

# Short Term Performance Persistence Of Open Ended Equity Funds: Indian Evidence

\* Dr. Y. Rama Krishna

## INTRODUCTION

Mutual funds attempt to lure investors by exhibiting their past performance. To draw in additional funds, mutual funds provide wide publicity to their successful schemes. On the other hand, investors believe that the history can repeat and expect that their investment can yield similar returns in the future. To realize higher returns, mutual fund managers have to be compelled to have access to additional information than the market or ought to be ready to get it faster than others. Consistent with Efficient Market Hypotheses (EMH), information advances aren't attainable as, "*prices at any time absolutely replicate all accessible information*" (Fama, 1970, p. 383). It's usually claimed that active management isn't a sound strategy in efficient markets. However, Grossman and Stiglitz (1980) argue that the market for information cannot forever be in equilibrium, i.e. informationally efficient markets cannot forever exist, if information acquisition is expensive. Earlier studies (Fama & French, 1988; Kaul 1996; Cremers 2002) have focused on predicting asset returns based on historical return data of the same asset, basically relying on autocorrelation patterns. More recent works include information from other related companies or macro-economic variables into the forecasting methods. Fama & French (1988) argue that stock returns seem to be predictable based on the fundamental data: "*there is much evidence that stock returns are predictable*". Kaul (1996); Cochrane (1999) reports that long run returns can be forecasted more precisely than the short term returns. Various studies (Otten & Bams 2002; Blake & Timmermann 1988; Stotz 2007) evaluating performance with risk based models show that active mutual funds do not add value based on net returns. In contrast, few studies (Grinblatt and Titman, 1989; Wermers, 2000) using portfolio-information-based measures document a better performance by fund managers, compared to risk based models and compared to a passive benchmark. On average, the performance of active funds is negative net of costs. However, it is still possible that some fund managers are able to outperform their benchmark. If some managers are good at picking stocks, then it is reasonable to believe that such talents persist over time. Interestingly, over periods of one year or longer, no persistence in a fund can be documented.

## LITERATURE REVIEW

The early research finds that there is no uniformity in mutual fund performance and concludes that past superior performance of managed funds cannot be attributed to managers' superior selection abilities (Sharpe, 1966; Elton et al., 1990). After taking transaction costs into consideration, Carhart (1997) and Chen et al. (2000) also provide evidence for the lack of skilled or informed mutual fund managers. However, some empirical studies find evidence of persistence in mutual fund performance over one to three years, and ascribe this to the '*hot hands*' phenomenon (Grinblatt and Titman, 1992; Hendricks et al., 1993; Goetzmann and Ibbotson, 1994; Brown and Goetzmann, 1995). This evidence is identical with the notion that managers possess selection skill so that relative performance tends to persist from one period to the next.

Goetzmann and Ibbotson (1994) document that mutual fund performance does not seem to persist in a way that investors can benefit from an ex-ante identification of real investment skill by observing past performance. In another study, Malkiel (1995) reports that persistent outperformance can only be found for the pre 1980 periods. Studies of Hendricks, Patel, and Zeckhauser (1993); Elton, Gruber, and Blake (1996); Huij and Verbeek (2007), report persistent performance in the short run and appear to be stronger among young funds, small-cap growth funds and no-load funds. Brown and Goetzmann (1995) report that "*investors can use historical information to beat the pack*" (p. 697), but also find that investing based on persistence exposes investors to greater total risk than other strategies. Carhart (1997) concluded that almost all the predictability in mutual fund returns is explained by common factors in stock returns and systematic differences in mutual fund expenses and transaction costs. Consistent with the findings of Carhart (1997),

---

\* Principal, Malla Reddy Institute of Business Management, Maisammaguda, Dhulapally, Secunderabad - 500 014, Andhra Pradesh. E-mail : yramphd@yahoo.com

Daniel, Grinblatt, Titman, and Wermers (1997) find that actively-managed mutual funds beat mechanical trading rules based on persistence -- but only by an amount equal to the average management fee. Golec (1996) reports a relation between mutual fund performance, risk, and fees and fund manager characteristics such as age, level of education, and length of tenure with the fund. Porter and Trifts (1998) study the performance of fund managers who manage the same fund for at least ten years. They present evidence that inferior performance is more likely to persist than superior performance. Soumya Guha Deb, Ashok Banerjee, & B. B. Chakrabarti (2008) found some evidence of performance persistence for growth funds, but found virtually no evidence of persistence for Equity Linked Saving Schemes. Sanjay Sehgal & Manoj Jhanwar (2008) found no evidence that confirms persistence using monthly data. In this context, this study aims to empirically assess the short-term performance of mutual funds in India.

## OBJECTIVES OF THE STUDY

On the basis of above review of literature, the objectives of this study are as follows:

1. To analyze the performance of open ended equity funds using mean return and variance analysis;
2. Ranking these funds using risk adjusted measures of Sharpe's, and Treynor ratios;
3. Analyze the short-term performance persistence using Brown & Goetzmann (1995), and Malkiel's (1995) non parametric models.

The remaining part of this paper is organized as follows: the first section speaks about the data, the second includes detailed methodology, the third deals with results and analysis, and finally, the fourth section concludes the discussion.

## DATA

The data consists free from survivorship bias Net Asset Values (NAV) of ten mutual funds schemes from April 1, 2008 to March 31, 2011. All these schemes have reinvestment option, and hence, the researcher has used reinvestment based NAV. All the sample schemes are open ended in nature, and predominantly, equity based with growth as their objective. The daily NAVs were used to calculate average daily and annual returns. Data have been collected from the official website of Association of Mutual Funds of India (AMFI). National Stock Exchange (NSE) NIFTY was considered as the proxy for the market.

## METHODOLOGY

This paper attempts to empirically investigate the short-term performance persistence of select Indian equity mutual funds. First, the researcher calculated the annual returns, total risk, systematic risk, and correlation coefficient of all the sample funds. Second, he calculated the risk-adjusted performance of those funds using Sharpe and Treynor indexes. Finally, Brown & Goetzmann, and Malkiel's non - parametric measures were used to assess the short-term performance persistence of the sample funds.

The return of the mutual fund in period t ( $R_t$ ) is computed as follows:

$$R_t = \ln(\text{NAV}_t - \text{NAV}_{t-1})$$

Where:

$R_t$  = Return for the period t;

$\ln$  = Natural Logarithm;

$\text{NAV}_t$  = the Net Asset Value of a fund in period t; and

$\text{NAV}_{t-1}$  = the Net Asset Value of a fund in period t-1

The annualized returns of NAV are obtained by compounding the average daily returns for the period of one year.

Total risk of the mutual fund is calculated as below:

$$\sigma_p = \sqrt{\sum (r - \mu)^2 / n - 1} \text{ Annual standard deviation} = \text{daily } \sigma * \sqrt{T}$$

where:

$\sigma$  = total risk of portfolio

$r$  = daily return

$\mu$  = average daily return

$n$  = number of observations

$T$  = number of trading days in the year

For computing systematic risk ( $\beta$ ), NSE NIFTY was considered as proxy for the market.

$$\beta = \text{cov}_{xy} / \sigma_x^2$$

$\beta$  = Systematic Risk

$\text{cov}_{xy}$  = Covariance of xy

$\sigma_x^2$  = variance of Market proxy

Risk adjusted performance of mutual funds were measured using Sharpe & Treynor indexes.

$$S_i = (r_p - r_f) / \sigma_p \text{ and } T_i = (r_p - r_f) / \beta$$

Where:

$S_i$  = Sharpe Index

$T_i$  = Treynor Index

$r_p$  = return on portfolio

$r_f$  = risk free rate

Short term performance persistence tests were conducted using Brown & Goetzmann (1995) and Malkiel's (1995).

Brown & Goetzmann (1995) Odds Ratio (OR):

$$OR = WW * LL / WL * LW$$

$$\sigma \text{ of OR} = \sqrt{1/WW + 1/LL + 1/WL + 1/LW}$$

$$z = \ln(OR) / \sigma \ln(OR)$$

where:

WW = number of funds which are winners in both the first and second period;

LL = number of funds which are losers in both the first and second period;

WL = number of funds which are winners in the first period and losers in the second period; and

LW = number of funds which are losers in the first period and winners in the second period.

OR = odds ratio

ln = natural logarithm

Malkiel's Z test, the expression of which is as follows

$$Z = (Y - np) / \sqrt{np(1-p)}$$

Where:

Z is the statistical variable, which has a normal distribution (0, 1);

Y is the number of winner portfolios in two consecutive periods;

n is the total number of times winning (losing);

p is the probability repeat winning (losing).

## DATA ANALYSIS

Table 1 - 3 presents the annualized returns, total risk, systematic risk, and correlation coefficient for the sample of funds in this study. The average annualized fund return for the period 2008-09 was -30.83 %, with the average annualized risk of 26.12. The average correlation coefficient with the proxy for market (NIFTY) was 0.90. But, two funds (KOTAK & ICICI) that have negative correlation with NIFTY reported positive annualized returns (7.14% and 6.75% respectively). These two funds also have a negative beta. This may be attributed to the unique portfolio holding of these funds. Except these two funds, all other funds reported returns similar to NIFTY. The average annualized fund return for the period 2009-10 was 48.73%, with the average annualized risk of 19.77. The average correlation coefficient was 0.63. However, for the same period, NIFTY reported an annualized return of 53.95%, which is greater than the average fund return. Fifty percent of the funds reported annualized returns higher than proxy for the market. Kotak & ICICI reported lowest returns during this period. Finally, the average annualized fund return for the period 2010-11 was 8.28%, with a total risk of 12.52. For the same period, NIFTY reported 9.77% annualized return. In this period, only thirty percent of funds reported returns greater than NIFTY. The funds return moved in tandem with the market. From the above analysis, it is evident that the market timing ability of the fund managers was limited.

## MUTUAL FUNDS RANKING

Tables 3, 5, and 6 contain the risk adjusted measures for sample stocks for the three time periods. From the Table 4, for the period 2008 - 09, except Kotak & ICICI, for all the funds, Sharpe's measure was negative. For the same period, for

Table 1: Realized Annual Return, Total Risk, Systematic Risk, And Correlation Coefficients For The Period 2008 - 2009					
	2008 - 09				
	Mutual Fund	Annual Return	Risk	Beta	Correl
1	KOTAK	7.14	1.92	-0.02	-0.46
2	ICICI	6.75	2.62	-0.02	-0.24
3	UTI	-36.00	26.58	0.62	0.96
4	RELIANCE	-36.35	29.08	0.67	0.97
5	TATA	-37.15	27.46	0.63	0.96
6	HSBC	-37.98	30.83	0.72	0.98
7	HDFC	-41.50	34.44	0.78	0.94
8	CANARA	-43.29	35.61	0.84	0.98
9	LIC	-43.39	39.15	0.90	0.94
10	FT	-46.57	33.49	0.72	0.90
	Average	-30.83	26.12	0.72	0.90
	<b>NIFTY (MARKET PROXY)</b>	<b>-45.04</b>	<b>41.53</b>		

Table 2: Realized Annual Return, Total Risk, Systematic Risk, And Correlation Coefficients For The Period 2009 - 2010					
	2009 - 10				
	Mutual Fund	Annual Return	Risk	Beta	Correl
1	HDFC	76.32	26.32	0.84	0.94
2	CANARA	72.73	25.27	0.82	0.95
3	FT	69.73	22.60	0.67	0.87
4	UTI	59.68	21.69	0.71	0.96
5	TATA	56.71	23.50	0.77	0.97
6	LIC	53.52	28.33	0.63	0.65
7	RELIANCE	45.79	23.91	0.79	0.97
8	HSBC	45.19	22.23	0.75	0.98
9	KOTAK	4.36	1.45	-0.02	-0.48
10	ICICI	3.25	2.38	-0.04	-0.46
	Average	48.73	19.77	0.59	0.63
	<b>NIFTY (MARKET PROXY)</b>	<b>53.95</b>	<b>29.38</b>		

Table 3: Realized Annual Return, Total Risk, Systematic Risk, And Correlation Coefficients For The Period 2010 - 2011					
	2010 - 11				
	Mutual Fund	Annual Return	Risk	Beta	Correl
1	HDFC	17.28	15.14	0.79	0.93
2	UTI	13.37	15.13	0.82	0.97
3	FT	11.37	13.93	0.67	0.85
4	CANARA	9.61	12.14	0.64	0.94
5	HSBC	9.23	16.07	0.89	0.98
6	ICICI	8.39	2.02	-0.04	-0.36
7	LIC	8.04	19.67	0.89	0.81
8	KOTAK	7.09	1.34	-0.03	-0.38
9	TATA	3.90	14.30	0.74	0.92
10	RELIANCE	-5.47	15.43	0.80	0.93
	Average	8.28	12.52	0.62	0.66
	<b>NIFTY (MARKET PROXY)</b>	<b>9.77</b>	<b>17.81</b>		

all the funds, Treynor's measure was also negative. Ranking had been done using Sharpe's index. Kotak (0.59) was the top performer followed by ICICI (0.28). Table 5 shows the risk adjusted returns using the Sharpe's Index, and Treynor's Index for the period 2009-10. Column 1 reports the performance rankings using Sharpe's index and Treynor's Index. Franklin Templeton outperformed all the funds. However, for the same period, Kotak & ICICI reported negative returns. In the previous year, only these two funds (Kotak and ICICI) reported positive returns. This may be because of their inverse correlation with proxy for the market. Finally, the Sharpe's and Treynor's index for the period 2010-11 is presented in Table 6. For this period, except TATA & Reliance, all the funds reported positive returns, with ICICI at the top. From the results, it is evident that when the market was down, funds with negative correlation performed well. On the other hand, majority of the funds moved in tandem with the market. When the market reported positive returns, the funds also reported positive returns and vice versa.

Table 4: Mutual Fund Ranking (Sharpe Index) For The Period 2008 - 2009			
Year		2008 - 2009	
S.No	Mutual Fund	Sharpe	Treynor
1	KOTAK	0.59	-54.03
2	ICICI	0.28	-48.93
3	LIC	-1.26	-54.86
4	HDFC	-1.38	-60.72
5	CANARA	-1.38	-59.02
6	HSBC	-1.43	-60.83
7	RELIANCE	-1.46	-62.78
8	FT	-1.57	-72.69
9	TATA	-1.57	-68.08
10	UTI	-1.58	-68.22

Table 5: Mutual Fund Ranking (Sharpe Index) For The Period 2009 - 2010			
Year		2009- 2010	
S.No	Mutual Fund	Sharpe	Treynor
1	FT	2.82	95.04
2	HDFC	2.67	83.31
3	CANARA	2.64	81.26
4	UTI	2.48	75.25
5	TATA	2.16	65.47
6	HSBC	1.76	52.52
7	LIC	1.68	75.71
8	RELIANCE	1.66	50.44
9	KOTAK	-1.13	69.38
10	ICICI	-1.15	73.52

Table 6: Mutual Fund Ranking (Sharpe Index) For The Period 2010 - 2011			
Year		2010- 2011	
S.No	Mutual Fund	Sharpe	Treynor
1	ICICI	1.18	-58.37
2	KOTAK	0.81	-37.98
3	HDFC	0.74	14.23
4	UTI	0.49	8.94
5	FT	0.39	8.04
6	CANARA	0.30	5.65
7	HSBC	0.20	3.64
8	LIC	0.10	2.29
9	TATA	-0.15	-2.83
10	RELIANCE	-0.74	-14.27

## SHORT TERM PERFORMANCE PERSISTENCE

The obtainable literature provides mixed support on the issue of whether there is persistence in the mutual fund performance. This section empirically evaluates the short-term performance persistence of select Indian mutual funds for the period April 2008 to March 2011. The analysis of performance persistence is based on computations over three annual periods. The researcher calculated the short-term performance persistence using non parametric methods suggested by Brown & Goetzmann (1995) and Malkiel's (1995). Tables 7 and 8 show the three annual contingency tables. Z scores of Brown & Goetzmann (1995) and Malkiel's (1995) are presented in Table 9. On the basis of results shown in the Tables 7, 8 and 9, the researcher may confirm that there is no certain trend towards performance persistence, because the majority of funds changed their status during the study period. To verify this intuitive finding, the performance persistence measures mentioned above were applied. It confirms the non-existence of the short-term performance persistence phenomenon.

## CONCLUSION

In this paper, the researcher explored the short term performance persistence of select Indian equity mutual funds during the period April, 2008 to March 2011. The researcher applied non - parametric measures recommended by

Table 7: Short Term Performance Persistence For The Period 2008-09 - 2009-10								
Year		2008 - 2009		M = -1.41	2009 - 2010		M = 1.96	
S.No	Mutual Fund	Sharpe	Treynor	W / L	Sharpe	Treynor	W / L	OR
1	CANARA	-1.38	-59.02	W	2.64	81.26	W	WW
2	FT	-1.57	-72.69	L	2.82	95.04	W	LW
3	HDFC	-1.38	-60.72	W	2.67	83.31	W	WW
4	HSBC	-1.43	-60.83	L	1.76	52.52	L	LL
5	ICICI	0.28	-48.93	W	-1.15	73.52	L	WL
6	KOTAK	0.59	-54.03	W	-1.13	69.38	L	WL
7	LIC	-1.26	-54.86	W	1.68	75.71	L	WL
8	RELIANCE	-1.46	-62.78	L	1.66	50.44	L	LL
9	TATA	-1.57	-68.08	L	2.16	65.47	W	LW
10	UTI	-1.58	-68.22	L	2.48	75.25	W	LW

Table 8: Short Term Performance Persistence For The Period 2009-10 - 2010-11								
Year		2009 - 2010		M = 1.96	2010 - 2011		M = 5.42	
S.No	Mutual Fund	Sharpe	Treynor	W / L	Sharpe	Treynor	W / L	OR
1	CANARA	2.64	81.26	W	0.30	5.65	L	WL
2	FT	2.82	95.04	W	0.39	8.04	W	WW
3	HDFC	2.67	83.31	W	0.74	14.23	W	WW
4	HSBC	1.76	52.52	L	0.20	3.64	W	LW
5	ICICI	-1.15	73.52	L	1.18	-58.37	W	LW
6	KOTAK	-1.13	69.38	L	0.81	-37.98	W	LW
7	LIC	1.68	75.71	L	0.10	2.29	W	LW
8	RELIANCE	1.66	50.44	L	-0.74	-14.27	L	LL
9	TATA	2.16	65.47	W	-0.15	-2.83	L	WL
10	UTI	2.48	75.25	W	0.49	8.94	W	WW

Table 9: Brown & Goetzmann And Malkiel's Z- Statistics								
	WW	LL	WL	LW	Odd Ratio	S D	Brown's Z - statistic	Malkiel's Z - Statistic
2008 - 10	2	2	3	3	0.44	1.29	-3.17 (p = 0.0008)	-1.9 (p = 0.0287)
2009 - 11	3	1	2	4	0.38	1.44	-2.67 (p = 0.0038)	-1.3 (p = 0.0968)

Brown & Goetzmann (1995) and Malkiel's (1995). Initially, the researcher measured the return variance analysis to assess the performance sample funds, followed by risk adjusted performance measures. Next, he ranked the mutual funds using Sharpe's ratio. Finally, the short term performance was measured by using non - parametric measures. Results of the study show that there is no consistence in the performance of mutual funds.

The findings of the study suggest that investors should be alert about the fact that past performance does not guarantee future returns. The results of the study have been following practical implications. First, it helps mutual fund managers to make changes in their management style. Second, it helps them to compare their performance with other funds, and also with a benchmark. Finally, the results help investors to make wise investment decisions.



## REFERENCES

- 1) Blake, David, & Allan Timmermann (1998). "Mutual fund performance: Evidence from the UK", *European Finance Review*, Volume 2, Issue 1, pp. 57 - 77.
- 2) Brown, Stephen J., & William N. Goetzmann (1995). "Performance persistence", *Journal of Finance*, Volume 50, Issue 2, pp. 679- 698.
- 3) Carhart, Mark M., (1997). "On persistence in mutual fund performance", *Journal of Finance*, Volume 52, Issue 1, pp. 57- 82.
- 4) Chen, Hsiu-Lang, Narasimhan Jegadeesh, & Russ Wermers (2000). "The value of active mutual fund management: An examination of the stockholdings and trades of fund managers", *Journal of Financial and Quantitative Analysis*, Volume 35, Issue 3, pp. 343- 368.
- 5) Cochrane, John H., (1999). "New facts in finance", *Economic Perspectives*, pp. 36- 58.
- 6) Cremers, K. J. Martijn (2002). "Stock return predictability: A Bayesian model selection perspective", *Review of Financial Studies*, Volume 15, Issue 4, pp. 1223- 1249.
- 7) Daniel, Kent, Mark Grinblatt, Sheridan Titman, & Russ Wermers (1997). "Measuring mutual fund performance with characteristic-based benchmarks," *Journal of Finance*, Volume 52, Issue 3, pp. 1035- 1058.
- 8) Elton, E.J., Gruber, M.J. and Rentzler, J.C. (1990). "The performance of publicly offered commodity funds", *Financial Analysts Journal*, Volume 46, Issue 4, pp. 23- 30.
- 9) Elton, Edwin J., Martin J. Gruber, & Christopher R. Blake (1996). "The persistence of risk-adjusted mutual fund performance", *Journal of Business* Volume 69, Issue 2, pp. 133- 157.
- 10) Fama, Eugene F. (1970). "Efficient capital markets: A review of theory and empirical work", *Journal of Finance*, Volume 25, Issue 2, pp. 383- 417.
- 11) Fama, Eugene F. and Kenneth R. French (1988). "Dividend yields and expected stock returns", *Journal of Financial Economics*, Volume 22, Issue 1, pp. 3 - 25.
- 12) Goetzmann, William N., & Roger G. Ibbotson (1994). "Do winners repeat?" *Journal of Portfolio Management* Volume 20, Issue 1, pp. 9- 18.
- 13) Golec, J. H. (1996). "The effects of mutual fund manager's characteristics on their portfolio performance, risk and fees", *Financial Services Review*, Volume 5, Issue 2, pp. 133- 148.
- 14) Grinblatt, M. and S. Titman (1989). "Mutual fund performance: an analysis of quarterly portfolio holding", *Journal of Business*, Volume 62, Issue 3, pp. 393-416.
- 15) Grinblatt, M. and Titman, S. (1992). "The persistence of mutual fund performance", *Journal of Finance*, Volume 47, Issue 5, pp. 197- 784.
- 16) Grossman, Sanford J., & Jodeph E. Stiglitz (1980). "On the impossibility of informationally efficient markets", *American Economic Review* Volume 70, pp. 393- 408.
- 17) Hendricks, Darryll, Jayendu Patel, & Richard Zeckhauser (1993). "Hot hands in mutual funds: Short-run persistence of relative performance", 19741988, *Journal of Finance*, Volume 48, Issue 1, pp. 93- 130.
- 18) Huij, Joop, & Marno Verbeek (2007). "Cross-sectional learning and short-run persistence in mutual fund performance", *Journal of Banking and Finance*, Volume 31, Issue 3, pp. 973 - 997.
- 19) Kaul, Gautam, (1996). "Predictable components in stock returns", in Gangadharrao S. Maddala, and C. R. Rao, ed.: *Statistical Methods in Finance*, pp. 269- 296. Elsevier: Amsterdam.
- 20) Malkiel, B. (1995). "Returns from investing in equity mutual funds 1971 to 1991", *Journal of Finance*, Volume 50, Issue 2, pp. 549-572.
- 21) Otten, R. and D. Bams (2002). "European mutual fund performance", *European Financial Management*, Volume 8, Issue 1, pp. 75-101.
- 22) Porter, G. E., and Trifts, J. W. (1998). "The Performance Persistence of Experienced Mutual Fund Managers", *Financial Services Review*, Volume 7, Issue 1, 1998, pp. 57-68.
- 23) Sanjay Sehgal & Manoj Jhanwar (2008). "On Stock Selection Skills and Market Timing Abilities of Mutual Fund Managers in India", *International Research Journal of Finance and Economics*, 15, pp. 307 - 317.
- 24) Sharpe, W.F. (1966). "Mutual fund performance", *Journal of Business*, Volume 34, pp. 119 - 138.
- 25) Soumya Guha Deb, Ashok Banerjee, & B B Chakrabarti (2008). "Persistence in Performance of Indian Equity Mutual Funds: An Empirical Investigation", *IIMB Management Review*, June 2008, pp. 172 - 187.
- 26) Stotz, Olaf, (2007). "Selection, market timing and style timing of equity mutual funds: Evidence from Germany", *Zeitschrift für betriebswirtschaftliche Forschung*, Volume 77, pp. 51 - 74.
- 27) Wermers, Russ (2000). "Mutual fund performance: An empirical decomposition into stock-picking talent, style, transactions costs, and expenses", *Journal of Finance*, Volume 55, Issue 4, pp. 1655 - 1695.