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Research Paper

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QUANTITATIVE ANALYSIS OF MULTI –CAP EQUITY MUTUAL FUNDS IN INDIA

Mr. Megharaja.B[1]	[1]*Assistant Professor and Research Scholar, Department of Studies and Research in Commerce, Vijayanagara Sri Krishnadevaraya University, Jnanasagara Campus, Vinayaka Nagar –Bellary. Karnataka State, India,*
Dr. Chalawadi C.I[2]	[2]*Special officer, Research Guide and Assistant Professor, Department of Studies and Research in Commerce, Vijayanagara Sri Krishnadevaraya University, Post Graduate Centre, Yelburga (Post &Tq) Koppal (Dist), Karnataka, India*

ABSTRACT

The financial institutions play vital role for the growth of the nation, Mutual fund industry has been raising funds from the small investors and that amount deployment in to the corporate securities and government securities. Mutual fund is tailor made avenues as per the investor's aspirant's base. In this industry comprises Equity, Debt, Balance, Money market and Gilt funds are available in the investors in India. Equity mutual funds have the higher the risk and return than other funds, especially sector funds is more risk and return. Therefore the study went to know the performance of selected funds return in terms of the Net Asset Value which is mentioned in the mutual fund insight in Value research April 2017 Monthly journal, in this study has concerned six funds of the six years from 2011 to 2016, which are performed better return by the investment through Systematic Investment Plan (SIP) of Rs 10,000 and measured and evaluated selected funds through the statistical tools and ratios. Hence the study on an entitled "Analyses of Multi-Cap Equity mutual funds in India"

KEY WORDS: *Returns (NAV), Risk, Beta, ANOVA, Risk Adjusted returns, Covariance, Correlation etc..*

INTRODUCTION

The movements of fund from surplus to deficit, who has the excess income over the expenditure and who has the excess expenditure over the income, who does have an idea to initiate enterprise for earning additional income through the financial system in India. Financial system plays significant role for control nation by its circulation of money with it aids like financial market, financial instruments, financial institutions and financial services. In each aids of financial system play vital role for developing India economy. Mutual fund product has been attracting young investor in financial service who would like to take moderate rate of risk and return due to available suitable schemes as per investors wish and it managed by the professional expert at AMCs in India. Mutual fund has been contributing some percentage to gross domestic product in present scenario in India. Mutual fund included N number of scheme in different AMCs in India. In equity mutual fund has multiple schemes with high risk as compare to rest schemes. Especially sectors fund have been producing more returns rather than others schemes in sectors equity mutual fund in India. Hence this study is going to analyses and examines the rate of return and risk with help of the statistical tools on an entitled Quantitative Analysis of Multi –Cap Equity Mutual Funds in India

OBJECTIVES OF THE STUDY

The study intends to measure the performance of the selected Multi-Cap Equity mutual funds and evaluated them through the suitable statistical tools to allocate the rank to them.

Research Design

Type of the Research: Quantitative research

Method of the Research: Analytical research methods

Sources of the study: Secondary Data

Period of the study: 2011 to 2016

Sample technique: Non Probability sampling Technique

Tools used for analysis: Statistical Tools, Risk Adjusted Returns ratio, CAGR, Covariance, Correlation, etc…

Sampling method: Convenience sampling from the following multi cap equity mutual funds

	Multi-Cap Equity Mutual Funds	Lunch date	Fund Manager
X1	Birla Sun life equity fund	Aug-1998	Anil Shah
X2	Franklin India High Growth companies	June-2007	Anand Radhakrishna
X3	ICICI Prudential value discovery fund	July 2004	Mrinal singh
X4	Kotak select focus fund	Aug-2009	Harsha Upadhyaya
X5	SBI Mafnum Multicap Fund	Sep-2005	Anup Upadhyay
Z	Nifty 500 index		
Rf	364 Days Treasury Bill Returns		

ANALYSIS AND INTERPRETATION

Table: 1 The table shows the possible return of selected Multi-Cap equity mutual funds

Years\Funds (%)	X1	X2	X3	X4	X5	Nifty	Rf
2011	-29.38	-24.97	-23.73	-22.29	-30.69	-27.19	7.5
2012	35.74	42.54	46.01	33.45	38.35	31.84	8.2
2013	7.11	9.22	8.31	6.13	5.20	3.61	7.85
2014	56.61	79.58	73.76	57.87	55.98	37.82	8.74
2015	2.93	1.49	5.44	2.96	9.81	-0.72	8.39
2016	15.21	4.95	4.61	9.44	5.82	3.84	7.23

Interpretation: the above table depicted that Multi-cap funds have been derived from the standard formula as below table by using yearly NAV and those returns have been compared with market index such as Nifty 500 index and the Risk free rate of the return took in the 364 days Treasury Bill in the selected study period.

Table: 2 The table shows the descriptive statistics of the selected multi cap equity mutual funds

	X1	X2	X3	X4	X5	Nifty	Rf
Returns	14.70	18.80	19.07	14.59	14.08	8.20	7.98
Median	11.16	7.09	6.88	7.79	7.82	3.73	8.025
Total risk	29.46	36.76	34.81	27.65	30.05	23.70	0.57
Systematic risk	0.79	0.62	0.66	0.84	0.78	1	0
Kurtosis	0.33	0.56	-0.09	0.35	0.15	-0.35	-1.25
Skewness	-0.06	0.88	0.70	0.50	-0.04	-0.14	-0.066
Range	85.99	104.55	97.49	80.16	86.67	65.01	1.51
N	6	6	6	6	6	6	6

Interpretation: The above table states descriptive statistics as above shows, X3 has earned more returns in the selected funds in the study period than the benchmark, in case of total risk X2 has higher than the rest of the schemes, X4 has more systematic risk as compare to the selected funds means very less volatility as rest of the schemes. X3 has negative Kurtosis but remain are positive, Skewness all are positive skewness or not a symmetrical distributions

Risk adjusted returns of the selected Multi-cap equity mutual funds

Table: 3 Sharpe Ratio

	Rp	Rf	Std. Dev	Risk Premium	Sharpe ratio	Rank
X1	14.7	7.98	29.46	6.72	0.23	4
X2	18.8	7.98	36.76	10.82	0.29	2
X3	19.07	7.98	34.81	11.09	0.32	1
X4	14.59	7.98	27.65	6.61	0.24	3
X5	14.08	7.98	30.05	6.1	0.20	5
Nifty	8.2	7.98	23.7	0.22	0.01	6

Interpretation: the Sharpe's performance measure makes a measurement of the risk premium of portfolios. It measures adjusted the performance of risk. Thus, Sharpe's Index is given by the following equation. The risk premium is the return required by the investors for assumption of risk relative to the total of the risk in the portfolio. The above table states that the risk premium of the portfolio comparative to the total risk in the portfolio, the selected multi-cap funds performance well as compare to the benchmark Nifty 500.

Table: 4 Treynor ratio

	Rp	Rf	Beta	Risk Premium	Treynor ratio	Rank
X1	14.7	7.98	0.79	6.72	8.51	3
X2	18.8	7.98	0.62	10.82	17.45	1
X3	19.07	7.98	0.66	11.09	16.80	2
X4	14.59	7.98	0.84	6.61	7.87	4
X5	14.08	7.98	0.78	6.1	7.82	5
Nifty	8.2	7.98	1	0.22	0.22	6

Interpretation: the Treyner's performance measurement measures the systematic risk of the risk premium of the portfolio and takes into consideration difference on the return of a portfolio and the riskless rate. The above table states that the risk premium of the portfolio comparative to the systematic into the portfolio, the selected multi-cap funds performance well as compare to the benchmark Nifty 500.

Table: 5 Jensen Alpha

	Rp	Rm	Rf	Beta	Risk Premium	β(Rm-Rf)	Rf+β(Rm-Rf)	α=Rp-[Rf+ β(Rm-Rf)]	Rank
X1	14.7	8.2	7.98	0.79	0.22	0.17	8.15	6.55	3
X2	18.8	8.2	7.98	0.62	0.22	0.14	8.12	10.68	2
X3	19.07	8.2	7.98	0.66	0.22	0.15	8.13	10.94	1
X4	14.59	8.2	7.98	0.84	0.22	0.18	8.16	6.43	4
X5	14.08	8.2	7.98	0.78	0.22	0.17	8.15	5.93	5

Interpretation: The above table states that the superior performance of selected multi-cap schemes returns as per the Jensen Alpha due to the superior management skills of its portfolio manager and out of them X3 has performed well as compare to the rest of the schemes.

Table: 6 Fama's net Selectivity

	Rp	±p	Rm	±m	Rf	Rm-Rf	±p/±m	Rm-Rf*±p/±m	Rf+(Rm-Rf)*±p/±m	Fama=Rp- Rf+ (Rm-Rf)*±p/±m	Rank
X1	14.7	29.46	8.2	23.7	7.98	0.22	1.24	0.27	8.25	6.45	3
X2	18.8	36.76	8.2	23.7	7.98	0.22	1.55	0.34	8.32	10.48	2
X3	19.07	34.81	8.2	23.7	7.98	0.22	1.47	0.32	8.30	10.77	1
X4	14.59	27.65	8.2	23.7	7.98	0.22	1.17	0.26	8.24	6.35	4
X5	14.08	30.05	8.2	23.7	7.98	0.22	1.27	0.28	8.26	5.82	5

Interpretation: The above table states that net selectivity is decomposition of total return is useful in identifying the difference skills involved in active portfolio management. A port folio manager who attempts to earn a higher return than the market return assumes higher risk and depended on his superior stock selection ability to achieve the higher return. Hence units return by taking of total risk of the portfolio. The selected multi-cap funds have been performed well, especially X3 better than the rest of the schemes in the study area.

Table: 7 Information Ratio

	Rp	?p	Rm	Rp-Rm	IR=Rp-Rm???p	Rank
X1	14.7	29.46	8.2	6.5	0.22	4
X2	18.8	36.76	8.2	10.6	0.29	2
X3	19.07	34.81	8.2	10.87	0.31	1
X4	14.59	27.65	8.2	6.39	0.23	3
X5	14.08	30.05	8.2	5.88	0.20	5
Nifty	8.2	23.7	8.2	0	0.00	

Interpretation: the selected sachems X3 earned excess over benchmark returns, in case of the X5 less returns than the others in the sample of the study area.

Table: 8 M-Square

	Rp	±p	±m	Rf	Rp-Rf	(Rp-Rf)* ±m	(Rp-Rf)* ±m +Rf	(Rp-Rf)* ±m +Rf/±p	Rank
X1	14.7	29.46	23.7	7.98	6.72	159.26	167.24	5.68	4
X2	18.8	36.76	23.7	7.98	10.82	256.43	264.41	7.19	2
X3	19.07	34.81	23.7	7.98	11.09	262.83	270.81	7.78	1
X4	14.59	27.65	23.7	7.98	6.61	156.66	164.64	5.95	3
X5	14.08	30.05	23.7	7.98	6.1	144.57	152.55	5.08	5

Interpretation: The M Square performance measure expresses the relative performance in risk adjusted basis points, the key is to ensure that the portfolio brings evaluated and the benchmark have the same standard deviation.

Table: 9 One- Way ANOVA of the selected multi-Cap equity mutual funds in India

ANOVA						
Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	469.69	5	93.93799	0.099582	0.991448	2.533555
Within Groups	28299.61	30	943.3204			
Total	28769.3	35				

Ho: there is no significant relationship between selected Multi-Cap selected Schemes.

H1: there is significant relationship between selected Multi-Cap selected Schemes.

Interpretation: the calculated value is 0.099 less than the F crit (P Value is greater than 0.05) value fall in the Reject area of alternative hypothesis under the two tailed test and 5 % level of significance and 95 percentage of confidence level. Hence the test concludes that there is a significant relationship between selected Multi-caps selected Schemes in the study area.

Table: 10 The table shows the covariance and correlation of the selected Multi cap equity mutual funds

	X1	***X2***	***X3***	***X4***	***X5***	***Nifty***
X1	***723.10***	***874.26***	***830.04***	***672.47***	***725.60***	***572.73***
X2	0.97	***1126.14***	***1062.71***	***841.04***	***892.64***	***694.88***
X3	0.97	1.00	***1009.87***	***796.26***	***855.78***	***667.58***
X4	0.99	0.99	0.99	***637.06***	***681.60***	***533.00***
X5	0.98	0.97	0.98	0.98	***752.39***	***585.68***
Nifty	0.98	0.96	0.97	0.98	0.99	***468.05***

Interpretation: Covariance of the portfolios will help in finding out the interactive risk. When the covariance will be positive then the rates of the return of portfolios move together either upwards or downwards. Alternatively, it can also be said that the interactive risk is positive. Secondly, covariance will be zero on two investments if the rates of return areindependent. Therefore, when two stocks are inversely related to each other, the covariance will become negative. In the study selected schemes have above average. Hence selected multi- cap equity mutual funds schemes are positive and moving towards same direction.

The Correlation above table provides some insights into which of the independent variables are related to each selected funds have the highest correlation and positive

Table: 11 The table shows the Kendall's Tau-u correlation of the selected Multi cap equity mutual funds

	Kendall's Tau-u			Nifty500	X1	X2	X3	X4	X5
Nifty500	Correlation Coefficient			1.000	1.000**	.867*	.733*	1.000**	.733*
	Sig. (2-tailed)					.015	.039		.039
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.867	.733	1.000	.733
			Upper	1.000	1.000	.867	.733	1.000	.733
X1	Correlation Coefficient			1.000**	1.000	.867*	.733*	1.000**	.733*
	Sig. (2-tailed)					.015	.039		.039
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.867	.733	1.000	.733
			Upper	1.000	1.000	.867	.733	1.000	.733
X2	Correlation Coefficient			.867*	.867*	1.000	.867*	.867*	.600
	Sig. (2-tailed)			.015	.015		.015	.015	.091
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.867	.867	1.000	.867	.867	.600
			Upper	.867	.867	1.000	.867	.867	.600
X3	Correlation Coefficient			.733*	.733*	.867*	1.000	.733*	.733*
	Sig. (2-tailed)			.039	.039	.015		.039	.039
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.733	.733	.867	1.000	.733	.733
			Upper	.733	.733	.867	1.000	.733	.733
X4	Correlation Coefficient			1.000**	1.000**	.867*	.733*	1.000	.733*
	Sig. (2-tailed)					.015	.039		.039
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.867	.733	1.000	.733
			Upper	1.000	1.000	.867	.733	1.000	.733
X5	Correlation Coefficient			.733*	.733*	.600	.733*	.733*	1.000
	Sig. (2-tailed)			.039	.039	.091	.039	.039	
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.733	.733	.600	.733	.733	1.000
			Upper	.733	.733	.600	.733	.733	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Interpretation: there is highly positive linear relationship among various selected multi-Cap mutual funds namely X1, X2, X3, X4, X5 and Market Index under Kendall Tab_b. These have been examined at 5 percentages and 10 percentage level of significance to find out the significant relationship between one fund and others funds. It concludes that there is enough evidence of significant relationship among selected Multi-Cap equity mutual funds.

Table: 12 The table shows the Spearman's Rho Correlation Coefficient of the selected Multi cap equity mutual funds

	Spearman's rho			Nifty500	X1	X2	X3	X4	X5
Nifty500	Correlation Coefficient			1.000	1.000**	.943**	.829*	1.000**	.829*
	Sig. (2-tailed)					.005	.042		.042
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.943	.829	1.000	.829
			Upper	1.000	1.000	.943	.829	1.000	.829
X1	Correlation Coefficient			1.000**	1.000	.943**	.829*	1.000**	.829*
	Sig. (2-tailed)					.005	.042		.042
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.943	.829	1.000	.829
			Upper	1.000	1.000	.943	.829	1.000	.829
X2	Correlation Coefficient			.943**	.943**	1.000	.943**	.943**	.771
	Sig. (2-tailed)			.005	.005		.005	.005	.072
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.943	.943	1.000	.943	.943	.771
			Upper	.943	.943	1.000	.943	.943	.771
X3	Correlation Coefficient			.829*	.829*	.943**	1.000	.829*	.829*
	Sig. (2-tailed)			.042	.042	.005		.042	.042
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.829	.829	.943	1.000	.829	.829
			Upper	.829	.829	.943	1.000	.829	.829
X4	Correlation Coefficient			1.000**	1.000**	.943**	.829*	1.000	.829*
	Sig. (2-tailed)					.005	.042		.042
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	1.000	1.000	.943	.829	1.000	.829
			Upper	1.000	1.000	.943	.829	1.000	.829
X5	Correlation Coefficient			.829*	.829*	.771	.829*	.829*	1.000
	Sig. (2-tailed)			.042	.042	.072	.042	.042	
	N			6	6	6	6	6	6
	Bootstrap[c]	Bias		0.000	0.000	0.000	0.000	0.000	0.000
		Std. Error		0.000	0.000	0.000	0.000	0.000	0.000
		95% Confidence Interval	Lower	.829	.829	.771	.829	.829	1.000
			Upper	.829	.829	.771	.829	.829	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

c. Unless otherwise noted, bootstrap results are based on 1000 stratified bootstrap samples

Interpretation: there is highly positive linear relationship among various selected multi-Cap mutual funds namely X1, X2, X3, X4, X5 and Market Index under Spearman Rho. These have been examined at 5 percentages and 10 percentage level of significance to find out the significant relationship between one fund and others funds. It concludes that there is enough evidence of significant relationship among selected Multi-Cap equity mutual funds.

FINDING AND CONCLUSION

The mutual funds have been attracting young investors who would like to prefer higher return with having lesser risk in the present scenario. In the study has selected five Multi-cap equity mutual funds with the benchmark index Nifty 500 along with 364 days Treasury bill as a risk free rate of return for the measure the risk adjusted return to fulfill the study adjectives. The has used many tools for analysis of the

Multi-cap funds, such as Descriptive statistics, Covariance, Coefficient-correlation, Risk adjusted returns are show that selected Multi-Cap funds performance better than the benchmark index Nifty 500 and there is positive correlation, covariance, Analysis of variance. X3 means ICICI Prudential value discovery fund has been performed well in all tested tools in risk adjusted returns in the study selected schemes and period. Vice versa X 5 means SBI Magnum Multi-cap Fund but better than the benchmark in the study.

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