

Market-timing Performance of the Open-ended Income and Growth Mutual Fund Schemes: An Empirical Study

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Abstract

The present study seeks to examine the market-timing performance of the open-ended income and growth mutual fund schemes' managers in India over the period from January 2001 to December 2011. The data for the proposed study are obtained from the website of Association of Mutual Funds in India (AMFI). Here, Treynor and Mazuy model is used. However, the empirical findings bring out that the market-timing performances of both types of schemes are not statistically significant. It is also observed from the analysis that eight schemes are statistically significant. Consequently, the average market-timing performance is also unsatisfactory for the income (0.007) as well as growth (-0.095) schemes. But, the mean test reveals that they are approximately equal performers. On the whole, owing to the insignificant market-timing performance, the fund managers of both types of schemes have failed to earn abnormal rate of return by applying the strategy of market outguessing from the volatile capital market. This speaks against the superior market-timing ability of the open-ended mutual fund managers in India.

Keywords: Mutual Fund, Performance Evaluation, Market-timing, Treynor and Mazuy Model, BSE Sensex.

1. Introduction

The traditional investment avenues like bank deposit, post-office saving, investment in Govt. securities etc are

not much attractive to the investors today. On the other hand, it is well known that the Indian investors do not want to invest in share market because of high risk and fear of capital loss. They are defensive in nature and they do not have adequate knowledge in the capital market. However, the mutual fund organisations can help the investors to earn higher rate of return (but less than share market) at comparatively lower degree of expected risk by means of offering appropriate mutual fund schemes. The rate of return will be higher if the mutual fund managers are conscious about the general market movement (hold high beta portfolios when the market is upward and low beta portfolios when the market is downward). This can be possible by means of superior market outguessing by the efficient mutual fund managers during the market swings in volatile capital market condition. This is in fact, an important task of the successful mutual fund managers. In addition to this, it is accepted that superior market-timing ability provides to the investors higher rate of expected return and vice-versa. So, keeping this in mind, the proposed study aims to examine the comparative market-timing performances of the income and growth schemes of the open-ended mutual fund managers in India.

In order to accomplish this objective, the present study is designed as follows: after the brief introduction presented in Section 1, the literature survey will be presented in Section 2. Section 3 highlights the specific objectives of the study which are followed by data description and methodology in Section 4 and 5 respectively. Section 6 presents analysis and interpretation of the results and the study ended with conclusion in Section 7.

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2. Literature Review

Truly speaking, the literature on mutual fund performance around the world is vast. A large number of research works are conducted by the academicians as well as professionals for the evaluation of mutual fund performance. Some of the important research works regarding this research study are discussed below:

In 1966, Treynor and Mazuy develop a CAPM-based performance evaluation model and apply it on 57 mutual funds. Their study report is against positive market-timing performance. In 1972 Eugene F Fama, develops an alternative model for evaluating investment performance. The earlier works, which are made by Sharpe, Treynor, Jensen etc evaluate portfolio performance in two dimensions namely risk and return. But, Fama suggests a finer breakdown of investment performance namely stock-selection, market-timing, diversification and risk bearing components. Most of the previous works are concentrated on the single period but, Fama presents his model not only on single period but also on multi-period. Kon and Jen (1978) examine the market-timing ability, selectivity, and market efficiency of 49 mutual funds with complete monthly return data over the period from January 1960 to December 1971. Their result supports strong form of market efficiency in respect of market-timing but, in respect of selectivity, the mutual fund managers shown positive, as well as negative evidences. Henrikson and Merton (1981) develop another model for the evaluation of market-timing performance by employing both parametric and non-parametric statistical procedures. Merton (1981) also develops an equilibrium theory of market forecasting. He observes that a substantial additional average rate of return can be earned by applying superior market timing ability. In 1983 Kon proposes a frame work for measuring the market-timing ability of the investment managers and analyzes 37 mutual funds (each with 198 months of total rate of return data based on NAV) over the period from January 1960 to June 1976. The result of the study reports that the individual mutual funds exhibit significant positive timing ability. In 1984, Chang and Lewellen examine the stock-selection and market-timing ability of the 67 investment managers. They use parametric statistical procedure developed by Henrikson and Merton. They study reports that the managers are not able to timing the market and also unable to select superior stocks. Similarly, Henrikson

(1984) also analyzes the market-timing performance of the mutual fund managers over the period from 1968 to 1980 by taking into account 116 mutual fund schemes. The study reports no market-timing ability of the managers. Jaganathan and Korajczyk (1986) examine the market-timing ability of the managed portfolios over the period from January 1926 to December 1981. They demonstrate in favour of making artificial market-timing by investing in option like securities. But, the study reports no market-timing ability due to poorer selection of stocks. Lee and Rahaman (1990) examine the market-timing ability and the selectivity performance of the mutual fund managers. They use simple regression technique and finally the result of the study supported some positive evidence of market-timing ability and stocks selectivity performance of the mutual fund managers. In 1996 Graham and Harvey examine the market-timing performance over the period from 1980 to 1992. The study reports little evidences on the market-timing performance. Backer, Connie, Ferson, Wayne, Mayers, David, Schill (1999) also examine the market-timing performance of the investment managers. They use utility function. The study reports that the fund managers are unable to exhibit superior market-timing performance. Drew, Veeraraghvan, Wilson (2005) analyze the market-timing and selectivity performance of the Australian equity super annuation fund managers over the period from 1991 to 2000. The study reports that the managers are unable to forecast the market at right time and also unable to select stocks over the study period. M. Jaydev (1996) examines the diversification, market-timing and selectivity performance of two growth oriented schemes in India over the period from June 1992 to March 1994. He considers monthly NAV for his study and applies Jensen, Treynor and Sharpe models. The study reports that the performance of market-timing, diversification, and selectivity are found to be poor. Rao and Venkateswarlu (2000) examine the market-timing ability of the nine schemes of UTI mutual fund. The study reports that only one scheme out of nine schemes displayed the positive market-timing performance. Similarly, Amitabh Gupta (2002) conducts a brief study for the evaluation of investment and also market-timing performance of the mutual fund managers in India. The study reports against presence of market-timing performance. Ramesh Chander (2002) examines the components of the 34 randomly selected mutual fund schemes across the fund characteristics namely nature, sponsorship and investment objectives over the

period from January 1994 to December 1998 by using Fama's decomposition theory. The study reports that the overall performance is not satisfactory but the selectivity performance was positive and the market timing performance was negative. Irissappane, Murugaesan and Chandrasekara (2003) examine the portfolio selection skills and market timing abilities of 34 mutual fund managers managed by UTI, LIC and Can bank mutual funds over the 10 years period by employing Treynor and Mazuy and Henrikson and Merton models. The study reports that, no market-timing abilities are found in Indian mutual fund managers. A study by Tripathy (2006), examines the market-timing abilities of 31 tax planning schemes in India over the period from December 1995 to January 2004 by employing Treynor and Mazuy, and Henrikson and Merton models. The study reports against of positive market ability. Choudhary (2007) examines the components of mutual fund performance of 50 equity investment schemes over the eight years period (January 1998 – December 2005) by employing Fama's decomposition theory. The study reports superior stock selection skills, risk bearing and diversification activities by the fund managers but the negative market-timing abilities are found during the study period.

From the above literature review, it is seen that the market-timing performances of the mutual fund managers are not satisfactory. It is also noticed that, most of the earlier studies are based on very limited number of samples and also considered very short period of time. By using this short period with limited data it may not be said that the market-timing performance of the whole mutual fund industry is unsatisfactory. For solving this problem, generally a large number of data as well as long period of time is needed, and only then the result that will derive from the data may be partially correct. Therefore, at the primary stage 176 income schemes and 97 growth schemes are selected. The study period is chosen very long (11 years) that starts from January 2001 to December 2011 (calendar year).

3. Objective of The Study

The present study examines the market-timing performance of the income as well as the growth schemes of the open-ended mutual fund managers in India during a period of ten (11) years. It is assumed that the managers of those schemes will achieve superior market-timing performance and expected that the managers will offer to

the investors' abnormal rate of expected return.

More specifically the objectives can be stated as:

1. To examine the macro-forecasting (market-timing) performance of the income and growth schemes of the open-ended mutual fund managers.
2. To test whether the income schemes are well market-forecaster than that of the growth schemes or vice versa.

4. Data Description

The monthly closing net asset value (NAV) is considered for the proposed study. The study period is from January 2001 to December 2011 (11 years or 132 months). For this purpose, at primary stage 273 open-ended mutual fund schemes (income – 173 and growth – 97) are taken into consideration and finally 143 schemes are selected after the exclusion of those schemes which are found to offer a return below the risk free rate. Finally, 56 schemes are considered out of 143 schemes (39.16% of 143) and 87 out of 97 growth schemes (60.84% of 143). Out of 143 schemes, 59 schemes have completed seven year's period and the remaining schemes (84) have above three years of existence in the mutual fund industry. The monthly yield of seven years government dated securities is used as a risk free rate because it is considered as totally risk free and accepted by all investors in India. The monthly closing values of BSE Sensex are considered as the market surrogate and largely used by the Indian researchers and professionals. The data on the above variables are collected from the following sources:

1. Monthly closing NAV (net asset value) – website of Association of Mutual Fund in India, website of Security Exchange Board of India and also from websites of individual mutual fund schemes available in the Indian market. The information of the risk-free rate of return is gathered from the RBI report on currency and finance.
2. The index values are collected from the website of Bombay Stock Exchange.

5. Methodology

Investors invest in the mutual fund schemes with the expectation of earning higher rate of return with the minimum possible degree of risk. The rate of return will be higher if the mutual fund managers are able to predict

the market movement correctly. Therefore, the fund managers need to have the ability to forecast accurately the future state of the macro-economic aspects. In order to assess such ability of the fund managers an appropriate measure is needed. Treynor and Mazuy have developed a portfolio performance evaluation model, which is applied in this study for testing the market-timing performance. The model is defined as:

$$(R_i - R_m) = \alpha_i + \beta_i (R_m - R_f) + \gamma_i (R_m - R_f)^2 + e_i$$

where, R_i = Rate of return of i^{th} scheme; R_m = Market rate of return (BSE Sensitive index); R_f = risk free rate; e_i = error term with zero mean (0) and constant standard deviation.

The variables, which are considered for the above regression model, are excess scheme's rate of return (dependent variable), excess market rate of return and excess square market rate of return as independent variables. The parameters of the above model are α_i , β_i and γ_i . Here, coefficient of excess squared market return (gamma) is considered as a numerical measure of market-timing performance of the mutual fund managers. This gamma coefficient will be positive if the mutual fund managers are efficient in market-timing activity and the value of gamma coefficient must be greater than zero. If the value of gamma coefficient is statistically significant, it is generally expected that the mutual fund managers are superior in market-timing activity and the gamma coefficient has been tested with 5% level of significance by applying 't' test with an alternative hypothesis which is statistically significantly greater than zero. The hypotheses are as under:

$$H_0: \gamma_i = 0$$

$$H_a: \gamma_i > 0$$

Application of this model requires the computation of the monthly rate of return of the open-ended mutual fund schemes and the market rate of return.

The computation of monthly rate of return (R_i) of the open-ended mutual fund scheme is given as:

$$R_i = \frac{Nav(t) - Nav(t-1)}{Nav(t-1)} * 100$$

where, R_i = Return of the i^{th} mutual fund scheme.

$Nav(t)$ = Net asset value at time t (current period).

$Nav(t-1)$ = Net asset value at time $t-1$ (previous period)

Similarly, the computation of market rate of return (R_m) is given as:

$$R_m = \frac{Market\ index(t) - Market\ index(t-1)}{Market\ index(t-1)} * 100$$

where, R_m = Return on market index (BSE Sensitive index)

Market index (t) = Market index at time t (current period)

Market index ($t-1$) = Market index at time $t-1$ (previous period)

The value of systematic risk is computed by applying the market model as under:

$$R_i = \alpha_i + \beta_i R_m + e_i$$

In this study, mean test is applied for the selection of better type of schemes according to their market-timing performances. The hypotheses are as under:

H_0 : average market timing performance of income scheme = average market timing performance of growth schemes

H_a : average market timing performance of income scheme \neq average market timing performance of growth schemes.

If H_a is accepted then the second test will be applied here:

H_0 : average market-timing performance of the income scheme = average market-timing performance of the growth scheme.

H_a : average market-timing performance of the income scheme $>$ average market-timing performance of the growth scheme.

OR H_a : average market-timing performance of the growth scheme $>$ average market-timing performance of the income scheme.

In this study it has also been examined the strength of relationship between the market-timing performance and schemes' rate of return by applying Pearson's correlation coefficient.

Table 1: Market-Timing Performance of Income Scheme (Open-ended)

NO.	SCHEME NAME	β_i	t -value	γ_i	t -value	R_i
1	Alliance short term fund-growth	0.302	5.947*	0.005	1.037	0.2774
2	Alliance income fund-Growth	0.329	5.562*	0.005	0.813	0.9693
3	Alliance income fund-54EA-Gr	0.329	5.551*	0.005	0.869	1.0746
4	Alliance income fund-54EB-Gr	0.292	6.483*	0.005	1.140	0.8979
5	Alliance monthly income-Gr	0.341	8.162*	0.004	0.851	0.7737
6	Birla MIP-plan C (Gr)	0.325	7.617*	0.004	0.964	0.8345
7	Birla income plus-retail(Gr)	0.296	6.525*	0.005	1.196	0.5637
8	FT India monthly income pl-gr	0.341	8.182*	0.004	1.010	0.5359
9	Templeton monthly income pl-g	0.340	8.469*	0.005	1.237	0.4720
10	Temple India income build a/c -gr	0.294	6.359*	0.006	1.259	0.5048
11	Templeton India income fund-gr	0.283	6.396*	0.005	1.210	0.5775
12	Principal income fund-gr.pl-growt	0.287	5.745*	0.007	1.453	0.4866
13	Principal depo fund-pl 54EA/EB	0.263	5.224*	0.005	1.190	0.5395
14	UTI senior citizen unit plan	0.427	7.263*	0.003	0.473	0.5353
15	UTI-mahila unit scheme(UMS)	0.256	4.392*	0.001	0.087	0.5214
16	UTI-bond fund-gr (rep.aft.6 mon)	0.291	6.562*	0.006	1.385	0.5314
17	UTI-retirem benefit pension fund	0.302	4.912*	0.006	0.960	0.5698
18	SBI magnum monthly inc pl-growt	0.297	6.545*	0.004	0.807	0.6350
19	SBI magnum income fund-growth	0.297	6.584*	0.013	1.956**	0.7732
20	Reliance mtf-retail-gr.pl-gr.opti	0.264	6.328*	0.005	1.229	0.7652
21	Reliance short term fund-growth	0.338	5.879*	0.003	0.503	0.5490
22	Rel inco fund retail pl-gr.pl-gr.opt	0.299	6.742*	0.005	1.219	0.3926
23	Libra bond fund-dividend	0.332	6.499*	0.007	1.398	0.3936
24	Libra bond fund-growth	0.334	6.456	0.007	1.466	0.5445
25	Il&fs bond fund-stp-growth	0.264	3.585*	0.000	0.035	1.2353
26	Il&fs bond fund-bonus plan	0.283	4.516*	0.004	0.623	0.4769
27	JM short term fund-growth	0.345	6.894*	0.003	0.715	0.4774
28	JM income growth-bonus option	0.278	6.230	0.004	0.855	1.0588
29	Prudent ICICI fixed maturit pl-yrly	0.265	4.457*	0.005	0.829	1.4991
30	Prudential ICICI fmp yrly series	0.228	3.953*	0.000	0.026	0.7308
31	Prudential ICICI fixed mat pl-qr	0.269	3.569*	0.002	0.251	0.7916
32	Prudential ICICI income pl-gr.op	0.285	6.271*	0.004	0.982	0.7878
33	Prudential ICICI mip-div-quart	0.426	8.439*	0.005	1.240	0.9763
34	Prudential ICICI mip-cum	0.242	2.468**	0.003	0.252	0.7625
35	GSSIF-ST-Growth	0.267	6.523*	0.005	1.319	0.5576
36	GSSIF-Growth	0.292	6.464*	0.005	1.065	2.1495
37	Sun f&c monthly income-growth	0.268	4.233*	0.001	0.115	2.2358
38	Sun f&c mon val fud-bnd opti-gr	0.247	3.826*	0.001	0.166	0.6231
39	HDFC income fund-growth	0.335	6.196*	0.003	0.684	0.6124
40	HDFC short term pl-growth	0.331	6.434*	0.004	0.762	0.6222
41	BOB income fund-div.plan	0.295	6.650*	0.002	0.519	0.6706
42	BOB income fund-growth	0.298	6.617*	0.002	0.544	0.7820
43	Can income – growth plan	0.324	6.211*	0.004	0.819	0.6999

NO.	SCHEME NAME	β_i	t-value	γ_i	t-value	Ri
44	Can cigo-growth plan	0.405	9.246*	0.000	0.039	0.5576
45	Sahara income fund-growth	0.323	6.692*	0.003	0.754	0.5022
46	Sahara short term plan-growth	0.316	5.234*	0.007	1.199	0.6754
47	DBS Chola triple ace-regular-cum	0.279	6.578*	0.016	1.985**	0.2983
48	Escorts income bond-dividend	0.415	5.483*	0.003	0.451	0.6729
49	Escorts income bond-growth	0.326	3.247*	0.001	0.142	0.6072
50	Escorts income plan-growth	0.267	5.932*	0.005	1.196	0.6660
51	Kotak bond-deposit-growth	0.288	6.272*	0.003	0.704	0.5828
52	Kotak bond-regular-growth	0.293	6.717*	0.005	1.204	0.6816
53	LIC MF bond fund-growth	0.282	6.329*	0.005	1.063	0.2606
54	Tata income fund-growth	0.269	5.826*	0.006	1.319	0.7568
55	Sundarm bnp Parib bond saver-gr	0.285	6.359*	0.001	0.166	0.5978
56	PNB debt fund-growth	0.345	6.150*	0.002	0.283	0.9444

6. Result and Interpretation

One of the important tasks of the mutual fund managers among the various tasks is macro-forecasting or prediction of general market movement correctly. Macro-forecasting means forecast of general market movement or hold high beta portfolios when the market is upturn and hold low beta portfolios when the market is downturn. But, in the real world, market is completely volatile and as such, it is very difficult to predict the market at right time. From the literature survey, it is seen that, most of them (managers) are losers. It is generally believed that timely market forecast offers to the investors' higher rate of return. A superior manager tries to forecast the market when the stocks outperform than that of the risk free rate ($R_m > R_f$) and conversely, when the risk less rate outperforms the stocks ($R_f > R_m$). This is the secret strategy of market-timing or macro-forecasting performance. The market-timing performance is tested by applying the Treynor and Mazuy model (1966). The coefficient of excess squared market return (γ_i) is considered as market-timing performance of the mutual fund managers. The results of macro-forecasting performance are presented in Table 1 and Table 2 for both types of open-ended schemes (income and growth) respectively.

The market-timing performances of 56 open-ended income schemes are shown in Table 1. The beta coefficients (systematic risk) of all the schemes are found to be positive and statistically significant. It is seen from Table 1 that all the schemes have offered positive market-timing performances. The positive market-timing performance is

found to be 100%. It is observed that two schemes out of 56 schemes have offered statistically significant superior market-timing performance. The names of the schemes are SBI magnum income fund-growth and DBS Chola triple ace-regular-Cumulative respectively. As a result, the percentage of superior market-timing performance is found to be 2.57%. The correlation between market-timing performance (γ_i) and the scheme rate of return is found to be negative (-0.1988) for the income schemes and the average market-timing performance is also found to be very low (0.004). From the above, it may be concluded that the market-timing performances of the open-ended income schemes are very unsatisfactory.

The market-timing performance of the growth schemes (87) is presented in Table 2. The market-timing performances of forty-seven (47) schemes are found to be positive and the remaining forty (40) schemes are found negative. The percentage of positive market-timing performance is 54.02. However, only seven schemes out of 47 schemes have offered superior market-timing performance. The names of the schemes are Can index-dividend (Serial No. 11), Can Index-Growth (Serial No. 12), ING Vysya Equity fund-dividend option (Serial No. 21), Sun F&C resurgent India Equity fund (Serial No. 25), Principal equity fund-growth (Serial No.29), Tarus discovery fund (Serial No.63) and UTI Sunder (Serial No.70). These seven (7) schemes have offered to the investors' comparatively higher rate of returns than that of the others. The percentage of superior market-timing performance is 14.89. The correlation coefficient between market-timing performance (γ_i) and the schemes' rate of return is found to be negative (-0.1439) for the growth

Table 2: Market-Timing Performance of Growth Schemes (Open-ended)

NO	SCHEME NAME	β_i	t-value	γ_i	t-value	Ri
1	Alliance basic industries fund-dv	0.512	4.295**	0.017	1.587	2.9795
2	Alliance basic industries fund-gr	0.463	3.649**	0.010	0.840	3.5673
3	Alliance frontline equity fund-dv	0.778	7.741**	-0.010	-1.134	2.6590
4	BOB growth fund-dividend plan	0.778	6.954**	-0.012	-1.159	2.6274
5	BOB growth fund-growth plan	0.626	6.464**	0.002	0.246	2.4242
6	DBS Chola growth fund-cummulativ	0.814	9.227**	0.006	0.664	2.4181
7	DBS Chola growth fund-qurt.dv	0.748	9.158**	0.000	-0.024	1.3382
8	Canequity diversified-bonus	0.680	7.241**	-0.020	-2.276	2.1964
9	Canequity diversified-growth	0.473	1.886*	-0.049	-1.779	4.1677
10	Canequity diversified-income	0.661	7.569**	-0.021	-2.468	2.1748
11	Can index-dividend	0.873	5.854**	0.027	1.982**	2.2413
12	Can index-growth	0.817	12.14**	0.017	2.843**	3.1449
13	DBS Chola mid cap fund-growth	0.727	6.857**	0.012	1.094	3.2789
14	DBS Chola mid cap fund-div	0.750	5.879**	0.009	0.682	2.6354
15	JM equity fund-dividend	0.837	7.215**	-0.003	-0.241	1.7756
16	JM equity fund –growth	0.847	13.09**	-0.008	-1.453	2.2375
17	Escorts growth plan-div.option	0.663	5.794**	0.000	0.024	1.6344
18	Escorts growth plan-gr.option	0.660	3.589**	-0.019	-1.045	3.5476
19	Escorts opportunities fund-div	0.553	10.75**	0.000	0.038	1.7484
20	Escorts opportunities fund-growt	0.480	7.585**	0.002	0.272	1.8721
21	ING Vysya equity fund-div option	0.628	4.275**	0.025	2.362**	1.4232
22	ING Vysya equity fund-gr.option	0.269	2.367**	-0.005	-0.272	2.7339
23	DSP meril lnch top 100 eqty fnd-dv	0.730	6.845**	-0.009	-0.888	2.3406
24	DSP meril lynch top 100 eqty fnd-gr	0.847	10.27**	0.000	-0.054	4.2859
25	Sun f&c resurgent Ind equity fund	0.768	6.634**	0.025	2.003**	3.3252
26	Bonanza exclusive gr.scheme	0.791	8.246**	-0.014	-1.518	2.1945
27	Franklin India fund-nifty plan	0.740	11.79**	0.002	0.351	2.1687
28	Franklin pharma fund-growth	0.635	6.857**	-0.005	-0.556	1.8897
29	Principal equity fund-growth	0.266	2.776**	0.025	2.770**	1.7118
30	Principal growth fund-div.opt	0.696	9.943**	-0.003	-0.440	1.7518
31	Principal growth fund-growth plan	0.771	9.743**	0.000	-0.027	2.2638
32	Prudential ICICI FMCG pl-dv.opt	0.664	5.833**	0.000	-0.029	3.2461
33	Prudential ICICI FMCG plan-gr.opt	0.560	6.192**	-0.002	-0.233	2.3546
34	Prudetial ICICI power plan-growth	0.703	9.496**	-0.009	-1.294	3.6724
35	Alliance buy India fund-div	0.575	5.263**	-0.007	-0.606	2.4621
36	Alliance buy India fund-growth	0.553	5.173**	-0.001	-0.123	2.3414
37	Alliance equity fund-dividend	0.820	8.019**	-0.005	-0.539	1.5581
38	Alliance equity fund-growth	0.786	8.088**	-0.002	-0.165	2.4424
39	Alliance new millennium fund-d	0.852	3.410**	0.002	0.082	2.2330
40	Alliance new millennium fund-g	0.826	3.344**	0.004	0.147	2.2463
41	Alliance front line equity fund-g	0.750	7.218**	-0.015	-1.656	3.4676
42	Birla Ind opportun fnd-plan A (dv)	0.582	6.996**	0.009	1.128	1.7134

NO	SCHEME NAME	β_i	t-value	γ_i	t-value	Ri
43	Birla Ind opportuni fund-plan B(gr)	0.706	7.775**	0.000	0.029	2.1441
44	Birla MNC fund-plan A (div)	0.591	10.16**	0.000	0.057	1.3597
45	Birla MNC fund-plan B(growth)	0.721	9.723**	-0.006	-0.852	2.1892
46	Birla advantage fund-plan A(dv)	0.730	10.17**	-0.004	-0.657	2.4312
47	Birla advantage fund-plan B(GR)	0.597	5.490**	-0.006	-0.567	3.1337
48	DBS Chola opportunities fund-cm	0.709	8.690**	0.005	0.675	1.9217
49	DBS Chola opor fnd-regular qtrly dv	0.745	10.02**	0.005	0.663	1.9225
50	Canexpo- growth plan	0.828	10.27**	-0.001	-0.167	3.3456
51	Canexpo-income plan	0.743	6.992**	0.001	0.055	1.7243
52	DSP merill lynch equity fund	0.626	3.018**	0.006	0.308	2.6692
53	DSP merill lynch tech.com fund	0.601	4.045**	-0.013	-0.893	2.5813
54	JM Basic fund	0.897	7.231**	-0.018	-1.460	1.6199
55	ING Vysya select stocks fund-dv	0.880	8.292**	0.001	0.082	1.5286
56	ING Vysya select stocks fund-g.op	0.858	9.520**	0.002	0.220	1.7265
57	Kotak MNC	0.593	6.912**	0.000	-0.021	2.7225
58	Kotak tech	0.547	5.560**	0.002	0.017	2.2135
59	Kotak 30- (dividend)	0.860	9.232**	0.002	0.211	2.8414
60	Kotak 30-(growth)	0.825	9.761**	-0.006	-0.720	4.1835
61	Sun f&c value fund-dividend	0.878	6.880**	-0.003	-0.230	1.0308
62	Sun f&c value fund-growth	0.864	8.646**	-0.011	-1.002	1.5225
63	Tarus discovery fund	0.821	8.337**	0.026	1.989**	2.1921
64	Tarus star share	0.834	8.725**	0.004	0.423	3.1794
65	UTI-grand master 1993	0.744	8.948**	0.009	1.137	1.5259
66	UTI-pef 95	0.578	5.255**	-0.009	-0.811	1.3848
67	Tata pure equity fund-growth	0.771	11.46**	-0.004	-0.595	3.0356
68	Tata select equity fund	0.787	10.12**	-0.009	-1.111	3.3122
69	Tata life sciences&tech fund-gr	0.739	8.385**	0.004	0.407	2.6831
70	UTI Sunder	0.847	12.59**	0.013	2.145**	3.2567
71	Franklin fmcg fund-growth	0.595	10.54**	0.000	0.074	1.6784
72	Franklin India bluechip fund-Div	0.834	12.25**	-0.003	0.183	1.7734
73	Franklin India bluechip fund-gr	0.775	13.21**	-0.004	-0.596	2.7228
74	Franklin India growth fund	0.722	11.39**	-0.001	-0.586	2.3256
75	Franklin India prima fund-dv	0.778	9.018**	-0.010	-0.099	2.3897
76	Franklin India prima fund-grow	0.752	8.691**	-0.002	-1.151	3.9498
77	Franklin India prima plus-div	0.696	9.452**	-0.008	-0.020	1.7652
78	Franklin India prima plus-growth	0.734	11.14**	0.005	-1.222	2.9121
79	Franklin infotech fund-div	0.636	6.024**	0.000	0.482	0.5532
80	Franklin infotech fund-growth	0.696	6.518**	0.000	0.013	1.1098
81	Il&fs gr&value fund-annual dv.plan	0.789	7.489**	0.000	-0.023	0.7718
82	Il&fs gr&value fund-gr. plan	0.347	2.203**	0.021	1.431	1.8118
83	LIC MF growth fund	0.766	9.974**	-0.010	-1.334	2.1158
84	Principal equity fund-dividend	0.779	9.388**	-0.002	-0.235	1.2559
85	Prudential ICICI gr pl-dv. option	0.708	11.73**	0.005	0.731	1.3559
86	Prudential ICICI gr.plan-gr. option	0.752	8.395**	0.004	0.485	2.5032
87	Prudential ICICI technology fund	0.742	0.616	0.005	0.542	1.8242

schemes. The average market-timing performance is negative (-0.0005). It may be said that the market-timing performances of the growth schemes are very poor, as a result, the investors' have got lower rate of return.

Correlation between R_i and $\gamma_i = -0.1988$, * significant at 5% level

Correlation between R_i and $\gamma_i = -0.1439$, ** significant at 5% level

Comparative Analysis of both types of schemes: From Tables 1 and 2, it is seen that the average market-timing performance of the income schemes is 0.004 and for the growth schemes is -0.073. In general, income schemes are better performer than the growth schemes because the average market-timing performance of the income schemes is greater than the growth schemes. But, in statistical sense, it is not correct. Therefore, statistical test is needed whether they are equal performers or not. For this purpose, 'z' test is applied.

The hypotheses are as under:

H_0 : average market-timing performance of the income schemes = average market-timing performance of the growth schemes.

H_a : average market-timing performance of the income schemes \neq average market-timing performance of the growth schemes.

Here the sample standard deviation is considered as the population standard deviation. According to the information:

Sample 1: (income scheme) Sample 2 (growth scheme)

$$\bar{X}_1 = 0.004 \quad \bar{X}_2 = -0.0005$$

$$\sigma_{s1} = 0.3675 \quad \sigma_{s2} = 0.8376$$

$$n_1 = 56 \quad n_2 = 87$$

The test statistic 'z' is as follows:

$$z = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_{s1}^2}{n_1} + \frac{\sigma_{s2}^2}{n_2}}} = \frac{0.004 - (-0.0005)}{\sqrt{\frac{(0.3675)^2}{56} + \frac{(0.8376)^2}{87}}} = \frac{0.0045}{0.1023513} = 0.04396$$

As, H_a is two sided, two tailed test has been applied here for determining the rejection region at 5% level of significance that come to as under,

$$R: / Z / > 1.96$$

As the observed value of 'z' is 0.04396 that falls in the acceptance region and thus rejects H_a at 5% level and concludes that the market-timing performance of both types of schemes are same. The difference may be considered to have arisen solely due to fluctuations of sampling.

Conclusion

The present study has empirically examined the macro-forecasting performance of 56 open-ended income schemes and 87 growth schemes in India. The market-timing performance of the income schemes and the growth schemes are shown in Table 1 and in Table 2 respectively. Only two income schemes have shown statistically significant macro-forecasting performance. The average macro-forecasting performance of the income mutual fund schemes is also found to be unsatisfactory (0.004). Similarly, the average market-forecasting performance of the growth schemes is found to be negative (-0.0005), as a result, the managers have offered to the investors' generally lower rate of returns. However, statistically significant macro-forecasting performance is found positive for the seven (7) schemes. In terms of superior macro-forecasting performance, at a glance, the growth schemes are better than that of the income schemes. But, it may not be said that the growth schemes are well market timers than that of the income schemes based on seven (7) schemes. As such, mean test is applied and seen that they are approximately equal performers.

From the above, it may be said that the overall macro-forecasting performances of the income mutual fund managers as well as the growth mutual fund managers are very poor in Indian context. It may be said that the mutual fund managers of both types of schemes unable to take the advantage of acquiring of extra returns from the volatile market movement (BSE Sensex) by market outguessing. However, in spite of poor market forecasting performance, the schemes have offered to the investors' higher rate of returns than the risk free rate because the managers have taken the advantage of market movement only by applying the strategy of simply buy and hold policy. Finally, it may be said that, if the mutual fund managers are not more efficient in market outguessing in near future then the investors will be the ultimate losers and as a result, the growth of the mutual fund industry will be hampered in India.

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