Empirical Testing of Risk and Return in Indian Mutual Fund Children Schemes

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Investors invest in mutual funds expecting higher returns than the risk-free returns. We investigate whether the investments in the Indian Mutual Fund Children Schemes have given good returns. We use the NAV from the year 2013 to 2017 for 10 schemes and 2008 to 2017 for 5 schemes. We calculate the risk, returns, alpha and beta. The result shows that five years schemes have shown better risk return trade off when compared to ten years schemes. This paper will be helpful to the investors for investment decision.

Keywords: Mutual Funds, NAV, Rate of Return, Alpha, Beta

1. Introduction

Mutual fund is a pool of money from investors and invests scientifically in securities to generate returns. Investors invest in mutual funds expecting higher returns than the risk-free returns. We investigate whether the investments in the Indian Mutual Fund Children Schemes have given good returns. Many researchers have studied the risk return analysis of mutual fund scheme. Research studies by **Jensen (1968)** evaluated the ability of the fund managers in selecting the undervalued securities. He concludes that for the sample 115 mutual funds, the fund managers were not able to forecast security prices well enough to recover research expenses and fees**. Dave (1998)** found that performance of the mutual funds industry and then reviewed the performance of individual funds. **Thomas (1998)** studied the performance of Master share and MSGF for the period 1994-95 using market prices and NAV respectively. **John (1974)** found that on an average the fund managers appeared to keep their portfolios within the stated risk. Some funds in the lower risk group possessed higher risk than funds in the most risky group. **Grinblatt and Titman (1989)** found that some mutual funds consistently realize abnormal returns by systematically picking stocks that realize positive excess returns. **Narasimhan and Vijayalakshmi (2001)** made an empirical evaluation of diversification and timing performance of 76 mutual fund schemes of around 25 fund houses. The study employed two alternative methods to examine this issue. In the first case, the portfolio return and risk and correlation between the stocks in the portfolio of each scheme can be computed and compared with each other. **Michael and Katouritz (2002)** found that for high quality managers, there is a positive relationship between fees & performance. While many of the study conducted by western countries on Mutual funds and there are studies in the Indian context studied by **Anand and Murugaiah (2006)** found that the influence of market factor was more severe during negative performance of the funds**. Soumya, Ashok and *et. al* (2009)** found that the mutual funds generated positive monthly returns on the average, during the studyperiodofJanuary2000throughJune2005.S**usheel (2010**) found that preference of UTI & SBI mutual funds has been better in 2007–08.Whencomparedto2006-07SBIperformancewasgoodboththeyear**.** Hence, this paper propose to study the risk and return of mutual fund children schemes. We investigate how much the fund's return can differ from the historical mean return of the scheme. Beta measures funds volatility related to a benchmark. Mutual fund children schemes show would fluctuate correlated to a benchmark. It takes the volatility of a portfolio and compares its risk-adjusted performance to a benchmark index. The additional return of the investment relative to the return of the benchmark index is its "alpha." This study is undertaken with the following objective

2. Objective and Methodology

2.1 This study is undertaken with the following objective

- To ascertain the risk and return of selected children mutual funds schemes.

2.2 Data Sample

We followed Anand and Murugaiah methodology to find risk and return factor. The sample of the study has included scheme wise performance of various mutual fund children schemes. Data pertaining to the performance of the funds were drawn from secondary sources through data published by Association of Mutual Fund in India (AMFI), mutualfundsindia.com, moneycontrol.com BSE.com, and NSE.com mutual funds books, journals and websites of other mutual funds. This study proposes to test the risk and return of 5 mutual fund schemes and 10 mutual fund scheme. Data collected from 2008 January 01 to 2017 December 31 for ten years and from 2013 January 01 to 2017 December 31 for 5 years.

2.3 Methodology

The daily returns of the mutual funds will be computed by using the following equation.

Rit = NAVt – NAVt-1/ NAVt-1 1

Where, Rit is return on fund NAVt is the Net Asset value of the scheme at the end of't',NAVt-1 is Net Asset value of the scheme at the end of the month't-1'calculated. The results are shown in Table 1 and Table 4.
The Following are the formulas which measures risk:

Standard Deviation 2
$SD = \sqrt{\sum(Xi - \bar{x})2/N}$
σ = Standard deviation of return
X = Return from the stock in period i
x□ = Arithmetic mean of return
n = Number of periods

Variance 3
σ2 = ∑ (Xi- X □) 2/N
σ2 = Variance
Xi = the value of the ith element
$\bar{x}$= the mean of X
N = the number of elements

Median 4
Median = l + h/f (N/2-C)
l = Lower class boundary of the median class
h = Size of the median class interval
f = Frequency corresponding to the median class
N = Total number of observation
C = Cumulative frequency preceding median class

Skewness 5
Skewness=$\frac{\sum (Xi - \bar{x})\,3}{N}$
Raising the difference to the exponent 3

Kurtosis 6
Kurtosis = $\frac{\sum_{i=1}^{N} \frac{(Xi - \bar{x})^4}{N}}{S^4}$
$\bar{x}$Is the mean
S = standard deviation
N = number of data points

Alpha 7
Alpha = R-Rf- beta (Rm-Rf) 7
R = portfolio return
Rf = risk free rate of return
Beta = systematic risk of a portfolio
Rm = market return

Beta
Beta= $\frac{Asecuritycovariancewithmarketportfolio}{Varianceofthemarketportfolio}$8

3. Results and Discussion

The performance evaluation is done by comparing the returns of a mutual fund scheme with returns to an index which is benchmark of the market. In this study the returns have been averaged. Average return is obtained by taking the mean of daily returns, whereby daily returns are calculated by using the NAVs of the mutual fund scheme.

Table 1 *Shows NAV and Rate of Return for the Period from 1.1.2008 to 31.12.2017*

Name of the Mutual Fund Schemes	Total NAV	Average NAV	Total ROR	Average ROR
HDFC children gift fund	140662.84	57.2265	137.879	0.056
ICICI prudential child care fund(Gift plan)	178010.61	72.509	82.331	0.033
ICICI prudential child care fund-study plan	94819.559	39.475	112.100	0.0466
SBI Magnum children's benefits funds	70205.119	29.094	108.759	0.045
LIC MF children gift fund	29316.42	12.129	-6.231	-0.002

Table 1 Shows average return of five mutual fund schemes which has been calculated for ten years in five schemes HDFC children gift fund is showing highest average rate of return Rs.0.056 and LIC MF children gift fund is having lowest average rate of return Rs.-0.002.

Table 2 Shows standard deviation, variance, median, skewness and kurtosis these are all risk measures. In this calculation ICICI prudential child care fund (Gift plan) mutual fund is having highest standard deviation Rs1.9544. ICICI prudential child care fund-study plan mutual fund is having lowest standard deviation Rs.0.3063. ICICI prudential child care fund (Gift plan) mutual fund having highest variance Rs.3.8200. ICICI prudential child care fund-study plan mutual fund is having lowest Variance Rs.0.0938. HDFC children gift fund mutual funds having highest median Rs.0.0956. LIC MF children gift fund mutual fund is having lowest median Rs.0. ICICI prudential child care fund (Gift plan) mutual fund having highest skewnessRs.30.3139 and ICICI prudential child care fund-study plan mutual fund is having lowest skewness Rs.-0.3525. ICICI prudential child care fund (Gift plan) mutual fund is having highest kurtosis Rs.1279.5061 and SBI Magnum children's benefits funds mutual fund is having lowest kurtosis Rs.6.5190.

Table 2 *Shows Statistical Description of Risk for the period from 1.1.2008 to 31.12.2017*

Name of the Mutual Fund Schemes	Std. Dev	Variance	Median	Skewness	Kurtosis
HDFC children gift fund	0.8636	0.7458	0.0956	0.0547	12.1381
ICICI prudential child care fund(Gift plan)	1.9544	3.8200	0.0855	30.3139	1279.5061
ICICI prudential child care fund-study plan	0.3063	0.0938	0.0489	-0.3525	6.6531
SBI Magnum children's benefits funds	0.3478	0.1210	0.0564	-0.2975	6.5190
LIC MF children gift fund	1.2444	1.5485	0	-0.1248	23.5587

Table 3 Shows Alpha is a measure of an investment's show on a risk-adjusted basis and Beta is a measure of the volatility of a portfolio in comparison to the market. HDFC Children gift fund, ICICI prudential child care fund-study plan and SBI Magnum children's benefits funds is having highest alpha (0.04). LIC MF children gift fund is having lowest alpha (-0.03) for Sensex and HDFC Children gift fund, ICICI prudential child care fund-study plan and SBI Magnum children's benefits funds is having highest alpha (0.04).LIC MF children gift fund is having lowest alpha (-0.03) for nifty. LIC MF children gift fund is having highest beta (0.77) and ICICI prudential child care fund-study plan is having lowest beta (0.13) for Sensex, LIC MF children gift fund is having highest beta (0.78) and ICICI prudential child care fund-study plan is having lowest beta (0.13) for nifty.

Table 3 *Shows Statistical Description of Alpha and Beta for the Period from 1.1.2008 to 31.12.2017*

Name of the scheme	Sensex		Nifty	
	A	β	α	β
HDFC Children gift fund	0.04	0.54	0.04	0.55
ICICI prudential child care fund(Gift plan)	0.02	0.57	0.01	0.59
ICICI prudential child care fund-study plan	0.04	0.13	0.04	0.13
SBI Magnum children's benefits funds	0.04	0.16	0.04	0.16
LIC MF children gift fund	-0.03	0.77	-0.03	0.78

Table 4 Shows average rate of return of ten mutual fund schemes HDFC children gift fund direct having highest average rate of return Rs.0.073.LIC MF children gift fund direct having lowest average rate of return Rs.0.0047.

Table 4 *Shows Total NAV and Total Rate of Return for the Period from 1.1.2013 to 31.12.2017*

Name of the Mutual Fund Schemes	Total NAV	Average NAV	Total ROR	Average ROR
HDFC children gift fund	97299.070	79.105	86.440	0.070
HDFC children gift fund Direct	99235.820	80.680	90.232	0.073
ICICI prudential child care fund(Gift plan)	117400.980	95.526	77.956	0.063
ICICI prudential child care fund(Gift plan)Direct	119825.510	97.498	81.762	0.067
ICICI prudential child care fund-Direct-study plan	64117.230	53.298	73.280	0.061
ICICI prudential child care fund-study plan	62575.820	52.016	69.557	0.058
LIC MF children gift fund	16804.220	13.922	56.554	0.047
LIC MF children gift fund-Direct	16924.560	14.151	55.750	0.047
SBI Magnum children's benefits funds	44492.220	36.892	70.714	0.059
SBI Magnum children's benefits funds-Direct	45499.010	37.821	74.012	0.062

Table 5 shows standard deviation, variance, median, skewness and kurtosis. ICICI prudential child care fund (Gift plan) direct mutual fund is having highest standard deviation (0.7242) and ICICI prudential child care fund-study plan is having lowest standard deviation (0.2789). ICICI prudential child care fund (Gift plan) direct mutual fund having highest variance (0.5245). ICICI prudential child care fund-study plan mutual fund is having lowest variance (0.0778). HDFC children gift fund direct fund mutual funds having highest median (0.1003). LIC MF children gift fund mutual fund is having lowest median (0.0597). HDFC children gift fund direct mutual fund having highest skewness (-0.3124) and HDFC children gift fund Direct mutual fund is having lowest skewness (-0.7458). SBI Magnum children's benefits funds-Direct mutual fund is having highest kurtosis (6.6230)and ICICI prudential child care fund(Gift plan)Direct mutual fund is having lowest kurtosis (2.9119).

Table 5 *Shows Statistical Description of NAV Risk for the Period from 1.1.2013 to 31.12.2017*

Name of the Mutual Fund Schemes	Std. Dev	Variance	Median	Skewness	Kurtosis
HDFC children gift fund	0.6156	0.3789	0.0996	-0.7450	3.4556
HDFC children gift fund Direct	0.6158	0.3792	0.1003	-0.7458	3.4693
ICICI prudential child care fund(Gift plan)	0.7238	0.5239	0.0835	-0.4437	2.9226
ICICI prudential child care fund(Gift plan)Direct	0.7242	0.5245	0.0865	-0.4441	2.9119
ICICI prudential child care fund-Direct-study plan	0.2791	0.0779	0.0702	-0.5044	3.3788
ICICI prudential child care fund-study plan	0.2789	0.0778	0.0716	-0.4989	3.3616
LIC MF children gift fund	0.6402	0.4099	0.0597	-0.4126	3.4028
LIC MF children gift fund-Direct	0.6510	0.4238	0.0622	-0.5133	3.8442
SBI Magnum children's benefits funds	0.3915	0.1533	0.0827	-0.3124	6.6080
SBI Magnum children's benefits funds-Direct	0.3915	0.1533	0.0864	-0.3241	6.6230

Table 6 An alpha of zero means that the investment earned a return that matched the overall market return as reflected by the selected benchmark index. Beta is a measure of the volatility of a portfolio in comparison to a benchmark. ICICI prudential child care fund-Direct-study plan, ICICI prudential child care fund-study plan funds and SBI Magnum children's benefits funds-Direct is having highest alpha (0.05). LIC MF children gift fund and LIC MF children gift fund-Direct is having lowest alpha (0.02) for Sensex and ICICI prudential child care fund-Direct-study plan, ICICI prudential child care fund-study plan funds and SBI Magnum children's benefits funds-Direct is having highest alpha (0.05). LIC MF children gift fund and LIC MF children gift fund-Direct is having lowest alpha (0.02) for nifty. ICICI prudential child care fund-Direct-study plan, ICICI prudential child care fund-study plan funds is having highest beta (0.65) and ICICI prudential child care fund-Direct-study plan and ICICI prudential child care fund-study plan is having lowest beta (0.20) for Sensex and ICICI prudential child care fund-Direct-study plan and ICICI prudential child care fund-study plan funds is having highest beta (0.65),ICICI prudential child care fund-Direct-study plan and ICICI prudential child care fund-study plan is having lowest beta(0.20) for nifty

Table 6 *Shows Statistical Description of Alpha and Beta for the period from 1.1.2013 to 31.12.2017*

Name of the scheme	Sensex		Nifty	
	α	β	α	β
HDFC children gift fund	0.04	0.59	0.04	0.59
HDFC children gift fund Direct	0.04	0.59	0.04	0.59
ICICI prudential child care fund(Gift plan)	0.03	0.65	0.03	0.65
ICICI prudential child care fund(Gift plan)Direct	0.03	0.65	0.03	0.65
ICICI prudential child care fund-Direct-study plan	0.05	0.20	0.05	0.20
ICICI prudential child care fund-study plan	0.05	0.20	0.05	0.20
LIC MF children gift fund	0.02	0.62	0.02	0.61
LIC MF children gift fund-Direct	0.02	0.62	0.02	0.61
SBI Magnum children's benefits funds	0.04	0.30	0.04	0.30
SBI Magnum children's benefits funds-Direct	0.05	0.30	0.05	0.30

Note: For ten years and for five years data is available with author.

4. Summary and Conclusion

The present paper investigates the performance of five schemes for ten years and ten schemes for five years for the period from 2008 Jan 01 to 2017 Dec 31 and2013 Jan 01 to 2017 Dec 31of mutual fund. The historical NAV of the selected schemes was tested on the basis of risk, return, alpha and beta. The results shows that in the sample five schemes HDFC children gift

fund is having good returns and LIC MF children gift fund is having negative return and ICICI prudential child care fund (gift plan) is having highest risk and ICICI prudential child care fund-study plan is having lowest risk. In the sample of ten schemes HDFC children gift fund Direct is having high returns, LIC MF children gift fund and LIC MF children gift fund-Direct is having less return. ICICI prudential child care fund (Gift plan) Direct is having high risk and ICICI prudential child care fund-Direct-study plan is having low risk. Hence it will be helpful to understand the risk and return to the investors. The result shows that five years schemes have shown better risk return trade off when compared to ten years schemes.

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