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AN ANALYSIS OF PERFORMANCE PERSISTENCE IN INDIAN MUTUAL FUND USING HURST EXPONENT

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Abstract

We empirically investigated the presence of long memory in financial return series data of selected equity oriented mutual funds in India. The Hurst exponent, a non parametric test was used as the measurement of performance persistence to show presence of long memory. We used Net Asset Value (NAV) of 33 equity oriented growth based Indian mutual funds from different categories which showed a diversified picture of the mutual fund industry in India for the period 2003-2019. We empirically found that the degree of performance persistence is positive in case of selected funds and a few funds showed randomness or Brownian motion. The result suggested that the performance persistence exists in Indian mutual funds, applying the Rescaled Range method of Hurst exponent analysis.

Keywords: *mutual funds, performance persistence, rescaled range analysis, Hurst exponent, fractal*

1. INTRODUCTION

Investments are made to create wealth. People are always eager to maximise their return from investment. They may invest money for various reasons keeping in mind their needs and time horizon. But the need for money may arise at any point of time as it depends on future contingencies. Therefore they always need a steady return from their investment. This is only possible through purchasing very less risky assets like government securities. But investors may use diversification strategy to maximise his or her return. The diversification strategies may be applied in the capital market through mutual funds. Mutual funds are a collection of investable amounts from retail investors to maximize return by applying particular investment strategy. In case of Govt. Securities performance i.e return is very less variant from time to time but in case of mutual funds, investing in the equity market, this performance may persist or may not persist as the equity market is highly fluctuating and supports the random walk model.

It is not possible for general investors to always track the Net Asset Value(NAV) of the funds where they invested and to decide entry or exit points on the basis of equity market trend. Moreover frequent entry and exit will attract more transaction costs. So people perhaps invest in mutual funds for a longer period but redemption of their investment may occur at any point of time. So it is very important to judge whether performance of mutual funds persists. Performance persistence signifies a positive relation between the return of the different periods[1].In finance performance persistence means the performance of a mutual fund will also continue in the next period [2]. Investors use past returns as a reliable indicator of future performance of the selected mutual funds. So the past performance is a significant input for the investment decision[2]. The measure of Hurst exponent indicates degree of performance persistence of same price change patterns, and it is related to the weak-form of Efficient Market Hypothesis(EMH) as historical returns data are used for the performance persistence analysis.[3]

At present returns on mutual fund investment and its risk are of great importance of discussion to policy makers of funds as well as to the investors. One can calculate the investment risk by measuring volatility of funds price. Volatility in the NAV of the equity oriented mutual funds are directly related to the volatility of the equity market and this fluctuation of the equity market greatly depends on the flow of information infused in the equity market. The flow of new information comes in the market in a random way and the security price adjusted to reflect the new information.This volatility implies the risk involved in the investment. Many research works showed that the financial market is a non linear dynamic system, nonlinear time series having long term correlation, self similarity or trends[4]. So using standard statistical analysis methods of price volatility may not give correct results. Therefore we calculate the hurst exponent, Fractal Dimension Index which are non parametric tests to check self similarity and long range dependence of returns of the selected mutual funds.

Accordingly we empirically studied performance persistence of mutual funds in India using the Hurst exponent and Fractal Dimension Index. We also studied correlation between periods using Hurst exponent. Specifically, we test the hypothesis that there is no performance persistence in Mutual Funds in India.

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2. LITERATURE SURVEY

Hurst(1951)[5], developed a method to measure long term memory of a time series. It is based on estimation of the variable over time . This estimation is known as Hurst Exponent(H). Harold Edwin Hurst, who was a British hydrologist, studied 800 years of records for the storage capacity of the Nile reservoirs. He observed that there was a tendency of a high flood year to be followed by another high flood, and for a low flood year followed by another low flood. He pointed out the presence of long range dependence of water level in hydrology. According to the Hurst proposition , if Hurst Exponent = 0.5 would indicate the current value of the series would not depend on past values. If the value of H lies in the range $0<H<0.5$, the series is anti persistent i.e. the series is mean reversing characteristics. This mean if a value of the times series was very high in previous period, it may be reduced in the following period towards the mean value.This anti persistent i.e. mean reverting behaviour will increase when the value of H tends to zero. If the value of H lies in the range $0.5<H<1$, the series is persistent i.e. the values of the series rise and fall in upward and downward depending on past values. Such series apparently display trends for some time, but these apparent trends may be discontinued abnormally. But The power of continuity of trends may increases as the value of Hurst exponent increases towards the upper limit. According to Cheoljun Eon "Hurst Exponent represents a measurement which has information value useful for the prediction of future price changes"

When the observations of the series are independent of the previous observation the value of Hurst exponent expected to be equal to 0.5. Hurst found this value for the Nile river at 0.91 much larger which implies a larger variation of water flow than could be possible from a random walk.

Gursakal (2009)[6] studied the Hurst exponent using daily return for the Turkish stock market. They analysed the whole data set into two parts. First part(1994-2004) of the data set showed long range dependence and the second part (2004-07) showed less long range dependence in comparison to the first part.

Hurst exponent estimation of finding long range dependency or self similarity extended to the field of mutual fund. Priyadarshini and Chandra Babu (2010)[7] used Hurst exponent to evaluate performance persistence in selected six mutual funds and found correlation between the period of the selected equity oriented mutual funds with one year NAV of the funds. They observed all funds showed highly presence of long memory and the Fractal Dimension Index closer to 1 which implied that returns of all funds were not random.

Mitra(2011)[8] applied Range to Standard (R/S) ratio to analyse trend in various stock index prices on a smaller window size of 30 trading days and found the value of Hurst exponent closer to 0.5 and varied very widely from period to period. Hurst exponent value was used by Mitra(2012) [9] to forecast financial time series using 12 stock indexes of different countries. In his study he showed the indexes considering full series were efficient and showed randomness but when the series split into a smaller series then the hurst exponent varied from 0 to 1. He also studied the relation between hurst exponent and trading profits.

Biernacki(2012)[4] used the hurst exponent to find scaling effect in mutual funds return series in fifteen Polish mutual funds and estimated hurst exponent of the mutual funds ranging from 0.48 to 0.73 which signifies a certain degree of self similarity in fund returns.

Chu(2017)[10] examined performance persistence of the Vietnamese stock market(VN index)and Chinese stock market(SSEC index) and showed that Vietnamese stock market had anti persistent with Hurst exponent equals to 0.193 whereas in case of chinese stock market it was 0.3456 for the study period 2005-2014.

Mahalingam et al. (2012)[11] studied long range dependence of Indian stock market returns of BSE index using Hurst exponent and found a high degree of performance persistence.

There is no comprehensive literature of performance persistence available in the field of mutual fund industry in India. Although a very scant literature is available in performance persistence analysis or long range dependence analysis of Indian stock market as well as in Indian mutual funds. The present study has an objective to explore the performance persistence of selected mutual funds in India using hurst exponent.

3. DATA AND METHODS

3.1 Data: In this paper we used NAV of 33 growth oriented equity based Indian mutuaL funds. The funds are selected on the basis of Asset Under Management (AUM). In this paper we selected those mutual funds that were launched before 01.04.2003 and exist till 31.03.2019 to get continuity in the data set and have more than 500 crore AUM on 31.03.2019. On that day 671 mutual funds were in operation in India including dividend schemes. Here we selected only growth schemes as we found AUM of different growth schemes are very high than the dividend schemes as people are interested to maximise their wealth rather than regular cash payment through dividend schemes. Out of the selected funds 6 are large cap funds, 5 are from large & mid cap funds, 4 funds are from multi cap funds, 4 are from mid cap funds, 7 are ELSS funds, 1 dividend yield fund, 4 are from sectoral funds, 1 from focused funds and 1 from value funds category. The categorisation of the schemes are taken from a moneycontrol website. Finally, a sample of 33 mutual fund schemes are taken. Table 2 provides the list of the

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selected schemes which represent a diversified picture of various schemes of the mutual fund industry in India. Monthly returns of the schemes are used for the period 1st April 2003 to 31st march 2019.

3.2 Descriptive Statistics

Mean. Median, standard deviation, Skewness and kurtosis are calculated for descriptive statistics.

3.3 Augmented Dickey Fuller Test

Augmented Dickey Fuller Test (ADF test) is a test used in time series analysis to test a unit root in a series. The result of the test shows whether a time series is stationary or not. In this test the null hypothesis is that the series has unit root. The model specification of ADF test is given below.

$$\Delta y_t = \boldsymbol{\alpha} + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \ldots\ldots + \delta_p \Delta y_{t-p} + \varepsilon_t$$

here is a constant , β is the coefficient of time $\gamma$is the coefficient of the lag period and p is the lag period of the autoregressive process.

3.4 Measuring Hurst Exponent

There are many methods to calculate the Hurst exponent in literature. The two important methods of calculating Hurst exponent are a) Range to Scale and b) Detrended Fluctuation Analysis. The Range to Scale method is a very popular measure of Hurst exponent. This method is based on a study of the average rescaled range of cumulative deviation from mean value of the periods.

Step 1: We start with a time series having NAV of the selected funds for the specified period. The monthly return data is calculated by applying the following formula:

$$R_{pi} = (NAV_i - NAV_{i-1}) / NAV_{i-1} \quad \text{----------(1)}$$

Where R_{pi} is the monthly return of the selected scheme of i^{th} month, NAV_i is the net asset value of the selected scheme at the beginning of the i^{th} month and NAV_{i-1} is the net asset value of the selected scheme at the beginning of the $i\text{-}1^{th}$ month.

Step 2 : We divided the whole data set in various sub periods(k,n) ; each sub period has n observation and marked as sub period k. The mean returns ($M_{k,n}$) of every sub period is calculated by the following formula

$$M_{k,n} = 1/n \sum_{i=1}^{n} R_{pi}$$ (where k is the number of sub periods and

n is the length of the each sub periods) ----------(2)

Step 3: Now we calculate the trend adjusted return series by deducting the mean return ($M_{k,n}$) of each sub period from monthly returns of each sub period.

$$X_{k,n} = R_{pi} - M_{k,n} \qquad i= 1,2,\ldots..,n \quad \text{----------(3)}$$

Step 4: We calculate cumulative series of trend adjust return from equation (3) for each sub period

$$Y_{k,n} = X_{k,1} + X_{k,2} + \ldots\ldots\ldots\ldots\ldots + X_{k,n} \quad \text{----------(4)}$$

Step 5: Now we calculate Range($R_{k,n,}$) of cumulative series ($Y_{k,ni}$) for each sub period by taking the difference of maximum and minimum value of the cumulative series.

$$R_{k,n} = \text{Max}(Y_{k,1} + Y_{k,2} + \ldots\ldots\ldots + Y_{k,n}) - \text{Min}(Y_{k,1} + Y_{k,2} + \ldots\ldots\ldots + Y_{k,n}) \quad \text{--------(5)}$$

Step 6: Now we calculate Standard deviation ($S_{k,n}$) for each sub period

$$S_{k,n} = \sqrt{1/n \sum_{i=1}^{n} (Rpi - Mn)^2} \quad \text{----------(6)}$$

Step 7: In this step we calculate rescaled range ,

$$\left(\frac{R}{S}\right)_{k,n} = R_{k,n}/S_{k,n} \quad \text{----------(7)}$$

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Step 8: As per Hurst proposition, Hurst described that so called $(\frac{R}{S})_{k,n}$ statistics varies with n^H

i,e $(\frac{R}{S})_{k,n} \alpha\ n^H$ ----------(8)

So, Hurst exponent can be measured by solving the following equation

$(\frac{R}{S})_k = C.\ n^H$ ----------(9)

$\text{Log}\ (\frac{R}{S})_k = C + H\ \text{Log}\ (n)$ ----------(10)

So to calculate Hurst exponent we have to run OLS of the equation (10) for all the sub periods i,e if we fit Log $(\frac{R}{S})_k$ Vs. Log(n), the slope of the line will be the value of the Hurst exponent.

Here we calculated Hurst exponent by considering scale (n) as 12, 24, 36…...192 (16 sub periods) and 24,48,72,.....192 (8 sub periods)

3.5 Computation of Fractal Dimension Index (FDI)

In Chaos theory any event like the equity market which is apparently a random event that has some degree of predictability[12].Chaos is a non linear, dynamic that appears to be random. We can employ fractal here. Fractal may be defined as an object with self similarity having similar characteristics recur at increasing extent like snowflakes, coast line etc. It can be seen as an object or time series which appears similar across a range of scale. A time series can be compared 10 days time scale to a 100 days time scale and 100 days scale to 1000 days time scale. Each time frame or range may zigzag a little differently but when viewed from a distance they have similar attributes on each scale. So fractals come across everywhere in nature. The fractal dimension describes how an object will take its shape. If any objects are examined through a microscope we can see more details with the change in scale and in addition to this most objects in nature show self similarity like snowflakes. Similarly a time series of mutual funds NAV has a similar fractal pattern. In this way we can say such mutual funds performance persistence can be predicted with the application of a non linear, natural system using the Fractal geometry tool.

The Fractal Dimension Index (FDI) tool is used to determine the persistence or antipersistence of a time series. This tool applies the principle of chaos theory and fractals. By this indicator we can estimate the fractal dimension of the mutual fund's return using estimated Hurst exponent . FDI determines whether the performance persistence of a mutual fund exists. This tool is used by Harrold Edwin Hurst and Edgar Peter. A persistent time series is less jagged and has less reversal whereas an anti persistent time series has more jagged and has more reversal. The simple technique to use FDI is that if the value of this indicator equals 1.5 implies the series is completely random and if it deviates from 1.5 in either direction then we can say the series is trending and magnitude of trending depends on how far the indicator is deviating from 1.5. If FDI is closer to 2 the probability is higher that the next return will be in the opposite direction of the present return. If FDI is closer to 1 implies performance of the fund in one direction, that is the probability is higher that the next return will be in the same direction of the present return. This indicator gives advantage to the mutual fund investors because an investor does not want to invest in those funds whose FDI value is close to 1.5.

After calculation of Hurst exponent we can estimate FDI of the time series . It is calculated by the following formula:

$D = 2 - H$ ----------(11)

(where D is Fractal Dimension Index, 2 is used here because of two dimension, H is value of Hurst exponent)

3.6 Computation of correlation between periods

The correlation between periods can be calculated as follows:

$C_N = 2^{(2H-1)} - 1$ ----------(12)

A time series whose Hurst exponent is equals to 0.5 signifies the series is random and the correlation between periods is 0. If the Hurst exponent is more than 0.5 i,e the persistent time series, correlation between periods will be positive and vice versa. So it is also a measure of identifying the presence of long memory in time series[6]. C_N= 0.40 implies that 40% of the data is influenced by the past data.

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4. RESULTS

4.1 Analysis of Descriptive statistics:

From table 1 of descriptive statistics it can be seen that all selected return series of funds having skewness ranging between plus one to minus one showed the distribution are moderately skewed and average skewness is near about zero indicating the series is normally distributed. The average value of kurtosis is near to 3 indicating the distribution is approximately mesokurtic.

4.2 Analysis of ADF test:

The result of ADF test in respect to all return series of the funds from April 2003 to March 2019 is conducted and presented in table 2. According to the table, the t statistics of all the funds is lesser than critical value -3.48 at 1 % level of significance. So we reject the null hypothesis. The overall analysis of the ADF test showed that none of the return serieses has unit root. So the return serieses are stationary at level.

4.3Analysis of Hurst exponent

In this paper we estimated the Hurst exponent using rescaled range analysis method for 33 selected equity oriented Indian growth mutual funds. We observed 4 funds(12%) having Hurst exponent value less than 0.5 (Table 3) which signified anti persistence of their performance. Current period performance is directed in the opposite direction of the previous period performance but the degree of anti persistence is very low i.e. near to 0.480 which means the Hurst exponent not highly afar from 0.5 which mean observations are independent and follow random walk or brownian motion. We have also observed that 22 funds (67%) have Hurst exponent between 0.5 to 0.6 and 7 funds (21%) have Hurst exponent more than 0.6. In total 88% of selected funds having more than 0.5 showed performance persistence. All these funds are characterised by the presence of long memory i.e a positive change in the current period is continued in the next period. The results are the same in both the cases of sub periods. Sundaram Diversified equity fund has the highest H value showing high degree of performance persistence and 30% of the data are influenced by past data. On average Hurst exponent value in both the cases is 0.57 which shows there is performance persistence in indian mutual funds but the degree of performance persistence is not very high. On average Fractal Dimension index of the funds near to 1.43 which implies that the mutual funds returns are not random and investors may get a positive return in the current period if return is positive in the past period as 10% of the return data are influenced by the past data.

5. CONCLUSION

We empirically investigated the degree of performance persistence of selected equity oriented mutual funds in India. The Hurst exponent was used as the measurement of degree of performance persistence, in addition Fractal Dimension Index and correlation between periods also calculated using Hurst exponent. In the test hypothesis established that there is no performance persistence is rejected as 88% of the selected mutual funds showed more or less some degree of performance persistence under both time periods of the study. Priyadarshini(2010)[7] found that the selected Indian mutual funds had high degree performance persistence using one year data. The findings of the present study do not confirm the mentioned findings. Though for future work we need to study other methods of performance persistence like contingency table approach of Brown and Goetzmann(1995)[13] and other statistical methods of studying presence of long memory in financial time series. The result of the present study may differ if the length of the sub period is changed and frequency of data is changed; that is, using daily return instead of monthly return for analysis.

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7. Tables:

Table :1

	Descriptive Statistics of Monthly return of the funds						
	Mean	Median	Max	Min	SD	Skewness	Kurtosis
ASL Frontline Equity Fund	1.53	1.84	31.64	-21.95	6.16	0	4
HDFC Top100 Equity Fund	1.76	1.84	29.52	-23.21	6.7	0.1	2.12
Franklin India Bluechip Equity Fund	1.48	1.81	25.76	-22.59	6.04	-0.27	2.44
DSP Top 100 Equity Fund	1.49	1.51	24.07	-20.39	6.16	-0.22	1.57
Kotak Bluechip Equity Fund	1.47	1.53	24.69	-24.3	6.11	-0.38	2.42
Tata Largecap Equity Fund	1.65	1.41	30.4	-23.13	6.3	-0.06	3.37
DSP Equity Opportunity Fund	1.68	2.26	26.26	-22.69	6.43	-0.32	1.92
Nippon India Vision Equity Fund	1.56	1.24	31.58	-20.79	6.96	-0.04	1.81
ASL Equity Advantage Fund	1.48	1.63	36.94	-23.95	7.04	0.07	3.84
ICICI Large & Mid Cap Equity Fund	1.48	1.46	21.24	-22.99	6.08	-0.5	1.96
HDFC Growth opportunity Equity Fund	1.28	1.55	29.15	-25.13	6.43	-0.24	2.87
HDFC Equity Fund	1.78	2	33.68	-25	6.88	0.01	2.86
Franklin India Equity Fund	1.67	2.15	29.25	-22.76	6	-0.2	3.26
ASL Equity Fund	1.77	2.25	34.36	-22.84	6.94	-0.04	3.01
Baroda Multicap Equity Fund	1.21	0.93	30.07	-24.09	6.41	-0.01	2.77

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Nippon India growth fund	1.84	2.03	33.96	-22.95	7.15	0.05	2.07
Franklin India Prima fund	1.81	2.42	36.59	-26.79	7.13	0.02	4.15
Sundaram Midcap Equity Fund	2.03	2.46	51.66	-24.15	7.91	0.92	8.18
ASL Midcap Equity Fund	1.78	2.37	43.87	-26.91	7.32	0.39	6.11
HDFC Taxsaver Fund	1.71	1.58	29.25	-26.06	6.64	-0.08	2.4
SBI Magnum Tax gain Equity Fund	1.46	1.55	30.09	-24.52	7.24	-0.4	2.24
ICICI Long Term Tax Gain Fund	1.87	1.84	30.84	-25.31	7.16	-0.08	2.05
Franklin India Taxshield	1.62	1.75	25.86	-21.3	5.92	-0.25	2.53
Sundaram Diversified Fund	1.66	1.89	32.8	-18.19	6.85	0.21	1.98
UTI Equity Fund	1.62	1.32	22.15	-21.12	5.88	-0.28	1.63
HDFC Long term advantage Fund	1.74	2.02	28.79	-23.32	6.21	-0.04	2.72
ASL Dividend Yield Fund	1.42	1.34	31.59	-22.01	6.41	0.04	3.44
ASL MNC Regular Fund	1.81	1.96	18.29	-22.07	5.64	-0.52	1.88
Nippon India Banking	1.85	2.09	40.84	-21.44	8.18	0.48	2.52
SBI Magnum ESG Fund	1.36	1.57	30.63	-24.36	6.49	-0.15	3.13
Franklin India Opportunity Fund	1.45	1.74	29.14	-23.58	6.66	-0.31	2.27
Sundaram Select Focus Fund	1.43	1.6	33	-21.25	6.68	0.25	3.18
HDFC Capital Builder Fund	1.86	2.2	27.53	-25.51	6.48	-0.31	2.47
Average	1.62	1.79	30.77	-23.23	6.62	-0.07	2.88

Table 2

Augmented Dickey Fuller Test		
	t statistics	P value
ASL Frontline Equity Fund	-12.711	0.0000
HDFC Top100 Equity Fund	-11.91	0.0000
Franklin India Bluechip Equity Fund	-12.097	0.0000
DSP Top 100 Equity Fund	-12.604	0.0000
Kotak Bchip Equity Fund	-12.516	0.0000
Tata Largecap Equity Fund	-12.067	0.0000
DSP Equity Opportunity Fund	-11.869	0.0000
Nippon India Vision Equity Fund	-12.324	0.0000
ASL Equity Advantage Fund	-12.191	0.0000
ICICI Large & Mid Cap Equity Fund	-12.496	0.0000
HDFC Growth opportunity Equity Fund	-11.972	0.0000
HDFC Equity Fund	-11.769	0.0000
Franklin India Equity Fund	-12.243	0.0000
ASL Equity Fund	-11.886	0.0000
Baroda Multicap Equity Fund	-12.723	0.0000
Nippon India growth fund	-11.122	0.0000
Franklin India Prima fund	-10.947	0.0000
Sundaram Midcap Equity Fund	-11.646	0.0000
ASL Midcap Equity Fund	-11.145	0.0000

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HDFC Taxsaver Fund	-11.374	0.0000
SBI Magnum Tax gain Equity Fund	-12.641	0.0000
ICICI Long Term Tax Gain Fund	-11.391	0.0000
Franklin India Taxshield	-11.875	0.0000
Sundaram Diversified Fund	-12.239	0.0000
UTI Equity Fund	-12.237	0.0000
HDFC Long term advantage Fund	-13.071	0.0000
ASL Dividend Yield Fund	-13.071	0.0000
ASL MNC Regular Fund	-12.249	0.0000
Reliance Banking	-12.184	0.0000
SBI Magnum ESG Fund	-12.463	0.0000
Franklin India Opportunity Fund	-11.993	0.0000
Sundaram Select Focus Fund	-12.576	0.0000
HDFC Capital Builder Fund	-11.346	0.0000

Table 3

H<0.5	0.5<H<0.6	H>0.6	Total Funds
Case A: When sub periods considered as 12,24,36,…….,192			
4	22	7	33
Case B: When sub periods considered as 24,48,72…….,192			
4	22	7	33

Table 4

Sl. No	Name of Fund	Hurst exponent Case A	Correlation between periods	F Index	Hurst exponent Case B	Correlation between periods	F Index
1	ASL Frontline Equity Fund	0.573	0.106	1.427	0.56	0.087	1.44
2	HDFC Top100 Equity Fund	0.55	0.072	1.45	0.529	0.041	1.471
3	Franklin India Bluechip Equity Fund	0.489	-0.015	1.511	0.481	-0.026	1.519
4	DSP Top 100 Equity Fund	0.576	0.111	1.424	0.587	0.128	1.413
5	Kotak Bchip Equity Fund	0.661	0.250	1.339	0.701	0.321	1.299
6	Tata Largecap Equity Fund	0.57	0.102	1.43	0.566	0.096	1.434
7	DSP Equity Opportunity Fund	0.589	0.131	1.411	0.598	0.146	1.402
8	Nippon India Vision Equity Fund	0.552	0.075	1.448	0.566	0.096	1.434
9	ASL Equity Advantage Fund	0.563	0.091	1.437	0.563	0.091	1.437
10	ICICI Large & Mid Cap Equity Fund	0.509	0.013	1.491	0.524	0.034	1.476
11	HDFC Growth opportunity Equity Fund	0.558	0.084	1.442	0.572	0.105	1.428
12	HDFC Equity Fund	0.521	0.030	1.479	0.51	0.014	1.49
13	Franklin India Equity Fund	0.573	0.106	1.427	0.595	0.141	1.405

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14	ASL Equity Fund	0.628	0.194	1.372	0.671	0.268	1.329
15	Baroda Multicap Equity Fund	0.563	0.091	1.437	0.582	0.120	1.418
16	Nippon India growth fund	0.556	0.081	1.444	0.641	0.216	1.359
17	Franklin India Prima fund	0.587	0.128	1.413	0.544	0.063	1.456
18	Sundaram Midcap Equity Fund	0.595	0.141	1.405	0.588	0.130	1.412
19	ASL Midcap Equity Fund	0.579	0.116	1.421	0.574	0.108	1.426
20	HDFC Taxsaver Fund	0.625	0.189	1.375	0.625	0.189	1.375
21	SBI Magnum Tax gain Equity Fund	0.538	0.054	1.462	0.502	0.003	1.498
22	ICICI Long Term Tax Gain Fund	0.553	0.076	1.447	0.543	0.061	1.457
23	Franklin India Taxshield	0.556	0.081	1.444	0.554	0.078	1.446
24	Sundaram Diversified Fund	0.675	0.275	1.325	0.721	0.358	1.279
25	UTI Equity Fund	0.645	0.223	1.355	0.591	0.134	1.409
26	HDFC Long term advantage Fund	0.586	0.127	1.414	0.562	0.090	1.438
27	ASL Dividend Yield Fund	0.483	-0.023	1.517	0.463	-0.050	1.537
28	ASL MNC Regular Fund	0.493	-0.010	1.507	0.496	-0.006	1.504
29	Reliance Banking	0.538	0.054	1.462	0.488	-0.016	1.512
30	SBI Magnum ESG Fund	0.45	-0.067	1.55	0.503	0.004	1.497
31	Franklin India Opportunity Fund	0.539	0.056	1.461	0.522	0.031	1.478
32	Sundaram Select Focus Fund	0.685	0.292	1.315	0.694	0.309	1.306
33	HDFC Capital Builder Fund	0.616	0.174	1.384	0.65	0.231	1.35
	Average	0.569	0.103	1.431	0.572	0.109	1.428