

An Analysis of Active Fund Allocation Decision of Mutual Funds in India

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Introduction

Mutual funds play a major role in managing the savings of the investors. The Indian mutual fund industry started with the formation of Unit Trust of India (UTI) in 1963, which introduced Unit-1964 scheme in the following year. With the establishment of Securities and Exchange Board of India (SEBI) to regulate securities market, the industry was opened up for private sector in 1992. The government also announced a few tax concessions for investments in mutual funds. The concept of mutual fund then became an important component of household savings and a large number of funds were floated. The period 2000-2010 was the best for mutual funds as they saw huge inflow of funds from investors. The industry saw an inflow of ₹425,432 cr during this period against a total investment of ₹428,741 cr collected by mutual funds during the period 1970-2012. Over the years, the number of mutual funds and the funds under their management have also increased several times. As on June 2013, there are 1,007 equity-oriented mutual fund schemes managing funds worth ₹211,695 cr. Mutual funds perform two important tasks, viz., diversification benefits even when the investment is small and expertise in stock selection. Mutual funds also indirectly claim expert investment skills by advertising their performance. Mutual funds perform active fund management by taking a decision on the following:

- a. Fund allocation between debt and equity;
- b. Selection of stocks and bonds for investment;

- c. Decision on how much to invest in each of the selected stocks and bonds; and
- d. Decision on selling stocks and bonds and replacing them with other stocks and bonds.

The above four decisions require considerable investment expertise at different levels. Fund allocation between debt and equity is based on macro-level reading of the market. If the fund manager expects that the economy is likely to do well in the coming years, she or he will increase equity exposure and vice versa. Selection of stocks and bonds is made based on fundamental analysis which determines the intrinsic value of the stock and classifies them as underpriced or overpriced stocks. Taking into consideration the investment restrictions on maximum amount of investment in a company or a sector or a group, the decision of how much money to be invested in each of the stock is taken. If a fund manager wants to be passive on this part, she or he would opt for equal investment in all chosen securities. After deciding the stocks and bonds and allocating funds, the last decision is when to buy and sell these securities. If a fund shows superior performance as reflected in the Net Asset Value (NAV) of the fund, such performance is on account of superior decision on one or more of the above four decision areas. In this paper, we examine the passive and active fund allocation strategies of mutual funds in India over the years.

Several academic studies examine whether mutual funds provide superior return. The studies conducted prior to 1990 show no such superior performance. However, subsequent studies show mixed results when the performance of funds is examined at two levels—ability to select right stocks, and timing skill. Several studies show that funds are good in their stock selection but not good in timing the market. Most studies examine the performance of funds at aggregate portfolio and benchmark with some widely used market indices. In this study, we consider investment in individual stocks and amount invested in these stocks.

Most fund managers follow active investment strategy and do skewed fund allocation after identifying the stocks. Typically, the top ones attract an investment of around 10% and bottom ones around 0.5%. For example, HDFC Equity Fund had 59 stocks in its portfolio in December 2009. The top five holdings are SBI (8.13%), ICICI Bank (6.18%), Infosys (4.87%), Titan Industries (4.67%) and Bank of Baroda (4.36%) and they together account for 28.21% of the total investments. The bottom five stocks in the 59 stock portfolio account for 1.09%. There are 21 stocks in which the fund invested is less than 1 % of the total corpus. The fund manager, after selecting 59 stocks actively, made this skewed fund allocation decision. Having selected the stocks, if a fund manager follows a passive strategy of investing equal amount in all these selected stocks, what would be the outcome? In other words, we examine whether fund managers add any value in managing the funds by actively deciding on how much money they need to invest in different stocks.

Literature Review

The performance of mutual funds is one of the areas where considerable amount of research has already been done. The studies range from developing a performance measure to examining whether funds showed superior performance. Several studies point out that fund managers have no special skill to outperform the market. Sharpe (1966) and Jensen (1967) observe no

superior performance by the US funds during 1945-64. Henriksson (1984) examines the timing skills of fund managers and finds no evidence on superior timing skills. The mutual fund returns are in line with the market return. While these studies find no evidence for superior performance, there are a few recent studies which report evidence for superior performance. Grinblatt and Titman (1989 and 1992) find that some funds report positive risk adjusted return. They also find such positive return is primarily out of their ability to pick up the stock and not on account of timing the market. Coggin *et al.* (1993) confirm the findings of Grinblatt and Titman that pension fund managers are good in selecting right stocks but not necessarily at right time. Some of these fund managers are consistently

performing superior return. Vermeers (2000) finds that the stock holdings of growth-oriented and high turnover funds outperform the benchmarks. This finding is also supported by Chen *et al.* (2000). Ahmed and Nanda (2005) examined two different types of funds, namely, 'enhanced index funds' and 'quantitative equity funds', which follow different investment style. They find that the enhanced index funds that follow quantitative techniques and quantitative equity funds which invest in small cap stocks outperform the market. More recently, Kosowski *et al.* (2006) showed that some growth-oriented mutual fund managers do earn positive abnormal returns due to genuine skill rather than good luck. Baker *et al.* (2010) demonstrated that some fund managers possess stock selection skills and this contributes majorly to the total abnormal returns. Thus, though most of the papers published before 1990 rejected the claim that it is possible for managers to obtain abnormal return, many papers since then have supported this claim. While most studies addressed the stock selection skill and timing skill, the fund allocation decision is not generally addressed in the existing literature. This study by addressing fund allocation skill fills this research gap.

Data and Methodology

The data is sourced from Capitaline NAV India database, which provides mutual funds' investments data. The data for each fund consists of (a) scheme name; (b) fund house; (c) fund manager; (d) portfolio of stocks at the end of each month; (e) number of stocks; and (f) price of the stock at the end of the month and at the beginning of the month. The above data is compiled for each month from January 2004 to December 2013. The study analyzes the performance of all equity oriented funds numbering 772 mutual funds schemes over 23,402 fund-months. The study covers mutual funds schemes offered by 53 mutual funds.

Computation of Monthly Active and Passive Returns with an Example

Active Return

As the data contains information about market price and number of stocks (holdings) for different months, active return is calculated as:

$$\begin{aligned} & £ \text{ (Market price of stock } i \text{ at the end of the month) } * \text{ (Number of stocks)} \\ & Z \text{ (Market price of stock } i \text{ at the beginning of the month) } * \text{ (Number of stocks)} \end{aligned}$$

Passive Return

Here, the fund manager invests equal amount in all the stocks which he has identified. Hence, we first calculate the total investment of a fund manager (T) using the following formula:

$$T = \text{£}(\text{Market Price}) * (\text{Number of Stock Holdings})$$

The summation is carried out for all the identified stocks for a particular scheme. Now, passive fund strategy would require this total investment T to be distributed equally among all the selected stocks. So, if a fund manager has identified N stocks, the amount invested in each of this stock (A) under passive strategy would be:

$$\frac{\text{Total investment} - j}{\text{Number of identified stocks} / N}$$

While the number of stocks (H) would be:

$$\frac{\text{Amount in each stock} - A}{\text{Market price of that stock} - MP}$$

The monthly passive return is now calculated as:

$$\frac{S(\text{Market price of stock } i \text{ at the end of month}) * (H)}{S(\text{Market price for stock } i \text{ at the beginning of month}) * (H)}$$

In Table 1, an example showing the above computation of active and passive return over 1 month is provided. The data for the study is in Columns 1 to 4. Columns 5 and 6 show the portfolio value at the beginning of the month and at the end of the month. The values in Columns 5 and 6 represent the outcome of active fund management strategy. The fund value at the beginning of the month was ₹210.15 cr and it has grown to ₹230.40 cr at the end of the month registering 9.63% gain during the month. If we assume the month beginning wealth of ₹210.15 cr is equally invested in each of the 10 stocks, ₹21.015 cr is invested in each of the stock. The number of stocks purchased under passive fund allocation strategy for each of the 10 stocks is ₹21.015 divided by the price at the beginning of the month shown in Column 3. The number of stocks under passive strategy is shown in Column 7. Column 8 shows the market value of each stock and the total value of the portfolio at the end of month when fund manager follows passive fund allocation strategy. The total fund value is ₹230.27 cr and the appreciation is 9.57%. The results show that there is no significant difference between passive and active fund allocation strategies, though the fund manager invested nearly 63.5% of the fund value in Stocks 9, 6 and 5. His active involvement in deciding how much to be allocated in each of the stock has not produced any superior return.

Table 1: Computation of Performance Under Active and Passive Fund Allocation

April 2005	Number of Stocks	Price at the Beginning of the Month (MP)	Price at the End of the Month	Market Value at the Beginning of the Month	Market Value at the End of the Month	No. of Stocks that Could Have Been Purchased for Equal Weight Portfolio (H=A/MP)	Market Value at the End of the Month (Under Equal Weight Portfolio)
d)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Stock 1	548,011	172.40	195.95	94,477,096	107,382,755	1,218,996	238,862,181
Stock 2	902,294	81.90	101.25	73,897,879	91,357,268	2,565,993	259,806,802
Stock 3	757,947	174.75	199.55	132,451,238	151,248,324	1,202,603	239,979,385
Stock 4	263,076	323.65	341.65	85,144,547	89,879,915	649,327	221,842,730
Stock 5	571,079	535.00	539.55	305,527,265	308,125,674	392,813	211,942,134
Stock 6	1,363,350	359.95	392.05	490,737,833	534,501,368	583,845	228,896,245
Stock 7	355,690	273.10	261.55	97,138,939	93,030,720	769,516	201,266,925
Stock 8	583,622	346.15	382.05	202,020,755	222,972,785	607,121	231,950,469
Stock 9	974,249	551.75	632.51	537,541,886	616,222,235	380,888	240,915,333
Stock 10	852,978	96.85	104.70	82,610,919	89,306,797	2,169,900	227,188,552
(N)							
Total				2,101,548,358	2,304,027,840		2,302,650,758
Wxth				(A)			

Performance of the Schemes

The performance measured is the difference between the return obtained using active and passive strategies of investing equal amount in all these selected stocks. In addition to computing the excess return that active fund allocation has achieved for each scheme, the same was computed for different fund houses, fund managers and funds' categories.

Performance of the Overall Schemes

Table 2 shows the month/year-wise excess return of all the schemes. Of the 120 months, the funds collectively show that the active fund management strategy is inferior to passive fund management in 72 months. Of the 10 years, in 6 years the performance under active fund management strategy is lower than passive fund management strategy. The funds have done better in active strategy in 2008, 2010, 2011 and 2013. The average return of all the schemes under active fund management scheme is 1.59% per month against 1.77% of passive strategy return. The median values under two strategies are 1.97% and 2.23%, respectively. In May 2006, the funds have collectively reported a superior performance of 1.75%. Funds have suffered a maximum loss of 4.47% in May 2009.

Table 2: Month-Wise Difference Between Active Fund Allocation and Passive Fund Allocation

	(in %)									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
January	-0.16	-0.48	0.20	0.24	-0.58	0.52	0.08	0.80	-0.79	0.37
February	0.50	1.57	-0.03	0.36	0.15	-0.50	-0.15	-0.06	-0.13	0.64
March	-0.76	-0.92	0.16	-0.25	-0.73	-1.50	-0.47	-0.69	0.30	-0.52
April	-1.74	-0.60	-0.81	-0.10	-0.02	-4.22	0.14	-0.04	-0.09	0.52
May	-0.33	0.49	1.75	-0.37	0.40	-4.47	-0.36	0.52	0.05	1.00
June	-1.61	-0.02	-0.28	0.31	-0.07	-0.80	-0.29	0.02	0.29	1.18
July	-0.96	-1.46	-0.43	0.30	-0.24	-0.92	-0.04	0.62	0.37	0.33
August	-0.60	-0.18	-0.29	0.48	0.97	0.04	0.74	0.25	-0.90	-0.65
September	0.40	0.16	0.66	0.95	1.41	-0.53	-0.21	0.62	0.07	0.17
October	-0.30	-0.50	-0.11	-0.89	0.32	-0.20	0.70	0.51	0.15	-1.23
November	0.53	0.19	0.12	2.12	-2.55	0.42	0.17	1.20	-0.58	0.57
December	-0.65	-0.87	-0.54	0.83	1.44	-0.46	0.37	-2.27	0.80	0.87
Full-Year	-0.63	-0.28	-0.10	-0.02	0.04	-1.12	0.06	0.12	-0.05	0.15

Table 3 reports the results of null hypothesis that there is no significant difference between the mean values of active fund allocation strategy and passive fund allocation strategy. In five out of 10 years, the null hypothesis is rejected. Of the five years, the mean difference is negative in four years. In the remaining 5 years, the null hypothesis is accepted. In other words, the results show the following:

- The active fund allocation strategy did not show any superior performance in five years (2007, 2008, 2010, 2011 and 2012):
- In one of the ten years (2013), the active fund allocation strategy reports a superior performance of 0.12% per month; and
- In four years, the active fund allocation strategy reported a negative performance over passive strategy (2004, 2005, 2006 and 2009).

The mean difference test was conducted month-wise for all the 120 months but is not reported here. The conclusion drawn from monthly data also confirms the above results. In 89 out of 120 months, the null hypothesis that there is no significant difference in the mean values of active and passive fund allocation is rejected. Of these 89 months, the active fund allocation yielded a return more than passive fund allocation only in 37 cases. The average excess return of the 37 cases is 0.66% per month. The average negative excess return in 52 months where the funds have reported lower return in active fund allocation is 0.90% per month. Clearly, our aggregate analysis of all funds do not support that fund managers are able to demonstrate superior fund allocation decision. While the analysis points out that active fund allocation is not producing any excess returns, it also fails to demonstrate that passive

Table 3: Performance of Funds Under Active and Passive Investment Strategies

Year	Mean Difference (%)	SD (%)	f-Value	Null Hypothesis
2011	-0.63	1.74	-14.1435	Reject
2012	-0.42	2.82	-6.5765	Reject
2013	-0.10	1.54	-3.3547	Reject
2014	-0.04	1.62	-1.2000	Accept
2015	0.05	1.94	1.4394	Accept
2016	-1.27	2.80	-21.5039	Reject
2017	0.04	1.16	1.4930	Accept
2018	0.01	1.48	0.1398	Accept
2019	0.03	1.18	0.9035	Accept
2020	0.12	1.43	4.4678	Reject

strategy will lead to better return. One possible reason is that when the number of stocks is large in a fund (for example, 50), the investments in each of the stocks under the passive fund allocation strategy reduce to a low level (for example, 2%). Even if a few stocks are showing superior performance, active strategy may not lead to any major difference in the value compared to passive strategy because of low weights. The average number of holdings by funds during the sample period is 32 stocks. Before we generalize our conclusion that the funds are not showing any superior fund allocation skill, we examine whether such superior fund allocation skill exists with some fund houses or fund managers.

Scheme-Wise Performance

Our data consists of 772 schemes floated by 53 mutual funds. The null hypothesis that there is no significant difference in the returns between active fund allocation and passive fund allocation is rejected in 19 out of 772 schemes. Of the 19 schemes where we find statistically significant difference between active and passive fund allocation, only 2 schemes, namely JM Equity Fund and JM Balance Fund have positive excess return. In all the other 17 cases, the funds have reported statistically negative return. In the remaining 753 schemes, the null hypothesis that there is no difference between active and passive fund allocation is accepted.

Performance of Fund Houses

We pool all the schemes floated by each mutual fund and evaluate their performance. The number of schemes ranges from one (Motilal Oswal, Shriram Mutual Fund) to 54 schemes (UTI). Other large funds which floated several schemes are Tata Mutual Fund (49 schemes), ICICI Prudential (46schemes), BirlaSun Life (43 schemes) and SBI (31 schemes). Of the 53 fund houses, only 9 fund houses reported excess return over passive fund allocation. Of these 9 fund houses, 7 have very few schemes. However, none of these excess returns is statistically significant. In the remaining 43 fund houses where the excess return is negative, 17 are statistically significant at 1% level. For the remaining 43 fund houses, the mean

difference in the performance is not statistically significant. The overall conclusion is that none of the fund houses shows any superior fund allocation skills of the fund schemes they have managed and 17 fund houses would have offered a slightly higher return to investors had they followed passive fund allocation.

Performance of Categories of Funds and Fund Managers

Our sample consists of 17 fund categories, which include balanced fund, sectoral schemes and tax planning. The mean difference test rejects the null hypothesis that there is no significant difference between active and passive fund allocation strategy for different funds' categories (Table 4). In all these cases, the difference is negative and significant at 1 % level. In the remaining 6 categories, the null hypothesis is accepted. Only, in three categories, the excess return is positive but not statistically significant. The overall conclusion of absence of excess return through active fund allocation holds good even for fund managers. The fund manager who managed two schemes which reported positive excess return has also managed another 9 schemes during the study period and none of them reports statistically positive excess return.

Table 4: Performance of Funds Under Active and Passive Fund Allocation

Mutual Fund Scheme Category	Active (%)	Passive (%)	Mean Difference (%)	SD (%)	f-Value
Balanced	1.31	1.38	-0.07	1.50	-1.5845
Equity - Auto	0.71	0.70	0.02	2.89	0.2107
Equity - Banking	0.86	0.82	0.05	1.67	0.9547
Equity - Diversified	0.69	0.86	-0.17	1.84	-3.2491
Equity - FMCG	1.70	2.02	-0.32	2.80	-3.9611
Equity - Infotech	-0.17	0.18	-0.35	3.37	-3.5342
Equity - Media	-0.15	0.18	-0.33	2.81	-3.9841
Equity - Offshore	-0.08	0.16	-0.24	2.10	-3.8868
Equity - Pharma	0.17	0.40	-0.23	2.02	-3.9627
Equity - Tax Planning	1.35	1.54	-0.19	1.80	-3.7193
Equity - Telecom	1.41	1.60	-0.19	3.57	-1.8468
Equity - Infrastructure	1.74	2.12	-0.38	2.23	-5.9089
Equity - Natural Resources	1.85	2.25	-0.40	1.49	-9.1414
Hybrid - Equity-Oriented	1.76	1.96	-0.20	1.87	-3.7391
Pension	1.73	1.90	-0.17	1.19	-4.8472
Real Estate Funds	1.65	1.83	-0.18	1.88	-3.1989
Speciality (Sectoral Funds)	1.29	1.46	-0.17	3.10	-1.9241

Our analysis has one limitation. The mutual funds report their investments at the end of every month. In our analysis, we assume the investments are not disturbed till the end of the next month. If the fund manager changes the portfolio during the month, the analysis would

not have captured the effect. In the absence of information on the exact date of fund managers changing the portfolio, it is reasonable to assume that the investments hold good for one month.

Conclusion

Mutual funds play an important role in managing the savings of small and big investors and employ professional fund managers in managing the funds. Several studies have examined the overall fund managers' performance under active and passive strategies. Some of these studies used stock market indices like S&P 500 and compared whether funds generate any excess return over the market return. In this study, we have examined the fund managers' decision on how much amount to be invested in selected stocks. Fund managers have two options after selecting the securities for investment. Under active decision making, the fund manager decides how much money to be invested in each of the securities and normally, such active decision leads to skewed distribution. Under passive decision making, the fund manager decides equal amount to be invested in the selected stocks. In this study, we have compared the performance of 772 mutual fund schemes based on the above two measures over a period of ten years, January 2004 to December 2013. Our results fail to show any support that active fund allocation decision is better than passive fund allocation decision. Only 2 out of 772 schemes report statistically excess return by following active fund allocation decision. Our conclusion that there is no value addition in pursuing active fund allocation decision making applies when we group the funds under different fund houses, different funds' categories and different fund managers. Though the funds suffer lower return by following active fund management, the lower return is not very large to conclude that active fund management leads to value destruction. In 753 fund schemes out of 772 schemes, the null hypothesis that there is no significant difference between active and passive fund allocation is accepted. The negative excess return does not mean that the funds suffered negative return. On the contrary, the average returns of the funds is 1.68% per month and our analysis compares what would have been the return if the fund managers followed passive fund allocation strategy instead of active fund allocation strategy. Our conclusions are: (a) there is no significant value addition by following active fund allocation strategy: and (b) on average funds would have earned 0.18% more per month by creating equal weight portfolio (passive fund allocation strategy), x

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