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Performance Analysis of Mutual Fund in India: A Study on Pre and Post Lockdown Period

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Structured Abstract

Purpose: The present paper deals with the performance analysis of selected equity schemes of mutual funds during pre and post lockdown period ranging from 2019-2021.

Methods/Design: The analysis has been made on the basis of risk and return of the selected schemes and used to Sharpe ratio, Jensen Ratio, Treynor Ratio.

Findings: The present study reveals that only 4 schemes produced higher rate of return but these schemes have higher rate of risk. Return and risk of our selected schemes have positive and significant relations. On the basis of rank, only one schemes has same rank between Treynor and Sharpe technique and this schemes is well diversified but other schemes are not produce same rank. These schemes are not well diversified. The selected schemes did not have stock selection ability. Only 4 schemes have higher stock selection ability and produce super or sustainable return.

Conclusion: The study concludes that the selected schemes do not produce good result is term of diversification view point. That means selected sachems are not well diversified.

Originality/Value: Performance analysis of mutual fund in India during pre and post lockdown period.

Key Words: Mutual Fund, Investment, Sharpe ratio, Jensen Ratio, Treynor Ratio.

Paper Type: Research Paper

Introduction

Now a day, mutual fund industry can play an important role for economic development of our country like India. It came to our country since 1964 by the UTI. After that privatization on and after 1992, Mutual fund is going year after year. Mutual fund is a collective vehicle that collect money from various types of investment and that money invest into various stocks like equity, bond and debt. Most of the people of our country are investing own money in various sectors for capital appreciation or increased own money. Few people who are belong to senior citizen; their incomes totally depend on the return from this investment. But, day by day and our bank interest rate is reduced. So, their income is not enhancing due to reduce the rate of interest. On that time period, people are trying to enhance or increased the income after investing own money into various stocks. But, most of the people do not have any idea how to invest own money into stock exchange. But, they, have to invest for enhancing own money. On that time, mutual fund is most suitable for them. Mutual fund is totally managed by professional manager those have sufficient knowledge about stock market. Our function is to select a good scheme and get good return at the end of the period. Our objectives are totally fulfilled at time even our selected schemes produced good return. So, there is required to analysis the performance of the schemes before selecting the scheme .Otherwise, we are not selecting ant good scheme. Our paper is trying to analysis the comparative study between pre and post lockdown period of mutual fund.

Objectives of the study

Now a day, growth of mutual fund is quite acceptable. This industry has introduced various types of schemes consisting of various portfolio mixes. These schemes have various objectives. It is difficult for small and medium type's investors for choosing a right one for them on the basis of financial objectives. On that time, measuring performance of mutual fund is one of the important criteria for investor.

The objective of the study is to analysis the performance of the selected mutual fund schemes during pre and post lockdown period.

Methodology of the study

The dataset in this study comprises 23 equity oriented mutual fund schemes based on various characters and the time period for the study **(2019-2021).** The data used are net asset value (NAV) of funds, market index prices, fund characteristics variables, such as fund expense

ratio, fund age, fund investment objective, portfolio turnover, fund size, the growth rate in fund size, and fund's beta value. 91 days treasure bill will be used for measuring risk free return. The return on each fund was calculated using monthly dividend adjusted NAVs. BSE SENSEX will be used for measuring market related risk.

Standard deviation has been used to measure the depreciation around the mean. Coefficient of variation will also be utilized to measure the risk per return i.e. the deviation between standard deviation and mean return and beta will be utilized to measure the systematic risk of an investment.

A) Return and Total Risk: The standard deviation of investment portfolio measure the risk of particular fund(s) for the evaluation period. By using mean return and standard deviation of portfolio, we can estimate the relationship between the total risk and return from the following equation

$$R_p = \alpha + \partial\, \delta_p + \varepsilon_p$$

Where, Rp is the average monthly return of mutual funds, δp is the standard deviation of mutual fund P. α & ∂ are the parameters to be estimated, ε_p is an error term of mutual fund p.

B) Return and Systematic Risk: The value of beta examines the average sensitivity of an individual fund with the market return and also it measures the systemic risk of a portfolio. Mutual funds are a diversified portfolio, thus the value of beta for a fund is not unreasonable summary of its risk properties with respect to the "systematic risk" which is a fluctuation in the market index to estimate the systematic risk. We will use the following equation as follows.

$$R_p = \alpha + \beta\, R_m + \varepsilon_p$$

Where, Rp is the average monthly return of the mutual fund P. Rm is the average monthly return of the market portfolio, α β are parameters to be estimated, and εp is the error term of the mutual fund P.

C) The Treynor Technique

$$Tp = \frac{(Rp - Rf)}{\beta}$$

$$Tm = \frac{(Rm - Rf)}{\beta m}$$

Where Tp is the treynor's portfolio performance measure for fund P over the evaluation period, Rp is the average rate of return for fund P over the evaluation period. Rf is the average risk free return over the evaluation period, βp is the beta of the fund over the evaluation period

D) The Sharpe Technique

$$Sp = \frac{(Rp-Rf)}{\delta p}$$

Where Sp is the sharp's portfolio performance measure for fund P over the evaluation period, Rp is the average rate of return for fund P over the evaluation period. R_f is the average risk free return over the evaluation period, δp is the standard deviation of the fund P over the evaluation period.

The sharp's ratio (Sp) evaluates the performance of its level of total risk and higher value of this ratio indicates that fund delivers a higher performance by using standard deviation (δp). The value of Sp can be compare with a similar measure of benchmark index as follows:

$$Sm = \frac{(Rp-Rf)}{\delta m}$$

E) The Jensen Technique

$$E(Rp) = R_f + \beta p\ [\ E(Rm) - R_f]$$

Jensen introduced the additional term δp to represent a consent periodic return (i.e either positive or negative) that an investor can earn in indentified market risk. Hence, this can be represented as follows:

$$(\ Rp - R_f) = \alpha p + \beta p\ (\ Rm - R_f) + \varepsilon_p$$

Where $(Rp - R_f)$ is the risk premium earned on portfolio P, ε_p is the random error term.

Interpretation

Table 1
Return and Risk of portfolio and benchmark

Name of the Schemes	Rp	SDp	Rm	SDm	Rf
Axis Bluechip Fund - Direct Plan - Growth	19.2	2.32	15.59	1.03	4.5
Axis Dynamic Equity Fund - Regular	8.29	1.72	15.59	1.03	4.5

Axis Equity Hybrid Fund - Direct Plan -	15.71	2.66	15.59	1.03	4.5
Baroda Dynamic Equity Fund-Regular Plan - Growth	16.8	2.28	15.59	1.03	4.5
HDFC Equity Opp Fund - II - 1100D June	5.14	3.44	15.59	1.03	4.5
ICICI Prudential Equity - Arbitrage Fund	5.38	0.91	15.59	1.03	4.5
IDBI Equity Advantage Fund - IDCW Direct	10.09	3.16	15.59	1.03	4.5
Kotak Bluechip Fund - Growth	17.68	3.72	15.59	1.03	4.5
Kotak Emerging Equity Scheme - Growth	21.92	3.26	15.59	1.03	4.5
Kotak Equity Arbitrage Fund - Growth	4.91	0.18	15.59	1.03	4.5
Kotak Equity Hybrid - Growth	18	2.92	15.59	1.03	4.5
Nippon India Equity Hybrid Fund- Direct	3.93	0.19	15.59	1.03	4.5
Nippon India Equity Fund	3.17	0.17	15.59	1.03	4.5
SBI Equity Savings Fund - Direct Plan - Growth	11.69	1.77	15.59	1.03	4.5
SBI Equity Savings Fund - Regular Plan -	10.4	1.91	15.59	1.03	4.5
UTI - Hybrid Equity Fund - Regular Plan - Growth	11.15	2.77	15.59	1.03	4.5
UTI Equity Savings Fund - Regular Plan - Growth	8.41	1.28	15.59	1.03	4.5
Union Equity Savings Fund - Regular Pl	9.28	2.05	15.59	1.03	4.5
Sundaram Equity Hybrid Fund Direct Plan -	13.18	2.58	15.59	1.03	4.5
L&T Hybrid Equity Fund - Direct Plan-Gro	12.98	3.05	15.59	1.03	4.5
BOI AXA MID & SMALL CAP EQUITY & DEBT	5.75	2.96	15.59	1.03	4.5
BOI AXA Large & Mid Cap Equity Fund Eco	16.76	3.05	15.59	1.03	4.5
BNP Paribas Dynamic Equity Fund	13.04	2.9	15.59	1.03	4.5

Source: computed value

Above table depicts the risk and return of our selected schemes. In simply, we know that higher return is associated with higher risk and vice versa. We saw various types of result from the above table. Axis Bluechip Fund - Direct Plan – Growth and Kotak Emerging Equity Scheme – Growth produced higher rate of return of 19.20% and 21.92% corresponding higher risk of 2.32 and 3.26 respectively. HDFC Equity Opp Fund - II - 1100D June and Boi Axa Mid & Small Cap Equity & Debt produced lower rate of return of 5.14% and 5.75% corresponding higher risk of 3.44 and 2.96 respectively. Nippon India Equity

Hybrid Fund- Direct and Nippon India Equity Fund produced lower rate of return of 3.93% and 3.17% corresponding lower risk of .19 and .17 respectively. Benchmark return and risk are 15.59% and 4.03 respectively. only 7 schemes produced return more than benchmark return but rest of the schemes did not cross the benchmark. On the other hand, we saw that risk of all schemes produced less risk than market risk. So, we concluded that performance of our selected schemes are not good except Axis Bluechip Fund - Direct Plan – Growth, Kotak Emerging Equity Scheme – Growth, Kotak Equity Hybrid – Growth and Kotak Bluechip Fund – Growth.

Table 2
Correlation between risk and return of selected schemes

Correlations		
	Return	Risk
Return	1	.638**
		0.001
	23	23
Risk	.638**	1
	0.001	
	23	23
**. Correlation is significant at the 0.01 level (2-tailed).		

Source: computed value

Above table tells us the correlation between return and risk of selected schemes. We know that positive value indicates the positive relationship between return and risk and vice versa. But from our study, we saw that our selected sample schemes produced correlation between return and risk is .638 and which is satirically significance at the level of 1% because p value is .001.So, we conclude that return and risk of our selected schemes have positive and significant relations. That means, if return is increased corresponding risk is go up and vice versa

Table 3
Result of Treynor and Sharpe Ratio

Name of the Schemes	Tp	Tm	Sp	Sm
Axis Bluechip Fund - Direct Plan - Growth	18.42	6.33	13.89	2.75
Axis Dynamic Equity Fund - Regular	9.35	2.2	9.95	2.75
Axis Equity Hybrid Fund - Direct Plan -	17.51	4.21	17.32	2.75
Baroda Dynamic Equity Fund-Regular Plan - Growth	22.69	4.62	20.46	2.75
HDFC Equity Opp Fund - II - 1100D June	1.25	0.18	21.74	2.75
ICICI Prudential Equity - Arbitrage Fund	4.29	0.96	54.09	2.75
IDBI Equity Advantage Fund - IDCW Direct	3.45	8.66	16.35	2.75
Kotak Bluechip Fund - Growth	14.42	35.43	12.13	2.75
Kotak Emerging Equity Scheme - Growth	15.41	20.53	16.02	2.75
Kotak Equity Arbitrage Fund - Growth	1.71	2.27	31.68	2.75
Kotak Equity Hybrid - Growth	19.79	4.69	16.02	2.75
Nippon India Equity Hybrid Fund- Direct	-0.77	3.23	15.04	2.75
Nippon India Equity Fund	-1.8	7.82	15.05	2.75
SBI Equity Savings Fund - Direct Plan - Growth	16.68	4.06	25.76	2.75
SBI Equity Savings Fund - Regular Plan -	14.15	3.19	25.73	2.75
UTI - Hybrid Equity Fund - Regular Plan - Growth	10.41	2.47	16.85	2.75
UTI Equity Savings Fund - Regular Plan - Growth	13.65	3.21	16.84	2.75
Union Equity Savings Fund - Regular Pl	7.2	2.33	16.72	2.75
Sundaram Equity Hybrid Fund Direct Plan -	14.06	3.36	17.97	2.75
L&T Hybrid Equity Fund - Direct Plan-Gro	12.6	2.78	16.47	2.75
BOI AXA MID & SMALL CAP EQUITY & DEBT	1.73	0.42	15.4	2.75
BOI AXA Large & Mid Cap Equity Fund Eco	15.11	1.04	13.67	2.75
BNP Paribas Dynamic Equity Fund	18.32	2.94	23.79	2.75

Source: computed value

Treynor (1965) conceived an index of portfolio performance called as reward to volatility ration based on systematic risk. It is denoted by Tp is the excess return over the risk free rate per unit of systematic risk. In other wards its risk premium per unit of systematic risk. Tm indicates the market risk premium per unit of systematic risk. If Tp is greater than Tm. we say sample sachems is outperform the market and vice versa. From above table we saw most of schemes (18) produced higher value of Tp as compare with Tm. only 5 schemes like IDBI Equity Advantage Fund - IDCW Direct, Kotak Bluechip Fund - Growth ,Kotak Emerging Equity Scheme – Growth, Kotak Equity Arbitrage Fund – Growth, Nippon India Equity Hybrid Fund- Direct and Nippon India Equity Fund are produced lower value of Tp as compare with Tm.

On the other hand, Sharp (1966) devised an index of portfolio performance measure, referred to as reward to variability ratio. The Sharpe ration provides the reward to volatility trade off. It is the ration of the fund portfolio average excess return divided by the standard deviation of the return. From the above table we saw all sample schemes produced higher value of Sp as compare with Sm. That means, 23 schemes are beat the market. We got 100% good result from our selected sample.

Table 4
Result of Jensen Alpha

Name of the Schemes	Alpha	t-value	p-value
Axis Bluechip Fund - Direct Plan - Growth	0.018	1.289	0.198
Axis Dynamic Equity Fund - Regular	-0.018	-1.838	0.067
Axis Equity Hybrid Fund - Direct Plan -	0.007	0.624	0.533
Baroda Dynamic Equity Fund-Regular Plan - Growth	0.013	1.102	0.271
HDFC Equity Opp Fund - II - 1100D June	-0.033	-0.656	0.512
ICICI Prudential Equity - Arbitrage Fund	-0.022	-6.61	0
IDBI Equity Advantage Fund - IDCW Direct	-0.016	-0.58	0.562
Kotak Bluechip Fund - Growth	0.009	0.876	0.381
Kotak Emerging Equity Scheme - Growth	0.031	1.009	0.314
Kotak Equity Arbitrage Fund - Growth	-0.024	-7.546	0
Kotak Equity Hybrid - Growth	0.015	1.084	0.279
Nippon India Equity Hybrid Fund- Direct	-0.042	-1.601	0.11

Nippon India Equity Fund	-0.045	-1.719	0.086
SBI Equity Savings Fund - Direct Plan - Growth	-0.008	-1.233	0.218
SBI Equity Savings Fund - Regular Plan -	-0.01	-1.664	0.097
UTI - Hybrid Equity Fund - Regular Plan - Growth	-0.011	-0.773	0.44
UTI Equity Savings Fund - Regular Plan - Growth	-0.016	-2.082	0.038
Union Equity Savings Fund - Regular Pl	0.031	6.73	0
Sundaram Equity Hybrid Fund Direct Plan -	-0.003	-0.201	0.841
L&T Hybrid Equity Fund - Direct Plan-Gro	-0.004	-0.402	0.688
BOI AXA MID & SMALL CAP EQUITY & DEBT	-0.012	-18.73	0
BOI AXA Large & Mid Cap Equity Fund Eco	0.008	0.409	0.682
BNP Paribas Dynamic Equity Fund	0.006	0.0056	0.956

Source: computed value

Jensen(1968) propound Jensen alpha measure which is intercept from the Sharp-Linter CAPM regression which measure impact of market portfolio excess return on portfolio excess return. Jensen alpha is the arithmetic difference of the portfolio return from the return of a portfolio on the securities market line with the same beta. Jensen defines his measure of portfolio performance as the difference between the actual return on a portfolio in any particular holding period and the expected return on that portfolio conditional on the risk free rate. A positive and significance value shows the stock selection ability of the schemes in order to generate superior return. From the above table we saw 14 schemes produced negative value and only 9 schemes produced positive value of alpha. But from 9 schemes, only 4 schemes have positive and significant value of alpha. So, we conclude that our selected schemes did not have stock selection ability. Only 4 schemes have higher stock selection ability and produce super or sustainable return.

Table 5
Rank Table of Treynor, Sharp and Jensen

Name of the Schemes	Treynor	Sharpe	Jensen
Axis Bluechip Fund - Direct Plan - Growth	3	20	3

Axis Dynamic Equity Fund - Regular	15	23	18
Axis Equity Hybrid Fund - Direct Plan -	5	9	8
Baroda Dynamic Equity Fund-Regular Plan - Growth	1	7	5
HDFC Equity Opp Fund - II - 1100D June	21	6	21
ICICI Prudential Equity - Arbitrage Fund	17	1	19
IDBI Equity Advantage Fund - IDCW Direct	18	14	16
Kotak Bluechip Fund - Growth	9	22	6
Kotak Emerging Equity Scheme - Growth	7	15	1
Kotak Equity Arbitrage Fund - Growth	20	2	20
Kotak Equity Hybrid - Growth	2	15	4
Nippon India Equity Hybrid Fund- Direct	22	19	22
Nippon India Equity Fund	23	18	23
SBI Equity Savings Fund - Direct Plan - Growth	6	3	12
SBI Equity Savings Fund - Regular Plan -	10	4	13
UTI - Hybrid Equity Fund - Regular Plan - Growth	14	10	14
UTI Equity Savings Fund - Regular Plan - Growth	12	11	16
Union Equity Savings Fund - Regular Pl	16	12	1
Sundaram Equity Hybrid Fund Direct Plan -	11	8	10
L&T Hybrid Equity Fund - Direct Plan-Gro	13	13	11
BOI AXA MID & SMALL CAP EQUITY & DEBT	19	17	15
BOI AXA Large & Mid Cap Equity Fund Eco	8	21	7
BNP Paribas Dynamic Equity Fund	4	5	9

Source: computed value

From the above table tells us the rank of our selected schemes for Trenor, Sharpe and Jensen. It should be noted that fully diversified schemes would give same rank for both Treynor and Sharpe Techniques. But we saw that only one scheme likes L&T Hybrid Equity Fund - Direct Plan-Growth is produced same rank for Treynor and Sharpe. But rests of the selected schemes have not produced same rank for three purposes. Only few schemes like Axis Equity

Hybrid Fund - Direct Plan , Baroda Dynamic Equity Fund-Regular Plan -Growth, IDBI Equity Advantage Fund - IDCW Direct, L&T Hybrid Equity Fund - Direct Plan-Growth, BOI AXA MID & SMALL CAP EQUITY & DEBT and BNP Paribas Dynamic Equity Fund have produced near rank but not same. So, we conclude that our selected schemes are not produced same performance under three measurement criteria .That means, all selected schemes are not performed at same level.

Table 6
Rank correlation between Treynor, Sharpe and Jensen

Correlations				
		Terynor	Sharpe	Jensen
Terynor	Pearson Correlation	1	0.047	.792**
	Sig. (2-tailed)		0.833	0.000
	N	23	23	23
Sharpe	Pearson Correlation	0.047	1	-0.159
	Sig. (2-tailed)	0.833		0.469
	N	23	23	23
Jensen	Pearson Correlation	.792**	-0.159	1
	Sig. (2-tailed)	0.000	0.469	
	N	23	23	23
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: computed value

Above table depicts the rank correlation between Treynor, Sharpe and Jensen. A positive and significance correlation between Treynor and Sharap indicates this scheme is well diversified and vice versa. Correlation between Treynor and Sharap is .047 and p-value is .833 that means this two have positive but not significance relation. But correlation between Treynor and Jensen is .792 and p-value is .000 which indicates the positive and significance relation.

And correlation between Sharape and Jensen is -.159 and p-value is .469 that means there is negative relation which is significance. So, we conclude that our selected schemes do not produce good result is term of diversification view point. Our selected sachems are not well diversified.

Conclusion

In the modern world, financial sector is producing various schemes and services for the investor. Investors are totally confused for where they go for invest own money. Survive from this situation, performance analysis is one of the important criterion for the investor for investing own money. From our study, we saw that only 4 schemes produced higher rate of return but these schemes have higher rate of risk. Return and risk of our selected schemes have positive and significant relations. That means, if return is increased corresponding risk is go up and vice versa On the basis of rank, we saw that only one schemes has same rank between Treynor and Sharpe technique and this schemes is well diversified but other schemes are not produce same rank .These schemes are not well diversified. Our selected schemes did not have stock selection ability. Only 4 schemes have higher stock selection ability and produce super or sustainable return. So, we conclude that our selected schemes do not produce good result is term of diversification view point. Our selected sachems are not well diversified.

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