PERFORMANCE, TIMING AND SELECTIVITY SKILLS OF INDIAN EQUITY MUTUAL FUNDS: AN EMPIRICAL APPROACH

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ABSTRACT

The study aims at evaluating the performance of Indian equity mutual funds and further to do attribution analysis of managerial performance on the parameters of diversification, timing and selectivity for the period 2008-10. Based on the performance for 2008-10, top ten open ended growth funds have been selected for the study. We have evaluated the performance of funds using Sharpe index, Treynor index and Jensen alpha. The Treynor-Mazuy model is used to test the timing and Fama measure is used to test the selectivity skills of mutual fund managers. The research findings show that on an average mutual funds track their benchmark and an investor is benefitted by the less risky investment. The results have implications for investors as mutual funds outperform the market and attribution analysis shows that 'managerial acumen' is present. The results are in contradiction with previous research in developed markets.

Keywords: Performance of mutual funds, selectivity, timing, diversification
JEL Classification: G11, G24

INTRODUCTION:

The financial sector development of a country is associated with its economic growth[1]. The main role of the financial sector is to mobilize the savings and allocate them in best investment opportunities and thereby remove market frictions. In India, banks have been the principal savings mobilizing agents (RBI report on Flow of Funds account of India, 2007-08). Stock markets have traditionally been considered for large and market savvy investors. In India, 1.3% of total population of India in 2009 participated in the stock market (Moneylife, 2009). Stock market returns are considered more volatile than fixed income bank investments. With this, mutual fund is one of the preferred channel for the small and retail investor to invest in capital market. It can be seen from the phenomenal growth of mutual funds as fund mobilizer as for the year 2010 where mutual funds mobilized USD 24.7 trillion world-wide (Investment Company Institute, 2011). The similar preference of investor is evident in India also as the RBI report on Flow of Funds account of India, 2007-08 reported that share of mutual fund in household financial savings increased to 7.3% in 2007-08 from 1.0% in 2001-02. There has been 44 asset management companied (AMC) with 1226 schemes and asset size INR 6114.02 Bn. Mutual funds provide an opportunity to retail investor to invest in small and regular amounts and get better and less risky returns. Further the professional management by mutual funds assures the investor of better stock selection and market timing skills which common retail investor cannot afford. But with this plethora of schemes and huge interest of investors in mutual funds, it is important to evaluate the performance of mutual funds so as to know whether claims of mutual funds to generate better returns, managerial acumen are present or not. The objective of this study is to evaluate the performance of mutual funds and to examine whether the fund managers have stock selection and timing skills particularly in the recessionary phase of the economy. The study evaluates the performance of mutual funds with both absolute and relative measures of performance evaluation.

LITERATURE REVIEW:

The modern theory of portfolio by Markowitz (1952) and its further explanation by Sharpe (1964) revolutionized the way return of the portfolio is linked with market portfolio by formulating Capital Asset Pricing Theory (CAPM) where the only risk is systematic risk which cannot be eliminated. Treynor (1965) and Sharpe (1966) proposed their index to evaluate the performance of portfolio based on Markowitz framework. Jensen (1968) proposed an absolute measure called 'α' (alpha) based on the CAPM and found that US mutual fund managers don't possess superior skills. Fama and French (1997) proposed three factor model as an improvement over Jensen model wherein size and value risk factors along with market factor explains asset prices and explained all stock market anomalies except momentum. Four factor model developed by Carhart (1997) with momentum factor explained most of the market anomalies. Sharpe (1966), Jensen (1967), Grinblatt and Titman (1989), Malkiel (1995), Carhart (1997), Bessller et al (2009), Fama and French (2010), and Badrinath and Gubellini (2012) found underperformance of mutual funds. Ippolito (1989), Daniel et al (1997) found positive performance by mutual fund managers. In India, using Trynor ratio, Sharpe ratio, Jensen measure and Fama and French measure Jaydev (1996), Yadav and Mishra (1996), Gupta and Sehgal (1998), Chander (2002), Deb (2008), Santhi and Gurunathan (2012) evaluated the performance of mutual funds.

Treynor and Mazuy (1966) proposed model to test market timing skill for mutual funds and found that only one out of 57 funds in sample did not possess market timing skill. Grant (1977), Kon (1983), Henrikson (1984), Chang and Lewellen (1984) raised the issue of market timing and cost of market timing decision. These found that some individual funds display significant market timing and stock selection skills and largely fund managers do not possess market timing skill. Gupta (2000), Tripathy (2006) could not find market timing skill among Indian mutual fund managers whereas Sehgal and Jhanwar (2008) found positive market timing skill. They argued that timing and stock selection skills are evident when high frequency data is used. Miglani (2011) analysed the market timing skills using Treynor-Mazuy and Henrikson method for the period 1999-2004 and could not found timing skills among Indian fund managers.

The above discussion on existing literature shows that findings on performance, timing and stock selection skills for fund managers are inconclusive. There is gap in existing literature on performance evaluation using Carhart factor and during the recessionary phase of economy. This paper attempts in contributes in the existing literature by evaluating mutual funds in the recessionary phase of Indian economy, that is, from 2008 to 2010

using Sharpe index, Treynor index, and Jensen alpha and it further tests the timing and stock selection skills of Indian mutual fund managers.

HYPOTHESIS:

The study proposes to test following hypothesis:
- H_1: There is no difference in market returns and risk-adjusted fund returns.
- H_2: There is no difference in fund rankings with different performance evaluation methods.
- H_3: There is no market timing skill with fund managers.
- H_4: There is no stock selection skill with fund managers.

METHODOLOGY DATA:

The sample of ten open ended equity mutual funds have selected on the basis on past there year performance. For this purpose, we utilized the rankings given by ICRA on their website. The data related to net asset value (NAV) of the fund has been obtained form Association of Mutual Funds of India (AMFI) for the three years 2008-10. The market return is the return from BSE Sensex index. Return from risk-free asset is calculated from the daily 1-3 years T-bill return taken from website of National Stock Exchange (NSE). The data related to index has been obtained from CMIE-Prowess database. The frequency of all data is daily.

EMPIRICAL MODELS PERFORMANCE MEASUREMENT:

The performance of growth equity mutual funds has been measured with the Sharpe ratio, Treynor ratio, and Jensen alpha. The Sharpe ratio is proposed by Sharpe (1966). It is reward to variability ratio. It measures the units of reward received per unit of risk. Higher Sharpe is preferred over the lower one.

$$S = \frac{R_i - R_f}{\sigma_i}$$

In comparison to Sharpe ratio, Treynor ratio is reward to volatility ratio. Instead to taking total risk, it only considers systematic risk into account.

$$T = \frac{R_i - R_f}{\beta_i}$$

Both Sharpe and Treynor ratio are relative ratio. They will be compared with Sharpe and Treynor ratio for market portfolio by calculating the ratio for index returns. In comparison to Sharpe and Treynor ratio, Jensen alpha is an absolute measure. Jensen (1968) proposed Jensen alpha by forcing capital market line to pass through origin. Jensen argued that any intercept for this line will be managerial performance. A positive alpha indicates that fund manager has better stock picking ability. The Jensen alpha will be calculated as,

$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + \varepsilon_{it}$

Here R_{it} is the daily return of the fund and it will be obtained from daily NAV using the following formula,

$$R_{it} = \ln\left(\frac{NAV_t}{NAV_{t-1}}\right)$$

For Sharpe and Treynor ratio, average return for the sample period will be taken. The σ_i is the risk of the fund proxy with standard deviation and β_i is the systematic risk for the fund.

The pairwise rank correlation coefficient will be calculated for ranks obtained from different evaluation criteria.

FAMA NET SELECTIVITY:

Fama (1972) proposed net selectivity measure by taking an extension to Jensen model. Fama selectivity compares the performance of a fund with required return vis-à-vis total risk. The difference between is the 'net selectivity'. It represents the stock selection skill of fund manager. Higher values are preferred over the lower values. Net selectivity as proposed by Fama is calculated as

$$NS = (R_i - R_f) - \frac{\sigma_i}{\sigma_m}(R_m - R_f)$$

TREYNOR-MAZUY MODEL OF MARKET TIMING:

Market timing is ability of fund manager to forecast the market and hence change the beta of portfolio accordingly. Treynor and Mazuy (1966) proposed the following model to estimate the market timing skill of fund manager,

$$R_i - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)^2 + \varepsilon_i$$

A high value of γ is an indicator of positive market timing skills of fund manager.

EMPIRICAL FINDINGS AND DISCUSSION PERFORMANCE EVALUATION:

The compounded annual growth rate (CAGR) and risk for the sample period for the selected mutual funds is shown in Table 1. From Table 1, it can be seen that HDFC Equity fund has given highest cumulative growth in the three year period.

Table 1: Risk and Return Characteristics of Funds

S.No.	Fund	Risk	Beta or systematic risk	Unsystematic risk	CAGR
1	Brila sun life pure value fund-growth	1.3539	0.5516	0.6812	1.8358
2	Birla sun life dividend yield plus plan B-Growth	1.2782	0.5024	0.6964	5.5917
3	HDFC Equity Fund - Growth Option	1.7512	0.7148	0.9915	10.5614
4	ICICI Prudential discovery Fund-Institutional option-I Growth	1.5494	0.6238	0.8339	2.4176
5	ING Dividend yield fund-Growth option	1.5632	0.6550	0.7326	2.3586
6	Mirea Asset India Opportunities Fund-Growth Option	1.8917	0.8529	0.5422	1.7399
7	Reliance Equity Opportunities Fund - Growth Plan Growth Option	1.6633	0.7346	0.6171	3.0853
8	Sundram Financial Services Opportunities fund-Inst Growth	1.7692	0.5021	1.2328	2.3612
9	Sundram Financial services opportunities fund-Reg Growth	1.6736	0.5667	1.2026	2.3487
10	ICICI Prudential discovery fund-Growth option	1.5395	0.6238	0.8278	4.0359
	Market	2.1135			

Birla Sun life dividend fund and ICICI prudential have given approximately 6% and 4% cumulative return. Other funds on an average have given 2-3% cumulative growth. The risk profile of funds vis-à-vis market shows that funds have lesser risk as compared to market. Further, unsystematic risk constitutes the larger proportion of the total risk of the funds. For Sundram Financial Services, both the funds have very high unsystematic risk. It can be that though the funds are better in risk management but these are not well diversified.

The primarily analysis shows that the mutual funds provide better returns than market return and also manage their risk well. Though the risk of the mutual funds is lower than the market risk in the analysis period, but mutual funds have high component of unsystematic risk. This shows that mutual funds are not well diversified. Further analysis of the mutual funds has been done with Sharpe ratio, Treynor ration, Jenson ratio and the Fama decomposition index.

Table 2: Performance Indicators of Funds

S.No.	Fund	Average Excess fund return	Jenson alpha	Treynor ratio	Sharpe ratio
	Market (benchmark)			-0.0009	-0.0004
1	Brila sun life pure value fund-growth	0.0336	0.0278	0.0610	0.0248
2	Birla sun life dividend yield plus plan B-Growth	0.0451	0.0393	0.0899	0.0353
3	HDFC Equity Fund - Growth Option	0.0404	0.1036*	0.0565	0.0231
4	ICICI Prudential discovery Fund-Institutional option-I Growth	0.0565	0.0921*	0.0906	0.0365

5	ING Dividend yield fund-Growth option	0.0423	0.0792*	0.0645	0.0270
6	Mirea Asset India Opportunities Fund-Growth Option	0.0392	0.0508*	0.0460	0.0207
7	Reliance Equity Opportunities Fund - Growth Plan Growth Option	0.0352	0.0497*	0.0479	0.0211
8	Sundram Financial Services Opportunities fund-Inst Growth	-0.0145	0.0437	-0.0289	-0.0082
9	Sundram Financial services opportunities fund-Reg Growth	0.0293	0.0763	0.0517	0.0175
10	ICICI Prudential discovery fund-Growth option	0.0498	0.0885*	0.0798	0.0323

*p-value significant at 5% significance level

Treynor ratio measures the excess return of the portfolio with respect to systematic risk and Sharpe ratio measure the performance of portfolio with excess return to total risk. The market portfolio Treynor and Sharpe ratio are taken as the benchmark for evaluating the performance of mutual funds. Jenson ratio (α) measures the fund manager's professional ability to perform better than the market. Table 2, shows the performance indices of all the mutual funds for the period 2008-2010. Regarding the performance based on the Treynor index, all mutual funds have better performance than the benchmark. Though for Sundram Financial Services Opportunities fund-Inst Growth fund, the index value is negative, which means that it has given returns lower than the risk free return. For Sharpe ratio also, other than Sundram Financial Services Opportunities fund-Inst Growth fund, all funds have performed better than the benchmark.

Both Sharpe and Treynor ratio don't provide any insight into the fund manager's prediction ability. Jenson ratio is an improvement over both the ratio. The comparison of Jenson ratio with benchmark shows that HDFC Equity fund –Growth option, ICICI Prudential Discovery fund IP-I Growth, ING Dividend yield fund growth option, Sundram Financial Services Opportunities Fund-Reg Growth, ICICI Prudential Discovery Fund-Growth option have performed better than the market. The Jenson alpha shows whether the fund has performed better than the market. So, the Jenson alpha has been tested at the 5% significance level from regression results. This shows that alpha value is significant for six out of ten mutual funds.

The pairwise Spearman and Kendall's rank-correlation are calculated for ranks obtained from various criteria like Jensen alpha, Treynor ratio, Sharpe ratio and CAGR. Table 3 shows that ranks obtained from Treynor ratio and Sharpe ratio are highly correlated and statistically significant.

Table 3: Pairwise Rank-Correlation Based on Different Evaluation Criteria

	R(Jenson alpha)	R(Treynor ratio)	R(Sharpe ratio)	R(CAGR)
R(Jenson alpha)	1			
R(Treynor ratio)	0.2848	1		
	0.2889			
R(Sharpe ratio)	0.2485	0.9636*	1	
	0.2	0.9111*		
R(CAGR)	0.3576	0.3939	0.4182	1
	0.2889	0.2889	0.2889	

*significant at 5% significance level, row one indicates Spearsman rank-correlation coefficient and row two indicates Kendall's tau rank-correlation coefficient

Pairwise rank correlation coefficient between Jensen alpha, Treynor ratio, Sharpe ratio and CAGR are very low and statistically not significant. With this we reject H$_1$ and H$_2$, which is, there is no difference between market return and risk adjusted return of funds and ranks obtained from different evaluation criteria are different.

DIVERSIFICATION, TIMING AND SELECTIVITY:

Table 4 shows the diversification, net selectivity and market timing skills of fund managers. A high value of R-square shows the better diversification. The general rule is that a value greater than 0.80 is an indicator of high diversification. From the table, it can be said that Mirea Asset India Opportunities fund-Growth option, Reliance Equity Opportunities fund have high diversification. This substantiates our earlier primary suggestion from high unsystematic risk value that mutual funds in the sample are not well diversified.

Table 4: Diversification, Market Timing and Net Selectivity of Funds

S.No.	Fund	Diversification (R-squared)	Market timing	Famma decomosition (selectivity)
1	Brila sun life pure value fund-growth	0.7468	0.0014	0.0342
2	Birla sun life dividend yield plus plan B-Growth	0.7032	0.0010	0.0457
3	HDFC Equity Fund - Growth Option	0.6795	-0.0105	0.0412
4	ICICI Prudential discovery Fund-Institutional option-I Growth	0.7104	-0.0074	0.0572
5	ING Dividend yield fund-Growth option	0.7804	-0.0090	0.0430
6	Mirea Asset India Opportunities Fund-Growth Option	0.9179*	-0.0025	0.0400
7	Reliance Equity Opportunities Fund - Growth Plan Growth Option	0.8623*	-0.0033	0.0359
8	Sundram Financial Services Opportunities fund-Inst Growth	0.5144	-0.0036	-0.0137
9	Sundram Financial services opportunities fund-Reg Growth	0.4837	-0.0078	0.0300
10	ICICI Prudential discovery fund-Growth option	0.7108	-0.0075	0.0505

*R-square > 0.80

The market timing is measured with Treynor-Mazuy model. A high positive value shows the better market timing. Only two funds of Birla Sunlife show the positive value but the values are very low to say that funds do not have better timing. A high Famma decomposition value shows the better selection ability of fund manager. Other than Sundram Financial Services, though, the value is positive but is very low. Though from the positive value, it can be said that they have selectivity. With this we reject H_3 and H_4, that is, fund managers do possess stock selection and market timing skills.

CONCLUSION:

Based on the empirical findings related to performance evaluation, market timing and selectivity skills among the top ten equity mutual funds in India for the period 2008-10 show that there exists significant positive alpha among Indian mutual funds. The ranks obtained from different evaluation criteria are not highly correlated except Sharpe and Treynor ratio. The funds show positive but low stock selection and market timing skills. This confirms the results obtained by Sehgal and Jhanwar (2008), which were of the opinion that positive timing skills can be evident with high frequency data. Using daily data, we found positive alpha, market timing and stock selection skills among top performing Indian equity mutual funds.

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