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A STUDY ON RISK ADJUSTED PERFORMANCE AND PERFORMANCE PERSISTENCE OF SELECTED MUTUAL FUNDS IN INDIA

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Abstract—*Investing through mutual funds has become more interesting in recent years, because it offers optimum Returns for investors risk adjusted. The Indian market is no exception and experienced an Over the years, multifold growth of the mutual funds. The Indian market is overcrowded as from 2016 With over two thousand schemes for mutual funds, each promising higher return compared to the Their neighbors. It is a challenge for ordinary investors to choose the best portfolio to invest, making it important to evaluate these funds' results. Comprehension and Study of the past performance of the mutual funds does not guarantee future success, it can however provide an indication of how the fund is likely to work under various market conditions. We address many research problems in this work. Including assessing the Based-on risk and return performance of selected cooperative schemes and comparison of Performance of these selected schemes with benchmark index to assess if the scheme is acceptable Benchmark outperforming or underperforming. We also rank funds based on performance and suggest strategies for investing in a mutual fund, so our findings are significant relevance to public investments.*

Keywords—*Diversification, Investment, Mutual Funds, Portfolio, Risk Adjusted Return.*

INTRODUCTION

Investments are very important for a individual to park the surplus fund with a view to earning additional income or appreciation of the capital or both. When making an investment decision, an investor will weigh different factors. Mutual funds are investment options available to investment investors through which they can invest in an asset class of their own choice, such as stock, debt, gold or immovable, etc. This includes investment risk, tax benefits, liquidity, marketability, etc. If investors are unable to directly invest in capital markets, they can be exposed to the same securities through a mutual fund. Also, mutual funds provide flexibility to liquidate investment position at any point in time.

The mutual fund concept is a portfolio concept. A mutual fund is made up of capital raised by many investors. The capital is then handled by a professional fund manager who uses his investment management skills to invest in several financial instruments. The investors themselves have units that are effectively the share of the fund depending on the quantity invested. The increase in the value of the assets and of the other earnings from it is allocated to the unit holders according to the number of units kept after the relevant costs, charges and taxes have been paid. Like other alternative investment vehicles, mutual funds are often exposed to risk and if the value of stocks increases, the value of common funds will adjust, exposing these mutual funds to uncertainty, but in a restricted way. The Indian mutual fund industry is quite mature and, since its inception, it has seen both growth and structural changes. The first joint project was initiated by the Government of India (GoI) and the RBI.

Moreover, given the diversification of funds, their performance should not be based solely on absolute returns but should take risks-adjusted returns into consideration. There would also be possible political consequences for the participants of a report on the mutual fund industry. We plan to deal with a variety of research issues in this study. This involves calculating the efficiency and return of selected mutual schemes and comparing the performance of such selected schemes with the index of benchmarks to see if the scheme meets or is ineffective.

We also strive to classify funds according to their performance and to propose strategies to invest in a mutual fund based on the goals, risk appetite, investment duration, etc. This is how the rest of the paper has been arranged. Section II offers a literature review on mutually funded funds, Section III on data and methodology, Section IV on results and Section V on results.

REVIEW OF LITERATURE

Performance measurement plays an important role for investors when deciding to invest in mutual funds. Since Markowitz (1952), several indicators have been developed to assess fund performance. Traditional indicators are also accompanied by the measures that evaluate conditions such as asset allocation and performance persistence. The rising number of indicators might lead to a more confused performance evaluation as the use of the innumerable indicators can lead to wavering results and varying fund rankings.

Plantinga and Groot (2001) examined to what extent performance measures can be used as alternatives for preference functions. The study consisted of Sharpe ratio, Sharpe's alpha, the expected return measure, the Fouse index, the Sortino ratio and the upside potential ratio. It was found that the first three measures correspond to the inclinations of investors with a low degree of risk aversion, while the latter three measures match to the preferences of investors with medium and high degrees of risk aversion. Therefore, the choice of the suitable performance measure should be determined by the preference function of the investor.

Redman, Gullett and Manakyan (2000) evaluated the risk-adjusted returns using Treynor ratio, Sharpe ratio, and Jensen's Alpha for 5 portfolios of global mutual funds and for three time periods of nine and four years (1985-1994, 1985-1989, and 1990-1994) with the benchmark of Vanguard Index 500. During the first- and second-time frame, the portfolio performed better than the US markets, however during the third time frame, the earnings fell below the US index.

A study by Noulas and John (2005) surveyed the performance of 23 Greek equity funds amid the years 1997-2000 on a weekly basis. The performance was evaluated and ranked using the ratios of Treynor, Sharpe and Jensen. The results showed that the beta of all funds was less than one for four-year period establishing that the equity funds have neither the a like risk nor the same return.

On a global front, a study by Suzanne and Boudreaux (2007) studied ten sample portfolios of global mutual funds and examined the returns by using Sharpe's ratio for the time frame of 2000-2006. Nine out of ten of the sample mutual fund under study performed better than the benchmarked U.S. market. The portfolios which comprised of all global mutual funds did better than the portfolio which had only U.S stock mutual funds.

Using Modigliani and Modigliani (M squared) performance measure, Arugaslan and Ajay (2008) evaluated 50 extensive US global equity funds a ten-year period of 1994-2003. The results showed that risk effected the attractiveness of the fund as even though the funds had greater returns funds, they did lose attractiveness amongst the investors due to superior risk whereas the lesser return funds were attractive due to the minority of the risk.

Sathya Swaroop Debashish (2009) measured the performance of equity based mutual funds in India. There was a study of 23 schemes over a period of April 1996 to March 2009 (13 years) using various risk adjusted measures. The results show that UTI, Franklin Templeton, Prudential ICICI (in private sector) and SBI have out-performed the market portfolio with positive values, while Birla SunLife, HDFC and LIC mutual funds showed a poor below-average performance when measured against the risk-return relationship models and measures.

A study by Ramesh and Dhume (2011) analysed the performance of sector funds which were Banking, Infrastructure, FMCG, Technology and Pharmaceutical. The study focused on different performance measures. The findings of study discovered that all the except the infrastructure sector funds, other funds have outpaced the market.

Anitha (2011) assessed the performance of private and public sector mutual funds for a period of two years (2005-2007). Selected funds were studied using Statistical measures like Mean, Variance, Co-variance, and Standard Deviation. The performance of all the selected funds has exhibited volatility during period of study leading it to a difficult situation to assign one fund that would outperform the others consistently.

Patel and Prajapati (2012) estimated the performance of mutual funds in India using relative performance indices, Treynor's and Sharpe's ratio, risk-return analysis, Jensen's measure, and Fama's measure and concluded that most of the mutual funds have given positive return during the period of study.

Annapoorna and Gupta (2013) assess mutual fund schemes' performances ranked 1 by CRISIL and give a comparison of these returns with SBI's domestic term deposit rates. For calculations, simple statistical methods of averages and rate of returns were used. The results obtained clearly depict that, in most cases the mutual fund schemes have been unsuccessful in providing the benefit of SBI domestic term deposits.

STATEMENT OF THE PROBLEM

All investments involve certain fundamentals of risk and their risk outline differs according to the varying degree of the returns. It is very difficult to know whether mutual fund managers can deliver better returns thereby justifying the managing fees they charge. The ignorance of investors about mutual funds attached with aggressive selling by promising higher returns to the investors have resulted into loss of investors' assurance.

This study is correlated to an analysis of the potential for growth of mutual funds in India. In addition, the researcher tries to examine the impact of different factors on Mutual Fund risk-adjusted performance.

OBJECTIVES OF THE STUDY

- To measure small cap and large cap mutual fund comparative performance.
- To validate the concept of higher returns are associated with higher risk.
- To evaluate the performance persistence of mutual funds

SCOPE OF THE STUDY

An ELSS is a diversified mutual equity fund with most of the equity corpus. Since it is an equity fund, ELSS fund returns reflect equity market returns. This type of mutual fund has a 3-year lock from the investment date. This means that if you start a Systematic Investment Plan in an ELSS, then from the respective investment date each of your investments will be locked in for3 years. By selling it after 3 years, investors can exit ELSS.

LIMITATIONS OF STUDY

- Time is too short to conduct the study, thus due to shortage of time only few schemes have been taken for analysis.
- Study is based on secondary data.
- Sample size taken for the study is limited to 20 schemes only.

RESEARCH METHODOLOGY

Hypotheses:

Regression model

The following multiple regression model is developed through the regression test which shows the relation between study variables on fund performance-

Fund return (RP) = - 0.539 + 0.068 Rf + (-0.040) σp + 0.091 βi + (-0.364) Rm + 0.2.59 σm

Following Hypothesis are formed to achieve the research objectives:

Hypothesis 1

Ho: There is no significant relationship between funds returns and fund risk.

Hypothesis 2

Ho: There is no significant relationship between fund return and market return.

Hypothesis 3

Ho: There is no significant relationship between fund return and performance indicators.

Tools for Data Collection:

- Gathered information from paper, journels and magazines
- Gathered information from money control application and internet source

DATA ANALYSIS AND INTERPRETATIONS

A sample of 25 ELSS funds is taken for the study. The various schemes taken under have operated for minimum period of ten years since their inception & it is assumed that this period is enough to drive any inference from the analysis. The necessary data and NAV have been collected from the website of Advisorkhoj.com, AMFI and websites of various mutual fund companies. The proxy used in this study for the risk-free rate of return is the annual rate of State Bank of India.

This study estimates risk-return profiles for tax saving mutual funds that have been varied from Ten-year period to One-year period. Daily returns are used for computing annual returns and measures of return and risk. Mean returns are calculated by averaging the daily returns over the relevant period.

Total risk measures by the standard deviation of returns. Systematic (market) risk is estimated by beta. Risk premium related to the total risk is measures by Sharpe index. Fund's performance in relation to the market performance is measured by Trey nor index. Jensen's alpha is used to compare the actual or realized return of the portfolio with the predicted or calculated return. The Market benchmark used here is Nifty.

TABLE 1: DSP TAX FUNDS

Year	*Annualized average return (R_p)*	*Risk free return (R_f)*	*Annualized Standard Deviation (σ_p)*	*Annualized Average Market Return (R_m)*	*Beta*	*Annualised Standard deviation of Market return (σ_m)*
2010	23.26	7.25	13.8497	29.2676	0.7888	15.9589
2011	-26.68	8.94	16.4109	-23.0698	0.7577	20.7307
2012	39.81	6.27	16.5433	27.3353	0.8509	14.5465
2013	5.67	8.28	15.4314	9.8572	0.8338	17.2885
2014	51.91	8.68	13.5811	30.7823	0.9636	12.3661
2015	4.09	7.63	15.8347	-4.3940	0.9636	16.0255
2016	10.33	6.81	15.7377	3.1857	0.9821	14.6896
2017	36.29	6.29	10.4383	28.4293	0.7846	9.1429
2018	-7.07	7	14.1935	7.1970	1.0018	12.4452
2019	14.78	5.99	13.4822	14.9660	0.9233	13.5227

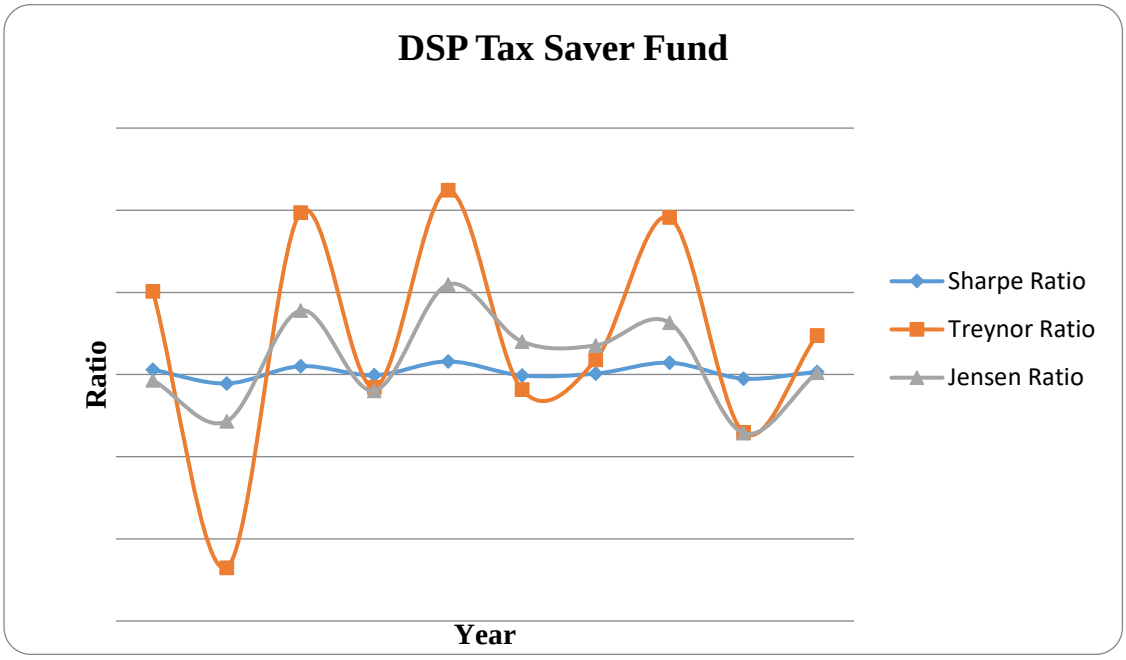
Interpretation:

In the above table Annualized Average Return is high in 2012 i.e .36.29 and Decreased in the year 2011 by -26.68. Annualized Standard Deviation (Fund Risk) had Increased in the Year 2011 by 16.4109. Annualized Market Return Deviation has increased in the year 2012 by 27.3353. Beta is less than 1.00 for the year 2010 to 2017, hence Security is theoretically less volatile than the market return. Therefore, the portfolio is less risky with the stock and in the year 2018 and 2019, beta is greater than 1.00, hence it indicates that volatility stock to a portfolio will increase portfolio risk, but also increase its expected returns.

TABLE 2: CALCULATION OF DSP TAX SAVER FUND RATIO:

Year	*Sharpe Ratio*	*Treynor Ratio*	*Jensen Ratio*
2010	1.155982513	20.29690549	-1.357235484
2011	-2.170503109	-47.00836869	-11.36499928
2012	2.027408072	39.41551463	15.61478271
2013	-0.169135519	-3.130223738	-3.92506123
2014	3.183091751	44.86392407	21.93269035
2015	-0.22355999	-3.673798084	8.046068224
2016	0.223666251	3.584066905	7.079524562
2017	2.874026523	38.23811896	12.63040915
2018	-0.991302223	-14.04510132	-14.26735981
2019	0.651969941	9.519908785	0.502184377

GRAPH 1: REPRESENTED THE DSP TAX SAVER FUND RATIO:



Interpretation:

In the above table Sharpe ratio is higher in 2014 by 3.1830%. Thus the performance of the fund is better in 2014. Higher the Treynor ratio measures, better the performance in 2014 by 44.8639% and Jensen ratio is higher in the year 2014, therefore performance was better.

ABSL Tax Plan Regular Plan:

TABLE 3: ABSL TAX PLAN REGULAR PLAN:

Year	*Annualized average return (R_p)*	*Risk free return (R_f)*	*Annualized Standard Deviation (σ_P)*	*Annualized Average Market Return (R_m)*	*Beta*	*Annualised Standard deviation of Market return (σm)*
2010	13.44	7.25	14.3779	29.2676	0.8159	15.9272
2011	-22.88	8.94	16.5421	-23.0698	0.7662	20.7307
2012	36.41	6.27	13.5491	27.3353	0.8839	14.5454
2013	7.69	8.28	15.2979	9.8572	0.8347	17.2847
2014	53.28	8.68	12.2233	30.7823	0.8606	12.3687
2015	8.28	7.63	15.5117	-4.3940	0.8816	16.0255
2016	2.78	6.81	13.6464	3.1857	0.8419	14.6896
2017	42.48	6.29	8.6534	28.4293	0.5717	9.1429
2018	-4.61	7	12.1352	7.1970	0.8191	12.4238
2019	3.8	5.99	12.2440	14.9660	0.7966	13.5227

Interpretation:

In the above table Annualized Average Return is high in 2017by 42.48 and Decreased in the year 2011 by-22.88. Annualized Standard Deviation (Fund Risk) had Increased in the Year 2011 by 16.5421. Annualized Market Return has increased in the year 2014 by 30.7823 and Annualized Standard Deviation of market Return has increased in the 2011. Beta is less than 1.00; hence Security is theoretically less volatile than the market return. Therefore, the portfolio is less risky with the stock.

Tata India Tax Saving Fund:

TABLE 4: TATA INDIA TAX SAVING FUND:

Year	*Annualized average return (R_p)*	*Risk free return (R_f)*	*Annualized Standard Deviation (σ_P)*	*Annualized Average Market Return (R_m)*	*Beta*	*Annualised Standard deviation of Market return (σm)*
2010	NA	NA	NA	NA	NA	NA
2011	NA	NA	NA	NA	NA	NA
2012	NA	NA	NA	NA	NA	NA
2013	NA	NA	NA	NA	NA	NA
2014	9.46	8.68	30.78226424	5.042561561	0.819491985	5.297837214
2015	12.99	7.63	-4.393976059	16.02346498	0.90050361	16.02551151
2016	1.35	6.81	3.185689154	15.11690409	0.90711078	14.7784908

2017	46	6.29	28.42934937	10.792132	0.759654656	9.142899423
2018	-8.12	7	7.197010553	14.30653655	0.998343769	12.46201118
2019	13.77	5.99	14.96602375	13.81899456	0.975163351	13.52274892

Interpretation:

In the above table Annualized Average Return is high in 2019 i.e. 13.77 and Decreased in the year 2018by -8.12. Annualized Standard Deviation (Fund Risk) had Increased in the Year 2015by 16.234. Both Annualized Market Return and Annualized Standard Deviation has increased in the year 2014 & 2015 by 30.7823and 16.0255. Beta is less than 1.00, hence Security is theoretically less volatile than the market return. Therefore, the portfolio is less risky with the stock.

FINDINGS:

- In this study it is found that the SBI advantage fund – Regular plan – Growth has highest Average Annualized Fund Return of 21.1025%, when compared to other schemes.
- It is found that Baroda ELSS 96 Plan A – Growth has least Average Annualized Fund Return of 4.28%.
- BOI AXA tax advantage fund – Growth scheme has highest Average Annualized Fund Standard Deviation of 15.1470%.
- IDBI Equity Savings Fund – Growth scheme has lowest Average Annualized Fund Standard Deviation (Risk) of 11.4142%.
- In Market Return, SBI advantage fund – Regular plan – Growth has highest Average Annualized Market Return of 19.8351%.
- Baroda ELSS 96 Plan A – Growth schemes has lowest Average Annualized Market Return of 9.8768%.
- It is found that Average Annualized Market Standard Deviation varies from 14.6661% to 12.4161%
- In this study it is found that the highest Fund Return will have highest Standard deviation (Risk). Therefore, scheme SBI Advantage Fund has highest return with highest risk.
- Beta is less than 1.00 to all the schemes expect HDFC Long Term Advantage Fund- Growth, which is more volatile than the market return by 1.9702 and the portfolio is riskier with the stock.
- It indicates that there is Moderate Degree of Correlation between Fund Return and Market Risk, Risk Free Return, Beta and Market Return. Hence it has 56% of total variation in Fund Return is due to Market Risk, Risk Free Return, Beta and Market Return, whereas 44% is due to other factors such as Market Return, Fund Risk, Risk Free Return and Beta. Thus, there is significant relationship between Fund return and Risk-Free Return, Beta, Market Return, Market Risk.

SUGGESTIONS

The study can be used by the investors to make an investment choice on various Equity Linked Saving Schemes listed in the National Stock Exchange. The results of the study will be useful to the fund managers and investors while managing the fund's portfolio and outperforming the market. Investors can buy BOI AXA Tax Advantage Fund – Regular – Growth plan to obtain high return with moderate risk.

CONCLUSION

The study concludes that Sample ELSS Funds can provide better return than any return on risk free securities but unable to outperform the benchmark portfolio in terms of average return. There is significant relationship between fund return and fund risk and market return proved. The study explains the impact of the explanatory variable used in the study (Risk free rate of return, total risk inherent to individual funds, beta of funds, market return and market risk) on the ELSS funds operating in India. The results suggest that all the explanatory variables have their impact on the fund return and fund performance is affected by changes in these variables. The results confirm that efficient management and diversification of fund investment as well as stock market trends and movement play an important role in defining ELSS fund performance.

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