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TEST OF SHARPE RATIO ON SELECTED MUTUAL FUND SCHEMES

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ABSTRACT

In the slow growth of Indian capital market and private participation in the Indian mutual fund industry, the challenge to survive and retain investor confidence has been a prime area of concern for mutual fund managers and researchers. Present paper evaluates the performance of 12 selected mutual fund schemes with the application of Sharpe model and also brings out which scheme is outperforming or underperforming during the study period from May 2005 to April 2009. The result shows that three out of twelve selected mutual fund schemes have more standard deviation than market index and only three mutual fund schemes, out of twelve, shows positive value of Sharpe Index. On the basis of the study it can be concluded that most of the selected mutual fund schemes during the study period are underperforming.

KEYWORDS: Mutual Fund, Risk, Standard Deviation, Sharpe Index.

INTRODUCTION

Mutual funds are mobilizing savings, particularly from the small and household investors, for investments in stock and money market. Basically, these institutions have professional fund managers, capable of managing funds very prudently and profitably of individuals and institutions that may not have such high degree of expertise or may not have adequate time to cope with the complexities of different investment avenues, legal provisions associated therewith and vagaries and vicissitudes of capital markets. Mutual funds, thus, provide an alternative to the investors, who instead of making direct investments in shares or bonds through public issues or through secondary market subscribe to the corpus of mutual funds. Investors can reap all the benefits of good investment through mutual funds like enjoying growth in those scrips in which he might not have otherwise invested, holding a balanced and well-diversified portfolio, better returns due to specialized and professional management of funds etc.

Mutual funds raise funds by selling their own shares also known as units. When an investor owns shares in mutual funds he owns a proportional share of their securities portfolio. In other words, share of a mutual fund actually represents a part share in many securities that it has purchased. Mutual fund share certificate combines the convenience and satisfaction of owning shares in many industries. Thus, mutual funds are investment intermediaries, which pool investors' funds, acquiring individual investments, and pass on the returns thereof to the investors, Besides Investment business, mutual funds may also

undertake, if permitted, underwriting and other merchant banking activities.

In India, Mutual Fund concept took roots only in sixties, after a century old history elsewhere in the world. Realizing the needs for a more active mobilization of household savings to provide investible resources to industry, the idea of first mutual fund in India was born out of the far sighted vision of Sri T. Krishnamachari the then Finance Minister. He wrote to the then Prime Minister Pandit Jawahar Lal Nehru outlining the need for an institution which would serve as a conduit for these resources to the Indian Capital market, and RBI was entrusted to create this special Institution. While introducing Unit Trust of India (UTI) Bill in Parliament Sri Krishnamachari observed, "I would christen this attempt as an adventure in small saving and I am confident that we are embarking on this adventure with every hope of being successful". He highlighted UTI as "an opportunity for the middle and lower Income groups to acquire without much difficulty property in the form of shares. UTI, in 1964 started with a unit scheme popular as US-64.

Since Unit Trust of India was the result of a special enactment, no other open ended mutual fund activities could emerge because of restrictive conditions of Indian Companies Act 1956. Of course, close ended investment companies existed for in house investments as well as portfolio Investment for a long time. But their activities were again on a restricted scale. No company came out with public issue for a long time. The first among such companies which offered their shares to public were Growth Fund of India Limited and Nagarjuna Investment Trust Limited.

The future looks bright for the industry in India, going by a recent study conducted by the Associated Chamber of Commerce and Industry of India and AMFI. The report predicts that the mutual fund industry is expected to jump sharply from its present share of 6% in GDP to 40% in the coming years, provided the country's growth rate consistently exceeds 6% per annum. The report says that by 2014, the size of Indian Mutual Fund Industry is estimated to go up to over Rs. 165000 cr. It suggests that India is going to follow the pattern seen in the developed markets such as the US where the size of the industry is 70% of the GDP. The worldwide size of the industry is about 37% of GDP.

There is no doubt that the mutual fund industry in India has come a long way witnessing significant structural changes from a monolithic structure to a competitive one. With the Indian economy on a high growth trajectory, improved corporate performance, ongoing economic reforms, rising income and higher saving levels make the industry's future look bright. However, this would not mean survival for all. The competition is going to be tough. And, size is going to play an important role in the game of survival. There is no doubt that those with capabilities – both in terms of size of the assets under management and investment skills – are going to rule the investment management scene.

With the objective of improving market efficiency, increasing transparency, integration of national markets and prevention of unfair practices regarding trading, a package of reforms comprising measures to liberalize, regulate and develop capital market was introduced.

An important step has been the establishment of the Securities and Exchange Board of India (SEBI) as the regulator for equity markets. Since 1992, reform measures in the equity market have focused mainly on regulatory effectiveness, enhancing competitive conditions, reducing information asymmetries, developing modern technological infrastructure,

mitigating transaction costs and controlling of speculation in the securities market. Another important development under the reform process has been the opening up of mutual funds to the private sector in 1992, which ended the monopoly of Unit Trust of India (UTI), a public sector entity. These steps have been buttressed by measures to promote market integrity.

The Indian capital market was opened up for foreign institutional investors (FIIs) in 1992. The Indian corporate sector has been allowed to tap international capital markets through American Depository Receipts (ADRs), Global Depository Receipts (GDRs), Foreign Currency Convertible Bonds (FCCBs) and External Commercial Borrowings (ECBs). Similarly, Overseas Corporate Bodies (OCBs) and non-resident Indians (NRIs) have been allowed to invest in Indian companies. FIIs have been permitted in all types of securities including Government securities and they enjoy full capital convertibility. Mutual funds have been allowed to open offshore funds to invest in equities abroad.

REVIEW OF LITERATURE

Review of previous studies provides the need and justification for the research work to be undertaken, and research methodology explains the research process. Researcher and practitioners have produced literature covering different aspects of mutual funds. A variety of technical and quantitative measures have been developed to assess and compare the financial performance of mutual fund schemes as well as the performance of funds managers. These measures provide the methods of comparing risk-adjusted returns of a portfolio with other portfolios or with benchmarks.

Wermers (2000) in his study used two databases in the analysis of mutual fund returns. The first database contains quarterly portfolio holding for all US equity mutual funds existing at any time between January 1975 and December 1994. The second mutual fund database is available from CRSP and used by Carhart (1997). The study found that funds which hold stocks outperform the market by 1.3 % per year, but their returns under-perform by 1 %. Of the 2.3 % difference between these results, 0.7% is due to the underperformance of non- stock holdings, whereas 1.6% is due to expenses and transaction costs. Thus, the funds pick stocks well enough to cover their costs.

Mishra, et al., (2002) measured mutual fund performance using lower partial moment. In this paper, measures of evaluating portfolio performance based on lower partial moment are developed. Risk from the lower partial moment is measured by taking into account only those stocks in which return is below a pre-specified "target rate" like risk-free rate.

Rajeeva Sinha and Vijay Jog(2003) the authors examine the performance of Canadian mutual fund managers, and find that their performance is lackluster when compared with some well-recognized bench marks such as the TSE 300 and the 90-day T-Bill rates, and is even lower when one accounts for the timing of entry and exit by mutual fund investors. They attribute this to the lack of performance persistence. However, unlike some US studies, they do not find evidence suggesting that Canadian mutual fund investors chase winners, and are reluctant to exit from losing funds; while investors do allocate funds based on past performance, the allocations do not favor star funds disproportionately. Poor performers experience significant fund withdrawals. They attribute this to the differences in the tax treatment of retirement-related savings – the principal source of mutual

funds asset growth.

Kshama Fernandes (2003) evaluated index fund implementation in India. In this paper, tracking error of index funds in India is measured .The consistency and level of tracking errors obtained by some well-run index fund suggest that it is possible to attain low levels of tracking error under Indian conditions. At the same time, there do seem to be periods when certain index funds appear to depart from the discipline of indexation.

Warren Bailey, Haitao Li, and Xiaoyan Zhang *(2004) analyze hedge fund performance, using the stochastic discount factor (SDF) approach and imposing the arbitrage-free requirement to correctly value the derivatives and dynamic trading strategies used by hedge funds. Using SDFs of many asset-pricing models, we evaluate hedge fund portfolios based on style and characteristics. Without the arbitrage-free requirement, pricing errors are relatively small and a few models can explain hedge fund returns. With this requirement, pricing errors are much bigger, and all models fail to price style and volatility portfolios. Fund manager characteristics like age, experience, and education explain some of the mispricing of our best risk model.

Antonella Basso and Stefania Funari (2004) tackle the problem of the presence of negative average rate of returns in the computation of the performance of ethical mutual funds. The presence of these negative values raises problems both in the computation of the classical performance indicators and in DEA modeling. In this paper we propose a suitably adjusted DEA model which allows the presence of non negative outputs. The model is applied to data on the UK market of ethical mutual funds.

K. Pendaraki et al. (2004) studied construction of mutual fund portfolios, developed a multi-criteria methodology and applied it to the Greek market of equity mutual funds. The methodology is based on the combination of discrete and continuous multi-criteria decision aid methods for mutual fund selection and composition. UTADIS multi-criteria decision aid method is employed in order to develop mutual fund's performance models. Goal programming model is employed to determine proportion of selected mutual funds in the final portfolios.

Zakri Y.Bello (2005) matched a sample of socially responsible stock mutual funds matched to randomly selected conventional funds of similar net assets to investigate differences in characteristics of assets held, degree of portfolio diversification and variable effects of diversification on investment performance. The study found that socially responsible funds do not differ significantly from conventional funds in terms of any of these attributes. Moreover, the effect of diversification on investment performance is not different between the two groups. Both groups underperformed the Domini 400 Social Index and S & P 500 during the study period.

Dimitri Margaritis, Roger Otten and Alireza Tourani-Rad (2007) apply data envelopment (DEA), a mathematical programming technique, to measure the performance of equity retail funds in New Zealand over the period 1998–2003. An analysis of fifty-two equity mutual funds, national and international, shows significant differences in their performances, with an average DEA efficiency score of 0.72. The application of regression analysis further shows that funds with an international asset allocation strategy have had lower efficiency scores, and that larger funds have had higher efficiency scores.

Ken L. Bechmann and Jesper Rangvid (2007) examine Danish mutual funds. The authors describe what is special about Danish mutual funds, as well as the dimensions along which Danish funds are comparable to other European funds. They discuss how Danish mutual funds have performed in absolute terms and in relation to other European mutual funds, and focus also on the costs to the investor of purchasing Danish mutual funds certificates. Finally, the authors compare Danish fund costs with the mutual fund costs in other European countries.

OBJECTIVES OF THE STUDY

The present study focuses on the performance evaluation of selected mutual fund schemes of various mutual funds operating in the country. The specific objectives of the study are as follows:

1. To evaluate the performance of mutual funds with special reference to Sharpe model.

2. To compare the performance of mutual funds on the basis of benchmark index and bring out which scheme is outperforming or underperforming.

RESEARCH METHODOLOGY

As many researches conducted to evaluate the performance of the mutual funds have proved that this is a matter of concern for the researcher, academicians, fund managers and financial analysts. These researches are the matter of criticism on the various grounds such as number of samples, time period of the research or the selection of a particular scheme. This study is an effort of its own kind to contribute to this field and may open up avenues for further intensive research on its different related aspects of portfolio management practices.

In order to achieve the investment objective mutual funds are adopting various types of strategies. The study is entirely based on the secondary data. The scope of the study is kept limited to the time period of 4 years (May 2005 to April 2009). The sample consists of 12 mutual fund schemes, which are chosen at random basis. It is important to point out that NAVs have been taken on monthly basis. The data regarding the NAV's and return of these 12 mutual fund schemes have been noted from Alpha database. The BSE Sensex was used as the proxy for market index and each scheme has been evaluated with respect to this benchmark.

Return alone should not be considered the basis of measurement of performance of a mutual fund schemes, it should also include level of risk undertaken and diversification of funds. The excess of portfolio return, over the risk less return is an indication of the overall portfolio performance. The study considered interest rate on treasury bills as risk-less return in view of the average yield being 5 percent during the study period.

NET ASSET VALUE

NAV has been obtained from the different sources such as:

1. SEBI annual reports
2. Economic Survey

3. Alpha Database and Companies Annual Reports

The portfolio return calculated on the basis of NAV does not consider any change in the market price but considers the change in the net asset value of mutual funds units during the period.

Portfolio's return (Rn) is calculated by using the following formula:

$$R_P = \frac{(NAV_t - NAV_{t-1})D_t + C_t}{NAV_{t-1}}$$

R_p = Portfolio return

NAV_t= Net asset value in time period t

NAV_{t-1} = Net asset value in the period t-l

D_t = dividend in the form of bonus distributed in the period t

C_t = cash dividend distributed in the time period t

Year-wise returns have been calculated for all mutual funds' schemes since their commencement of the study period i.e. from May 2005. The portfolio return Rp was computed in the manner prescribed above on a monthly basis. The holding period return has been computed with the process of geometric mean of monthly NAV based returns. The formula for the geometric mean has been used as follows:

Holding period return (HPR) =

$$[\{R_{pt+1} + R_{pt+2} + \ldots\ldots R_{pt+n}\}]$$

The same procedure is adopted to calculate the benchmark portfolio return.

This section has been written to study the performance of selected mutual fund schemes on the basis of analysis tools meant for Return Analysis, Risk Analysis and specific model meant for performance analysis.

SHARPE'S MODEL

In this model, performance of a fund is evaluated on the basis of Sharpe ratio, which is the ratio of returns generated by the fund over the risk free rate of return and the total risk associated with it. According to Sharpe, it is the total risk of the fund that investors are more concerned about. So, the model evaluates funds on the basis of reward per unit of total risk. Symbolically, it can be written as:

$S_p = (R_P - R_F)/\sigma_p$

S_P = Sharpe's index

R_P= Portfolio average return

R_F =Risk free rate of return

σ_P= Standard deviation of the return

Here, the benchmark is the ratio of market portfolio returns over the risk free rate of return with market portfolio's standard deviation and can be calculated as follows:

$S_M = (R_M - R_F)/\sigma_M$

S_M =Sharpe index of benchmark portfolio

R_M =Market average return

R_F =Risk free rate of return

σ_M=Standard deviation of market

While high and positive ratios show a superior risk- adjusted performance of a fund, a low and negative ratio is an indication of unfavorable performance.

TABLE 1.1 SHOWS THE SAMPLE SCHEMES WITH THEIR YEAR OF COMMENCEMENT.

Table 1.1

Sample Profile of the Diversified Mutual Fund Schemes (Year wise)

S.No.	Name of the Scheme	Year of Commencement	Types of Scheme
1.	Birla Sun Life Basic Inds. Fund	1994	Dividend
2.	F T India Monthly Income Plan	2000	Growth
3.	Franklin India Blue-chip Fund	1993	Growth
4.	H D F C Liquid Fund	2000	Growth
5.	Kotak Gilt	1998	Investment Plan RegularDividend
6.	L & T Liquid Fund	1994	Regular Plan Cumulative
7.	L I C M F Balanced Fund	1991	Growth

8.	Reliance Growth Fund	1995	Dividend
9.	S B I Magnum Gilt Fund	2000	Dividend
10.	Tata Balanced Fund	1995	Dividend
11.	Templeton India Pension Plan	1997	Treasury Dividend
12.	U T I Bond Fund	1999	Dividend

Sources: - SEBI annual reports, Economic Survey, Financial Express

ANALYSIS & CONCLUSION

Here, 12 Mutual Fund have been taken for the study. The table 1.2 shows the average return on sample schemes and Market return on BSE SENSEX. The market standard deviation (risk) is 0.836. The result shows that three out of twelve selected mutual fund schemes have more standard deviation than market index namely Birla Sun Life Basic Inds. Fund (Dividend), Reliance Growth Fund (Growth) and followed by Morgan Stanley Growth Fund (Growth). It means that these schemes are more risky than market portfolio. While the lowest deviation in return indicated by L & T Liquid Fund (Regular Plan Cumulative) and H D F C Liquid Fund(Growth). Only three mutual fund schemes, out of twelve shows positive value of Sharpe Index namely H D F C Liquid Fund (Growth), L & T Liquid Fund (Regular Plan Cumulative), and U T I Bond Fund (Dividend). While other mutual fund scheme had negative value of Sharpe Index in the analysis that indicates the inferior performance.

TABLE 1.2

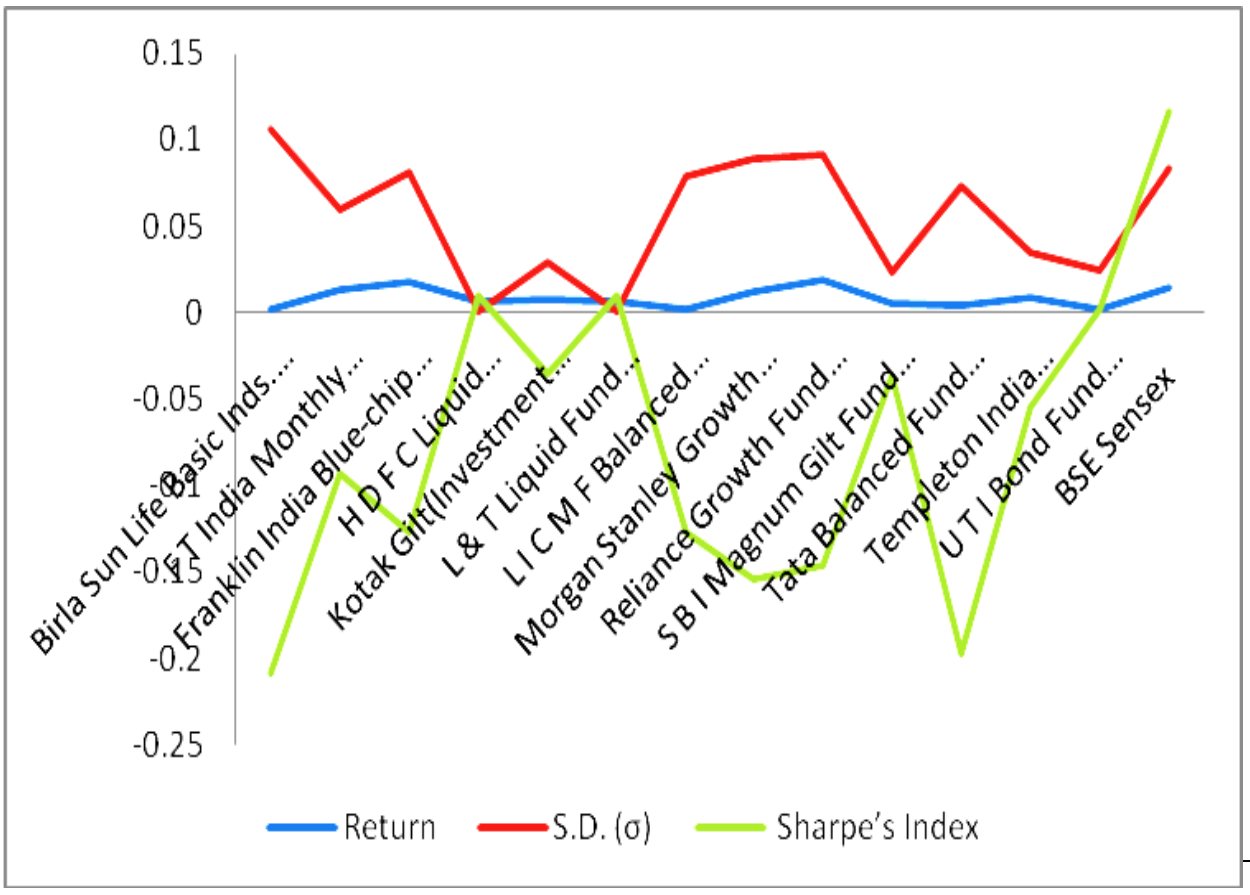
RETURN, VARIABILITY OF RETURNS (Σ), SHARPE'S INDEX OF THE DIVERSIFIED SAMPLE SCHEMES (MAY 2005-APRIL 09)

Scheme Name	**Return**	**S.D. (σ)**	**Sharpe's Index**
Birla Sun Life Basic Inds. Fund(Dividend)	0.0017	0.1061	-0.209
F T India Monthly Income Plan(Growth)	0.0131	0.0599	-0.094
Franklin India Blue-chip Fund(Growth)	0.0176	0.0815	-0.128
H D F C Liquid Fund(Growth)	0.0059	0.0011	0.0096
Kotak Gilt(Investment Plan Regular Plan Growth)	0.0071	0.0289	-0.036
L & T Liquid Fund (Regular Plan Cumulative)	0.0057	0.0011	0.0092

L I C M F Balanced Fund(Dividend)	0.0015	0.079	-0.128
Morgan Stanley Growth Fund (Growth)	0.0115	0.089	-0.155
Reliance Growth Fund (Growth)	0.0184	0.0918	-0.147
S B I Magnum Gilt Fund (Growth)	0.0048	0.0233	-0.037
Tata Balanced Fund (Growth)	0.0041	0.073	-0.198
Templeton India Pension Plan(Treasury Growth)	0.0081	0.0354	-0.055
U T I Bond Fund (Dividend)	0.0018	0.0243	0.002
BSE Sensex	**0.0135**	**0.0836**	

FIGURE 1.1

RETURN, VARIABILITY OF RETURNS (Σ), SHARPE'S INDEX OF THE DIVERSIFIED SAMPLE SCHEMES (MAY 2005-APRIL 09)



Thus, it appears from the predominance of negative as that the funds were not able to forecast future security prices and even not enough to recover their research expenses, management fees and commission expenses. On the basis of the study it can be safely concluded that most of the selected mutual fund schemes during the study period are underperforming.

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