Measurement of Risk and Return Spillovers Effects among Sensex and Equity Based Mutual Funds in India

Pramod Kumar Patjoshi, Girija Nandini

Abstract: A mutual fund is a unique and significant investment avenue provided by different financial institutions. Mutual funds mobilize money from numerous investors and invest in various financial securities in the stock market. It is a professionally managed investment avenue, which is related to market risk. It has seen an incredible development in the mutual fund sector in India during the last few decades. This paper has examined the performance of the selected equity-based mutual funds schemes by analysing their risk and returns in India. This paper also examined the risk and returns spillovers effects among Sensex and equity-based mutual funds in India. A total of eighteen schemes offered by six companies operating in India have been examined over the span of six years from 1st January 2013 to 31st December 2018. The study is related to secondary data and for analysing the data daily Net Asset Values (NAVs) of selected schemes have been collected from different websites. For analysing and measurement of risk and return spillovers effects among Sensex and equity based mutual funds in Indian mutual funds, different methods like descriptive statistics and correlation have applied. For testing the hypothesis, t-test has been applied and found that there is no significant difference between daily returns of Sensex and other sample mutual fund schemes indices daily returns at a 5% degree of significance.

Keywords: Mutual funds, NAVs, Risk, Return, Schemes, Large-cap, Midcap, Small cap.

I. INTRODUCTION

The growth of the financial security market in any country is a very significant issue leading to improve investment and active contribution to economic development. The different investors in security markets analyse the various risk which influences at the time of framing their decisions on investment. The portfolio theory of Markowitz (1952) stated that investors try to build an efficient portfolio. Investors use to take the decision to maximize their return of the portfolio for predictable total portfolio risk and reduce the risk for a level of probable return. It means that an investor who desires maximum return must accept maximum risk.

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Stock markets involve different risk factors and these risk factors influence the expected return [9]. According to Modigliani and Pogue (1973), most of the investors would agree that the dealing of risk is a very vital part of the financial decision [10]. Investment in mutual funds is one of the most advanced attractive investment avenues which play a significant part in the development of the economy of any country.

Mutual funds offer investment opportunities for investors or those don't have any knowledge about the stock market and still the desire to invest in the stock market. A mutual fund is a platform that makes trading of security for the investors in the stock market. Mutual fund companies mobilize the savings from various investors and invest their funds in different financial securities in the stock market. From the last few decades, numerous unexpected changes have been seen by mutual fund companies. Consequently, by means of the changed situation, it is very important to find out the different mutual fund returns as well as their schemes returns. The evaluation of different schemes of mutual funds in India is to see whether different schemes are outperforming or underperforming up to the benchmark and to find out the competency of the schemes to take the decision for investment. The mutual fund companies use to provide various schemes in different funds like sectoral funds, capitalization funds, growth or income funds, direct or regular funds for the investment (Chitra and Hemalatha, 2018) [1].

Sensex comprises thirty well recognized and financially comprehensive companies listed in the Bombay stock market. The thirty companies which are of the large-capitalization and most aggressively traded stocks. It represents various industrial sectors of the Indian economy. Sensex is the parameter and benchmark for Indian stock markets.

Equity mutual funds also called growth funds are diversified portfolios consist of different stocks with an aim of capital appreciation as its major goal. The portfolio of growth mutual funds mostly comprises of companies that reinvest their profit into expansion, acquisitions, research, and development. Equity mutual funds invest in different stocks having a correlation with the market return and risk. Consequently whenever Sensex varies then the stocks also use to vary to the extent of their risk. When the different stocks of a mutual fund diverge then NAVs of the mutual funds also vary. Therefore the present study examines risk and returns spillovers effects among Sensex and equity-based mutual funds in India.

II. LITERATURE REVIEW

Treynor (1965) framed to assess the performance of the portfolio, known as the return to risk ratio is demarcated by way of the average portfolio surplus return. The researcher found the performance of the fund by taking investment risk into account [16].

On the other hand, Jensen (1968) assessed the performance of a hundred and fifteen mutual funds from 1945 to 66. From the study, it was found that thirty nine funds performed better than average, although seventy six funds performed unusually lower returns in considering the total returns. Thus Jensen found that few funds had up to mark and significantly well than anticipated [7]. While Sharpe (1966) found a combined measure of return as well as a risk by evaluating thirty four open-end mutual funds from 1944 to 63. It was found from the research that the return of mutual funds linked through the smaller expense ratio regardless of the magnitude. Also, the sample funds displayed steadiness in risk measures [14].

Despite the fact, Jagric et al. (2015) analysed the mutual fund companies by means of numerous tests to assess the return volume of mutual funds. The researcher brought into a presence that the rankings assigned by their results equal to the Sharpe and Treynor principles as per just about the similar, suggesting that funds are sound diversified [6]. On the other hand, Irwin et al. (1970) have taken eighty six schemes by means of random portfolios for comparison. The research has resolved that mutual funds return result poorly. Schemes had greater revenue had beaten the market and they recognised that the performance of mutual funds had not been determined by the size of the fund [5].

Rohleder et al. (2014) in their study investigated the U.S. equity funds and noticed cross-sectional variances in the reaction of funds to the movement of risk. Correspondingly [13], Choi et al. (2017) have taken a sample of different investors investing in mutual funds. In the study, they verified whether focused investment plans can give higher returns [2]. While Kholkin and Haug (2016) analysed by considering open-end equity funds by means of their monthly returns and in the research, it found that funds by great volatility have lesser returns than other funds [8].

Further, Soni (2017) the research analysed the performances of numerous funds by means of their risk appearances. It confirms that there is continually a positive relationship among the risk and return of the funds or not [15]. On the other hand, Grinblatt et al. (2016) disclosed unambiguous alterations among the investment attitude as well as the ability of hedge funds in addition to mutual funds. [4]. Nandini (2014) in her study on the performance evaluation of selected mutual fund schemes in India investigates the performance of 9 funds from three different companies for 5 years. The NAV of different mutual fund schemes have considered evaluating the returns [3]. On the other hand, Patjoshi (2016) observed the risk and return of the Sensex and banking stocks. It has found that Sensex returns, and also all the banking stock returns, display positive returns apart from ICICI Bank return for the chosen period [11]. Similarly, Patjoshi (2016) studied at an objective to analyse the risk and returns of BSE large, BSE mid, and BSE small capitalized indices. The research was centerd on secondary data of 10 years from 1st April 2006 to 31st March 2016 and different methods like correlation, descriptive statistics, and t test have been employed for the study [12].

III. OBJECTIVES OF THE STUDY

The objectives of the research are

A. To analyse the risk & return of Sensex and selected Equity Based Mutual Fund Schemes in India.

B. To examine the risk and return spillovers effects among Sensex and selected Equity Based Mutual Funds Schemes in India.

IV. HYPOTHESIS OF THE STUDY

Based on the above objectives the hypothesis have planned for the study is

Hypothesis (Ho): There is no significant difference between Sensex returns and Equity Based Mutual Fund Schemes returns

V. METHODOLOGY AND TESTS USED IN THE STUDY

For the study, eighteen different schemes offered by six companies operating in India and Sensex have been examined over the period of six years from 1st January 2013 to 31st December 2018. The research is associated to secondary data and for analysing the data daily NAVs of eighteen mutual fund schemes have been collected from the database of the Association of Mutual Funds of India and Sensex data have been composed from the authorized portal of Bombay Stock Exchange.

Daily closing values of BSE Sensex and eighteen mutual fund schemes namely

In Large Cap, the schemes are Aditya Birla Sun Life Frontline Equity Fund - Growth - Direct Plan, Axis Bluechip Fund - Direct Plan-Growth, HDFC Top 100 Fund - Direct Plan-Growth Option, ICICI Prudential Bluechip Fund - Direct Plan-Growth, and Kotak Bluechip Fund-Growth – Direct and SBI Blue Chip Fund-Direct Plan-Growth.

In Mid Cap the schemes are Aditya Birla Sun Life Midcap Fund - Growth - Direct Plan, Axis Midcap Fund - Direct Plan-Growth, ICICI Prudential Midcap Fund - Direct Plan-Growth, HDFC Mid Cap Opportunities Fund -Direct Plan-Growth Option, Kotak Emerging Equity Scheme - Growth – Direct and SBI Magnum Midcap Fund - Direct Plan-Growth

In Small Cap the schemes are Aditya Birla Sun Life Small Cap Fund - Growth - Direct Plan, Axis Small Cap Fund - Direct Plan – Growth, HDFC Small Cap Fund - Direct Growth Plan, ICICI Prudential Small cap Fund - Direct Plan – Growth, SBI Small Cap Fund - Direct Plan – Growth and Kotak-Small Cap Fund - Growth - Direct

Methods of Investigation

The main objective of the research is to examine the risk and return apillovers effects among Sensex and selected Mutual fund schemes. For analysing and testing the hypothesis descriptive statistics, correlation, in addition to t-test have applied.

The Daily NAV returns of the selected mutual funds and stock market Index (Sensex) returns have evaluated by the formula as follows:

rt = ln (It/It-1)

Where

rt is the Return on Index / NAVs,

ln is the Natural logarithm,

It is the Today's closing value of Index /NAVs

It –1 is the previous day's closing value of the Index /NAVs

Beta

Beta is a measure of market risk. Beta is calculated as:

$$\beta = \frac{Cov\ (X,\ Y)}{Var\ (X)}$$

Standard Deviation and Variance

Standard Deviation is a measure of volatility and calculated by the formula stated under:

$$\sigma = \sqrt{\{1/(N-1)\}\ \sum (x_i - \bar{x})^2}\ \ over\ i = 1\ to\ N$$

P- Value

P-value is a yardstick to study the null hypothesis. The lesser the p-value, the further indication we have. Here the level of significance has been taken as a 5% confidence level.

VI. DATA ANALYSIS AND INTERPRETATION

A. Analysis of Risk and Return of Different Mutual Funds Schemes

Table-I précises the descriptive statistical values of daily market returns of different mutual fund schemes from 1st January 2013 to 31st December 2018 with the help of descriptive statistics analysis.

Table-I: Descriptive Statistics of the Return & Risk of Different Mutual Fund Schemes

Particulars	Mean	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum
Large cap Fund - Direct Plan - Growth						
Sensex	0.0414	0.8864	2.7512	-0.3807	-6.1197	3.7034
Aditya Birla	0.0556	0.8691	2.6491	-0.4846	-6.2499	3.2933
Axis	0.0584	0.8566	3.7195	-0.5886	-6.8569	2.8802
HDFC	0.0502	1.0442	2.9337	-0.3639	-7.6801	4.6946
ICICI	0.0563	0.8708	2.5693	-0.4332	-6.3172	3.0901
Kotak	0.0507	0.9082	2.7448	-0.4072	-6.2709	4.1833
SBI	0.0576	0.8438	2.8290	-0.5593	-5.8470	3.2409
Midcap Fund - Direct Plan - Growth						
Sensex	0.0414	0.8864	2.7512	-0.3807	-6.1197	3.7034
Aditya Birla	0.0619	0.9340	3.6535	-0.8288	-7.2246	3.6714
Axis	0.0695	0.9001	6.3327	-0.9639	-8.0956	4.8762
HDFC	0.0740	0.8806	3.6638	-0.7947	-7.0974	3.6338
ICICI	0.0727	0.9604	3.8057	-0.6196	-7.7243	4.2354
Kotak	0.0706	0.8605	4.0265	-0.8504	-7.0121	3.1511
SBI	0.0667	0.8786	3.4893	-0.7791	-6.7513	3.8924
Small cap Fund - Direct Plan - Growth						
Sensex	0.0414	0.8864	2.7822	-0.3770	-6.1197	3.7034
Aditya Birla	0.0671	0.9743	3.8434	-0.8876	-7.6795	3.6442
Axis	0.0822	0.8110	6.5281	-0.7120	-7.0880	5.1253
HDFC	0.0715	0.9237	4.1929	-0.8989	-7.3722	3.5361
ICICI	0.0422	0.7963	4.0459	-0.5703	-6.7106	4.0026
Kotak	0.0980	0.9904	2.3117	-0.5969	-5.8889	3.3275
SBI	0.0611	0.9187	3.3044	-0.7811	-7.0363	3.2630

Retrieval Number: F8744038620/2020©BEIESP
DOI: 10.35940/ijrte.F8744.038620
Journal Website: www.ijrte.org

4480

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Mean is the measure of average daily returns. It is observed from the above table that all sample mutual funds have provided positive average daily returns during the study period i.e. from 1st January 2013 to 31st December 2018. After analysing the different Large-cap Fund - Direct Plan-Growth schemes of sample mutual funds, it can observe that

Axis Large-cap has performed better by recording the highest average returns of 0.0584 and Sensex average returns (0.0414) is lowest as compared to the average returns under the same category during the study period. On the other hand in the case of Midcap Fund - Direct Plan-Growth schemes average return has recorded highest for HDFC (0.0740) and lowest for Sensex (0.0414) as compared to other Midcap Fund - Direct Plan-Growth schemes average return. Correspondingly Kotak's small-cap fund has delivered the highest return of 0.0980 and Sensex has delivered the lowest return of 0.0414 for Small-cap Fund - Direct Plan-Growth schemes. By means of examining the entire sample mutual funds schemes, it is clear that Mid cap and Small-cap mutual funds have performed better than Sensex and Large-cap funds. Kotak Small cap has delivered uppermost return and Sensex has delivered lowermost return during the study period.

Standard deviation is the measure of risk and a higher Standard deviation of a fund shows higher volatility. From the above table, it represents that Standard deviation is maximum for HDFC (1.0442) whereas minimum for SBI (0.8438) under the Large-cap funds' category. Alternatively ICICI Midcap has recorded a higher standard deviation of 0.9604 and Kotak Midcap has recorded lower of 0.8605 as compared to other for Midcap mutual funds. On the contrary, Kotak's small-cap has logged a higher standard deviation of 0.8605 and ICICI small-cap logged the lowest of 0.7963 for the study period. The standard deviation of HDFC large-cap return is more volatile or risky for investment and ICICI small-cap return is less volatile or less risky for investment as compared to all the sample mutual funds for the mentioned period. The daily return distribution of all sample indices returns is found to be negatively skewed.

B. Correlation between Sensex and Different Mutual Funds Schemes Returns

Table-II reveals the correlation matrix for average daily returns of Sensex and of different mutual funds schemes indices for six years from 1st January 2013 to 31st December 2018.

Table-II: Correlation of Aaverage Daily Returns of Sensex and Different Mutual Fund Schemes

Particulars	Sensex	Aditya Birla	Axis	HDFC	ICICI	Kotak	SBI
Large cap Fund - Direct Plan - Growth							
Sensex	1.0000						
Aditya Birla	0.0609	1.0000					
Axis	0.0495	0.9521	1.0000				
HDFC	0.0620	0.9609	0.9221	1.0000			
ICICI	0.0518	0.9741	0.9368	0.9609	1.0000		
Kotak	0.0568	0.9718	0.9448	0.9501	0.9627	1.0000	
SBI	0.1999	0.1200	0.0992	0.1020	0.1064	0.1235	1.0000
Midcap Fund - Direct Plan - Growth							
Particulars	Sensex	Aditya Birla	Axis	HDFC	ICICI	Kotak	SBI
Sensex	**1.0000**						
Aditya Birla	0.0701	1.0000					
Axis	0.0700	0.8979	1.0000				
HDFC	0.0726	0.9431	0.9040	1.0000			
ICICI	0.0757	0.9118	0.8760	0.9131	1.0000		
Kotak	-0.0140	0.2078	0.2145	0.2076	0.1886	1.0000	
SBI	0.1203	0.1729	0.1781	0.1703	0.1695	0.0192	1.0000
Small cap Fund - Direct Plan - Growth							
Particulars	Sensex	Aditya Birla	Axis	ICICI Prudential	HDFC	Kotak	SBI
Sensex	1.0000						
Aditya Birla	0.0135	1.0000					
Axis	-0.0277	-0.0026	1.0000				
HDFC	0.0725	-0.0041	0.0293	1.0000			
ICICI	0.0270	-0.0216	-0.0034	-0.0213	1.0000		
Kotak	0.1027	-0.0074	0.0273	0.8371	-0.0179	1.0000	
SBI	0.0730	0.0302	0.0266	0.9076	-0.0133	0.8343	1.0000

It can witness from Table-II that daily returns of Sensex are positively correlated with all sample mutual fund schemes returns except returns of Kotak midcap and Axis small-cap mutual fund (negative correlated). Sensex return is highly correlated with SBI large-cap and less correlated with Axis large-cap in the large-cap category.

Whereas, in the comparison of midcap funds and the Sensex notice that Sensex return has recorded an extremely correlation with SBI mid-cap and negatively correlated to Kotak mid-cap fund. On the other hand, Sensex return is highly correlated with Kotak small-cap and negatively related to Axis small-cap.

C. Analysis of Beta with Reference to Sensex of Sample Mutual Fund Schemes

Beta measures the market risk (volatility) of a particular fund as compared to the market as a whole. The beta values of sample mutual fund schemes for six years from 1st January 2013 to 31st December 2018 with reference to Sensex found out as elaborated below.

Table-III: Beta Coefficient of Sample Mutual Fund Schemes

Large cap Fund - Direct Plan - Growth		Mid cap Fund - Direct Plan - Growth		Small cap Fund - Direct Plan - Growth	
Particulars	Beta	Particulars	Beta	Particulars	Beta
Aditya Birla	0.0621	Aditya Birla	0.0665	Aditya Birla	0.0123
Axis	0.0512	Axis	0.0689	Axis	-0.0302
HDFC	0.0526	HDFC	0.0731	HDFC	0.0694
ICICI	0.0528	ICICI	0.0698	ICICI	0.0300
Kotak	0.0554	Kotak	-0.0145	Kotak	0.0918
SBI	0.2100	SBI	0.1214	SBI	0.0703

The above table shows that SBI large-cap mutual fund has recorded the highest beta (market risk) or more volatile and Axis large-cap mutual fund has recorded the lowest beta in the large-cap category. But in the case of mid-cap mutual funds, it can found SBI midcap mutual fund has delivered maximum beta value and Kotak midcap mutual fund has delivered a minimum beta value. On the other hand in the case of the small-cap mutual fund, Kotak small-cap has a higher beta and Axis small-cap have a lower beta value. From the entire selected mutual fund schemes greatest defensive scheme i.e. negatively sensitive to variations is Kotak mid-cap and Axis small-cap. However SBI large-cap and SBI midcap are the most sensitive mutual funds.

D. Analysis of Return per Volatility

Table IV displays the return per volatility measured in terms of the beta of sample mutual fund schemes for six years from 1st January 2013 to 31st December 2018. It can found from large-cap mutual funds, Axis large-cap return per volatility rank higher as compared to other and SBI large-cap return has positioned at the backseat, which labels that investors preferred Axis large-cap as it achieved better returns than the large-cap fund.

Table-IV: Return per Volatility of Sample Mutual Fund Schemes

Large cap Fund - Direct Plan - Growth			
Particulars	Return	Beta	Return/Beta
Aditya Birla	0.0556	0.0621	0.8956
Axis	0.0584	0.0512	1.1396
HDFC	0.0502	0.0526	0.9539
ICICI	0.0563	0.0528	1.0681
Kotak	0.0507	0.0554	0.9141
SBI	0.0576	0.2100	0.2744
Midcap Fund - Direct Plan - Growth			
Particulars	Return	Beta	Return/Beta
Aditya Birla	0.0619	0.0665	0.9313
Axis	0.0695	0.0689	1.0079
HDFC	0.0740	0.0731	1.0129
ICICI	0.0727	0.0698	1.0417
Kotak	0.0706	-0.0145	-4.8862
SBI	0.0667	0.1214	0.5497
Small cap Fund - Direct Plan - Growth			
Particulars	Return	Beta	Return/Beta
Aditya Birla	0.0671	0.0123	5.4629
Axis	0.0822	-0.0302	-2.7189
HDFC	0.0715	0.0694	1.0305
ICICI	0.0422	0.0300	1.4077
Kotak	0.0980	0.0918	1.0671
SBI	0.0611	0.0703	0.8694

ICICI midcap returns position higher as compared to other return per volatility and Kotak midcap return has located last in the midcap mutual funds category, which describes that ICICI midcap return has performed healthier than that of other during the study period. In the case of small-cap mutual funds return per volatility measured in terms of beta found to be highest for Aditya Birla small-cap return and Axis small-cap return found to be lowest, which defines that Aditya Birla small-cap mutual fund has performed better than other mutual funds in the same category.

E. Return per Standard Deviation of Sample Mutual Fund Schemes

Table -V specifies the position of different sample mutual fund schemes indices returns with the relation to standard deviation over an extent of six years from 1st January 2013 to 31st December 2018. Here it is observed that among all the large-cap schemes SBI large-cap has done better (less risky), than other large-cap mutual funds during the study period, while HDFC large-cap has to recover in the measure of return per standard deviation for minimizing the risk. In the category of midcap mutual funds returns it can detect that HDFC midcap has performed well (less risky), than other midcap funds in the study period, however, Aditya Birla midcap not done well (high risk) in the measure of return per standard deviation for reducing the risk. On the other hand, in case of small-cap mutual fund schemes it witnessed that Axis small-cap is performed better (less risky), than other small-cap mutual fund schemes, whereas ICICI small-cap has to improve.

Retrieval Number: F8744038620/2020©BEIESP
DOI: 10.35940/ijrte.F8744.038620
Journal Website: www.ijrte.org

4482

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Table-V: Return per Standard Deviation of Sample Mutual Fund Schemes

Large cap Fund - Direct Plan - Growth			
Particulars	Return	Standard Deviation	Return/ Standard Deviation
Aditya Birla	0.0556	0.8691	0.0640
Axis	0.0584	0.8566	0.0681
HDFC	0.0502	1.0442	0.0480
ICICI	0.0563	0.8708	0.0647
Kotak	0.0507	0.9082	0.0558
SBI	0.0576	0.8438	0.0683
Midcap Fund - Direct Plan - Growth			
Particulars	Return	Standard Deviation	Return/Standard Deviation
Aditya Birla	0.0619	0.9340	0.0663
Axis	0.0695	0.9001	0.0772
HDFC	0.0740	0.8806	0.0840
ICICI	0.0727	0.9604	0.0757
Kotak	0.0706	0.8605	0.0821
SBI	0.0667	0.8786	0.0759
Small cap Fund - Direct Plan - Growth			
Particulars	Return	Standard Deviation	Return/Standard Deviation
Aditya Birla	0.0671	0.9743	0.0689
Axis	0.0822	0.8110	0.1013
HDFC	0.0715	0.9237	0.0774
ICICI	0.0422	0.7963	0.0530
Kotak	0.0980	0.9904	0.0989
SBI	0.0611	0.9187	0.0665

F. Analysis of Significance Test Results of Different Mutual Funds

Table-6 displays the t-statistics Significance results and P-value of returns for different sample mutual fund schemes returns with the relation to Sensex returns for the mentioned period.

Table-VI: Significance Test Results of Different Mutual Fund Schemes

Large cap Fund - Direct Plan - Growth			Midcap Fund - Direct Plan - Growth			Small cap Fund - Direct Plan - Growth		
Particulars	**t Stat**	**P Value**	**Particulars**	**t Stat**	**P Value**	**Particulars**	**t Stat**	**P Value**
Aditya Birla	-0.4527	0.3254	Aditya Birla	-0.6336	0.2632	Aditya Birla	-0.8005	0.2118
Axis	-0.5407	0.2944	Axis	-0.8831	0.1887	Axis	-1.3337	0.0913
HDFC	-0.2529	0.4002	HDFC	-1.0386	0.1496	HDFC	-0.9863	0.1621
ICICI	-0.4735	0.3180	ICICI	-0.9564	0.1695	ICICI	-0.0795	0.4683
Kotak	-0.2879	0.3867	Kotak	-0.9013	0.1838	Kotak	-1.7693	0.0385
SBI	-0.5683	0.2849	SBI	-0.8291	0.2036	SBI	-0.6643	0.2533

The P-value of returns for different sample mutual fund schemes returns with the relation to Sensex returns mentioned period found more than 0.05, which specify that there is no significant difference between daily returns of Sensex and other selected mutual funds schemes daily returns at 5% degree of significance. Therefore the null hypothesis (there is no significant difference between Sensex returns and Selected Mutual Funds returns) is accepted.

VI. CONCLUSION

From the above it can conclude that, the Sensex returns and selected mutual fund schemes returns have been used to investigate the saillovers effects of risk and return among Sensex return and mutual fund schemes return. More precisely, to examine the correlation and the impact of Sensex return on selected mutual fund schemes return, during the period 1st January 2013 to 31st December 2018. It has found that Mid-cap and Small-cap mutual funds have performed better than Sensex and Large-cap funds. Kotak Small cap has delivered the highest return and Sensex has delivered the lowest return. The standard deviation of HDFC large-cap return is more volatile or risky for investment and ICICI small-cap return is less volatile or risky for investment as compared to all the sample mutual funds. From the correlation analysis, it is found that Sensex returns are positively correlated with all sample mutual fund schemes returns except that of Kotak midcap and Axis small-cap mutual fund (negatively correlated). Sensex return is highly correlated with SBI large cap. By analysing the beta of the selected mutual fund schemes, it is found that the greatest defensive scheme i.e. negatively sensitive to variations is Kotak mid-cap and Axis small-cap, whereas SBI large-cap and SBI midcap is the most sensitive mutual funds. The P-value of returns for different sample mutual fund schemes returns with the relation to Sensex returns over a period of six years from 1st January 2013 to 31st December 2018 found more than 0.05, which specify that there is no significant difference between daily returns of Sensex and other sample mutual fund schemes daily returns at 5% degree of significance.

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Retrieval Number: F8744038620/2020©BEIESP
DOI: 10.35940/ijrte.F8744.038620
Journal Website: www.ijrte.org

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