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Performance Evaluation of Investments under Active and Passive Investment Strategies

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ABSTRACT

An active investment strategy is expected to be superior in returns than passively managed investment. This is in view of the management cost while the passive should precede active in terms of their returns when efficiency is taken into consideration. Investors always have their eye on the risk - return characteristics of the investment. The choice of investment strategy depends upon the investors' assumption regarding the efficiency of the market. Active investors assume the market to be inefficient and expect to earn abnormal returns while the passive investors assume the same to be efficient and believe that no one can earn abnormal returns. Mutual Funds represent the active investment while Exchange Traded Funds (ETF) represent the passive investments. This study focuses on the performance evaluation of select mutual funds and exchange traded funds. These investments are evaluated based on four parameters, namely risk and return characteristics of each fund, performance of the funds in comparison to their benchmark index, tracking error of ETFs and the expense ratio involved. The study revealed that there is no much difference between the active and passive investment in terms of their risk- return characteristics and performance compared to the benchmark index but the tracking error and the expense ratio are the parameters that differentiate the strategies and makes the passive one attractive.

1. Introduction

The Investment options had a phenomenal growth in the recent past, be it financial engineering or financial innovation, with the launch of new products, the investors now have a platter of investment options to choose from. Since the choice has to be intelligent, the investors resort to various strategies to earn the maximum on their hard earned money. A recent development in the investment industry is that of passive investment, as an alternative to the active investment strategy.

Investment strategy

The Investment strategy can be classified as active and passive investment strategies. An active investment strategy is recognised by the active involvement of fund managers or investors in the process of investment whereas when the investors depend on market indices such as NIFTY and SENSEX, it is known as passive investment.

The mutual funds represent the active investment while exchange traded funds represent the passive investment. Active Investment aims to outperform the benchmark index as they rely on the assumption of an inefficient market while passive investment believes the market to be efficient and hence finds no scope for abnormal returns. In the case of mutual funds, fund managers try to outperform the market by selecting stocks with superior returns, while ETFs focus to replicate the index. Mutual Funds are traded on the day's closing NAV while ETFs are traded on a real time basis. Even though both the Mutual Funds and Exchange Traded funds invest in stock, bonds and commodities, the performance of an active investment depends upon the trading skill and expertise of the fund manager and the performance of Exchange Traded Funds (ETFs) depend upon the efficiency with which the fund track the underlying index. In this context the study focuses on the performance evaluation of active and passive funds over a period of five years i.e from 2012 to 2016.

2. Review of literature

Venkatramanis and Thilak (2016) analysed the performance of Mutual Funds, Index Funds and Exchange Traded Funds and found that Index funds and Exchange Traded funds are superior than the traditional mutual funds but tracking error is higher in case of Exchange Traded Funds.

Narend (2013) in his study compared the performance of mutual funds and exchange traded funds and found that Index funds have performed better than ETF in terms of tracking error and a higher Jensen's alpha, while ETFs have performed better in terms of returns.

Dyck (2013), in his research on U.S markets and other emerging markets found that in U.S markets, after costs, active management underperforms by 28bps per year but in less emerging markets net of fees returns were 246 basis points higher than the returns of their benchmarks. They concluded that the value of active management depends on the efficiency of the underlying market and the sophistication of the investor.

Chavannavar and Patel (2016) analysed the efficiency of Indian stock Market with respect to National stock exchange and it was found that Indian stock Markets are efficicent in both weak and semi strong form.

3. Statement of the problem

Studies have proved that Indian Stock Market is efficient in weak form and semi strong form, which indicates that there is scope for active investors to earn abnormal return. Based on the assumption of a weakly efficient market, the Mutual funds are expected to earn higher returns even after the adjustment of the expense ratio involved, when compared to the returns earned by the Exchange Traded Funds and that of the market indices. The performance of the Exchange Traded Funds are expected to be similar to that of the market indices, as the former replicates the latter. Hence this study intends to analyse whether the performance of mutual funds in Indian Stock Market is as expected in a weakly efficient market in comparison to the Exchange Traded Funds and market indices. It also analyses the effect of Tracking error and Expense Ratio on the returns of MFs and ETFs. Since the popularity of Mutual Funds and Exchange Traded Funds among the investors have been growing at an interesting rate, this study intends to compare both on the basis of their growth rate.

4. Objectives

- To evaluate the growth trend of the select mutual funds and exchange traded funds.
- To evaluate the performance of the select mutual funds and exchange traded funds on risk and return
- To evaluate the performance of select Mutual Funds and Exchange Traded Funds with respect to the benchmark index.
- To analyse the tracking error involved in the select Exchange traded funds and Mutual Funds.
- To analyse the mutual funds and exchange traded funds based on their expense ratio.

5. Hypotheses

Ho_1 : There is no significant difference in the growth of Mutual Funds and Exchange Traded funds.

Ho_2 : There is no significant difference in the performance of Mutual funds and Exchange traded funds based on their risk and return

Ho_3 : There is no significant difference in the performance of the funds and their benchmark Index.

Ho_4 : There is no significant difference in the tracking error of Mutual Funds and Exchange Traded Funds.

Ho_5 : There is no significant difference in the expense ratios of Mutual funds and Exchange Traded Funds.

6. Limitations of the study

- Indian stock market is assumed to be weakly efficient
- Only traditional mutual funds have been considered in the study.
- Study is limited to 4 Mutual Funds and Exchange Traded Funds.
- The period of the study is limited to 5 years.

7. Methodology

- **Nature of the Study** - The data required for the study were collected from secondary sources.
- **Data used** - Data required is the closing NAVs of all the funds which was collected from various websites. Daily NAVs of all the schemes were collected for a period of 5years i.e from 2012 to 2016
- **Sample size** – Sample for study was selected on the basis of the fulfilment of the following conditions :
    - Asset Management Companies with both Mutual Funds and Exchange Traded Funds were selected.
    - Schemes which have an inception on or before date 1st Jan 2012, were selected.
    - Exchange Traded Funds which track Nifty 50 were only selected.

Out of the schemes that fulfilled the above mentioned conditions, four Mutual funds and four Exchange Traded Funds were selected of the same asset management companies and they are :

S.No	Fund Name
M1	Aditya Birla Sunlife Equity
M2	Kotak Emerging Equity
M3	Invesco India Contra
M4	ICICI Prudential Equity
E1	Aditya Birla Sunlife Nifty
E2	Kotak Nifty
E3	Invesco Nifty
E4	ICICI Nifty

Framework of Analysis

- Nifty 50 was taken as the benchmark index.
- The FD rate of each year is taken a the risk free rate.
- Return was calculated from the daily returns using the formulae $Rt=Ln (NAV_t / NAV_{t-1})$
- Risk is calculated using Standard deviation and Beta.
- Standard deviation of a fund measures the risk by measuring the degree by which the returns fluctuates in relation to the mean return
- Beta measures the volatility of the mutual fund compared to the stock market. This is the systematic risk
- Statistical test used
    - Independent sample t test was used to analyse the Objective 1,2 and 5.
    - One way Anova was used to analyse the Objective 3.

Operational definition of Concept

Tracking Error

The tracking error is the mismatch in the returns of the Index with that of the returns. This is calculated by taking the standard deviation of the difference between the percentage change in NAV and the percentage change in return of the Index and then using the formulae

Tracking error = S.D (Calculated above) *sqrt 250.

Expense Ratio

It is the total management cost involved , for managing the funds by the fund managers. The required data is collected

from the factsheets of the respective schemes

8. Analysis

The analysis is performed on four parameters, namely Growth Trend, Risk Return Analysis of Mutual Funds and Exchange Traded Funds, Performance with respect to Benchmark Index, Tracking Error of ETFs and Expense ratio of Mutual Funds and Exchange Traded Funds

A. Growth trend of Mutual Fund and Exchange Traded Fund

The growth trend of Mutual Funds and Exchange traded funds is analysed from the year 2012 to 2017 by calculating the compounded annual growth rate of these schemes as shown in Table1

Table 1 Growth trend of Mutual Fund and Exchange Traded Fund

Sl.No	Initial Invsmt*	Final Invsmt*	Year	CAGR
M1	750	2735	5	**0.2953**
M2	54.9	1126.2	5	**0.8298**
M3	65.5	279.5	5	**0.3366**
M4	43.8	3837.4	5	**1.4463**
E1	5.9	172.8	5	**0.9648**
E2	10.7	442.9	5	**1.1056**
E3	2.9	1.5	5	**-0.1235**
E4	12	712	5	**1.2628**

*Source : Computed *(investment in crs)*

An independent sample t test was performed to compare the compounded annual growth rate of both mutual funds and exchange traded funds and it was found that there was no significant difference in the CAGR of Mutual Funds (M=..7270 and S.D=.5375) and the CAGR of Exchange Traded Funds (M=..8024 and S.D=.6291) with t(6)=-.182, p=0.861(Appendix A).Hence the null hypothesis cannot be rejected and it can be concluded that the mutual funds and exchange traded funds do not differ in their growth trend.

B. Risk - Return Analysis of Mutual Funds and Exchange Traded Funds.

The risk-return analysis of the mutual funds and exchange traded funds are analysed in two parts. The first part is the analysis of the returns earned by the funds and second part include two sub sections wherein the risk involved is analysed based on the total risk involved and also on the basis of the systematic risk.

Return

To analyse the performance of the mutual funds and exchange traded funds based on their return, the average return of all the schemes for the five years is computed as shown in Table 2

Table 2 Average return of funds Mutual Funds and Exchange Traded Funds

Sl. No	2012	2013	2014	2015	2016	Avg. Return
M1	0.4557	0.1011	0.6766	0.0429	0.2101	**0.2973**
M2	0.5931	-0.0765	0.9466	0.12	0.1462	**0.3459**
M3	0.3969	0.0671	0.7365	0.0585	0.0965	**0.2711**
M4	0.1435	0.1371	0.1241	0.1081	0.0976	**0.1221**
E1	0.3732	0.1103	0.4175	-0.0382	0.0672	**0.1860**
E2	0.3773	0.0861	0.3823	-0.0440	0.0423	**0.1688**
E3	0.3586	0.1043	0.4190	-0.0505	0.0642	**0.1791**
E4	0.1044	0.0601	0.4229	-0.0439	0.0115	**0.1110**

Source : Computed

An independent sample t test was performed to compare the average returns of mutual funds and exchange traded funds of the last five years and it was found that there was no significant difference in the average returns of Mutual Funds (M=.2591 and S.D=.0964) and the average returns of Exchange Traded Funds (M=.1612 and S.D=.0342) with t(6)=1.913, p=0.104 (Appendix B.1). Hence the null hypothesis cannot be rejected based on the first part and it can be concluded that the mutual funds and exchange traded funds do not differ with respect to the return earned.

Risk

To analyse the performance of mutual fund and exchange traded fund based on their risk, standard deviation and beta was taken into consideration. The standard deviation represents the total risk faced by the fund while the beta

measures the systematic risk faced by the fund as shown in Table 3 and Table 4 respectively

Table 3 Standard deviation Mutual Funds and Exchange Traded Funds

SL NO	2012	2013	2014	2015	2016	S.D
M1	2.2388	2.6727	2.3053	2.5292	2.5375	**2.4567**
M2	1.8552	2.2513	2.0925	2.3763	2.3943	**2.1939**
M3	1.9119	2.3159	2.1956	2.4452	2.6854	**2.3108**
M4	0.3010	0.2195	0.1848	0.1769	0.1513	**0.2067**
E1	2.4250	2.8382	1.9589	2.5221	2.3501	**2.4189**
E2	2.4399	2.8741	2.0244	2.5913	2.3951	**2.4650**
E3	2.4317	2.8688	2.0127	2.5907	2.4057	**2.4619**
E4	4.1077	3.2875	1.9914	2.5761	2.4617	**2.8849**

Source : Computed

Independent sample t test was performed to compare the Standard deviation of mutual funds and exchange traded funds of the last five years and it was found that there was no significant difference in the total risk of Mutual Funds (M=1.7920 and S.D=1.0623) and that of Exchange Traded Funds (M=2.5576 and S.D=0.2191) ; t(6)=-1.412, p=0.208 (Appendix B.2). Hence the null hypothesis cannot be rejected and it can be concluded that the mutual funds and exchange traded funds do not differ with respect to the risk involved in them.

Table 4 Beta of the funds Mutual Funds and Exchange Traded Funds

Sl. No	2012	2013	2014	2015	2016	Avg
M1	0.91	0.89	0.98	0.90	0.97	**0.93**
M2	0.62	0.63	0.74	0.78	0.85	**0.72**
M3	0.74	0.72	0.89	0.86	1.01	**0.84**
M4	-0.04	-0.02	-0.02	-0.01	0.00	**-0.02**
E1	1.03	1.02	0.97	0.97	0.99	**0.99**
E2	1.04	0.19	0.53	0.05	0.06	**0.37**
E3	1.02	1.03	1.00	0.99	1.01	**1.01**
E4	0.12	0.92	0.99	0.99	1.02	**0.81**

Source : Computed

Independent sample t test was performed to compare the Beta of mutual funds and exchange traded funds of the last five years and it was found that there was no significant difference in the systematic risk of Mutual Funds (M=0.6199 and S.D=0.4342) and that of Exchange Traded Funds (M=0.7958 and S.D=0.2968) ; t(6)=-.669, p=0.529 (Appendix B.2). Hence the null hypothesis cannot be rejected and it can be concluded that the mutual funds and exchange traded funds do not differ with respect to the systematic risk involved in them.

C. Performance in comparison to the Benchmark Index

To analyse the performance of each of the funds in comparison to the Benchmark index, the return and risks of the all the schemes were combined on a yearly basis to represent the Mutual Funds and Exchange Traded Funds separately. Then the same was compared with the benchmark index Nifty 50.

Return

To analyse the performance in comparison to a Benchmark index, NAV of Nifty 50 for the period of 5 years was taken into consideration. The annualised average return of MF, ETFs are consolidated and compared with Nifty 50 is as shown in the table 5

Table 5 Annualised Average Return of Mutual Fund, Exchange Traded fund and Nifty

Year	MF	ETF	Nifty
2012	0.3973	0.303375	0.35303
2013	0.0572	0.0902	0.09544
2014	0.62095	0.410425	0.40836
2015	0.082375	-0.04415	-0.06101
2016	0.1376	0.0463	0.04387

Source : Computed

A one way ANOVA between funds, was conducted to compare the return of Mutual Funds, Exchange Traded funds and Nifty for the period of 5 years and it was found that there is no significant difference between the three in terms of the

returns at p >0.05 level for the variances between them. [f(2,12) =0.329 , p =0.726] (Appendix C).

Risk Involved

The performance with respect to the Benchmark was also analysed in terms of the risk involved. The standard deviation of the Mutual Funds, Exchange Traded Funds and Nifty is as shown in the table 6

Table 6 Standard deviation

Year	MF	ETF	Nifty
2012	1.576725	2.851075	2.39127
2013	1.86485	2.96715	2.84541
2014	1.69455	1.99685	1.99357
2015	1.8819	2.57005	2.56357
2016	1.942125	2.40315	2.38684

Source : Computed

A one way ANOVA between funds, was conducted to compare the risk involved in Mutual Funds, Exchange Traded funds and Nifty for the period of 5 years and it was found that there is a significant difference between the three in terms of the risk involved at p <0.05 level for the variances between them. [F(2,12) =9.510 , p =0.03] (Appendix C). Post hoc comparisons using the LSD indicated that there is a significant difference in the risk involved in Mutual funds from the risk involved in Exchange Traded Funds and Nifty. But the risk involved in Exchange Traded Funds and the Benchmark Index does not significantly differ. Hence an ANOVA was performed to analyse whether the mutual fund vary among themselves. It was found that there is a significant difference among the Mutual funds . [F(3,16)=133.786 , p =0.00] (Appendix C). Post hoc Comparisons using LSD was performed and it was found that MF4 varies significantly from other Mutual Fund schemes, therefore the differences are just because of one Mutual Fund among them. Hence it can be concluded that risk involved in Mutual funds are more or less the same as of Exchange Traded Funds and Benchmark Index.

D. Tracking error

Tracking error is the error or mismatch in replicating the Index to which the fund is being tracked. The tracking error of the Exchange traded funds are shown in table 7

S.No	Exchange Traded Fund	Tracking Error
M1	Aditya Birla Sunlife Equity	**0.04**
M2	Kotak Emerging Equity	**0.07**
M3	Invesco India Contra	**0.06**
M4	ICICI Prudential Equity	**0.16**
E1	Aditya Birla Sunlife Nifty	**0.01**
E2	Kotak Nifty	**0.02**
E3	Invesco Nifty	**0.01**
E4	ICICI Prudential Nifty	**0.13**

Source : Collected

The tracking error was calculated based on the returns of the last five years. This indicates that the mismatch was highest in case of ICICI funds, while Aditya Birla and Invesco had the lowest tracking error in this period. Except for the case of ICICI fund, the tracking error is comparatively lesser for Exchange Traded Funds

Independent sample t test was performed to compare the tracking error of mutual funds and exchange traded funds and it was found that there was no significant difference in the tracking error of Mutual Funds (M=0.0825 and S.D=0.05315) and that of Exchange Traded Funds (M=0.0425 and S.D=0.05852) ; t(6)=1.012, p=0.351 (Appendix D). Hence the null hypothesis cannot be rejected and it can be concluded that the mutual funds and exchange traded funds do not differ significantly with respect to the tracking error involved, which may be due to the ICICI funds involved.

E. Expense Ratio

The Mutual Funds and Exchange Traded Funds were compared on the basis of the expense ratio involved in the funds selected. The expense ratios as collected from the fact sheets are shown in table 8.

Table 8 Expense Ratio

Sl No	Funds	Expense Ratio (in %)
M1	Aditya Birla Sunlife Equity	**2.30**
M2	Kotak Emerging Equity	**2.04**
M3	Invesco India Contra	**2.24**
M4	ICICI Prudential Equity	**0.95**
E1	Aditya Birla Sunlife Nifty	**0.05**

E2	Kotak Nifty	**0.10**
E3	Invesco Nifty	**0.10**
E4	ICICI Prudential Nifty	**0.05**

Source :Collected

An independent sample t test was performed to compare the expense ratio of mutual funds with those of exchange traded funds and it was found that there is significant difference in the expense ratio of Mutual Funds (M=1.88 and S.D=.6315) and the expense ratio of Exchange Traded Funds (M=.07500 and S.D=.02886) with t(6)=5.718, p=0.01. Hence the null hypothesis is rejected and it can be concluded that the exchange traded funds are cheaper than the mutual funds.

9. Findings

The Mutual funds and exchange traded funds do not vary in their return and risk characteristics, but the cost involved in investing in Mutual funds are higher than that of the Exchange Traded Funds, which makes the latter, attractive. When compared with the benchmark Index, there was no much difference in terms of returns and the risk involved. There was no difference in the performance of exchange traded funds when compared with the Index as, these funds replicated the Market Index with very less mismatch. The funds selected for the study replicated the Index with very less tracking error. The most significant finding is that related to the expense ratio, since all the funds provide more or less the same returns, investors should prefer exchange traded funds as the expense ratio involved is much less compared to Mutual Funds.

10. Conclusion

The select funds under Mutual Funds and Exchange Traded funds portray good return compared to risk free assets. Against our expectation from a weakly efficient market, the mutual funds do not earn better returns than the Exchange Traded Funds. The market seems to be efficient not only in weak form, but also in semi strong form of efficiency since the return earned by active and passive investing is more or less the same except for the expense ratio involved. The above mentioned results hold good for these schemes, the same study can be conducted with other schemes and Index funds to get a clearer picture of the available options.

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