

Comparative Assessment of Total Return, Risk Adjusted Return, Ranking and Performance Persistence of Small and Large Cap Mutual Funds

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ABSTRACT: - This study compares total return, risk adjusted return of small cap and large cap mutual funds with market returns. In addition, it contrasts the risk adjusted returns of small and large cap funds. It also measures risk return relationship and performance persistence of mutual funds. Six years daily closing Net Asset Value (NAVs) of 44 open ended equity growth mutual funds are obtained. Results reveal that mutual funds outperform market index when total return is taken into consideration and underperform market index when risk adjusted return is taken into consideration. We observe that risk adjusted returns of small cap funds are superior to large cap funds. We also find that risk of small cap funds is lower than large cap funds. Finally, we fail to find any significant relationship between risk and return and there is no evidence of performance persistence.

Introduction

Performance assessment of mutual funds attracted interest of many researchers. Reasons for this are, dissimilar results reported by earlier studies and usage of different performance measures. Few studies found that risk adjusted returns of mutual funds outperform market and others report that they underperform market. Reasons for outperformance are mentioned as managers market timing ability, portfolio selection, active investment style etc. Under performance is attributed to high expenses, excessive trading, and poor selection of portfolio. Another school of researchers argue that if the reason for fund's superior performance is manager's ability, then performance should persist as long as manager manages the fund. This leads to another facet of research, here also we see mixed results. Some of the authors who researched on persistence report that performance persistence exists in short-run and evaporates in long-run. Whereas, few other researchers did not find any evidence of persistence in fund performance and different results were found with different types of mutual fund offers. Extensive research is done on analyzing the performance of actively and passively managed

mutual funds.. There is very little work done on comparing the performance of large cap and small cap funds. With such overwhelming research existing investor is perplexed and finds it more complicated to invest in mutual funds. Many of earlier studies touched one or two dimensions in individual studies. In this study we use multiple facets like considering total return, risk adjusted return, ranking, comparison of small cap and large cap funds, performance persistence and association between risk and return. We use large volume of data to test our objectives. We are confident that the results of our study will be helpful to investors to make investment decisions and select suitable funds that match their risk appetite and return objective.

This article is divided into five sections. First section creates setting of the study. In second section we review the Literature. In the third section we present methodology adapted in this study. This is followed by discussion of results in section IV. The last section of this paper draws conclusion.

Literature Review

Existing literature on mutual fund performance is exorbitant and inconclusive. There are certain research studies (Gilbertson, 1982; Amporn, 2011;

Arnold, 2000) reported that mutual funds outperformed benchmark market indices. Whereas, Vasantha (2013), Shakeela (2015) reported underperformance when compared to market index. In another study Richard Evans (2009) find that mutual fund companies report total returns to general public and use risk-adjusted returns to evaluate the performance of fund managers. He found that when total returns were compared with market index, mutual funds outperformed market and when risk-adjusted returns were used mutual funds underperformed. Theodore Prince and Frank Bacon (2010) research result indicate that few of the mutual funds reported excess returns however many do not report excess returns. Alexander Groh and Oliver Gottschalg (2005) found mixed results when they analyzed private equity schemes. When management fees and other expenses are considered the fund returns become smaller. Md.Qamruzzaman (2014) report that different risk adjusted return measures show similar performance and ranking of mutual funds. They found that growth oriented funds have not outperformed market index

Amporn (2011) found that performance persistence is existed in short run and the same disappeared in long run. In another research Abdel Kader found performance persistence in both winners and losers funds in the short run. Similar results were reported by Edwin et. al (1996) they found that risk adjusted past performance of mutual funds have positive relation with future risk adjusted performance. Pierre Hereil et. al. (2010) also support that performance persistence exists on short-term horizons but becomes less relevant over longer periods.

Another facet of mutual fund research which attracted many researchers interest is application of risk adjusted performance measures. The most popular risk adjusted performance measures are Sharpe index, Treynor index, Jensen's alpha, three factor model and four factor model. For instance Martin Eling (2008) after analyzing 38,954 funds advocates that Sharpe ratio is adequate for analyzing the returns of hedge funds and the returns

of mutual funds. He preaches that Sharpe ratio is the best known and the best understood performance measure and might thus be considered superior to other performance measures. In another context Catherine (2013) found significant positive correlation between Sharpe and Treynor ratios and also found that different benchmarks yielded different risk-adjusted returns. Beehary Nitish et. al (2009) reports that mutual fund rankings obtained by using Sharpe and Treynor indices are similar. Timotej Jagric et. al (2007) after analyzing mutual funds using both Sharpe and Treynor rules found that both the methods reported almost same rankings.

Most of the earlier research paid attention to one or two dimensions of mutual fund performance. Either they concentrated on comparative performance with market index, or comparing performance among mutual funds. Few other studies evaluated the relevance of risk adjusted performance measures. In other research performance persistence of mutual funds are measured. To the best of our knowledge there is no study that measured all the above mentioned dimensions in single research. Present study tried to fill to this gap. In addition, we wish to compare the performance of small cap and large cap funds.

Methodology

This study aims to measure the comparative performance of small cap and large cap mutual funds. It also intends to compare the performance of mutual funds with benchmark market index. Another objective is to validate the concept of higher returns are associated with higher risk. Finally, we wish to evaluate the performance persistence of mutual funds. To reach our objectives we chose 44 open ended equity growth mutual funds that are actively managed by various fund houses in India. We categorized these mutual funds into small cap and large cap depending on their Assets Under Management (AUM). Funds with AUM less than INR 1,000 crores are considered as small cap and above INR 1,000 crore as large cap. Six years daily NAVs of these mutual funds were

sourced from Association of Mutual Funds of India (AMFI) official website. We split the data on early basis. First we calculated daily Log Normal returns and daily standard deviation and then these return and standard deviation values were aggregated to get annualized return and risk. In this study we considered both total return and risk-adjusted return. To compute risk adjusted return we used risk free rate of seven percent. S&P BSE 500 composite index is treated as market index. In this study we utilized only one risk adjusted performance measure i.e. Sharpe Index. This is because majority of previous research argue that Sharpe Index and Treynor's Index report similar results. Past studies reported that Treynor's index yielded inconsistent returns when different market indices were used. Considering all these factors we felt that Sharpe index is sufficient to measure the risk-adjusted performance of mutual funds. To know the association between return and risk we run correlation analysis. In continuation to correlation tests we run regression analysis to test the strength of association and coefficient of determination. We ranked the mutual funds on yearly basis for this we used Sharpe index values. Performance persistence was measured using early rankings. Results of the study are discussed in next section.

Results & Analysis

Performance of small cap mutual funds is presented in Table 1. Average total Annualized Return (AR) was positive for five years and negative for one year. Average total annual return ranged between -28% and 40% during the study period. It is observed that highest Annualized Standard Deviation (ASD) of 18.24% was found when annual return was all time low. This mean during the year 2011 there were high fluctuations in the market and NAVs of mutual funds oscillated very high. The performances of all the funds were not similar. There is lot of difference in the performance of top performing mutual fund and least performing mutual fund. For example in the year 2011 where the average AR was -28%, we observed that top

performing fund reported 8% positive return and worst performer incurred a dent of 64 percent. Similarly, in the year 2014 top performing fund reported 74% annualized return, whereas least performer reported meager 9% return. When we took risk adjusted return into consideration, we found that of the six years in three years there were negative returns and in three years there were positive returns. Positive returns found in total annualized returns evaporated when we adjusted for risk. This indicates that various charges levied by mutual funds to run the operations will hinder net annual returns to investors. Next we compared the total returns with market index. Small cap mutual funds outperformed market index in five years. After this we compared risk adjusted return with market index. We observed that small cap funds outperformed market index in only one year. In summary we found that in general small cap mutual funds failed to outperform market index.

Table 2 portrays performance of large cap mutual funds. The average total annualized returns were positive for four years and suffered losses for two years. When risk adjusted annual return was considered large cap funds fetched positive returns for three years and incurred loss in another three years. When we compared total return of large cap funds with market returns we found that in three years they outperformed market index, and when risk adjusted return was compared with index returns, we observed underperformance in five years. Overall it is found that average annualized risk adjusted returns of large cap mutual funds were below market returns. However, when we compared individual schemes with market returns we found that certain mutual funds outperformed market index. This high performance can be attributed to fund managers timing ability and portfolio composition of mutual funds.

When we tried to evaluate the association between return and risk we found mixed results. In certain years we found significant negative relationship between return and risk, and in other years there was a positive relationship. We find no significant

positive relationship between return and risk. We advocate that higher returns are not always associated with higher risk. Inverse correlations that we found in this study support our argument. To prove that higher returns are associated with higher risk the correlation values should be positive and strong. In addition, the coefficient of determination should also be high. But our study found significant negative relationships between return and risk. Furthermore, when there were positive correlations, they were weak and coefficient of determinations were poor, which mean, the positive associations are not statistically significant.

When we contrasted the performance of small cap funds with large cap funds, we found that small cap funds outperformed large cap funds in four years i.e. during 2012-2015. Only in two years i.e. 2010 and 2011 large cap funds outperformed small cap funds. While comparing the small cap and large cap mutual funds we found an interesting outcome. The risk or standard deviations of small cap funds are low when compared to large cap funds. This low volatility may be because of passive management style adapted by small cap funds or low traded volumes of units.

Sharpe index is a ratio of excess return or risk premium to associated risk and measured in times. A Sharpe index of 3 means risk adjusted return is 3 times more than risk involved in investing in that mutual fund. Average Sharpe index values of small cap funds ranged between -1.96 and 2.24 and for large cap funds they ranged between -2.01 and 2.17. Highest Sharpe index values were 4.16 and 3.59 respectively for small cap and large cap mutual funds. We found superior Sharpe index values for small cap funds compared to large cap funds. This is because small cap mutual funds reported higher risk adjusted returns than large cap mutual funds and the standard deviations or risk levels of small cap mutual funds are lower than that of large cap mutual funds. We also found that many of small cap funds had superior Sharpe index values compared large cap funds.

Table 3 and 4 provides year wise rankings of small cap and large cap mutual funds. We used yearly rankings as a measure of performance persistence. If the performance of fund is consistent then its rank should also be consistent over the period. We failed to find any such performance persistence in case of both small and large cap funds. Funds those topped in one year were not able to retain same rank in next year. We also found that in case of certain funds ranks were highly fluctuating. Some of the mutual funds improved their ranks but they were not able to maintain the same in future years. Based on the finding of the study we conclude that performance persistence is visible in our sample mutual funds.

Conclusion

In this study we aimed to compare total returns and risk adjusted returns of mutual funds with market index. In addition, we tried to evaluate risk adjusted performance of small cap and large cap mutual funds. Furthermore, we assessed popular concept of higher returns are associated with higher risk. Finally we intended to observe the comparative rankings of small and large cap mutual funds and their performance persistence. To congregate our research objectives we chose 44 open ended equity growth mutual funds of which 24 related to small cap group and 20 pertain to large cap category. Daily closing Net Asset Value (NAVs) of these mutual funds were sourced from Association of Mutual Funds of India (AMFI) for six years (January 1, 2010 to December 31, 2015). S&P BSE 500 index was considered as market index. Initially we calculated the daily log returns and risk, and obtained values are annualized to get annualized returns (AR) and Annualized Standard Deviations (ASD). For ranking we used Sharpe's risk adjusted performance measure. The results reported that when total returns are considered small cap funds outperformed market in four years and large cap funds outperformed in three years. When risk adjusted returns were compared both small and large cap funds outperformed market returns in only one year. We failed to find any concrete evidence to support the argument of higher returns are

associated with higher risk. Small cap funds had high Sharpe index values than large cap funds. This implies that small cap funds performed better than large cap funds. We also found that risk of investing in small cap funds is lower than that of large cap funds. Lastly, we do not find any performance persistence among sample mutual funds. There were wide deviations in yearly rankings of mutual funds. We observed that few funds improved their performance but were not able to continue the same in other years.

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Year	2010		2011		2012		2013		2014		2015	
Measure	AR	ASD	AR	ASD	AR	ASD	AR	ASD	AR	ASD	AR	ASD
Average	11.93	14.37	-28.46	18.24	27.17	14.50	3.99	15.22	39.73	13.51	2.36	11.14
Minimum	-3.46	1.14	-64.30	0.89	9.77	0.99	-13.01	0.56	8.52	0.61	-8.50	0.52
Maximum	24.95	21.97	7.78	31.67	41.94	25.16	35.76	26.91	74.32	26.59	14.63	15.25
Avg Risk Adjusted Return (Rf = 7%)	4.93		-35.46		20.17		-3.01		32.73		-4.64	
S&P BSE 500 Return	13.46		-32.55		27.03		2.29		31.31		-1.03	
Out Perform (OP) / Under Perform (UNP)	UNP		OP		OP		OP		OP		OP	
Risk Adjusted Performance	UNP		UNP		UNP		UNP		OP		UNP	
Risk Return Correlation		-0.24		-0.77		0.59		-0.52		0.78		-0.11
R Square Value		0.06		0.59		0.35		0.27		0.61		0.01

Year	2010		2011		2012		2013		2014		2015	
Measure	AR	ASD	AR	ASD	AR	ASD	AR	ASD	AR	ASD	AR	ASD
Average	12.73	14.53	-28.08	18.03	26.61	14.74	2.16	16.37	39.10	14.55	-0.93	11.58
Minimum	-5.45	12.79	-39.38	15.47	18.49	11.62	-10.02	14.27	28.37	11.27	-26.88	8.95
Maximum	24.97	16.71	-15.47	20.28	40.64	21.44	9.94	20.32	63.88	29.37	10.28	17.09
Avg Risk Adjusted Return (Rf = 7%)	5.73		-35.08		19.61		-4.84		32.10		-7.93	
S&P BSE 500 Return	13.46		-32.55		27.03		2.29		31.31		-1.03	
Out Perform (OP) / Under Perform (UNP)	UNP		OP		UNP		UNP		OP		OP	
Risk Adjusted Performance	UNP		UNP		UNP		UNP		OP		UNP	
Risk Return Correlation		-0.24		-0.6		0.32		-0.36		0.34		-0.75
R Square Value		0.06		0.36		0.10		0.13		0.11		0.56

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Table 3: Ranking of Small Cap Mutual Funds using Sharpe Index

S.No	Scheme	2010		2011		2012		2013		2014		2015	
		S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank
1	Baroda Pioneer	0.27	13	-2.27	19	0.76	21	-0.32	15	2.17	13	-0.99	20
2	Birla Gennext	0.58	8	-1.24	3	2.29	3	-0.60	18	2.74	6	-0.15	6
3	Birla Top 100	0.01	18	-1.84	6	1.46	8	-0.23	11	2.07	16	-0.76	17
4	Franklin Asia	-0.06	19	-0.62	2	0.58	23	0.24	4	0.03	24	-0.88	18
5	HDFC Multi Cap	0.49	10	-2.04	13	0.68	22	-0.74	21	1.69	21	-0.65	13
6	HSBC Mid Cap Equity	-0.40	21	-2.29	20	1.27	11	-0.63	19	3.26	2	0.05	2
7	ICICI Blended	-1.60	24	-0.59	1	1.47	7	1.74	2	0.75	23	-2.44	24
8	ICICI Exports	0.11	15	-1.77	5	1.16	15	2.39	1	2.23	12	0.55	1
9	ICICI Prudential Asia	0.74	5	-1.93	9	1.30	10	-0.19	9	3.03	4	-0.74	16
10	IDFC Equity	0.50	9	-1.71	4	0.90	20	-0.08	8	1.48	22	-1.23	22
11	JP Morgan Equity	0.99	2	-1.96	11	0.98	19	-0.24	14	2.09	15	-0.51	12
12	Kotak Classic Equity	-0.12	20	-1.90	7	1.16	14	-0.41	16	2.27	10	-0.98	19
13	Kotak Emerging Equity	0.65	6	-2.51	23	2.58	1	-1.00	24	4.16	1	-0.05	4
14	LIC Nomura MF Equity	0.08	16	-2.06	14	1.06	17	-0.24	13	1.90	20	-1.66	23
15	LIC Nomura MF Growth	0.16	14	-2.12	15	1.06	18	-0.19	10	2.06	17	-1.01	21
16	Principal Emerging Bluechip	0.63	7	-2.96	24	2.51	2	-0.24	12	3.13	3	-0.24	7
17	Principal Growth - I	0.31	11	-2.25	18	1.42	9	-0.69	20	2.01	18	-0.70	15
18	Principal Growth	0.29	12	-2.41	22	1.89	4	-0.08	7	2.01	19	-0.48	10
19	Quantum Long-Term Equity	1.39	1	-1.90	8	1.25	12	-0.02	6	2.15	14	-0.49	11
20	Religare Invesco	0.86	4	-1.99	12	1.08	16	0.14	5	2.40	8	-0.37	8
21	SBI Multi Cap	-0.76	23	-2.24	17	1.63	5	-0.59	17	2.95	5	0.05	3
22	Sundaram Equity Multiplier	0.04	17	-2.18	16	1.24	13	-0.88	22	2.24	11	-0.69	14
23	Sundaram SMILE	-0.65	22	-2.39	21	1.52	6	-0.98	23	2.48	7	-0.12	5
24	Taurus Ethical	0.94	3	-1.94	10	0.24	24	0.39	3	2.35	9	-0.48	9
	Average S_index	0.23		-1.96		1.31		-0.14		2.24		-0.62	
	Median S_index	0.28		-2.02		1.25		-0.24		2.20		-0.58	
	Minimum S_index	-1.60		-2.96		0.24		-1.00		0.03		-2.44	
	Maximum S_index	1.39		-0.59		2.58		2.39		4.16		0.55	

Table 4: Ranking of Large Cap Mutual Funds using Sharpe Index

S.No	Scheme	2010		2011		2012		2013		2014		2015	
		S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank	S_index	Rank
1	Birla Sun Life Equity	0.29	11	-2.39	19	1.46	6	-0.14	5	2.54	4	-0.48	4
2	DSP BlackRock Equity	0.66	4	-2.26	15	1.24	8	-0.56	16	2.08	13	-0.71	7
3	DSP BlackRock Top 100	0.46	9	-1.85	8	1.05	15	-0.41	12	1.53	17	-0.85	15
4	Franklin Flexi Cap	0.11	15	-1.80	5	1.13	12	-0.43	13	2.48	6	-0.63	6
5	Franklin Small	-0.03	16	-2.21	14	2.08	1	-0.15	6	3.59	1	0.07	2
6	HDFC Equity	1.20	1	-2.18	12	1.14	11	-0.32	10	2.16	10	-1.32	19
7	HDFC Growth	1.15	2	-1.85	7	0.98	18	-0.62	17	1.88	16	-0.84	14
8	HSBC Equity	0.52	8	-1.87	9	0.75	20	-0.35	11	1.43	19	-1.13	17
9	ICICI Infra	-0.28	18	-2.49	20	0.89	19	-0.90	19	1.30	20	-0.96	16
10	ICICI Prudential Bluechip	1.03	3	-1.42	1	1.00	16	0.04	2	2.11	12	-0.76	13
11	ICICI Prudential Top 100	0.56	6	-1.61	3	1.19	10	0.11	1	1.89	14	-0.76	12
12	SBI Bluechip	-0.25	17	-2.17	11	1.84	2	-0.12	4	2.71	2	-0.07	3
13	SBI Contra	-0.86	20	-2.28	17	1.48	4	-1.00	20	2.49	5	-0.72	10
14	SBI Magnum Equity	0.18	13	-1.81	6	1.10	13	-0.22	7	2.18	9	-0.60	5
15	SBI Multiplier	-0.44	19	-2.20	13	1.49	3	-0.23	8	2.68	3	0.17	1
16	Sundaram Growth	0.39	10	-2.26	16	0.98	17	-0.55	15	1.49	18	-2.06	20
17	Tata Pure Equit	0.54	7	-2.00	10	1.21	9	-0.09	3	1.89	15	-0.71	9
18	Templeton India Growth	0.65	5	-2.34	18	1.40	7	-0.65	18	2.32	8	-0.76	11
19	UTI Equity	0.26	12	-1.76	4	1.47	5	-0.30	9	2.45	7	-0.71	8
20	UTI Opportunity	0.15	14	-1.54	2	1.07	14	-0.51	14	2.12	11	-1.30	18
	Average S_index	0.31		-2.01		1.25		-0.37		2.17		-0.76	
	Median S_index	0.34		-2.08		1.17		-0.34		2.14		-0.74	
	Minimum S_index	-0.86		-2.49		0.75		-1.00		1.30		-2.06	
	Maximum S_index	1.20		-1.42		2.08		0.11		3.59		0.17	