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Size of Asset under Management and Performance of Mutual Fund

*Mayank Kumar**
Associate Professor (Finance), IMS Ghaziabad, Uttar Pradesh, India

ABSTRACT

Various studies have been done to determine the impact of AUM (Asset Under Management) over performance of mutual fund. Results are conflicting in nature. Studies says that lower size of fund under management will lead to in efficiency and with increased cost of managing fund in terms of research and other expenses; performance will go down whereas funds with too big asset under management tends to incur excessive cost leading to negative marginal return. This paper studied the relationship between performance of mutual fund and asset under management. Three major indicators of mutual fund performance namely Sharpe's, Treynor's ratio and Jensen's Alpha were considered. It was observed that schemes with lowest AUM category were least performer proving the earlier studies whereas schemes with largest AUM category has outperformed the others showing that returns tend to increase with increase in AUM, but failed to define size of too big AUM for underperformance. This opens a scope of further studies to define the size of AUM to be considered as too big.

Keywords: mutual fund, AUM, Sharpe's ratio, Treynor's Ratio, Jensen's Alpha.

Corresponding Author:
E-mail: mayank.kumar@imsgzb.com

INTRODUCTION

Mutual fund scheme is pool of money collected from a group of investors with a predefined common investment objective. Mutual fund has an advantage over direct investment in terms of bigger corpus as well as qualified fund manager backed with quality research. So, in terms of performance mutual fund gives better return with a lesser amount of risk in comparison to direct investment. The total amount invested in any of the mutual fund scheme is known as asset under management of that scheme. AUM (Asset under Management) impacts the performance of mutual funds. It's a paradox about the optimal size of AUM for best performance. Lower AUM size will lead to higher per unit research cost as well as other related expenditure which will ultimately eat up a part of returns leading to lower return. On the other hand, bigger AUM also leads to in efficiency causing lower rate of marginal return.

Mutual fund industry is one of the fastest growing financial services industries in India. On March 31st, 2018, the total industry AUM reached to Rs.21.36 Trillion (21.36 lakh Crore). There are altogether 42 asset management companies are operating in industry and on regular basis they are launching mutual fund schemes. With several schemes available for investment leads to confusion among investor to choose the best one. There are number of ways to evaluate the performance of mutual fund.

LITERATURE REVIEW

Indro et al. (1999) found that fund size (AUM) affects mutual fund performance. Mutual fund need to achieve a minimum fund size to generate sufficient return by justifying related costs. It also found that after attaining an optimal size of AUM it starts generating negative marginal return. Chen et al. (2004) in their study found that fund size erodes performance. They tried to identify various explanations for this case. They found that this relationship is not driven by heterogeneity in fund styles; they found that the effect of fund size on fund returns is most pronounced for funds that play small cap stocks. Yan (2008) verified the findings of Chen et al. in US market and found inverse relationship between fund size and fund performance. Basso A. and S. Funari (2003)in their paper studied the role of fund size in the performance of mutual fund. Yan found significant inverse relation between fund size and fund performance. Further, this inverse relation is stronger among funds that hold less liquid portfolios. Pollet and Wilson (2008) in their study found that larger funds suffer from diminishing returns to scale. Perold and Salomon (1991) found that as the AUM increases position size also increases in turn portfolio return as percentage of asset declines

OBJECTIVE

(1) The paper aims to compare the performance of large cap diversified open ended equity funds of select AMC's

(2) Examine the relationship between performance of mutual fund and their respective AUM

DATA AND METHODOLOGY

Total 89 open ended diversified equity schemes were identified whose investment objective was to invest in large cap companies and their benchmark was S&P NIFTY 100 (National Stock Exchange Index) consisting of top 100 largest companies in India. These 89 schemes were categorized into 5 subcategories based of their AUM. The category as follows:

(1) 15000 Crore plus
(2) 4000 Crore plus
(3) 1000 Crore Plus
(4) 500 Crore plus
(5) 100 Crore plus

In each category, top 5 schemes were short listed. Table 1 presents the details of schemes shortlisted for the study. Further in all the schemes, direct plan with growth option was considered to avoid any additional cost. These total 25 schemes were categorized as per the above criteria.

Table 1.*Selectedmutual fund schemes.*

Fund	**Net Assets (Cr)**	**Fund**	**Net Assets (Cr)**
HDFC Equity Fund—Direct Plan	20380.89	HDFC Growth Fund—Direct Plan	1129.14
Aditya Birla Sun Life Frontline Equity Fund—Direct Plan	19372.69	Motilal Oswal Focused 25 Fund—Direct Plan	1002.71
Kotak Select Focus Fund—Direct Plan	17853.35	UTI NIFTY Index Fund—Direct Plan	770.57
SBI Bluechip Fund—Direct Plan	17724.05	Tata Large Cap Fund—Direct Plan	756
ICICI Prudential Focused Bluechip Equity Fund—Direct Plan	16101.88	Sundaram Select Focus Fund—Direct Plan	684.94
Franklin India BluechipFund—Direct Plan	7821.02	HSBC Large Cap Equity Fund—Direct Plan	648.24
Mirae Asset India Equity Fund—Direct Plan	6775.38	ICICI Prudential Select Large Cap Fund—Direct Plan	540.34
UTI Equity Fund—Direct Plan	4905.44	Aditya Birla Sun Life Index Fund—Direct Plan	133.81
UTI Mastershare Fund—Direct Plan	4844.01	Edelweiss Large Cap Fund—Direct Plan	125.39
UTI Opportunities Fund—Direct Plan	4064.69	Canara Robeco Large Cap+ Fund—Direct Plan	111.34
Kotak 50—Direct Plan	1325.75	HDFC Index Fund—Sensex Plan—Direct Plan	111.15
HDFC Large Cap Fund—Direct Plan	1225	IDFC NIFTY Fund—Direct Plan	104.77
Reliance Focused Large Cap Fund—Direct Plan	1197.19		

Daily NAV (Net Asset Value) of these schemes were collected from thewebsite of Association of Mutual Funds in India(AMFI) for the period starting from April 1, 2015 to March 31, 2018. Total 739 data points were collected. Daily closing value of S&P NIFTY(National Stock Exchange Index)100 was collected from NSE's website for the above mentioned period to calculate the market return. Government of India's 10 year bond daily bond yield was collected for the above mentioned period as risk free rate.

With the help of data collected, three performance measurement tools namely Sharpe's, Treynor's ratio and Jensen' alpha was calculated for all five sub categories of schemes and their average for all 36 months were considered for analyzing the details.

From the collected data following calculations were done.
Risk Free Rate R(f) = Average (Day1,2, ….30) bond yield.

Market Return R(m) = (Closing Price of NIFTY 100 at month end—Closing price of NIFTY 100 at beginning of month)/ Closing price of NIFTY 100 at beginning of month.

Scheme Return R(p) = (Closing NAV at month end—Closing NAV at beginning of month)/ Closing NAV at beginning of month.

Standard Deviation = STDEV(Day 1,2, 3..30 NAV).

Beta (β)= Covariance (Scheme, Market)/Variance of market.

Sharpe's Ratio = {R(p)-R(m)}/Standard Deviation.

Treynor's Ratio = {R(p)-R(m)}/ β
Jensen's Alpha (α) = R(p)-{R(f)+ β*{R(m)-R(f)}}

Table 2 *presents the monthly R(m), R(f) and R(p) for all five categories.*

Table 2.*Monthlyreturn.*

	NIFTY100	Risk Free Rate	15000 CR +	4000 CR+	1000 CR+	500 CR+	100 CR+
Date/NAV	***Return***	***Return (Monthly)***	***Return***	***Return***	***Return***	***Return***	***Return***
Apr-15	-0.0329	0.0065	-0.0268	-0.0332	-0.0185	-0.0307	-0.0345
May-15	0.0131	0.0066	0.0134	0.0187	0.0276	0.0124	0.0172
Jun-15	-0.0064	0.0065	-0.0021	-0.0129	-0.0125	-0.0043	-0.0067
Jul-15	0.0137	0.0065	0.0274	0.0254	0.0215	0.0180	0.0167
Aug-15	-0.0631	0.0065	-0.0625	-0.0549	-0.0559	-0.0620	-0.0665
Sep-15	0.0163	0.0064	0.0217	0.0184	0.0040	0.0202	0.0232
Oct-15	0.0120	0.0063	0.0139	0.0059	0.0063	0.0112	0.0088
Nov-15	-0.0133	0.0064	-0.0005	-0.0102	0.0021	-0.0058	-0.0126
Dec-15	0.0004	0.0065	-0.0054	-0.0030	-0.0145	-0.0042	-0.0005
Jan-16	-0.0565	0.0065	-0.0584	-0.0555	-0.0545	-0.0529	-0.0511
Feb-16	-0.0749	0.0065	-0.0809	-0.0722	-0.0670	-0.0744	-0.0744
Mar-16	0.0698	0.0063	0.0813	0.0782	0.0504	0.0781	0.0756
Apr-16	0.0196	0.0062	0.0263	0.0220	0.0130	0.0161	0.0184
May-16	0.0390	0.0062	0.0394	0.0391	0.0194	0.0431	0.0405
Jun-16	0.0174	0.0062	0.0319	0.0220	0.0067	0.0207	0.0160
Jul-16	0.0436	0.0061	0.0470	0.0411	0.0431	0.0476	0.0433
Aug-16	0.0180	0.0059	0.0242	0.0206	0.0314	0.0178	0.0200
Sep-16	-0.0160	0.0059	-0.0041	-0.0103	-0.0045	-0.0116	-0.0155
Oct-16	-0.0096	0.0057	-0.0025	-0.0088	-0.0024	-0.0095	-0.0114
Nov-16	-0.0492	0.0054	-0.0505	-0.0519	-0.0471	-0.0478	-0.0561
Dec-16	-0.0052	0.0054	-0.0100	-0.0083	-0.0164	-0.0027	-0.0075

Jan-17	0.0519	0.0053	0.0511	0.0447	0.0371	0.0470	0.0487
Feb-17	0.0203	0.0056	0.0197	0.0231	0.0052	0.0169	0.0208
Mar-17	0.0257	0.0057	0.0303	0.0264	0.0189	0.0305	0.0294
Apr-17	0.0130	0.0057	0.0239	0.0169	0.0087	0.0167	0.0151
May-17	0.0249	0.0057	0.0184	0.0208	0.0385	0.0237	0.0260
Jun-17	-0.0074	0.0054	-0.0038	-0.0054	0.0122	-0.0050	-0.0065
Jul-17	0.0484	0.0054	0.0487	0.0451	0.0305	0.0504	0.0494
Aug-17	-0.0154	0.0054	-0.0110	-0.0159	-0.0069	-0.0166	-0.0172
Sep-17	-0.0201	0.0055	-0.0196	-0.0128	-0.0318	-0.0176	-0.0169
Oct-17	0.0508	0.0056	0.0519	0.0407	0.0350	0.0439	0.0446
Nov-17	-0.0182	0.0058	-0.0094	-0.0068	0.0039	-0.0090	-0.0163
Dec-17	0.0420	0.0060	0.0408	0.0475	0.0267	0.0434	0.0399
Jan-18	0.0455	0.0062	0.0255	0.0296	0.0220	0.0378	0.0497
Feb-18	-0.0460	0.0063	-0.0450	-0.0411	-0.0424	-0.0457	-0.0432
Mar-18	-0.0316	0.0063	-0.0265	-0.0272	-0.0212	-0.0275	-0.0276

Table 3*presents the Sharpe's ratio of different bracket of funds for 36 months.*

Table 3.*Sharpe'sratio.*

Date	15000+	4000+	1000+	500+	100+
Apr-15	0.6740	-4.3397	2.5756	-7.5201	4.2599
May-15	0.0260	1.5238	0.5681	0.2954	1.0703
Jun-15	0.4894	-1.9423	0.8453	-1.6221	1.0168
Jul-15	1.7105	1.2167	1.2617	0.4889	1.4397
Aug-15	0.0340	-3.2718	0.1257	-4.1954	0.4752
Sep-15	0.4446	1.0431	-0.7897	2.6495	-0.9626
Oct-15	0.3174	0.5609	0.3064	1.2579	-0.0893
Nov-15	1.8614	-3.8658	4.3940	-7.7708	6.7273
Dec-15	-0.8499	0.5781	-2.6779	3.0002	-3.4322
Jan-16	-0.1680	-4.6928	0.5034	-5.3206	1.4598
Feb-16	-0.4195	-5.2290	0.6832	-6.5664	1.5578
Mar-16	1.0689	6.4341	-2.5864	10.6116	-4.5555
Apr-16	0.7577	1.6475	-0.4348	2.3222	-0.6085
May-16	0.0516	4.9571	-3.3952	10.3820	-6.7371
Jun-16	1.9784	0.8426	-0.0128	2.8500	-1.0121
Jul-16	0.5703	6.9436	-0.2326	8.5325	-1.9926
Aug-16	0.8521	2.0661	1.8377	-0.0038	2.9345
Sep-16	1.2653	-2.6018	2.1569	-4.0919	2.6466
Oct-16	0.9038	-2.1712	2.0787	-4.4239	3.4090
Nov-16	-0.0983	-4.1245	0.6039	-4.7146	0.4775
Dec-16	-0.5890	-0.3519	-1.6068	2.0264	-3.1481
Jan-17	-0.1243	7.2674	-1.8829	10.4211	-4.1920
Feb-17	-0.0844	3.7556	-2.3633	6.1262	-2.9576
Mar-17	0.7676	3.8736	-0.9598	6.2730	-2.1627
Apr-17	2.2738	0.8115	0.6405	2.0406	0.7030
May-17	-0.8715	4.1815	0.9276	1.5747	2.4160
Jun-17	0.8860	-2.3351	3.4970	-8.1015	7.1379
Jul-17	0.0604	10.8981	-5.6777	18.8636	-12.4070
Aug-17	0.5173	-2.5827	1.8762	-4.5255	2.8679
Sep-17	0.0711	-1.7764	-2.5203	0.5819	-3.1584
Oct-17	0.1637	8.0657	-1.6533	11.8802	-4.8174
Nov-17	1.4283	-3.1206	2.7439	-6.6880	5.0925
Dec-17	-0.1932	7.8426	-3.9987	11.8772	-7.2692
Jan-18	-3.7817	10.0305	-5.8131	17.6355	-12.2644
Feb-18	0.1081	-4.4893	0.1499	-5.2203	1.0207
Mar-18	0.4797	-3.3234	1.6849	-4.9394	2.8286

***Table 4** presents the Treynor's ratio of different bracket of funds for 36 months.*

***Table 4.**Treynor'sratio.*

Date	15000+	4000+	1000+	500+	100+
Apr-15	0.0067	-0.0425	0.0323	-0.0727	0.0407
May-15	0.0004	0.0206	0.0089	0.0040	0.0143
Jun-15	0.0050	-0.0196	0.0099	-0.0164	0.0102
Jul-15	0.0156	0.0110	0.0141	0.0044	0.0129
Aug-15	0.0006	-0.0579	0.0024	-0.0743	0.0084
Sep-15	0.0059	0.0139	-0.0124	0.0352	-0.0128
Oct-15	0.0024	0.0042	0.0028	0.0094	-0.0006
Nov-15	0.0150	-0.0308	0.0459	-0.0609	0.0525
Dec-15	-0.0070	0.0048	-0.0262	0.0251	-0.0280
Jan-16	-0.0021	-0.0596	0.0074	-0.0679	0.0185
Feb-16	-0.0061	-0.0755	0.0121	-0.0949	0.0223
Mar-16	0.0124	0.0737	-0.0350	0.1221	-0.0519
Apr-16	0.0079	0.0168	-0.0050	0.0239	-0.0062
May-16	0.0005	0.0465	-0.0398	0.0966	-0.0624
Jun-16	0.0162	0.0068	-0.0001	0.0232	-0.0080
Jul-16	0.0037	0.0447	-0.0022	0.0544	-0.0125
Aug-16	0.0064	0.0155	0.0179	0.0000	0.0216
Sep-16	0.0120	-0.0243	0.0244	-0.0383	0.0247
Oct-16	0.0079	-0.0190	0.0237	-0.0381	0.0296
Nov-16	-0.0013	-0.0543	0.0089	-0.0622	0.0063
Dec-16	-0.0054	-0.0032	-0.0188	0.0184	-0.0281
Jan-17	-0.0009	0.0505	-0.0177	0.0743	-0.0285
Feb-17	-0.0005	0.0237	-0.0208	0.0385	-0.0184
Mar-17	0.0050	0.0249	-0.0083	0.0420	-0.0137
Apr-17	0.0133	0.0046	0.0070	0.0117	0.0038
May-17	-0.0062	0.0298	0.0137	0.0116	0.0163
Jun-17	0.0036	-0.0099	0.0250	-0.0330	0.0277
Jul-17	0.0003	0.0596	-0.0405	0.1032	-0.0618
Aug-17	0.0043	-0.0216	0.0190	-0.0387	0.0237
Sep-17	0.0005	-0.0129	-0.0217	0.0043	-0.0227
Oct-17	0.0010	0.0479	-0.0172	0.0658	-0.0245
Nov-17	0.0093	-0.0205	0.0312	-0.0448	0.0322
Dec-17	-0.0014	0.0545	-0.0382	0.0845	-0.0496
Jan-18	-0.0220	0.0583	-0.0480	0.1072	-0.0677
Feb-18	0.0011	-0.0440	0.0018	-0.0526	0.0099
Mar-18	0.0053	-0.0391	0.0238	-0.0565	0.0313

***Table 5** presents the Jenson's Alpha of different bracket of funds for 36 months.*

***Table 5.**Jensen'salpha.*

Date	15000+	4000+	1000+	500+	100+
Apr-15	0.0027	-0.0027	0.0043	-0.0031	-0.0041
May-15	0.0009	0.0063	0.0159	0.0001	0.0046

Jun-15	0.0028	-0.0076	-0.0096	0.0004	-0.0009
Jul-15	0.0145	0.0125	0.0096	0.0051	0.0033
Aug-15	-0.0037	0.0053	-0.0056	-0.0082	-0.0090
Sep-15	0.0062	0.0031	-0.0103	0.0047	0.0075
Oct-15	0.0030	-0.0051	-0.0042	-0.0001	-0.0026
Nov-15	0.0098	-0.0005	0.0098	0.0044	-0.0010
Dec-15	-0.0069	-0.0044	-0.0165	-0.0053	-0.0015
Jan-16	-0.0072	-0.0056	-0.0176	-0.0035	-0.0005
Feb-16	-0.0082	-0.0074	-0.0167	-0.0067	-0.0059
Mar-16	0.0161	0.0152	0.0017	0.0130	0.0124
Apr-16	0.0087	0.0045	-0.0032	-0.0019	0.0000
May-16	0.0057	0.0057	-0.0091	0.0088	0.0048
Jun-16	0.0157	0.0062	-0.0070	0.0045	-0.0002
Jul-16	0.0062	0.0037	0.0100	0.0072	0.0039
Aug-16	0.0067	0.0036	0.0147	0.0006	0.0029
Sep-16	0.0115	0.0039	0.0073	0.0031	-0.0011
Oct-16	0.0056	-0.0010	0.0026	-0.0019	-0.0034
Nov-16	-0.0020	-0.0065	-0.0084	-0.0034	-0.0091
Dec-16	-0.0059	-0.0040	-0.0144	0.0011	-0.0032
Jan-17	0.0026	-0.0027	-0.0036	0.0010	0.0017
Feb-17	-0.0015	0.0028	-0.0135	-0.0031	0.0010
Mar-17	0.0060	0.0034	-0.0010	0.0063	0.0054
Apr-17	0.0122	0.0055	-0.0013	0.0050	0.0029
May-17	-0.0073	-0.0023	0.0207	0.0015	0.0034
Jun-17	0.0039	0.0009	0.0181	0.0012	0.0004
Jul-17	0.0053	0.0074	-0.0058	0.0072	0.0065
Aug-17	0.0046	-0.0018	0.0038	-0.0029	-0.0037
Sep-17	0.0022	0.0081	-0.0150	0.0012	0.0015
Oct-17	-0.0020	-0.0024	-0.0043	-0.0036	-0.0003
Nov-17	0.0074	0.0062	0.0168	0.0067	-0.0009
Dec-17	0.0009	0.0092	-0.0055	0.0026	0.0015
Jan-18	-0.0163	-0.0113	-0.0140	0.0002	0.0102
Feb-18	0.0000	0.0027	-0.0019	-0.0048	0.0001
Mar-18	0.0031	-0.0020	0.0010	0.0006	0.0011

***Table 6** presents average of all three majors of performance for different category of funds.*

***Table 6.**Averageratio.*

Details	**15000+**	**4000+**	**1000+**	**500+**	**100+**
Sharpe's ratio	0.3495	0.9534	-0.1985	1.5552	-0.6174
Treynor's Ratio	0.0030	0.0022	-0.0006	0.0058	-0.0025
Jensen's Alpha	0.0029	0.0014	-0.0014	0.0011	0.0008

FINDINGS

Sharpe's ratio, which calculate the excess return over per unit of standard deviation, shows that in case of funds having around 100 crores of AUM are generating least amount of excess return in comparison to others and this trend improves in schemes higher AUM. Further, it starts decreasing as the fund size crosses 10000 Crore plus.

While in Treynor's ratio, which calculate the excess return over per unit of Beta shows that funds having around 100 crores of AUM are generating least amount of

excess return in comparison to others but tend to fluctuate with various AUM sizes.
In Jenson's Alpha which is an absolute measure of excess return over market by considering the risk class states that value is minimum with schemes having AUM of 100 Crore plus whereas this excess return trends keeps on increasing as the fund size goes up.

CONCLUSION

All the three majors for performance evaluation of mutual fund clearly states that mutual fund schemes having AUM of 100 Crore plus are worst performer and takes the bottom place in ranking which proves the earlier studies about economy of scale and bare minimum size of AUM. The performance major keeps on increasing as the AUM goes up. Even in the case of schemes having AUM of more than 15000 Crore which are the one of the highest AUM holding schemes in equity segment are showing better performance than the schemes having lower AUM. Which suggests that either the Indian schemes are yet to achieve the too big status or there is no such relationship exists in India. This opens a scope of further studies about testing of inverse relationship between fund size and performance.

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