Performance of Large Cap and Small Cap Funds in Indian Mutual Fund Schemes

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Mutual fund is an investment avenue to get good returns. We investigate whether the investments in large-mid cap and small cap schemes have given good returns or not. We use Daily NAV data from 1 Jan 2014 to 31 Dec 2018 to know the performance of schemes by using Sharpe, Treynor and Jensen measures. Results reveal that all five schemes in large-mid and small cap have given positive returns and the risk is less. The analysis of these schemes will have many implications to existing and potential investors.

Keywords: Mutual funds, Sharpe measure, Treynor measure, Jensen measure, Rate of Return

1. Introduction

Mutual fund is collecting money from various investors and invest systematically in different types of schemes to make returns. Investors invest in mutual funds expecting more returns than the risk-free returns. Researchers have investigated whether the investments in the mutual funds are having more returns than risk free rate of return. Research studies by Mazury (1966) found that investors normally believe managers to be able to anticipate market moves, and the dilemma of whether or not managers should attempt to market time. Treynor and Woerheide (1982) found that the effect of different factors and proved that factors like size of fund, efficiency of market programme and historical return of funds have great effect. Jagannathan and Kroajczyk (1986) found that show theoretically and empirically that portfolios can be constructed to show simulated timing ability when no true capacity exists. Malkiel (1995) found that who holds the moneys have tended to underperform the market together before and after are all reported expenses. Barua and Varma (1991) found that study had used ET Index as a proxy for market behaviour and the risk-adjusted performance is measured by using performance measures. The study concludes that the fund did not do well when compared to CML. Ferson and Schadt (1996) found that a conditional performance model using measures that are consistent with the theory of a semi-strong form of market productivity. Thiripalraju and Patil (1997) found that Indian fund managers lack both the micro and Macro predicting capabilities. Aarati Krishnan (2005) found that equity fund sales were on the comeback trail and had begun to double their asset base. Investors were now allocating a major portion of their savings to equities. Nalini and Tripathy (2005) analysed the market timing abilities of Indian fund manager in form of two models. There is only one scheme where market timing ability of the fund managers was exhibited. Nandhini and Rathnamani (2017) found that there is an impact of mutual fund flow in the Indian equity markets. Volatility and uncertainty are part and parcel of equity investing. Hence, this paper propose to study correlation coefficient of the large cap and small cap schemes with the benchmark. We investigate how much the fund's return can differ from the historical mean return of the scheme. Beta measures a funds volatility related to a benchmark. It takes the volatility of a portfolio and compares its risk-adjusted performance to a benchmark index. The additional return of the investment relative to the return of the benchmark index is its "alpha." This study is undertaken with the following objective.

2. Objective and Methodology

2.1 This study is undertaken with the following objective
To analyse the performance of large-mid cap and small cap schemes.

2.2 Data Sample
We followed Nandhini and Rathnamani methodology to found performance of the large- mid cap and small cap funds. The sample of the study has included scheme wise performance of various large- mid cap and small cap mutual fund. Data pertaining to the performance of the funds were drawn from secondary sources through data published by Amfi.com and NSE.com mutual fund brouchers, journals and websites of other mutual funds. This study proposes to test the performance of five large- mid cap schemes and five small cap schemes, Daily data collected from 01Jan 2014 to 31 Dec 2018for 5 years.

2.3 Methodology
The daily returns of the mutual funds will be computed by using the following equation.

Return ….1
$R = L_n$ (Current NAV/Previous NAV)
R is return on fund

$L_n =$ Log value

Standard deviation   2

$\sigma = \sqrt{\sum(X_i - \bar{x})2/N}$

σ = Standard deviation of return
X_i = Return from the stock in period i
$x\square$ = Arithmetic mean of return
n = Number of periods

Alpha   3

Alpha = R_p-R_f- β (R_m-R_f)

R_p = portfolio return
R_f = risk free rate of return
β = systematic risk of a portfolio
R_m = market return

Beta 4

$\beta = \frac{N\sum_{t=I}^{N} Rmt[\sum_{t-I}^{N} Rmt][\sum_{t-I}^{N} Rit]}{N\sum_{t-I}^{N} R^2mt[\sum_{t=I}^{N} Rmt]^2}$

Variance 5

$\sigma^2 = \sum(x-x\square)\, 2\, /N$

σ^2 = Standard deviation of return
X_i = Return from the stock in period i
$x\square$ = Arithmetic mean of return
n = Number of periods

Covariance 6

Cov(x, y) = $\sum dx*dy/n$

Cov(x, y) = Co variance of two securities
dx = Return on individual security
dy = Return on market
n = number of periods

Correlation 7

γ = Cov(x, y) / $\sigma x\ \sigma y$

Cov(x, y) = Co variance of two securities
Σ_x = Standard deviation of x return
Σ_y = Standard deviation of y return

Adjusted R-Square 8

R^2 = n ($\sum xy$) - ($\sum x$) ($\sum y$)/$\sqrt{[n]\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}$

r = The Correlation coefficient
n = number of periods
x = dependent variable
y = independent variable

Sharpe Measure (SM) 9

SM = $\frac{Ri-Rf}{\sigma i}$.

R_i: Average return on single scheme
R_f: Average risk-free ROR
σi: Total risk on scheme

Treynor Measure (TM) 10

TM = $\frac{Ri-Rf}{\beta i}$

R_i: Average Return on single security
R_f: Average risk-free Rate of Return
β: Sensitivity of schemes return

Jensen Measure (JM)   ….11
$JM = R_f + \beta (R_i - R_f)$
R_f: Average risk-free Rate of Return
β: Sensitivity of scheme return to market return
R_i: Average Return on single security

3.   Results and Discussion

The performance of a mutual fund scheme are analyzed with a nifty large cap and small cap index which is benchmark of the market. Average return is obtained by taking the mean of daily returns, whereby daily returns are calculated by using the NAVs of the mutual fund scheme and for the calculation of risk free rate of return we have taken 91days Treasury bills rates.

Table 1 *shows that average log rate of return and standard deviation of large- mid cap Schemes*

Sl. No	Large cap Schemes	Log Return	Std Deviation
1	Reliance large cap direct -dividend plan	0.0289	0.0104
2	SBI large-midcap fund - direct-dividend plan	0.0508	0.0098
3	DSP midcap direct-dividend plan	0.0804	0.0101
4	ICICI prudential large-midcap dividend fund	0.0097	0.0104
5	HSBC large cap equity dividend direct plan	0.0094	0.0112

Table 1 shows average log return and standard deviation of five large-mid cap schemes. In large-midcap mutual fund schemesDSP midcap direct-dividend plan is showing high return (0.0804) and HSBC large cap equity dividend direct plan is showing low return (0.0094) and HSBC large cap equity dividend direct plan is showing high standard deviation (0.0112) and SBI large-midcap fund direct-dividend plan is showing low standard deviation (0.0098).

Table 2 *Shows Adjusted R-square, Alpha and Betaof large- mid cap Schemes*

Sl. No	Large and Mid-cap Schemes	Adjusted R-square	Alpha	Beta
1	Reliance large cap direct -dividend plan	0.6888	-	0.96
2	SBI large-midcap fund - direct-dividend plan	0.7299	-	0.93
3	DSP midcap direct-dividend plan	0.8405	0.00016	1.03
4	ICICI prudential large-midcap dividend fund	0.5538	-	0.85
5	HSBC large cap equity dividend direct plan	0.5925	-	0.95

Table 2 shows R-square, Alpha and Beta. In five large-midcap schemesDSP midcap direct-dividend plan is showing high R-square (0.8405) andICICI prudential large-midcap dividend fund is showing low (0.5538).DSP midcap direct-dividend plan is showing high alpha(0.00016) and SBI large-midcap fund-direct-dividend plan is showing low alpha (-0.00005). DSP midcap direct-dividend plan is showing high beta (1.03) and ICICI prudential large-midcap dividend fund is showing lowest beta (0.857368).

Table 3 *Shows Correlation, Variance and Covarianceof large- mid cap Schemes*

Sl. No	Large and Mid-cap Schemes	Correlation	Variance	Covariance
1	Reliance large cap direct -dividend plan	0.8301	0.00010	0.000078
2	SBI large-midcap fund - direct-dividend plan	0.8544	0.00009	0.000075
3	DSP midcap direct-dividend plan	0.9168	0.00010	0.000084
4	ICICI prudential large-midcap dividend fund	0.7444	0.00010	0.000069
5	HSBC large cap equity dividend direct plan	0.7699	0.00012	0.000079

Table 3 shows about Correlation, Variance and Co-variance in large and mid-cap schemes DSP midcap direct-dividend plan is showing high correlation between scheme and benchmark (0.9168) and lowest correlation is ICICI prudential large-midcap dividend fund(0.7444), HSBC large cap equity dividend direct is showing high variance (0.000125) and SBI large and midcap Fund direct plan dividend is showing lowest variance (0.00009), and next methodology is covariance in this five schemes ICICI prudential large-midcap dividend fund ICICI Prudential large-mid cap fund-dividend is showing highest covariance (0.000084) and ICICI prudential large-midcap dividend fund is showing lowest covariance (0.000069).

Table 4 *Shows Log return and standard deviation of small cap schemes*

Sl. No	Small Cap Schemes	Log Return	Std deviation
1	Reliance small cap direct-dividend plan	0.07	0.011742
2	SBI small cap regular dividend plan	0.06	0.013354
3	DSP small cap direct plan dividend plan	0.09	0.010067
4	ICICI small cap direct plan dividend plan	0.05	0.008049
5	HSBC small cap dividend	0.06	0.011929

Table 4 shows about log return and standard deviation of five small-cap schemes In out of five small-cap mutual fund schemes DSP small-cap direct plan dividend plan is showing high return of (0.09) and ICICI small cap direct plan dividend plan showing low return of (0.05) and SBI small-cap fund direct plan dividend is showing high standard deviation and ICICI Small cap direct plan dividend plan is showing low standard deviation (0.008049).

Table 5 *Shows Adjusted R square, Alpha and Beta of small cap schemes*

Sl. No	Small Cap Schemes	R square	Alpha	Beta
1	Reliance small cap direct-dividend plan	0.8745	0.000142	1.488
2	SBI small cap regular dividend plan	0.7911	0.000136	1.278
3	DSP small cap direct plan dividend plan	0.5311	0.000505	0.864
4	ICICI small cap direct plan dividend plan	0.6294	0.000163	0.747
5	HSBC small cap dividend	0.5141	0.000201	1.007

Table 5 shows that R-square, Alpha and Beta. In this five small-cap schemes in this schemes Reliance small cap direct plan dividend plan is showing highest R-square (0.8745) and lowest is HSBC small cap dividend is (0.5141). DSP small-cap direct plan dividend is showing highest alpha (0.000505) and SBI small cap fund direct plan dividend is showing lowest alpha (0.000136). Reliance small cap direct plan dividend plan is showing highest Beta (1.4881) and ICICI Prudential small cap fund dividend is showing lowest beta (0.7479).

Table 6 *Shows Correlation, Variance and Covariance of small cap schemes*

Sl. No	Schemes in Small Cap	Correlation	Variance	Covariance
1	Reliance small cap direct-dividend plan	0.68	0.000138	0.000068
2	SBI small cap regular dividend plan	0.48	0.000674	0.000055
3	DSP small cap direct plan dividend plan	0.72	0.001068	0.000062
4	ICICI small cap direct plan dividend plan	0.79	0.000648	0.000054
5	HSBC small cap dividend	0.71	0.000657	0.000072

Table 6 shows about correlation, variance and covariance of small-cap schemes ICICI small cap direct plan dividend plan is showing high correlation between scheme and benchmark (0.7936) and lowest correlation is SBI small cap regular plan dividend (0.4866), DSP small cap direct plan dividend plan is showing highest variance (0.001068) and Reliance small cap direct plan dividend plan is showing lowest variance (0.000138), and next methodology is covariance in this five schemes HSBC small cap dividend is showing highest covariance (0.000072) and ICICI small cap direct plan dividend plan is showing lowest covariance (0.000054).

Table 7 *Shows Sharpe measure of large cap schemes*

Sl. No	Schemes in Large Cap	Sharpe Measure	Ranking
1	Reliance large cap direct -dividend plan	-2.23	III
2	SBI large-midcap fund - direct-dividend plan	-0.35	II
3	DSP midcap direct-dividend plan	2.77	I
4	ICICI prudential large-midcap dividend fund	-4.15	V
5	HSBC large cap equity dividend direct plan	-3.81	IV

Table 7 shows about performance of Sharpe measure of large mid-cap schemes DSP midcap direct plan dividend is ranked I and ICICI prudential large-mid cap fund dividend is ranked V.

Table 8 *Shows Treynor measure of large cap schemes*

Sl. No	Schemes in Large Cap	Treynor Measure	Ranking
1	Reliance large cap direct -dividend plan	-2.64	III
2	SBI large-midcap fund - direct-dividend plan	-0.63	II
3	DSP midcap direct-dividend plan	2.88	I
4	ICICI prudential large-midcap dividend fund	-5.23	V
5	HSBC large cap equity dividend direct plan	-4.63	IV

Table 8 shows about performance of Treynor measure of large-mid- cap schemes DSP midcap direct dividend plan is ranked I and ICICI prudential large midcap dividend fund is ranked V.

Table 9 *Shows Jensen Measure of Large cap schemes*

Sl. No	Schemes in Large Cap	Jensen measure	Ranking
1	Reliance large cap direct -dividend plan	-1.64	V
2	SBI large-midcap fund - direct-dividend plan	1.37	II
3	DSP midcap direct-dividend plan	5.88	I
4	ICICI prudential large-midcap dividend fund	-1.23	IV
5	HSBC large cap equity dividend direct plan	0.37	III

Table 9 shows the performance of Jensen measure of large-mid cap schemesDSP midcap direct-dividend plan is ranked I and Reliance large cap direct dividend plan is ranked V.

Table 10 *Shows Sharpe Measure of Small cap schemes*

Sl. No	Schemes in Small Cap	Sharpe Measure	Ranking
1	Reliance Small cap direct dividend plan	2.77	II
2	SBI Small cap Regular plan dividend	2.36	III
3	DSP Small cap direct dividend plan	3.56	I
4	ICICI Small cap direct dividend plan	-1.55	V
5	HSBC Small cap dividend	1.64	IV

Table 10 shows about performance of Sharpe measure of small cap schemes DSP small cap direct plan dividend is ranked I and ICICI small cap direct dividend plan is ranked V.

Table 11 *Shows Treynor Measure of Small cap schemes*

Sl. No	Schemes in Small Cap	Treynor Measure	Ranking
1	Reliance Small cap direct dividend plan	3.75	I
2	SBI Small cap Regular plan dividend	2.20	III
3	DSP Small cap direct dividend plan	2.73	II
4	ICICI Small cap direct dividend plan	-2.01	V
5	HSBC Small cap dividend	1.20	IV

Table 11 shows about performance of Treynor measure of small cap schemes Reliance small cap direct dividend plan is ranked I and ICICI small cap direct dividend plan fund is ranked V.

Table 12 *Shows Jensen Measure of Small cap schemes*

Sl. No	Schemes in Small Cap	Jensen measure	Ranking
1	Reliance Small cap direct dividend plan	4.72	III
2	SBI Small cap Regular plan dividend	4.87	II
3	DSP Small cap direct dividend plan	9.60	I
4	ICICI Small cap direct dividend plan	6.44	IV
5	HSBC Small cap dividend	6.43	V

Table 12 shows the performance of Jensen measure of small cap schemes DSP Small cap direct dividend plan is ranked I and Reliance Small cap direct dividend plan is ranked V.

4.   Summary and Conclusion

The present paper investigates the performance of five large mid cap and small cap funds for five years from the period 01 Jan 2014 to 31 Dec 2018.The fund performance of Sharpe measure of large mid-cap schemes DSP midcap direct plan dividend is ranked I and ICICI prudential large-mid cap fund dividend is ranked V. Treynor measure of large-mid- cap schemes DSP midcap direct dividend plan is ranked I and ICICI prudential large midcap dividend fund is ranked V and Jensen measure of large-mid cap schemes DSP midcap direct-dividend plan is ranked I and Reliance large cap direct dividend plan is ranked V. performance of Sharpe measure of small cap schemes DSP small cap direct plan dividend is ranked I and ICICI small cap direct dividend plan is ranked V. Treynor measure of small cap schemes Reliance small cap direct dividend plan is ranked I and ICICI small cap direct dividend plan fund is ranked V. Jensen measure of small cap schemes DSP Small cap direct dividend plan is ranked I and Reliance Small cap direct dividend plan is ranked V. Investors have to make a self-analysis of their requirements, risk and expected return so as to improve their investment strategy. Due to seasonal fluctuation the investor should think of investment through mutual fund instead of direct investment in equity market. Investors should

improve the level of awareness and financial knowledge of retail investors. The analysis of these schemes will have many implications to existing and potential investors. Results reveal that all five schemes in large-mid and small cap have given positive returns and the risk is less.

5. References

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