Mutual Fund Performance Evaluation: A Benchmark Comparison

By

**Shalini Sharma**, Project Fellow, Department of Business Administration CDLU, Sirsa, Shalinibharadwaj10@gmail.com

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**Dr. Arti Gaur**, Assistant Professor, Department of Business Administration CDLU, Sirsa, Artigaur2009@gmail.com

&

**Nancy Arora**, Ph.D, Research Scholar, Department of Business Administration CDLU, Sirsa, Nancyarora142@gmail.com

ABSTRACT

A mutual fund is just the connecting bridge or a financial intermediary that allows a group of investors to pool their money together with a predetermined investment objective. The mutual fund will have a fund manager who is responsible for investing the gathered money into specific securities (stocks or bonds). Mutual funds are considered as one of the best available investments as compared to others they are very cost efficient and also easy to invest in, thus by pooling money together in a mutual fund, investors can purchase stocks or bonds with much lower trading costs than if they tried to do it on their own. But the biggest advantage to mutual funds is diversification, by minimizing risk & maximizing returns. Under this study To evaluate the return with risk associated in the mutual fund and compares the performance of various mutual fund schemes on the basis of benchmark index so as to bring out whether the scheme is outperforming or underperforming the benchmark is measured by using secondary data Sharpe's and Treynor’s portfolio performance measure is used to find the risk premium of portfolio relative to the total amount of risk in the portfolio. The study brings out that in India almost every sector is likely to witness a huge growth going forward.

KEYWORDS: Risk, Fund, Return, Portfolio, growth, Investor.

INTRODUCTION OF MUTUAL FUND

Every human being saves some of one’s earning for the future. Now the biggest problem a person faces where to keep that saving. There are so many type of the financial instrument in which an investor can invest his saving. And new innovations take place in this regard from time to time. Such innovations reduce or diffuse risk, minimize the transaction cost to widen reach of capital market in its better integration in the financial system. Several significant developments have taken place in history of Indian financial system with the new intermediaries such as depositaries, venture capital funds, credit rating agencies and foreign institutional investors. Advent of the mutual fund business culture is of course a new feather in the cap of Indian capital market. A Mutual Fund is a financial institution,
which by polling droplet of saving of many individuals accumulate a fairly large and well diversified portfolio of investments. The money thus collected is invested by the fund manager in different types of securities depending upon the objectives of the scheme. It could range from share to debenture to money market instruments. The income earned through these investments and the units holders in proportion to the number of units owned by them share the capital appreciation realized by the scheme. Thus, a mutual fund is the most suitable investment for a common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost.

Characteristics of Mutual Fund

The main Characteristics of Mutual Fund are as follows:-

- A Mutual Fund actually belongs to the investors who have pooled their fund. The ownership of the mutual fund is in the hands of the investors.
- The pool of fund is invested in a portfolio of marketable investment. The value of portfolio is updated every day.
- A Mutual Fund is managed by investment professionals and other service providers, who earn fees for their services from the fund.
- The investors share in the fund is denominated by "units". The value of unit’s changes with change in the portfolio's value everyday. The value of one unit of investment is called as the Net Asset Value or NAV.
- The investment portfolio of the mutual fund is created according to the stated investment objectives of the fund.
- Investors purchase mutual fund shares from the fund itself (or through a broker for the fund), but are not able to purchase the share from other investor on a secondary market, such as the New York stock exchange or NASDAQ stock market. The price investors pay for mutual fund shares is the fund’s approximate per share net asset value (NAV) plus any shareholder fees that the fund imposes at purchase (such as sales loads).
- Mutual fund shares are "redeemable." This means that when want to sell their fund shares, they sell them back to the fund (or to a broker acting for the fund) at their approximate per share NAV, minus any fees the fund imposes at that time (such as deferred sales loads or redemption fees).
- Mutual funds generally sell their shares on a continuous basis, although some funds will stop selling.
- The investment portfolios of mutual funds typically are managed by separate entities known as "investment advisers".
- Mutual funds come in many varieties. For example, there are index funds, stock funds, bond funds, money market funds, and more. Each of these may have a different investment objective and strategy and a different investment portfolio. Different mutual funds may also be subject to different risks, volatility, and fees and expenses.

REVIEW OF LITERATURE:

Treynor and Mauzy (1953) carried out a study to test the claims of the active managers of having good market timing. They used a statistical test which helped predicting the future with the help of past trends. During the period of 1953-62, 57 funds were tested, but
found no evidence about the funds outperforming the benchmark. They said that an investor can benefit from his only by varying the fund volatility systematically so that the resulting line is concave upwards. The study assumes that improvement in a funds return can only be due to the manager’s ability to discover the under priced securities, companies and industries and not always the market as a whole.

**Jensen, M.C. (1964)** covered the performance of 115 funds during the period 1945-64. Measuring the performance in terms of Jensen’s alpha (α), the study found that the average mutual fund earned 1.1% less than the expected return appropriate to the corresponding systematic risk. The distribution was significantly skewed towards negative alphas, with 76 mutual funds showing values of alphas less than zero. The study led to the conclusion that mutual funds on average were not able to predict security prices well enough to outperform the market. Nor even an individual fund was able to do significantly better than that expected from a mere random chance. On average the funds were not quite successful enough in their trading activities, even to recoup the brokerage expenses.

**Sharpe, W.F. (1966),** studied the performance of 34 mutual funds. The study revealed that, the degree of reliability of performance forecast using the past trends was not very high. Thus past performance was found not to be a dependable predictor of future performance. Sharpe’s study revealed that investment managers did quite well in diversification of the portfolios. The difference in the actual performance could therefore be related to the ability of managers in regard to selectivity and market timing. The study also indicated a strong correlation between good performance and low administrative costs. Sharpe also tried to see if there is a relationship between the size of a fund and its performance. It is expected that for a larger fund, the overhead expenses will form a smaller percentage of the total value of assets. It may also be possible to obtain better information and conduct a more exhaustive analysis for a given percentage of overhead expenses. However, the study failed to notice any significant correlation of performance with the size of funds.

**Chang, E. and W. Leweldon,(1984)** employed a parametric statistical procedure that jointly tested for either superior market timing or security- selection skills to examine the investment performance of a sample of 67 mutual funds during the 1970s. Using both quarterly and monthly return series, they find that manager's security selection abilities were significant in magnitude in only five instances out of 67, and three of these five have negative values. They concluded that their empirical were consisted with their model’s predictions and that the findings suggested no evidence of skillful market timing or superior security selection abilities.

**Lehman, B. and D.Modest,1987** evaluated the efficacy of performance measure that use the standard security market line as a benchmark model and they conclude that the choice of a benchmark portfolio significantly impact performance results and thus was the first crucial step in measured the performance of mutual fund.

**Grinblatt, M. and S. titman, 1989** reported that superior performance existed particularly among the aggressive growth and growth funds. But surprisingly, there funds also had the highest expenses. As a result their actual return net of expenses did not exhibit superior performance. This indicated that investor could not take advantage of the superior abilities of portfolio managers.
Stephen J. Brown and William N. Goetzmann (1997) in their article “mutual fund styles” purposed a new approach for determining management styles. They claim, their classifications are superior to common industry classifications in predicting cross sectional future performance, as well as past performance, and they also outperform classifications based on risk measure and analogue portfolios. They believe and identify the same with proof that several funds misclassify themselves. Some of this misclassification they believe might be intentional, in that it works to improve ex post relative performance measure, on average. Management styles are widely used as the basis for performance measurement and compensation. Thus there is a great need for style classifications that are objectively and empirically determined, consistent across manager and related to the strategy. Objectivity is important because of the moral hazard inherent in allowing managers to self report their styles without objective verification. Consistency is needed for the purpose of performance comparison.

Carhart, M., 1997 investigated the persistence issue using a sample of equity fund from 1962-1993. The sample comprised 1892 funds divided among aggressive growth, long term growth, and growth and income categories. He reported that expenses and turnover were related to performance with deciles ten having higher than average expenses and turnover. He concluded that the spread in mean return, unexplained by common factors and fees, was primarily attributable to strong underperformance by funds in deciles ten.

Rao and Ravindran measured the performance of 269 funds in the period 1999-2002 during the bearish phase in the Indian equity market. Out of the 269, only 58 were chosen as the rest earned a return less than the risk free rate. It was found that more than half of the funds had a positive Sharpe, Treynor ratio and Jensen Alpha even during the bear phase.

Lunde A., A. timmermann, and D.Blake, 1999 investigated the relationship between funds conditional probability closure and their return performance. They employed a data set containing monthly return on a nearly completed sample of U.K. open ended funds during the period 1973-1995. The number of dead and surviving funds was 973 and 1402 respectively. They found that funds performance over the past three year was more significantly for its closure probability than only its prior year's performance.

RESEARCH METHODOLOGY

The study is entirely based on the secondary data. The scope of the study is limited to the time period of 10 years covering the early phases of the millenium (January 2000 to December 2009). The sample consists of 30 schemes which is chosen at random basis. It is important to point out those NAVs taken on weekly basis.

Data Collection

The secondary data regarding NAV of these 30 different schemes have been noted from 'Economic Times' and www.amfiindia.com. The sensex is used as the proxy for market index and sensex have been taken from "Economic Times" and www.value-investing-centre.com. Each scheme has been evaluated with respect to this benchmark.
Analysis of Data

Return alone should not be considered as the basis of measurement of Performance of a mutual fund scheme, it should also include level of risk undertaken. The excess of Portfolio return, over and above the risk less return is an indication of the overall portfolio performance. The study considered interest rate on Treasury bill as risk less return. The portfolio return calculated on the basis of NAV that have taken on monthly basis during the study period. To evaluate the return with risk associated the following methods have considered.

1) Sharpe's portfolio performance measure
2) Treynor's portfolio performance measure

- **Sharpe's Portfolio Performance Measure**:

William F. Sharpe developed a method of measuring return per unit of risk in 1966. The reward to variability ratio attempted by Sharpe is referred as the "Sharpe Ratio". Sharpe index measures the risk premium of portfolio relative to the total amount of risk in the portfolio. The risk premium is the difference between the portfolio's average return and risk less rate of return. It gives a single value to be used for the performance ranking of various funds or portfolios on risk adjusted return basis. The Standard Deviation of the portfolio indicates the risk. The larger the Sharpe's index the portfolio is over performing the market and vice-versa. There is following formula for measuring the Sharpe's portfolio.

\[
SP = \frac{(R_P - R_F)}{\sigma_P}
\]

Where:

- \( SP \) = Sharpe's Index
- \( R_P \) = Portfolio Average Return
- \( R_F \) = Risk free rate of interest
- \( \sigma_P \) = Standard deviation of the portfolio return

Here, the benchmark is additional return of market over risk free return related with market portfolio's total risk.

\[
Sm = \frac{(R_m - R_F)}{\sigma_m}
\]

Where:

- \( Sm \) = Sharpe Index of benchmark
- \( R_m \) = Average Market Return
- \( R_F \) = Risk free rate of interest
- \( \sigma_m \) = Standard deviation of the Market Return

In case of SP is more than Sm (\( SP > Sm \)) the fund's performance is better than market.

- **Treynor's portfolio performance measure**:

A key to understanding Treynor's portfolio performance is the Concept of a characteristics line. The graphic presentation of the linear regression relationship between the return of an individual security and the return on market portfolio is commonly referred to as the characteristic line. The slope of the characteristic line is the Beta
coefficient, a measure of the portfolio’s systematic risk as a type of volatility measure. Thus, by comparing the slopes of characteristic line, the investor gets an indication of the fund’s volatility. Treynor has proposed incorporating these various concepts into a single index to measure portfolio performance more accurately. The characteristics line can be drawn by plotting the fund’s rate of return for a given period against the market’s return for the same period as shown in the diagram.

Relationship between Fund’s Return and Market’s Return

![Characteristics Line Diagram](image)

The slope of the line indicates the sensitivity of funds return to the market. More the slope more will be the risk. With the help of the characteristic line Treynor measures the performance of the fund. He develop a performance index which is a ratio of return generated by a fund over and above risk free rate of return during a given time period and systematic risk associated with it.

According to Treynor’s ratio, the additional returns of the portfolio (fund) over the risk free returns is expressed in relation to portfolio’s systematic risk measured by Beta. This is known as reward to volatility (RVOL) and expressed as:

\[
\text{Treynor’s Index (T_P)} = \frac{(R_P - R_F)}{\beta_P}
\]

- \(R_P\) = Portfolio average return
- \(R_F\) = Risk free rate of return
- \(\beta_P\) = Slope of the characteristic line

Here additional average returns of market over average risk free return \((R_m - R_F)\) are the benchmark. Where
- \(R_m\) = Average Market Return
- \(R_F\) = Risk free Return

Greater value of the portfolio over the market indicates a superior performance of the fund. All risk averse investor would like to maximize this value while high and positive Treynor index shows a superior risk adjusted performance of the fund, a low and negative Treynor index is an indication of unfavorable performance. The total expression indicates the portfolio’s risk premium (difference between portfolio’s return and risk free rate of return) per unit of risk. To compare its performance with benchmark, Treynor index have calculated by using the return on the benchmark portfolio.

**OBJECTIVE OF THE STUDY**

To compare the performance of various mutual fund schemes on the basis of benchmark index so as to bring out whether the scheme is outperforming or underperforming the benchmark. In order to achieve the investment objective mutual funds are adopting various types of strategies. The issue related to choose
among the various schemes is important because a single wrong decision may put the investor on financial crisis. A proper performance evaluation measure will remove.

ANALYSIS AND INTERPRETATION

Data analysis and interpretation is the most important part of any research study. The raw primary data were collected during the course of study. The data, after collection, has to be analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. This is essential for a scientific study & for ensuring that we have all relevant data for making contemplated comparisons & analysis.

Table 1. Ranking based on Sharpe’s ratio and Treynor ratio of equity growth schemes (Jan 2000 to June 2009).

<table>
<thead>
<tr>
<th>Scheme name</th>
<th>Sharpe’s Ratio</th>
<th>Rank</th>
<th>Treynor’s Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birla Sun Life Equity Fund</td>
<td>0.0623</td>
<td>13</td>
<td>0.3631</td>
<td>11</td>
</tr>
<tr>
<td>Birla Sun Life India opportunity fund</td>
<td>0.0151</td>
<td>30</td>
<td>0.1003</td>
<td>30</td>
</tr>
<tr>
<td>Birla sun life MNC fund</td>
<td>0.0411</td>
<td>20</td>
<td>0.2457</td>
<td>22</td>
</tr>
<tr>
<td>DBS Chola opportunities fund</td>
<td>0.0280</td>
<td>28</td>
<td>0.1668</td>
<td>28</td>
</tr>
<tr>
<td>Franklin India Bluechip Fund</td>
<td>0.0730</td>
<td>8</td>
<td>0.3947</td>
<td>9</td>
</tr>
<tr>
<td>Franklin India Prima Plus</td>
<td>0.0682</td>
<td>11</td>
<td>0.3830</td>
<td>10</td>
</tr>
<tr>
<td>HDFC Equity Fund</td>
<td>0.0860</td>
<td>6</td>
<td>0.4325</td>
<td>6</td>
</tr>
<tr>
<td>HDFC Top 200 Fund</td>
<td>0.0712</td>
<td>9</td>
<td>0.3582</td>
<td>12</td>
</tr>
<tr>
<td>ICICI Pru Growth Fund</td>
<td>0.0466</td>
<td>18</td>
<td>0.2575</td>
<td>19</td>
</tr>
<tr>
<td>ICICI Pru Power</td>
<td>0.0573</td>
<td>15</td>
<td>0.3370</td>
<td>15</td>
</tr>
<tr>
<td>ING Core Equity Fund</td>
<td>0.0305</td>
<td>25</td>
<td>0.2322</td>
<td>23</td>
</tr>
<tr>
<td>JM Basic Fund</td>
<td>0.0751</td>
<td>7</td>
<td>0.5749</td>
<td>1</td>
</tr>
<tr>
<td>JM Equity Fund</td>
<td>0.0284</td>
<td>27</td>
<td>0.1604</td>
<td>29</td>
</tr>
<tr>
<td>LICMF Equity Fund</td>
<td>0.0286</td>
<td>26</td>
<td>0.1797</td>
<td>27</td>
</tr>
<tr>
<td>LICMF Growth Fund</td>
<td>0.0330</td>
<td>24</td>
<td>0.2281</td>
<td>24</td>
</tr>
<tr>
<td>Reliance Vision Fund</td>
<td>0.0901</td>
<td>3</td>
<td>0.5636</td>
<td>2</td>
</tr>
<tr>
<td>Sundaram BNP Paribas Growth Fund</td>
<td>0.0533</td>
<td>16</td>
<td>0.2865</td>
<td>17</td>
</tr>
<tr>
<td>Tata Life Science &amp; Technology Fund</td>
<td>0.0374</td>
<td>23</td>
<td>0.2550</td>
<td>20</td>
</tr>
<tr>
<td>Tata Pure Equity Fund</td>
<td>0.0707</td>
<td>10</td>
<td>0.4064</td>
<td>8</td>
</tr>
<tr>
<td>Tata Select Equity Fund</td>
<td>0.0396</td>
<td>21</td>
<td>0.2488</td>
<td>21</td>
</tr>
<tr>
<td>Taurus Discovery Fund</td>
<td>0.0274</td>
<td>29</td>
<td>0.1875</td>
<td>26</td>
</tr>
<tr>
<td>Taurus Starshare</td>
<td>0.0524</td>
<td>17</td>
<td>0.3260</td>
<td>16</td>
</tr>
<tr>
<td>Franklin India Opportunities Fund</td>
<td>0.0387</td>
<td>22</td>
<td>0.2261</td>
<td>25</td>
</tr>
<tr>
<td>Birla Sun life Basic Industries Fund</td>
<td>0.0920</td>
<td>2</td>
<td>0.5307</td>
<td>4</td>
</tr>
<tr>
<td>Birla Sun Life Buy India Fund</td>
<td>0.0421</td>
<td>19</td>
<td>0.2626</td>
<td>18</td>
</tr>
<tr>
<td>Kotak MNC</td>
<td>0.0585</td>
<td>14</td>
<td>0.3505</td>
<td>14</td>
</tr>
<tr>
<td>DSP BR Opportunities Fund</td>
<td>0.0880</td>
<td>4</td>
<td>0.4518</td>
<td>5</td>
</tr>
<tr>
<td>Principal Resurgent India Equity Fund</td>
<td>0.0965</td>
<td>1</td>
<td>0.5516</td>
<td>3</td>
</tr>
<tr>
<td>HDFC Growth Fund</td>
<td>0.0877</td>
<td>5</td>
<td>0.4324</td>
<td>7</td>
</tr>
<tr>
<td>Principal Growth Fund</td>
<td>0.0672</td>
<td>12</td>
<td>0.3521</td>
<td>13</td>
</tr>
</tbody>
</table>
According to above table No. 1 scheme on the basis of Sharpe’s index is Principal Resurgent India Equity Fund and on the second rank is Birla Sun Life Basic Industries Fund and the lowest scheme is Birla Sun Life India Opportunity Fund and according to Treynor Model, the No. 1 scheme is JM Basic Fund and on the second rank is Reliance Vision Fund and the lowest scheme is Birla Sun Life India Opportunity Fund. The study focused on the performance of thirty mutual fund schemes. The evaluation of performance was based on two risk adjusted performance measures, viz., Sharpe measure, Treynor measure. It was found that there were close similarities in the ranking of the schemes on the basis of Sharpe and Treynor indices.

The performance of the 30 schemes was also gauged against the performance of a benchmark market portfolio represented by the sensex. The performance of the portfolio studied was found to be mixed in comparison to the benchmark with only 11 portfolio out of 30 performing worse and the remaining are performing better than the market portfolio.

The Sharpe ratio tells us whether a portfolio’s returns are due to smart investment decisions or a result of excess risk. This measurement is very useful because although one portfolio or fund can reap returns than its peers, it is only a good investment if those higher returns do not come with too much additional risk. The greater a portfolio’s Sharpe ratio, the better its risk-adjusted performance has been. The range of Sharpe ratio in our research of 30 mutual funds varies from 0.0151 to 0.0965. Sharpe ratio for Sensex (market portfolio for our research) stands at 0.0415. We can thus conclude that 19 out of 30 funds have Sharpe ratio more than that of market portfolio and thus have out-performed the market. The average Sharpe ratio for all 30 mutual funds stands at 0.0562 which is again higher than that of market portfolio. Thus we can conclude that majority funds have substantially outperformed the market. Treynor ratio is a risk adjusted measure of return based on systematic risk. Treynor ratio in our research varies from 0.1003 to 0.5749 with an average of 0.3282. In contrast the Treynor ratio for market portfolio (i.e. Sensex) stands at 0.1867. From our study we can see that 26 out of 30 funds have outperformed the market portfolio. Thus we can conclude that mutual funds in India have the capacity in outperforming the market.

**SUMMARY AND CONCLUSIONS**

The Indian mutual fund industry has grown at a remarkable rate in the recent past. This has been result of astonishing growth of the Indian economy and its markets. This action in the markets and the mutual fund industry motivated this study. The study measured the performances of various funds using the risk adjusted measures of portfolio performance. The study also discussed and explained these measures to make it easy for the readers to follow these measures and also understand their significance.

The results derived were significantly different from the empirical studies conducted in the past on the similar topic in other markets. The empirical studies suggest that, on an average, the fund managers are unable to beat the market portfolio and have positive results. US mutual fund studies reveal that the vast majority of mutual funds under perform the average return of the stock market. One estimate has it that approximately 80% of mutual funds under perform the stock market returns. But the case is quite different for
Indian mutual fund managers as found in this study. In comparison, in India, a developing economy, almost every sector is likely to witness a huge growth going forward. But while that may be true, considering the frenetic pace of growth that is being predicted for India, it is a good mood point that the Indian fund scenario would follow suit, sooner or later. Though, to reach that stage it may take another 10-15 years for the Indian economy. The reason being that in the US, percentage of households interested in some funds has risen from 6% in 1980 to more than 50% currently. In India, it is still a negligible percentage. Thus to make a meaningful comparison with the developed economies, India has a long way to go.

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