sdmimd
JOURNAL OF MANAGEMENT

DOI : 10.15533/sdm/2016/v7i1/90221

Evaluation of Growth of Mutual Funds and Exchange Traded Funds in India

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Abstract

Investors are always baffled about the risk-return characteristics of their investments. There is often the challenge of the alternative between active & passive investments. In case of active mutual funds there are numerous categories of active funds each tracking a different benchmark. It often leads to confusion about how the performance can be compared between one fund to another. The growth of ETFs' has been phenomenal in the recent years due to various advantages of an exchange traded fund compared to the mutual fund as lower cost of management, lesser dependence on fund manager, ease of transaction to name a few. In this context the research analysedthe passive ETF's & prominent Mutual funds both active and passive to justify superior returns at lower risk. The research was based on secondary data, for a period of 5 years i.e. from 2010 to 2015.The various tools used were Sharpe Ratio, Jenson's Alpha, Treynor's Ratio and Tracking error. The study recommends fund houses to implement proactive strategies to reduce tracking error and make ETF's a better alternative for investment.

Keywords:*Mutual Funds, Exchange Traded Funds, Tracking Error and Jenson's Alpha*

1. Introduction

The Indian mutual fund industry has evolved a lot of transformation in the recent years. The changes in the past few years include financial literacy, reduction in the entry charges and the launch of new products. Its growth has been phenomenal compared to the other segments in the financial sector. The savings rate of the affluent Indian well assists the choice of mutual funds as it offers adequate diversification at lesser cost. Exchange Traded Funds (ETF's) have undoubtedly garnered a significant part of the investor's portfolio due to increased volatility in the equity markets and other advantages as lower cost &flexibility.Investors often strive to switch between active and passive investments. Active management focuses to outperform the broader index by stock selection, which is predominantly managed by the fund managers, while the passive management focuses to mimic the performance of the Index thereby reducing the cost of management. Index funds & ETF's have seen incredible growth for the reasons stated above. ETF's trade close to their Net Asset Value (NAV) throughout the day whereas a mutual fund can be traded on the day's closing NAV. Both Mutual funds & ETF's hold various assets such as stocks, commodities, or bonds, and track a specific index. ETF's have several advantages over traditional mutual funds, such as higher trading flexibility, lower expense ratios, transparency, and Tax Efficient. Mutual funds have higher expense ratios compared to ETFs because of their entry and exit loads. Entry loads of mutual funds have been banned while exit loads do continue to exist. ETFs are more tax efficient as the transacting shareholder is taxed, while the gains are distributed to the other shareholders. ETFs offer more transparency as they declare their

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daily holdings, unlike mutual funds, which declare their holdings at the end of the quarter.

The comparison of the various categories of mutual funds tracking their respective benchmark often tend to perplex, as each category has its benchmark and often these benchmarks differ among the fund houses. The performance of an active fund as well depends on the expertise of the fund manager, which in many instances have not been able to outperform their benchmark consistently. This often favors passive funds and more predominantly ETF's as it offers the flexibility of trading throughout the day. In this context the paper focuses to research mutual funds in the large capitalized, index funds and the ETF's over a period of five years i.e. from 2010 to 2015.

2. Review of Literature

Review of literature examined few studies conducted in the area of performance of mutual funds.

Mallikarjuna Rao & Ranjeetha Rani (2013) analyzed the risk adjusted performance of selected balanced mutual fund schemes in India. A total of 10 schemes offered by various mutual funds were selected and studied for risk and returns parameters. The evaluation included Sharpe ratio, Treynor's ratio, Jenson's Alpha and Fama's measure. The results proved that various schemes failed to outperform the market. The mutual funds were found to have lowaverage beta, disproportionate unsystematic risk, mismatch of the risk and return relationship.

R.S Rai & T .V Raman (2014) compared the performance of Large cap, Small and Mid Cap Mutual funds in India with their benchmark indices over one,three and five year time durations. It was observed that the'mid & small-cap' schemes performed significantly better than the 'large-cap' schemes over all the three selected periods. It was also observed that during all the three time durations, the average annualized returns of the selectedcategories to be significantly superior to their respective benchmark indices.

Narend (2014) studied the performance of Exchange traded funds and Index funds. He observed that tracking error of ETF's is greater than the mutual funds; the active returns of ETF's exceeded the returns of the mutual funds during the period of comparison. Jensen's Alpha was found to be negative for both Index fund and ETF's. He concluded that Index funds are superior in terms of tracking error and Jensen's alpha.

3. Statement of Problem

The performance of mutual funds are always compared with their benchmark and comparing a similar category of mutual funds often leads to a puzzle as each of them track a different benchmark and the task becomes still complex if the categories are different and the result of such comparison doest justify as the category by itself is different. In this regard the research focused to find out whether there is any significant difference between the performance of the mutual funds with respect to its benchmark and with respect to a standard benchmark.

4. Objectives

- To compare and evaluate the performance of different schemes of mutual fund companies on the basis of risk and return.
- To analyze the funds benchmarked to their index and compare their performance to a common index.
- To evaluate the investment performance of the mutual funds with respect to standard deviation, Sharpe's ratio, Treynor'sratio and Jenson's alpha.

5. Research Hypothesis

On the basis of the stated objectives,the following hypotheses were tested:

Ho_1: There is no significant difference between the returns of Indexfunds and Exchange traded funds.

Ho_2: There is no significant difference between the betas of large capequity mutual fund schemes with respect to the benchmark.

Ho_3: There is no significant difference between the tracking error of passive index fund and Exchange traded funds in India.

6. Methodology

The data for the research was collected through secondary sources. The closing NAV for the mutual funds was collected from their respective fund.The following mutual fund schemes were selected;

- 3 schemes were selected in large-cap equityfund scheme and index mutual fund Scheme
- Daily NAV of those schemes has been used in this research for the period of Five years i.e., April 2010 to March 2015.
- BSE-100 and BSE-200 were benchmark indices for market portfolio of large-cap equity funds and were compared with the Nifty index.
- In the study the risk-free rate is assumed to be 8 %.

Data for closing price for the benchmark index (BSE-100 and BSE-200) were collected from website of Bombay Stock Exchange (www.bseindia.com) and National Stock Exchange (www.nseindia.com) respectively.

Following tools and measures used for the comparative analysis of selected mutual fund schemes: -

6.1 Return

It is the primary motivating force that drives investment. It represents the reward for undertaking investment. The annual returns of the schemes were computed by using the following equation.

$$Rpt = \frac{NAV(t) - NAV(t-1)}{NAV(t-1)}$$

Where, Rpt = return on fund scheme,

NAV (t) = Net Asset value of the scheme at the end of 't',

NAV (t-1) = Net Asset value of the scheme at the end of the period't-1'.

6.2 Risk

The standard deviation of a fund measures the risk by measuring the degree to which the fund fluctuates in relation to its mean return.Standard deviation is a measure of risk. The standard deviation of mutual fund schemes has been calculated as under:

$$\sigma_p = \sqrt{\frac{1}{n-1}\sum\{Rp(t) - Rp^2\}}$$

6.3 Beta

It measures the volatility of particular mutual fund compared to stock market. Beta is the systematic risk. Beta is non diversifiable in nature. It has been calculated by using the following formula:

$$Beta(\beta) = \frac{Cov(R_p, R_m)}{Var(R_m)}$$

Where, β = systematic risk the portfolio,

Cov (R_p, R_m) = covariance between the return of portfolio and market,

Var (R_m) = variance of market return.

6.4 Sharpe'sRatio

It isdefined as the excess return earned on a portfolio per unit of total risk (standard deviation).William F. Sharpe (1966) had invented an index of portfolio performance measure, namely Sharpe ratio. The formula for Sharpe measure is:

$$Sharpe = \frac{R_p - R_f}{\sigma_p}$$

Where, R_p = return of mutual fund portfolio,

R_f = risk free rate of return,

σ_p = standard deviation of the mutual fund portfolio.

6.5 Treynor's Ratio

The excess return earned per unit of risk (beta).This measure was developed by Jack Treynor in 1965 based on systematic risk and known as reward to volatility ratio. The formula for this measure is

$$Treynor = \frac{R_p - R_f}{\beta}$$

Where, R_p = return of mutual fund portfolio,

R_f = risk free rate of return,

B = systematic risk of the portfolio.

6.6 Jensen's Measure

A measure to know how different Mutual Fund schemes performed relative to what it was expected to do.This measure developed by Michael Jensen. The formula for Jensen measure is:

$$Alpha(a) = R_p - CAPM_{return}$$

$$CAPM_{return} = R_f + \beta(R_m + R_f)$$

Where,

R_p = return of mutual fund portfolio,
$CAPM_{return}$ = expected return of mutual fund,
R_f = risk free rate of return,
B = systematic risk of the portfolio,
R_m = return of benchmark portfolio.

6.7 Tracking Error

An Index fund is a mutual fund scheme that invests in the securities in the target Index in the same proportion or weight age of the securities as it bears to the target index. Index Funds are designed to provide returns that closely track the benchmarked Index. Indexing merely ensures that the returns of the Index Fund will not stray far from the returns on the Index that the fund mimics. Still there are instances, which lead to mismatch of the returns of the index with that of the fund. This mismatch or the difference in the returns of the Index with that of the fund is known as Tracking Error. The steps in the calculation of tracking error are given below;

1. Calculate the percentage change in the NAV and TR Index for each day over its previous day
   Percentage change in the NAV =

$$\frac{\text{NAV as on day (t)} - \text{NAV as on day (t-1)}}{\text{NAV as on day (t-1)}}$$

2. Calculate the difference between the percentage change in the NAV and the percentage change in the TR Index for each day
3. Calculate the standard deviation of the difference obtained from day(1) to day(n).
4. Calculate the annualized tracking error as per the formula given below

Annualized tracking error = Standard deviation obtained (Step 4) *sqrt (250)

7. Data Analysis and Interpretation

The Table 1-3 summarizes the analysis of the Nifty Index mutual fund and the Exchange Traded fund. In comparison among the Index funds & the ETF's, the returns are almost similar and the same was tested using ANOVA. The results of the ANOVA are summarized in Table 4.

8. Returns of Index Funds & Nifty ETF

Hypothesis:

H_0- There is no significant difference between the returns of the Index funds and the Nifty ETF.
H_1- There is significant difference between the returns of Index funds & the Nifty ETF.

The F value is less than 3.24 (d.o.f. 3, 16) and the significance level is greater than 0.05, thus it can

Table 1. BSL nifty index fund

	MF Returns	Nifty	SD.Index	SD. Mf	Tr. E	Beta
2010-11	9.854	10.27	1.121	1.124	0.712	1
2011-12	-10.02	-9.11	1.31	1.309	0.598	1
2012-13	6.45	6.85	0.826	0.823	0.498	0.996
2013-14	16.95	17.53	1.148	1.153	0.613	0.988
2014-15	26.411	26.33	0.871	0.867	0.74	0.995

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 2. Franklin India index fund

	MF Returns	Nifty	SD.Index	SD. Mf	Tr. E	Beta
2010-11	10.29	10.27	1.121	1.116	0.413	0.995
2011-12	-9.02	-9.11	1.308	1.296	0.461	0.99
2012-13	6.996	6.85	0.825	0.819	0.446	0.985
2013-14	17.88	17.53	1.149	1.133	0.649	0.99
2014-15	26.36	26.33	0.87	0.862	0.391	0.991

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 3. Nifty bees

	MF Returns	Nifty	SD.Index	SD. Mf	Tr. E	Beta
2010-11	10.15	10.27	1.121	1.048	6.536	0.87
2011-12	-9.55	-9.11	1.31	1.188	6.446	0.869
2012-13	6.63	6.85	0.826	0.854	5.15	0.965
2013-14	15.92	17.53	1.148	1.059	4.45	0.898
2014-15	26.71	26.33	0.871	0.82	4.19	0.901

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 4. ANOVA

Returns of Index funds & ETF.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.231	3	.410	.002	1.000
Within Groups	2836.085	16	177.255		
Total	2837.317	19			

be concluded that the returns of the Index funds & Exchange traded funds are the same. Therefore the null hypothesis is accepted.

9. Tracking Error of Index Funds & ETF

Hypothesis:

H_0- There is no significant difference between the tracking error of the Index funds and the Exchange traded fund.

H_1- There is significant difference between the tracking error of Index funds & the Nifty ETF.

Table 5. ANOVA

Tracking Error of Index funds and NIFTY ETF

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	76.938	2	38.469	94.537	.000
Within Groups	4.883	12	.407		
Total	81.821	14			

The values of the tracking error are significantly different which is observed by the F value (greater than 3.88) and significance level is less than 0.05. Hence we accept alternate hypothesis stating that the tracking error of the Index funds & the ETF's are significantly different (Table 5).

10. Beta of Active Funds

Hypothesis:

H_0- There is no significant difference between the betas of the large cap funds and the Nifty index.

H_1- There is significant difference between the betas of the large cap funds and the Nifty index.

Table 6. ANOVA

Beta of large cap funds

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.119	3	.040	6.095	.006
Within Groups	.104	16	.007		
Total	.223	19			

The F value is greater than 3.24 (d.o.f. 3, 16) and the significance level is less than 0.05, thus it can be concluded that the betas of the large cap funds and the Nifty index are significantly different. Therefore the alternate hypothesis is accepted (Table 6).

11. Analysis of Sharpe Ratio

The Table 7 summarizes the returns of the large cap funds, the standard deviation and the Sharpe ratios of the funds. The values of standard deviation in the three large cap funds are similar and further they prove that the category of the large cap funds have similar standard deviations. The Sharpe ratio risk premium related to total risk. The value of the Sharpe measure diverges as the returns generated by the fund are different. SBI bluechip fund had performed better as the Sharpe ratio is the highest in the year 2014-15.

Table 7. Analysis of sharpe ratio

SBI Bluechip				HDFC Top 200				Franklin India Large Cap Fund			
	Returns MF	Std.Dev	Sharpe		Returns MF	Std.Dev	Sharpe		Returns MF	Std.Dev	Sharpe
2010-11	1.25	1.05	-6.43	2010-11	16.39	1.00	8.43	2010-11	16.64	0.95	9.06
2011-12	-7.14	1.06	-14.24	2011-12	-6.26	1.24	-11.49	2011-12	-6.92	1.05	-14.25
2012-13	16.10	0.68	11.84	2012-13	3.96	0.91	-4.44	2012-13	3.13	0.74	-6.62
2013-14	18.24	1.01	10.13	2013-14	19.89	1.01	11.76	2013-14	19.77	1.00	11.77
2014-15	48.34	0.79	51.32	2014-15	34.87	0.79	34.19	2014-15	43.39	0.97	36.60

Source:https://www.amfiindia.com/net-asset-value/nav-history

12. Analysis of Treynor's Ratio

The Table 8-10 summarize the Treynor's ratios of the large cap funds. The beta values were calculated using two separate indices, the benchmark and the Nifty index for all the three funds and the Treynor's measure were calculated. The values of beta of large cap funds and Nifty index are significantly different was being proved by the above hypothesis. The comparison of the Treynor's ratio of the large cap fund with the benchmark and Nifty index proves that there is no significant difference between them. This proves that the performance of the fund does not differ when compared to a standard index.

Table 8. SBI blue chip fund

	Beta		Treynor's Ratio	
	BSE 100	Nifty	BSE 100	Nifty
2010-11	0.93	0.89	-7.26	-7.63
2011-12	0.82	0.79	-18.46	-19.21
2012-13	0.80	0.79	10.13	10.32
2013-14	0.88	0.85	11.64	12.10
2014-15	0.83	0.85	48.60	47.74

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 9. HDFC Top200 fund

	Beta		Treynor's Ratio	
	BSE 200	Nifty	BSE 200	Nifty
2010-11	0.91	0.86	9.25	9.76
2011-12	0.98	0.93	-14.49	-15.40
2012-13	1.11	1.06	-3.64	-3.83
2013-14	1.09	1.01	10.91	11.76
2014-15	1.20	1.17	22.39	22.95

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 10. L&T large cap fund

	Beta		Treynor's Ratio	
	BSE 100	Nifty	BSE 100	Nifty
2010-11	0.86	0.83	10.00	10.41
2011-12	0.82	0.79	-18.24	-18.93
2012-13	0.86	0.85	-5.67	-5.74
2013-14	0.88	0.85	13.38	13.80
2014-15	1.04	1.04	34.03	33.93

Source:https://www.amfiindia.com/net-asset-value/nav-history

Table 11. Jenson's Alpha of large cap funds

	SBI Blue chip	HDFC Top 200	L&T Largecap
2010-11	-8.76	6.44	6.76
2011-12	-1.66	1.58	-1.44
2012-13	9.00	-2.83	-3.89
2013-14	2.18	2.26	3.64
2014-15	24.85	5.41	16.27

Source:https://www.amfiindia.com/net-asset-value/nav-history

13. Analysis of Jenson's Alpha

The Table 11 summarizes the values of Alpha of the large cap funds. The values were found to be different which proves the competence of stock selection by the fund managers. In the year 2011-12 and 2013-14 it was found to be similar and broadly varying in the other years. SBI Blue chip fund had delivered superior returns in terms of Jenson's alpha.

14. Implications

The research paper would assist the fund houses to be sanguine in curtailing the tracking error of the ETF's. The fund houses can implement proactive strategies to make ETF's a better alternative for investment. The introduction of the ETF's was one of the notable innovations in the industry. The funds houses can focus to introduce more innovative products like ETF's on Silver and other commodities. The initiatives taken by the stock exchanges & the AMFI on financial literacy would aid in increasing the retail participation in the equity markets.

15. Conclusion

The comparison of the index funds proved that both the index fund and the ETF's are efficient when compared on the beta and the return parameters. The tracking error, which defines the efficiency of tracking the index, is found to be superior in index funds than ETF's.In comparison of the large cap funds, the beta is significantly different and so are their returns. The large cap funds have delivered higher returns compared to the index with a lesser beta value, which is augmented well with the alpha values. The Sharpe's ratio considers the return of the fund above the risk free rate adjusted to the standard deviation of the fund. In

comparison of the standard deviation among the large cap funds, the values are similar whereas the return adjusted to the standard deviation differs because of the actual returns delivered by the fund. The value of the Treynor as well proves the same. The comparison of alpha justifies the competence of the fund manager's stock selection. HDFC Top 200 fund has underperformed compared to the other large cap funds in the last year of comparison.

16. Limitations & Scope for Further Research

The research analyzed the mutual funds during the financial year (April 1-March 31), for all the funds and the indices. There comparison would be different in case of a shift in the period from January-December. The evaluation was for a five year horizon, increasing the time period would give much realistic comparison of active vs. passive investments. The research could be extended to study the various reasons for higher tracking error in ETF's. All funds in the same category of large cap, index funds & ETF's can be considered to give an inclusive representation. The research was constrained due to the availability of time.

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