Quantitative Analysis of Indian Mutual Funds : Equity Schemes

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Abstract

Mutual funds are an integral part of the stock market, which have become an investment avenue for a large number of investors in recent years. There are a number of investment opportunities available to an investor. Each of these investments has its own risk and return features. The present study was conducted to evaluate and compare the performance of equity mutual fund schemes of selected companies (HDFC, ICICI, and Franklin Templeton).

Keywords: **mutual fund, risk-return, Sharpe ratio, Treynor ratio, Jensen ratio, beta**

JEL Classification: G110, G120, G170

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Mutual funds allow a group of investors to pool their money together and invest the same. The fund manager invests the funds' assets, typically by buying stocks or bonds, or a combination of the two. Mutual funds provide many benefits to investors. First of all, it is very difficult for an investor with only ₹ 5000 to invest in a diversified basket of market instruments. However, any small investor can easily achieve a diversified portfolio by investing in diversified mutual funds. Second, unlike the underlying assets that may have limited liquidity in the market, mutual funds can be very easily traded. Furthermore, by combining their cash together, investors in mutual funds have an access to professional management and can experience lower transaction costs. Due to the many benefits provided by mutual funds, this sector has witnessed a tremendous growth in the past two decades.

Funds vary in size and cash holdings. Furthermore, they have different fee structures: some funds charge loads while others do not. Some funds managers try to time the market and trade more often, while some others tend to hold a more long-term view and trade less. However, researchers examining the relation between fund performance and fund properties have yet to produce conclusive findings. In this paper, a method is proposed to help domain professionals to analyze the critical relations and take decisions regarding fund selection.

The main focus of the present paper is to analyze the risk return parameters of the top performing equity- small / mid cap, tax planning, and sector funds based on various measures; and to compare the performance of fund returns with the market returns, to analyze the stock selecting ability and the market timing ability of the fund managers of the top performing funds. This research is limited to three open-ended funds, three each in the equity, tax planning, and sector funds respectively of the selected AMCs (Franklin Templeton, ICICI, and HDFC) as per the availability of NAV data for the past five years (2007-2012).

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Literature Survey

Several academicians have tried to study the performance of various mutual funds. Anand and Murugaiah (2003) applied the measurement tools of modern portfolio theory to the performance of mutual funds. The study aimed to examine the degree of correlation that existed between fund and market return, to understand the impact of fund specific characteristics on performance, and to evaluate the diversification and selectivity skills of fund managers. Sapar and Madava (2003) examined the performance of Indian mutual funds in a bear market through relative performance index, risk-return analysis, Treynor 's ratio, Sharpe's ratio, Sharpe's measure, Jensen's measure, and the results of performance measure suggested that most of the mutual fund schemes in the sample of 58 were able to satisfy investors' expectations by giving excess returns over expected returns based on both premiums for systematic risk and total risk.

Panwar and Madhumathi (2006) identified the differences in characteristics of public-sector and private-sector sponsored mutual funds and found the extent of diversification in the portfolio of securities of public-sector and private-sector sponsored mutual funds and compared their performance using traditional investment measures. The study found that public-sector sponsored, private-sector Indian sponsored, and private-sector foreign sponsored mutual funds did not differ statistically in terms of portfolio characteristics such as net assets, common stock percent, market capitalization, holdings, and top 10%. Portfolio risk characteristics measured through private-sector Indian sponsored mutual funds seemed to have outperformed both public- sector and private-sector foreign sponsored mutual funds. Rao (2006) studied the financial performance of select open-ended equity mutual fund schemes for the period from April 1, 2005 - March 31, 2006 pertaining to the two dominant investment styles and tested the hypothesis - whether the differences in performance are statistically significant. The analysis indicated that growth plans generated higher returns than generated by dividend plans, but at a higher risk. The study also classified the 419 open-ended equity mutual fund schemes into six distinct investment styles.

Selvam and Palanisamy (2011) studied the risk and return relationship of Indian mutual fund schemes. The study found out that out of 35 sample schemes, 11 showed significant *t* - values and the other 24 sample schemes did not prove to have a significant relationship between the risk and returns. According to *t* - alpha values, the majority of (32) of the sample schemes' returns were not significantly different from their market returns, and very few number of sample schemes' returns were significantly different from their market returns during the study period. Rao and Daita (2013) attempted to analyze the influence of fundamental factors such as economy, industry, and company on the performance of mutual funds. Effort was made to carry out an in-depth analysis of the economy through a collection of monthly data pertaining to the key macro-economic variables covering a period of 228 months spread over 19 years. The causal relationship between real economic variables and their impact on the performance of mutual funds was studied with the help of descriptive statistics consisting of suitable test statistics, correlation matrix, Augmented Dickey-Fuller (ADF) test, and Granger's causality test. To appraise the mutual fund industry in a lucid style, various aspects such as assets under management (AUM), investor type, and product classification were studied with the help of percentage analysis. Finally, the fundamental soundness of the company was gauged against the chosen parameters with the support of descriptive statistics, correlation matrix, simple regression, and multiple regression.

Vyas and Moonat (2012) studied that for many years, funds were more of a service than a product, the service being professional money management. According to the authors, in the last 15 years, mutual funds have evolved to be a product. A competent fund manager should analyze investor behaviour and understand their needs and expectations to gear up the performance of MFs to meet investors' requirements. It is the time for mutual fund companies to understand the fund selection/ switching behaviour of the investors' and to design the fund schemes according to the changing needs of consumers. This study made efforts in this regard, and suggested ways to penetrate this mode of investment deep in the Indian society ; it also provided information regarding expectations' of the investors. Rama Krishna (2012) examined the short-term performance persistence of select Indian Equity (growth) mutual funds during the period from 2008 and 2011. First, to assess the performance of sample funds, the author used return variance analysis. Second, he used Sharpe's index to rank the funds. Finally, to test the short term performance, the researcher pursued Brown and Goetzmann (1995) and Malkiel's (1995) measures (as cited

in Rama Krishna, 2012). Majority of the sample funds reported results similar to the Proxy for the market. The study concluded that mutual fund managers need to change their fund management style as per the investors' requirements.

Based on the literature study, it was observed that some research studies used statistical tools or quantitative tools to analyze the performance of mutual funds. All research will use one or two methods to compare the mutual funds of one or two schemes only. Some of the research studies focused only on a particular fund and revealed the advantages and disadvantages of the same. It was observed that none of the research studies focused on comparing similar types of open ended schemes in various AMCs. Hence, the present study was conducted to fill this gap. The present study compared the selected three schemes and three AMCs by using of different statistical tools and ratio analysis.

Objectives of the study

(1) To evaluate and compare the performance of equity mutual fund schemes of selected companies.

(2) To compare the performance of equity diversified mutual fund schemes of selected companies' vis-à-vis the market.

Scope of the Study

Mutual fund performance of three companies - HDFC, ICICI, and Franklin Templeton were considered for performance analysis (using secondary data). The study aims to measure the returns earned by the sample mutual funds schemes and compare them against the market portfolio returns to distinguish the performers from the laggards. The study also aims to find out those mutual fund schemes offering the advantages of diversification, along with adequate systematic risk as compared to market beta risk.

Research Methodology

Secondary data were taken as a basis of analysis in this research. The aim is to evaluate, compare, and rank the financial performance of the mutual fund schemes. In this paper, three schemes and three AMCs (asset management companies) are taken as a sample. The sample AMCs are HDFC, ICICI, and Franklin Templeton. Three equity mutual fund schemes each from the said AMCs were selected randomly. The data were collected from secondary sources (i.e. fact sheets of companies, newspapers, journals, periodicals, etc.). Daily data about the closing net asset value of the selected schemes were collected from the websites - Association of Mutual Funds in India (AMFI) (2013) and Moneycontrol.com (2013). The time period of the study is from January 2007 to December 2012. The data were also collected from the official websites of Franklin Templeton India AMC, ICICI AMC, HDFC AMC, and Value Research Online (AMFI 2013 ; BSE, 2013 ; Fund details, 2013 ; Mutual fund data, 2013). Microsoft Excel was used for all the calculations.

Database Definitions

↳ **Treynor Performance:** Jack Treynor (1965) conceived an index of portfolio performance measure called as reward to volatility ratio, based on systematic risk defined in the following equation. He assumed that the investor can eliminate an unsystematic risk by holding a diversified portfolio. Hence, his performance measure, denoted as T_P , 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.

$$T_P = \frac{\text{Risk Premium}}{\text{Systematic Risk Index}} = \frac{r_p - r_f}{\beta_p}$$

where,

T_P = Treynor' s ratio,
r_P = portfolio return,
r_f = risk free return and,
β_p = Beta coefficient for portfolio.

The major limitation of the Treynor index is that it can be applied to the schemes with positive betas during the bull phase of the market. The results will mislead if applied during the bear phase of the market to the schemes with negative betas. The second limitation is it ignores the rewards for unsystematic or unique risk.

↳ **Jensen's Performance** : Jensen's Alpha is a measure of differential return earned by the fund. It helps in evaluating the ability of the fund manager in identifying the undervalued securities and thereby, generating excess returns than the benchmark.

$$\alpha = (R_p - R_f) - \beta (R_m - R_f)$$

where,
α = the Jensen measure (alpha), intercept measuring the forecasting ability of the manager,
R_p = average portfolio return

$$(R_p = R_f + [\beta * (R_m - R_f)])$$

R_f = average risk free return,
β = portfolio beta,
R_m = average market return.

↳ **Beta - Measure of Systematic Risk :** Beta is a measure of systematic risk of a portfolio. It determines the volatility of a fund in comparison to that of its index or benchmark.

ß = Covariance (Stock, Index)/ Variance (Index)

where, Covariance (Stock, Index) means covariance between scheme and market returns, while Variance (Index) means variance of Index.

Higher values of β indicates a high sensitivity of fund returns against market returns; the lower value indicates low sensitivity. Higher β values are desired for mutual funds during the bull phase of the market, and lower β values are desired during the bear phase to outperform the market. There are unequal sample observations and non-identical time periods for the selected mutual fund schemes. It is assumed that beta is stationary during the period.

↳ **Sharpe's Ratio :** William F. Sharpe (1966) devised an index of portfolio performance measure, referred to as reward to the variability ratio denoted by S_P . He assumed that a small investor invests fully in the mutual fund and does not hold any portfolio to eliminate unsystematic risk and hence demands a premium for the total risk.

$$S_P = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{r_p - r_f}{\sigma_p}$$

where,

S_P = Sharpe's ratio,
r_P = portfolio return,
r_f = risk free return, and
σ_P = standard deviation of portfolio returns.

The S_P for benchmark portfolio is :

$$\frac{r_m - r_f}{\sigma_m}$$

where,
σ_m = standard deviation of market returns.

If S_P of the mutual fund scheme is greater than that of the market portfolio, the fund has outperformed the market. The superiority of Sharpe's ratio over Treynor's ratio is that it considers the point whether investors are reasonably rewarded for the total risk in comparison to the market. A mutual fund scheme with a relatively large unique risk may outperform the market in Treynor's index and may underperform the market in Sharpe's ratio. A mutual fund scheme with a large Treynor ratio and a low Sharpe ratio can be concluded to have relatively larger unique risk.

Analysis and Results

(1) Sector Funds: The current status, profile, and trailing returns of the sample MFs is depicted in the Table 1, Table 2, and Table 3 respectively. Latest NAV for Franklin Infotech Fund, ICICI Prudential Technology, and HDFC Capital Builder fund as of 07/06/2013 is 65.7799, 19.86, and 115.145 respectively. Net assets for Franklin Infotech fund, ICICI Prudential Technology, and HDFC Capital Builder fund as of 31/03/2013 is 112.39, 109.49, and 467.37 respectively.

(2) Small & Mid Cap Funds : The current status, profile, and trailing returns of small and mid-cap funds is given in Table 4, Table 5, and Table 6 respectively. Latest NAV for Franklin India Prima, ICICI Prudential Mid Cap, and HDFC Mid Cap Opportunities fund as of 07/06/2013 is 320.8645, 30.49, and 17.884 respectively. Net assets of Franklin India Prima, ICICI Prudential Mid Cap, and HDFC Mid Cap Opportunities fund as of 31/03/2013 is 786.10, 223.04, and 2734.14 respectively.

(3) Tax Planning Funds: The current status, profile, trailing returns of Tax planning funds are given in Table 7, Table 8, and Table 9 respectively. Latest NAV for Franklin India Tax Shield and HDFC Tax Saver fund as of 07/06/2013 is 320.8645 and 30.49 respectively. Net assets of Franklin India Tax Shield and HDFC Tax Saver fund as of 31/03/2013 are 786.10 and 223.04 respectively.

Performance Analysis

The higher the information ratio, the higher is the active return of the portfolio. The Tables 10, 11, and 12 show the performance analysis of funds by considering the information ratio. HDFC Capital Builder has higher information ratio (0.08) than others. In case of small and mid cap funds, Franklin India Prima-G has a higher information ratio (0.15) than ICICI and HDFC. While in tax planning funds, Franklin was performing better than HDFC Tax Saver.

The Table 13 depicts that all the IT sector funds are having a beta less than one during 2012, which shows that

Table 1. Current Status & Profile of Sector Funds

	Sector Funds		
Current Stats & Profile	**Franklin Infotech**	**ICICI Prudential Technology Reg**	**HDFC Capital Builder**
Latest NAV	65.7799 (07/06/13)	19.86 (07/06/13)	115.145 (07/06/13)
52-Week High	73.8014 (07/03/13)	22.14 (07/03/13)	121.429 (21/01/13)
52-Week Low	56.2358 (26/07/12)	17.12 (26/07/12)	100.999 (18/06/12)
Fund Category	Equity: Technology	Equity: Technology	Equity: Large & Mid Cap
Type	Open End	Open End	Open End
Launch Date	Aug-98	Jan-00	Jan-94
Risk Grade	Not Rated	Not Rated	Below Average
Return Grade	Not Rated	Not Rated	Average
Net Assets (Cr) *	112.39 (31/03/13)	109.49 (31/03/13)	467.37 (31/03/13)
Benchmark	S&P BSE Infotech	S&P BSE Tech	CNX 500

Table 2. Trailing Returns of Sector Funds

	Sector Funds					
	Returns up to 1 year are absolute and over 1 year are annualized					
Trailing Returns	**Franklin Infotech**		**ICICI Prudential Technology Reg**		**HDFC Capital Builder**	
As on 07 Jun 2013	Fund	Category	Fund	Category	Fund	Category
Year to Date	7.29	5.24	2.58	5.24	-1.4	-3.35
1-Month	3.22	0.73	-0.85	0.73	-1.37	-2.27
3-Month	-10.87	-10	-10.3	-10	-0.88	-0.55
1-Year	7.24	9.01	8.58	9.01	13.87	14.98
3-Year	6.19	4.6	10.54	4.6	5.23	4.66
5-Year	7.85	4.49	8.4	4.49	9.84	6.29
Return Since Launch	19.02	--	5.31	--	13.45	--

Table 3. Best and Worst Performance of Sector Funds

	Sector Funds					
Best & Worst	**Franklin Infotech**		**ICICI Prudential Technology Reg**		**HDFC Capital Builder**	
Performance	**Best (Period)**	**Worst (Period)**	**Best (Period)**	**Worst (Period)**	**Best (Period)**	**Worst (Period)**
Month	65.03 (03/12/1999-04/01/2000)	-41.14 (21/08/2001-21/09/2001)	29.88 (07/11/2001 - 07/12/2001)	-37.53 (09/02/2001 - 13/03/2001)	30.93 (20/03/1998 - 21/04/1998)	-33.87 (12/05/2006 - 13/06/2006)
Quarter	144.09 (22/11/1999 - 22/02/2000)	-50.83 (22/02/2000 - 23/05/2000)	74.86 (09/03/2009 - 10/06/2009)	-47.51 (28/07/2008 - 27/10/2008)	73.18 (09/03/2009 - 10/06/2009)	-39.36 (02/09/2008 - 02/12/2008)
Year	534.27 (04/01/1999 - 04/01/2000)	-73.98 (12/04/2000 - 12/04/2001)	172.63 (09/03/2009 - 11/03/2010)	-70.77 (13/03/2000 - 13/03/2001)	146.48 (24/04/2003 - 23/04/2004)	-56.79 (14/01/2008-13/01/2009)

they were less risky as compared to their benchmark index during this period. Out of the three funds, Franklin Infotech Scheme is observed to be the most aggressive, having a beta of 0.08 ; ICICI and HDFC funds are observed to be the least aggressive (beta of - 0.03). The Table 14 depicts the performance analysis of IT sector funds on the basis of Sharpe's ratio . It measures the risk premium of the portfolio relative to the total amount of risk in the

Table 4. Current Status and Profile (Small and Mid Cap Funds)

Small & Mid Cap Funds			
Current Stats & Profile	**Franklin India Prima-G**	**ICICI Pru Midcap Reg-G**	**HDFC Mid-Cap Opportunities- G**
Latest NAV	320.8645 (07/06/13)	30.49 (07/06/13)	17.884 (07/06/13)
52-Week High	336.0005 (07/01/13)	35.04 (07/01/13)	19.047 (15/01/13)
52-Week Low	255.0176 (14/06/12)	28.78 (18/06/12)	15.45 (18/06/12)
Fund Category	Equity: Mid & Small Cap	Equity: Mid & Small Cap	Equity: Mid & Small Cap
Type	Open End	Open End	Open End
Launch Date	Nov-93	Oct-04	Jun-07
Risk Grade	Below Average	Above Average	Below Average
Return Grade	Above Average	Below Average	Above Average
Net Assets (Cr) *	786.10 (31/03/13)	223.04 (31/03/13)	2,734.14 (31/03/13)
Benchmark	CNX 500	CNX Midcap	CNX Midcap

Table 5. Trailing Returns (Small and Mid Cap Funds)

Small & Mid Cap Funds						
Returns up to 1 year are absolute and over 1 year are annualized						
Trailing Returns	**Franklin India Prima-G**		**ICICI Pru Midcap Reg-G**		**HDFC Mid-Cap Opportunities- G**	
As on 07 Jun 2013	**Fund**	**Category**	**Fund**	**Category**	**Fund**	**Category**
Year to Date	-2.92	-7.7	-9.63	-7.7	-4.04	-7.7
1-Month	0.69	-1.42	-3.57	-1.42	-0.26	-1.42
3-Month	2.36	-0.66	-5.22	-0.66	0.77	-0.66
1-Year	24.6	13.46	4.1	13.46	14.87	13.46
3-Year	8.37	4.35	-2.05	4.35	9.82	4.35
5-Year	10.7	7.45	1.07	7.45	13.89	7.45
Return Since Launch	19.44	--	13.82	--	10.25	--

Table 6. Best and Worst Performance (Small and Mid Cap Funds)

Small & Mid Cap Funds						
Best & Worst	**Franklin India Prima-G**		**ICICI Pru Midcap Reg-G**		**HDFC Mid-Cap Opportunities- G**	
Performance	**Best (Period)**	**Worst (Period)**	**Best (Period)**	**Worst (Period)**	**Best (Period)**	**Worst (Period)**
Month	41.70 (06/05/2009-05/06/2009)	-34.00 (26/09/2008-27/10/2008)	39.46 (06/05/2009-05/06/2009)	-40.73 (26/09/2008-27/10/2008)	31.48 (06/05/2009-05/06/2009)	-30.38 (26/09/2008-27/10/2008)
Quarter	90.91 (06/03/2009-05/06/2009)	-49.86 (22/02/2000-23/05/2000)	87.64 (09/03/2009-10/06/2009)	-50.92 (02/09/2008-02/12/2008)	71.73 (09/03/2009-10/06/2009)	-38.68 (02/09/2008-02/12/2008)
Year	217.85 (01/01/1999-03/01/2000)	-63.83 (14/01/2008 - 13/01/2009)	165.52 (09/03/2009 - 11/03/2010)	-69.62 (14/01/2008 - 13/01/2009)	142.61 (09/03/2009 - 11/03/2010)	-54.01 (14/01/2008-13/01/2009)

Table 7. Current Status & Profile (Tax Planning Funds)

Tax Planning Funds		
Current Stats & Profile	**Franklin India Taxshield-G**	**HDFC Tax Saver-G**
Latest NAV	320.8645 (07/06/13)	30.49 (07/06/13)
52-Week High	336.0005 (07/01/13)	35.04 (07/01/13)
52-Week Low	255.0176 (14/06/12)	28.78 (18/06/12)
Fund Category	Equity: Mid & Small Cap	Equity: Mid & Small Cap
Type	Open End	Open End
Launch Date	Nov-93	Oct-04
Risk Grade	Below Average	Above Average
Return Grade	Above Average	Below Average
Net Assets (Cr) *	786.10 (31/03/13)	223.04 (31/03/13)
Benchmark	CNX 500	CNX Midcap

Table 8. Trailing Returns (Tax Planning Funds)

Tax Planning Funds				
Returns up to 1 year are absolute and over 1 year are annualized				
Trailing Returns	**Franklin India Taxshield-G**		**HDFC Tax Saver-G**	
As on 07 Jun 2013	**Fund**	**Category**	**Fund**	**Category**
Year to Date	-2.27	-3.29	-6.02	-3.29
1-Month	-0.73	-1.86	-1.68	-1.86
3-Month	-0.17	0.11	-2.66	0.11
1-Year	16.22	14.89	9.55	14.89
3-Year	9.13	4.54	3.29	4.54
5-Year	10.15	5.45	9.77	5.45
Return Since Launch	24.99	--	28.57	--

Table 9. Best and Worst Performance (Tax Planning Funds)

Tax Planning Funds				
Best & Worst	**Franklin India Taxshield-G**		**HDFC Tax Saver-G**	
Performance	**Best (Period)**	**Worst (Period)**	**Best (Period)**	**Worst (Period)**
Month	57.81 (03/12/1999-04/01/2000)	-29.18 (24/09/2008-24/10/2008)	34.19 (15/12/1999-14/01/2000)	-32.30 (26/09/2008-27/10/2008)
Quarter	137.13 (22/11/1999-22/02/2000)	-34.66 (02/09/2008-03/12/2008)	78.93 (09/03/2009-10/06/2009)	-39.75 (02/09/2008-02/12/2008)
Year	214.23 (10/05/1999-09/05/2000)	-51.50 (14/01/2008-13/01/2009)	272.59 (24/02/1999-24/02/2000)	-55.57 (03/12/2007-02/12/2008)

portfolio. This risk premium is the difference between the portfolios's average rate of return and the riskless rate of return. This index assigns the highest value to assets that have the best risk - adjusted average rate of return. Hence, the larger the S_p , the better the fund has performed. HDFC Capital Builder scheme has a higher Sharpe's ratio (0.08), and is expected to perform well as compared to the others - Franklin and ICICI.

The Table 15 depicts the performance analysis of IT sector funds on the basis of Treynor's ratio. It represents mutual fund's excess returns to its standard deviation. A high Treynor ratio indicates a more attractive fund. HDFC Capital Builder schemes have a higher Treynor 's ratio, and are expected to perform well as compared to the other

Table 10. Performance Analysis - IT Sector Funds

Description	Franklin Infotech						ICICI Prudential Technology Reg						HDFC Capital Builder					
	Year(s)																	
	2012	2011	2010	2009	2008	2007	2012	2011	2010	2009	2008	2007	2012	2011	2010	2009	2008	2007
Market Return %	-2.38	-15.62	30.69	124.21	-50.17	-15.64	-2.38	-15.62	30.69	124.21	-50.17	42.01	-2.38	-15.62	30.69	124.21	-50.17	-15.64
Annual Return %	-0.94	-15.37	32.63	128.74	-49.65	-15.78	16.63	-18.97	43.35	119.97	-63.97	9.77	28.40	-23.77	27.85	89.67	-55.18	67.57
Correlation	0.09	0.11	0.11	-0.03	0.16	-0.01	-0.04	0.85	0.13	0.52	0.26	-0.01	-0.04	0.62	0.11	0.32	0.57	0.46
Risk	2.67	3.35	2.77	4.61	5.91	3.68	2.44	2.98	2.80	4.12	4.39	3.03	1.87	2.22	1.83	3.83	4.63	3.01
R Square	0.01	0.01	0.01	0.00	0.03	0.01	0.00	0.72	0.02	0.27	0.07	0.00	0.00	0.38	0.01	0.10	0.33	0.21
Information Ratio	-0.03	-0.06	0.07	0.16	-0.11	-0.06	0.03	-0.09	0.10	0.18	-0.21	0.01	0.08	-0.14	0.08	0.15	-0.16	0.15

Table 11. Performance Analysis - Small & Mid Cap Funds

Description	Franklin India Prima-G						ICICI Pru Midcap Reg-G						HDFC Mid-Cap Opportunities- G					
	Year(s)																	
	2012	2011	2010	2009	2008	2007	2012	2011	2010	2009	2008	2007	2012	2011	2010	2009	2008	2007
Market Return %	31.67	-27.57	13.13	83.34	-57.36	61.14	31.67	-27.57	13.13	83.34	-57.36	61.14	31.67	-27.57	13.13	83.34	-57.36	61.14
Annual Return %	44.70	-22.74	19.11	102.99	-62.72	47.65	40.76	-32.81	17.86	96.51	-68.39	59.42	39.98	-18.69	31.36	91.04	-51.74	29.90
Correlation	0.15	0.20	-0.01	0.04	0.19	-0.07	0.11	0.74	0.18	0.66	0.45	0.79	0.07	0.76	0.20	0.60	0.85	-0.07
Risk	1.74	2.03	2.26	4.64	4.65	2.83	2.06	2.03	2.00	4.23	5.04	3.23	1.91	2.05	2.05	3.77	4.22	1.90
R Square	0.02	0.04	0.00	0.00	0.04	0.00	0.01	0.55	0.03	0.43	0.20	0.62	0.00	0.58	0.04	0.36	0.72	0.00
Information Ratio	0.15	-0.13	0.03	0.14	-0.21	0.08	0.12	-0.20	0.04	0.15	-0.20	0.12	0.13	-0.13	0.09	0.16	-0.16	0.09

Table 12. Performance Analysis -Tax Planning Funds

	Description Franklin India Taxshield-G						HDFC Tax Saver-G					
	Year(s)											
	2012	2011	2010	2009	2008	2007	2012	2011	2010	2009	2008	2007
Market Return %	31.67	-27.57	13.13	83.34	-57.36	61.14	31.67	-27.57	13.13	83.34	-57.36	61.14
Annual Return %	29.60	-15.68	23.47	75.19	-49.30	56.02	26.67	-22.75	25.73	96.10	-51.88	37.65
Correlation	0.13	0.19	-0.02	0.02	0.16	-0.09	0.05	0.80	0.17	0.65	0.84	0.84
Risk	1.78	2.21	2.00	4.34	5.10	3.39	1.92	2.06	1.91	4.10	4.86	3.25
R Square	0.02	0.04	0.00	0.00	0.02	0.01	0.00	0.64	0.03	0.42	0.70	0.71
Information Ratio	0.08	-0.09	0.05	0.11	-0.13	0.11	0.08	-0.15	0.07	0.15	-0.14	0.07

Table 13. Performance Analysis Based on Beta Measures - IT Sector Funds

Name of the Fund	Year(s)											
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin Infotech	0.08	0.10	0.10	-0.03	0.14	-0.01	0.03	0.50	0.92	0.04	0.00	0.06	0.10
ICICI Prudential Technology Reg	-0.03	0.69	0.12	0.37	0.18	-0.01	0.24	0.43	0.24	0.12	0.29	-0.04	-0.01
HDFC Capital Builder	-0.03	0.39	0.07	0.22	0.41	0.32	0.16	0.26	0.21	0.18	0.02	0.12	0.10

Table 14. Performance Analysis Based on Sharpe Ratio - IT Sector Funds

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin Infotech	-0.03	-0.06	0.07	0.16	-0.11	-0.06	-0.04	0.09	-0.05	0.05	0.01	-0.05	-0.11
ICICI Prudential Technology Reg	0.03	-0.09	0.10	0.18	-0.21	0.01	0.08	0.11	0.02	0.09	0.02	-0.06	-0.09
HDFC Capital Builder	0.08	-0.14	0.08	0.15	-0.16	0.15	0.03	0.12	0.08	0.27	0.02	-0.13	-0.09

Table 15. Performance Analysis Based on Treynor Ratio - IT Sector Funds

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin Infotech	0.00	-0.06	0.11	0.34	-0.25	-0.02	-0.25	0.15	-0.29	0.15	0.60	-0.13	-0.46
ICICI Prudential Technology Reg	0.07	-0.08	0.15	0.34	-0.40	0.07	0.18	0.17	0.06	0.21	0.08	-0.14	-0.21
HDFC Capital Builder	0.11	-0.11	0.10	0.28	-0.31	0.22	0.09	0.16	0.16	0.32	0.06	-0.10	-0.09

Table 16. Performance Analysis Based on Jenson Alpha - IT Sector Funds

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin Infotech	-0.02	-0.09	0.10	0.30	-0.31	-0.08	-0.27	0.18	-0.61	0.13	0.03	-0.16	-0.50
ICICI Prudential Technology Reg	0.04	-0.16	0.13	0.44	-0.48	0.02	0.19	0.20	0.05	0.20	0.06	-0.17	-0.27
HDFC Capital Builder	0.08	-0.16	0.08	0.32	-0.44	0.17	0.09	0.16	0.15	0.31	0.05	-0.14	-0.12

Table 17. Performance Analysis Based on Beta Measures - Small & Mid Cap Funds

Name of the Fund	Year(s)					
	2012	2011	2010	2009	2008	2007
Franklin India Prima-G	0.11	0.15	-0.01	0.04	0.15	-0.05
ICICI Pru Midcap Reg-G	0.10	0.58	0.16	0.55	0.40	0.69
HDFC Mid-Cap Opportunities- G	0.06	0.58	0.18	0.45	0.61	-0.04

schemes. The Table 16 depicts the performance analysis of IT sector funds on the basis of Jenson's alpha. The entire ratio in the compared schemes is negative, and few have positive alpha. Franklin Infotech has the lowest negative alpha value of -0.02, which implies that the fund return has underperformed the benchmark index by -0.02% during 2012. ICICI and HDFC Capital Builder have a positive alpha value of 0.04 and 0.08 respectively, which implies that the fund return has overperformed the benchmark index by 0.04% and 0.08% respectively during 2012. If the value is positive, then the portfolio is earning excess returns.

The Table 17 depicts the performance analysis on the basis of Beta measures (for small and mid -cap funds). It can be observed that all the small and mid cap funds had a beta less than one during 2012, which shows that they are less risky as compared to their benchmark index during this period. Out of the three funds, Franklin India Prima-G Scheme is observed to be the most aggressive, having a beta of 0.08. ICICI Pru Midcap Reg-G (beta of 0.10) and HDFC Mid-Cap Opportunities- G funds are the least aggressive (beta of 0.06). The Table 18 depicts the analysis on the basis of Sharpe's ratio (for small and mid -cap funds). It measures the risk premium of the portfolio relative to the total amount of risk in the portfolio. This risk premium is the difference between the portfolios's average rate of return and riskless rate of return. This index assigns the highest value to the assets that have the best risk - adjusted average rate of return. The larger the S_p, the better the fund has performed. Franklin India Prima-G scheme has a higher Sharpe's ratio (0.15), and is expected to perform well as compared to the others - ICICI Pru

Table 18. Performance Analysis Based on Sharpe Ratio - Small & Mid Cap Funds

Name of the Fund	Year(s)					
	2012	2011	2010	2009	2008	2007
Franklin India Prima-G	0.15	-0.13	0.03	0.14	-0.21	0.08
ICICI Pru Midcap Reg-G	0.12	-0.20	0.04	0.15	-0.20	0.12
HDFC Mid-Cap Opportunities- G	0.13	-0.13	0.09	0.16	-0.16	0.09

Table 19. Performance Analysis Based on Treynor Ratio - Small & Mid Cap Funds

Name of the Fund	Year(s)					
	2012	2011	2010	2009	2008	2007
Franklin India Prima-G	0.14	-0.10	0.09	0.28	-0.35	0.16
ICICI Pru Midcap Reg-G	0.14	-0.16	0.07	0.30	-0.45	0.20
HDFC Mid-Cap Opportunities- G	0.14	-0.08	0.11	0.28	-0.28	0.23

Midcap Reg-G and HDFC Mid-Cap Opportunities- G.

The Table 19 depicts the analysis on the basis of Treynor's ratio (for small and mid -cap funds) as Treynor's ratio represents the mutual fund's excess return to its standard deviation. A high Treynor ratio indicates a more attractive fund. All the three funds have the same Treynor's ratio and are expected to perform well. The Table 20 depicts the analysis on the basis of Jenson's alpha (for small and mid-cap funds). The Table 20 reveals that Franklin and ICICI have a positive alpha value of 0.13 each respectively, which implies that the fund return has overperformed the benchmark index by 0.13% each respectively during 2012. If the value is positive, then the portfolio is earning excess returns.

The Table 21 depicts the analysis on the basis of Beta measures (tax planning). Franklin India Taxshield-G fund is having a beta less than one during 2012, which shows they are less risky as compared to their benchmark index during this period. Out of these two funds, HDFC funds are the least aggressive (beta of 0.04). The Table 22 depicts the analysis on the basis of Sharpe's ratio (for tax planning). It measures the risk premium of the portfolio relative to the total amount of risk in the portfolio. This risk premium is the difference between the portfolios's average rate of return and riskless rate of return. This index assigns the highest value to assets that have the best risk - adjusted average rate of return. The larger the S_p, the better the fund has performed. The Table depicts that both funds have the same Sharpe ratio, and are expected to perform well.

Table 20. Performance Analysis Based on Jenson Alpha - Small & Mid Cap Funds

Name of the Fund	Year(s)					
	2012	2011	2010	2009	2008	2007
Franklin India Prima-G	0.13	-0.14	0.05	0.27	-0.43	0.12
ICICI Pru Midcap Reg-G	0.13	-0.27	0.05	0.41	-0.61	0.29
HDFC Mid-Cap Opportunities- G	0.12	-0.19	0.09	0.37	-0.51	0.19

Table 21. Performance Analysis Based on Beta Measures - Tax Planning

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin India Taxshield-G	0.10	0.15	-0.02	0.02	0.13	-0.08	0.17	0.50	0.22	-0.52	0.03	0.30	-0.12
HDFC TaxSaver-G	0.04	0.61	0.14	0.53	0.68	0.75	0.17	0.43	0.14	0.11	0.13	0.62	0.55

Table 22. Performance Analysis Based on Sharpe Ratio - Tax Planning

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin India Taxshield-G	0.08	-0.09	0.05	0.11	-0.13	0.11	0.04	0.12	0.06	0.09	0.02	-0.05	0.08
HDFC TaxSaver-G	0.08	-0.15	0.07	0.15	-0.14	0.07	0.05	0.18	0.09	0.25	0.02	-0.02	-0.06

Table 23. Performance Analysis Based on Treynor Ratio - Tax Planning

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin India Taxshield-G	0.10	-0.06	0.09	0.22	-0.24	0.18	0.10	0.16	0.11	1.02	0.05	-0.04	1.63
HDFC TaxSaver-G	0.09	-0.10	0.09	0.29	-0.27	0.14	0.13	0.23	0.16	0.32	0.06	-0.01	-0.19

Table 24. Performance Analysis Based on Jensen's Alpha - Tax Planning

Name of the Fund	Year(s)												
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Franklin India Taxshield-G	0.09	-0.11	0.06	0.21	-0.30	0.14	0.09	0.18	0.10	0.86	0.03	-0.10	1.62
HDFC TaxSaver-G	0.08	-0.22	0.07	0.40	-0.53	0.25	0.13	0.24	0.14	0.32	0.04	-0.09	-0.29

The Table 23 depicts the analysis on the basis of Treynor's ratio (tax planning). It represents the mutual fund's excess return to its standard deviation. A high Treynor ratio indicates a more attractive fund. Franklin India Taxshield-G scheme has a higher Treynor 's ratio and is expected to perform well as compared to the other schemes. The Table 24 depicts the analysis on the basis of Jensen's alpha (tax planning). The Table reveals that Franklin and HDFC have a positive alpha value of 0.09 and 0.08 respectively, which implies that the fund return has overperformed the benchmark index by 0.09% and 0.08% respectively during 2012. If the value is positive, then the portfolio is earning excess returns.

Implications and Conclusion

The relation between mutual fund performance and fund characteristics is of much interest to financial market practitioners and investors. However, there is a lack of conclusive knowledge on this issue. This study introduced a method which examines the relation between fund returns and fund asset size, cash holding, loads, expense ratios, and turnover. The method can help economists, financial market practitioners, and investors better understand massive data distribution. It can supplement traditional statistical analysis and assist in re-designing improved statistical computation, and therefore, the study provides a solid support for decision making in mutual fund investments.

The study would also help in creating awareness among the investor community in choosing the best mutual fund scheme as it conducted a comparative analysis of the mutual funds of three AMCs. This study also showed that much information about mutual funds is not available publicly. For instance, there is no information on fund styles or comprehensive league tables to allow the comparison of mutual funds in the market. Subsequent investors are likely to be uninformed. Thus, it is still not clear how these investors make their decisions and whether these decisions are smart in the sense of providing superior returns in subsequent periods.

Limitations of the Study and Scope for Further Research

The following are the limitations of the present study : (a) The study is limited to the analysis of three mutual funds

under each of the three AMCs, (b) the research analysis was based on the past performance of only the selected equity diversified schemes, and does not provide any assurance of the future performance of the said schemes, (c) the research was based on the net asset value that is continuously fluctuating, (d) only equity schemes were considered for the purpose of research, and hence, the present study is completely based on equity diversified schemes, and the results are not relevant for any other schemes.

Future studies can extend this study by considering more than three AMCs. They can consider not only equity, but all other types of funds. Further research can engage in examining the behaviour of mutual fund investors in emerging markets. More emphasis on other characteristics of emerging markets, such as their inefficiency, non-normality, volatility, and structure breaks can be considered and how this affects their performance can be examined.

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