

Active versus Passive Equity Fund Management in India

***Dr. G. Srinivasa Rao, **P. Gangadhar Rao,**

Professor -cum- Principal, Aditya P G College, Kakinada, Andhra Pradesh, India

Associate Professor, Dept. of Management Studies, Aditya P G College, Kakinada

Abstract

The study examines the performance of the active and passive equity mutual funds using risk adjusted measures like Sharpe ratio, Treynor ratio and Jensen Measure to know whether actively managed equity mutual funds collecting higher fees and promising higher returns outperform the passively managed funds based on the index in India. There is strong evidence that actively managed equity mutual funds are generating superior returns than passively managed funds. It is found that 6 out of 10 active equity mutual fund categories have shown statistically significant returns than passive equity mutual funds using Sharpe, Treynor risk adjusted performance measures and 9 out of 10 using Jensen measure.

Keywords: Active and Passive Equity Funds, Sharpe Ratio, Treynor Ratio, Jensen Measure, Performance

Introduction:

As on March 2011, 80 percent of investment in mutual funds is in equity funds by the retail investors with majority of the investment is in actively managed equity mutual funds than passively managed funds. In actively managed funds managers try to beat the market by finding the stocks that generate higher than average return. Passive management or index tracking on the other hand are funds that are based on index and the value of the fund fluctuates according to changes in the index. Generally, the fees paid by the investors for an active fund is higher than those paid for index fund.

Significance of the Study:

Most of the foreign studies find that actively managed funds does not

outperform its benchmarks after expenses and only a small percentage of mutual fund managers have market timing ability or selectivity expertise. So this study examines whether actively managed equity mutual funds outperform the passively managed funds based on the index in India.

Review of Literature:

Dale. A. Prondzinski (2008) studied Active versus passive management of international mutual funds from 1995 to 2008. Sharpe composite portfolio performance measure was used to measure, analyze and rank risk adjusted performance. Six hypotheses tested regarding active versus passive investments. The study suggests that it may be beneficial to select actively managed international funds instead of index funds given the indices examined.

Alireza Kazemi (2007) studied active versus passive management of Swedish mutual funds from 2001 to 2006 using Jensen alphas and found that actively managed equity mutual funds does not outperform the passively managed portfolios that are based on index.

Subbiah Somasundaram (2007) examined the relative performance of actively managed equity funds and the passively managed index funds. He utilized the unconditional and conditional variants to evaluate the performance on a sample of 91 funds during the period 2003:4 to 2007:7. The broad based S&P CNX 500 is used as benchmark in this study. The study uses multi beta (Style-Size), lagged vector variables (T-Bills, Term Structure Yield Spread). Using these stock picking and market timing ability was evaluated in the Indian context. Finally the efficacy of passive funds was examined. The results show active funds with positive risk adjusted excess returns post fees (excludes loads) but not significantly large enough at 1% and 5%. Results show fund Managers positive stock selection ability but negative market timing skill. Study found the market co-efficient and alpha negatively correlated. Passive funds are affected by cost rather than tracking error. Finally the use of lagged vector variables in the dynamic conditional model has a great impact on the performance results compared to the traditional techniques. With regards to the above highlighted factors, this study results were consistent with the past findings but contradicts the efficient market hypothesis.

Soumya Guha Deb, Ashok Banerjee, B. B. Chakrabarti (2007) has done a return based style analysis of equity mutual funds in India using quadratic optimization of an asset class factor model proposed by William Sharpe. They found the 'style

benchmarks' of each of the sample of equity funds as optimum exposure to eleven passive asset class indexes. They also analyzed the relative performance of the funds with respect to their style benchmarks. Their results show that the funds have not been able to beat their style benchmarks on the average.

Fortin. R & Michelson, S (2005) examined the benefits of active international mutual fund management. They utilized Morningstar Mutual Fund data to analyze five international mutual fund categories, and overall, for a sample of 831 funds with 4,835 annual return data points. they find the difference in mean return (index minus fund return) is negative for all fund categories, except for Europe funds. The difference is significant overall and for four of the five fund categories. The results from the multivariate regression show no relationship between total return and expense ratio, but there is a significant positive relationship between total return and turnover, and a significant positive relationship between total return and fund size (LN net assets). As opposed to domestic mutual funds, it appears to be beneficial to select actively managed international mutual funds over index funds.

Dr. S. NarayanRao & M. Ravindran (2003) has carried performance evaluation of Indian mutual funds in a bear market through relative performance index, risk-return analysis, Treynor's ratio, Sharpe's ratio, Jensen's measure, and Fame's measure. The data used is monthly closing NAVs. The source of data is website of Association of Mutual Funds in India (AMFI). Study period is September 98-April 02 (bear period). They started with a sample of 269 open ended schemes (out of total schemes of 433) for computing

relative performance index. Then after excluding the funds whose returns are less than risk-free returns, 58 schemes were used for further analysis. Mean monthly (logarithmic) return and risk of the sample mutual fund schemes during the period were 0.59% and 7.10%, respectively, compared to similar statistics of 0.14% and 8.57% for market portfolio. The results of performance measures suggest that most of the mutual fund schemes in the sample of 58 were able to satisfy investor's expectations by giving excess returns over expected returns based on both premium for systematic risk and total risk.

Gupta (2000) studied funds with respect to BSE national Index to analyze whether the funds were able to outperform the market. The analysis showed that 52% funds were outperforming the index while 48% underperformed the market. It was stated that active management could add value when the managers exploit the market inefficiencies and also stated that active management has led to complex regulations because of various trading strategies adopted by the managers.

Bogle (2000) illustrates that an index fund has a 350-basis-point advantage over the average equity mutual fund due to management expenses, brokerage costs, sales charges and tax advantages.

Fortin and Michelson (1999) examined the benefits of active mutual fund management investing versus index funds. In general, they find that index funds outperform actively managed funds for most equity and all bond fund categories on both a total return and after-tax total return basis, with the exception of actively managed Small Company Equity (SCE) and International Stock (IS) funds. These results should be viewed with caution,

however, as there is evidence that actively managed funds outperform the index funds during periods when the economy is either going into or out of a recession.

Malkiel (1996) notes that over the past 25 years, about 70 percent of active equity managers have been outperformed by the S&P 500 Stock Index. Gruber (1996) and Bogle (1995) also find similar results. They argue that index funds allow investors to buy securities of many different types with minimal expense and significant tax savings. Bogle (1996) states that "the case for selecting an index fund is compelling due to indexing inherent cost advantage.

Elton, Gruber and Blake (1996) show that their portfolio of high-alpha actively managed funds outperformed the Vanguard S&P Index fund from 1981 to 1993.

Grinblatt, M & Titman S. (1993) finds that the portfolio choices of mutual fund managers, particularly those that managed aggressive growth funds, earned significantly positive risk-adjusted returns in the 1976-85 period.

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Methodology:

Data Collection:

Data is collected from secondary sources. Yearly data on adjusted NAVs of equity mutual fund schemes was collected from the websites valuearesearchonline.com, Moneycontrol.com, mutualfundsindia.com, amfiindia.com and NSE S&P CNX Nifty

data is obtained from nseindia.com for the period from April 2006 to March 2011.

Sample Design:

Using secondary data the study analyzes the performance of 100 actively managed equity schemes (Technology, Pharma, Tax saving, Large cap, Infra, Multicap, Large & Midcap, FMCG, Mid & Small cap and Banking Funds) and 8 Index schemes. All the sample schemes are open ended in nature and are predominantly equity based with growth as their objective.

Data Analysis:

The data collected was analyzed with the help of statistical techniques like T – test, F – test, ANOVA and risk adjusted performance measures Sharpe ratio, Treynor's ratio and Jensen's measure for a period of five years.

Hypotheses:

H10: $\mu_1 = \mu_2$: There is no significant difference between the mean returns of active equity mutual fund schemes.

H1a: $\mu_1 \neq \mu_2$: There is significant difference between the mean returns of active equity mutual fund schemes.

H20: $\mu_1 = \mu_2$: There is no significant difference between the mean Sharpe ratios of active and passive equity mutual fund schemes.

H2a: $\mu_1 > \mu_2$: The mean Sharpe ratios of active equity mutual funds are greater than passive equity mutual fund schemes.

H30: $\mu_1 = \mu_2$: There is no significant difference between the mean Treynor ratios of active and passive equity mutual fund schemes.

H3a: $\mu_1 > \mu_2$: The mean Treynor ratios of active equity mutual funds are greater than passive equity mutual fund schemes.

H40: $\mu_1 = \mu_2$: There is no significant difference between the mean Jensen measures of active and passive equity mutual fund schemes.

H4a: $\mu_1 > \mu_2$: The mean Jensen measures of active equity mutual funds are greater than passive equity mutual fund schemes.

Table 1: Hypotheses

	Hypothesis	Test
H10	Active Equity Fund Categories Returns	ANOVA
H20	Active versus Index Funds Sharpe Ratios	F-Test two sample for variance
H30	Active versus Index Funds Treynor Ratios	F-Test two sample for variance
H40	Active versus Index Funds Jensen Measures	F-Test two sample for variance

DATA ANALYSIS AND RESULTS:**Hypothesis 1:****TABLE 2: ANOVA FOR ACTIVE EQUITY MUTUAL FUND SCHEMES:**

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Technology Funds	5	122.96	24.592	20.57132		
Tax-saving	16	271.02	16.93875	18.85091		
Infra	5	99.54	19.908	9.03992		
Pharma	4	89.08	22.27	73.32627		
Large Cap	10	183.6	18.36	3.903644		
Multicap	11	227.26	20.66	47.25792		
Large & Midcap	27	457.76	16.95407	29.73972		
Mid & Small cap	18	396.98	22.05444	28.15048		
FMCG	2	32.48	16.24	0.1352		
Banking	2	71.64	35.82	18.7272		
ANOVA						
Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F Ratio</i>
Between Groups	1140.27	9	126.6967	4.752012	0.000035142	1.985595
Within Groups	2399.553	90	26.6617			
Total	3539.823	99				

From Table1, null hypothesis is rejected as the calculate value of F static is greater than critical value at 0.01 level of significance. So, alternative hypothesis is accepted.

There is significant difference between the mean returns of active equity mutual fund schemes.

Hypothesis 2:

TABLE 3:

F-Test Two-Sample for Variances (SHARPE RATIO)					
	<i>Technology Funds</i>	<i>Index Funds</i>		<i>Pharma Funds</i>	<i>Index Funds</i>
Mean	0.28014257	0.262541855	Mean	0.273211403	0.262541855
Variance	0.002922943	0.001539446	Variance	0.013799033	0.001539446
Observations	5	8	Observations	4	8
df	4	7	df	3	7
F	1.898698505		F	8.963637751	
P(F<=f) one-tail	0.215577025		P(F<=f) one-tail	0.008539746	
F Critical one-tail	4.120311727		F Critical one-tail	4.346831402	
	<i>Tax saving Funds</i>	<i>Index Funds</i>		<i>Large cap Funds</i>	<i>Index Funds</i>
Mean	0.215809791	0.262541855	Mean	0.320917083	0.262541855
Variance	0.007752495	0.001539446	Variance	0.002801907	0.001539446
Observations	16	8	Observations	10	8
df	15	7	df	9	7
F	5.035900469		F	1.820075568	
P(F<=f) one-tail	0.019096538		P(F<=f) one-tail	0.220979129	
F Critical one-tail	3.510740184		F Critical one-tail	3.676674699	
	<i>Infra Funds</i>	<i>Index Funds</i>		<i>Multicap Funds</i>	<i>Index Funds</i>
Mean	0.287910231	0.262541855	Mean	0.283165975	0.262541855
Variance	0.005358357	0.001539446	Variance	0.016634448	0.001539446
Observations	5	8	Observations	11	8
df	4	7	df	10	7
F	3.480705465		F	10.80547959	
P(F<=f) one-tail	0.072109075		P(F<=f) one-tail	0.002302178	
F Critical one-tail	4.120311727		F Critical one-tail	3.636523121	

	Large & Midcap Funds	Index Funds		FMCG Funds	Index Funds
Mean	0.229642082	0.262541855	Mean	0.275047614	0.262541855
Variance	0.026418109	0.001539446	Variance	0.000649325	0.001539446
Observations	27	8	Observations	2	8
df	26	7	df	1	7
F	17.16079436		F	0.421791765	
P(F<=f) one-tail	0.000369243		P(F<=f) one-tail	0.463235482	
F Critical one-tail	3.397232771		F Critical one-tail	0.004223537	
	Mid & Small Cap Funds	Index Funds		Banking Funds	Index Funds
Mean	0.249189367	0.262541855	Mean	0.586393131	0.262541855
Variance	0.007902933	0.001539446	Variance	0.004572455	0.001539446
Observations	18	8	Observations	2	8
df	17	7	df	1	7
F	5.133622476		F	2.970196214	
P(F<=f) one-tail	0.017546034		P(F<=f) one-tail	0.128474471	
F Critical one-tail	3.479876659		F Critical one-tail	5.591447848	

Note: df = Degrees of Freedom F = Value of F Statistic P = p value F critical = F Statistic critical value.

Table 3 above shows the F -Test two sample for variances result of Sharpe ratios for active equity mutual funds versus passive funds or index funds at 0.05 level of significance.

There is no significant difference between the mean Sharpe ratio of Technology Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance .i.e. the 1.896 value of F Statistic is less than the 4.120 F critical value.

The mean Sharpe ratio of Pharma Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 8.963 value of F Statistic is higher than the 4.34 F critical value.

The mean Sharpe ratio of Tax saving Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 5.035 value of F Statistic is higher than the 3.51 F critical value.

There is no significant difference between the mean Sharpe ratio of Large cap Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 1.820 value of F Statistic is less than the 3.676 F critical value.

There is no significant difference between the mean Sharpe ratio of Infra Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 3.480 value of F

Statistic is less than the 4.120 F critical value.

The mean Sharpe ratio of Multicap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 10.805 value of F Statistic is higher than the 3.636 F critical value.

The mean Sharpe ratio of Large & Midcap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 17.160 value of F Statistic is higher than the 3.397 F critical value.

The mean Sharpe ratio of FMCG Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 0.421 value of F

Statistic is higher than the 0.00421 F critical value

The mean Sharpe ratio of Mid & Small cap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 5.1333 value of F Statistic is higher than the 3.479 F critical value.

There is no significant difference between the mean Sharpe ratio of Banking Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 2.970 value of F Statistic is less than the 5.591 F critical value.

Hypothesis 3:

Table 4:

F-Test Two-Sample for Variances(Treynor Ratio)					
	<i>Technology Funds</i>	<i>Index Funds</i>		<i>Pharma Funds</i>	<i>Index Funds</i>
Mean	10.84728133	9.234282981	Mean	10.9814688	9.234282981
Variance	4.282259462	1.922338321	Variance	22.97694552	1.922338321
Observations	5	8	Observations	4	8
df	4	7	df	3	7
F	2.227630493		F	11.95260234	
P(F<=f) one- tail	0.167209011		P(F<=f) one- tail	0.00383001	
F Critical one-tail	4.120311727		F Critical one-tail	4.346831402	
	<i>Tax saving Funds</i>	<i>Index Funds</i>		<i>Largecap Funds</i>	<i>Index Funds</i>
Mean	7.755085807	9.234282981	Mean	11.42000458	9.234282981
Variance	10.17253237	1.922338321	Variance	3.588497538	1.922338321
Observations	16	8	Observations	10	8
df	15	7	df	9	7
F	5.291749249		F	1.866735682	
P(F<=f) one-tail	0.016615915		P(F<=f) one- tail	0.211343017	
F Critical	3.510740184		F Critical	3.676674699	

one-tail			one-tail		
	<i>Infra Funds</i>	<i>Index Funds</i>		<i>Multicap Funds</i>	<i>Index Funds</i>
Mean	10.67040728	9.234282981	Mean	7.472768716	9.234282981
Variance	8.913423821	1.922338321	Variance	141.5762487	1.922338321
Observations	5	8	Observations	11	8
df	4	7	df	10	7
F	4.636761242		F	73.6479355	
P(F<=f) one- tail	0.038130708		P(F<=f) one- tail	3.95348E-06	
F Critical one-tail	4.120311727		F Critical one-tail	3.636523121	
	<i>Large & Midcap Funds</i>	<i>Index Funds</i>		<i>FMCG Funds</i>	<i>Index Funds</i>
Mean	8.023425183	9.234282981	Mean	10.34023964	9.234282981
Variance	39.79864611	1.922338321	Variance	2.150156751	1.922338321
Observation	27	8	Observations	2	8
df	26	7	df	1	7
F	20.70324754		F	1.1185111	
P(F<=f) one- tail	0.000198018		P(F<=f) one- tail	0.325365015	
F Critical one-tail	3.397232771		F Critical one-tail	5.591447848	
	<i>Mid & Small Cap Funds</i>	<i>Index Funds</i>		<i>Banking Funds</i>	<i>Index Funds</i>
Mean	9.034869563	9.234282981	Mean	20.88467889	9.234282981
Variance	10.68786658	1.922338321	Variance	6.343673019	1.922338321
Observation	18	8	Observations	2	8
df	17	7	df	1	7
F	5.559826		F	3.299977402	
P(F<=f) one- tail	0.01398084		P(F<=f) one- tail	0.112128305	
F Critical one-tail	3.479876659		F Critical one-tail	5.591447848	

Table 4 above shows the F Test two sample for variances result of Treynor ratios for active equity mutual funds versus passive funds or index funds at 0.05 level of significance.

There is no significant difference between the mean Treynor ratio of

Technology Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 2.227 value of F Statistic is less than the 4.120 F critical value.

The mean Treynor ratio of Pharma Funds is greater than Index Funds as the

null hypothesis is rejected at 0.05 level of significance. i.e. the 11.9526 value of F Statistic is higher than the 4.3468 F critical value.

The mean Treynor ratio of Tax-saving Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 5.2916 value of F Statistic is higher than the 3.5107 F critical value.

There is no significant difference between the mean Treynor ratio of Large cap Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 1.8666 value of F Statistic is less than the 3.6766 F critical value.

The mean Treynor ratio of Infra Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 4.636 value of F Statistic is higher than the 4.120 F critical value.

The mean Treynor ratio of Multicap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 73.653 value of F Statistic is higher than the 3.6365 F

critical value.

The mean Treynor ratio of Large & Midcap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 20.703 value of F Statistic is higher than the 3.397 F critical value.

There is no significant difference between the mean Treynor ratio of FMCG Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 1.1185 value of F Statistic is less than the 5.5914 F critical value.

The mean Treynor ratio of Mid & Small Cap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 5.5598 value of F Statistic is higher than the 3.4798 F critical value.

There is no significant difference between the mean Treynor ratio of Banking Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 3.2999 value of F Statistic is less than the 5.5914 F critical value.

Hypothesis 4:

Table 5:

F-Test Two-Sample for Variances(JENSEN MEASURE)					
	<i>Technology Funds</i>	<i>Index Funds</i>		<i>Pharma Funds</i>	<i>Index Funds</i>
Mean	2.260786342	0.262541855	Mean	2.361805532	0.26880358
Variance	9.650393213	0.001539446	Variance	48.86672524	1.782268668
Observations	5	8	Observations	4	8
df	4	7	df	3	7
F	6268.745842		F	27.41827094	
P(F<=f) one- tail	1.63378E-12		P(F<=f) one- tail	0.000304772	
F Critical one-tail	4.120311727		F Critical one-tail	4.346831402	

	<i>Tax-saving Funds</i>	<i>Index Funds</i>		<i>Large cap Funds</i>	<i>Index Funds</i>
Mean	-1.77321313	0.26880358	Mean	1.790982158	0.26880358
Variance	13.61461475	1.782268668	Variance	3.28765901	1.782268668
Observations	15	8	Observations	10	8
df	14	7	df	9	7
F	7.638923914		F	1.844648379	
P(F<=f) one-tail	0.005808375		P(F<=f) one-tail	0.215839821	
F Critical one-tail	3.5292314		F Critical one-tail	3.676674699	
	<i>Infra Funds</i>	<i>Index Funds</i>		<i>Multicap Funds</i>	<i>Index Funds</i>
Mean	1.210868809	0.26880358	Mean	2.410189239	0.26880358
Variance	8.909211866	1.782268668	Variance	26.44180455	1.782268668
Observations	5	8	Observations	11	8
df	4	7	df	10	7
F	4.998804066		F	14.83603736	
P(F<=f) one-tail	0.031895384		P(F<=f) one-tail	0.000846643	
F Critical one-tail	4.120311727		F Critical one-tail	3.636523121	
	<i>Large & Midcap Funds</i>	<i>Index Funds</i>		<i>FMCG Funds</i>	<i>Index Funds</i>
Mean	-0.801486716	0.26880358	Mean	0.629812099	0.26880358
Variance	19.34229781	1.782268668	Variance	1.406507273	1.782268668
Observations	27	8	Observations	2	8
df	26	7	df	1	7
F	10.85262741		F	0.789166806	
P(F<=f) one-tail	0.001638701		P(F<=f) one-tail	0.59615681	
F Critical one-tail	3.397232771		F Critical one-tail	0.004223537	
	<i>Mid & Small Cap Funds</i>	<i>Index Funds</i>		<i>Banking Funds</i>	<i>Index Funds</i>
Mean	-0.870421415	0.26880358	Mean	15.44795625	0.26880358
Variance	27.47715907	1.782268668	Variance	15.29549333	1.782268668
Observations	18	8	Observations	2	8
df	17	7	df	1	7
F	15.4169568		F	8.582035697	
P(F<=f)	0.000595918		P(F<=f)	0.022039606	

one-tail			one-tail		
F Critical one-tail	3.479876659		F Critical one-tail	5.591447848	

Table 5 above shows the F- Test two sample for variances result of Jensen Measure for active equity mutual funds versus passive funds or index funds at 0.05 level of significance.

The mean Jensen measure of Technology Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 6268.74 value of F Statistic is higher than the 4.120 F critical value.

The mean Jensen measure of Pharma Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 27.4182 value of F Statistic is higher than the 4.346 F critical value.

The mean Jensen measure of Tax-saving Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 7.6389 value of F Statistic is higher than the 3.5292 F critical value.

There is no significant difference between the mean Jensen measure of Large cap Funds and Index Funds as the null hypothesis is accepted at 0.05 level of significance. i.e. the 1.884 value of F Statistic is lesser than the 3.6766 F critical value.

The mean Jensen measure of Infra Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 4.998 value of F Statistic is higher than the 4.120 F critical value.

The mean Jensen measure of

Multicap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 14.8360 value of F Statistic is higher than the 3.6335 F critical value.

The mean Jensen measure of Large & Midcap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 10.8526 value of F Statistic is higher than the 3.3972 F critical value.

The mean Jensen measure of FMCG Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 0.7891 value of F Statistic is higher than the 0.0042 F critical value.

The mean Jensen measure of Mid & Small cap Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 15.4169 value of F Statistic is higher than the 3.4798 F critical value.

The mean Jensen measure of Banking Funds is greater than Index Funds as the null hypothesis is rejected at 0.05 level of significance. i.e. the 8.5820 value of F Statistic is higher than the 5.5914 F critical value.

Summary and Conclusion:

The study above found strong evidence that actively managed equity mutual funds are generating superior returns than passively managed funds. Using Sharpe ratio, it is clear from the study that Pharma, Tax Saving, Multicap ,

FMCG, Large & Midcap, Mid & Small cap funds have generated higher returns than passive equity mutual funds while Technology, Large cap, Infra and Banking Funds have generated less returns. Using Treynor ratio, it is evident from the study that Pharma, Tax saving, Infra, Multi cap, Large & Midcap, Mid & Small cap funds have generated higher returns than passive equity mutual funds and Technology, Large cap, FMCG and Banking Funds have generated less returns. Using Jensen Measure, the study also made it clear that Pharma, Tax saving, Infra, Multi cap, Large & Midcap, Mid & Small cap, Technology, FMCG and Banking Funds have generated higher returns than passive equity mutual funds and only Large cap Funds have shown less returns.

So in summary, the study found that 6 out of 10 active equity mutual fund categories have shown statistically significant returns than passive equity mutual funds using Sharpe, Treynor risk adjusted performance measures and 9 out of 10 using Jensen measure. The study supports the findings of Dale, A. Pronzinski (2008), Gupta (2000), Grinblatt, M. & Titman, S. (1993) and Elton, Gruber and Blake (1996). The study concludes that actively managed equity mutual funds in India provide positive risk adjusted excess returns than passively managed funds.

Limitations of the Study:

A limitation of the study is survivorship may have skewed the findings toward the actively managed fund categories.

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National and International Conferences, all the papers have been published and carry an ISBN number. He has a keen interest in preparing the students to participate in various SDP's and have organized number of national level management fests like convivial, conquest, talaash.

Author's Profile



Dr. G. Srinivasa Rao M.Sc., MBA, M.Phil, Ph.D, PGDCA, having 16 years of teaching experience, is presently working as Professor & Principal, Aditya PG College, Kakinada and has presented research papers at 6 International, 30 National Seminars and also published articles in many reputed journals. He has received "**Eminent Educationalist Award**", in Sept, 2011 (IIEEM), New Delhi for outstanding contribution to the field of Education. He is an active NSS volunteer, Coordinator – Blood Donation Camp, Motivator of Students towards CSR.



P.GANGADHAR having fifteen years of experience in teaching started his career as a assistant professor in the year 1998, played a key role in organizing two national workshops. His area of interest is finance, he has attended 15