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An Empirical study on the Performance of Selected Diversified Equity Mutual Funds in India

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Abstract Economic growth depends upon a sound financial system which helps in capital formation. A financial system enables transformation of savings into investments. Economic reform process initiated in the early 1990s affected the financial system of the country to a great extent leading to the overall development of the Indian economy. Since liberalisation, the role of Indian mutual fund industry as a significant financial service in financial market has really been noteworthy. In the past decade, Indian mutual fund industry has witnessed robust quantitative growth. Mutual funds, by nature, are of three types: equity funds, debt funds and balanced funds. Equity funds invest predominantly (at least 65%) in domestic equities. Diversified equity funds constitute a major portion of equity funds. These funds invest in a wide array of securities with a view to outperforming the benchmark indices. Hence stock-specific and sector-specific risks are minimized to a great extent. The competence and the consistency of the fund managers are the key for delivering returns in case of diversified equity funds. In this backdrop, the main objective of the study is to analyse the performance of the selected diversified equity schemes in the line of risk-return parameters. The study is based on secondary data. The period of study is up to ten year time frame from March, 2004 to March, 2014. This study on the performance of open-ended diversified equity schemes is based on 8 (eight) schemes from 5 (five) top AMCs in terms of AUM as on 31st March, 2014, namely, Birla Sun Life, HDFC, ICICI Prudential, Reliance, and UTI. Here, the criterion for selection of equity schemes was to select those schemes which are in the industry for more than ten years and have AUM of more than INR 1000 crore as on 31th March, 2014. Measures like Sharpe Ratio, Treynor Ratio, Jensen alpha, and Sharpe Differential Measure (SDM) have been applied to understand risk-return relationship of the schemes. Further, measures like R-squared (R^2) or coefficient of determination and beta have been used to understand the relationship of the schemes with the benchmark and to have an understanding of the extent of market risk. Spearman's rank correlation coefficient has also been applied. The study reveals that most of the schemes have generated superior risk-adjusted return in comparison to the benchmark. It is evident that most fund managers have superior stock picking abilities. Further, most of the schemes are defensive in nature in comparison to the benchmarks. The chosen schemes are adequately diversified. It is observed that overall returns of the schemes from "Systematic Investment Plan (SIP)" are very satisfactory. Lastly, it is noticed that fund size has inverse relationship with cost.

[Key Words: Jensen Alpha, Mutual Fund, SDM, Sharpe Ratio, SIP, Treynor Ratio]
(JEL Code: G11, G23)

I. Introduction

Economic growth depends upon a sound financial system which helps in capital formation. A financial system enables transformation of savings into investments. Economic reform process initiated in the early 1990s affected the financial system of the country to a great extent leading to the overall development of the Indian economy. Since liberalisation, the role of Indian mutual fund industry as a significant financial service in financial market has really been noteworthy. In the past decade, Indian mutual fund industry has witnessed robust quantitative growth which can be easily understood from the Assets under Management (AUM) figures of the industry. The AUM has grown manifold. From a meagre INR 25 crore in March, 1965 the AUM has recorded a stupendous growth to reach more than INR 8 lakh crore as on 31st March, 2014. This phenomenal growth is due to several favourable economic and demographic factors like booming capital market, infrastructural development, rising income levels, increased foreign participation, favourable tax structure etc.

Mutual funds, by nature, are of three types: equity funds, debt funds and balanced funds. Equity funds invest predominantly (at least 65%) in domestic equities. Diversified equity funds constitute a major portion of equity funds. These funds invest in a wide array of securities with a view to outperforming the benchmark indices. Hence stock-specific and sector-specific risks are minimized to a great extent. The competence and the consistency of the fund managers are the key for delivering returns in case of diversified equity funds. Since these funds are managed actively, the expense ratio is relatively higher compared to passive funds like index funds. But if the funds are able to generate superior returns, one is well compensated for the extra fees one pays. In case of equity funds, the ups and downs in the equity market have direct effect on the performance of the equity funds. Open-ended funds have perpetual existence and a flexible corpus which is ever changing. Investors are free to buy and redeem any number of units of such funds at any point of time at applicable NAV. Liquidity is the main benefit of these funds.

II. Review of Literature

In India, mutual funds attracted the attention of academicians and researchers in the mid 1980s when articles came to appear in financial dailies, magazines and journals. This activity got momentum in the mid 1990s when the mutual fund industry was made open to the private players and new SEBI regulation came into being.

Barua & Varma (1991) evaluated the performance of 'Mastershare' during 1987-1991 using Jensen and other measures and found the performance of the fund satisfactory. **Sarkar and Majumdar (1994)** worked on the evaluation of performance of five growth-oriented schemes between February 1991 and August 1993. The authors concluded that the returns generated by the chosen mutual fund schemes were not superior to the market in general during the period of study. Nevertheless, they observed that the selected funds performed well in the boom period. **Sarkar (1995)** examined critically the methodology of evaluating performance of mutual funds and observed that Sharpe and Treynor measures of performance evaluation, in spite of their differences in terms of risk, ranked mutual funds alike. **Jayadev (1996)** found unsatisfactory diversification of the funds and insignificant selectivity skills of the

fund managers. **Krishnamurthi (1997)** has observed that mutual funds are an ideal investment vehicle for investors in general and small and medium investors in particular. **Muthappan and Damodharan (2006)** evaluated the performance of 40 mutual fund schemes from April, 1995 to March, 2000 and observed that most of the chosen schemes were able to outperform the market in terms of returns but they lagged behind the returns generated by 91-day treasury bills. **Badrinath (2008)** carried out a study on 'contra' funds with special emphasis on 'SBI Contra Fund' and found that the performance of 'SBI Contra Fund' was superior to that of general equity diversified market. **Loomba (2011)** studied the performance of large cap equity funds of Franklin Templeton Fund House from 15 September, 2010 to 15 September, 2011 on the basis of Sharpe ratio, Maan Whitney's U-Test and Kruskal Wallis Test. It was observed that Nifty returns outperformed the chosen scheme returns. **Shitole and Thyagarajan (2012)** evaluated the performance of the schemes of three AMCs, namely, ICICI Prudential AMC, HDFC AMC, and Franklin Templeton AMC and opined that most funds were able to provide market-related returns and many schemes outperformed their respective benchmark indices. **Das (2013)** observed superior stock picking skill of the fund managers in different time periods. Further, funds were defensive in comparison to their benchmarks but the chosen funds were well diversified. 10-year SIP returns of the funds were very satisfactory as well.

III. Research Questions

The present study addresses the following research questions:

(1) Have the schemes generated superior risk-adjusted returns?

(2) Do fund managers have good stock picking abilities?

(3) Are the schemes aggressive or defensive with respect to the benchmark?

(4) Are the schemes diversified enough?

(5) Whether the return from "Systematic Investment Plan" is satisfactory?

(6) Is there any relationship between net assets and expense ratio?

IV. Objective of the Study

The main objective of the study is to analyse the performance of the selected diversified equity schemes in the line of risk-return parameters.

V. Data Source and Research Methodology

The study is based on secondary data. Data are obtained from the official websites of five fund houses, websites of Bombay Stock Exchange (BSE), AMFI website, various reports, and articles published in financial dailies, finance-based magazines and periodicals.

The period of study is up to ten year time frame from March, 2004 to March, 2014. This study on the performance of open-ended diversified equity schemes is based on 8 (eight) schemes from 5 (five) top AMCs in terms of AUM as on 31st March, 2014, namely, Birla Sun Life, HDFC, ICICI Prudential, Reliance, and UTI. Here, the criterion for selection of equity schemes was to select those schemes which are in the industry for more than ten years and have AUM of more than INR 1000 crore as on 31th March, 2014. One scheme from Birla Sun Life, two from HDFC, one from ICICI Prudential, two from Reliance, and two from UTI meet the above norm. The chosen

time period is a mixture of several bull and bear phases of the Indian capital market. The month end NAVs, under "Growth" option, of each scheme have been obtained from the official websites of the AMCs, and from Blue Chip (http://bluechipindia.co.in). The month end closing values of the benchmark index S&P BSE Sensex have been obtained from the official websites of the Bombay Stock Exchange (BSE). The monthly returns of the schemes and the benchmark over the period of study have been computed. The rate offered by Public Provident Fund (PPF) scheme has been taken as average annualised risk-free rate (R_f) for the purpose of the study. The rate is 8.70%, 8.57%, 8.34%, 8.24%, and 8.17% for 1-year, 3-year, 5-year, 7-year, and 10-year time period. For the purpose of calculating returns from 'Systematic Investment Plan' (SIP), it is assumed that Rs. 1000 is invested at the end of each month at respective closing NAVs of the schemes.

Monthly returns of the schemes (R_p) and of the benchmark (R_b) are calculated as follows:

$$\mathbf{R_p = [(NAV_t - NAV_{t-1})/NAV_{t-1}] *100}$$

$$\mathbf{R_b = [(Value_t - Value_{t-1})/Value_{t-1}] *100}$$

Averages of R_p and R_b are taken and annualised in order to have average annualised return figure for 1-year, 3-year, 5-year, 7-year, and 10-year time frame. Likewise, average annualised Standard Deviation of the schemes (SD_p) and the benchmark index (SD_b) have been computed to measure total risk. Measures like Sharpe Ratio, Treynor Ratio, Jensen alpha, and Sharpe Differential Measure (SDM) have been applied to understand risk-return relationship of the schemes.

Further, measures like R-squared (R^2) or coefficient of determination and beta have been used to understand the relationship of the schemes with the benchmark and to have an understanding of the extent of market risk. Spearman's rank correlation coefficient has also been applied.

VI. Analysis and Findings

Table 1 shows the snapshot of the chosen schemes.

Table 1: Scheme Snapshot

SN	SCHEME	Date of Launch	As on 31.03.2014	As on 31.10.2014		
			AAUM	Stock (%)	Bond (%)	Cash (%)
1	BSL FRONTLINE EQUITY	Aug-02	3921	98.80	1.94	-0.74
2	HDFC EQUITY	Dec-94	10445	99.28	1.00	-0.28
3	HDFC TOP 200	Sep-96	10320	99.42	0.68	-0.10
4	ICICI PRU DYNAMIC	Oct-02	3670	77.51	16.70	5.78
5	RELIANCE GROWTH	Oct-95	4106	98.61	0.24	1.15
6	RELIANCE VISION	Oct-95	2412	98.29	0.27	1.44
7	UTI EQUITY	May-92	2478	99.19	0.41	0.40
8	UTI MASTERSHARE	Oct-86	2233	97.46	1.00	1.54

Source: Mutual Fund Insight, Volume XI, No 8, May, 2014 & www.valueresearchonline.com

It is observed that 87.50% (7) schemes have equity exposure in excess of 97%. On an average, equity holding of the schemes stood at 96.07%. Average debt holding is 2.78%. ICICI Pru Dynamic is the only scheme having significant debt holding of 16.70%. Cash component is also negligible and average cash holding stood at 1.15% and only one scheme has cash component in excess of 5%. Debt component gives cushion at adverse times. Cash may be profitably utilised during market downturns. Therefore, it can be said that the chosen schemes are heavily tilted towards equity.

1. Average Annualised Schemes Return (R_p) and Average Annualised Benchmark Return (R_b)

Table 2 depicts Average Annualised Schemes Return (R_p) and Average Annualised Benchmark Return (R_b).

Table 2: Average Annualized Scheme Return (R_p) and Average Annualized Benchmark Return (R_b)

SN	SCHEME	R_p				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	21.78	10.05	23.24	15.54	20.74
2	HDFC EQUITY	22.33	7.35	25.31	15.95	22.19
3	HDFC TOP 200	20.55	7.38	22.85	16.10	21.73
4	ICICI PRU DYNAMIC	27.17	10.39	23.00	14.43	23.36
5	RELIANCE GROWTH	15.73	5.14	20.86	13.49	22.88
6	RELIANCE VISION	24.88	5.42	18.98	11.78	19.06
7	UTI EQUITY	20.88	9.74	21.86	14.73	17.58
8	UTI MASTERSHARE	18.11	6.93	18.47	12.72	15.32
	MAXIMUM	27.17	10.39	25.31	16.10	23.36
	MINIMUM	15.73	5.14	18.47	11.78	15.32
	AVERAGE	21.43	7.80	21.82	14.34	20.36
	Rb	**18.21**	**6.01**	**19.18**	**11.15**	**17.15**

Source: Computed by the Researcher

Average of R_p generated by the schemes is more than the benchmark in all the periods. Throughout the period more schemes have outperformed the benchmark index. For example, 75% (6) schemes have managed to outperform the benchmark in 1-year, 3-year, and 5-year return, 100% (8) schemes in 7-year period, and 87.50% (7) schemes in 10-year period. It is also observed that 5 schemes have outperformed the benchmark throughout the entire study period.

2. Annualized Standard Deviation of the Funds (SD_p) and the Benchmark (SD_b)

Standard Deviation (SD), one of the widely used measures of risk, is used to measure the total risk. The lower amount of SD is always preferable as it signifies lower amount of risk. The gist is presented below in Table 3.

Table 3: Annualised Standard Deviation of Funds (SDp) and the Benchmark (SDb)

SN	SCHEME	SDp				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	15.32	16.45	21.72	25.55	24.13
2	HDFC EQUITY	19.71	20.39	24.55	27.78	26.24

3	HDFC TOP 200	19.03	19.64	23.16	26.08	24.92
4	ICICI PRU DYNAMIC	12.39	15.94	17.91	22.64	23.61
5	RELIANCE GROWTH	14.98	18.62	24.29	27.90	27.09
6	RELIANCE VISION	22.23	21.77	25.06	27.67	26.43
7	UTI EQUITY	14.48	15.12	18.93	22.41	22.50
8	UTI MASTERSHARE	14.99	15.06	18.81	23.75	23.06
	MAXIMUM	22.23	21.77	25.06	27.90	27.09
	MINIMUM	12.39	15.06	17.91	22.41	22.50
	AVERAGE	16.64	17.87	21.80	25.47	24.75
	SDb	**12.90**	**16.27**	**22.36**	**26.21**	**25.17**

Source: Computed by the Researcher

It is observed that average of annualised SD generated by the schemes is less than that of the benchmark in 3 out of 5 periods (5-year, 7-year, and 10-year). During 7-year and 10-year time periods more schemes (62.50%) have outperformed the benchmark index. However, ICICI Pru Dynamic is the only scheme which has undertaken less risk than the benchmark in all the periods.

3. Risk adjusted Return: Sharpe Ratio and Treynor Ratio

Sharpe Ratio (SR), also known as reward-to-variability ratio, indicates the fund's additional return over and above the risk-free return and the total risk of the fund, measured in terms of SD. It is expressed as: $\mathbf{SR_p = (R_p - R_f) / SD_p}$ where, SR_p = Sharpe Ratio of the scheme, R_p = Average annualised scheme return, R_f = Average annualised risk-free return, SD_p = Annualised Standard Deviation of the scheme.

Similarly, the Sharpe Ratio of a benchmark (SR_b) is expressed as: $\mathbf{SR_b = (R_b - R_f) / SD_b}$ where, SR_b = Sharpe Ratio of the benchmark, R_b = Average annualised benchmark return, R_f = Average annualised risk-free return, SD_b = Annualised Standard Deviation of the benchmark.

Treynor Ratio (TR) of a scheme is expressed as: $\mathbf{TR_p = (R_p - R_f) / Beta}$ where, TR_p = Treynor Ratio of the scheme, R_p = Average annualised scheme return, R_f = Average annualised risk-free return, Beta= Systematic risk of the scheme.

Similarly, Treynor Ratio of a benchmark (TR_b) is expressed as: $\mathbf{TR_b = (R_b - R_f) / Beta}$ where, TR_b = Treynor Ratio of the benchmark, R_b = Average annualised benchmark return, R_f = Average annualised risk-free return, Beta= Systematic risk of the benchmark (=1).

The results of Sharpe Ratio and Treynor Ratio of the chosen schemes are depicted in Table 4 and Table 5 respectively.

Table 4: Sharpe Ratio (SR_p) of the Schemes

SN	**SCHEME**	**SR_p**				
		1Y	**3Y**	**5Y**	**7Y**	**10Y**
1	BSL FRONTLINE EQUITY	**0.85**	**0.09**	**0.69**	**0.29**	**0.52**
2	HDFC EQUITY	**0.69**	-0.06	0.69	0.28	0.53
3	HDFC TOP 200	**0.62**	-0.06	0.63	0.30	0.54
4	ICICI PRU DYNAMIC	**1.49**	**0.11**	**0.82**	**0.27**	**0.64**
5	RELIANCE GROWTH	**0.47**	**-0.18**	0.52	0.19	0.54
6	RELIANCE VISION	**0.73**	-0.14	**0.42**	0.13	0.41

7	UTI EQUITY	**0.84**	**0.08**	**0.71**	**0.29**	**0.42**
8	UTI MASTERSHARE	**0.63**	-0.11	0.54	0.19	**0.31**
	MAXIMUM	1.49	0.11	0.82	0.30	0.64
	MINIMUM	0.47	-0.18	0.42	0.13	0.31
	AVERAGE	0.79	-0.03	0.63	0.24	0.49
	SR_b	**0.74**	**-0.16**	**0.48**	**0.11**	**0.36**

Source: Computed by the Researcher

Table 5: Treynor Ratio (TR_p) of the Schemes

SN	SCHEME	TR_p				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	**11.34**	**1.51**	**15.88**	**7.74**	**13.63**
2	HDFC EQUITY	**9.69**	**-1.04**	**16.38**	**7.61**	**14.15**
3	HDFC TOP 200	**8.54**	-1.03	14.55	8.10	14.13
4	ICICI PRU DYNAMIC	**23.57**	**2.02**	**19.49**	**7.55**	**17.53**
5	RELIANCE GROWTH	**7.16**	**-3.30**	12.31	5.20	14.99
6	RELIANCE VISION	10.85	**-2.62**	**10.14**	3.53	11.01
7	UTI EQUITY	**11.23**	**1.31**	**16.58**	**7.80**	**11.26**
8	UTI MASTERSHARE	**8.26**	-1.83	12.30	5.08	**8.20**
	MAXIMUM	23.57	2.02	19.49	8.10	17.53
	MINIMUM	7.16	-3.30	10.14	3.53	8.20
	AVERAGE	11.33	-0.62	14.70	6.58	13.11
	TR_b	**9.51**	**-2.55**	**10.84**	**2.90**	**8.98**

Source: Computed by the Researcher

87.50% (7) schemes have outperformed the benchmark in terms of SR and TR in 5-year and 10-year period and 100% (8) schemes in 7-year period. In 1-year period, 37.5% (3) schemes have outperformed the benchmark in terms of SR and TR; whereas 87.50% (7) and 75% (6) schemes have performed better than the benchmark in terms of SR and TR respectively in 3-year period. 3 schemes (BSL Frontline Equity, ICICI Pru Dynamic, and UTI Equity) have consistently outperformed the benchmark during the entire study period in terms of SR and TR.

4. Rank Correlation between Sharpe Ratio and Treynor Ratio

Spearman's Rank correlation between Sharpe Ratio and Treynor Ratio reveals the following results.

Table 6: Rank Correlation between Sharpe Ratio and Treynor Ratio

	Sharpe Ratio					Treynor Ratio				
	1Y	3Y	5Y	7Y	10Y	1Y	3Y	5Y	7Y	10Y
Sharpe Ratio	1	1	1	1	1	-	-	-	-	-
Treynor Ratio	0.976*	0.994*	0.970*	0.988*	0.958*	1	1	1	1	1

* Correlation is significant at the 0.01 level (2-tailed).

Source: Computed by the Researcher

Such a high positive rank correlation coefficient (statistically significant too) between Sharpe Ratio and Treynor Ratio signifies that the chosen schemes are adequately diversified.

5. Jensen Alpha, Beta, and R-squared

Jensen alpha is expressed as:

$$\textbf{Alpha} = R_p - [R_f + \text{Beta} * (R_b - R_f)]$$ where,

Alpha= Differential return earned by the scheme out of the ability of the fund manager in selecting correct stocks; R_p = Average Annualised Scheme Return, R_f = Average Annualised Risk-free Return, R_b = Average Annualised Benchmark Return, Beta= Systematic risk of the scheme.

A positive alpha value signifies positive stock selection ability of the fund manager; and a negative alpha value suggests poor stock picking skill by the fund manager. Beta measures the systematic risk associated with the scheme which exists because of the variability in the market return. The extent of diversification which is used to reduce the degree of unique/unsystematic risk is measured by RSQ. There exists inverse relationship between the degree of diversification and the degree of unique risk. The value of RSQ ranges between 0 and 1. RSQ value of 1 implies completely diversified portfolio having zero unique risk.

The results of Jensen Alpha, Beta, and RSQ of the schemes are presented in Table 7, Table 8, and Table 9 respectively.

Table 7: Jensen Alpha of the Schemes

SN	SCHEME	ALPHA				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	**2.12**	**4.00**	**4.73**	**4.56**	**4.29**
2	HDFC EQUITY	**0.26**	**1.76**	**5.74**	**4.76**	**5.12**
3	HDFC TOP 200	-1.34	1.75	3.70	5.04	4.95
4	ICICI PRU DYNAMIC	**11.02**	**4.13**	**6.51**	**3.81**	**7.41**
5	RELIANCE GROWTH	-2.30	-0.78	1.49	2.32	5.90
6	RELIANCE VISION	2.00	-0.08	-0.74	0.63	2.01
7	UTI EQUITY	**1.87**	**3.46**	**4.68**	**4.07**	**1.91**
8	UTI MASTERSHARE	-1.42	0.65	1.20	1.92	-0.68
	MAXIMUM	11.02	4.13	6.51	5.04	7.41
	MINIMUM	-2.30	-0.78	-0.74	0.63	-0.68
	AVERAGE	1.53	1.86	3.41	3.39	3.87

Source: Computed by the Researcher

Table 8: Beta of the Schemes

SN	SCHEME	BETAp				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	1.15	0.98	0.94	0.94	0.92
2	HDFC EQUITY	1.41	1.17	1.04	1.01	0.99
3	HDFC TOP 200	1.39	1.15	1.00	0.97	0.96
4	ICICI PRU DYNAMIC	0.78	0.90	0.75	0.82	0.87
5	RELIANCE GROWTH	0.98	1.04	1.02	1.01	0.98
6	RELIANCE VISION	1.49	1.20	1.05	1.00	0.99

7	UTI EQUITY	1.08	0.90	0.82	0.83	0.84
8	UTI MASTERSHARE	1.14	0.90	0.82	0.88	0.87
	MAXIMUM	1.49	1.20	1.05	1.01	0.99
	MINIMUM	0.78	0.90	0.75	0.82	0.84
	AVERAGE	1.18	1.03	0.93	0.93	0.93
	>1	6	4	3	3	0
	<1	2	4	5	5	8

Source: Computed by the Researcher

Table 9: RSQ of the Schemes

SN	**SCHEME**	**RSQ**				
		1Y	**3Y**	**5Y**	**7Y**	**10Y**
1	BSL FRONTLINE EQUITY	0.94	0.95	0.93	0.94	0.93
2	HDFC EQUITY	0.85	0.86	0.89	0.91	0.90
3	HDFC TOP 200	0.88	0.91	0.93	0.95	0.94
4	ICICI PRU DYNAMIC	0.67	0.85	0.88	0.90	0.85
5	RELIANCE GROWTH	0.71	0.82	0.88	0.90	0.83
6	RELIANCE VISION	0.75	0.81	0.88	0.90	0.89
7	UTI EQUITY	0.93	0.93	0.93	0.95	0.87
8	UTI MASTERSHARE	0.96	0.94	0.96	0.95	0.91
	MAXIMUM	0.96	0.95	0.96	0.95	0.94
	MINIMUM	0.67	0.81	0.88	0.90	0.83
	AVERAGE	0.84	0.88	0.91	0.92	0.89
	>0.75	5	8	8	8	8
	>0.80	5	8	8	8	8
	>0.90	3	4	4	7	4

Source: Computed by the Researcher

Average alpha of the schemes is positive throughout the period. 62.50% (5) schemes have generated positive alpha in 1-year period, 75% (6) schemes in 3-year period, 87.50% (7) schemes in 5-year and 10-year period, and 100% (8) schemes in 7-year period. Average beta of the schemes is less than 1 during 3 out of 5 periods, the exception being 1-year period and 3-year period. 25% (2) schemes have beta less than 1 in 1-year period, 50% (4) schemes in 3-year period, and 62.50% (5) schemes in 5-year and 7-year period. In 10-year period, 100% (8) schemes have beta value less than 1. ICICI Pru Dynamic is the only scheme which has beta value less than 1 during the entire study period. Average RSQ value is 0.84 or more during the entire period. 62.50% (5) schemes have RSQ value > 0.75 in 1-year period, but 100% (8) schemes in 3-year, 5-year, 7-year and 10-year period.

6. Sharpe Differential Measure (SDM)

SDM is measured as follows:

$$\textbf{Alpha} = R_p - [R_f + (SD_p/SD_b)*(R_b - R_f)]$$

Where, Alpha = SDM which indicates the stock selection ability of the fund managers, R_p = Average Annualised Scheme Return, R_f = Average Annualised Risk-free Return, R_b = Average Annualised Benchmark Return, SD_p = Annualised Scheme Standard Deviation, SD_b = Annualised Benchmark Standard Deviation.

A high alpha value (SDM) implies superior stock selection by fund managers and vice versa. Table 10 exhibits alpha values and SDM of the schemes.

Table 10: Sharpe Differential Measure (SDM)

SN	SCHEME	SDM				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	**1.80**	**4.07**	**4.37**	**4.47**	**3.97**
2	HDFC EQUITY	-0.90	1.98	5.06	4.63	4.66
3	HDFC TOP 200	-2.17	1.89	3.28	4.97	4.67
4	ICICI PRU DYNAMIC	9.34	4.33	5.98	3.68	6.77
5	RELIANCE GROWTH	-4.01	-0.50	0.74	2.16	5.05
6	RELIANCE VISION	-0.21	0.27	-1.51	0.48	1.46
7	UTI EQUITY	**1.51**	**3.55**	**4.34**	**4.01**	**1.39**
8	UTI MASTERSHARE	-1.64	0.72	1.01	1.85	-1.08
	MAXIMUM	9.34	4.33	5.98	4.97	6.77
	MINIMUM	-4.01	-0.50	-1.51	0.48	-1.08
	AVERAGE	0.46	2.04	2.91	3.28	3.36

Source: Computed by the Researcher

SDM values of most of the schemes are positive during most of the time periods barring 1-year period. In 7-year period, all the schemes have exhibited positive SDM values.

7. Rank Correlation between Jensen Alpha and SDM

The results of Spearman's Rank correlation between Jensen Alpha and SDM are incorporated in Table 11.

Table 11: Rank Correlation between Jensen Alpha and SDM

	JENSEN ALPHA					SDM				
	1Y	3Y	5Y	7Y	10Y	1Y	3Y	5Y	7Y	10Y
JENSEN ALPHA	1	1	1	1	1	-	-	-	-	-
SDM	0.952*	1*	0.976*	1*	0.976*	1	1	1	1	1

* Correlation is significant at the 0.01 level (2-tailed)

Source: Computed by the Researcher

Such a high positive rank correlation coefficient (1 or close to 1 and statistically significant too) between Jensen Alpha and SDM throughout the entire period of study implies that the fund managers have exhibited superior stock picking abilities.

8. Returns of the Funds from "Systematic Investment Plan" (SIP)

SIP returns of the schemes are depicted in Table 12.

Table 12: Returns of the Schemes from "Systematic Investment Plan" (SIPp)

SN	SCHEME	SIPp				
		1Y	3Y	5Y	7Y	10Y
1	BSL FRONTLINE EQUITY	32.37	17.74	13.03	13.36	16.38
2	HDFC EQUITY	43.00	15.18	11.64	13.27	16.36
3	HDFC TOP 200	36.59	14.30	10.83	12.41	16.07
4	ICICI PRU DYNAMIC	41.35	18.92	14.48	14.22	17.52
5	RELIANCE GROWTH	29.36	10.22	7.11	8.61	13.80

6	RELIANCE VISION	43.23	12.09	7.59	7.98	11.52
7	UTI EQUITY	29.66	15.59	12.78	13.14	13.99
8	UTI MASTERSHARE	28.09	13.01	9.96	9.99	11.74
	MAXIMUM	43.23	18.92	14.48	14.22	17.52
	MINIMUM	28.09	10.22	7.11	7.98	11.52
	AVERAGE	35.46	14.63	10.93	11.62	14.67

Source: Computed by the Researcher

It is observed that minimum as well as maximum SIP returns for all the periods are positive which implies that capital of the investors is very much protected under SIP. 100% (8) schemes have generated SIP return in excess of risk-free rate in 1-year, 3-year, and 10-year time periods. This also signifies that SIP is a strong medium-to-long term instrument for wealth creation. Further, average SIP returns are in double digits throughout the entire period.

7. Relationship between Fund Size and Cost

The chosen schemes are ranked according to their average fund size (measured in terms of Net Assets) and average cost (in terms of expense ratio) of five years (2009-2013). Table 13 shows the result.

Table 13: Average Fund Size and Average Cost of the Schemes

SN	SCHEME	Average Net Assets (Inr Crore)	Average Expense Ratio (%)
1	BSL FRONTLINE EQUITY	2730.208	2.032
2	HDFC EQUITY	8728.448	1.872
3	HDFC TOP 200	9720.916	1.884
4	ICICI PRU DYNAMIC	3220.84	1.866
5	RELIANCE GROWTH	6067.734	1.884
6	RELIANCE VISION	2790.28	1.946
7	UTI EQUITY	2122.83	1.946
8	UTI MASTERSHARE	2407.868	1.92

Source: Computed by the Researcher

Spearman's rank correlation reveals the following result.

Correlations

			NETASSETS	EXPENSERATIO
Spearman's rho	NETASSETS	Correlation Coefficient	1.000	-.663
		Sig. (2-tailed)	.	.073
		N	8	8
	EXPENSERATIO	Correlation Coefficient	-.663	1.000
		Sig. (2-tailed)	.073	.
		N	8	8

Source: Computed by the Researcher

It is observed that there exists negative correlation (-0.663) between net assets and expense ratio which implies that the funds having large corpus can lower the cost to a great extent.

VII. Conclusion

Based on research questions, the findings can be summarised as follows:

(1) Most of the schemes have generated superior risk-adjusted return in comparison to the benchmark (Table 4 and Table 5) in all the periods, the exception being 1-year period where 3 out of 8 schemes have delivered superior risk-adjusted performance against the benchmark in terms of total risk.

(2) It is evident from Jensen alpha values (Table 7) and SDM values (Table 10) that most fund managers have superior stock picking abilities. The fact has been substantiated by high positive Spearman's rank correlation between Jensen alpha and SDM (Table 11).

(3) From beta values (Table 8), it is evident that most of the schemes are defensive in nature in comparison to the benchmarks in 5-year, 7-year, and 10-year period. Only in 1-one year period, most of the schemes have exhibited aggressiveness by generating beta values greater than 1. In 3-year period, 50% schemes are defensive. ICICI Pru Dynamic is the only scheme which remained defensive during the entire study period. The results reveal that the schemes have become defensive with the increase in time period.

(4) From Table 9, it is observed that RSQ values of all the schemes are in between 0.67 and 0.96 during the study period. It implies that the schemes are adequately diversified. Spearman's rank correlation between Sharpe Ratio and Treynor Ratio (Table 6) has also affirmed the fact that the chosen schemes are adequately diversified.

(5) SIP return figures (Table 12) suggest that all the schemes have delivered SIP return in excess of the risk-free rate of return in 1-year, 3-year, and 10-year period. In 5-year and 7-year period also, most of the schemes have generated more SIP return than the risk-free rate of return. As such, it is evident that overall SIP returns of the schemes are very satisfactory.

(6) Fund size has inverse relationship with cost (Table 13). As such, schemes having large corpus are better placed than small sized schemes so far as expense ratio figures are concerned.

VIII. Limitations of the Study

Some of the limitations are mentioned below:

(1) Mergers and Acquisitions (M&A) between the schemes and the same between the fund houses are not considered.

(2) The effect of change in fund managers is not taken into consideration.

(3) The impact of brokerage and inflation has not been considered.

IX. Significance of the Study

The present study has its own relevance. The findings of the study should provide a platform for understanding the performance of the chosen open-ended diversified equity schemes of different AMCs.

X. Scope for Further Research

Further research in the following areas could be considered as an extension of the present study:

- A comprehensive study can be conducted to highlight the position of the Indian mutual fund industry with other developing countries.
- Investor's perception towards investing in diversified equity schemes can be an area of research.
- A detailed study can be undertaken on the impact of cost on scheme performance.
- A study on the market timing abilities of fund managers can be undertaken.

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