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Risk & return analysis of performance of mutual fund schemes in India

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Abstract
This paper has investigated the performance of the risk and returns analysis of select mutual funds schemes in India. Their performance is analyzed in comparison to BSE-Sensex and the monthly yield on 91-Day Treasury bills for risk-free rate of return. For testing the performance, the researcher selected growth oriented mutual fund schemes floated by UTI mutual fund during 1st April 2007 to 31st March 2016. This study examines six open-ended equity schemes with growth option being launched by UTI Mutual Funds. Monthly NAV as declared by the relevant schemes have been used in this study for the period of ten years i.e., April 2007 to March 2016. BSE-Sensex has been used for market portfolio. The historical performance of the selected schemes were evaluated on the basis of Sharpe, Treynor, and Jensen's measure whose results will be useful for investors for taking better investment decisions. From the result, the standard deviation and beta value is also low for UTI Dividend Yield fund. This fund provides highest return for a given unit of risk taken. The investor who needs regular income can invest in UTI Dividend Yield fund.

Keywords: Mutual fund, risk factor, Risk-return investment, safety, security

1. Introduction

The Mutual fund is one of the most attractive financial investment instruments that play a vital role in the economy of a country. Mutual fund Industry was introduced in India in the year 1963 with the formation of Unit Trust of India. Mutual funds are financial intermediaries in the investment business. A mutual fund is an investment company that creates a bridge between individual investors or retail investors and corporate giants. Mutual funds provide an investment options for retail investors or individual investors those who are not aware about stock market still they want to invest their funds in stock market with a small amount of money. A mutual fund is a pure intermediary which performs basic function of buying and selling of security on behalf of its investors or unit holders. Mutual funds mobilize saving from a large number of investors and invest these funds in share and other securities. During the last few years, many extraordinary and rapid changes have been seen in the Mutual fund industry. Therefore, due to the changed environment it becomes important to investigate the mutual fund performance. The need for evaluating the performance of mutual fund schemes in India is to see whether the mutual fund schemes are outperforming or underperforming than the benchmark and to see the competency of schemes to make out a strong case for investment. The present paper investigates the performance of select mutual fund schemes of UTI in India. The success of any scheme depends upon the competence of the management and its soundness.

2. Literature Review

This chapter attempts to shed light on the key objectives by looking at different written works at national and international level. A number of studies on evaluating the performance of Indian Mutual Fund Schemes have been conducted in India and foreign countries. Review of some of the studies is presented in the following discussion.
Jayadev (1996) evaluated the performance of two growth-oriented mutual funds namely Mastergain and Magnum express by using monthly returns. Jensen, Sharpe and Treynor measures have been applied in the study and the pointed out that according to Jensen and Treynor measure Mastergain have performed better and the performance of Magnum was poor according to all three measures.

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In their study of open-ended Pakistani mutual funds performance using the quarterly data for the period of 1996-2006. The study measure the fund performance by using Sharpe ratio with the help of pooled time-series and cross sectional data and also focused on different attributes such as fund size, expenses, age, turnover and liquidity. The results found significant impact on fund performance. Studied the performance of selected schemes of mutual funds based on risk and return models and measures. The study covered the period from April 1996 to March 2005 (nine years). The study revealed that Franklin Templeton and UTI were the best performers and Birla Sun life, HDFC and LIC mutual funds showed poor performance. In their study examined the performance of 10 mutual funds in which 5 were conventional and 5 were Islamic for the period from 2006 to 2008 by using Sharpe and Treynor measures. The results found that the funds of Pakistan were able to add more value either conventional or Islamic. The study also found that some of the funds were underperformed, so these funds were facing diversification problems during the study period. Examined the performance of top ten mutual funds that was selected on the basis of previous years return. The study analyzed the performance on the basis of return, standard deviation, beta as well as Treynor, Jensen and Sharpe indexes. The study also used Carhart's four-factor model for analyze the performance of mutual funds. The results revealed that Reliance Regular Saving Scheme Fund had achieved the highest final score and Canara Robeco Infra had achieved the lowest final score in the one year category. Sondhi and Jain (2010) [9] examined the market risk and investment performance of equity mutual funds in India. The study used a sample of 36 equity fund for a period of 3 years. The study examined whether high beta of funds have actually produced high returns over the study period. The study also examined that open-ended or close ended categories, size of fund and the ownership pattern significantly affect risk-adjusted investment performance of equity fund. The results of the study confirmed with the empirical evidence produced by fama (1992) that high beta funds (market risks) may not necessarily produced high returns. The study revealed that the category, size and ownership have been significantly determinant of the performance of mutual funds during the study period. Prabakaran and Jayabal (2010) evaluated the performance of mutual fund schemes. The study conducted a sample of 23 schemes were chosen as per the priority given by the respondents in Dharmapuri district covered a period from April 2002 to March 2007. The study used the methodology of Sharpe, Jensen and Fama for the performance evaluation of mutual funds. The results of the study found that 13 schemes out of 23 schemes selected had superior performance than the benchmark portfolio in terms of Sharpe ratio, 13 schemes had superior performance of Treynor ratio and 14 schemes had superior performance according to Jensen measure. The Fama's measure indicated in the study that the returns out of diversification were less. Thus the India Mutual funds were not properly diversified.

3. Statement of the Problem
The Indian mutual funds industry is going through a phase of transformation since liberalization. Liberalization has paved the way for foreign investors in the mutual fund industry. This has increased the pace of evolution in the industry and made more products and services available to investors. Institutional investors dominate the mutual fund industry. They hold about 57 percent the total net assets whereas, retail investors account for about 37 percent. Thus, the present study is an attempt to find out the risk and return analysis of performance of select mutual funds schemes in India. Their performance is analyzed in comparison to BSE-Sensex and the monthly yield on 91-Day Treasury bills for risk-free rate of return.

4. Significance of the study
The present study is useful to research agencies, academicians, mutual funds investors, business school students and mutual funds companies. The study focuses on the risk and return analysis of performance of selected mutual fund schemes in India. This study is an attempt made to cope-up with the problems faced by the investors to earn a handsome return with the minimum level of risk. For testing the performance, the researcher selected growth oriented mutual fund schemes floated by UTI mutual fund during 1st April 2007 to 31st March 2016.

5. Objectives of the study
The present study is concerned with the following objectives:
- To examine the performance of selected schemes on the basis of risk and return.
- To compare the performance of selected schemes with benchmark index and to see whether the scheme is outperforming or underperforming when compared to the benchmark.
- To examine the performance of selected schemes by using the portfolio performance evaluation models namely Sharpe, Treynor and Jensen.

6. Research methodology
This study is both analytical and descriptive in nature. The researcher uses secondary source of data for measuring the performance of mutual funds by its risk-return. To examine the mutual fund schemes performance, the growth oriented schemes, which have been floated by the UTI mutual funds during 1st April 2007 to 31st March 2016 have been considered for the purpose of the study. This study examines six open-ended equity schemes with growth option being launched by UTI Mutual Funds. Monthly NAV as declared by the relevant schemes have been used in this study for the period of ten years i.e., April 2007 to March 2016. BSE-Sensex has been used for market portfolio. In the study, the monthly yield on 91-day Treasury bills has been used as risk-free rate. The study was based on data regarding NAV and it was obtained from the website of www.mutualfundindia.com and www.utimf.com for the period of April 2007 to March 2016. Data for monthly closing price for the benchmark index (BSE-Sensex) were collected from web site of Bombay Stock Exchange (www.bseindia.com). The schemes are selected based on the regular availability of data during the study period.

6.1. Research tools
6.1.1 Return
The monthly returns of the schemes were computed by using the following equation.

$$Rpt = NAV_t - NAV_{t-1} / NAV_{t-1}$$

Where, Rpt is return on fund scheme, NAV_t is the Net Asset value of the scheme at the end of 't', NAV_{t-1} is Net Asset value of the scheme at the end of the month 't-1'.
The average return of the market portfolio is computed as follows:

$$\overline{Rp} = 1/n \sum_{t=1}^{n} Rpt$$

Where, Rp is the average return of the mutual fund schemes.

Similarly, the monthly returns for the market index were calculated by using the following equation:

$$Rmt = Market\ Index_t - Market\ Index_{t-1} / Market\ Index_{t-1}$$

Where, Rmt return of the market index,
Market Index $_t$ is the Market value of the index at the end of 't', Market index $_{t-1}$ is the market value of the scheme at the end of the month 't-1'.
The average return of the market index is computed by the using the following equation:

$$\overline{Rm} = 1/n \sum_{t=1}^{n} Rmt$$

Where, Rm is the market return of the mutual fund schemes.

6.1.2 Risk
Standard deviation is a measure of variability which is used as the standard measure of the total risk of individual assets and the residual risk of portfolios of assets. The standard deviation of mutual fund schemes has been calculated by using the following equation:

$$\sigma p = \sqrt{1/n\text{-}1 \sum (Rpt - Rp)^2}$$

σp is the risk of fund portfolio.

$$\sigma m = \sqrt{1/n\text{-}1 \sum (Rmt - Rm)^2}$$

σm is the risk of market portfolio.

Beta: Beta is the systematic risk. Beta is undiversificable in nature. It has been calculated by using this formula

$$Beta = COV\ (Rp, Rm) / .\sigma^2 m$$

Where, β_p is systematic risk of the portfolio, COV (Rp, Rm) covariance between the return of portfolio and market, $\sigma^2 m$ is variance of market return.

6.1.3 Sharpe Measure
William F. Sharpe (1966) had planned or invent an index of portfolio performance measure, namely Sharpe ratio. The equation for Sharpe measure is as follows

$$Sharpe = R_p - R_f / \sigma p$$

Where, Rp is return of mutual fund portfolio, R_f is risk free rate of return, σp is standard deviation of the mutual fund portfolio.

6.1.4 Treynor Measure
This measure was developed by Jack Treynor in 1965 is based on systematic risk and known as reward to volatility ratio. The equation for this measure is
$$Treynor = (Rp - Rf) / \beta p$$
Where Rp = Average return on fund p
Rf = Return on risk free asset
βp = Sensitivity of fund return on market return

6.1.5 Jensen Differential Measure
This measure developed by Michael Jensen. This standard is based on CAPM measures the portfolio manager's predictive ability to achieve higher return than expected for the given riskiness. The basic model is

$$Rpt - Rf = \alpha + \beta (Rm - Rf) + ei$$

Where Alpha (α) = the intercept
βp = Systemic risk
Rm = Market return
Rpt = Fund return on time period t
Rf = Return on risk free asset

7. Results and Analysis

Table 1: showing list of Mutual Funds Schemes selected for the present Study

Name of the UTI Mutual Fund	NAV
UTI - Balanced Fund	137.02
UTI - Banking Sector Fund	71.1483
UTI - Contra Fund	17.0544
UTI - Dividend Yield Fund	50.0134
UTI - Energy Fund	10.4403
UTI - Opportunities Fund	45.6043

Table 2: showing rate of return of UTI Mutual Fund Schemes

Name of the UTI Mutual Fund	Average Return (%)
UTI - Balanced Fund	13
UTI - Banking Sector Fund	27
UTI - Contra Fund	25
UTI - Dividend Yield Fund	34
UTI - Energy Fund	3
UTI - Opportunities Fund	17

From the above table it can be inferred that UTI Dividend Yield Fund has yielded highest returns (34%) of all selected mutual funds and UTI banking sector fund has earned next highest returns, followed by UTI Contra fund. UTI Energy fund delivered lowest returns (3%) among the all funds.

Table 3: showing standard deviation of UTI Mutual Fund Schemes

Name of the UTI Mutual Fund	Standard Deviation
UTI - Balanced Fund	14.3
UTI - Banking Sector Fund	12.7
UTI - Contra Fund	14.31
UTI - Dividend Yield Fund	13.01
UTI - Energy Fund	13.56
UTI - Opportunities Fund	13.7

The above table represents that higher Standard deviation means higher volatility. UTI Banking sector fund has less standard deviation (12.7) which means it is comparatively less risky than the other funds. It is the fund best one to choose. Similarly UTI Dividend Yield fund (13.01) next

lowest standard deviation fund in the above table and followed by UTI Energy fund (13.56).

Table 4: Showing Beta value of UTI Mutual fund schemes

Name of the UTI Mutual Fund	Beta
UTI - Balanced Fund	0.49
UTI - Banking Sector Fund	0.67
UTI - Contra Fund	0.32
UTI - Dividend Yield Fund	0.61
UTI - Energy Fund	0.55
UTI - Opportunities Fund	0.57

The above table represents beta value of the selected mutual fund schemes. Beta is a measure the volatility of a particular fund in comparison to the market as a whole. The above table explains the UTI Contra fund has lowest Beta (0.32). This fund is less risky to compare with other funds. Since Beta value is less than 1 means the funds reacts less than the market reaction.

Table 5: Showing Sharpe Ratio of UTI Mutual fund schemes

Name of the UTI Mutual Fund Schemes	Sharpe Ratio
UTI - Balanced Fund	6.65
UTI - Banking Sector Fund	4.52
UTI - Contra Fund	6.34
UTI - Dividend Yield Fund	13.19
UTI - Energy Fund	4.45
UTI - Opportunities Fund	6.34

The above table represents the Sharpe ratio computation for the selected mutual fund schemes and it is the best known for risk – adjusted statistic. In above table UTI Dividend Yield fund has the highest Sharpe ratio (13.19). This scheme provides the highest return for a given unit of risk taken and UTI Energy fund has registered with (4.45) shows a lowest sharpe ratio.

Table 6: Showing Treynors Ratio of UTI Mutual fund schemes

Name of the UTI Mutual Fund Schemes	Teynors Ratio
UTI - Balanced Fund	7.85
UTI - Banking Sector Fund	4.82
UTI - Contra Fund	7.43
UTI - Dividend Yield Fund	15.29
UTI - Energy Fund	3.45
UTI - Opportunities Fund	7.24

The above table represents the Treynors ratio computation for the selected mutual fund schemes. In above table UTI Dividend Yield fund has the highest Treynors ratio (15.29). This scheme provides the highest return for a given unit of risk taken and UTI Energy fund has registered with (3.45) shows a lowest ratio.

Table 7: Showing Jensens Ratio of UTI Mutual fund schemes

Name of the UTI Mutual Fund Schemes	Jensens Ratio
UTI - Balanced Fund	8.45
UTI - Banking Sector Fund	6.72
UTI - Contra Fund	8.23
UTI - Dividend Yield Fund	14.19
UTI - Energy Fund	4.45
UTI - Opportunities Fund	6.16

The above table represents the Jensens ratio computation for the selected mutual fund schemes. In above table UTI

Dividend Yield fund has the highest Jensens ratio (14.19). This scheme provides the highest return for a given unit of risk taken and UTI Energy fund has registered with (4.45) shows a lowest ratio.

8. Results
- UTI Dividend Yield Fund has yielded highest returns (34%) when compared with selected mutual funds
- UTI Banking sector fund has less standard deviation (12.7) which means it is comparatively less risky than the other funds.
- All the selected funds shows beat value is less than 1, it means all the selected funds are less volatile than the market
- From table no.5, UTI Dividend Yield fund has the highest Sharpe ratio (13.19). This scheme provides the highest return for a given unit of risk taken.
- From table no. 6, UTI Dividend Yield fund has the highest Treynors ratio (15.29).
- From table no.7, UTI Dividend Yield fund has the highest Jensens ratio (14.19).

9. Conclusion
An investor can select any mutual funds schemes based on its risk and return. Risk is a key factor considered in selection of mutual funds schemes that suit his objectives. From the analysis, it can clearly identified that UTI Dividend Yield fund has got highest Sharpe, Treynors and Jensens ratio as compared with other selected schemes. But the standard deviation and beta value is also low for UTI Dividend Yield fund. This fund provides highest return for a given unit of risk taken. The investor who needs regular income can invest in UTI Dividend Yield fund.

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