Sun Life Cash Plus-Ret (G)	-6.8803	115	-7.9939	119
81	Birla Sun Life Income Plus-Ret (G)	6.8541	9	6.6414	11
82	Birla Sun Life Income Plus-Ret (QD)	-9.7296	122	-9.1151	120
83	DBS Chola Triple Ace (G)	-42.9183	134	20.6962	5
84	DSP Blackrock Bond Fund (G)	6.1926	12	6.0808	12
85	DSP Blackrock Bond Fund (QD)	-25.1505	132	-26.6534	133
86	Templeton India Income Fund (G)	5.4671	13	5.7112	14
87	Templeton India Income Fund (QD)	-12.6078	126	-12.4740	127
88	Templeton India Treasury Management Account (G)	-8.8516	120	-10.1753	124
89	Templeton India Treasury Management Account (WD)	181.3570	1	209.0020	1
90	HDFC Cash Management Fund - Savings Plan (WD)	-14.4782	127	-15.1922	130
91	HDFC Cash Management Fund - Savings Plan (G)	-0.8899	103	-0.9669	106
92	HDFC High Interest Fund (QD)	-10.3166	123	-9.5258	123
93	HDFC High Interest Fund (AD)	-17.3852	129	-14.8446	129
94	HDFC High Interest Fund (HD)	-17.6303	130	-16.1260	131
95	HDFC High Interest Fund (G)	-1.7552	111	-1.8231	112
96	ING Vysya Income Fund-Ret (QD)	-6.1721	114	-6.1474	114
97	ING Vysya Income Fund-Ret (G)	7.1318	8	6.8433	10
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	22.1900	4	28.8052	4
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	-78.1576	136	-118.1345	136
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	141.9742	2	86.0120	2
101	ICICI Prudential Income Plan (G)	8.1214	6	8.0407	7
102	JM G-Sec Fund -Regular (D)	-7.7070	117	-6.8853	115
103	JM High Liquidity Fund (G)	-7.8768	118	-9.3602	122

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Treynor Ratio	Rank	Treynor Ratio	Rank
104	JM High Liquidity Fund (WD)	65.7221	3	61.9518	3
105	JM Income Fund (G)	-0.9637	106	-0.9199	104
106	JM Income Fund (D)	-10.8488	124	-9.3137	121
107	Kotak Mahindra Gilt- Savings (G)	-17.3694	128	-14.4449	128
108	LIC Bond Fund (G)	16.5885	5	15.8069	6
109	LIC Bond Fund (D)	-29.9899	133	-26.7914	134
110	LIC Monthly Income Plan (MD)	-3.5072	112	-3.4516	113
111	LIC Monthly Income Plan (G)	1.1215	31	1.1285	33
112	LIC MF Govt. Securities Fund-Regular (G)	4.2332	14	4.3167	15
113	LIC MF Govt. Securities Fund-Regular (D)	-57.8811	135	-72.5691	135
114	SBI Magnum Income Fund-1998 (D)	-11.7315	125	-11.5649	126
115	SBI Magnum Income Fund-1998 (G)	0.9326	39	0.9508	38
116	SBI Magnum Insta Cash Fund (WD)	-239.2542	137	-389.6547	137
117	SBI Magnum Insta Cash Fund (G)	-5.2544	113	-7.3466	118
118	Sundaram B N P Paribas Bond Saver (G)	3.4014	15	3.3262	16
119	Tata Gilt RIP (G)	6.7737	10	6.9014	9
120	Tata Gilt RIP (D)	-7.6543	116	-7.0984	117
121	Tata Income Fund (G)	6.3339	11	5.8248	13
122	Tata Income Fund (HD)	-19.2982	131	-18.6087	132
123	UTI Bond Fund (D)	-7.8776	119	-6.9403	116
124	UTI Bond Fund (G)	7.4795	7	7.8797	8
125	UTI Money Market Fund (WD)	2.0697	17	1.7239	19
	Average	-4.1520		-7.5980	
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	-0.3434	89	-0.3454	90
127	Canara Robeco Equity Tax Saver (G)	-0.6064	97	-0.6198	98
128	HDFC Tax Saver (D)	-0.1761	83	-0.1810	84
129	HDFC Tax Saver (G)	0.8594	42	0.8638	43
130	ICICI Prudential Tax Plan (G)	0.9282	40	0.9428	39
131	LIC MF Tax Plan (G)	-0.1109	81	-0.1110	82
132	Principal Personal Tax Saver Fund (G)	-0.1593	82	-0.1612	83
133	Principal Tax Savings Fund (G)	0.3975	56	0.4015	57
134	SBI Magnum Tax Gain'93 (G)	-0.3380	88	-0.3425	89
135	Sahara Tax Gain Fund (G)	-1.2415	110	-1.2649	111
136	Tata Tax Saving Fund (G)	0.1332	68	0.1345	69
137	Taurus Tax shield (G)	-0.0443	78	-0.0445	79
	Average	-0.0585		-0.0606	
	Overall Average	-1.2486		-2.4278	
Note : Treynor Ratio BSE 30 = 0.5187 and Treynor Ratio Nifty 50 = 0.5208					

Table 5.7 reveals the Treynor Ratios for the sample mutual fund schemes as well as for the benchmark portfolios. The Treynor Ratio for BSE 30 and for Nifty 50 is 0.5187 and 0.5208 respectively.

When BSE 30 was used as a proxy for the market portfolios, out of 137 schemes, 51 (37.23 %) schemes have outperformed and remaining 86 (62.77 %) schemes yielded inferior performance. The top five prominent winners are Templeton India Treasury Management Account (WD), ICICI Prudential Gilt Fund (Treasury Plan) (G), JM High Liquidity Fund (WD), ICICI Prudential Gilt Fund (Investment Plan) (G) and LIC Bond Fund (G) while the bottom five prominent laggards are SBI Magnum Insta Cash Fund (WD), ICICI Prudential Gilt Fund (Treasury Plan) (QD), LIC MF Govt. Securities Fund-Regular (D), DBS Chola Triple Ace (G) and LIC Bond Fund (D). It is curious to note that all the top five winners and all the bottom five laggards are from income fund only. In addition, the average Treynor Ratio for all mutual fund schemes is -1.2495 and 110 (80.29 %) schemes could register better than the overall sample average investment performance.

When Nifty 50 was used as a proxy for the market portfolios, out of 137 schemes, 52 (37.96 %) schemes have outperformed and remaining 85 (62.04 %) schemes yielded inferior performance. The top five prominent winners are Templeton India Treasury Management Account (WD), ICICI Prudential Gilt Fund (Treasury Plan) (G), JM High Liquidity Fund (WD), ICICI Prudential Gilt Fund (Investment Plan) (G) and DBS Chola Triple Ace (G) while the bottom five prominent laggards are SBI Magnum Insta Cash Fund (WD), ICICI Prudential Gilt Fund (Treasury Plan) (QD), LIC MF Govt. Securities Fund-Regular (D), LIC Bond Fund (D) and DSP Blackrock Bond Fund (QD). Again all the top five winners and all the bottom five laggards are from income fund. The average Treynor Ratio for all mutual fund schemes is -2.4294 and 112 (81.75 %) schemes could register better than the overall sample average investment performance.

The results are more or less similar across the benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. In other words, investment managers are hardly predisposed for any reason to any benchmark portfolio in the investment performance evaluation. These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Jaydev (1996)⁸, Singh and Singla (2000)⁹, Gupta

(2003)³, Gupta and Gupta (2004)¹⁰, Chandel and Verma (2005)⁴, Muthappan and Damodharan (2006)⁵, Chander (2006)¹¹, Debasish (2007)⁶ etc.

To examine whether the Treynor ratio of the selected mutual fund schemes is significantly different according to their objectives or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₉: There is no significant difference in the Treynor Ratio of the selected sample mutual fund schemes according to their objectives.

Based on the results of the Treynor Ratio presented in Table 5.7, t-value was derived.

The computed value of t is shown below.

Significance of difference in the Treynor Ratio of the selected sample mutual fund schemes according to their objectives		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-1.1018	-1.1012
Balanced vs. Income	0.3693	0.5016
Balanced vs. Tax-Planning	0.7725	0.7767
Growth vs. Income	0.6423	0.8544
Growth vs. Tax-Planning	1.8908	1.8853
Income vs. Tax-Planning	-0.2646	-0.3676

On comparing the same with the Table Value, it was found that there is no significant difference in the Treynor Ratio according to their objectives.

5.2.3 RESULT OF SHARPE RATIO (1966)¹²

This ratio measures the return of a portfolio in excess of the risk-free rate, also called the risk premium, compared to the total risk of the portfolio, measured by its standard deviation. This ratio, initially called the 'reward-to-variability ratio'.

Sharpe Ratio takes into account the total risk of the portfolio i.e. standard deviation. So whether we use BSE 30 or Nifty 50 as a benchmark portfolio, the results of Sharpe Ratio for all the schemes remains same. For the purpose of our study ten years period is selected i.e. from January 2000 to December 2009. Hence out of all the available schemes, the schemes for which data were available for the entire span of study period are selected. For 137 schemes such data were available and hence they are selected as sample for the study to analyze the performance of the mutual fund schemes. The total number of observation for all mutual fund schemes are same i.e. 119, hence the Sharpe Ratio for both the benchmark portfolios remains same for all mutual fund schemes.

Table 5.8 : Sharpe Ratios of Mutual Fund Schemes across Benchmark Criteria			
Sr. No.	Scheme Name	Sharpe Ratio	Rank
Balanced			
1	Birla Sun Life'95 Fund (G)	0.1064	30
2	Birla Sun Life'95 Fund (D)	0.0125	73
3	DSP Blackrock Balanced Fund (G)	0.1257	24
4	Templeton India Pension Plan (G)	0.1868	6
5	Templeton India Pension Plan (D)	-0.0692	108
6	HDFC Prudence Fund (D)	-0.0063	84
7	HDFC Prudence Fund (G)	0.1904	5
8	ICICI Prudential Balanced Fund (G)	0.0640	47
9	JM Balanced Fund (G)	-0.0540	104
10	JM Balanced Fund (D)	-0.0519	103
11	Kotak Mahindra Balance (G)	0.0052	78
12	LIC Mf Balance Fund (D)	-0.0764	109
13	LIC Mf Balance Fund (G)	0.0304	57
14	LIC MF Unit Linked Insurance Scheme (D)	-0.1044	115
15	Principal Balanced Fund (D)	-0.0151	89
16	Principal Balanced Fund (G)	0.0255	60
17	SBI Magnum Balanced Fund (G)	0.0141	72
18	Tata Balanced Fund (G)	0.0894	34
19	UTI Balanced Fund (D)	-0.0433	100
20	UTI Balanced Fund (G)	0.1277	23
21	UTI Ulip (G)	-0.0831	110
	Average	0.0226	
Growth			
22	Baroda Pioneer Diversified fund (G)	0.0527	51
23	Birla Sun Life Advantage Fund (G)	0.0218	63
24	Birla Sun Life Equity (G)	0.0985	33
25	Birla Sun Life India Opportunities Fund (D)	-0.0676	107
26	Birla Sun Life India Opportunities Fund (G)	-0.0009	79
27	Birla Sun Life M N C Fund (G)	0.1069	29
28	Birla Sun Life M N C Fund (D)	0.0067	76
29	DSP Blackrock Equity Fund (G)	-0.0953	113
30	Franklin Fmcg Fund (G)	0.0872	36
31	Franklin India Bluechip Fund (G)	0.1452	13
32	Franklin India Bluechip Fund (D)	-0.0036	82
33	Franklin India Prima Fund (G)	0.1164	26
34	Franklin India Prima Fund (D)	-0.0195	92
35	Franklin India Prima Plus (G)	0.1324	20
36	Franklin India Prima Plus (D)	-0.0413	99
37	Franklin Infotech Fund (D)	-0.0960	114

Sr. No.	Scheme Name	Sharpe Ratio	Rank
38	Franklin Infotech Fund (G)	-0.0180	91
39	Franklin Pharma Fund (G)	0.0802	39
40	Templeton India Growth Fund (G)	0.1376	17
41	HDFC Capital Builder Fund (D)	-0.0086	85
42	HDFC Capital Builder Fund (G)	0.1331	18
43	HDFC Equity Fund (G)	0.1660	11
44	HDFC Equity Fund (D)	0.0209	64
45	HDFC Top 200 Fund (D)	-0.0032	81
46	HDFC Top 200 Fund (G)	0.1433	15
47	ICICI Prudential FMCG Fund (G)	0.1018	31
48	ICICI Prudential Growth Plan (G)	0.0779	40
49	ICICI Prudential Growth Plan (D)	-0.0847	111
50	ICICI Prudential Power (G)	0.0175	68
51	JM Basic Fund (G)	-0.0509	101
52	JM Equity Fund (D)	-0.0543	105
53	JM Equity Fund (G)	0.0155	70
54	Kotak Mahindra 30 Unit Scheme (G)	0.0732	42
55	LIC M F Growth Fund (G)	0.0207	65
56	LIC MF Equity Fund (G)	0.0192	67
57	Principal Index Fund (G)	0.0528	50
58	Reliance Growth Fund (D)	-0.0250	96
59	Reliance Growth Fund (G)	0.1661	10
60	Reliance Vision Fund (G)	0.1654	12
61	SBI Magnum Contra Fund (G)	0.0679	45
62	SBI Magnum Equity Fund (G)	-0.0514	102
63	SBI Magnum F M C G Fund (G)	-0.0210	93
64	SBI Magnum Global Fund-1994 (G)	0.0236	61
65	SBI Magnum I T Fund (G)	-0.0874	112
66	SBI Magnum Multiplier Plus-1993 (G)	0.0093	74
67	SBI Magnum Pharma Fund (G)	0.0312	56
68	Sundaram B N P Paribas Growth Fund (G)	0.0726	44
69	Tata Equity Opportunities Fund (D)	0.0291	58
70	Tata Growth Fund (G)	0.1447	14
71	Tata Life Sciences & Technology Fund (G)	0.0544	49
72	Tata Pure Equity Fund (G)	0.1125	27
73	Tata Select Equity Fund (G)	0.0512	53
74	Taurus Bonanza (G)	0.0732	43
75	Taurus Discovery (G)	0.0078	75
76	Taurus Starshare (G)	0.0625	48
77	UTI Master Value Fund (G)	-0.0016	80
78	UTI Mastershare (G)	0.0166	69
	Average	0.0383	

Sr. No.	Scheme Name	Sharpe Ratio	Rank
Income			
79	Birla Sun Life Cash Manager-Ret (G)	0.3083	2
80	Birla Sun Life Cash Plus-Ret (G)	0.2710	3
81	Birla Sun Life Income Plus-Ret (G)	0.1282	22
82	Birla Sun Life Income Plus-Ret (QD)	-0.1737	123
83	DBS Chola Triple Ace (G)	-0.0244	95
84	DSP Blackrock Bond Fund (G)	0.1101	28
85	DSP Blackrock Bond Fund (QD)	-0.2236	129
86	Templeton India Income Fund (G)	0.1331	19
87	Templeton India Income Fund (QD)	-0.3149	133
88	Templeton India Treasury Management Account (G)	0.3264	1
89	Templeton India Treasury Management Account (WD)	-1.9373	137
90	HDFC Cash Management Fund - Savings Plan (WD)	-0.1411	119
91	HDFC Cash Management Fund - Savings Plan (G)	0.0060	77
92	HDFC High Interest Fund (QD)	-0.2082	128
93	HDFC High Interest Fund (AD)	-0.1578	122
94	HDFC High Interest Fund (HD)	-0.2077	127
95	HDFC High Interest Fund (G)	0.0193	66
96	ING Vysya Income Fund-Ret (QD)	-0.2073	126
97	ING Vysya Income Fund-Ret (G)	0.1203	25
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.1701	9
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	-0.1194	118
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.1826	7
101	ICICI Prudential Income Plan (G)	0.1382	16
102	JM G-Sec Fund -Regular (D)	-0.1101	117
103	JM High Liquidity Fund (G)	0.2579	4
104	JM High Liquidity Fund (WD)	-0.3675	135
105	JM Income Fund (G)	-0.0241	94
106	JM Income Fund (D)	-0.1463	120
107	Kotak Mahindra Gilt- Savings (G)	0.0765	41
108	LIC Bond Fund (G)	0.1803	8
109	LIC Bond Fund (D)	-0.3153	134
110	LIC Monthly Income Plan (MD)	-0.2845	132
111	LIC Monthly Income Plan (G)	0.0279	59
112	LIC MF Govt. Securities Fund-Regular (G)	0.0672	46
113	LIC MF Govt. Securities Fund-Regular (D)	-0.2019	125
114	SBI Magnum Income Fund-1998 (D)	-0.2452	130
115	SBI Magnum Income Fund-1998 (G)	0.0234	62
116	SBI Magnum Insta Cash Fund (WD)	-0.4118	136
117	SBI Magnum Insta Cash Fund (G)	0.0520	52
118	Sundaram B N P Paribas Bond Saver (G)	0.0853	38

Sr. No.	Scheme Name	Sharpe Ratio	Rank
119	Tata Gilt RIP (G)	0.1284	21
120	Tata Gilt RIP (D)	-0.1739	124
121	Tata Income Fund (G)	0.0404	55
122	Tata Income Fund (HD)	-0.2742	131
123	UTI Bond Fund (D)	-0.1569	121
124	UTI Bond Fund (G)	0.0856	37
125	UTI Money Market Fund (WD)	-0.0122	87
	Average	-0.0745	
Tax-Planning			
126	Baroda Pioneer Elss 96 (G)	-0.0361	98
127	Canara Robeco Equity Tax Saver (G)	-0.0615	106
128	HDFC Tax Saver (D)	-0.0161	90
129	HDFC Tax Saver (G)	0.0878	35
130	ICICI Prudential Tax Plan (G)	0.0998	32
131	LIC MF Tax Plan (G)	-0.0118	86
132	Principal Personal Tax Saver Fund (G)	-0.0151	88
133	Principal Tax Savings Fund (G)	0.0432	54
134	SBI Magnum Tax Gain'93 (G)	-0.0321	97
135	Sahara Tax Gain Fund (G)	-0.1064	116
136	Tata Tax Saving Fund (G)	0.0142	71
137	Taurus Tax shield (G)	-0.0042	83
	Average	-0.0032	
	Overall Average	-0.0064	
Note : Sharpe Ratio BSE 30 = 0.0648 and Sharpe Ratio Nifty 50 = 0.0643			

Table 5.8 reveals the Sharpe Ratios for the sample mutual fund schemes as well as for the benchmark portfolios. The Sharpe Ratio for BSE 30 and for Nifty 50 is 0.0648 and 0.0643 respectively. Out of 137 schemes, 46 (33.58 %) schemes have outperformed the benchmark portfolios and remaining 91 (66.42 %) schemes yielded inferior performance with respect to both the benchmark proxy. The top five prominent winners are Templeton India Treasury Management Account (G), Birla Sun Life Cash Manager-Ret (G), Birla Sun Life Cash Plus-Ret (G), JM High Liquidity Fund (G), HDFC Prudence Fund (G) while the bottom five prominent laggards are Templeton India Treasury Management Account (WD), SBI Magnum Insta Cash Fund (WD), JM High Liquidity Fund (WD), LIC Bond Fund (D), Templeton India Income Fund (QD). It is curious to note that out of top five winners, four schemes are from income fund and one is from balanced fund. It is also interesting to note that all the bottom five laggards are from income fund only. In addition, the average Sharpe Ratio for all mutual fund schemes is -0.0064 and 84 (61.31 %) schemes could register

better than the overall sample average investment performance. These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Shah and Susan (1994)¹³, Jaydev (1996)⁸, Singh and Singla (2000)⁹, Gupta (2003)³, Gupta and Gupta (2004)¹⁰, Chandel and Verma (2005)⁴, Muthappan and Damodharan (2006)⁵, Chander (2006)¹¹, Debasish (2007)⁶, Deb, Banerjee and Chakrabarti (2008)¹⁴ etc.

To examine whether the Sharpe ratio of the selected mutual fund schemes is significantly different according to their objectives or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁₀: There is no significant difference in the Sharpe Ratio of the selected sample mutual fund schemes according to their objectives.

Based on the results of the Sharpe Ratio presented in Table 5.8, **t-value** was derived.

The computed value of **t** is shown below.

Significance of difference in the Treynor Ratio of the selected sample mutual fund schemes according to their objectives	
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)
Balanced vs. Growth	-0.8131
Balanced vs. Income	1.3016
Balanced vs. Tax-Planning	0.9054
Growth vs. Income	2.4754*
Growth vs. Tax-Planning	1.8883
Income vs. Tax-Planning	-0.7290

On comparing the same with the Table Value, it was found that only in case of Growth and Income mutual fund schemes there is a significant difference.

5.2.4 RESULTS OF SHARPE AND TREYNOR: A COMPARISON

Table 5.9 : Ranking of Mutual Fund Schemes as per Sharpe and Treynor Ratios across Benchmark criteria					
Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Sharpe Ratio	Treynor Ratio	Sharpe Ratio	Treynor Ratio
Balanced					
1	Birla Sun Life'95 Fund (G)	30	35	30	36
2	Birla Sun Life'95 Fund (D)	73	69	73	70
3	DSP Blackrock Balanced Fund (G)	24	33	24	34
4	Templeton India Pension Plan (G)	6	19	6	20
5	Templeton India Pension Plan (D)	108	101	108	102
6	HDFC Prudence Fund (D)	84	79	84	80
7	HDFC Prudence Fund (G)	5	18	5	18
8	ICICI Prudential Balanced Fund (G)	47	50	47	51

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Sharpe Ratio	Treynor Ratio	Sharpe Ratio	Treynor Ratio
9	JM Balanced Fund (G)	104	98	104	99
10	JM Balanced Fund (D)	103	93	103	94
11	Kotak Mahindra Balance (G)	78	73	78	74
12	LIC Mf Balance Fund (D)	109	99	109	100
13	LIC Mf Balance Fund (G)	57	59	57	60
14	LIC MF Unit Linked Insurance Scheme (D)	115	109	115	110
15	Principal Balanced Fund (D)	89	90	89	91
16	Principal Balanced Fund (G)	60	52	60	53
17	SBI Magnum Balanced Fund (G)	72	65	72	66
18	Tata Balanced Fund (G)	34	43	34	44
19	UTI Balanced Fund (D)	100	92	100	93
20	UTI Balanced Fund (G)	23	27	23	28
21	UTI Ulip (G)	110	105	110	105
Spearman's Rank Correlation Coefficient		0.9936		0.9939	
Growth					
22	Baroda Pioneer Diversified fund (G)	51	54	51	55
23	Birla Sun Life Advantage Fund (G)	63	63	63	64
24	Birla Sun Life Equity (G)	33	41	33	42
25	Birla Sun Life India Opportunities Fund (D)	107	100	107	101
26	Birla Sun Life India Opportunities Fund (G)	79	74	79	75
27	Birla Sun Life M N C Fund (G)	29	34	29	35
28	Birla Sun Life M N C Fund (D)	76	72	76	73
29	DSP Blackrock Equity Fund (G)	113	107	113	108
30	Franklin Fmcg Fund (G)	36	37	36	40
31	Franklin India Bluechip Fund (G)	13	26	13	27
32	Franklin India Bluechip Fund (D)	82	77	82	78
33	Franklin India Prima Fund (G)	26	32	26	32
34	Franklin India Prima Fund (D)	92	84	92	85
35	Franklin India Prima Plus (G)	20	30	20	31
36	Franklin India Prima Plus (D)	99	91	99	92
37	Franklin Infotech Fund (D)	114	108	114	109
38	Franklin Infotech Fund (G)	91	85	91	86
39	Franklin Pharma Fund (G)	39	38	39	41
40	Templeton India Growth Fund (G)	17	28	17	29
41	HDFC Capital Builder Fund (D)	85	80	85	81
42	HDFC Capital Builder Fund (G)	18	25	18	26
43	HDFC Equity Fund (G)	11	22	11	23
44	HDFC Equity Fund (D)	64	61	64	62
45	HDFC Top 200 Fund (D)	81	76	81	77
46	HDFC Top 200 Fund (G)	15	24	15	25
47	ICICI Prudential FMCG Fund (G)	31	29	31	30
48	ICICI Prudential Growth Plan (G)	40	46	40	47
49	ICICI Prudential Growth Plan (D)	111	102	111	103

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Sharpe Ratio	Treynor Ratio	Sharpe Ratio	Treynor Ratio
50	ICICI Prudential Power (G)	68	16	68	17
51	JM Basic Fund (G)	101	96	101	97
52	JM Equity Fund (D)	105	95	105	96
53	JM Equity Fund (G)	70	67	70	68
54	Kotak Mahindra 30 Unit Scheme (G)	42	47	42	48
55	LIC M F Growth Fund (G)	65	62	65	63
56	LIC MF Equity Fund (G)	67	64	67	65
57	Principal Index Fund (G)	50	55	50	56
58	Reliance Growth Fund (D)	96	87	96	88
59	Reliance Growth Fund (G)	10	20	10	21
60	Reliance Vision Fund (G)	12	21	12	22
61	SBI Magnum Contra Fund (G)	45	44	45	45
62	SBI Magnum Equity Fund (G)	102	94	102	95
63	SBI Magnum F M C G Fund (G)	93	86	93	87
64	SBI Magnum Global Fund-1994 (G)	61	60	61	61
65	SBI Magnum I T Fund (G)	112	104	112	107
66	SBI Magnum Multiplier Plus-1993 (G)	74	70	74	71
67	SBI Magnum Pharma Fund (G)	56	57	56	58
68	Sundaram B N P Paribas Growth Fund (G)	44	48	44	49
69	Tata Equity Opportunities Fund (D)	58	58	58	59
70	Tata Growth Fund (G)	14	23	14	24
71	Tata Life Sciences & Technology Fund (G)	49	51	49	52
72	Tata Pure Equity Fund (G)	27	36	27	37
73	Tata Select Equity Fund (G)	53	53	53	54
74	Taurus Bonanza (G)	43	45	43	46
75	Taurus Discovery (G)	75	71	75	72
76	Taurus Starshare (G)	48	49	48	50
77	UTI Master Value Fund (G)	80	75	80	76
78	UTI Mastershare (G)	69	66	69	67
Spearman's Rank Correlation Coefficient		0.9630		0.9631	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	2	121	2	125
80	Birla Sun Life Cash Plus-Ret (G)	3	115	3	119
81	Birla Sun Life Income Plus-Ret (G)	22	9	22	11
82	Birla Sun Life Income Plus-Ret (QD)	123	122	123	120
83	DBS Chola Triple Ace (G)	95	134	95	5
84	DSP Blackrock Bond Fund (G)	28	12	28	12
85	DSP Blackrock Bond Fund (QD)	129	132	129	133
86	Templeton India Income Fund (G)	19	13	19	14
87	Templeton India Income Fund (QD)	133	126	133	127
88	Templeton India Treasury Management Account (G)	1	120	1	124
89	Templeton India Treasury Management Account (WD)	137	1	137	1

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Sharpe Ratio	Treynor Ratio	Sharpe Ratio	Treynor Ratio
90	HDFC Cash Management Fund - Savings Plan (WD)	119	127	119	130
91	HDFC Cash Management Fund - Savings Plan (G)	77	103	77	106
92	HDFC High Interest Fund (QD)	128	123	128	123
93	HDFC High Interest Fund (AD)	122	129	122	129
94	HDFC High Interest Fund (HD)	127	130	127	131
95	HDFC High Interest Fund (G)	66	111	66	112
96	ING Vysya Income Fund-Ret (QD)	126	114	126	114
97	ING Vysya Income Fund-Ret (G)	25	8	25	10
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	9	4	9	4
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	118	136	118	136
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	7	2	7	2
101	ICICI Prudential Income Plan (G)	16	6	16	7
102	JM G-Sec Fund -Regular (D)	117	117	117	115
103	JM High Liquidity Fund (G)	4	118	4	122
104	JM High Liquidity Fund (WD)	135	3	135	3
105	JM Income Fund (G)	94	106	94	104
106	JM Income Fund (D)	120	124	120	121
107	Kotak Mahindra Gilt- Savings (G)	41	128	41	128
108	LIC Bond Fund (G)	8	5	8	6
109	LIC Bond Fund (D)	134	133	134	134
110	LIC Monthly Income Plan (MD)	132	112	132	113
111	LIC Monthly Income Plan (G)	59	31	59	33
112	LIC MF Govt. Securities Fund-Regular (G)	46	14	46	15
113	LIC MF Govt. Securities Fund-Regular (D)	125	135	125	135
114	SBI Magnum Income Fund-1998 (D)	130	125	130	126
115	SBI Magnum Income Fund-1998 (G)	62	39	62	38
116	SBI Magnum Insta Cash Fund (WD)	136	137	136	137
117	SBI Magnum Insta Cash Fund (G)	52	113	52	118
118	Sundaram B N P Paribas Bond Saver (G)	38	15	38	16
119	Tata Gilt RIP (G)	21	10	21	9
120	Tata Gilt RIP (D)	124	116	124	117
121	Tata Income Fund (G)	55	11	55	13
122	Tata Income Fund (HD)	131	131	131	132
123	UTI Bond Fund (D)	121	119	121	116
124	UTI Bond Fund (G)	37	7	37	8
125	UTI Money Market Fund (WD)	87	17	87	19
Spearman's Rank Correlation Coefficient		0.5437		0.5074	
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	98	89	98	90
127	Canara Robeco Equity Tax Saver (G)	106	97	106	98
128	HDFC Tax Saver (D)	90	83	90	84
129	HDFC Tax Saver (G)	35	42	35	43

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Sharpe Ratio	Treynor Ratio	Sharpe Ratio	Treynor Ratio
130	ICICI Prudential Tax Plan (G)	32	40	32	39
131	LIC MF Tax Plan (G)	86	81	86	82
132	Principal Personal Tax Saver Fund (G)	88	82	88	83
133	Principal Tax Savings Fund (G)	54	56	54	57
134	SBI Magnum Tax Gain'93 (G)	97	88	97	89
135	Sahara Tax Gain Fund (G)	116	110	116	111
136	Tata Tax Saving Fund (G)	71	68	71	69
137	Taurus Tax shield (G)	83	78	83	79
Spearman's Rank Correlation Coefficient		0.9959		0.9963	
Overall Spearman's Rank Correlation Coefficient		0.7084		0.6847	

Table 5.9 shows the results pertaining to Sharpe and Treynor ratios reflect some conflict in performance rankings. The reason for such a conflict arises due to the fact that Sharpe ratio takes into accounts the total risk of the portfolio whereas the Treynor ratio considers only the systematic or the market risk. Thus, it is possible that a portfolio might have outperformed the market in terms of Treynor ratio whereas in terms of Sharpe ratio it did not. The reason for these differences is that the portfolio under consideration may have a relatively larger amount of unique risk. The presence of unique risk in the portfolio does not affect the Treynor ratio whereas it would affect the Sharpe ratio. Therefore, in order to detect any conflict in performance ranking, the sample schemes have been ranked in terms of Sharpe and Treynor ratios and their rank correlation coefficient has been worked out. The overall rank correlation coefficient for the sample schemes is 0.7084 and 0.6847 across the different market proxy i.e. BSE 30 and Nifty 50 respectively, which is quite high. It shows that overall there is small difference in ranking of mutual fund schemes based on both the measures. Thus, in respect of both the measures 41 (29.93 %) schemes have reflected better performance in comparison to their respective BSE 30 benchmark portfolios and Nifty 50 benchmark portfolios. These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Gupta (2003)³, Gupta and Gupta (2004)¹⁰, Muthappan and Damodharan (2006)⁵ etc.

To examine whether the RCC derived between Sharpe and Treynor ratio for each group of the selected sample mutual fund schemes is significantly different according to their objectives or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₁₁: The RCC derived between Sharpe and Treynor ratio for each group of the selected sample mutual fund schemes according to their objectives is not significant.

Based on the results of the Treynor Ratio presented in Table 5.9, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference in the RCC derived between Sharpe and Treynor ratio for each group of the selected sample mutual fund schemes according to their objectives		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced	38.30*	39.22*
Growth	26.52*	26.57*
Income	4.3456*	3.9500*
Tax-Planning	34.78*	36.63*

On comparing the same with the Table Value, it was found to be higher than the Table value. This rejects the null hypothesis indicating there by that the RCC, derived between the ranks assigned according to the two performance measures *viz.* Sharpe and Treynor is significant.

5.2.5 RESULTS OF JENSEN DIFFERENTIAL MEASURE (1968)¹⁵

Jensen's alpha is defined as the differential between the return on the portfolio in excess of the risk-free rate and the return explained by the market model.

The Jensen measure is based on the CAPM. The term $\beta (R_M - R_F)$ measures the return on the portfolio forecast by the model. α_P measures the share of additional return that is due to the manager's choices. The parameters of the Jensen measure were estimated by using standard regression techniques. A positive and significant alpha for the mutual fund scheme would indicate that the portfolio has generated an average return greater than the return on the benchmark portfolio thereby indicating a superior performance.

Alpha estimates of each of the mutual fund schemes as well as corresponding t-values have been derived and shown in Table 5.10 considering BSE30 as the benchmark criteria and in Table 5.11 for Nifty50 as benchmark criteria.

Table 5.10 : Jensen's Measures of Mutual Fund Schemes : BSE 30					
Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
Balanced					
1	Birla Sun Life'95 Fund (G)	1.2262	0.8912	0.3350	1.0842
2	Birla Sun Life'95 Fund (D)	0.5927	0.8915	-0.2989	-0.7803
3	DSP Blackrock Balanced Fund (G)	1.2500	0.8633	0.3867	1.7371
4	Templeton India Pension Plan (G)	1.0720	0.6843	0.3878	2.8382*
5	Templeton India Pension Plan (D)	0.2268	0.6937	-0.4670	-2.0082*
6	HDFC Prudence Fund (D)	0.4579	0.8674	-0.4095	-0.8333
7	HDFC Prudence Fund (G)	1.7041	0.8683	0.8358	3.0543*
8	ICICI Prudential Balanced Fund (G)	0.8975	0.8600	0.0375	0.0399
9	JM Balanced Fund (G)	0.0545	0.8496	-0.7951	-1.0779
10	JM Balanced Fund (D)	0.1360	0.9014	-0.7653	-2.3067*
11	Kotak Mahindra Balance (G)	0.5358	0.8290	-0.2931	-0.9024
12	LIC Mf Balance Fund (D)	0.0044	0.8553	-0.8509	-2.5124*
13	LIC Mf Balance Fund (G)	0.6907	0.8476	-0.1569	-0.6190
14	LIC MF Unit Linked Insurance Scheme (D)	-0.1636	0.7828	-0.9465	-2.0714*
15	Principal Balanced Fund (D)	0.2929	0.8117	-0.5188	0.1450
16	Principal Balanced Fund (G)	0.8705	0.9003	-0.0298	0.5506
17	SBI Magnum Balanced Fund (G)	0.6298	0.9276	-0.2977	-0.2551
18	Tata Balanced Fund (G)	1.1075	0.8918	0.2156	0.7122
19	UTI Balanced Fund (D)	0.2300	0.8041	-0.5742	-1.4085
20	UTI Balanced Fund (G)	1.2460	0.8272	0.4188	1.3940
21	UTI Ulip (G)	0.1681	0.6856	-0.5175	-2.0444*
	Average	0.6300	0.8349	-0.2050	
Growth					
22	Baroda Pioneer Diversified fund (G)	0.9780	1.0380	-0.0601	0.0431
23	Birla Sun Life Advantage Fund (G)	0.7041	1.0488	-0.3447	-0.7608
24	Birla Sun Life Equity (G)	1.4413	1.0569	0.3843	1.2881
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	1.0650	-1.3734	-1.2028
26	Birla Sun Life India Opportunities Fund (G)	0.4950	1.0377	-0.5428	-0.6272
27	Birla Sun Life M N C Fund (G)	1.2274	0.8750	0.3524	1.0490
28	Birla Sun Life M N C Fund (D)	0.5564	0.8828	-0.3265	-0.5362
29	DSP Blackrock Equity Fund (G)	-0.5888	1.0055	-1.5942	-1.1744
30	Franklin Fmcg Fund (G)	1.0133	0.7864	0.2270	0.6079
31	Franklin India Bluechip Fund (G)	1.6583	0.9976	0.6606	3.2174*
32	Franklin India Bluechip Fund (D)	0.4704	0.9939	-0.5235	-0.7771
33	Franklin India Prima Fund (G)	1.6337	1.0288	0.6049	1.5257
34	Franklin India Prima Fund (D)	0.3068	1.0215	-0.7147	-0.9130
35	Franklin India Prima Plus (G)	1.5592	0.9879	0.5714	2.3020*
36	Franklin India Prima Plus (D)	0.1364	0.9712	-0.8348	-1.5120

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t - Alpha
37	Franklin Infotech Fund (D)	-0.5774	0.9993	-1.5767	-1.5771
38	Franklin Infotech Fund (G)	0.3098	0.9872	-0.6775	-0.5290
39	Franklin Pharma Fund (G)	1.0571	0.8113	0.2458	0.6247
40	Templeton India Growth Fund (G)	1.6338	1.0062	0.6276	2.6103*
41	HDFC Capital Builder Fund (D)	0.4275	0.9324	-0.5050	-0.6521
42	HDFC Capital Builder Fund (G)	1.5476	0.9462	0.6014	1.7746
43	HDFC Equity Fund (G)	1.8742	1.0046	0.8696	3.3576*
44	HDFC Equity Fund (D)	0.6901	0.9516	-0.2615	-0.2679
45	HDFC Top 200 Fund (D)	0.4735	1.0050	-0.5315	-0.8228
46	HDFC Top 200 Fund (G)	1.7062	1.0080	0.6982	2.5622*
47	ICICI Prudential FMCG Fund (G)	1.2200	0.8272	0.3928	0.9439
48	ICICI Prudential Growth Plan (G)	1.1316	0.9886	0.1430	0.6382
49	ICICI Prudential Growth Plan (D)	-0.2782	0.9761	-1.2543	-2.0166*
50	ICICI Prudential Power (G)	1.3557	0.6785	0.6771	1.3947
51	JM Basic Fund (G)	-0.1654	1.1293	-1.2947	-0.9591
52	JM Equity Fund (D)	-0.0146	1.0391	-1.0537	-2.0680*
53	JM Equity Fund (G)	0.6492	1.0669	-0.4177	-0.9551
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	1.0116	0.1089	0.5480
55	LIC MF Growth Fund (G)	0.6915	1.0086	-0.3171	-0.4990
56	LIC MF Equity Fund (G)	0.6787	1.0566	-0.3780	-1.0271
57	Principal Index Fund (G)	0.9265	1.0162	-0.0896	-0.7700
58	Reliance Growth Fund (D)	0.2575	0.9744	-0.7169	-0.7965
59	Reliance Growth Fund (G)	2.0028	1.0102	0.9926	2.5978*
60	Reliance Vision Fund (G)	1.8995	0.9856	0.9139	2.6289*
61	SBI Magnum Contra Fund (G)	1.1866	0.9857	0.2009	-0.6501
62	SBI Magnum Equity Fund (G)	-0.0331	1.0675	-1.1006	-1.5855
63	SBI Magnum F M C G Fund (G)	0.3504	0.8150	-0.4646	-0.7559
64	SBI Magnum Global Fund-1994 (G)	0.7598	1.0981	-0.3384	-0.2076
65	SBI Magnum I T Fund (G)	-0.5079	1.0551	-1.5630	-1.6300
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	1.0758	-0.4768	-0.5681
67	SBI Magnum Pharma Fund (G)	0.7789	0.9087	-0.1298	0.0127
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	1.0405	0.1134	0.5850
69	Tata Equity Opportunities Fund (D)	0.7587	0.9669	-0.2082	-0.2443
70	Tata Growth Fund (G)	1.6644	0.9533	0.7111	2.0117*
71	Tata Life Sciences & Technology Fund (G)	0.9985	0.9851	0.0134	0.2882
72	Tata Pure Equity Fund (G)	1.4529	1.0146	0.4383	1.7226
73	Tata Select Equity Fund (G)	1.0232	1.0696	-0.0465	0.2820
74	Taurus Bonanza (G)	1.2000	1.0291	0.1709	0.6523
75	Taurus Discovery (G)	0.5899	1.0846	-0.4946	-0.4084
76	Taurus Starshare (G)	1.1773	1.0967	0.0806	0.5509
77	UTI Master Value Fund (G)	0.4889	0.9621	-0.4732	-0.5240

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
78	UTI Mastershare (G)	0.6314	0.9685	-0.3372	-1.2695
	Average	0.8101	0.9894	-0.1793	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	0.5488	0.5012	0.0477	6.0933*
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	0.5007	0.0433	6.5640*
81	Birla Sun Life Income Plus-Ret (G)	0.7411	0.5217	0.2194	1.2978
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	0.5245	-0.4107	-1.9672
83	DBS Chola Triple Ace (G)	0.4701	0.5042	-0.0341	-0.2316
84	DSP Blackrock Bond Fund (G)	0.6443	0.5155	0.1288	1.0713
85	DSP Blackrock Bond Fund (QD)	-0.0015	0.5142	-0.5157	-2.4009*
86	Templeton India Income Fund (G)	0.6468	0.5173	0.1295	1.2537
87	Templeton India Income Fund (QD)	0.0181	0.5237	-0.5056	-3.6622*
88	Templeton India Treasury Management Account (G)	0.5548	0.5008	0.0540	6.5922*
89	Templeton India Treasury Management Account (WD)	0.0788	0.5025	-0.4238	19.1561*
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	0.5204	-0.4800	-1.4266
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	0.4889	0.0403	0.3026
92	HDFC High Interest Fund (QD)	0.0595	0.5261	-0.4666	-2.3750*
93	HDFC High Interest Fund (AD)	0.1148	0.5154	-0.4005	-1.6828
94	HDFC High Interest Fund (HD)	0.0571	0.5169	-0.4598	-2.2720*
95	HDFC High Interest Fund (G)	0.6568	0.4585	0.1983	0.6837
96	ING Vysya Income Fund-Ret (QD)	0.0707	0.5402	-0.4694	-2.5465*
97	ING Vysya Income Fund-Ret (G)	0.6725	0.5160	0.1564	1.1982
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	0.5131	0.3888	1.8782
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	0.5064	-0.4023	-1.1382
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	0.5044	0.1831	1.9655
101	ICICI Prudential Income Plan (G)	0.7525	0.5197	0.2329	1.4160
102	JM G-Sec Fund -Regular (D)	0.2494	0.5209	-0.2715	-1.2271
103	JM High Liquidity Fund (G)	0.5515	0.5006	0.0509	4.4614*
104	JM High Liquidity Fund (WD)	-0.0701	0.4992	-0.5693	-3.8578*
105	JM Income Fund (G)	0.4816	0.5157	-0.0340	-0.5090
106	JM Income Fund (D)	-0.0282	0.5292	-0.5574	-1.5312
107	Kotak Mahindra Gilt- Savings (G)	0.5304	0.5030	0.0275	0.8161
108	LIC Bond Fund (G)	0.7048	0.5100	0.1947	1.8764
109	LIC Bond Fund (D)	0.0016	0.5124	-0.5109	-3.4571*
110	LIC Monthly Income Plan (MD)	0.0025	0.5779	-0.5754	-4.9392*
111	LIC Monthly Income Plan (G)	0.7686	0.6263	0.1424	0.4825
112	LIC MF Govt. Securities Fund-Regular (G)	0.6295	0.5192	0.1104	0.6657
113	LIC MF Govt. Securities Fund-Regular (D)	-0.0073	0.5083	-0.5157	-2.1024*
114	SBI Magnum Income Fund-1998 (D)	-0.0121	0.5266	-0.5387	-2.7929*
115	SBI Magnum Income Fund-1998 (G)	0.5336	0.5203	0.0132	0.0560

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	0.5050	-0.5613	-4.3600*
117	SBI Magnum Insta Cash Fund (G)	0.5399	0.5002	0.0397	0.6261
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	0.5184	0.0813	0.7319
119	Tata Gilt RIP (G)	0.7694	0.5241	0.2453	1.3243
120	Tata Gilt RIP (D)	0.1208	0.5297	-0.4090	-2.0331*
121	Tata Income Fund (G)	0.5584	0.5082	0.0501	0.4139
122	Tata Income Fund (HD)	0.0330	0.5164	-0.4834	-3.0453*
123	UTI Bond Fund (D)	-0.0647	0.5412	-0.6059	-1.6905
124	UTI Bond Fund (G)	0.6411	0.5133	0.1278	0.8776
125	UTI Money Market Fund (WD)	0.4258	0.4842	-0.0584	0.2605
	Average	0.3598	0.5162	-0.1565	
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	0.1446	1.0462	-0.9016	-1.4469
127	Canara Robeco Equity Tax Saver (G)	-0.1356	1.0506	-1.1862	-1.7243
128	HDFC Tax Saver (D)	0.3479	0.9627	-0.6148	-0.5734
129	HDFC Tax Saver (G)	1.3374	1.0069	0.3306	1.0850
130	ICICI Prudential Tax Plan (G)	1.4729	1.0453	0.4276	1.2500
131	LIC MF Tax Plan (G)	0.3959	1.0080	-0.6121	-1.1029
132	Principal Personal Tax Saver Fund (G)	0.3428	1.0277	-0.6849	-0.5730
133	Principal Tax Savings Fund (G)	0.9005	1.0213	-0.1209	-0.0067
134	SBI Magnum Tax Gain'93 (G)	0.1462	1.0525	-0.9062	-0.8446
135	Sahara Tax Gain Fund (G)	-0.8226	1.0579	-1.8805	-1.4128
136	Tata Tax Saving Fund (G)	0.6381	1.0267	-0.3886	-0.5381
137	Taurus Tax shield (G)	0.4555	1.0685	-0.6130	-0.4385
	Average	0.4353	1.0312	-0.5959	
	Overall Average	0.5953	0.8065	-0.2112	
Note: * Significant at 5% level					

Table 5.11 : Jensen's Measures of Mutual Fund Schemes : Nifty 50					
Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
Balanced					
1	Birla Sun Life'95 Fund (G)	1.2262	0.8885	0.3377	1.0774
2	Birla Sun Life'95 Fund (D)	0.5927	0.8888	-0.2961	-0.7845
3	DSP Blackrock Balanced Fund (G)	1.2500	0.8616	0.3884	1.7469
4	Templeton India Pension Plan (G)	1.0720	0.6818	0.3902	2.7401*
5	Templeton India Pension Plan (D)	0.2268	0.6901	-0.4634	-1.9669
6	HDFC Prudence Fund (D)	0.4579	0.8629	-0.4050	-0.8232
7	HDFC Prudence Fund (G)	1.7041	0.8626	0.8415	2.9671*
8	ICICI Prudential Balanced Fund (G)	0.8975	0.8604	0.0371	0.0156
9	JM Balanced Fund (G)	0.0545	0.8456	-0.7911	-1.0729
10	JM Balanced Fund (D)	0.1360	0.8968	-0.7608	-2.2725*

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
11	Kotak Mahindra Balance (G)	0.5358	0.8240	-0.2882	-0.8794
12	LIC Mf Balance Fund (D)	0.0044	0.8561	-0.8517	-2.5866*
13	LIC Mf Balance Fund (G)	0.6907	0.8483	-0.1576	-0.6596
14	LIC MF Unit Linked Insurance Scheme (D)	-0.1636	0.7827	-0.9463	-2.0918*
15	Principal Balanced Fund (D)	0.2929	0.8098	-0.5170	0.1436
16	Principal Balanced Fund (G)	0.8705	0.9040	-0.0335	0.5423
17	SBI Magnum Balanced Fund (G)	0.6298	0.9307	-0.3008	-0.2809
18	Tata Balanced Fund (G)	1.1075	0.8934	0.2141	0.7116
19	UTI Balanced Fund (D)	0.2300	0.8071	-0.5771	-1.4615
20	UTI Balanced Fund (G)	1.2460	0.8284	0.4175	1.4115
21	UTI Ulip (G)	0.1681	0.6848	-0.5167	-2.0528*
	Average	0.6300	0.8337	-0.2038	
Growth					
22	Baroda Pioneer Diversified fund (G)	0.9780	1.0342	-0.0562	0.0351
23	Birla Sun Life Advantage Fund (G)	0.7041	1.0437	-0.3396	-0.7536
24	Birla Sun Life Equity (G)	1.4413	1.0550	0.3863	1.2923
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	1.0615	-1.3699	-1.2087
26	Birla Sun Life India Opportunities Fund (G)	0.4950	1.0334	-0.5384	-0.6290
27	Birla Sun Life M N C Fund (G)	1.2274	0.8759	0.3515	1.0520
28	Birla Sun Life M N C Fund (D)	0.5564	0.8875	-0.3312	-0.5798
29	DSP Blackrock Equity Fund (G)	-0.5888	1.0045	-1.5933	-1.1881
30	Franklin Fmcg Fund (G)	1.0133	0.7864	0.2270	0.6007
31	Franklin India Bluechip Fund (G)	1.6583	0.9924	0.6658	3.0972*
32	Franklin India Bluechip Fund (D)	0.4704	0.9821	-0.5117	-0.7303
33	Franklin India Prima Fund (G)	1.6337	1.0238	0.6098	1.5161
34	Franklin India Prima Fund (D)	0.3068	1.0148	-0.7080	-0.8999
35	Franklin India Prima Plus (G)	1.5592	0.9838	0.5755	2.2744*
36	Franklin India Prima Plus (D)	0.1364	0.9667	-0.8302	-1.5047
37	Franklin Infotech Fund (D)	-0.5774	0.9869	-1.5643	-1.5379
38	Franklin Infotech Fund (G)	0.3098	0.9786	-0.6688	-0.5152
39	Franklin Pharma Fund (G)	1.0571	0.8119	0.2452	0.6170
40	Templeton India Growth Fund (G)	1.6338	1.0006	0.6332	2.5280*
41	HDFC Capital Builder Fund (D)	0.4275	0.9273	-0.4998	-0.6457
42	HDFC Capital Builder Fund (G)	1.5476	0.9428	0.6048	1.7658
43	HDFC Equity Fund (G)	1.8742	0.9992	0.8750	3.2724*
44	HDFC Equity Fund (D)	0.6901	0.9504	-0.2603	-0.2800
45	HDFC Top 200 Fund (D)	0.4735	0.9959	-0.5223	-0.7892
46	HDFC Top 200 Fund (G)	1.7062	1.0050	0.7012	2.5683*
47	ICICI Prudential FMCG Fund (G)	1.2200	0.8274	0.3926	0.9391
48	ICICI Prudential Growth Plan (G)	1.1316	0.9876	0.1440	0.6357

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t - Alpha
49	ICICI Prudential Growth Plan (D)	-0.2782	0.9783	-1.2565	-2.0792*
50	ICICI Prudential Power (G)	1.3557	0.6683	0.6874	1.3975
51	JM Basic Fund (G)	-0.1654	1.1267	-1.2921	-0.9701
52	JM Equity Fund (D)	-0.0146	1.0423	-1.0569	-2.1884*
53	JM Equity Fund (G)	0.6492	1.0620	-0.4128	-0.9500
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	1.0061	0.1145	0.5370
55	LIC M F Growth Fund (G)	0.6915	1.0057	-0.3142	-0.5094
56	LIC MF Equity Fund (G)	0.6787	1.0558	-0.3772	-1.1014
57	Principal Index Fund (G)	0.9265	1.0176	-0.0911	-2.9549*
58	Reliance Growth Fund (D)	0.2575	0.9776	-0.7201	-0.8316
59	Reliance Growth Fund (G)	2.0028	1.0077	0.9951	2.6035*
60	Reliance Vision Fund (G)	1.8995	0.9829	0.9166	2.6330*
61	SBI Magnum Contra Fund (G)	1.1866	0.9840	0.2025	0.6446
62	SBI Magnum Equity Fund (G)	-0.0331	1.0629	-1.0960	-1.5851
63	SBI Magnum F M C G Fund (G)	0.3504	0.8061	-0.4557	-0.7251
64	SBI Magnum Global Fund-1994 (G)	0.7598	1.0895	-0.3297	-0.1962
65	SBI Magnum I T Fund (G)	-0.5079	1.0472	-1.5551	-1.6109
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	1.0721	-0.4731	-0.5761
67	SBI Magnum Pharma Fund (G)	0.7789	0.9122	-0.1333	-0.0087
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	1.0346	0.1192	0.5741
69	Tata Equity Opportunities Fund (D)	0.7587	0.9702	-0.2115	-0.2799
70	Tata Growth Fund (G)	1.6644	0.9526	0.7118	2.0293*
71	Tata Life Sciences & Technology Fund (G)	0.9985	0.9855	0.0131	0.2751
72	Tata Pure Equity Fund (G)	1.4529	1.0123	0.4406	1.7380
73	Tata Select Equity Fund (G)	1.0232	1.0712	-0.0480	0.2648
74	Taurus Bonanza (G)	1.2000	1.0269	0.1731	0.6463
75	Taurus Discovery (G)	0.5899	1.0849	-0.4950	-0.4319
76	Taurus Starshare (G)	1.1773	1.0941	0.0832	0.5442
77	UTI Master Value Fund (G)	0.4889	0.9597	-0.4708	-0.5313
78	UTI Mastershare (G)	0.6314	0.9643	-0.3329	-1.2554
	Average	0.8101	0.9863	-0.1763	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	0.5488	0.5016	0.0473	4.3366*
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	0.5011	0.0429	6.5318*
81	Birla Sun Life Income Plus-Ret (G)	0.7411	0.5224	0.2187	1.2934
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	0.5260	-0.4122	-1.9960
83	DBS Chola Triple Ace (G)	0.4701	0.5029	-0.0328	-0.2120
84	DSP Blackrock Bond Fund (G)	0.6443	0.5158	0.1285	1.0700
85	DSP Blackrock Bond Fund (QD)	-0.0015	0.5136	-0.5152	-2.3942*
86	Templeton India Income Fund (G)	0.6468	0.5168	0.1300	1.2617

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
87	Templeton India Income Fund (QD)	0.0181	0.5240	-0.5059	-3.6661*
88	Templeton India Treasury Management Account (G)	0.5548	0.5012	0.0536	6.5770*
89	Templeton India Treasury Management Account (WD)	0.0788	0.5027	-0.4239	-19.1266*
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	0.5197	-0.4793	-1.4216
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	0.4900	0.0392	0.2998
92	HDFC High Interest Fund (QD)	0.0595	0.5281	-0.4686	-2.3969*
93	HDFC High Interest Fund (AD)	0.1148	0.5174	-0.4026	-1.6980
94	HDFC High Interest Fund (HD)	0.0571	0.5182	-0.4611	-2.2834*
95	HDFC High Interest Fund (G)	0.6568	0.4600	0.1968	0.6820
96	ING Vysya Income Fund-Ret (QD)	0.0707	0.5405	-0.4697	-2.5516*
97	ING Vysya Income Fund-Ret (G)	0.6725	0.5166	0.1559	1.1937
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	0.5110	0.3909	1.8933
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	0.5055	-0.4014	-1.1320
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	0.5049	0.1827	1.9629
101	ICICI Prudential Income Plan (G)	0.7525	0.5199	0.2326	1.4149
102	JM G-Sec Fund -Regular (D)	0.2494	0.5230	-0.2736	-1.2448
103	JM High Liquidity Fund (G)	0.5515	0.5011	0.0504	4.4323*
104	JM High Liquidity Fund (WD)	-0.0701	0.4989	-0.5690	-3.8511*
105	JM Income Fund (G)	0.4816	0.5163	-0.0347	-0.5191
106	JM Income Fund (D)	-0.0282	0.5335	-0.5617	-1.5556*
107	Kotak Mahindra Gilt- Savings (G)	0.5304	0.5028	0.0276	0.8398
108	LIC Bond Fund (G)	0.7048	0.5104	0.1944	1.8748
109	LIC Bond Fund (D)	0.0016	0.5135	-0.5120	-3.4700*
110	LIC Monthly Income Plan (MD)	0.0025	0.5794	-0.5769	-5.0606*
111	LIC Monthly Income Plan (G)	0.7686	0.6260	0.1426	0.4811
112	LIC MF Govt. Securities Fund-Regular (G)	0.6295	0.5189	0.1106	0.6687
113	LIC MF Govt. Securities Fund-Regular (D)	-0.0073	0.5074	-0.5148	-2.0938*
114	SBI Magnum Income Fund-1998 (D)	-0.0121	0.5270	-0.5391	-2.7972*
115	SBI Magnum Income Fund-1998 (G)	0.5336	0.5201	0.0135	0.0610
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	0.5045	-0.5608	-4.3489*
117	SBI Magnum Insta Cash Fund (G)	0.5399	0.5012	0.0387	0.6087
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	0.5188	0.0809	0.7282
119	Tata Gilt RIP (G)	0.7694	0.5238	0.2456	1.3266
120	Tata Gilt RIP (D)	0.1208	0.5319	-0.4111	-2.0569*
121	Tata Income Fund (G)	0.5584	0.5086	0.0497	0.4117
122	Tata Income Fund (HD)	0.0330	0.5169	-0.4839	-3.0502*
123	UTI Bond Fund (D)	-0.0647	0.5464	-0.6111	-1.7239
124	UTI Bond Fund (G)	0.6411	0.5128	0.1282	0.8838
125	UTI Money Market Fund (WD)	0.4258	0.4802	-0.0544	0.2730
	Average	0.3598	0.5167	-0.1569	

Sr. No.	Scheme Name	Portfolio Return (%)	SML (%)	Alpha	t – Alpha
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	0.1446	1.0454	-0.9008	-1.4830
127	Canara Robeco Equity Tax Saver (G)	-0.1356	1.0410	-1.1766	-1.6790
128	HDFC Tax Saver (D)	0.3479	0.9521	-0.6042	-0.5476
129	HDFC Tax Saver (G)	1.3374	1.0064	0.3310	1.0839
130	ICICI Prudential Tax Plan (G)	1.4729	1.0391	0.4337	1.2370
131	LIC MF Tax Plan (G)	0.3959	1.0097	-0.6138	-1.1602
132	Principal Personal Tax Saver Fund (G)	0.3428	1.0239	-0.6811	-0.5766
133	Principal Tax Savings Fund (G)	0.9005	1.0184	-0.1179	-0.0157
134	SBI Magnum Tax Gain'93 (G)	0.1462	1.0475	-0.9013	-0.8439
135	Sahara Tax Gain Fund (G)	-0.8226	1.0499	-1.8726	-1.3993
136	Tata Tax Saving Fund (G)	0.6381	1.0239	-0.3858	-0.5496
137	Taurus Tax shield (G)	0.4555	1.0680	-0.6125	-0.4547
	Average	0.4353	1.0271	-0.5918	
	Overall Average	0.5953	0.8048	-0.2096	
Note: * Significant at 5% level					

Here the explanation for both viz. Table 5.10 and Table 5.11 is taken together as there is no much difference in the results obtained by using BSE30 or Nifty50 benchmark proxy. The data reveal that, out of 137 mutual fund schemes, 56 mutual fund schemes i.e. 40.88% have posted positive alpha estimates across both the benchmark criteria. This indicates that fund managers have exhibited superior performance. Table 5.10 and Table 5.11 also show the equilibrium return (SML). Equilibrium returns of a fund is the return that it is expected to earn with the given level of systematic risk or market risk. One can also say that, the schemes with positive alpha have generated return in excess of equilibrium returns.

The alpha values varied widely, the highest being 0.9926 (BSE 30 Benchmark proxy) and 0.9951 (Nifty 50 Benchmark proxy) for Reliance Growth Fund (G) and the lowest -1.8805 (BSE 30 Benchmark proxy) and -1.8726 (Nifty 50 Benchmark proxy) for Sahara Tax Gain Fund (G). Such large variation of alpha values show that stock selection abilities of fund managers vary for different mutual fund schemes. Positive alpha values of mutual fund may be a result of adopting better forecast techniques by the fund managers; they seem to have been able to pick up undervalued stocks enabling them to post better performance during the period consideration.

The alpha values can be tested by statistical methods for its degree of significance from a value of zero. The measure for this degree of significance is the t-value, which

is the alpha value divided by the standard error of the regression. A t-value is in excess of 2 is strongly indicative that the performance, either positive or negative, is highly significant in a statistical sense; that is, there is a small probability that the performance results from chance. (Farrell, J L, Jr. (1997))¹⁶.

To examine whether the observed value of Jensen Differential Measure (alpha) for the same sample schemes is zero or not, t-test was applied. For this the null hypothesis as follows was framed.

H₀₁₂: The observed value of Jensen Differential Measure (alpha) for the same sample schemes is not different from zero.

The t-value for the sample schemes were presented in Table 5.10 and Table 5.11 for BSE30 and Nifty50 benchmark portfolio. The results indicate that alpha values for only 14 schemes out of 137 schemes viz., Reliance Growth Fund (G), Reliance Vision Fund (G), HDFC Equity Fund (G), HDFC Prudence Fund (G), Tata Growth Fund (G), HDFC Top 200 Fund (G), Franklin India Bluechip Fund (G), Templeton India Growth Fund (G), Franklin India Prima Plus (G), Templeton India Pension Plan (G), Templeton India Treasury Management Account (G), JM High Liquidity Fund (G), Birla Sun Life Cash Manager-Ret (G), Birla Sun Life Cash Plus-Ret (G) are found to be statistically significant at 5 per cent level (one tail test), thus implying that these 14 schemes have generated above normal returns across both the benchmark proxy i.e. BSE 30 and Nifty 50.

So, the null hypothesis that the observed value of differential measure (alpha) for the same sample schemes is not different from zero is accepted, as for majority of the funds the alpha is not found to be different from zero. If one apply a two-tailed test then find that 21 schemes, viz., Tata Gilt RIP (D), Templeton India Treasury Management Account (WD), HDFC High Interest Fund (HD), HDFC High Interest Fund (QD), Templeton India Pension Plan (D), ING Vysya Income Fund-Ret (QD), Tata Income Fund (HD), Templeton India Income Fund (QD), LIC Bond Fund (D), LIC MF Govt. Securities Fund-Regular (D), DSP Blackrock Bond Fund (QD), UTI Ulip (G), SBI Magnum Income Fund-1998 (D), SBI Magnum Insta Cash Fund (WD), JM High Liquidity Fund (WD), LIC Monthly Income Plan (MD), JM Balanced Fund (D), LIC Mf Balance Fund (D), LIC MF Unit Linked Insurance Scheme (D), JM Equity Fund (D), ICICI Prudential Growth Plan (D), show significant but negative values of alpha at 5 per cent level across the BSE 30 benchmark proxy. And across

the Nifty 50 benchmark proxy, only one scheme i.e. Principal Index Fund (G) is added to the list and Templeton India Pension Plan (D) is removed from the list. This implies that these schemes have not generated even the expected return. Hence, it may be concluded that, Indian fund managers do not seem to have generated excess returns than expected. The superior performance is noticeable only in respect of **fourteen** schemes across both the benchmark proxy.

These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Shah and Susan (1994)¹³, Jaydev (1996)⁸, Singh and Singla (2000)⁹, Gupta (2003)³, Gupta and Gupta (2004)¹⁰, Chandel and Verma (2005)⁴, Sondhi and Jain (2005)², Muthappan and Damodharan (2006)⁵, Chander (2006)¹¹, Debasish (2007)⁶, Deb, Banerjee and Chakrabarti (2008)¹⁴ etc.

5.2.6 RESULTS OF SHARPE DIFFERENTIAL RETURN MEASURE

Sharpe's differential return measure is used to know the ability of the fund manager in both security selection and diversifying the portfolio. The difference between actual return and the expected return of the portfolio are called differential returns.

The equilibrium return in the above formulation is worked out in terms of the Capital Market Line (CML), the risk premium expected to be earned by the portfolio is in relation to the total risk of the portfolio rather than the market risk. However, for a well diversified portfolio, the two measures (Jensen and Sharpe) should indicate same quantum of differential return. In case the portfolio not fully diversified, the Sharpe differential return would be small in magnitude. The difference can be interpreted as decline in performance resulting from lack of diversification.

Table 5.12 reveals the information pertaining to Sharpe Differential Returns for sample mutual fund schemes across the different benchmark criteria.

When BSE 30 was used as a proxy for the market portfolios, out of 137 schemes, 46 (33.58 %) schemes reflect a positive differential returns, thereby indicating superior performance. The remaining 91 (66.42 %) schemes yielded negative differential returns indicating that they could not generate returns commensurate with the risk they assumed. The top five prominent winners are Reliance Growth Fund (G), Reliance Vision Fund (G), HDFC Equity Fund (G), HDFC Prudence Fund (G) and HDFC Top 200 Fund (G) while the bottom five prominent laggards are ICICI Prudential Power (G), Sahara Tax Gain Fund (G), DSP Blackrock Equity Fund (G), Franklin Infotech Fund (D) and SBI Magnum IT Fund (G). Out of top five winners

four are from growth fund and one from balanced fund and same out of bottom five laggards four are from growth fund and one from tax-planning fund. The average Sharpe Differential Return being -0.3493 and 62 (45.26 %) schemes could register better than the overall sample average investment performance.

When Nifty 50 was used as a proxy for the market portfolios, results are same as obtained while using BSE 30 as benchmark proxy. The average Sharpe Differential Return being -0.3493 and 63 (45.99 %) schemes could register better than the overall sample average investment performance.

The results are similar across the benchmark portfolios for the sample mutual fund schemes. As was revealed earlier, benchmark variability hardly provides any purpose in the investment performance measurement and reporting.

For a well diversified portfolio, Jensen and Sharpe Differential measures yield the same differential returns. The difference between these two measures indicates a decline in performance resulting from lack of diversification.

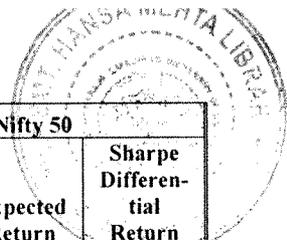
These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Gupta (2003)³, Muthappan and Damodharan (2006)⁵, Prabakaran *et al* (2010)¹⁷ etc.

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Actual Return	Expected Return	Sharpe Differential Return	Actual Return	Expected Return	Sharpe Differential Return
Balanced							
1	Birla Sun Life'95 Fund (G)	1.2262	0.9436	0.2826	1.2262	0.9405	0.2857
2	Birla Sun Life'95 Fund (D)	0.5927	0.9662	-0.3735	0.5927	0.9629	-0.3702
3	DSP Blackrock Balanced Fund (G)	1.2500	0.8881	0.3619	1.2500	0.8854	0.3646
4	Templeton India Pension Plan (G)	1.0720	0.7007	0.3713	1.0720	0.6993	0.3727
5	Templeton India Pension Plan (D)	0.2268	0.7629	-0.5362	0.2268	0.7611	-0.5343
6	HDFC Prudence Fund (D)	0.4579	0.9777	-0.5198	0.4579	0.9744	-0.5165
7	HDFC Prudence Fund (G)	1.7041	0.9120	0.7921	1.7041	0.9091	0.7950
8	ICICI Prudential Balanced Fund (G)	0.8975	0.9025	-0.0049	0.8975	0.8996	-0.0021
9	JM Balanced Fund (G)	0.0545	1.0423	-0.9878	0.0545	1.0385	-0.9840
10	JM Balanced Fund (D)	0.1360	0.9627	-0.8267	0.1360	0.9595	-0.8234
11	Kotak Mahindra Balance (G)	0.5358	0.9036	-0.3677	0.5358	0.9007	-0.3649
12	LIC Mf Balance Fund (D)	0.0044	0.9272	-0.9228	0.0044	0.9242	-0.9198
13	LIC Mf Balance Fund (G)	0.6907	0.9023	-0.2116	0.6907	0.8995	-0.2087

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Actual Return	Expected Return	Sharpe Differential Return	Actual Return	Expected Return	Sharpe Differential Return
14	LIC MF Unit Linked Insurance Scheme (D)	-0.1636	0.9178	-1.0815	-0.1636	0.9149	-1.0785
15	Principal Balanced Fund (D)	0.2929	1.4062	-1.1133	0.2929	1.3998	-1.1069
16	Principal Balanced Fund (G)	0.8705	1.4363	-0.5658	0.8705	1.4297	-0.5592
17	SBI Magnum Balanced Fund (G)	0.6298	1.0838	-0.4540	0.6298	1.0797	-0.4498
18	Tata Balanced Fund (G)	1.1075	0.9409	0.1665	1.1075	0.9378	0.1696
19	UTI Balanced Fund (D)	0.2300	0.9129	-0.6830	0.2300	0.9100	-0.6801
20	UTI Balanced Fund (G)	1.2460	0.8800	0.3660	1.2460	0.8773	0.3687
21	UTI Ulip (G)	0.1681	0.7654	-0.5974	0.1681	0.7636	-0.5955
	Average	0.6300	0.9588	-0.3288	0.6300	0.9556	-0.3256
Growth							
22	Baroda Pioneer Diversified fund (G)	0.9780	1.0860	-0.1080	0.9780	1.0818	-0.1038
23	Birla Sun Life Advantage Fund (G)	0.7041	1.0983	-0.3942	0.7041	1.0941	-0.3900
24	Birla Sun Life Equity (G)	1.4413	1.1200	0.3212	1.4413	1.1156	0.3256
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	1.2814	-1.5899	-0.3084	1.2759	-1.5843
26	Birla Sun Life India Opportunities Fund (G)	0.4950	1.1618	-0.6668	0.4950	1.1571	-0.6621
27	Birla Sun Life M N C Fund (G)	1.2274	0.9420	0.2854	1.2274	0.9389	0.2885
28	Birla Sun Life M N C Fund (D)	0.5564	1.0088	-0.4524	0.5564	1.0052	-0.4488
29	DSP Blackrock Equity Fund (G)	-0.5888	1.2465	-1.8353	-0.5888	1.2412	-1.8300
30	Franklin Fmcg Fund (G)	1.0133	0.8822	0.1311	1.0133	0.8795	0.1338
31	Franklin India Bluechip Fund (G)	1.6583	1.0187	0.6396	1.6583	1.0151	0.6432
32	Franklin India Bluechip Fund (D)	0.4704	1.1041	-0.6337	0.4704	1.0998	-0.6294
33	Franklin India Prima Fund (G)	1.6337	1.1324	0.5013	1.6337	1.1279	0.5058
34	Franklin India Prima Fund (D)	0.3068	1.1575	-0.8507	0.3068	1.1529	-0.8460
35	Franklin India Prima Plus (G)	1.5592	1.0199	0.5393	1.5592	1.0162	0.5430
36	Franklin India Prima Plus (D)	0.1364	1.0793	-0.9429	0.1364	1.0752	-0.9388
37	Franklin Infotech Fund (D)	-0.5774	1.2331	-1.8105	-0.5774	1.2279	-1.8053
38	Franklin Infotech Fund (G)	0.3098	1.2009	-0.8911	0.3098	1.1959	-0.8861
39	Franklin Pharma Fund (G)	1.0571	0.9506	0.1065	1.0571	0.9474	0.1097
40	Templeton India Growth Fund (G)	1.6338	1.0355	0.5983	1.6338	1.0317	0.6021
41	HDFC Capital Builder Fund (D)	0.4275	1.0810	-0.6536	0.4275	1.0769	-0.6495
42	HDFC Capital Builder Fund (G)	1.5476	1.0117	0.5359	1.5476	1.0081	0.5395
43	HDFC Equity Fund (G)	1.8742	1.0384	0.8358	1.8742	1.0346	0.8396
44	HDFC Equity Fund (D)	0.6901	1.0822	-0.3921	0.6901	1.0781	-0.3880

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Actual Return	Expected Return	Sharpe Differential Return	Actual Return	Expected Return	Sharpe Differential Return
45	HDFC Top 200 Fund (D)	0.4735	1.1061	-0.6325	0.4735	1.1018	-0.6283
46	HDFC Top 200 Fund (G)	1.7062	1.0470	0.6592	1.7062	1.0431	0.6631
47	ICICI Prudential FMCG Fund (G)	1.2200	0.9596	0.2604	1.2200	0.9564	0.2636
48	ICICI Prudential Growth Plan (G)	1.1316	1.0260	0.1056	1.1316	1.0223	0.1094
49	ICICI Prudential Growth Plan (D)	-0.2782	1.1016	-1.3798	-0.2782	1.0974	-1.3756
50	ICICI Prudential Power (G)	1.3557	3.6490	-2.2933	1.3557	3.6267	-2.2710
51	JM Basic Fund (G)	-0.1654	1.3544	-1.5198	-0.1654	1.3483	-1.5137
52	JM Equity Fund (D)	-0.0146	1.1219	-1.1364	-0.0146	1.1175	-1.1321
53	JM Equity Fund (G)	0.6492	1.1123	-0.4631	0.6492	1.1079	-0.4587
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	1.0494	0.0711	1.1206	1.0455	0.0750
55	LIC MF Growth Fund (G)	0.6915	1.0907	-0.3992	0.6915	1.0866	-0.3950
56	LIC MF Equity Fund (G)	0.6787	1.0933	-0.4147	0.6787	1.0892	-0.4105
57	Principal Index Fund (G)	0.9265	1.0218	-0.0953	0.9265	1.0181	-0.0916
58	Reliance Growth Fund (D)	0.2575	1.1423	-0.8848	0.2575	1.1378	-0.8803
59	Reliance Growth Fund (G)	2.0028	1.0882	0.9146	2.0028	1.0840	0.9187
60	Reliance Vision Fund (G)	1.8995	1.0504	0.8491	1.8995	1.0465	0.8530
61	SBI Magnum Contra Fund (G)	1.1866	1.1548	0.0317	1.1866	1.1502	0.0364
62	SBI Magnum Equity Fund (G)	-0.0331	1.1802	-1.2133	-0.0331	1.1754	-1.2085
63	SBI Magnum F M C G Fund (G)	0.3504	0.9770	-0.6266	0.3504	0.9737	-0.6233
64	SBI Magnum Global Fund-1994 (G)	0.7598	1.2064	-0.4466	0.7598	1.2014	-0.4416
65	SBI Magnum I T Fund (G)	-0.5079	1.2534	-1.7613	-0.5079	1.2481	-1.7560
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	1.1690	-0.5701	0.5990	1.1643	-0.5653
67	SBI Magnum Pharma Fund (G)	0.7789	1.0745	-0.2957	0.7789	1.0705	-0.2916
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	1.0837	0.0702	1.1539	1.0796	0.0743
69	Tata Equity Opportunities Fund (D)	0.7587	1.0708	-0.3121	0.7587	1.0668	-0.3081
70	Tata Growth Fund (G)	1.6644	1.0232	0.6412	1.6644	1.0196	0.6449
71	Tata Life Sciences & Technology Fund (G)	0.9985	1.0927	-0.0941	0.9985	1.0885	-0.0900
72	Tata Pure Equity Fund (G)	1.4529	1.0501	0.4029	1.4529	1.0462	0.4068
73	Tata Select Equity Fund (G)	1.0232	1.1611	-0.1379	1.0232	1.1564	-0.1333
74	Taurus Bonanza (G)	1.2000	1.1199	0.0801	1.2000	1.1155	0.0845
75	Taurus Discovery (G)	0.5899	1.2196	-0.6297	0.5899	1.2146	-0.6246
76	Taurus Starshare (G)	1.1773	1.2022	-0.0249	1.1773	1.1972	-0.0199
77	UTI Master Value Fund (G)	0.4889	1.1157	-0.6269	0.4889	1.1114	-0.6225
78	UTI Mastershare (G)	0.6314	1.0026	-0.3712	0.6314	0.9990	-0.3677
	Average	0.8101	1.1429	-0.3328	0.8101	1.1383	-0.3283

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Actual Return	Expected Return	Sharpe Differential Return	Actual Return	Expected Return	Sharpe Differential Return
Income							
79	Birla Sun Life Cash Manager-Ret (G)	0.5488	0.5132	0.0356	0.5488	0.5132	0.0357
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	0.5134	0.0307	0.5441	0.5133	0.0307
81	Birla Sun Life Income Plus-Ret (G)	0.7411	0.6236	0.1174	0.7411	0.6228	0.1183
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	0.6491	-0.5353	0.1139	0.6481	-0.5342
83	DBS Chola Triple Ace (G)	0.4701	0.5930	-0.1229	0.4701	0.5924	-0.1223
84	DSP Blackrock Bond Fund (G)	0.6443	0.5865	0.0578	0.6443	0.5859	0.0584
85	DSP Blackrock Bond Fund (QD)	-0.0015	0.6501	-0.6517	-0.0015	0.6491	-0.6506
86	Templeton India Income Fund (G)	0.6468	0.5734	0.0734	0.6468	0.5729	0.0739
87	Templeton India Income Fund (QD)	0.0181	0.6036	-0.5855	0.0181	0.6029	-0.5848
88	Templeton India Treasury Management Account (G)	0.5548	0.5139	0.0409	0.5548	0.5138	0.0410
89	Templeton India Treasury Management Account (WD)	0.0788	0.5180	-0.4392	0.0788	0.5179	-0.4391
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	0.7165	-0.6761	0.0403	0.7149	-0.6746
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	0.7801	-0.2508	0.5293	0.7781	-0.2488
92	HDFC High Interest Fund (QD)	0.0595	0.6420	-0.5825	0.0595	0.6410	-0.5815
93	HDFC High Interest Fund (AD)	0.1148	0.6633	-0.5485	0.1148	0.6622	-0.5474
94	HDFC High Interest Fund (HD)	0.0571	0.6430	-0.5860	0.0571	0.6421	-0.5850
95	HDFC High Interest Fund (G)	0.6568	1.0162	-0.3594	0.6568	1.0126	-0.3558
96	ING Vysya Income Fund-Ret (QD)	0.0707	0.6391	-0.5683	0.0707	0.6381	-0.5674
97	ING Vysya Income Fund-Ret (G)	0.6725	0.5946	0.0779	0.6725	0.5939	0.0785
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	0.6554	0.2465	0.9019	0.6543	0.2476
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	0.7205	-0.6164	0.1041	0.7190	-0.6149
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	0.5689	0.1186	0.6876	0.5685	0.1191
101	ICICI Prudential Income Plan (G)	0.7525	0.6203	0.1322	0.7525	0.6195	0.1330
102	JM G-Sec Fund -Regular (D)	0.2494	0.6534	-0.4040	0.2494	0.6523	-0.4030
103	JM High Liquidity Fund (G)	0.5515	0.5157	0.0358	0.5515	0.5157	0.0358
104	JM High Liquidity Fund (WD)	-0.0701	0.6049	-0.6749	-0.0701	0.6041	-0.6742
105	JM Income Fund (G)	0.4816	0.5632	-0.0816	0.4816	0.5628	-0.0812
106	JM Income Fund (D)	-0.0282	0.7393	-0.7675	-0.0282	0.7376	-0.7658
107	Kotak Mahindra Gilt-Savings (G)	0.5304	0.5264	0.0041	0.5304	0.5262	0.0042
108	LIC Bond Fund (G)	0.7048	0.5760	0.1288	0.7048	0.5755	0.1293



Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Actual Return	Expected Return	Sharpe Differential Return	Actual Return	Expected Return	Sharpe Differential Return
109	LIC Bond Fund (D)	0.0016	0.6069	-0.6053	0.0016	0.6062	-0.6046
110	LIC Monthly Income Plan (MD)	0.0025	0.6179	-0.6154	0.0025	0.6170	-0.6146
111	LIC Monthly Income Plan (G)	0.7686	1.1185	-0.3499	0.7686	1.1142	-0.3455
112	LIC MF Govt. Securities Fund-Regular (G)	0.6295	0.6249	0.0046	0.6295	0.6240	0.0055
113	LIC MF Govt. Securities Fund-Regular (D)	-0.0073	0.6677	-0.6751	-0.0073	0.6666	-0.6739
114	SBI Magnum Income Fund-1998 (D)	-0.0121	0.6400	-0.6521	-0.0121	0.6390	-0.6511
115	SBI Magnum Income Fund-1998 (G)	0.5336	0.5861	-0.0525	0.5336	0.5855	-0.0519
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	0.5918	-0.6481	-0.0563	0.5912	-0.6475
117	SBI Magnum Insta Cash Fund (G)	0.5399	0.5487	-0.0089	0.5399	0.5484	-0.0085
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	0.5766	0.0231	0.5997	0.5760	0.0237
119	Tata Gilt RIP (G)	0.7694	0.6377	0.1317	0.7694	0.6367	0.1326
120	Tata Gilt RIP (D)	0.1208	0.6464	-0.5256	0.1208	0.6454	-0.5246
121	Tata Income Fund (G)	0.5584	0.5912	-0.0329	0.5584	0.5906	-0.0323
122	Tata Income Fund (HD)	0.0330	0.6149	-0.5819	0.0330	0.6141	-0.5811
123	UTI Bond Fund (D)	-0.0647	0.7383	-0.8030	-0.0647	0.7366	-0.8013
124	UTI Bond Fund (G)	0.6411	0.6077	0.0334	0.6411	0.6069	0.0341
125	UTI Money Market Fund (WD)	0.4258	0.9163	-0.4905	0.4258	0.9134	-0.4875
	Average	0.3598	0.6406	-0.2808	0.3598	0.6396	-0.2799
Tax-Planning							
126	Baroda Pioneer Elss 96 (G)	0.1446	1.1473	-1.0027	0.1446	1.1428	-0.9981
127	Canara Robeco Equity Tax Saver (G)	-0.1356	1.1774	-1.3130	-0.1356	1.1726	-1.3082
128	HDFC Tax Saver (D)	0.3479	1.1317	-0.7838	0.3479	1.1273	-0.7793
129	HDFC Tax Saver (G)	1.3374	1.1184	0.2190	1.3374	1.1141	0.2234
130	ICICI Prudential Tax Plan (G)	1.4729	1.1329	0.3400	1.4729	1.1284	0.3445
131	LIC MF Tax Plan (G)	0.3959	1.0965	-0.7006	0.3959	1.0923	-0.6964
132	Principal Personal Tax Saver Fund (G)	0.3428	1.1949	-0.8521	0.3428	1.1900	-0.8472
133	Principal Tax Savings Fund (G)	0.9005	1.0988	-0.1983	0.9005	1.0946	-0.1941
134	SBI Magnum Tax Gain'93 (G)	0.1462	1.2257	-1.0795	0.1462	1.2206	-1.0744
135	Sahara Tax Gain Fund (G)	-0.8226	1.3113	-2.1340	-0.8226	1.3056	-2.1282
136	Tata Tax Saving Fund (G)	0.6381	1.1159	-0.4778	0.6381	1.1115	-0.4735
137	Taurus Tax shield (G)	0.4555	1.2473	-0.7918	0.4555	1.2421	-0.7866
	Average	0.4353	1.1665	-0.7312	0.4353	1.1618	-0.7265
	Over All Average			-0.3493			-0.3461

5.2.7 RESULTS OF FAMA'S COMPONENTS OF INVESTMENT PERFORMANCE (1972)¹⁸

The empirical results relating to risk-adjusted performance measures discussed earlier reflected the overall performance of sample schemes. Eugene F Fama (1972) goes a step ahead, he suggests to measure fund performance in terms of excess returns over expected returns based on premium for total risk. In other words, the excess returns are computed based on Capital Market Line (CML). Fama breaks down the observed return into four components.

1. Risk-free return R_F
2. Compensation for systematic risk $\beta (R_M - R_F)$
3. Compensation for inadequate diversification $(R_M - R_F)\{(\sigma_p / \sigma_M) - (\beta)\}$
4. Net superior returns due to selectivity $(R_P - R_F) - (\sigma_p / \sigma_M) (R_M - R_F)$

A positive value for F_P indicates that the fund earned returns higher than expected returns and lies above CML, and a negative value indicates that the fund earned returns less than expected returns and lies below CML.

Table 5.13 and Table 5.14 give information pertaining to Fama's components of performance for the mutual fund schemes. Note that the overall performance has been broken down into various components such as risk free return, compensation for beta, compensation for inadequate diversification, net superior returns due to selectivity. The order of discussion is in that order. Table 5.13 present the computational results considering BSE30 as a Benchmark proxy and Table 5.14 present the same considering Nifty50 as a Benchmark proxy.

Analysis of results with respect to BSE 30 Benchmark proxy:

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
Balanced						
1	Birla Sun Life'95 Fund (G)	1.2262	0.3875	0.0524	0.2826	0.3350
2	Birla Sun Life'95 Fund (D)	0.5927	0.3878	0.0746	-0.3735	-0.2989
3	DSP Blackrock Balanced Fund (G)	1.2500	0.3596	0.0248	0.3619	0.3867
4	Templeton India Pension Plan (G)	1.0720	0.1805	0.0165	0.3713	0.3878
5	Templeton India Pension Plan (D)	0.2268	0.1900	0.0692	-0.5362	-0.4670
6	HDFC Prudence Fund (D)	0.4579	0.3637	0.1103	-0.5198	-0.4095
7	HDFC Prudence Fund (G)	1.7041	0.3645	0.0437	0.7921	0.8358
8	ICICI Prudential Balanced Fund (G)	0.8975	0.3563	0.0424	-0.0049	0.0375

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
9	JM Balanced Fund (G)	0.0545	0.3458	0.1928	-0.9878	-0.7951
10	JM Balanced Fund (D)	0.1360	0.3976	0.0614	-0.8267	-0.7653
11	Kotak Mahindra Balance (G)	0.5358	0.3252	0.0746	-0.3677	-0.2931
12	LIC Mf Balance Fund (D)	0.0044	0.3515	0.0719	-0.9228	-0.8509
13	LIC Mf Balance Fund (G)	0.6907	0.3438	0.0547	-0.2116	-0.1569
14	LIC MF Unit Linked Insurance Scheme(D)	-0.1636	0.2791	0.1350	-1.0815	-0.9465
15	Principal Balanced Fund (D)	0.2929	0.3080	0.5944	-1.1133	-0.5188
16	Principal Balanced Fund (G)	0.8705	0.3966	0.5360	-0.5658	-0.0298
17	SBI Magnum Balanced Fund (G)	0.6298	0.4238	0.1562	-0.4540	-0.2977
18	Tata Balanced Fund (G)	1.1075	0.3881	0.0491	0.1665	0.2156
19	UTI Balanced Fund (D)	0.2300	0.3004	0.1088	-0.6830	-0.5742
20	UTI Balanced Fund (G)	1.2460	0.3235	0.0528	0.3660	0.4188
21	UTI Ulip (G)	0.1681	0.1818	0.0798	-0.5974	-0.5175
	Average	0.6300	0.3312	0.1239	-0.3288	-0.2050
Growth						
22	Baroda Pioneer Diversified fund (G)	0.9780	0.5343	0.0479	-0.1080	-0.0601
23	Birla Sun Life Advantage Fund (G)	0.7041	0.5450	0.0495	-0.3942	-0.3447
24	Birla Sun Life Equity (G)	1.4413	0.5532	0.0631	0.3212	0.3843
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	0.5612	0.2164	-1.5899	-1.3734
26	Birla Sun Life India Opportunities Fund (G)	0.4950	0.5340	0.1240	-0.6668	-0.5428
27	Birla Sun Life M N C Fund (G)	1.2274	0.3712	0.0670	0.2854	0.3524
28	Birla Sun Life M N C Fund (D)	0.5564	0.3791	0.1259	-0.4524	-0.3265
29	DSP Blackrock Equity Fund (G)	-0.5888	0.5017	0.2410	-1.8353	-1.5942
30	Franklin Fmcg Fund (G)	1.0133	0.2826	0.0958	0.1311	0.2270
31	Franklin India Bluechip Fund (G)	1.6583	0.4939	0.0211	0.6396	0.6606
32	Franklin India Bluechip Fund (D)	0.4704	0.4902	0.1102	-0.6337	-0.5235
33	Franklin India Prima Fund (G)	1.6337	0.5250	0.1036	0.5013	0.6049
34	Franklin India Prima Fund (D)	0.3068	0.5178	0.1360	-0.8507	-0.7147
35	Franklin India Prima Plus (G)	1.5592	0.4841	0.0321	0.5393	0.5714
36	Franklin India Prima Plus (D)	0.1364	0.4674	0.1081	-0.9429	-0.8348
37	Franklin Infotech Fund (D)	-0.5774	0.4956	0.2338	-1.8105	-1.5767
38	Franklin Infotech Fund (G)	0.3098	0.4835	0.2136	-0.8911	-0.6775
39	Franklin Pharma Fund (G)	1.0571	0.3075	0.1393	0.1065	0.2458
40	Templeton India Growth Fund (G)	1.6338	0.5024	0.0293	0.5983	0.6276
41	HDFC Capital Builder Fund (D)	0.4275	0.4287	0.1486	-0.6536	-0.5050
42	HDFC Capital Builder Fund (G)	1.5476	0.4424	0.0655	0.5359	0.6014
43	HDFC Equity Fund (G)	1.8742	0.5009	0.0338	0.8358	0.8696
44	HDFC Equity Fund (D)	0.6901	0.4478	0.1307	-0.3921	-0.2615
45	HDFC Top 200 Fund (D)	0.4735	0.5013	0.1011	-0.6325	-0.5315

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
46	HDFC Top 200 Fund (G)	1.7062	0.5043	0.0390	0.6592	0.6982
47	ICICI Prudential FMCG Fund (G)	1.2200	0.3235	0.1324	0.2604	0.3928
48	ICICI Prudential Growth Plan (G)	1.1316	0.4849	0.0373	0.1056	0.1430
49	ICICI Prudential Growth Plan (D)	-0.2782	0.4724	0.1255	-1.3798	-1.2543
50	ICICI Prudential Power (G)	1.3557	0.1748	2.9705	-2.2933	0.6771
51	JM Basic Fund (G)	-0.1654	0.6255	0.2251	-1.5198	-1.2947
52	JM Equity Fund (D)	-0.0146	0.5353	0.0828	-1.1364	-1.0537
53	JM Equity Fund (G)	0.6492	0.5632	0.0453	-0.4631	-0.4177
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	0.5079	0.0378	0.0711	0.1089
55	LIC M F Growth Fund (G)	0.6915	0.5048	0.0821	-0.3992	-0.3171
56	LIC MF Equity Fund (G)	0.6787	0.5529	0.0367	-0.4147	-0.3780
57	Principal Index Fund (G)	0.9265	0.5124	0.0056	-0.0953	-0.0896
58	Reliance Growth Fund (D)	0.2575	0.4706	0.1680	-0.8848	-0.7169
59	Reliance Growth Fund (G)	2.0028	0.5065	0.0780	0.9146	0.9926
60	Reliance Vision Fund (G)	1.8995	0.4818	0.0648	0.8491	0.9139
61	SBI Magnum Contra Fund (G)	1.1866	0.4819	0.1691	0.0317	0.2009
62	SBI Magnum Equity Fund (G)	-0.0331	0.5637	0.1128	-1.2133	-1.1006
63	SBI Magnum F M C G Fund (G)	0.3504	0.3113	0.1620	-0.6266	-0.4646
64	SBI Magnum Global Fund-1994 (G)	0.7598	0.5944	0.1082	-0.4466	-0.3384
65	SBI Magnum I T Fund (G)	-0.5079	0.5513	0.1983	-1.7613	-1.5630
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	0.5720	0.0933	-0.5701	-0.4768
67	SBI Magnum Pharma Fund (G)	0.7789	0.4050	0.1658	-0.2957	-0.1298
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	0.5367	0.0432	0.0702	0.1134
69	Tata Equity Opportunities Fund (D)	0.7587	0.4632	0.1039	-0.3121	-0.2082
70	Tata Growth Fund (G)	1.6644	0.4495	0.0700	0.6412	0.7111
71	Tata Life Sciences & Technology Fund (G)	0.9985	0.4814	0.1076	-0.0941	0.0134
72	Tata Pure Equity Fund (G)	1.4529	0.5108	0.0355	0.4029	0.4383
73	Tata Select Equity Fund (G)	1.0232	0.5659	0.0915	-0.1379	-0.0465
74	Taurus Bonanza (G)	1.2000	0.5254	0.0907	0.0801	0.1709
75	Taurus Discovery (G)	0.5899	0.5808	0.1351	-0.6297	-0.4946
76	Taurus Starshare (G)	1.1773	0.5929	0.1055	-0.0249	0.0806
77	UTI Master Value Fund (G)	0.4889	0.4583	0.1536	-0.6269	-0.4732
78	UTI Mastershare (G)	0.6314	0.4648	0.0340	-0.3712	-0.3372
	Average	0.8101	0.4856	0.1535	-0.3328	-0.1793
Income						
79	Birla Sun Life Cash Manager-Ret (G)	0.5488	-0.0026	0.0121	0.0356	0.0477
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	-0.0030	0.0127	0.0307	0.0433
81	Birla Sun Life Income Plus-Ret (G)	0.7411	0.0180	0.1019	0.1174	0.2194
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	0.0208	0.1246	-0.5353	-0.4107

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
83	DBS Chola Triple Ace (G)	0.4701	0.0004	0.0889	-0.1229	-0.0341
84	DSP Blackrock Bond Fund (G)	0.6443	0.0118	0.0709	0.0578	0.1288
85	DSP Blackrock Bond Fund (QD)	-0.0015	0.0104	0.1359	-0.6517	-0.5157
86	Templeton India Income Fund (G)	0.6468	0.0136	0.0561	0.0734	0.1295
87	Templeton India Income Fund (QD)	0.0181	0.0200	0.0799	-0.5855	-0.5056
88	Templeton India Treasury Management Account (G)	0.5548	-0.0030	0.0131	0.0409	0.0540
89	Templeton India Treasury Management Account (WD)	0.0788	-0.0012	0.0154	-0.4392	-0.4238
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	0.0166	0.1961	-0.6761	-0.4800
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	-0.0149	0.2911	-0.2508	0.0403
92	HDFC High Interest Fund (QD)	0.0595	0.0223	0.1159	-0.5825	-0.4666
93	HDFC High Interest Fund (AD)	0.1148	0.0116	0.1480	-0.5485	-0.4005
94	HDFC High Interest Fund (HD)	0.0571	0.0131	0.1261	-0.5860	-0.4598
95	HDFC High Interest Fund (G)	0.6568	-0.0452	0.5577	-0.3594	0.1983
96	ING Vysya Income Fund-Ret (QD)	0.0707	0.0364	0.0989	-0.5683	-0.4694
97	ING Vysya Income Fund-Ret (G)	0.6725	0.0123	0.0785	0.0779	0.1564
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	0.0093	0.1423	0.2465	0.3888
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	0.0027	0.2141	-0.6164	-0.4023
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	0.0007	0.0645	0.1186	0.1831
101	ICICI Prudential Income Plan (G)	0.7525	0.0159	0.1007	0.1322	0.2329
102	JM G-Sec Fund -Regular (D)	0.2494	0.0171	0.1325	-0.4040	-0.2715
103	JM High Liquidity Fund (G)	0.5515	-0.0031	0.0151	0.0358	0.0509
104	JM High Liquidity Fund (WD)	-0.0701	-0.0045	0.1056	-0.6749	-0.5693
105	JM Income Fund (G)	0.4816	0.0119	0.0476	-0.0816	-0.0340
106	JM Income Fund (D)	-0.0282	0.0254	0.2101	-0.7675	-0.5574
107	Kotak Mahindra Gilt- Savings (G)	0.5304	-0.0008	0.0234	0.0041	0.0275
108	LIC Bond Fund (G)	0.7048	0.0063	0.0659	0.1288	0.1947
109	LIC Bond Fund (D)	0.0016	0.0087	0.0945	-0.6053	-0.5109
110	LIC Monthly Income Plan (MD)	0.0025	0.0741	0.0400	-0.6154	-0.5754
111	LIC Monthly Income Plan (G)	0.7686	0.1225	0.4923	-0.3499	0.1424
112	LIC MF Govt. Securities Fund- Regular (G)	0.6295	0.0154	0.1057	0.0046	0.1104
113	LIC MF Govt. Securities Fund- Regular (D)	-0.0073	0.0046	0.1594	-0.6751	-0.5157
114	SBI Magnum Income Fund-1998 (D)	-0.0121	0.0228	0.1134	-0.6521	-0.5387
115	SBI Magnum Income Fund-1998 (G)	0.5336	0.0166	0.0658	-0.0525	0.0132
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	0.0012	0.0869	-0.6481	-0.5613
117	SBI Magnum Insta Cash Fund (G)	0.5399	-0.0036	0.0485	-0.0089	0.0397

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	0.0146	0.0582	0.0231	0.0813
119	Tata Gilt RIP (G)	0.7694	0.0203	0.1136	0.1317	0.2453
120	Tata Gilt RIP (D)	0.1208	0.0260	0.1166	-0.5256	-0.4090
121	Tata Income Fund (G)	0.5584	0.0045	0.0830	-0.0329	0.0501
122	Tata Income Fund (HD)	0.0330	0.0127	0.0985	-0.5819	-0.4834
123	UTI Bond Fund (D)	-0.0647	0.0374	0.1971	-0.8030	-0.6059
124	UTI Bond Fund (G)	0.6411	0.0095	0.0944	0.0334	0.1278
125	UTI Money Market Fund (WD)	0.4258	-0.0195	0.4321	-0.4905	-0.0584
	Average	0.3598	0.0125	0.1244	-0.2808	-0.1565
Tax-Planning						
126	Baroda Pioneer Elss 96 (G)	0.1446	0.5424	0.1011	-1.0027	-0.9016
127	Canara Robeco Equity Tax Saver (G)	-0.1356	0.5469	0.1268	-1.3130	-1.1862
128	HDFC Tax Saver (D)	0.3479	0.4589	0.1690	-0.7838	-0.6148
129	HDFC Tax Saver (G)	1.3374	0.5031	0.1115	0.2190	0.3306
130	ICICI Prudential Tax Plan (G)	1.4729	0.5416	0.0875	0.3400	0.4276
131	LIC MF Tax Plan (G)	0.3959	0.5043	0.0885	-0.7006	-0.6121
132	Principal Personal Tax Saver Fund (G)	0.3428	0.5240	0.1672	-0.8521	-0.6849
133	Principal Tax Savings Fund (G)	0.9005	0.5176	0.0775	-0.1983	-0.1209
134	SBI Magnum Tax Gain'93 (G)	0.1462	0.5487	0.1733	-1.0795	-0.9062
135	Sahara Tax Gain Fund (G)	-0.8226	0.5541	0.2534	-2.1340	-1.8805
136	Tata Tax Saving Fund (G)	0.6381	0.5230	0.0892	-0.4778	-0.3886
137	Taurus Tax shield (G)	0.4555	0.5648	0.1788	-0.7918	-0.6130
	Average	0.4353	0.5274	0.1353	-0.7312	-0.5959
	Overall Average	0.5953	0.3027	0.1373	-0.3485	-0.2112
Note: Risk Free Return (91 Days T-bills) = 0.5038						

1) Performance on Systematic Risk (β)

The performance on systematic risk assesses return being generated by fund managers due to their decision to take risk. They assume risk in the hope of generating extra returns on their portfolios. Table 5.13 shows that out of 137 mutual fund schemes, 126 schemes have positive performance on account of risk bearing activity of fund managers and only 11 mutual fund schemes have suffered negative performance. JM Basic Fund (G), SBI Magnum Global Fund-1994 (G), Taurus Starshare (G), Taurus Discovery (G) and SBI Magnum Multiplier Plus-1993 (G) have the highest positive performance with 0.6255, 0.5944, 0.5929, 0.5808 and 0.5720 per month respectively. While HDFC High Interest Fund (G), UTI Money Market Fund (WD), HDFC Cash Management Fund - Savings Plan (G), JM High Liquidity Fund (WD) and SBI

Magnum Insta Cash Fund (G) have the highest negative performance with -0.0452, -0.0195, -0.0149, -0.0045 and -0.0036 per month respectively.

2) Performance on Diversification

Note that performance attributed to selectivity can be attributed to diversification and net selectivity. The diversification measures additional return that compensates the portfolio manager for bearing diversifiable risk. Therefore, in the first place an attempt has been made to examine fund managers performance on diversification. It can be seen from Table 5.13 that all the schemes have gained a significant part of their returns in pursuit of their diversification activities, as the diversification measure was positive. ICICI Prudential Power (G), Principal Balanced Fund (D), HDFC High Interest Fund (G), Principal Balanced Fund (G) and LIC Monthly Income Plan (G) have earned a highest positive return for its diversification while Principal Index Fund (G), Birla Sun Life Cash Manager-Ret (G), Birla Sun Life Cash Plus-Ret (G), Templeton India Treasury Management Account (G) and JM High Liquidity Fund (G) have earned lowest positive return for its diversification.

3) Performance on Net Selectivity

After accounting for diversification, the residual performance on selectivity is attributed to net selectivity and it will be equal to (or less than) that on selectivity. A positive net selectivity will indicate superior performance. However, in case net selectivity is negative then it would mean that fund managers have taken diversifiable risk that has not been compensated by extra returns. It may be seen from the Table 5.13 that fund managers of 56 schemes (40.88 %) appeared to possess superior stock selection ability as the selectivity measure was found to be positive. It is interesting to note that in terms of net selectivity there were 46 schemes (33.58 %) showed positive values. This would imply that fund managers of 10 schemes were not able to get some additional compensation for their diversification activities. The five top performers with regards to net selectivity include Reliance Growth Fund (G), Reliance Vision Fund (G), HDFC Equity Fund (G), HDFC Prudence Fund (G) and HDFC Top 200 Fund (G). All these schemes are from the private sector mutual funds.

Analysis of results with respect to Nifty 50 Benchmark proxy:

1) Performance on Systematic Risk (β)

The performance on systematic risk assesses return being generated by fund managers due to their decision to take risk. They assume risk in the hope of generating extra returns on their portfolios. Table 5.14 shows that out of 137 mutual fund schemes, 125

schemes have positive performance on account of risk bearing activity of fund managers and only 12 mutual fund schemes have suffered negative performance. JM Basic Fund (G), Taurus Starshare (G), SBI Magnum Global Fund-1994 (G), Taurus Starshare (G), Taurus Discovery (G) and SBI Magnum Multiplier Plus-1993 (G) have the highest positive performance with 0.6229, 0.5903, 0.5857, 0.5812 and 0.5683 per month respectively. While HDFC High Interest Fund (G), UTI Money Market Fund (WD), HDFC Cash Management Fund - Savings Plan (G), JM High Liquidity Fund (WD) and JM High Liquidity Fund (G) have the most negative performance with -0.0437, -0.0235, -0.0137, -0.0048 and -0.0027 per month respectively.

2) Performance on Diversification

Note that performance attributed to selectivity can be attributed to diversification and net selectivity. The diversification measures additional return that compensates the portfolio manager for bearing diversifiable risk. Therefore, in the first place an attempt has been made to examine fund managers' performance on diversification. It can be seen from the Table 5.14 that all the schemes have gained a significant part of their returns in pursuit of their diversification activities, as the diversification measure was positive. ICICI Prudential Power (G), Principal Balanced Fund (D), HDFC High Interest Fund (G), Principal Balanced Fund (G) and LIC Monthly Income Plan (G) have earned a highest positive return for its diversification and while Principal Index Fund (G), Birla Sun Life Cash Manager-Ret (G), Birla Sun Life Cash Plus-Ret (G), Templeton India Treasury Management Account (G) and JM High Liquidity Fund (G) have earned lowest positive return for its diversification.

3) Performance on Net Selectivity

After accounting for diversification, the residual performance on selectivity is attributed to net selectivity and it will be equal to (or less than) that on selectivity. A positive net selectivity will indicate superior performance. However, in case net selectivity is negative then it would mean that fund managers have taken diversifiable risk that has not been compensated by extra returns. It may be seen from the Table 5.14 that fund managers of 56 schemes (40.88 %) appeared to possess superior stock selection ability as the selectivity measure was found to be positive. It is interesting to note that in terms of net selectivity there were 46 schemes (33.58 %) showed positive values. This would imply that fund managers of 10 schemes were not able to get some additional compensation for their diversification activities. The five top performers with regards to net selectivity include Reliance Growth Fund (G), Reliance Vision

Fund (G), HDFC Equity Fund (G), HDFC Prudence Fund (G) and HDFC Top 200 Fund (G). All these schemes are from the private sector mutual funds.

These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Gupta (2003)³, Gupta and Gupta (2004)¹⁰, Muthappan and Damodharan (2006)⁵, Prabakaran *et al* (2010)¹⁷ *etc.*

The results are similar across the both benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. It may also note that from the Table 5.13 and Table 5.14 that out of 137 schemes, 78 schemes i.e. 56.93% have more returns than the risk free returns while remaining 59 schemes i.e. 43.07% have less return than the risk free returns.

Table 5.14 : Fama's Components of Investment Performance: Nifty 50						
Sr. No.	Scheme Name	Fund Return	Compen-sation for Beta	Compen-sation for inadequate diversification	Net superior returns due to selectivity	Selectivity
Balanced						
1	Birla Sun Life'95 Fund (G)	1.2262	0.3847	0.0520	0.2857	0.3377
2	Birla Sun Life'95 Fund (D)	0.5927	0.3850	0.0741	-0.3702	-0.2961
3	DSP Blackrock Balanced Fund (G)	1.2500	0.3578	0.0238	0.3646	0.3884
4	Templeton India Pension Plan (G)	1.0720	0.1780	0.0175	0.3727	0.3902
5	Templeton India Pension Plan (D)	0.2268	0.1864	0.0710	-0.5343	-0.4634
6	HDFC Prudence Fund (D)	0.4579	0.3591	0.1115	-0.5165	-0.4050
7	HDFC Prudence Fund (G)	1.7041	0.3589	0.0464	0.7950	0.8415
8	ICICI Prudential Balanced Fund (G)	0.8975	0.3567	0.0392	-0.0021	0.0371
9	JM Balanced Fund (G)	0.0545	0.3419	0.1929	-0.9840	-0.7911
10	JM Balanced Fund (D)	0.1360	0.3930	0.0627	-0.8234	-0.7608
11	Kotak Mahindra Balance (G)	0.5358	0.3203	0.0767	-0.3649	-0.2882
12	LIC Mf Balance Fund (D)	0.0044	0.3524	0.0681	-0.9198	-0.8517
13	LIC Mf Balance Fund (G)	0.6907	0.3445	0.0512	-0.2087	-0.1576
14	LIC MF Unit Linked Insurance Scheme(D)	-0.1636	0.2789	0.1322	-1.0785	-0.9463
15	Principal Balanced Fund (D)	0.2929	0.3061	0.5899	-1.1069	-0.5170
16	Principal Balanced Fund (G)	0.8705	0.4002	0.5257	-0.5592	-0.0335
17	SBI Magnum Balanced Fund (G)	0.6298	0.4269	0.1490	-0.4498	-0.3008
18	Tata Balanced Fund (G)	1.1075	0.3896	0.0445	0.1696	0.2141
19	UTI Balanced Fund (D)	0.2300	0.3033	0.1029	-0.6801	-0.5771
20	UTI Balanced Fund (G)	1.2460	0.3247	0.0489	0.3687	0.4175
21	UTI Ulip (G)	0.1681	0.1810	0.0788	-0.5955	-0.5167
	Average	0.6300	0.3300	0.1219	-0.3256	-0.2038

Sr. No.	Scheme Name	Fund Return	Compen-sation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
Growth						
22	Baroda Pioneer Diversified fund (G)	0.9780	0.5305	0.0476	-0.1038	-0.0562
23	Birla Sun Life Advantage Fund (G)	0.7041	0.5399	0.0504	-0.3900	-0.3396
24	Birla Sun Life Equity (G)	1.4413	0.5512	0.0606	0.3256	0.3863
25	Birla Sun Life India Opportunities Fund (D)	-0.3084	0.5577	0.2144	-1.5843	-1.3699
26	Birla Sun Life India Opportunities Fund (G)	0.4950	0.5296	0.1237	-0.6621	-0.5384
27	Birla Sun Life M N C Fund (G)	1.2274	0.3721	0.0630	0.2885	0.3515
28	Birla Sun Life M N C Fund (D)	0.5564	0.3838	0.1176	-0.4488	-0.3312
29	DSP Blackrock Equity Fund (G)	-0.5888	0.5007	0.2367	-1.8300	-1.5933
30	Franklin Fmcg Fund (G)	1.0133	0.2826	0.0931	0.1338	0.2270
31	Franklin India Bluechip Fund (G)	1.6583	0.4887	0.0226	0.6432	0.6658
32	Franklin India Bluechip Fund (D)	0.4704	0.4783	0.1177	-0.6294	-0.5117
33	Franklin India Prima Fund (G)	1.6337	0.5201	0.1041	0.5058	0.6098
34	Franklin India Prima Fund (D)	0.3068	0.5110	0.1381	-0.8460	-0.7080
35	Franklin India Prima Plus (G)	1.5592	0.4800	0.0325	0.5430	0.5755
36	Franklin India Prima Plus (D)	0.1364	0.4629	0.1086	-0.9388	-0.8302
37	Franklin Infotech Fund (D)	-0.5774	0.4832	0.2410	-1.8053	-1.5643
38	Franklin Infotech Fund (G)	0.3098	0.4748	0.2174	-0.8861	-0.6688
39	Franklin Pharma Fund (G)	1.0571	0.3081	0.1355	0.1097	0.2452
40	Templeton India Growth Fund (G)	1.6338	0.4968	0.0311	0.6021	0.6332
41	HDFC Capital Builder Fund (D)	0.4275	0.4235	0.1496	-0.6495	-0.4998
42	HDFC Capital Builder Fund (G)	1.5476	0.4390	0.0653	0.5395	0.6048
43	HDFC Equity Fund (G)	1.8742	0.4955	0.0354	0.8396	0.8750
44	HDFC Equity Fund (D)	0.6901	0.4466	0.1277	-0.3880	-0.2603
45	HDFC Top 200 Fund (D)	0.4735	0.4921	0.1059	-0.6283	-0.5223
46	HDFC Top 200 Fund (G)	1.7062	0.5013	0.0381	0.6631	0.7012
47	ICICI Prudential FMCG Fund (G)	1.2200	0.3237	0.1289	0.2636	0.3926
48	ICICI Prudential Growth Plan (G)	1.1316	0.4839	0.0346	0.1094	0.1440
49	ICICI Prudential Growth Plan (D)	-0.2782	0.4745	0.1191	-1.3756	-1.2565
50	ICICI Prudential Power (G)	1.3557	0.1645	2.9584	-2.2710	0.6874
51	JM Basic Fund (G)	-0.1654	0.6229	0.2216	-1.5137	-1.2921
52	JM Equity Fund (D)	-0.0146	0.5385	0.0752	-1.1321	-1.0569
53	JM Equity Fund (G)	0.6492	0.5583	0.0459	-0.4587	-0.4128
54	Kotak Mahindra 30 Unit Scheme (G)	1.1206	0.5023	0.0394	0.0750	0.1145
55	LIC M F Growth Fund (G)	0.6915	0.5019	0.0809	-0.3950	-0.3142
56	LIC MF Equity Fund (G)	0.6787	0.5521	0.0333	-0.4105	-0.3772
57	Principal Index Fund (G)	0.9265	0.5139	0.0005	-0.0916	-0.0911
58	Reliance Growth Fund (D)	0.2575	0.4738	0.1602	-0.8803	-0.7201
59	Reliance Growth Fund (G)	2.0028	0.5039	0.0764	0.9187	0.9951

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
60	Reliance Vision Fund (G)	1.8995	0.4792	0.0636	0.8530	0.9166
61	SBI Magnum Contra Fund (G)	1.1866	0.4802	0.1662	0.0364	0.2025
62	SBI Magnum Equity Fund (G)	-0.0331	0.5591	0.1126	-1.2085	-1.0960
63	SBI Magnum F M C G Fund (G)	0.3504	0.3023	0.1676	-0.6233	-0.4557
64	SBI Magnum Global Fund-1994 (G)	0.7598	0.5857	0.1119	-0.4416	-0.3297
65	SBI Magnum I T Fund (G)	-0.5079	0.5434	0.2009	-1.7560	-1.5551
66	SBI Magnum Multiplier Plus-1993 (G)	0.5990	0.5683	0.0923	-0.5653	-0.4731
67	SBI Magnum Pharma Fund (G)	0.7789	0.4085	0.1582	-0.2916	-0.1333
68	Sundaram B N P Paribas Growth Fund (G)	1.1539	0.5308	0.0450	0.0743	0.1192
69	Tata Equity Opportunities Fund (D)	0.7587	0.4664	0.0966	-0.3081	-0.2115
70	Tata Growth Fund (G)	1.6644	0.4489	0.0669	0.6449	0.7118
71	Tata Life Sciences & Technology Fund (G)	0.9985	0.4817	0.1030	-0.0900	0.0131
72	Tata Pure Equity Fund (G)	1.4529	0.5086	0.0339	0.4068	0.4406
73	Tata Select Equity Fund (G)	1.0232	0.5674	0.0852	-0.1333	-0.0480
74	Taurus Bonanza (G)	1.2000	0.5232	0.0886	0.0845	0.1731
75	Taurus Discovery (G)	0.5899	0.5812	0.1296	-0.6246	-0.4950
76	Taurus Starshare (G)	1.1773	0.5903	0.1031	-0.0199	0.0832
77	UTI Master Value Fund (G)	0.4889	0.4559	0.1517	-0.6225	-0.4708
78	UTI Mastershare (G)	0.6314	0.4605	0.0347	-0.3677	-0.3329
	Average	0.8101	0.4826	0.1520	-0.3283	-0.1763
Income						
79	Birla Sun Life Cash Manager-Ret (G)	0.5488	-0.0022	0.0116	0.0357	0.0473
80	Birla Sun Life Cash Plus-Ret (G)	0.5441	-0.0026	0.0122	0.0307	0.0429
81	Birla Sun Life Income Plus-Ret (G)	0.7411	0.0186	0.1004	0.1183	0.2187
82	Birla Sun Life Income Plus-Ret (QD)	0.1139	0.0223	0.1220	-0.5342	-0.4122
83	DBS Chola Triple Ace (G)	0.4701	-0.0008	0.0895	-0.1223	-0.0328
84	DSP Blackrock Bond Fund (G)	0.6443	0.0120	0.0701	0.0584	0.1285
85	DSP Blackrock Bond Fund (QD)	-0.0015	0.0099	0.1354	-0.6506	-0.5152
86	Templeton India Income Fund (G)	0.6468	0.0130	0.0561	0.0739	0.1300
87	Templeton India Income Fund (QD)	0.0181	0.0203	0.0789	-0.5848	-0.5059
88	Templeton India Treasury Management Account (G)	0.5548	-0.0026	0.0127	0.0410	0.0536
89	Templeton India Treasury Management Account (WD)	0.0788	-0.0011	0.0152	-0.4391	-0.4239
90	HDFC Cash Management Fund - Savings Plan (WD)	0.0403	0.0159	0.1953	-0.6746	-0.4793
91	HDFC Cash Management Fund - Savings Plan (G)	0.5293	-0.0137	0.2881	-0.2488	0.0392
92	HDFC High Interest Fund (QD)	0.0595	0.0243	0.1129	-0.5815	-0.4686

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
93	HDFC High Interest Fund (AD)	0.1148	0.0136	0.1448	-0.5474	-0.4026
94	HDFC High Interest Fund (HD)	0.0571	0.0144	0.1239	-0.5850	-0.4611
95	HDFC High Interest Fund (G)	0.6568	-0.0437	0.5525	-0.3558	0.1968
96	ING Vysya Income Fund-Ret (QD)	0.0707	-0.0367	0.0976	-0.5674	-0.4697
97	ING Vysya Income Fund-Ret (G)	0.6725	0.0128	0.0773	0.0785	0.1559
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.9019	0.0072	0.1433	0.2476	0.3909
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	0.1041	0.0018	0.2135	-0.6149	-0.4014
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.6876	0.0011	0.0636	0.1191	0.1827
101	ICICI Prudential Income Plan (G)	0.7525	0.0161	0.0996	0.1330	0.2326
102	JM G-Sec Fund -Regular (D)	0.2494	0.0192	0.1293	-0.4030	-0.2736
103	JM High Liquidity Fund (G)	0.5515	-0.0027	0.0146	0.0358	0.0504
104	JM High Liquidity Fund (WD)	-0.0701	-0.0048	0.1052	-0.6742	-0.5690
105	JM Income Fund (G)	0.4816	0.0125	0.0465	-0.0812	-0.0347
106	JM Income Fund (D)	-0.0282	0.0297	0.2041	-0.7658	-0.5617
107	Kotak Mahindra Gilt- Savings (G)	0.5304	-0.0010	0.0234	0.0042	0.0276
108	LIC Bond Fund (G)	0.7048	0.0066	0.0651	0.1293	0.1944
109	LIC Bond Fund (D)	0.0016	0.0098	0.0927	-0.6046	-0.5120
110	LIC Monthly Income Plan (MD)	0.0025	0.0756	0.0376	-0.6146	-0.5769
111	LIC Monthly Income Plan (G)	0.7686	0.1222	0.4881	-0.3455	0.1426
112	LIC MF Govt. Securities Fund-Regular (G)	0.6295	0.0152	0.1051	0.0055	0.1106
113	LIC MF Govt. Securities Fund-Regular (D)	-0.0073	0.0037	0.1591	-0.6739	-0.5148
114	SBI Magnum Income Fund-1998 (D)	-0.0121	0.0232	0.1120	-0.6511	-0.5391
115	SBI Magnum Income Fund-1998 (G)	0.5336	0.0163	0.0654	-0.0519	0.0135
116	SBI Magnum Insta Cash Fund (WD)	-0.0563	0.0007	0.0867	-0.6475	-0.5608
117	SBI Magnum Insta Cash Fund (G)	0.5399	-0.0026	0.0472	-0.0085	0.0387
118	Sundaram B N P Paribas Bond Saver (G)	0.5997	0.0150	0.0573	0.0237	0.0809
119	Tata Gilt RIP (G)	0.7694	0.0200	0.1129	0.1326	0.2456
120	Tata Gilt RIP (D)	0.1208	0.0281	0.1135	-0.5246	-0.4111
121	Tata Income Fund (G)	0.5584	0.0049	0.0820	-0.0323	0.0497
122	Tata Income Fund (HD)	0.0330	0.0132	0.0972	-0.5811	-0.4839
123	UTI Bond Fund (D)	-0.0647	0.0427	0.1902	-0.8013	-0.6111
124	UTI Bond Fund (G)	0.6411	0.0091	0.0941	0.0341	0.1282
125	UTI Money Market Fund (WD)	0.4258	-0.0235	0.4331	-0.4875	-0.0544
	Average	0.3598	0.0129	0.1230	-0.2799	-0.1569
Tax-Planning						
126	Baroda Pioneer Elss 96 (G)	0.1446	0.5416	0.0974	-0.9981	-0.9008

Sr. No.	Scheme Name	Fund Return	Compensation for Beta	Compensation for inadequate diversification	Net superior returns due to selectivity	Selectivity
127	Canara Robeco Equity Tax Saver (G)	-0.1356	0.5373	0.1316	-1.3082	-1.1766
128	HDFC Tax Saver (D)	0.3479	0.4483	0.1752	-0.7793	-0.6042
129	HDFC Tax Saver (G)	1.3374	0.5027	0.1076	0.2234	0.3310
130	ICICI Prudential Tax Plan (G)	1.4729	0.5354	0.0893	0.3445	0.4337
131	LIC MF Tax Plan (G)	0.3959	0.5060	0.0826	-0.6964	-0.6138
132	Principal Personal Tax Saver Fund (G)	0.3428	0.5201	0.1661	-0.8472	-0.6811
133	Principal Tax Savings Fund (G)	0.9005	0.5146	0.0762	-0.1941	-0.1179
134	SBI Magnum Tax Gain'93 (G)	0.1462	0.5438	0.1731	-1.0744	-0.9013
135	Sahara Tax Gain Fund (G)	-0.8226	0.5462	0.2557	-2.1282	-1.8726
136	Tata Tax Saving Fund (G)	0.6381	0.5202	0.0876	-0.4735	-0.3858
137	Taurus Tax shield (G)	0.4555	0.5643	0.1740	-0.7866	-0.6125
	Average	0.4353	0.5234	0.1347	-0.7265	-0.5918
	Overall Average	0.5953	0.3011	0.1358	-0.3454	-0.2096

Note: Risk Free Return (91 Days T-bills) = 0.5038

5.2.8 RESULTS OF APPRAISAL RATIO (1973)¹⁹

Another measure that has been used in the study is the Appraisal Ratio. The Appraisal Ratio is similar in concept to the Sharpe ratio.

The ratio reflects the extra return per unit of unsystematic risk and could be used for ranking purposes to understand the relative performance of managed funds. To calculate the appraisal ratio, the fund's alpha is divided by the unsystematic risk of the funds in which they invested. Note that the appraisal ratio for the market portfolio is zero. Thus, a positive value would indicate superior performance. The analysis of performance of sample schemes in terms of this ratio becomes all the more important as the funds reflected considerable amount of unique risk.

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Appraisal Ratio	Rank	Appraisal Ratio	Rank
Balanced					
1	Birla Sun Life'95 Fund (G)	0.1042	28	0.1051	28
2	Birla Sun Life'95 Fund (D)	-0.0768	76	-0.0761	74
3	DSP Blackrock Balanced Fund (G)	0.1845	14	0.1884	14
4	Templeton India Pension Plan (G)	0.3185	3	0.3100	3
5	Templeton India Pension Plan (D)	-0.1715	110	-0.1679	107
6	HDFC Prudence Fund (D)	-0.0872	82	-0.0856	82
7	HDFC Prudence Fund (G)	0.2946	6	0.2872	6

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Appraisal Ratio	Rank	Appraisal Ratio	Rank
8	ICICI Prudential Balanced Fund (G)	0.0136	53	0.0139	53
9	JM Balanced Fund (G)	-0.1247	98	-0.1237	96
10	JM Balanced Fund (D)	-0.2162	123	-0.2121	121
11	Kotak Mahindra Balance (G)	-0.0816	78	-0.0790	77
12	LIC Mf Balance Fund (D)	-0.2334	129	-0.2387	128
13	LIC Mf Balance Fund (G)	-0.0504	69	-0.0521	69
14	LIC MF Unit Linked Insurance Scheme (D)	-0.2004	119	-0.2015	118
15	Principal Balanced Fund (D)	-0.0396	65	-0.0395	65
16	Principal Balanced Fund (G)	-0.0023	57	-0.0026	57
17	SBI Magnum Balanced Fund (G)	-0.0487	68	-0.0500	68
18	Tata Balanced Fund (G)	0.0694	37	0.0719	37
19	UTI Balanced Fund (D)	-0.1338	101	-0.1373	100
20	UTI Balanced Fund (G)	0.1411	21	0.1453	21
21	UTI Ulip (G)	-0.1781	111	-0.1783	110
	Average	-0.0247		-0.0249	
Growth					
22	Baroda Pioneer Diversified fund (G)	-0.0168	60	-0.0157	60
23	Birla Sun Life Advantage Fund (G)	-0.0940	87	-0.0915	86
24	Birla Sun Life Equity (G)	0.0916	31	0.0935	31
25	Birla Sun Life India Opportunities Fund (D)	-0.1652	107	-0.1650	106
26	Birla Sun Life India Opportunities Fund (G)	-0.0914	85	-0.0905	85
27	Birla Sun Life M N C Fund (G)	0.0980	30	0.1002	30
28	Birla Sun Life M N C Fund (D)	-0.0634	71	-0.0660	71
29	DSP Blackrock Equity Fund (G)	-0.1885	113	-0.1892	113
30	Franklin Fmcg Fund (G)	0.0584	40	0.0589	40
31	Franklin India Bluechip Fund (G)	0.2933	7	0.2846	7
32	Franklin India Bluechip Fund (D)	-0.0978	88	-0.0925	87
33	Franklin India Prima Fund (G)	0.1133	26	0.1136	26
34	Franklin India Prima Fund (D)	-0.1159	92	-0.1137	91
35	Franklin India Prima Plus (G)	0.2066	13	0.2061	13
36	Franklin India Prima Plus (D)	-0.1610	105	-0.1593	104
37	Franklin Infotech Fund (D)	-0.1908	116	-0.1865	112
38	Franklin Infotech Fund (G)	-0.0874	83	-0.0854	81
39	Franklin Pharma Fund (G)	0.0491	42	0.0494	43
40	Templeton India Growth Fund (G)	0.2335	9	0.2280	10
41	HDFC Capital Builder Fund (D)	-0.0846	81	-0.0832	80
42	HDFC Capital Builder Fund (G)	0.1560	19	0.1566	19
43	HDFC Equity Fund (G)	0.3010	5	0.2951	5
44	HDFC Equity Fund (D)	-0.0462	67	-0.0463	67
45	HDFC Top 200 Fund (D)	-0.1031	90	-0.0988	89

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Appraisal Ratio	Rank	Appraisal Ratio	Rank
46	HDFC Top 200 Fund (G)	0.2238	11	0.2264	11
47	ICICI Prudential FMCG Fund (G)	0.0792	34	0.0798	34
48	ICICI Prudential Growth Plan (G)	0.0477	43	0.0497	42
49	ICICI Prudential Growth Plan (D)	-0.2217	126	-0.2265	124
50	ICICI Prudential Power (G)	0.0140	52	0.0142	52
51	JM Basic Fund (G)	-0.1454	102	-0.1457	101
52	JM Equity Fund (D)	-0.2208	124	-0.2308	126
53	JM Equity Fund (G)	-0.1174	93	-0.1149	92
54	Kotak Mahindra 30 Unit Scheme (G)	0.0354	45	0.0363	45
55	LIC M F Growth Fund (G)	-0.0686	72	-0.0682	72
56	LIC MF Equity Fund (G)	-0.1195	95	-0.1246	98
57	Principal Index Fund (G)	-0.0762	74	-0.2633	130
58	Reliance Growth Fund (D)	-0.1075	91	-0.1099	90
59	Reliance Growth Fund (G)	0.2204	12	0.2223	12
60	Reliance Vision Fund (G)	0.2293	10	0.2312	9
61	SBI Magnum Contra Fund (G)	0.0297	48	0.0301	48
62	SBI Magnum Equity Fund (G)	-0.1906	115	-0.1893	114
63	SBI Magnum F M C G Fund (G)	-0.0844	80	-0.0815	78
64	SBI Magnum Global Fund-1994 (G)	-0.0585	70	-0.0560	70
65	SBI Magnum I T Fund (G)	-0.1993	118	-0.1966	117
66	SBI Magnum Multiplier Plus-1993 (G)	-0.0909	84	-0.0903	84
67	SBI Magnum Pharma Fund (G)	-0.0209	61	-0.0218	61
68	Sundaram B N P Paribas Growth Fund (G)	0.0334	47	0.0344	47
69	Tata Equity Opportunities Fund (D)	-0.0412	66	-0.0431	66
70	Tata Growth Fund (G)	0.1769	16	0.1801	16
71	Tata Life Sciences & Technology Fund (G)	0.0026	56	0.0025	56
72	Tata Pure Equity Fund (G)	0.1466	20	0.1502	20
73	Tata Select Equity Fund (G)	-0.0090	58	-0.0096	59
74	Taurus Bonanza (G)	0.0344	46	0.0351	46
75	Taurus Discovery (G)	-0.0765	75	-0.0778	75
76	Taurus Starshare (G)	0.0141	51	0.0147	51
77	UTI Master Value Fund (G)	-0.0756	73	-0.0754	73
78	UTI Mastershare (G)	-0.1206	97	-0.1175	93
	Average	-0.0116		-0.0146	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	0.3393	2	0.3327	2
80	Birla Sun Life Cash Plus-Ret (G)	0.3071	4	0.3002	4
81	Birla Sun Life Income Plus-Ret (G)	0.1198	25	0.1196	25
82	Birla Sun Life Income Plus-Ret (QD)	-0.1849	112	-0.1859	111
83	DBS Chola Triple Ace (G)	-0.0247	62	-0.0238	62

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Appraisal Ratio	Rank	Appraisal Ratio	Rank
84	DSP Blackrock Bond Fund (G)	0.1019	29	0.1017	29
85	DSP Blackrock Bond Fund (QD)	-0.2288	127	-0.2285	125
86	Templeton India Income Fund (G)	0.1228	23	0.1231	23
87	Templeton India Income Fund (QD)	-0.3346	133	-0.3351	133
88	Templeton India Treasury Management Account (G)	0.3616	1	0.3553	1
89	Templeton India Treasury Management Account (WD)	-1.9389	137	-1.9379	137
90	HDFC Cash Management Fund - Savings Plan (WD)	-0.1466	103	-0.1463	102
91	HDFC Cash Management Fund - Savings Plan (G)	0.0095	55	0.0092	55
92	HDFC High Interest Fund (QD)	-0.2216	125	-0.2231	123
93	HDFC High Interest Fund (AD)	-0.1630	106	-0.1640	105
94	HDFC High Interest Fund (HD)	-0.2148	122	-0.2156	122
95	HDFC High Interest Fund (G)	0.0252	49	0.0250	49
96	ING Vysya Income Fund-Ret (QD)	-0.2333	128	-0.2337	127
97	ING Vysya Income Fund-Ret (G)	0.1126	27	0.1123	27
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.1664	18	0.1672	18
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	-0.1202	96	-0.1199	95
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.1820	15	0.1816	15
101	ICICI Prudential Income Plan (G)	0.1306	22	0.1305	22
102	JM G-Sec Fund -Regular (D)	-0.1183	94	-0.1194	94
103	JM High Liquidity Fund (G)	0.2849	8	0.2793	8
104	JM High Liquidity Fund (WD)	-0.3650	134	-0.3649	134
105	JM Income Fund (G)	-0.0378	64	-0.0386	64
106	JM Income Fund (D)	-0.1542	104	-0.1557	103
107	Kotak Mahindra Gilt- Savings (G)	0.0788	35	0.0793	35
108	LIC Bond Fund (G)	0.1753	17	0.1751	17
109	LIC Bond Fund (D)	-0.3219	132	-0.3229	132
110	LIC Monthly Income Plan (MD)	-0.4297	136	-0.4399	136
111	LIC Monthly Income Plan (G)	0.0153	50	0.0153	50
112	LIC MF Govt. Securities Fund-Regular (G)	0.0595	39	0.0596	39
113	LIC MF Govt. Securities Fund-Regular (D)	-0.2037	120	-0.2034	119
114	SBI Magnum Income Fund-1998 (D)	-0.2597	130	-0.2601	129
115	SBI Magnum Income Fund-1998 (G)	0.0106	54	0.0108	54
116	SBI Magnum Insta Cash Fund (WD)	-0.4128	135	-0.4124	135
117	SBI Magnum Insta Cash Fund (G)	0.0573	41	0.0558	41
118	Sundaram B N P Paribas Bond Saver (G)	0.0738	36	0.0736	36
119	Tata Gilt RIP (G)	0.1200	24	0.1201	24
120	Tata Gilt RIP (D)	-0.1889	114	-0.1905	116
121	Tata Income Fund (G)	0.0372	44	0.0369	44
122	Tata Income Fund (HD)	-0.2834	131	-0.2839	131

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		Appraisal Ratio	Rank	Appraisal Ratio	Rank
123	UTI Bond Fund (D)	-0.1695	109	-0.1716	109
124	UTI Bond Fund (G)	0.0800	33	0.0802	33
125	UTI Money Market Fund (WD)	-0.0092	59	-0.0086	58
	Average	-0.0807		-0.0817	
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	-0.1686	108	-0.1708	108
127	Canara Robeco Equity Tax Saver (G)	-0.1953	117	-0.1899	115
128	HDFC Tax Saver (D)	-0.0929	86	-0.0896	83
129	HDFC Tax Saver (G)	0.0606	38	0.0615	38
130	ICICI Prudential Tax Plan (G)	0.0865	32	0.0867	32
131	LIC MF Tax Plan (G)	-0.1272	100	-0.1312	99
132	Principal Personal Tax Saver Fund (G)	-0.0984	89	-0.0978	88
133	Principal Tax Savings Fund (G)	-0.0267	63	-0.0261	63
134	SBI Magnum Tax Gain'93 (G)	-0.1251	99	-0.1241	97
135	Sahara Tax Gain Fund (G)	-0.2073	121	-0.2051	120
136	Tata Tax Saving Fund (G)	-0.0791	77	-0.0789	76
137	Taurus Tax shield (G)	-0.0821	79	-0.0827	79
	Average	-0.0880		-0.0873	
	Overall Average	-0.0440		-0.0456	

Table 5.15 reveals the Appraisal Ratios for the sample mutual fund schemes across different benchmark criteria.

When BSE 30 was used as a proxy for the market portfolios, out of 137 schemes, 56 (40.88 %) schemes reflect a positive ratio and remaining 81 (59.12 %) schemes yielded negative ratios. The top five prominent winners are Templeton India Treasury Management Account (G), Birla Sun Life Cash Manager-Ret (G), Templeton India Pension Plan (G), Birla Sun Life Cash Plus-Ret (G) and HDFC Equity Fund (G) while the bottom five prominent laggards are Templeton India Treasury Management Account (WD), LIC Monthly Income Plan (MD), SBI Magnum Insta Cash Fund (WD), JM High Liquidity Fund (WD) and Templeton India Income Fund (QD). Out of top five winners three are from income fund, one from balanced fund and one from growth fund and all the bottom five laggards are from income fund only. The average Appraisal Ratio for all mutual fund schemes is -0.0440 and 66 (48.18 %) schemes could register better than the overall sample average investment performance.

When Nifty 50 was used as a proxy for the market portfolios, out of 137 schemes, 56 (40.88 %) schemes reflect a positive ratio and remaining 81 (59.12 %) schemes yielded negative ratios. The top five prominent winners are Templeton India Treasury

Management Account (G), Birla Sun Life Cash Manager-Ret (G), Templeton India Pension Plan (G), Birla Sun Life Cash Plus-Ret (G) and HDFC Equity Fund (G) while the bottom five prominent laggards are Templeton India Treasury Management Account (WD), LIC Monthly Income Plan (MD), SBI Magnum Insta Cash Fund (WD), JM High Liquidity Fund (WD) and Templeton India Income Fund (QD). Out of top five winners three are from income fund, one from balanced fund and one from growth fund and all the bottom five laggards are from income fund only. The average Appraisal Ratio for all mutual fund schemes is -0.0456 and 66 (48.18 %) schemes could register better than the overall sample average investment performance.

These results are similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Gupta (2003)³, Chander (2006)¹¹, Chander (2007)²⁰ etc.

The results are similar across the benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. In other words, investment managers are hardly inclined for any reason to any benchmark portfolio in the investment performance evaluation.

To examine whether the Appraisal Ratio of the selected mutual fund schemes is significantly different according to their objectives or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁₃: There is no significant difference in the Appraisal Ratio of the selected sample mutual fund schemes according to their objectives.

Based on the results of the Appraisal Ratio presented in Table 5.15, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference in the Appraisal Ratio of the selected sample mutual fund schemes according to their objectives.		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-0.3600	-0.2780
Balanced vs. Income	0.7148	0.7268
Balanced vs. Tax-Planning	1.2568	1.2487
Growth vs. Income	1.3993	1.3547
Growth vs. Tax-Planning	1.8542	1.7258
Income vs. Tax-Planning	0.0723	0.0562

On comparing the same with the Table Value, it was found that there is no significant difference in the Appraisal Ratio according to their objectives.

5.2.9 RESULTS OF INFORMATION RATIO (1994)²¹

Sharpe presents the information ratio as a generalization of his ratio, in which the risk free asset is replaced by a benchmark portfolio.

The information ratio is defined by the residual return of the portfolio compared to its residual risk. This ratio allows us to check that the risk taken by the manager, in deviating from the benchmark, is sufficiently rewarded. The information ratio measures a portfolio manager's ability to generate excess returns relative to a benchmark. The higher the Information Ratio the more consistent a manager is.

Table 5.16 : Information Ratios of Mutual Fund Schemes across Benchmark Criteria							
Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Tracking error	Information Ratio	Rank	Tracking error	Information Ratio	Rank
Balanced							
1	Birla Sun Life'95 Fund (G)	3.7999	0.0536	17	3.8486	0.0524	18
2	Birla Sun Life'95 Fund (D)	4.3835	-0.0980	85	4.4273	-0.0976	83
3	DSP Blackrock Balanced Fund (G)	3.2291	0.0705	15	3.2671	0.0690	15
4	Templeton India Pension Plan (G)	5.3622	0.0092	28	5.4782	0.0087	28
5	Templeton India Pension Plan (D)	5.7601	-0.1381	119	5.8887	-0.1355	118
6	HDFC Prudence Fund (D)	5.2691	-0.1071	93	5.3569	-0.1058	92
7	HDFC Prudence Fund (G)	3.7034	0.1841	8	3.8636	0.1759	8
8	ICICI Prudential Balanced Fund (G)	3.7320	-0.0335	41	3.6950	-0.0344	42
9	JM Balanced Fund (G)	6.9122	-0.1400	120	6.9746	-0.1391	119
10	JM Balanced Fund (D)	4.0038	-0.2214	135	4.1010	-0.2167	133
11	Kotak Mahindra Balance (G)	4.6717	-0.1042	89	4.8000	-0.1018	87
12	LIC Mf Balance Fund (D)	4.4670	-0.2279	136	4.4269	-0.2305	135
13	LIC Mf Balance Fund (G)	4.1198	-0.0805	75	4.0837	-0.0818	75
14	LIC MF Unit Linked Insurance Scheme (D)	6.0003	-0.1977	132	6.0180	-0.1974	131
15	Principal Balanced Fund (D)	13.4967	-0.0541	56	13.5161	-0.0541	56
16	Principal Balanced Fund (G)	13.1699	-0.0115	34	13.1211	-0.0117	34
17	SBI Magnum Balanced Fund (G)	6.2885	-0.0624	67	6.1871	-0.0638	67
18	Tata Balanced Fund (G)	3.7052	0.0230	27	3.6085	0.0230	27
19	UTI Balanced Fund (D)	5.4566	-0.1452	122	5.3958	-0.1473	122
20	UTI Balanced Fund (G)	4.2300	0.0528	18	4.1908	0.0528	17
21	UTI Ulip (G)	5.9580	-0.1434	121	6.0272	-0.1421	120
	Average		-0.0653			-0.0656	
Growth							
22	Baroda Pioneer Diversified fund (G)	3.5805	-0.0124	35	3.5763	-0.0130	35
23	Birla Sun Life Advantage Fund (G)	3.6902	-0.0863	79	3.7241	-0.0861	78
24	Birla Sun Life Equity (G)	4.2276	0.0991	13	4.1575	0.1002	13
25	Birla Sun Life India Opportunities Fund (D)	8.3388	-0.1596	124	8.3244	-0.1601	123

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Tracking error	Information Ratio	Rank	Tracking error	Information Ratio	Rank
26	Birla Sun Life India Opportunities Fund (G)	5.9425	-0.0888	80	5.9513	-0.0890	79
27	Birla Sun Life M N C Fund (G)	4.2567	0.0481	19	4.2020	0.0483	19
28	Birla Sun Life M N C Fund (D)	5.5852	-0.0834	77	5.4530	-0.0859	77
29	DSP Blackrock Equity Fund (G)	8.4617	-0.1904	129	8.4261	-0.1915	129
30	Franklin Fmcg Fund (G)	5.3290	-0.0017	32	5.3440	-0.0021	32
31	Franklin India Bluechip Fund (G)	2.2844	0.2783	2	2.3925	0.2649	2
32	Franklin India Bluechip Fund (D)	5.3711	-0.1028	87	5.5708	-0.0995	86
33	Franklin India Prima Fund (G)	5.3383	0.1145	12	5.3666	0.1135	12
34	Franklin India Prima Fund (D)	6.1639	-0.1161	99	6.2264	-0.1153	97
35	Franklin India Prima Plus (G)	2.8165	0.1906	7	2.8627	0.1868	7
36	Franklin India Prima Plus (D)	5.2463	-0.1689	126	5.2897	-0.1679	125
37	Franklin Infotech Fund (D)	8.2710	-0.1934	130	8.4093	-0.1905	128
38	Franklin Infotech Fund (G)	7.7743	-0.0917	81	7.8655	-0.0909	80
39	Franklin Pharma Fund (G)	5.9741	0.0058	30	5.9654	0.0054	30
40	Templeton India Growth Fund (G)	2.6992	0.2265	3	2.8028	0.2173	6
41	HDFC Capital Builder Fund (D)	6.1300	-0.0971	83	6.1939	-0.0964	82
42	HDFC Capital Builder Fund (G)	4.0300	0.1303	11	4.0654	0.1287	11
43	HDFC Equity Fund (G)	2.9025	0.2935	1	2.9916	0.2840	1
44	HDFC Equity Fund (D)	5.7598	-0.0577	59	5.7340	-0.0583	61
45	HDFC Top 200 Fund (D)	5.1640	-0.1063	92	5.3042	-0.1039	90
46	HDFC Top 200 Fund (G)	3.1281	0.2186	4	3.1126	0.2190	3
47	ICICI Prudential FMCG Fund (G)	5.8042	0.0340	23	5.7975	0.0337	23
48	ICICI Prudential Growth Plan (G)	3.0393	0.0359	21	2.9540	0.0362	21
49	ICICI Prudential Growth Plan (D)	5.7041	-0.2280	137	5.5931	-0.2329	136
50	ICICI Prudential Power (G)	48.7852	0.0068	29	48.8184	0.0068	29
51	JM Basic Fund (G)	9.0528	-0.1312	114	9.0107	-0.1321	115
52	JM Equity Fund (D)	4.7785	-0.2170	134	4.5864	-0.2266	134
53	JM Equity Fund (G)	3.6249	-0.1030	88	3.6407	-0.1031	89
54	Kotak Mahindra 30 Unit Scheme (G)	3.0850	0.0318	24	3.1692	0.0303	24
55	LIC MF Growth Fund (G)	4.6291	-0.0715	71	4.6154	-0.0722	71
56	LIC MF Equity Fund (G)	3.2071	-0.1072	94	3.0666	-0.1128	94
57	Principal Index Fund (G)	1.1806	-0.0812	76	0.3625	-0.2705	137
58	Reliance Growth Fund (D)	6.7067	-0.1141	98	6.5928	-0.1164	99
59	Reliance Growth Fund (G)	4.5078	0.2175	6	4.4836	0.2182	4
60	Reliance Vision Fund (G)	4.0264	0.2178	5	4.0168	0.2178	5
61	SBI Magnum Contra Fund (G)	6.7835	0.0242	26	6.7596	0.0240	26
62	SBI Magnum Equity Fund (G)	5.8167	-0.1815	127	5.8197	-0.1817	126
63	SBI Magnum F M C G Fund (G)	6.3689	-0.1055	90	6.5459	-0.1030	88

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Tracking error	Information Ratio	Rank	Tracking error	Information Ratio	Rank
64	SBI Magnum Global Fund-1994 (G)	5.9023	-0.0445	48	5.9788	-0.0443	48
65	SBI Magnum I T Fund (G)	7.8600	-0.1947	131	7.9188	-0.1935	130
66	SBI Magnum Multiplier Plus-1993 (G)	5.3098	-0.0797	74	5.2886	-0.0805	74
67	SBI Magnum Pharma Fund (G)	6.4548	-0.0377	44	6.3548	-0.0387	44
68	Sundaram B N P Paribas Growth Fund (G)	3.4037	0.0386	20	3.4729	0.0372	20
69	Tata Equity Opportunities Fund (D)	5.1241	-0.0515	53	4.9774	-0.0534	54
70	Tata Growth Fund (G)	4.1603	0.1543	9	4.1068	0.1558	9
71	Tata Life Sciences & Technology Fund (G)	5.2710	-0.0045	33	5.1907	-0.0050	33
72	Tata Pure Equity Fund (G)	2.9929	0.1438	10	2.9404	0.1457	10
73	Tata Select Equity Fund (G)	5.2163	0.0001	31	5.0676	-0.0003	31
74	Taurus Bonanza (G)	4.9712	0.0357	22	4.9308	0.0356	22
75	Taurus Discovery (G)	6.5332	-0.0662	68	6.4336	-0.0676	69
76	Taurus Starshare (G)	5.8137	0.0266	25	5.7610	0.0265	25
77	UTI Master Value Fund (G)	6.3308	-0.0843	78	6.3280	-0.0847	76
78	UTI Mastershare (G)	2.9180	-0.1340	118	2.9844	-0.1318	113
	Average		-0.0179			-0.0222	
Income							
79	Birla Sun Life Cash Manager-Ret (G)	8.0510	-0.0588	62	8.1360	-0.0585	62
80	Birla Sun Life Cash Plus-Ret (G)	8.0576	-0.0594	63	8.1425	-0.0590	63
81	Birla Sun Life Income Plus-Ret (G)	7.9458	-0.0354	43	8.0221	-0.0353	43
82	Birla Sun Life Income Plus-Ret (QD)	8.0029	-0.1135	96	8.0647	-0.1129	95
83	DBS Chola Triple Ace (G)	8.1210	-0.0680	69	8.2298	-0.0674	68
84	DSP Blackrock Bond Fund (G)	7.9290	-0.0477	50	8.0133	-0.0475	51
85	DSP Blackrock Bond Fund (QD)	8.1659	-0.1254	109	8.2605	-0.1242	107
86	Templeton India Income Fund (G)	7.8708	-0.0477	51	7.9677	-0.0474	50
87	Templeton India Income Fund (QD)	7.8478	-0.1280	111	7.9300	-0.1269	110
88	Templeton India Treasury Management Account (G)	8.0570	-0.0580	60	8.1424	-0.0577	59
89	Templeton India Treasury Management Account (WD)	8.0312	-0.1175	101	8.1198	-0.1165	100
90	HDFC Cash Management Fund - Savings Plan (WD)	8.4162	-0.1167	100	8.5089	-0.1157	98
91	HDFC Cash Management Fund - Savings Plan (G)	9.2752	-0.0532	54	9.3423	-0.0530	53
92	HDFC High Interest Fund (QD)	7.9486	-0.1211	104	8.0031	-0.1206	102
93	HDFC High Interest Fund (AD)	8.2068	-0.1106	95	8.2613	-0.1101	93
94	HDFC High Interest Fund (HD)	8.0948	-0.1193	102	8.1613	-0.1186	101
95	HDFC High Interest Fund (G)	11.7456	-0.0311	39	11.8005	-0.0312	39
96	ING Vysya Income Fund-Ret (QD)	7.7146	-0.1234	105	7.7934	-0.1224	105

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Tracking error	Information Ratio	Rank	Tracking error	Information Ratio	Rank
97	ING Vysya Income Fund-Ret (G)	7.9424	-0.0441	47	8.0216	-0.0439	47
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	8.2055	-0.0147	36	8.3237	-0.0147	36
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	8.6429	-0.1062	91	8.7394	-0.1053	91
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	8.0621	-0.0415	46	8.1454	-0.0414	46
101	ICICI Prudential Income Plan (G)	7.9663	-0.0339	42	8.0497	-0.0338	41
102	JM G-Sec Fund -Regular (D)	8.0781	-0.0957	82	8.1306	-0.0953	81
103	JM High Liquidity Fund (G)	8.0599	-0.0584	61	8.1437	-0.0581	60
104	JM High Liquidity Fund (WD)	8.2285	-0.1328	116	8.3228	-0.1315	112
105	JM Income Fund (G)	7.8771	-0.0687	70	7.9563	-0.0682	70
106	JM Income Fund (D)	8.4313	-0.1246	108	8.4468	-0.1246	108
107	Kotak Mahindra Gilt-Savings (G)	8.0293	-0.0613	65	8.1228	-0.0608	65
108	LIC Bond Fund (G)	7.9900	-0.0398	45	8.0741	-0.0396	45
109	LIC Bond Fund (D)	8.0336	-0.1271	110	8.1051	-0.1262	109
110	LIC Monthly Income Plan (MD)	6.9940	-0.1458	123	7.0470	-0.1450	121
111	LIC Monthly Income Plan (G)	11.1342	-0.0228	37	11.1776	-0.0229	37
112	LIC MF Govt. Securities Fund-Regular (G)	7.9898	-0.0492	52	8.0803	-0.0489	52
113	LIC MF Govt. Securities Fund-Regular (D)	8.3324	-0.1236	106	8.4322	-0.1224	104
114	SBI Magnum Income Fund-1998 (D)	7.9332	-0.1304	113	8.0118	-0.1294	111
115	SBI Magnum Income Fund-1998 (G)	7.8528	-0.0623	66	7.9447	-0.0618	66
116	SBI Magnum Insta Cash Fund (WD)	8.1055	-0.1331	117	8.2022	-0.1318	114
117	SBI Magnum Insta Cash Fund (G)	8.0941	-0.0596	64	8.1696	-0.0593	64
118	Sundaram B N P Paribas Bond Saver (G)	7.8610	-0.0538	55	7.9432	-0.0535	55
119	Tata Gilt RIP (G)	7.9623	-0.0318	40	8.0525	-0.0317	40
120	Tata Gilt RIP (D)	7.9108	-0.1140	97	7.9614	-0.1135	96
121	Tata Income Fund (G)	8.0542	-0.0576	58	8.1370	-0.0573	58
122	Tata Income Fund (HD)	7.9980	-0.1237	107	8.0773	-0.1228	106
123	UTI Bond Fund (D)	8.2469	-0.1318	115	8.2453	-0.1321	116
124	UTI Bond Fund (G)	8.0231	-0.0475	49	8.1181	-0.0472	49
125	UTI Money Market Fund (WD)	10.4673	-0.0570	57	10.5892	-0.0565	57
	Average		-0.0814			-0.0810	
Tax-Planning							
126	Baroda Pioneer Elss 96 (G)	5.3607	-0.1637	125	5.2834	-0.1666	124
127	Canara Robeco Equity Tax Saver (G)	6.0904	-0.1901	128	6.2019	-0.1871	127
128	HDFC Tax Saver (D)	6.6830	-0.1009	86	6.8330	-0.0990	85
129	HDFC Tax Saver (G)	5.4581	0.0577	16	5.3902	0.0580	16
130	ICICI Prudential Tax Plan (G)	4.9563	0.0909	14	5.0096	0.0895	14
131	LIC MF Tax Plan (G)	4.8171	-0.1301	112	4.6825	-0.1343	117
132	Principal Personal Tax Saver Fund (G)	6.9602	-0.0976	84	6.9612	-0.0979	84

Sr. No.	Scheme Name	BSE 30			Nifty 50		
		Tracking error	Information Ratio	Rank	Tracking error	Information Ratio	Rank
133	Principal Tax Savings Fund (G)	4.5340	-0.0269	38	4.5152	-0.0275	38
134	SBI Magnum Tax Gain'93 (G)	7.2608	-0.1207	103	7.2736	-0.1208	103
135	Sahara Tax Gain Fund (G)	9.0879	-0.2030	133	9.1386	-0.2021	132
136	Tata Tax Saving Fund (G)	4.9129	-0.0782	73	4.8889	-0.0791	73
137	Taurus Tax shield (G)	7.5031	-0.0756	72	7.4360	-0.0765	72
	Average		-0.0865			-0.0869	
	Overall Average		-0.0530			-0.0547	

Table 5.16 reveals the Information Ratios for the sample mutual fund schemes across different benchmark criteria.

When BSE 30 was used as a proxy for the market portfolios, out of 137 schemes, 31 (22.63 %) schemes reflect a positive ratio and remaining 106 (77.37 %) schemes yielded negative ratios. The top five prominent performers are HDFC Equity Fund (G), Franklin India Bluechip Fund (G), Templeton India Growth Fund (G), HDFC Top 200 Fund (G) and Reliance Vision Fund (G) while the bottom five under performers are ICICI Prudential Growth Plan (D), LIC MF Balance Fund (D), JM Balanced Fund (D), JM Equity Fund (D) and Sahara Tax Gain Fund (G). All the top five winners are from growth fund and from bottom five underperformer two schemes are from growth fund, two schemes are from balanced fund and one from tax-planning fund. The average Information Ratio for all mutual fund schemes is -0.0530 and 53 (38.69 %) schemes could register better than the overall sample average investment performance.

When Nifty 50 was used as a proxy for the market portfolios, out of 137 schemes, 30 (21.90 %) schemes reflect a positive ratio and remaining 107 (78.10 %) schemes yielded negative ratios. The top five prominent performers are HDFC Equity Fund (G), Franklin India Bluechip Fund (G), HDFC Top 200 Fund (G), Reliance Growth Fund (G) and Reliance Vision Fund (G) while the bottom five under performers are Principal Index Fund (G), ICICI Prudential Growth Plan (D), LIC MF Balance Fund (D), JM Equity Fund (D) and JM Balanced Fund (D). All the top five winners are from growth fund and out of bottom five underperformer, three schemes are from growth fund and two schemes are from balanced fund. The average Information Ratio for all mutual fund schemes is -0.0547 and 56 (40.88 %) schemes could register better than the overall sample average investment performance.

The results are more or less similar across the benchmark portfolios for the sample

mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. In other words, investment managers are hardly inclined for any reason to any benchmark portfolio in the investment performance evaluation.

To examine whether the Information Ratio of the selected mutual fund schemes is significantly different according to their objectives or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁₄: There is no significant difference in the Information Ratio of the selected sample mutual fund schemes according to their objectives.

Based on the results of the Information Ratio presented in Table 5.16, **t-value** was derived. The computed value of **t** is shown below.

Significance of difference in the Information Ratio of the selected sample mutual fund schemes according to their objectives.		
Fund Objectives	t-stat (* Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-1.4870	-1.3397
Balanced vs. Income	0.9222	0.8894
Balanced vs. Tax-Planning	0.5838	0.5940
Growth vs. Income	3.2031*	2.9014*
Growth vs. Tax-Planning	1.7231	1.5926
Income vs. Tax-Planning	0.2974	0.3518

On comparing the same with the Table Value, it was found that only in case of Growth and Income schemes there is a significant difference in the Information Ratio according to their objectives. Thus the residual return as compared to residual risk for Growth schemes is significantly higher than Income schemes.

5.2.10 RESULTS OF M² MEASURE: MODIGLIANI AND MODIGLIANI (1997)²²

Modigliani and Modigliani (1997) showed that the portfolio and its benchmark must have the same risk to be compared in terms of basis points of risk-adjusted performance. So they propose that the portfolio be leveraged or deleveraged using the risk-free asset.

This measure evaluates the Risk Adjusted Performance (RAP) of a portfolio in relation to the market benchmark, expressed in percentage terms. For a fund with any given risk and return, the Modigliani measure is equivalent to the return the fund would have achieved if it had the same risk as the market index. The relationship therefore allows us to situate the performance of the fund in relation to that of the

market. The most interesting funds are those with the highest RAP value. The Modigliani measure is drawn directly from the capital market line. It can be expressed as the Sharpe ratio times the standard deviation of the benchmark index: the two measures are directly proportional. So Sharpe ratio and Modigliani measure lead to the same ranking of funds.

Table 5.17 : M ² Measure of Mutual Fund Schemes across Benchmark Criteria					
Sr. No.	Scheme Name	BSE 30		Nifty 50	
		M ² Measure	Rank	M ² Measure	Rank
Balanced					
1	Birla Sun Life'95 Fund (G)	0.3332	30	0.3408	30
2	Birla Sun Life'95 Fund (D)	-0.4189	73	-0.4200	73
3	DSP Blackrock Balanced Fund (G)	0.4884	24	0.4977	24
4	Templeton India Pension Plan (G)	0.9777	6	0.9925	6
5	Templeton India Pension Plan (D)	-1.0731	108	-1.0815	108
6	HDFC Prudence Fund (D)	-0.5689	84	-0.5716	84
7	HDFC Prudence Fund (G)	1.0065	5	1.0217	5
8	ICICI Prudential Balanced Fund (G)	-0.0064	47	-0.0028	47
9	JM Balanced Fund (G)	-0.9513	104	-0.9584	104
10	JM Balanced Fund (D)	-0.9342	103	-0.9411	103
11	Kotak Mahindra Balance (G)	-0.4771	78	-0.4787	78
12	LIC Mf Balance Fund (D)	-1.1303	109	-1.1394	109
13	LIC Mf Balance Fund (G)	-0.2754	57	-0.2748	57
14	LIC MF Unit Linked Insurance Scheme (D)	-1.3547	115	-1.3664	115
15	Principal Balanced Fund (D)	-0.6399	89	-0.6434	89
16	Principal Balanced Fund (G)	-0.3147	60	-0.3145	60
17	SBI Magnum Balanced Fund (G)	-0.4059	72	-0.4068	72
18	Tata Balanced Fund (G)	0.1976	34	0.2035	34
19	UTI Balanced Fund (D)	-0.8658	100	-0.8719	100
20	UTI Balanced Fund (G)	0.5045	23	0.5140	23
21	UTI Ulip (G)	-1.1841	110	-1.1938	110
	Average	-0.3377		-0.3378	
Growth					
22	Baroda Pioneer Diversified fund (G)	-0.0962	51	-0.0936	51
23	Birla Sun Life Advantage Fund (G)	-0.3439	63	-0.3441	63
24	Birla Sun Life Equity (G)	0.2704	33	0.2772	33
25	Birla Sun Life India Opportunities Fund (D)	-1.0604	107	-1.0687	107
26	Birla Sun Life India Opportunities Fund (G)	-0.5256	79	-0.5278	79
27	Birla Sun Life M N C Fund (G)	0.3378	29	0.3453	29
28	Birla Sun Life M N C Fund (D)	-0.4646	76	-0.4662	76
29	DSP Blackrock Equity Fund (G)	-1.2816	113	-1.2924	113
30	Franklin Fmcg Fund (G)	0.1797	36	0.1855	36
31	Franklin India Bluechip Fund (G)	0.6441	13	0.6552	13
32	Franklin India Bluechip Fund (D)	-0.5475	82	-0.5499	82

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		M ² Measure	Rank	M ² Measure	Rank
33	Franklin India Prima Fund (G)	0.4136	26	0.4221	26
34	Franklin India Prima Fund (D)	-0.6749	92	-0.6788	92
35	Franklin India Prima Plus (G)	0.5420	20	0.5518	20
36	Franklin India Prima Plus (D)	-0.8497	99	-0.8556	99
37	Franklin Infotech Fund (D)	-1.2875	114	-1.2984	114
38	Franklin Infotech Fund (G)	-0.6630	91	-0.6668	91
39	Franklin Pharma Fund (G)	0.1236	39	0.1288	39
40	Templeton India Growth Fund (G)	0.5836	17	0.5940	17
41	HDFC Capital Builder Fund (D)	-0.5872	85	-0.5902	85
42	HDFC Capital Builder Fund (G)	0.5472	18	0.5571	18
43	HDFC Equity Fund (G)	0.8108	11	0.8237	11
44	HDFC Equity Fund (D)	-0.3516	64	-0.3519	64
45	HDFC Top 200 Fund (D)	-0.5447	81	-0.5471	81
46	HDFC Top 200 Fund (G)	0.6294	15	0.6403	15
47	ICICI Prudential FMCG Fund (G)	0.2963	31	0.3034	31
48	ICICI Prudential Growth Plan (G)	0.1049	40	0.1098	40
49	ICICI Prudential Growth Plan (D)	-1.1971	111	-1.2070	111
50	ICICI Prudential Power (G)	-0.3782	68	-0.3787	68
51	JM Basic Fund (G)	-0.9267	101	-0.9335	101
52	JM Equity Fund (D)	-0.9536	105	-0.9607	105
53	JM Equity Fund (G)	-0.3947	70	-0.3955	70
54	Kotak Mahindra 30 Unit Scheme (G)	0.0676	42	0.0721	42
55	LIC M F Growth Fund (G)	-0.3528	65	-0.3530	65
56	LIC MF Equity Fund (G)	-0.3648	67	-0.3652	67
57	Principal Index Fund (G)	-0.0954	50	-0.0927	50
58	Reliance Growth Fund (D)	-0.7187	96	-0.7231	96
59	Reliance Growth Fund (G)	0.8117	10	0.8246	10
60	Reliance Vision Fund (G)	0.8057	12	0.8186	12
61	SBI Magnum Contra Fund (G)	0.0253	45	0.0293	45
62	SBI Magnum Equity Fund (G)	-0.9303	102	-0.9371	102
63	SBI Magnum F M C G Fund (G)	-0.6868	93	-0.6908	93
64	SBI Magnum Global Fund-1994 (G)	-0.3297	61	-0.3297	61
65	SBI Magnum I T Fund (G)	-1.2186	112	-1.2287	112
66	SBI Magnum Multiplier Plus-1993 (G)	-0.4444	74	-0.4457	74
67	SBI Magnum Pharma Fund (G)	-0.2687	56	-0.2680	56
68	Sundaram B N P Paribas Growth Fund (G)	0.0627	44	0.0672	44
69	Tata Equity Opportunities Fund (D)	-0.2855	58	-0.2850	58
70	Tata Growth Fund (G)	0.6402	14	0.6512	14
71	Tata Life Sciences & Technology Fund (G)	-0.0829	49	-0.0801	49
72	Tata Pure Equity Fund (G)	0.3825	27	0.3906	27
73	Tata Select Equity Fund (G)	-0.1088	53	-0.1063	53
74	Taurus Bonanza (G)	0.0675	43	0.0720	43
75	Taurus Discovery (G)	-0.4562	75	-0.4577	75
76	Taurus Starshare (G)	-0.0185	48	-0.0149	48

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		M ² Measure	Rank	M ² Measure	Rank
77	UTI Master Value Fund (G)	-0.5313	80	-0.5336	80
78	UTI Mastershare (G)	-0.3860	69	-0.3866	69
	Average	-0.2116		-0.2103	
Income					
79	Birla Sun Life Cash Manager-Ret (G)	1.9505	2	1.9763	2
80	Birla Sun Life Cash Plus-Ret (G)	1.6521	3	1.6746	3
81	Birla Sun Life Income Plus-Ret (G)	0.5081	22	0.5176	22
82	Birla Sun Life Income Plus-Ret (QD)	-1.9100	123	-1.9280	123
83	DBS Chola Triple Ace (G)	-0.7142	95	-0.7186	95
84	DSP Blackrock Bond Fund (G)	0.3628	28	0.3706	28
85	DSP Blackrock Bond Fund (QD)	-2.3093	129	-2.3318	129
86	Templeton India Income Fund (G)	0.5471	19	0.5571	19
87	Templeton India Income Fund (QD)	-3.0406	133	-3.0714	133
88	Templeton India Treasury Management Account (G)	2.0955	1	2.1230	1
89	Templeton India Treasury Management Account (WD)	-16.0353	137	-16.2137	137
90	HDFC Cash Management Fund - Savings Plan (WD)	-1.6487	119	-1.6637	119
91	HDFC Cash Management Fund - Savings Plan (G)	-0.4708	77	-0.4724	77
92	HDFC High Interest Fund (QD)	-2.1861	128	-2.2072	128
93	HDFC High Interest Fund (AD)	-1.7829	122	-1.7994	122
94	HDFC High Interest Fund (HD)	-2.1821	127	-2.2031	127
95	HDFC High Interest Fund (G)	-0.3638	66	-0.3642	66
96	ING Vysya Income Fund-Ret (QD)	-2.1787	126	-2.1997	126
97	ING Vysya Income Fund-Ret (G)	0.4450	25	0.4538	25
98	ICICI Prudential Gilt Fund (Investment Plan) (G)	0.8433	9	0.8566	9
99	ICICI Prudential Gilt Fund (Treasury Plan) (QD)	-1.4749	118	-1.4879	118
100	ICICI Prudential Gilt Fund (Treasury Plan) (G)	0.9442	7	0.9586	7
101	ICICI Prudential Income Plan (G)	0.5880	16	0.5984	16
102	JM G-Sec Fund -Regular (D)	-1.4004	117	-1.4126	117
103	JM High Liquidity Fund (G)	1.5472	4	1.5685	4
104	JM High Liquidity Fund (WD)	-3.4625	135	-3.4981	135
105	JM Income Fund (G)	-0.7116	94	-0.7160	94
106	JM Income Fund (D)	-1.6902	120	-1.7057	120
107	Kotak Mahindra Gilt- Savings (G)	0.0937	41	0.0985	41
108	LIC Bond Fund (G)	0.9251	8	0.9394	8
109	LIC Bond Fund (D)	-3.0439	134	-3.0747	134
110	LIC Monthly Income Plan (MD)	-2.7975	132	-2.8256	132
111	LIC Monthly Income Plan (G)	-0.2952	59	-0.2948	59
112	LIC MF Govt. Securities Fund-Regular (G)	0.0199	46	0.0239	46
113	LIC MF Govt. Securities Fund-Regular (D)	-2.1354	125	-2.1559	125
114	SBI Magnum Income Fund-1998 (D)	-2.4825	130	-2.5069	130
115	SBI Magnum Income Fund-1998 (G)	-0.3309	62	-0.3309	62
116	SBI Magnum Insta Cash Fund (WD)	-3.8171	136	-3.8567	136

Sr. No.	Scheme Name	BSE 30		Nifty 50	
		M ² Measure	Rank	M ² Measure	Rank
117	SBI Magnum Insta Cash Fund (G)	-0.1022	52	-0.0997	52
118	Sundaram B N P Paribas Bond Saver (G)	0.1648	38	0.1704	38
119	Tata Gilt RIP (G)	0.5099	21	0.5194	21
120	Tata Gilt RIP (D)	-1.9117	124	-1.9297	124
121	Tata Income Fund (G)	-0.1949	55	-0.1934	55
122	Tata Income Fund (HD)	-2.7151	131	-2.7422	131
123	UTI Bond Fund (D)	-1.7757	121	-1.7922	121
124	UTI Bond Fund (G)	0.1667	37	0.1723	37
125	UTI Money Market Fund (WD)	-0.6167	87	-0.6199	87
	Average	-1.1153		-1.1242	
Tax-Planning					
126	Baroda Pioneer Elss 96 (G)	-0.8081	98	-0.8136	98
127	Canara Robeco Equity Tax Saver (G)	-1.0109	106	-1.0187	106
128	HDFC Tax Saver (D)	-0.6474	90	-0.6510	90
129	HDFC Tax Saver (G)	0.1848	35	0.1906	35
130	ICICI Prudential Tax Plan (G)	0.2803	32	0.2872	32
131	LIC MF Tax Plan (G)	-0.6130	86	-0.6163	86
132	Principal Personal Tax Saver Fund (G)	-0.6395	88	-0.6430	88
133	Principal Tax Savings Fund (G)	-0.1729	54	-0.1711	54
134	SBI Magnum Tax Gain'93 (G)	-0.7755	97	-0.7806	97
135	Sahara Tax Gain Fund (G)	-1.3706	116	-1.3824	116
136	Tata Tax Saving Fund (G)	-0.4049	71	-0.4057	71
137	Taurus Tax shield (G)	-0.5523	83	-0.5549	83
	Average	-0.5442		-0.5466	
	Overall Average	-0.5701		-0.5728	

Table 5.17 reveals the perfect positive symmetry with regards to the investment performance ranking across the benchmark portfolios for sample investment schemes. In other words, the results negate any substance in allegation leveled against portfolio managers for benchmark variability to report better investment performance. The results reported were so robust in this regard that they hardly leave any scope for reconsiderations. It also provides credence to investment performance comparatively for the managed portfolios even if such performance is measured considering two different market proxies. Similarly in relation to the M² measure, the performance obtaining is similar to that obtained under the Sharpe Ratio. Since, as pointed out earlier, M² is essentially an extension of Sharpe Ratio. Out of 137 schemes, 46 (33.58 %) schemes could register positive performance and remaining 91 (66.42 %) schemes yielded negative performance with respect to both i.e. BSE 30 and Nifty 50 benchmark proxy. The top five prominent winners are Templeton India Treasury

Management Account (G),Birla Sun Life Cash Manager-Ret (G),Birla Sun Life Cash Plus-Ret (G),JM High Liquidity Fund (G),HDFC Prudence Fund (G) while the bottom five prominent laggards are Templeton India Treasury Management Account (WD),SBI Magnum Insta Cash Fund (WD),JM High Liquidity Fund (WD),LIC Bond Fund (D),Templeton India Income Fund (QD). It is curious to note that out of top five winners, four schemes are from income fund and one is from balanced fund. It is also interesting to note that all the bottom five laggards are from income fund only. In addition, the average M^2 measure for all mutual fund schemes is -0.5701 with respect to BSE 30 benchmark proxy and -0.5728 with respect to Nifty 50. Of 137 schemes, 84 (61.31 %) schemes could register better than the overall sample average investment performance across both the benchmark criteria.

The results are similar across the both benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. In other words, investment managers are hardly inclined for any reason to any benchmark portfolio in the investment performance evaluation. These results is similar to those reported by other researcher and academicians utilizing data from Indian mutual funds viz., Chander (2006)¹¹.

To examine whether the M^2 measure of the selected mutual fund schemes is significantly different according to their objectives or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁₅: There is no significant difference in the M^2 measure of the selected sample mutual fund schemes according to their objectives.

Based on the results of the M^2 measure presented in Table 5.17, **t-value** was derived.

The computed value of **t** is shown below.

Significant difference in the M^2 measure of the selected sample mutual fund schemes according to their objectives.		
Fund Objectives	t-stat (Significant at the 0.05 level, 2-tailed)	
	BSE30	Nifty50
Balanced vs. Growth	-0.8131	-0.8131
Balanced vs. Income	1.3016	1.3016
Balanced vs. Tax-Planning	0.9054	0.9054
Growth vs. Income	2.4754	2.4754
Growth vs. Tax-Planning	1.8883	1.8883
Income vs. Tax-Planning	-0.7290	-0.7290

On comparing the same with the Table Value, it was found that only in case of Growth and Income schemes there is a significant difference in the M^2 measure according to their objectives. This indicates that considering the Risk Adjusted Performance, Growth schemes have superior return as compared to Income schemes.

5.3 SECTION 2 : RANKING OF MUTUAL FUND SCHEMES

5.3.1 RANKING OF MUTUAL FUND SCHEMES ACROSS BENCHMARK CRITERIA

Table 5.18 : Ranking of mutual fund schemes across Benchmark Criteria								
Sr. No.	Treydor Ratio		M^2		Appraisal Ratio		Information Ratio	
	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)
Balanced								
1	35	36	30	30	28	28	17	18
2	69	70	73	73	76	74	85	83
3	33	34	24	24	14	14	15	15
4	19	20	6	6	3	3	28	28
5	101	102	108	108	110	107	119	118
6	79	80	84	84	82	82	93	92
7	18	18	5	5	6	6	8	8
8	50	51	47	47	53	53	41	42
9	98	99	104	104	98	96	120	119
10	93	94	103	103	123	121	135	133
11	73	74	78	78	78	77	89	87
12	99	100	109	109	129	128	136	135
13	59	60	57	57	69	69	75	75
14	109	110	115	115	119	118	132	131
15	90	91	89	89	65	65	56	56
16	52	53	60	60	57	57	34	34
17	65	66	72	72	68	68	67	67
18	43	44	34	34	37	37	27	27
19	92	93	100	100	101	100	122	122
20	27	28	23	23	21	21	18	17
21	105	105	110	110	111	110	121	120
RCC	1.0000		1.0000		0.9999		0.9999	
Growth								
22	54	55	51	51	60	60	35	35
23	63	64	63	63	87	86	79	78
24	41	42	33	33	31	31	13	13
25	100	101	107	107	107	106	124	123
26	74	75	79	79	85	85	80	79
27	34	35	29	29	30	30	19	19
28	72	73	76	76	71	71	77	77

Sr. No.	Treyrnor Ratio		M ²		Appraisal Ratio		Information Ratio	
	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)
29	107	108	113	113	113	113	129	129
30	37	40	36	36	40	40	32	32
31	26	27	13	13	7	7	2	2
32	77	78	82	82	88	87	87	86
33	32	32	26	26	26	26	12	12
34	84	85	92	92	92	91	99	97
35	30	31	20	20	13	13	7	7
36	91	92	99	99	105	104	126	125
37	108	109	114	114	116	112	130	128
38	85	86	91	91	83	81	81	80
39	38	41	39	39	42	43	30	30
40	28	29	17	17	9	10	3	6
41	80	81	85	85	81	80	83	82
42	25	26	18	18	19	19	11	11
43	22	23	11	11	5	5	1	1
44	61	62	64	64	67	67	59	61
45	76	77	81	81	90	89	92	90
46	24	25	15	15	11	11	4	3
47	29	30	31	31	34	34	23	23
48	46	47	40	40	43	42	21	21
49	102	103	111	111	126	124	137	136
50	16	17	68	68	52	52	29	29
51	96	97	101	101	102	101	114	115
52	95	96	105	105	124	126	134	134
53	67	68	70	70	93	92	88	89
54	47	48	42	42	45	45	24	24
55	62	63	65	65	72	72	71	71
56	64	65	67	67	95	98	94	94
57	55	56	50	50	74	130	76	137
58	87	88	96	96	91	90	98	99
59	20	21	10	10	12	12	6	4
60	21	22	12	12	10	9	5	5
61	44	45	45	45	48	48	26	26
62	94	95	102	102	115	114	127	126
63	86	87	93	93	80	78	90	88
64	60	61	61	61	70	70	48	48
65	104	107	112	112	118	117	131	130
66	70	71	74	74	84	84	74	74
67	57	58	56	56	61	61	44	44
68	48	49	44	44	47	47	20	20
69	58	59	58	58	66	66	53	54
70	23	24	14	14	16	16	9	9
71	51	52	49	49	56	56	33	33

Sr. No.	Treynor Ratio		M ²		Appraisal Ratio		Information Ratio	
	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)
72	36	37	27	27	20	20	10	10
73	53	54	53	53	38	59	31	31
74	45	46	43	43	46	46	22	22
75	71	72	75	75	75	75	68	69
76	49	50	48	48	51	51	25	25
77	75	76	80	80	73	73	78	76
78	66	67	69	69	97	93	118	113
RCC	0.9998		1.0000		0.9767		0.9828	
Income								
79	121	125	2	2	2	2	62	62
80	115	119	3	3	4	4	63	63
81	9	11	22	22	25	25	43	43
82	122	120	123	123	112	111	96	95
83	134	5	95	95	62	62	69	68
84	12	12	28	28	29	29	50	51
85	132	133	129	129	127	125	109	107
86	13	14	19	19	23	23	51	50
87	126	127	133	133	133	133	111	110
88	120	124	1	1	1	1	60	59
89	1	1	137	137	137	137	101	100
90	127	130	119	119	103	102	100	98
91	103	106	77	77	55	55	54	53
92	123	123	128	128	125	123	104	102
93	129	129	122	122	106	105	95	93
94	130	131	127	127	122	122	102	101
95	111	112	66	66	49	49	39	39
96	114	114	126	126	128	127	105	105
97	8	10	25	25	27	27	47	47
98	4	4	9	9	18	18	36	36
99	136	136	118	118	96	95	91	91
100	2	2	7	7	15	15	46	46
101	6	7	16	16	22	22	42	41
102	117	115	117	117	94	94	82	81
103	118	122	4	4	8	8	61	60
104	3	3	135	135	134	134	116	112
105	106	104	94	94	64	64	70	70
106	124	121	120	120	104	103	108	108
107	128	128	41	41	35	35	65	65
108	5	6	8	8	17	17	45	45
109	133	134	134	134	132	132	110	109
110	112	113	132	132	136	136	123	121
111	31	33	59	59	50	50	37	37
112	14	15	46	46	39	39	52	52

Sr. No.	Treydor Ratio		M ²		Appraisal Ratio		Information Ratio	
	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)	(BSE30)	(Nifty 50)
113	135	135	125	125	120	119	106	104
114	125	126	130	130	130	129	113	111
115	39	38	62	62	54	54	66	66
116	137	137	136	136	135	135	117	114
117	113	118	52	52	41	41	64	64
118	15	16	38	38	36	36	55	55
119	10	9	21	21	24	24	40	40
120	116	117	124	124	114	116	97	96
121	11	13	55	55	44	44	58	58
122	131	132	131	131	131	131	107	106
123	119	116	121	121	109	109	115	116
124	7	8	37	37	33	33	49	49
125	17	19	87	87	59	58	57	57
RCC	0.9417		1.0000		0.9999		0.9996	
Tax-Planning								
126	89	90	98	98	108	108	125	124
127	97	98	106	106	117	115	128	127
128	83	84	90	90	86	83	86	85
129	42	43	35	35	38	38	16	16
130	40	39	32	32	32	32	14	14
131	81	82	86	86	100	99	112	117
132	82	83	88	88	89	88	84	84
133	56	57	54	54	63	63	38	38
134	88	89	97	97	99	97	103	103
135	110	111	116	116	121	120	133	132
136	68	69	71	71	77	76	73	73
137	78	79	83	83	79	79	72	72
RCC	0.9997		1.0000		0.9995		0.9992	
Overall RCC	0.9605		1.0000		0.9924		0.9909	
	(40.12)		(∞)		(93.83)		(85.61)	
Note: RCC = Spearman's Rank Correlation Coefficient								
A figure in brackets presents the t-value significant at the 0.05 level (2-tailed).								
Note: The Serial Number represents the name of the schemes, which are in the same order as given in Appendix-I.								

Two benchmark proxies were used to measure the performance of the sample schemes viz., BSE30 and Nifty50. In order to detect any conflict in performance ranking of the sample schemes based on both the benchmark index; their Rank Correlation Coefficient has been worked out. For Sharpe Ratio calculation one uses the total risk of the sample scheme as its denominator. So, there is no change in the results or rankings if one uses BSE30 or Nifty50 as a benchmark portfolio. In case of above four measures presented in Table 5.18, one can assign the ranking to the respective schemes on the basis of their results and hence only these four measures out of nine

are considered for analysis. The information inputs reported in Table 5.18 reveal that the results are almost the same across both benchmark portfolios for the sample mutual fund schemes. The results reveal that the rank correlation coefficient (RCC) for the sample schemes based on Treynor Ratio is 0.9605, based on M² Measure RCC is 1.0000, based on Appraisal Ratio RCC is 0.9924 and based on Information Ratio RCC is 0.9909 across both the market index i.e. BSE 30 and Nifty 50. Hence, based on the result of the rank correlation coefficient, it is proved that according to both benchmarks, the rankings of the scheme are almost the same. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting. In other words, investment managers are hardly inclined for any reason to any benchmark portfolio in the investment performance evaluation. These results are similar to those reported by Chander (2006)¹¹.

To examine whether the performance of sample mutual fund schemes differs with the different benchmark criteria or not, **t-test** was applied. For this the null hypothesis as follows was framed:

H₀₁₆: The RCC is not significant between different types of schemes.

Based on the results presented in Table 5.18, **t-value** was derived. The computed value of **t** is shown in Table 5.18. On comparing the same with the Table Value, it was found to be substantially higher. This rejects the null hypothesis. This indicates that there is a significant RCC in the ranks assigned for different measurement criteria according to BSE30 and Nifty50.

5.3.2 RANKING OF MUTUAL FUND SCHEMES ACROSS DIFFERENT MEASUREMENT CRITERIA

As discussed, to analyze the performance of various mutual fund schemes nine different measurement criteria are used.

Theoretically, all performance measures developed to rate investment performance of the managed portfolio tend to do so in an identical manner. But the rate of return measure, Jensen Measure, Sharpe differential return measure and Fama Measure are absolute measures of performance and one cannot assign the ranks to the mutual fund schemes based on above performance measures. In order to detect any difference in performance ranking of the sample schemes across different measurement criteria; their Rank Correlation Coefficient (RCC) has been worked out. Therefore, only five

measures presents in Table 5.19 are used for the comparison. Table 5.19, gives the ranking for a given performance measure, for all schemes taken together, for various selected performance measures taking BSE30 and Nifty50 separately. The RCC for BSE30 and Nifty50 are presented in Table 5.20 and Table 5.21 respectively. Regarding the parameter stationarity of investment performance, it was revealed by the information inputs reported in Table 5.19 that Sharpe ratio tends to overstate the portfolio performance while the Treynor ratio underrates it for the obvious reasons set in methodologies, whereas the M^2 as considered to be more prudent and theoretically sound measure. Table 5.20 and Table 5.21 revealed that the rank correlation coefficient between the Sharpe and M^2 is 1.0000 under both the benchmark proxy indicating perfect correlation between both the measures. The same in relation to the Sharpe and Treynor measures was found to be 0.7084 and 0.6847 for BSE 30 and Nifty 50 benchmark proxy respectively. This magnitude of rank correlation coefficient was found to be 0.9658 and 0.9522 for BSE 30 and Nifty 50 benchmark proxy respectively for Sharpe and Appraisal Ratio. The rank correlation coefficient was found to be 0.8522 and 0.8360 for BSE 30 and Nifty 50 benchmark proxy respectively for Sharpe and Information Ratio. It is 0.7084 and 0.6847 for BSE 30 and Nifty 50 benchmark proxy respectively for Treynor and M^2 Ratio and 0.6648 and 0.6514 for Treynor and Appraisal Ratio. The rank correlation coefficient was found to be 0.7035 and 0.6891 for BSE 30 and Nifty 50 benchmark proxy respectively for Treynor and Information Ratio. On the other hand, the rank correlation coefficient between M^2 and Appraisal Ratio has been found to be 0.9658 and 0.9522 for BSE 30 and Nifty 50 benchmark proxy respectively and that between M^2 and Information Ratio was noted to be 0.8522 and 0.8360, which is same as for Sharpe and Information Ratio. And rank correlation coefficient was found to be 0.8963 and 0.8944 for BSE 30 and Nifty 50 benchmark proxy respectively for Appraisal and Information Ratio.

Thus, the results reported and discussed above point credence to the observation regarding performance rating consistency across the measurement criteria. Hence, it tantamount to acceptance of null hypothesis regarding the performance of sample schemes is similar across the different measurement criteria.

Table 5.19 : Ranking of mutual fund schemes across different measurement Criteria										
Sr. No.	BSE30					Nifty 50				
	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
Balanced										
1	30	35	30	28	17	30	36	30	28	18
2	73	69	73	76	85	73	70	73	74	83
3	24	33	24	14	15	24	34	24	14	15
4	6	19	6	3	28	6	20	6	3	28
5	108	101	108	110	119	108	102	108	107	118
6	84	79	84	82	93	84	80	84	82	92
7	5	18	5	6	8	5	18	5	6	8
8	47	50	47	53	41	47	51	47	53	42
9	104	98	104	98	120	104	99	104	96	119
10	103	93	103	123	135	103	94	103	121	133
11	78	73	78	78	89	78	74	78	77	87
12	109	99	109	129	136	109	100	109	128	135
13	57	59	57	69	75	57	60	57	69	75
14	115	109	115	119	132	115	110	115	118	131
15	89	90	89	65	56	89	91	89	65	56
16	60	52	60	57	34	60	53	60	57	34
17	72	65	72	68	67	72	66	72	68	67
18	34	43	34	37	27	34	44	34	37	27
19	100	92	100	101	122	100	93	100	100	122
20	23	27	23	21	18	23	28	23	21	17
21	110	105	110	111	121	110	105	110	110	120
Balanced										
22	51	54	51	60	35	51	55	51	60	35
23	63	63	63	87	79	63	64	63	86	78
24	33	41	33	31	13	33	42	33	31	13
25	107	100	107	107	124	107	101	107	106	123
26	79	74	79	85	80	79	75	79	85	79
27	29	34	29	30	19	29	35	29	30	19
28	76	72	76	71	77	76	73	76	71	77
29	113	107	113	113	129	113	108	113	113	129
30	36	37	36	40	32	36	40	36	40	32
31	13	26	13	7	2	13	27	13	7	2
32	82	77	82	88	87	82	78	82	87	86
33	26	32	26	26	12	26	32	26	26	12
34	92	84	92	92	99	92	85	92	91	97
35	20	30	20	13	7	20	31	20	13	7
36	99	91	99	105	126	99	92	99	104	125
37	114	108	114	116	130	114	109	114	112	128
38	91	85	91	83	81	91	86	91	81	80

Sr. No.	BSE30					Nifty 50				
	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
39	39	38	39	42	30	39	41	39	43	30
40	17	28	17	9	3	17	29	17	10	6
41	85	80	85	81	83	85	81	85	80	82
42	18	25	18	19	11	18	26	18	19	11
43	11	22	11	5	1	11	23	11	5	1
44	64	61	64	67	59	64	62	64	67	61
45	81	76	81	90	92	81	77	81	89	90
46	15	24	15	11	4	15	25	15	11	3
47	31	29	31	34	23	31	30	31	34	23
48	40	46	40	43	21	40	47	40	42	21
49	111	102	111	126	137	111	103	111	124	136
50	68	16	68	52	29	68	17	68	52	29
51	101	96	101	102	114	101	97	101	101	115
52	105	95	105	124	134	105	96	105	126	134
53	70	67	70	93	88	70	68	70	92	89
54	42	47	42	45	24	42	48	42	45	24
55	65	62	65	72	71	65	63	65	72	71
56	67	64	67	95	94	67	65	67	98	94
57	50	55	50	74	76	50	56	50	130	137
58	96	87	96	91	98	96	88	96	90	99
59	10	20	10	12	6	10	21	10	12	4
60	12	21	12	10	5	12	22	12	9	5
61	45	44	45	48	26	45	45	45	48	26
62	102	94	102	115	127	102	95	102	114	126
63	93	86	93	80	90	93	87	93	78	88
64	61	60	61	70	48	61	61	61	70	48
65	112	104	112	118	131	112	107	112	117	130
66	74	70	74	84	74	74	71	74	84	74
67	56	57	56	61	44	56	58	56	61	44
68	44	48	44	47	20	44	49	44	47	20
69	58	58	58	66	53	58	59	58	66	54
70	14	23	14	16	9	14	24	14	16	9
71	49	51	49	56	33	49	52	49	56	33
72	27	36	27	20	10	27	37	27	20	10
73	53	53	53	58	31	53	54	53	59	31
74	43	45	43	46	22	43	46	43	46	22
75	75	71	75	75	68	75	72	75	75	69
76	48	49	48	51	25	48	50	48	51	25
77	80	75	80	73	78	80	76	80	73	76
78	69	66	69	97	118	69	67	69	93	113
Income										
79	2	121	2	2	62	2	125	2	2	62

Sr. No.	BSE30					Nifty 50				
	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
80	3	115	3	4	63	3	119	3	4	63
81	22	9	22	25	43	22	11	22	25	43
82	123	122	123	112	96	123	120	123	111	95
83	95	134	95	62	69	95	5	95	62	68
84	28	12	28	29	50	28	12	28	29	51
85	129	132	129	127	109	129	133	129	125	107
86	19	13	19	23	51	19	14	19	23	50
87	133	126	133	133	111	133	127	133	133	110
88	1	120	1	1	60	1	124	1	1	59
89	137	1	137	137	101	137	1	137	137	100
90	119	127	119	103	100	119	130	119	102	98
91	77	103	77	55	54	77	106	77	55	53
92	128	123	128	125	104	128	123	128	123	102
93	122	129	122	106	95	122	129	122	105	93
94	127	130	127	122	102	127	131	127	122	101
95	66	111	66	49	39	66	112	66	49	39
96	126	114	126	128	105	126	114	126	127	105
97	25	8	25	27	47	25	10	25	27	47
98	9	4	9	18	36	9	4	9	18	36
99	118	136	118	96	91	118	136	118	95	91
100	7	2	7	15	46	7	2	7	15	46
101	16	6	16	22	42	16	7	16	22	41
102	117	117	117	94	82	117	115	117	94	81
103	4	118	4	8	61	4	122	4	8	60
104	135	3	135	134	116	135	3	135	134	112
105	94	106	94	64	70	94	104	94	64	70
106	120	124	120	104	108	120	121	120	103	108
107	41	128	41	35	65	41	128	41	35	65
108	8	5	8	17	45	8	6	8	17	45
109	134	133	134	132	110	134	134	134	132	109
110	132	112	132	136	123	132	113	132	136	121
111	59	31	59	50	37	59	33	59	50	37
112	46	14	46	39	52	46	15	46	39	52
113	125	135	125	120	106	125	135	125	119	104
114	130	125	130	130	113	130	126	130	129	111
115	62	39	62	54	66	62	38	62	54	66
116	136	137	136	135	117	136	137	136	135	114
117	52	113	52	41	64	52	118	52	41	64
118	38	15	38	36	55	38	16	38	36	55
119	21	10	21	24	40	21	9	21	24	40
120	124	116	124	114	97	124	117	124	116	96
121	55	11	55	44	58	55	13	55	44	58

Sr. No.	BSE30					Nifty 50				
	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
122	131	131	131	131	107	131	132	131	131	106
123	121	119	121	109	115	121	116	121	109	116
124	37	7	37	33	49	37	8	37	33	49
125	87	17	87	59	57	87	19	87	58	57
Tax-Planning										
126	98	89	98	108	125	98	90	98	108	124
127	106	97	106	117	128	106	98	106	115	127
128	90	83	90	86	86	90	84	90	83	85
129	35	42	35	38	16	35	43	35	38	16
130	32	40	32	32	14	32	39	32	32	14
131	86	81	86	100	112	86	82	86	99	117
132	88	82	88	89	84	88	83	88	88	84
133	54	56	54	63	38	54	57	54	63	38
134	97	88	97	99	103	97	89	97	97	103
135	116	110	116	121	133	116	111	116	120	132
136	71	68	71	77	73	71	69	71	76	73
137	83	78	83	79	72	83	79	83	79	72

Note: The Serial Number represents the name of the schemes, which are in the same order as given in Appendix-I.

Performance Measures	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
Sharpe Ratio	1.0000 (∞)	0.7084 (11.66)	1.0000 (∞)	0.9658 (43.30)	0.8522 (18.92)
Treynor Ratio	--	1.0000 (∞)	0.7084 (11.65)	0.6648 (10.34)	0.7035 (11.50)
M ²	--	--	1.0000 (∞)	0.9658 (43.30)	0.8522 (18.92)
Appraisal Ratio	--	--	--	1.0000 (∞)	0.8963 (23.49)
Information Ratio	--	--	--	--	1.0000 (∞)

Note: A Figure in brackets presents the t-value significant at the 0.05 level (two-tail).

Performance Measures	Sharpe Ratio	Treynor Ratio	M ²	Appraisal Ratio	Information Ratio
Sharpe Ratio	1.0000 (∞)	0.6847 (10.92)	1.0000 (∞)	0.9522 (36.21)	0.8360 (17.70)
Treynor Ratio	--	1.0000 (∞)	0.6847 (10.92)	0.6514 (9.98)	0.6891 (11.05)
M ²	--	--	1.0000 (∞)	0.9522 (36.21)	0.8360 (17.70)
Appraisal Ratio	--	--	--	1.0000 (∞)	0.8944 (23.24)
Information Ratio	--	--	--	--	1.0000 (∞)

Note: A Figure in brackets presents the t-value significant at the 0.05 level (two-tail).

To examine whether the performance of sample mutual fund schemes is significantly different across the different measurement criteria or not, **t-test** was applied. For this the null hypothesis as follows was framed.

H₀₁₇: There is no significant difference between the performance of sample schemes across the different measurement criteria.

Based on the results presented in Table 5.19, **t-value** was derived which is presented in to brackets in Table 5.20 and Table 5.21. On comparing the same with the Table Value, it was found that there is a significant difference between the performance of sample schemes across the different measurement criteria. These results are similar to those reported by Chander (2006)¹¹.

Thus, in short it can be concluded that the performance of sample schemes is not superior in comparison to the relevant benchmark portfolio and sample schemes are not found to be reasonably diversified. But it is found that the performance of sample schemes maintained uniformity across both the benchmark criteria and performance rating consistency across the different measurement criteria.

5.4 SECTION 3: CONCLUSIONS

This chapter examined the empirical results pertaining to the investment performance of the Indian mutual fund schemes. The study period was from January 2000 to December 2009 (i.e. ten years) with available data for continuous period of 10 years for 137 open ended mutual fund schemes from public as well as private sector framing a sample. To evaluate the performance of the sample schemes nine performance measures are employed: viz., 1) Rate of Return measure, 2) Treynor's Ratio, 3) Sharpe's Ratio, 4) Jensen Differential Measure 5) Sharpe Differential Measure, 6) Fama's Components of Investment Performance 7) Appraisal Ratio 8) Information Ratio and 9) M² measure: Modigliani and Modigliani. Based on application of these nine measures, following major findings are derived.

1) RETURNS OF SAMPLE SCHEMES

The results indicate that the **average risk free return** is 0.5038. Of 137 schemes, 78 (56.93%) sample mutual fund schemes have earned returns more than the risk free return. This implies that the sample schemes, on an average, performed better than the risk free return.

The **average market returns** for BSE30 and Nifty 50 are 1.0224 and 1.0246 respectively. The average market returns are more than the average fund return. There are only 31 (22.63%) and 30(21.90%) schemes which earned more monthly compounding return than the monthly compounding market returns with respect to BSE30 and Nifty 50 respectively. This implies that the sample schemes, on an average, performed poorer than the market return.

The **average mutual fund schemes return** is 0.5952. Out of 137 schemes, 65 schemes (47.45 %) have earned the return more than the average return earned by the mutual fund schemes. It is also revealed that out of 137 mutual fund schemes, 119 schemes (86.86 %) have earned positive return.

On examining whether there is a significant difference between the average return of the selected sample mutual fund schemes and average return of the benchmark portfolio *viz.*, BSE30 and Nifty50, it was found that there is a **significant difference** in the average return of mutual fund schemes and average return of the benchmark portfolio. The negative significant **t-value** indicates that the average return on mutual fund schemes was significantly lower than the average return on the benchmark portfolio (H_1).

The **average market risk** is 8.0094 and 8.1004 per month for BSE30 and Nifty50 respectively. 63 (45.99%) and 61(44.53%) schemes depicted higher total risk with respect to BSE30 and Nifty50 benchmark proxy.

The **average sample mutual fund scheme risk** is 6.8047 percent per month. 76 (55.47%) schemes have depicted higher than average risky-ness.

On examining whether there is a significant difference between the average risk of the selected sample mutual fund schemes and average risk of the benchmark portfolio *viz.*, BSE30 and Nifty50, it was found that there is a **significant difference** in the average risk of mutual fund schemes and average risk of the benchmark portfolio. The negative significant **t-value** indicates that the average risk on mutual fund schemes was significantly lower than the average risk on the benchmark portfolio (H_2).

The **average systematic risk** i.e. beta is 0.5847 and 0.5791 across both the benchmark criteria *viz.*, BSE 30 and Nifty 50 respectively. In case of BSE 30, 83 sample mutual fund schemes depicted higher beta than average beta and in case of Nifty 50, 84 sample mutual fund schemes depicted higher beta than average beta.

2) RISK AND SCHEME OBJECTIVES

Based on objectives, the schemes are classified into four categories namely, Balanced scheme, Growth scheme, Income scheme and Tax-Planning scheme. The results revealed that these schemes are to more extent in conformity with their stated objectives. In case of average return and average risk (total risk) characteristics, all the schemes are in conformity with their stated objectives except tax-planning scheme. The results also clearly reflected that beta (market risk) and return characteristics are in conformity with their stated objectives in case of all the sample schemes.

On examining whether there is a significant difference in the return of the selected sample mutual fund schemes according to their objectives, it was found that in case of *Balanced & Income schemes and Growth & Income schemes* there is a **significant difference** in the return of selected mutual fund schemes (**H₃**).

On examining whether there is a significant difference in the risk of the selected sample mutual fund schemes according to their objectives, it was found that there was a **significant difference** in total risk as well as systematic risk between all types of schemes except between *Growth & Tax-Planning schemes* (**H₄ & H₅**).

3) RETURN AND FUND SPONSORSHIP

The result revealed (Table 5.5) that the average return of the private sector mutual fund schemes (101 schemes) was found to be 0.6680 and for the public sector mutual fund schemes (36 schemes) was 0.3907. Thus, the private sector mutual fund scheme performed far better than the public sector mutual fund schemes. This was also supported by t-test (**H₆**).

4) UNIQUE RISK AND DIVERSIFICATION

The primary reason for investment in mutual funds is that they are expected to be reasonably diversified and that their fund managers are able to generate superior performance than an average investor. On examining the extent to which Indian mutual fund managers have been able to diversify their portfolios, it is observed that the average unique risk of the mutual fund schemes is 4.3165 and 4.3022 per month with respect to BSE 30 and Nifty 50 benchmark proxy respectively. The average diversification for BSE 30 and Nifty 50 benchmark proxy comes to 44.65% and 44.77% respectively. This entails that sample schemes are not adequately diversified.

On examining whether the mutual fund schemes are reasonably diversified, it was

observed that sample mutual fund schemes are **not reasonably diversified (H₇)**.

On examining whether there is a significant difference in the unique risk of the selected sample mutual fund schemes according to their objectives, it was found that in case of *Balanced & Growth schemes, Balanced & Tax-planning schemes and Growth & Tax-Planning schemes* there is a **no significant difference (H₈)**.

5) RESULTS OF TREYNOR RATIO

The study used two benchmark proxy viz. BSE 30 and Nifty 50. The results indicate that the Treynor Ratio for BSE 30 is 0.5187. Out of 137 schemes, 51 (37.23 %) schemes have outperformed. The Treynor Ratio for Nifty 50 is 0.5208. Out of 137 schemes, 52 (37.96 %) schemes have outperformed. The results are more or less similar across the benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting.

On examining whether there is a significant difference in the Treynor ratio of the selected sample mutual fund schemes according to their *objectives*, it was found that there is **no significant difference** in the Treynor Ratio according to their objectives **(H₉)**.

6) RESULTS OF SHARPE RATIO

The results indicate that Sharpe Ratio for BSE 30 and for Nifty 50 is 0.0648 and 0.0643 respectively. Out of 137 schemes, 46 (33.58 %) schemes have outperformed the benchmark portfolios. In addition, the average Sharpe Ratio for all mutual fund schemes is -0.0064 and 84 (61.31 %) schemes could register better than the overall sample average investment performance.

On examining whether there is a significant difference in the Sharpe ratio of the selected sample mutual fund schemes according to their *objectives*, it was found that only in case of *Growth and Income mutual fund schemes* there is a **significant difference** in the performance as per Sharpe ratio **(H₁₀)**.

7) TREYNOR RATIO VS. SHARPE RATIO

The results pertaining to Sharpe ratio and Treynor ratio reflects some conflict in performance rankings. The reason for such a conflict arises due to the fact that Sharpe ratio takes into accounts the total risk of the portfolio whereas the Treynor ratio considers only the systematic or the market risk. The Rank Correlation Coefficient for

the sample schemes is 0.7084 and 0.6847 across the different market proxy i.e. BSE 30 and Nifty 50 respectively, which is quite high. It shows that overall there is small difference in ranking of mutual fund schemes based on both the measures. Thus, in respect of both the measures 41 (29.93 %) schemes have reflected better performance in comparison to their respective BSE 30 and Nifty50 benchmark portfolios.

On examining whether the RCC derived between Sharpe and Treynor ratio for each group of the selected sample mutual fund schemes according to their *objectives* is significant, it was found to be higher than the table value. This rejects the null hypothesis indicating there by that the RCCs derived between the ranks assigned according to the two performance measures *viz.* Sharpe and Treynor is **significant (H₁₁)**.

8) RESULTS OF JENSEN DIFFERENTIAL MEASURE

The data reveal that, out of 137 mutual fund schemes, 56 mutual fund schemes i.e. 40.88% have posted positive alpha estimates across both the benchmark criteria. The large variation of alpha values show that stock selection abilities of fund managers vary for different mutual fund schemes. The results indicate that alpha values for only 14 schemes out of 137 schemes are found to be statistically significant at 5 per cent level (one tail test). If one applies a two-tailed test then find that 21 schemes show significant but negative values of alpha at 5 per cent level across the BSE 30 and Nifty 50 benchmark proxy. This implies that these schemes have not generated even the expected return. Hence, it may be concluded that, Indian fund managers do not seem to have generated excess returns than expected.

On examining whether the observed value of Jensen Differential Measure (alpha) for the same sample schemes is different from zero, it was found that the observed value of differential measure (alpha) for the same sample schemes is **zero (H₁₂)**.

9) RESULTS OF SHARPE DIFFERENTIAL MEASURE

The results are similar across both the benchmark portfolios for the sample mutual fund schemes. Out of 137 schemes, 46 (33.58 %) schemes reflect a positive differential returns, thereby indicating superior performance. The remaining 91 (66.42 %) schemes yielded negative differential returns indicating that they could not generate returns commensurate with the risk they assumed. The average Sharpe Differential Return being -0.3493 and 62 (45.26 %) schemes could register better than the overall sample average investment performance for BSE30 proxy and the average

Sharpe Differential Return being -0.3493 and 63 (45.99 %) schemes could register better than the overall sample average investment performance for Nifty50 proxy.

The similar results across the benchmark portfolios revealed that benchmark variability hardly provides any purpose in the investment performance measurement and reporting.

10) RESULTS OF FAMA'S COMPONENTS OF INVESTMENT PERFORMANCE

With respect to Fama's measure, the performance of a fund manager is broken down into various components such as (a) Performance on Systematic Risk (b) Performance on Diversification and (c) Performance on Net Selectivity.

• WHEN USED BSE30 BENCHMARK PROXY:

(a) Performance on Systematic Risk (β): Out of 137 mutual fund schemes, 126 schemes have positive returns on account of risk bearing activity of fund managers.

(b) Performance on Diversification: The diversification measures additional return that compensates the portfolio manager for bearing diversifiable risk. The results indicate that all the schemes have gained a significant part of their returns in pursuit of their diversification activities, as the diversification measure was positive.

(c) Performance on Net Selectivity: Fund managers of 56 schemes (40.88 %) appeared to possess superior stock selection ability as the selectivity measure was found to be positive. It is interesting to note that in terms of net selectivity there were 46 schemes (33.58 %) showed positive values. This would imply that fund managers of 10 schemes were not able to get some additional compensation for their diversification activities.

• WHEN USED NIFTY50 BENCHMARK PROXY:

(a) Performance on Systematic Risk (β): Out of 137 mutual fund schemes, 125 schemes have positive returns on account of risk bearing activity of fund managers.

(b) Performance on Diversification: Similar results as observed for BSE30 were observed for Nifty50 as benchmark.

(c) Performance on Net Selectivity: Similar results as observed for BSE30 were observed for Nifty50 as benchmark.

The results are similar across the both benchmark portfolios for the sample mutual fund schemes. Thus it may be deduced from this analysis that benchmark variability hardly provides any purpose in the investment performance measurement and reporting.

11) RESULTS OF APPRAISAL RATIO

The next performance measure employed was 'Appraisal Ratio'. Here also, results are similar across both the benchmark portfolios for the sample mutual fund schemes. Out of 137 schemes, 56 (40.88 %) schemes reflect a positive ratio and remaining 81 (59.12 %) schemes yielded negative ratios. The average Appraisal Ratio for all mutual fund schemes is -0.0440 with respect to BSE30 benchmark portfolio and 66 (48.18 %) schemes could register better than the overall sample average investment performance. The average Appraisal Ratio for all mutual fund schemes is -0.0456 with respect to Nifty50 benchmark portfolio and 66 (48.18 %) schemes could register better than the overall sample average investment performance.

On applying t-test, it was found that there is **no significant difference** in the Appraisal Ratio according to their *objectives* (H_{13}).

12) RESULTS OF INFORMATION RATIO

The results are more or less similar across the benchmark portfolios for the sample mutual fund schemes. When BSE 30 was used as a proxy for the market portfolios, out of 137 schemes, only 31 (22.63 %) schemes reflect a positive ratio. The average Information Ratio for all mutual fund schemes is -0.0530 and 53 (38.69 %) schemes could register better than the overall sample average investment performance.

When Nifty 50 was used as a proxy for the market portfolios, out of 137 schemes, only 30 (21.90 %) schemes reflect a positive ratio. The average Information Ratio for all mutual fund schemes is -0.0547 and 56 (40.88 %) schemes could register better than the overall sample average investment performance.

On examining whether there is significant difference in the Information ratio of the selected sample mutual fund schemes according to their *objectives*, it was found that only in case of *Growth and Income schemes* there is a **significant difference** in the Information Ratio according to their objectives (H_{14}).

13) RESULTS OF M² MEASURE: MODIGLIANI AND MODIGLIANI

In case of M² Measure also, the results reveal the perfect positive symmetry with

regards to the investment performance ranking across the benchmark portfolios for sample investment schemes. Similarly, in relation to the M^2 measure, the performance is similar to that obtained under the Sharpe Ratio. Out of 137 schemes, only 46 (33.58 %) schemes could register positive performance with respect to both the benchmark proxy. In addition, the average M^2 measure for all mutual fund schemes is -0.5701 with respect to BSE 30 benchmark proxy and -0.5728 with respect to Nifty 50. Of 137 schemes, 84 (61.31 %) schemes could register better than the overall sample average investment performance across both the benchmark criteria.

On examining whether there is significant difference in the M^2 measure of the selected sample mutual fund schemes according to their *objectives*, it was found that only in case of *Growth and Income schemes* there is a **significant difference** in the M^2 measure according to their objectives (H_{15}).

14) RANKING OF MUTUAL FUND SCHEMES ACROSS BENCHMARK CRITERIA

After examining performance of schemes, as per various measures and also examining the difference in results according to objectives of the same, the consistency of performance measures, with reference to two benchmark criteria, was examined. On examining whether the RCC is significant between different types of schemes, it was found that the performance of sample mutual fund schemes was consistent with reference to two benchmark criteria, irrespective of the performance measures applied (H_{16}).

15) RANKING OF MUTUAL FUND SCHEMES ACROSS DIFFERENT MEASUREMENT CRITERIA

Moreover, an attempt was also made to examine consistency of the outcome of the performance measures within given benchmark criterion. On examining whether there is significant difference in the performance of sample schemes between the two selected measurement criteria, it was found that there is **no significant difference** in performance of sample scheme between two measures (H_{17}).

16) SCHEMES OUTPERFORMING IN RELATION TO BSE 30 VIS-À-VIS NIFTY 50 BENCHMARK ACROSS DIFFERENT MEASUREMENT CRITERIA

Table 5.22 reveals the summary of schemes outperforming in relation to BSE 30 vis-à-vis Nifty 50 benchmark across different measurement criteria viz., Rate of return,

Treynor Ratio, Sharpe Ratio, Jensen differential measure, Sharpe differential measure, Fama's measure, Appraisal ratio, Information ratio, M^2 measure.

Table 5.22 : Summary of Schemes Outperforming in Relation to BSE 30 vis-à-vis Nifty 50 across different measurement criteria					
Sr. No.	Performance Measures	BSE 30		Nifty 50	
		Schemes Outperforming	Top Five Performers	Schemes Outperforming	Top Five Performers
1	Rate of Return	31 (22.63%)	1. Reliance Growth Fund(G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Top 200 Fund (G) 5. HDFC Prudence Fund (G)	30 (21.90%)	1. Reliance Growth Fund(G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Top 200 Fund (G) 5. HDFC Prudence Fund(G)
2	Treynor Ratio	51 (37.23%)	1. Templeton India Treasury Management Account (WD) 2. ICICI Prudential Gilt Fund (Treasury Plan) (G) 3. JM High Liquidity Fund (WD) 4. ICICI Prudential Gilt Fund (Investment Plan) (G) 5. LIC Bond Fund (G)	52 (37.96%)	1. Templeton India Treasury Management Account (WD) 2. ICICI Prudential Gilt Fund (Treasury Plan) (G) 3. JM High Liquidity Fund (WD) 4. ICICI Prudential Gilt Fund (Investment Plan) (G) 5. DBS Chola Triple Ace (G)
3	Sharpe Ratio	46 (33.58%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Birla Sun Life Cash Plus-Ret (G) 4. JM High Liquidity Fund (G) 5. HDFC Prudence Fund (G)	46 (33.58%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Birla Sun Life Cash Plus-Ret (G) 4. JM High Liquidity Fund (G) 5. HDFC Prudence Fund (G)
4	Jensen Differential Measure	56 (40.88%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Plus-Ret (G) 3. Birla Sun Life Cash Manager-Ret (G) 4. JM High Liquidity Fund (G) 5. HDFC Equity Fund (G)	56 (40.88%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Plus-Ret (G) 3. JM High Liquidity Fund (G) 4. Birla Sun Life Cash Manager-Ret (G) 5. HDFC Equity Fund (G)
5	Sharpe Differential Measure	46 (33.58%)	1. Reliance Growth Fund (G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Prudence Fund (G) 5. HDFC Top 200 Fund (G)	46 (33.58%)	1. Reliance Growth Fund (G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Prudence Fund (G) 5. HDFC Top 200 Fund (G)

Sr. No.	Performance Measures	BSE 30		Nifty 50	
		Schemes Outperforming	Top Five Performers	Schemes Outperforming	Top Five Performers
6	Fama's Components of Investment performance measure				
	1) Performance on Systematic Risk (β)	126 (92.0%)	1. JM Basic Fund (G) 2. SBI Magnum Global Fund-1994 (G) 3. Taurus Starshare (G) 4. Taurus Discovery (G) 5. SBI Magnum Multiplier Plus-1993(G)	126 (92.0%)	1. JM Basic Fund (G) 2. SBI Magnum Global Fund-1994 (G) 3. Taurus Starshare (G) 4. Taurus Discovery (G) 5. SBI Magnum Multiplier Plus-1993 (G)
	2) Performance on Diversification	137 (100.0%)	1. ICICI Prudential Power (G) 2. Principal Balanced Fund (D) 3. HDFC High Interest Fund (G) 4. Principal Balanced Fund (G) 5. LIC Monthly Income Plan (G)	137 (100.0%)	1. ICICI Prudential Power (G) 2. Principal Balanced Fund (D) 3. HDFC High Interest Fund (G) 4. Principal Balanced Fund (G) 5. LIC Monthly Income Plan (G)
	3) Performance on Net Selectivity	56 (40.88%)	1. Reliance Growth Fund(G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Prudence Fund(G) 5. HDFC Top 200 Fund (G)	56 (40.88%)	1. Reliance Growth Fund (G) 2. Reliance Vision Fund (G) 3. HDFC Equity Fund (G) 4. HDFC Prudence Fund (G) 5. HDFC Top 200 Fund (G)
7	Appraisal Ratio	56 (40.88%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Templeton India Pension Plan (G) 4. Birla Sun Life Cash Plus-Ret (G) 5. HDFC Equity Fund (G)	56 (40.88%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Templeton India Pension Plan (G) 4. Birla Sun Life Cash Plus-Ret (G) 5. HDFC Equity Fund (G)
8	Information Ratio	31 (22.63%)	1. HDFC Equity Fund (G) 2. Franklin India Bluechip Fund (G) 3. Templeton India Growth Fund (G) 4. HDFC Top 200 Fund (G) 5. Reliance Vision Fund (G)	30 (21.90%)	1. HDFC Equity Fund (G) 2. Franklin India Bluechip Fund (G) 3. HDFC Top 200 Fund (G) 4. Reliance Growth Fund (G) 5. Reliance Vision Fund (G)
9	M ² measure: Modigliani and Modigliani	46 (33.58%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Birla Sun Life Cash Plus-Ret (G) 4. JM High Liquidity Fund (G) 5. HDFC Prudence Fund (G)	46 (33.58%)	1. Templeton India Treasury Management Account (G) 2. Birla Sun Life Cash Manager-Ret (G) 3. Birla Sun Life Cash Plus-Ret (G) 4. JM High Liquidity Fund (G) 5. HDFC Prudence Fund (G)

The Table 5.22 reveals that almost for all measures top 5 performers are same for both the benchmarks. It is also worth noting that almost in all the cases the schemes relate to those floated by the Private mutual funds. Having examined the performance and related aspects for the select MF schemes, the next chapter proposes to examine the market timing abilities of the mutual fund managers.

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