

A Comparative Analysis of performance of mutual fund schemes and their impact on stock markets for India

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Abstract:

The present paper investigates the performance of Tax saving schemes for the period from 1st January 2012 to 31st December 2017 six year for transition economy. Monthly NAV of different schemes have been used to calculate the returns from the schemes. For market return the study considered Nifty index and for the risk-free return, the study considered 10-year GSEC yield.. The historical performance of the selected schemes was evaluated on the basis of Sharpe, Treynor and Jensen's measure whose results may be useful for investors for taking better investment decision. The study revealed that some sample mutual fund schemes had outperformed bench- mark return. The result also finds that some of the schemes had underperformed and is not advisable for diversification. Further this study has applied regression to measure the impact of each of the schemes on market index i.e. Nifty. The study has analysed each year wise impact and a whole sample impact on Nifty.

Key Words: Mutual funds, Performance evaluation, Sharpe and Treynor ratio.

Introduction:

Mutual fund provide households on option for portfolio diversification and relative risk aversion through collection of funds from the households and debt market. Mutual Fund is one of the most attractive financial instruments out of many financial instruments. This instrument plays very vital role for accelerating the economy of a country. The Indian Mutual Fund industries is one of the fastest growing and most competitive segment of financial sector which provides new opportunities for investors. Mutual fund industry was introduced in 1963 with the formation of unit trust of India.

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During the last few years many extraordinary and rapid changes have been seen in the mutual fund industry. In the last decades the mutual fund industries has shown impressive growth not just in the scale of assets under management but also in term of schemes and product. Mutual fund is a dynamic financial institution which plays a crucial role in on economy by mobilizing savings and investing in the capital markets.

The objectives of this study are

- I. To examine the performance of selected schemes on the basis of risk and return and compare the performance of selected schemes with benchmark index to see whether the schemes is outperforming or underperforming the bench mark.
- II. To examine the performance of select schemes by using the portfolio performance evaluation model namely Sharpe Treynor and Jensen.
- III. To examine the impact of selected mutual fund schemes on Nifty

Review of literature:

Review of literature is generally a prerequisite for systematic research endeavors. This enables the researcher to gain comprehensive understanding about earlier research works. This in turn, provides sufficient information to trace out the research gap prevailing in a given area of research. With this in mind, we have carried out the review of literature concerning the research area as under.

Shashikant Uma (1993) critically examined the rationale and relevance of mutual fund operations in Indian Money Markets. She pointed out that money market mutual funds with low-risk and low return offered conservative investors a reliable investment avenue for short-term investment.

Sahu R K and Panda J (1993) identified that, the savings of the Indian public in mutual funds was 5 to 6 percent of total financial savings, 11 to 12 percent of bank deposits and less than 15 percent of equity market capitalization. The study suggested that, mutual funds should develop suitable strategies keeping in view the savings potentials, growth prospects of investment outlets, national policies and priorities.

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.

Tripathy, Nalini Prava (1996) Identified that the Indian capital market expanded tremendously as a result of economic reforms, globalization and privatization. Household sector accounted for about 80 percent of country's savings and only about one third of such savings were available for the corporate sector. The study suggested that, mutual fund should build investors confidence through schemes meeting the diversified needs of investors, speedy disposal of information improved transparency in operation, better customer service and assured benefits of professionalism.

Gupta Amitabh (2001), evaluated the performance of 73 selected schemes with different investment objectives, both from the public and private sectors using Market Index and Fundex. NAV of close end and open end schemes from April 1994 to March 1999 were tested. The sample schemes were not adequately diversified, risk and return of schemes were not in conformity with their objectives and there was no evidence of market timing abilities of mutual fund industry in India.

Narasimhan (2001) analyzed the top of 76 mutual fund schemes from January 1998 to March 1999. The study showed that 62 stocks were held in portfolio of several schemes of which only 26 companies provided positive gains. The top holdings represented more than 90% of the total corpus in the case of 11 funds and showed higher risk levels compared to the returns. The correlation between portfolio stocks and diversification benefits were significant at 1% level for 30 pairs and at 5% level for 53 pairs.

Bansal (2003) survey of 2,819 respondents revealed that, the percentage of investors holding only UTI schemes reduced. The unit holders' loyalty seemed to have become a myth as investors were looking for performance. Unit-holders spread their holdings over two or more funds with an urge to diversify increasing competitive mutual fund environment.

Singh and Chander (2003) identified that past record and growth prospects influenced the choice of scheme. Investors in mutual funds expected repurchase facility, prompt

service and adequate information. Return, portfolio selection and NAV were important criteria's for mutual fund appraisal. The ANOVA results indicated that, occupational status; age had insignificant influence on the choice of scheme.

Venkateshwaralu (2004) had analyzed investors from the twin cities of Hyderabad and Secunderabad. Investors preferred to invest in open end schemes with growth objectives. Chi-square value revealed that the size of income class is independent of preference patterns and dependent on the choice of fund floating institution. Reasonable returns and long term strategy adopted by the scheme were the criteria of scheme selection. Investors perceived that too many restrictions led to the average performance of mutual funds in India.

Saha (2003) identified that Prudential ICICI balanced fund, Zurich (I) equity fund were the best among the equity funds while Pioneer ITI Treasury scheme was the best among debt schemes. He concluded that the efficiency of the fund managers was the key in the success of mutual funds and so the AMCs had to ensure more professional outlook for better results.

Satish (2004) researched out that investors from seven major cities in India had a preference for mutual funds compared to banking and insurance products. Investors expected moderate returns and accepted moderate risks. Sixty percent of investors preferred growth schemes. The image of AMCs acted as a major factor in the choice of schemes. Investors had the same level of confidence towards shares and mutual funds.

Sondhi and Jain (2005) examined 17 public sector and 19 private sector mutual funds equity schemes. The mean and median returns for the aggregate period (1993 to 2002) were lower than the returns on 364 days' Treasury bills and higher than the BSE 100 index. Alliance equity fund was the top performer and Can-bonus and LIC Dhanvikas (I) were the worst performers. They hypothesized that the majority of the sample schemes earned returns better than the market. The private equity schemes had superior performance due to their popularity, fund management practices, well researched stock selection and timing skills. More than three fourths of the public sector schemes were unable to achieve better returns in spite of higher investor confidence associated with high safety. The funds did not show consistency in performance.

Muthappan and Damodharan (2006) evaluated 40 schemes for the period April 1995 to March 2000. The study identified that majority of the schemes earned returns higher than the market but

lower than 91 days' Treasury bill rate. The average risk of the scheme was higher than that of the market. 15 schemes had above average monthly returns. The growth schemes earned average monthly returns. The risk and return of the schemes were not always in conformity with their stated investment objectives. The sample schemes were not adequately diversified as the average unique risk was 7.45% with an average diversification of 35.01%. 23 schemes outperformed both in terms of total risk and systematic risk. 19 schemes with positive alpha values indicated superior performance. The study concluded that the Indian mutual funds were not properly diversified.

Dhankar and Kumar (2006-7) applied price-earnings ratios to determine future behavior of stock prices to make investment decisions. Their study measured the performance of a set of portfolios which were based on price/earnings ratios of the stocks. Their study examined the monthly P/E of the stocks of the BSE 100 companies for the period June 1996 to May 2005 with three non overlapping sub-periods: June 1996 to Dec 1999, Jan 2000 to Dec 2002, Jan 2003 to May 2005. Their study found no consistency between the portfolios expected returns and their corresponding price/earnings ratios. It was observed that the stock market failed to reflect instantaneous responses pertaining to earning information. However, during project sub periods, the relationship between the portfolio's expected returns and market risk was found to be positive and significant. These findings could question the efficient market hypothesis but also could uphold the application of CAPM in the Indian stock market.

Chander (2007) studied the risk-return relationship as an important component of investment decision making. Though studies had examined the nature of risk-return relationships, they had not provided adequate evidence on the stationarity of such relationships. The study found that investment managers considered both variability and volatility as risk surrogates. Sample portfolios had experienced identical risk performance for measurement criteria but performance variability was noticed for fund characteristics. The results demonstrate a strong positive relationship for 35% high risk-return portfolios and 15% low risk-return portfolios.

Relevant null hypotheses were negated for the remaining portfolios to support Gupta's (2002) observations that risk-return characteristics were in conflict with the stated objectives. Such a bland situation emerged when managers failed to read the directional changes in the market movements.

Aggarwal and Gupta (2007) found that while the global mutual fund industry continued to grow in leaps and bounds, the research on mutual funds were confined to only a few developed markets with USA always getting a special attention. Although emerging markets such as India had attracted the attention of investors all over the world, they had remained devoid of much systematic research, especially in the area of mutual funds. In an effort to plug that gap, their study sought to check the performance of mutual funds operation in India. In this regard, quarterly return performance of all the equity diversified mutual funds during the period from January 2002 to December 2006 was tested. Analysis was carried out with the CAPM and Fama French models. Amidst contrasting findings from the application of these two models, the study called for further research and insight into the interplay between the performance determinant factors of portfolios and their effects on mutual fund returns.

Sahoo and Hatti (2007) in their study found neural network technique very useful in the study of mutual fund performance. Financial and economic forecasters had spurred the recent development of a number of new forecasting models. In the hard sciences, neural networks can be used in the context of statistical analyses such as regression, time series, moving average and smoothing methods and numerous judgmental methods as alternatives. In addition, neural networks can also overcome many of the shortcomings of traditional techniques analyzing noisy and incomplete data.

Deb(2008) contribution focuses on return based style analysis of equity mutual funds in India using quadratic optimization of an asset class factor model proposed by William Sharpe. His study found style benchmarks for each of its sample of equity funds as optimum exposure to 11 passive asset class indexes. The study also analyzed the relative performance of the funds with respect to their style benchmarks. The results of this study also showed that the funds had not been able to beat their style benchmarks on the average.

Kumar and Dhankar (2008) study was on daily, weekly and monthly adjusted opening and closing prices of BSE composite 100 portfolios for the period of June 1996 thru' May, 2005. Their findings suggested that the relationship between portfolio returns and risk was very weak based on daily returns. It was moderate in the case of weekly returns. However, portfolio risk and return exhibited a high degree of positive relationship when monthly returns were used. Portfolio nonmarket risk showed a declining tendency with diversification.

Rao (2009) study was concerned with the market timing ability of selected Indian mutual fund managers. For this, two important models, namely, Treynor & Mazum and Henricksson & Merton had been used with the BSE Sensex and NSE Nifty as market proxies. The results indicated that a majority of the selected mutual fund scheme managers were not seriously engaged in any market timing activities and were relying mainly on stock selection skills. Further, fund managers of private sectors exhibited better market timings as per Henricksson & Merton model. The results were similar to those reported by other researchers utilizing data from Indian mutual funds. The results reported were also in line with those for developed capital market.

Rozafitombo (2010) the author attempted to identify the most relevant indicators for classifying mutual funds based on their statistical properties. The study focused on 15 indicators of performance relative to 210 equity mutual funds calculated monthly on three sub periods between 2000 and 2006.

A comparison of statistical distributions, correlation and principle component analysis had not only confirmed the relevance of information ratios, betas and Sharpe ratios but also highlighted the importance of globally integrated approach based on both different calculation periods (short, medium and long terms) and three dimensions on the performance analysis and mutual fund rankings (i.e. managerial skills, market exposure and relative performance).

Cuthbertson, Nitzsche and Sullivan (2010) contribution provides a critical review of empirical on the performance of mutual funds mainly for the US and the UK. Their evidence suggested that the past winner funds persisted where rebalancing was frequent and sophisticated sorting rules were used. But because of the transaction costs, the net economic gains to the investors from the winner funds might be marginal.

Agarwal (2011) analyzed the Indian Mutual Fund Industry and point out that there has been incredible growth in the mutual fund industry in India, attracting large investments from domestic and foreign investors. Tremendous increase in number of AMCs providing ample of opportunity to the investors in the form of safety, hedging, arbitrage, limited risk with better returns than any other long-term securities has resulted in attracting more investors towards mutual fund investments.

Rompotis (2011) investigated several issues concerning the performance of US listed actively managed exchange traded funds. The returns and risks in the new types of ETFs were examined

in comparison to the return and risk of market represented by S&P 500 index. The results indicated there was no significant difference between them. A single index regression analysis (CAPM) shows that the managers of the active ETFs failed to deliver any significant excess returns i.e. with respect to market returns.

Data and Methodology

Data:

We collect daily data of Net Asset Value) of Reliance Tax saver fund, SBI Magnum Tax gain scheme, HDFC India Tax saver fund, ICICI pru long term equity saving scheme, LIC MF Tax plan, Birla Sun Life Tax saving scheme, Risk free rate of 10 year Gsec yield and market index (Nifty)) from Bloomberg data base. The period of the study is from 1st January 2008 to 31st December 2017. We have analysed the data year wise and also for the whole sample period.

Methodology

Risk and return are two important variables to be used in the performance evaluation of portfolio. Portfolio evaluation is said to be incomplete, if such exercise is based only either on returns or on risk. A comprehensive evaluation is to be based on return and risk. Therefore, risk adjusted return analysis is said to be better way of evaluating portfolio performance. In this context, it is worthwhile to state that, in the lexicon of mutual fund performance evaluation, there is several risk-adjusted performance models evolved and implemented from time to time. These are;

a) Treynor's Index

b) Sharpe's Index

Concept of Beta

Beta measures the systematic risk. Beta shows how prices of securities respond to the market forces. Beta is calculated by relating the return on a security with return for the market. By convention, market will have beta 1.0. Mutual fund can be said as volatile, more volatile or less volatile. If beta is greater than 1 the stock is said to be riskier than market. If beta is less than 1, the indication is that stock is less risky in comparison to market. If beta is zero then the risk is as same as of the market. Negative beta is rare. A relative measure of the sensitivity return on security is to change in the broad market index return. Beta measure the systematic risk, it shows how prices of securities respond to the market forces. Beta is calculated by relating the return on a security with return for the market. Market will have 1.0, if the beta is greater than 1 than the stock is said to be very riskier than market risk, beta less than 1 than the stock is said

to be not that much riskier as compare to the market risk. Beta involved market risk, and market risk involved political risk, inflation risk, and interest rate risk. Market risk is measured by beta, which is another measure of investment risk that is based on the volatility of returns.

Beta Calculation

$$\frac{N \sum XY - \sum X \sum Y}{N \sum X^2 - (\sum X)^2}$$

$$\beta =$$

$$\frac{N \sum XY - \sum X \sum Y}{N \sum X^2 - (\sum X)^2}$$

Where

N = No of observations

$\sum X$ = Sum of X returns (Here X is market return)

$\sum Y$ = Sum of Y returns (Here Y is a particular fund return)

X^2 = X * X

$\sum XY$ = Sum of X * Y

Sharpe ratio:

Sharpe Ratio, named after William Sharpe, is a very useful measure of performance that is especially relevant when comparing mutual funds within a category. The Sharpe Ratio is a mutual fund's excess return divided by its standard deviation, where excess return is the actual return less the risk-free rate of return. Although the Sharpe Ratio is computed from historical data, it is the same formula as the slope of the Capital Allocation Line, which is forward- looking. Risk free rate of return can earn by investing in Government securities. T-Bill Index is a good measure of this risk free return.

The Sharpe ratio formula:

$$= \frac{r_p - r_f}{\sigma_p}$$

Where

r_p = Expected portfolio return

r_f = Risk free rate

σ_p = portfolio standard deviation

Sharpe ratio is the average return earned in excess of the risk free rate per unit of volatility or total risk. Subtracting the risk free rate from the mean return, the performance associated with risk taking activities can be isolated. Generally the greater the value of the Sharpe ratio, the more attractive the risk adjusted return.

Treynor Ratio :

Treynor ratio developed by Jack Treynor. The treynor ratio, also known as the reward to volatility ratio is a metric for returns that exceed those that might have been gained on a riskless investment, per each unit of market risk. Treynor ratio is a risk adjusted measurement of a return based on systematic risk. It is a metric efficiency that makes use of the relationship that exists between risk and annualized risk adjusted return.

Ultimately the ratio attempts to measure how successful an investment is in providing investors, compensation, with consideration for the investments inherent level of risk. The treynor ratio is reliant upon beta that is the sensitivity of an investment to movements in the market to judge risk.

When the value of the Treynor ratio is high, it is an indication that an investor has generated high returns on each of the market risks he has taken. The Treynor ratio allows for an understanding of how each investment within a portfolio an idea of how efficiently capital is being used. The Treynor ratio relates excess return over the risk free rate to the additional risk taken, however systematic risk is used instead of total risk. The higher the treynor ratio, the better the performance of the portfolio under analysis.

The treynor ratio formula

$$= \frac{r_p - r_f}{B_p}$$

T = Treynor's ratio

r_p = portfolio return

r_f = risk free rate

B_p = portfolio beta

Regression:

It is a technique for determining the statistical relationship between two or more variables where a change in a dependant variable is associated with, and depends on, a change in one or more independent variables.

$$Nifty = \alpha_0 + \beta_1 r_{hdfct} + \beta_2 r_{licit} + \beta_3 r_{relt} + \beta_4 r_{rabt} + \beta_5 r_{icicit} + \beta_6 r_{sbit} + \varepsilon_i \dots \dots \dots (i)$$

Empirical Analysis:

Analysis and Interpretation of Mutual fund Tax Saving Scheme

Analysis and Interpretation

Table No.1

1) Return related analysis and interpretation

Table-5.8: Return for select schemes of the Tax Saving Schemes and benchmark values							
Year	Market Return (CNX Nifty)	Asset Management Companies and Schemes					
		Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	0.331	-0.338	-0.359	-0.329	-0.374	-0.383	-0.479
2009	0.235	0.256	0.265	0.296	0.32	0.202	0.285
2010	0.063	0.083	0.047	0.097	0.089	0.058	0.092
2011	-0.122	-0.122	-0.117	-0.111	-0.119	-0.134	-0.105
2012	0.095	0.153	0.119	0.093	0.125	0.088	0.075
2013	0.020	0.012	0.025	0.016	0.038	0.029	0.008
2014	0.125	0.263	0.174	0.194	0.178	0.174	0.171
2015	0.224	-0.014	0.012	-0.028	0.017	-0.016	0.033
2016	0.020	0.015	0.006	0.027	0.0146	0.01	0.011
2017	0.104	0.155	0.117	0.135	0.095	0.129	0.15
Average	0.095	0.046	0.028	0.039	0.038	0.015	0.024
Deviation		-0.049	-0.067	-0.056	-0.057	-0.08	-0.071
Over/Under		Under	Under	Under	Under	Under	Under
Rank		1	4	2	3	6	5

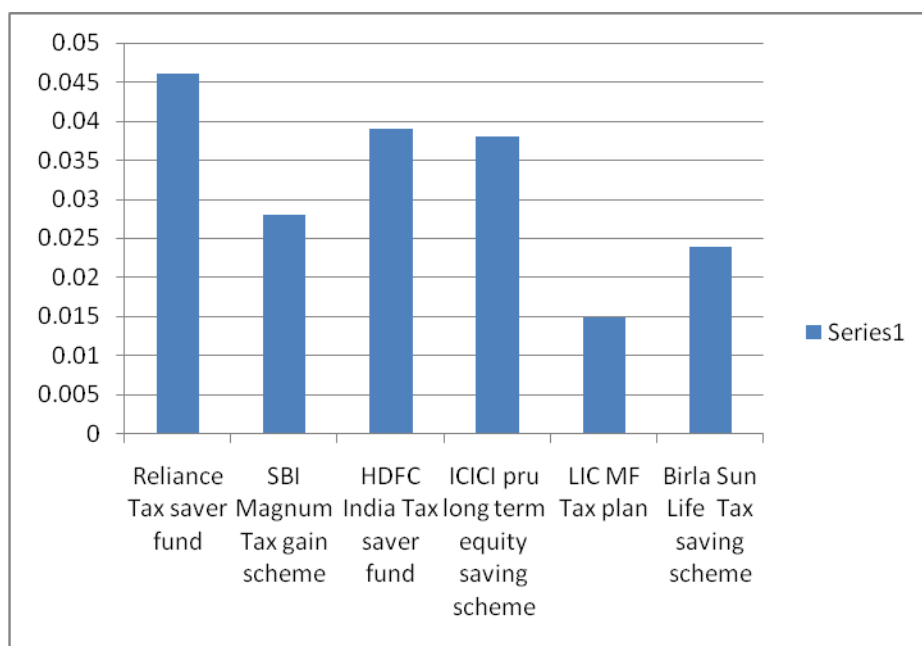
Source: authors calculation

This table reveals the year-wise information about the values of holding period returns of select schemes as well as benchmark index. On the basis of these yearly values respective averages

are calculated for the study period. It is clear from the above table that, Reliance Tax Saver fund has performed well as compared to other schemes in this category with average return 0.046 but it is astonished that all the schemes are under performance as compare to benchmark index. This is followed by HDFC India tax saver fund which registered an average return of 0.039percent and ICICI prudential long term equity tax saving scheme which registered a average return of 0.038percent and SBI Magnum Tax gain scheme registered return of 0.028 and Birla Sunlife Tax Saving schemes registered an average return of 0.024 and LIC MF tax plan registered a return of 0.015

Graph No.1

Return for select Tax saving Schemes and benchmark values



2. Risk related analysis and interpretation

(Figures in percentage)

Table No. 2

Table-: Standard Deviation for select schemes of the Tax Saving Schemes and benchmark values		
Year	S.D Market	Asset Management Companies and Schemes

	Return (CNX Nifty)	Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	2.874	2.263	2.439	2.251	2.375	2.852	2.801
2009	2.17	1.627	1.889	1.708	1.582	2.131	1.845
2010	1.78	0.975	0.936	0.86	0.859	1.008	0.99
2011	1.352	1.084	1.114	0.989	1.124	1.272	1.109
2012	0.980	0.884	0.817	0.834	0.779	0.939	0.832
2013	1.168	1.079	0.985	1.075	0.962	1.041	1.092
2014	0.814	1.096	0.85	1.106	0.885	0.844	0.88
2015	1.046	1.199	1.04	1.128	0.946	1.064	1.017
2016	0.964	1.164	0.949	1.121	0.86	0.949	0.907
2017	0.577	0.719	0.665	0.762	0.611	0.638	0.557
Average	1.372	1.209	1.168	1.183	1.098	1.273	1.203
Deviation		-0.163	-0.204	-0.189	-0.274	-0.099	-0.169
Risk		Less	Less	Less	Less	Less	Less
Rank		5	2	3	1	6	4

Source: authors calculation

This table provides summarized information about year-wise values of standard deviation for select schemes as well as benchmark index. Further, it also provides the information about the resultant average standard deviation of each scheme and corresponding benchmark index. A closure look at the table reveals that LIC MF tax plan has highest average value of standard deviation (1.273percent) followed by Reliance tax saver fund (1.209 percent), Birla sunlife saving scheme (1.203 percent), HDFC India Tax saver (1.183 percent) , SBI Magnum Tax gain scheme (1.168 percent)and ICICI prudential long term equity tax saving scheme (1.098 percent). Hence, LIC MF tax plan is having higher total volatility whereas ICICI prudential long term equity tax saving schemes has least total volatility during the study period as measured by Standard Deviation.

Graph 2:- Standard Deviation for select Tax Saving Scheme

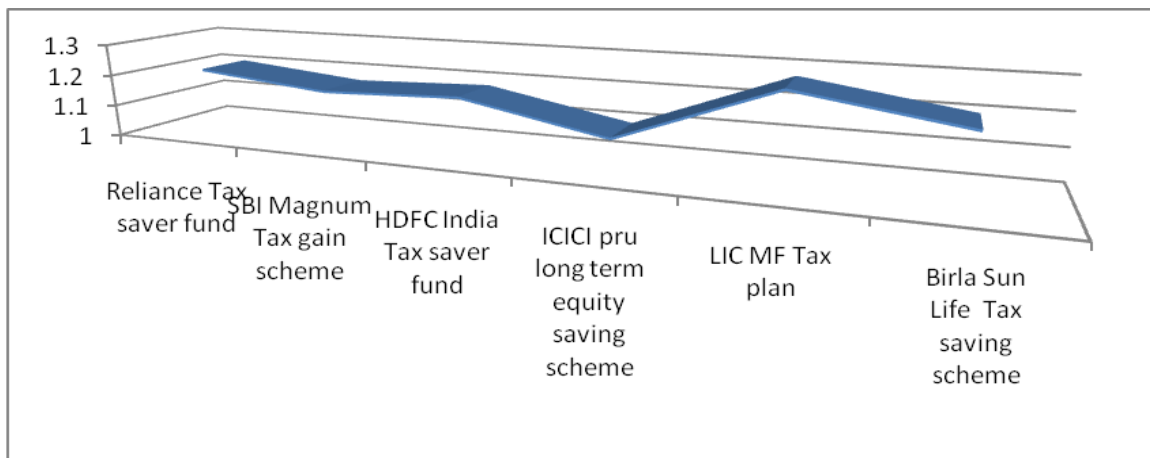


Table No 3: Systematic Risk (Beta) for select schemes of the Tax saving Schemes

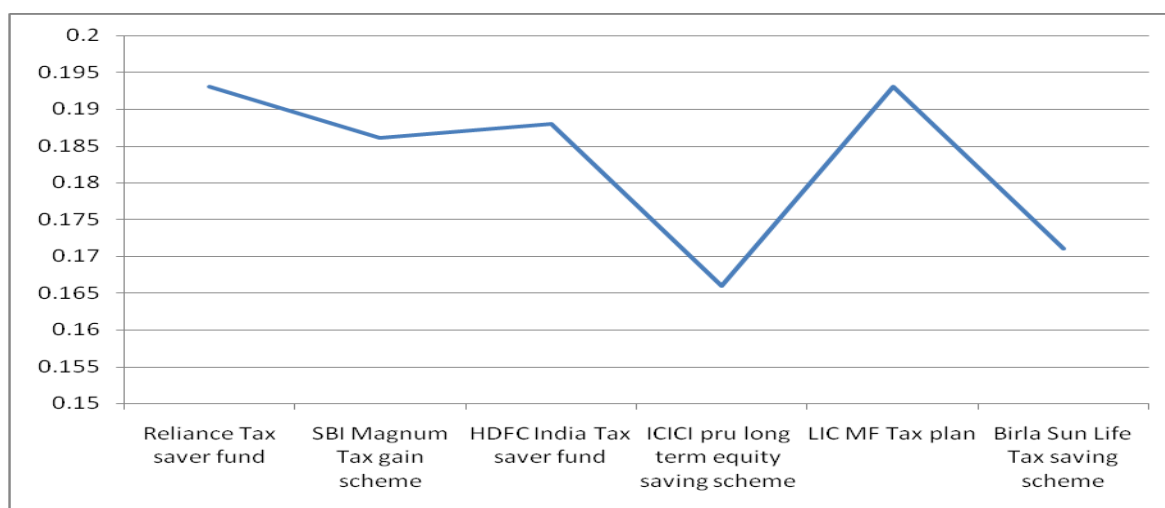
Year	Asset Management Companies and Schemes					
	Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	0.19	0.246	0.2	0.236	0.285	0.198
2009	0.048	0.064	0.041	0.052	0.065	0.0403
2010	0.186	0.163	0.169	0.15	0.171	0.178
2011	0.215	0.233	0.226	0.247	0.296	0.225
2012	0.039	-0.011	-0.039	-0.014	-0.026	-0.018
2013	0.176	0.189	0.175	0.141	0.181	0.199
2014	0.364	0.296	0.408	0.319	0.293	0.318
2015	0.107	0.12	0.108	0.066	0.099	0.101
2016	0.303	0.238	0.246	0.203	0.263	0.235
2017	0.311	0.323	0.354	0.26	0.306	0.241
Average	0.194	0.186	0.188	0.166	0.193	0.171

Rank	1	4	3	6	2	5
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Source: authors calculation

This table portrays the information about Beta values of select schemes belonging to Tax saving scheme for the study period. It is generally known fact that, higher the value of beta higher will be responsiveness of a given fund to the changes in the market index and vice-versa. A fund having higher beta may do well in a general up-trend whereas may not do so during the down-trend. Hence, a fund with lower beta may not exhibit attractive performance but it may save investors from extreme loss during the down- trend. A beta value of 1.0 of a fund implies neither over responsiveness nor under responsiveness to the changes in the market. A beta value of greater than 1.0 shows more than proportionate responsiveness to the changes in the market; a beta of less than 1.0 shows less than proportionate responsiveness. It is clear from the above table that Reliance Tax saver fund has highest beta value of 0.194 showing moderately high responsiveness; ICICI prudential long term equity tax saving schemes has lowest beta value of 0.166 having less responsiveness to the changes in the market; LIC MF Tax plan has a beta value of 0.193; HDFC India Tax saver has a beta value of 0.188; SBI Magnum Tax gain schemes has a beta value of 0.0.186; Birla sunlife Tax saving schemes has a beta value of 0.171. Hence, all the schemes having beta values of less than 1.0, perhaps, it can be inferred that, all portfolios are defensive portfolios.

**Graph 3:-
 Systematic Risk (Beta) for select schemes of the Tax saving scheme**



3.Risk-adjusted return analysis and interpretation

Table: Sharpe's Values for Select Schemes of the Tax saving schemes and benchmark values

Table No 4-: Sharpe's Values for Select Schemes of the Tax Saving Schemes and benchmark values

Year	Market Return (CNX Nifty)	Asset Management Companies and Schemes					
		Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	-0.054	-0.072	-0.076	-0.069	-0.084	-0.073	-0.109
2009	0.037	0.062	0.059	0.083	0.105	0.023	0.071
2010	0.044	0.069	0.034	0.095	0.086	0.042	0.078
2011	-0.109	-0.136	-0.128	-0.138	-0.129	-0.125	-0.118
2012	0.104	0.182	0.155	0.12	0.171	0.101	0.099
2013	-0.019	-0.028	-0.017	-0.024	-0.005	-0.012	-0.032
2014	0.217	0.286	0.265	0.221	0.259	0.267	0.253
2015	-0.014	-0.006	0.019	-0.018	0.025	-0.008	0.04
2016	0.095	0.074	0.082	0.088	0.1	0.086	0.091
2017	0.088	0.142	0.096	0.107	0.069	0.119	0.173
Average	0.038	0.057	0.048	0.046	0.059	0.042	0.054
Deviation		0.019	0.01	0.008	0.021	0.004	0.016
Over / Under		Over	Over	Over	Over	Over	Over
Rank		2	4	5	1	6	3

Source: authors calculation

This table crystallizes the year-wise information as well as average values of Sharpe's Index both for select schemes and the underlying benchmark index over the period of the study. It is observed from the above table that, all schemes belonging to Tax saving schemes (AMCs)

have shown on an average mash-up of over performance as compared to average performance of benchmark index. However, the extent of performance differs from scheme to scheme. ICICI prudential long term equity saving schemes, Reliance tax saver , Birla sunlife tax saving scheme, SBI Magnum Tax gain scheme, HDFC India tax saver fund and LIC MF tax plan have shown over performance (0.059 percent, 0.057 percent, 0.054 percent, 0.048 percent, 0.046 percent and 0.042 percent) respectively . All the six schemes have performed better than the benchmark index.

Graph-4:

Sharpe's Values for Select Schemes of the Equity growth and benchmark values

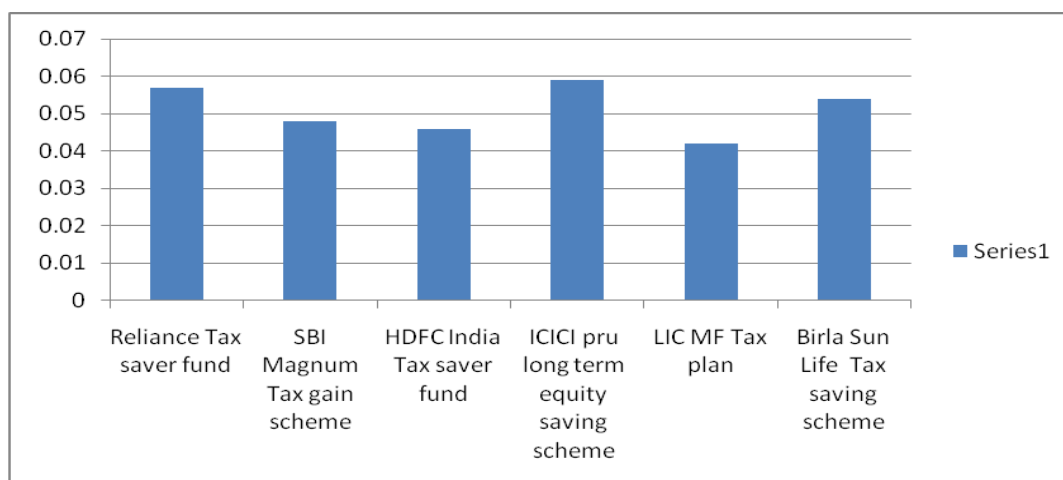


Table No 5 Treynor's Values for Select Schemes of the Tax saving schemes and benchmark values

Table-5.5: Treynor's Values for Select Schemes of the Tax saving schemes and benchmark values							
Year	Market Return (CNX Nifty)	Asset Management Companies and Schemes					
		Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	-0.157	-0.862	-0.753	-0.775	-0.848	-0.735	-1.54
2009	0.082	2.105	1.727	3.44	3.188	0.753	3.27
2010	0.048	0.364	0.198	0.484	0.49	0.253	0.432

2011	-0.148	-0.686	-0.613	-0.607	-0.589	-0.539	-0.583
2012	0.102	-4.04	-11.451	-2.565	-9.414	-3.551	-4.529
2013	-0.022	-0.174	-0.092	-0.15	-0.033	-0.072	-0.176
2014	0.177	0.861	0.762	0.6007	0.72	0.768	0.701
2015	-0.015	-0.071	0.164	-0.197	0.361	-0.093	0.404
2016	0.092	0.285	0.326	0.402	0.424	0.313	0.354
2017	0.051	0.328	0.197	0.23	0.162	0.248	0.4
Average	0.021	-0.189	-0.953	0.086	-0.553	-0.265	-0.126
Deviation		0.21	-0.974	0.065	-0.574	-0.286	-0.147
Over / Under		under	under	over	under	under	Under
Rank		3	6	1	5	4	2

Source: authors calculation

This table exhibit the year-wise information as well as average values of Treynor's Index both for select schemes and the underlying benchmark index over the period of the study. It is surprising to observed from the above table that, five schemes belonging to Tax saving schemes (AMCs) have on an average under performed and one scheme over performed as compared to average performance of benchmark index. wherein, HDFC India tax saver fund (0.086), Birla sun life Tax saving scheme (-0.0126), Reliance tax saver (-0.0189) LIC MF Tax plan (-0.0265), ICICI Prudential long term equity saving schemes(-0.553), SBI Magnum Tax gain scheme(0.953) Hence, only one scheme HDFC schemes have able to generate sufficient return in commensurate with their systematic risk as compared to bench mark index and another five have not able to generate sufficient return.

Graph-5:

Treynor's Values for Select Schemes of the Tax saving schemes and benchmark values

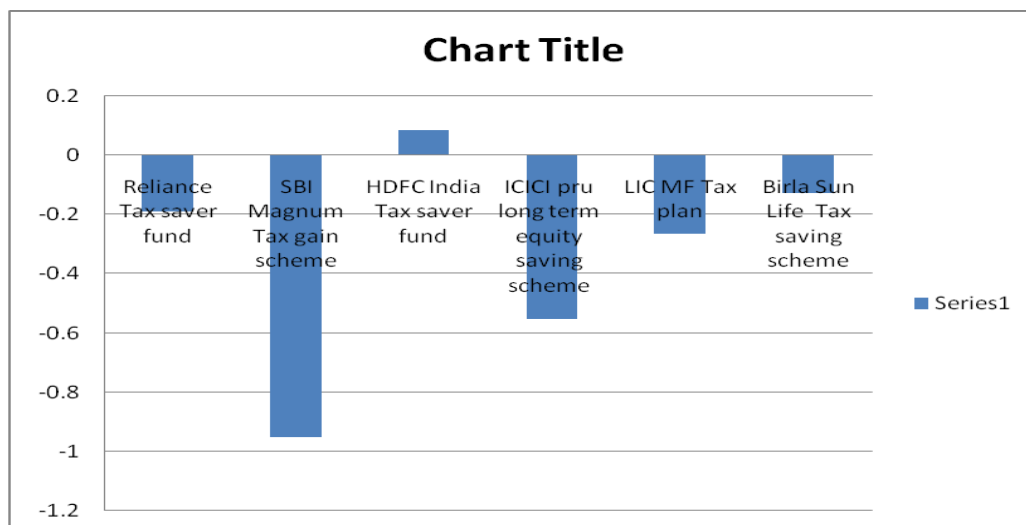


Table No 6-: Jensen's Alpha Values for Select Schemes of the Tax saving schemes

Year	Asset Management Companies and Schemes					
	Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
2008	-0.053	-0.093	-0.048	-0.104	-0.13	-0.197
2009	-0.039	-0.026	-0.0005	0.026	-0.088	-0.012
2010	0.064	0.027	0.077	0.068	0.039	0.073
2011	-0.2006	-0.198	-0.191	-0.202	-0.222	-0.185
2012	0.164	0.133	0.104	0.139	0.1	0.088
2013	-0.07	-0.056	-0.065	-0.045	-0.052	-0.074
2014	0.411	0.314	0.348	0.321	0.313	0.314
2015	-0.003	0.042	-0.016	0.029	-0.004	0.045
2016	0.164	0.154	0.175	0.161	0.159	0.159
2017	0.0081	0.044	0.065	0.016	0.054	0.068
Average	0.044	0.034	0.045	0.04	0.016	0.027
Over / Under	over	over	over	over	over	over
Rank	2	4	1	3	6	5

Source: authors calculation

This table narrates the information about year wise values of alpha for each select scheme as well as their average value during the study period. Alpha is an index of management skills of fund managers. Though, all select schemes fund managers have experienced positive alphas the extent of positively is highest in case of HDFC India Tax saver Fund (0.045), followed by Reliance tax saver fund (0.044 percent); ICICI Prudential long term equity saving schemes(0.04) ; SBI Magnum tax gain scheme (0.034),Birla Sun life Tax saving Scheme (0.027) and LIC MF Tax plan (0.016 percent). A positive alpha implies superior returns due to superior management skills and negative alpha implies inferior management skills as compared to the market. From the results shown in the above table, one can infer that, on an average, all schemes have fared well. Hence, we can say that, fund manager's managerial skills required for investment or disinvestment decision making is good.

Graph-6:
Jensen's Alpha Values for Select Schemes of the Tax saving schemes

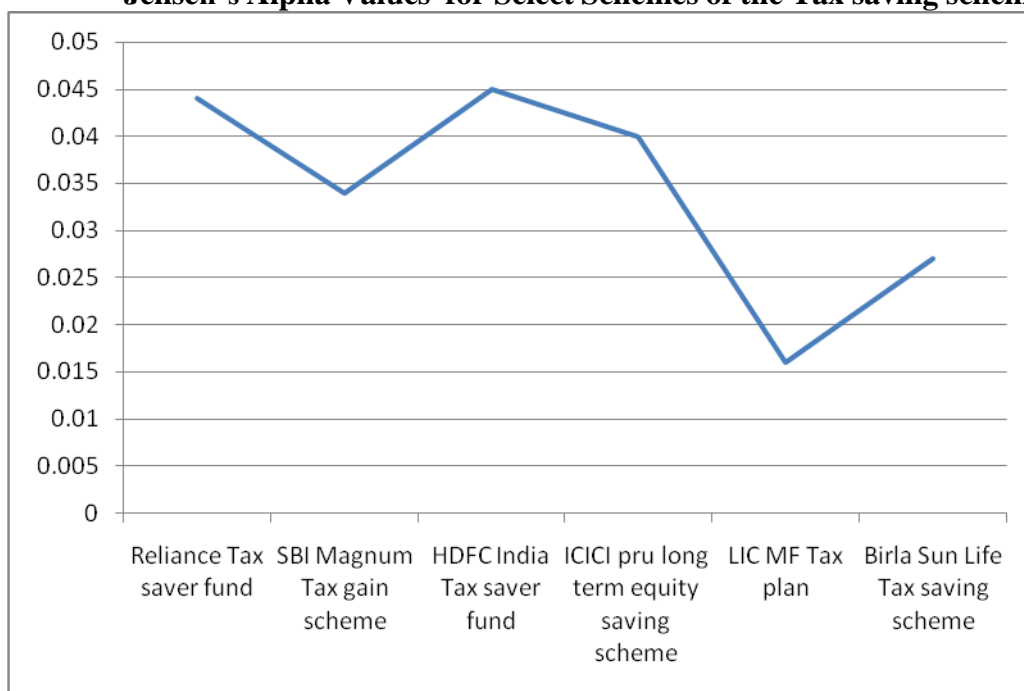


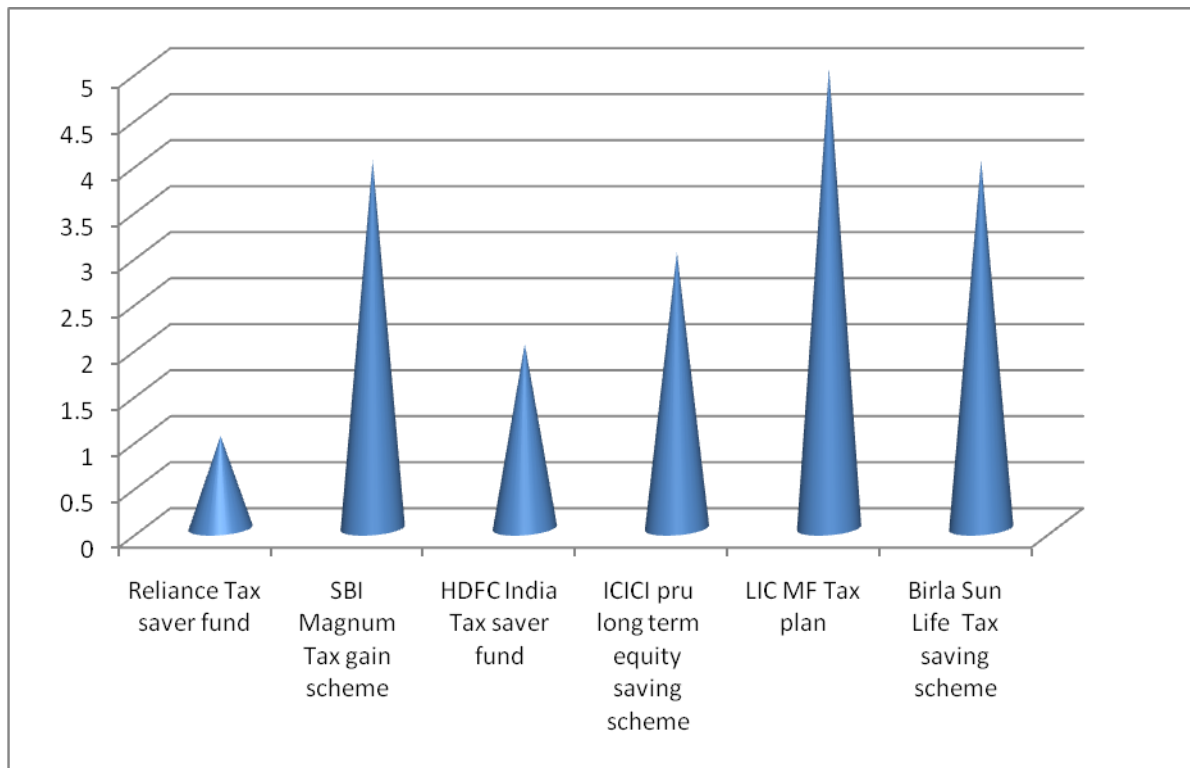
Table No 7:- Overall Ranking of all select Tax Saving Schemes

Models	RANKING					
	Reliance Tax saver fund	SBI Magnum Tax gain scheme	HDFC India Tax saver fund	ICICI pru long term equity saving scheme	LIC MF Tax plan	Birla Sun Life Tax saving scheme
Return	1	4	2	3	6	5
SD	5	2	3	1	6	4
Beta	1	4	3	6	2	5
Sharpe's	2	4	5	1	6	3
Treynor's	3	6	1	5	4	2
Jensen's	2	4	1	3	6	5
TOTAL	14	24	15	18	30	24
RANK	1	4	2	3	5	4

Source: authors calculation

The table No. 5.14 indicates the overall ranking of all chosen Tax saving schemes during the study period. From the above table, it is clear that Reliance Tax saver has placed at first position (1st Rank), followed by HDFC India Tax saver fund has placed at second position (2nd Rank); ICICI prudential long term equity saving scheme has placed at the third position (3rd Rank); Birla sunlife Tax saving scheme and SBI Magnum Tax gain scheme both has placed at the fourth position (4th Rank); LIC MF Tax plan has placed at the Fifth position (5th Rank).

Graph-7:
Overall Ranking of all select Tax saving schemes



Regrassion:

The regression has been run to measure the impact of the schemes under consideration on market return.. The regression equation is given below.

$$Nifty = a_0 + \beta_1 r_{reliant} + \beta_2 r_{sbit} + \beta_3 r_{hdft} + \beta_4 r_{cicic} + \beta_5 r_{lic} + \beta_6 r_{birlat} + \varepsilon_i \dots \dots \dots (i)$$

$\beta_1 r_{hdft}$ Coefficient of Regression on Reliance Tax saver fund

$\beta_2 r_{lic}$ Coefficient of Regression on SBI Magnum Tax gain scheme

$\beta_3 r_{reliant}$ Coefficient of Regression on HDFC India Tax saver fund

$\beta_4 r_{abt}$ Coefficient of Regression on ICICI pru long term equity saving scheme

$\beta_5^{ricicit}$ Coefficient of Regression on LIC MF Tax plan

β_6^{rsbit} Coefficient of Regression on Birla Sun Life Tax saving scheme

Table No.8

Regression Result										
Equation-i										
Coefficient										
Variable	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
β_1	-1.40 (0.61)	-0.66 (0.86)	11.30 (0.00)	-6.08 (0.01)	-0.55 (0.85)	-17.5 (0.00)	0.18 (0.93)	8.99 (0.00)	6.90 (0.00)	-6.80 (0.001)
β_2	35.51 (0.20)	155.9 (0.00)	90.78 (0.00)	187.3 (0.00)	107.7 (0.00)	-15.75 (0.63)	-59.5 (0.00)	38.64 (0.014)	84.62 (0.004)	30.35 (0.045)
β_3	-172.1 (0.00)	-201.6 (0.00)	-128.3 (0.00)	-6.625 (0.70)	-91.22 (0.00)	-25.41 (0.04)	-25.86 (0.02)	50.28 (0.00)	-167.2 (0.00)	-19.16 (0.188)
β_4	-32.77 (0.16)	-168.7 (0.00)	-79.73 (0.00)	44.17 (0.13)	26.36 (0.29)	123.6 (0.00)	68.77 (0.00)	-79.82 (0.00)	-16.00 (0.44)	11.15 (0.335)
β_5	33.29 (0.00)	27.10 (0.00)	22.59 (0.00)	10.6 (0.04)	28.26 (0.00)	12.85 (0.00)	2.26 (0.57)	2.19 (0.55)	-4.65 (0.07)	0.040 (0.98)
β_6	69.04 (0.00)	99.22 (0.00)	51.81 (0.00)	-28.91 (0.07)	-4.67 (0.73)	79.9 (0.00)	66.88 (0.00)	30.43 (0.00)	93.77 (0.00)	81.73 (0.00)

R ²	0.97	0.98	0.98	0.95	0.93	0.91	0.99	0.90	0.96	0.97
AR ²	0.97	0.98	0.98	0.95	0.93	0.90	0.99	0.90	0.96	0.97

R²= R Squared, A R²= Adjusted R Squared,

It has been run regression in one equation. The regression result is given in table-8. In equation-i, we consider the impact of Reliance tax saver fund, SBI Magnum Tax gain scheme, HDFC India Tax saver fund, LIC Tax Plan and Birla sun Life Tax saving scheme. In addition to this run the regression for full sample as well considering all data years in one equation. We find no significant impact from Reliance Tax saver fund, SBI Magnum Tax gain scheme , ICICI pru long term equity saving scheme, LIC MF Tax plan, Birla Sun Life Tax saving scheme. The impact from HDFC India Tax saver fund and Reliance Tax saver fund is negative and significant.

Conclusion:

This Study helps to investors for taking investment decision relating to mutual fund schemes and it shows mutual fund is better platform for investment and it provide good return with low risk .

It creates awareness that the mutual funds are beneficial investment for risk averse investors . The mutual fund industries provide to the investors with a wide range of investments options according to his risk bearing capacities and interest. Besides they also give a good return to the investors. This paper analyses six mutual fund schemes of Different Companies. From this study, It is Found that find ICICI pru long term equity saving scheme is shows the greater value of Sharpe ratio as compare to other selected schemes hence this schemes provides better return. It shows the grater skills in managing the investment. After calculating beta value of the selected schemes we find Reliance Tax saver fund is more volatile as compare to LIC Tax saving schemes and other selected schemes. ICICI pru long term equity saving scheme is less volatile as compare to selected schemes. On the regression , It has been find that no significant impact from Reliance Tax saver fund, SBI Magnum Tax gain scheme , ICICI pru long term

equity saving scheme, LIC MF Tax plan, Birla Sun Life Tax saving scheme. The impact from HDFC India Tax saver fund and Reliance Tax saver fund is negative and significant.

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