



Study of Returns and Risk of Select Indian Equity Funds with special reference to diversification achieved by investors when Equity funds are combined with Investment in Gold

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Abstract :

Investing in Gold has been a traditional favorite with the Indian investors. Equity mutual funds have gained popularity gradually with the investors over last few years in India. With volatility in the Indian stock market creating anxiety in the investors mind, gold as investment seems to find place along with equity funds in the portfolio of investors. This paper aimed to examine the utility of Gold ETF as tool to improve returns of equity mutual fund portfolio. Research also examines if the addition of gold improves the risk adjusted return. It is observed that forming a portfolio comprising equity funds and gold does not offer a different absolute mean return or a better risk adjusted return when compared with a portfolio that comprises only equity funds. Hence the wisdom of investing in gold requires careful consideration

Introduction and objective of the research

Investors in the Indian Equity markets have witnessed volatility in the major stock indices in last couple of months. Foreign Institutional investors (FII's) have been net sellers in the Indian stock market and Domestic Institutional investors have been providing support to the market to a certain extent. Various techniques of investment are utilized by participants to make superior returns. Gold has been traditionally favored as an investment choice in India. The modern day investor has been showing considerable investment in the Indian equity market through the Mutual Fund route. This research aims to test if the investment in Diversified Equity Mutual Funds (other than Index Funds) when combined with investment in Gold produces a better return. Additionally, the risk adjusted return in terms of the Sharpe Ratio would also be observed as an indication of superior risk adjusted returns.

Research Methodology

Equity Mutual funds based on their Assets under management (AUM) were considered. Four funds with highest AUM as reported by NDTV Profit's website were considered for collection of data regarding the Net Asset Value (NAV). The NAV's of these equity funds were then used to calculate the quarterly returns over the past five years ending 31-Dec-2021. An investment portfolio comprising equal weights to these four funds was formed notionally. The quarterly returns were calculated for this portfolio. Then, a portfolio comprising these four equity funds and a Gold fund was formed giving equal weights all constituents of the

portfolio. Again the quarterly returns were calculated for this portfolio. The NAV's of the Equity funds and the Gold fund were collected from the website of Association of Mutual Funds in India (AMFI).

Formulation of Hypothesis

The hypothesis to be tested:

H_0 : There is no difference in the returns produced by a portfolio comprising only equity funds and a portfolio comprised of equity funds and Gold fund

H_1 : Returns produced by the portfolio comprised of Equity funds and Gold funds are different than the returns produced by a portfolio comprising only equity funds

The hypothesis was tested using the 'Difference of the means test (two sample)' using the t-statistic at 5% significance level ($\alpha = 0.05$)

Data Analysis and Findings

The largest equity funds in India (other than index funds), for which last five years data is available are:

Table 1 – Top Four equity funds in India based on their AUM

Name of the Fund	AUM (Rs. Crores)
1. SBI Blue Chip Fund	14,083
2. HDFC Mid Cap Opportunities Fund	16,651.66
3. Aditya Birla Sunlife Equity Fund	14,170.09
4. Axis long term equity fund	14,152.12

(Source: NTDV profit website)

According to Markowitz diversification if the returns between two assets/investments are not correlated, better diversification is achieved. Keeping this in view the coefficient of correlations between the four equity funds and HDFC Gold Exchange Traded Fund (ETF) were calculated based on the quarterly returns of the past five years.

Table 2: Coefficient of Correlation (r) between HDFC Gold ETF and Equity Funds:

Equity Fund	r-value
HDFC Mid Cap Opportunities Fund - Growth	-0.19753
Aditya Birla Sunlife Frontline Equity Fund - Growth	-0.105595
Axis Long Term Equity Fund - Growth	-0.018275
SBI Blue Chip Fund	-0.123266

Source: Calculated by Author based on data in Appendix 1

The observed r-value indicates a negative correlation between the returns of the HDFC Gold ETF and the four equity funds mentioned above. This should help an investor in diversification the portfolio as per the Portfolio theory principles.

A portfolio comprising the four equity funds in equal weights (0.25 each) was formed notionally and the mean and standard deviation of quarterly returns was calculated. Similarly a portfolio comprising these four equity funds AND HDFC Gold ETF was formed giving equal weights (0.20) to all five constituents of the portfolio.

Table 3: Mean and Returns of the two portfolios formed using equity funds and gold fund

Portfolio comprised of:	Quarterly-Mean Returns (%)	Standard deviation
Four Equity funds in equal weights	2.28	7.70
Four Equity funds and HDFC Gold ETF	1.65	6.64

It is observed from the above result that addition of the HDFC Gold ETF reduces the risk in terms of standard deviation but also reduces the return to the investor. To test whether the difference in the returns of the two portfolios are statistically significant, a t-test was carried out. The observed t-statistic and the p-value (obtained using EXCEL) were:

Table 4: t-statistic and observed p-value for the difference in the returns of the portfolios mentioned above

t-statistic	0.387606
p-value	0.350235

The p-value (observed, 0.35) is greater than 0.05 (α) and hence there is not sufficient evidence to reject the Null hypothesis and therefore the Null hypothesis, that there is NO difference in the returns generated by the two portfolios, stands accepted.

The risk adjusted returns in terms of Sharpe ratio were also calculated to see if investment in Gold produces better risk adjusted returns. The results were:

Table 5: Sharpe ratio of the two portfolios

Portfolio comprised of:	Sharpe Ratio
Four Equity funds in equal weights	0.153197
Four Equity funds and HDFC Gold ETF in equal weights	0.082622

For calculation of the Sharpe ratio the risk free rate of return was assumed to be 4.4% p.a. i.e. 1.1% per quarter. This assumption was made based on the fixed deposit rates offered by nationalized banks during the period of study.

Conclusion and Suggestion

The results obtained indicate the fact that the returns generated by investing only in Equity mutual funds are not different from a portfolio in which equity mutual funds are combined with investment in gold. This raises a question on the conventional wisdom that advocates investment in gold with aim to generate better returns.

It is also observed that though the returns of investment in Gold are negatively correlated to the investment in Equity fund, the advantage of diversification does not translate into better risk adjusted returns. As observed the Sharpe ratio of the portfolio comprising the four equity funds only, was 0.153197 and the ratio, after combining HDFC Gold ETF with the four equity funds, was 0.082622.

Based on the above findings it is concluded that investment in the gold as tool to improve returns of the portfolio and as a tool of reducing risk should be given careful consideration as the objective of enhanced returns or reduced risk may not be achieved by investing in gold.

Limitations of the research

The applicability and the generalization the conclusion may be affected due to following reasons:

- 1) Only a limited number of equity funds were studied
- 2) The returns in time period between 2017 and 2021 were only analyzed. The results in the other block of time period may differ.

Bibliography

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- 3) E.Madhavi, An Empirical Study on Performance of Gold ETFs in India - Post Crash Period, Vol.6, No.13, pg. 75-83, Research Journal of Finance and Accounting, 2015
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Appendix 1: Historical NAV's of the four equity funds and HDFC gold ETF

Date	HDFC Mid Cap Opportunities Fund - Growth	Quarterly return of the Fund (%)	Aditya Birla Sunlife Frontline Equity Fund - Growth	Quarterly return of the Fund (%)	Axis Long Term Equity Fund - Growth	Quarterly return of the Fund (%)	SBI Blue Chip Fund	Quarterly return of the Fund (%)	Quarterly return of the portfolio comprising the Four Equity funds in Equal Weights (%)	HDFC Gold Exchange Traded Fund. (ETF)- Growth Option	Quarterly return of the Fund (%)	Quarterly return of the portfolio comprising the Four Equity funds and HDFC Gold ETF in Equal Weights (%)
02-Jan-17	42.654		170.82		30.4681		29.931			2613.0222		
31-Mar-17	49.797	16.75	193.1	13.04	34.527	13.32	33.5722	12.17	13.82	2668.4467	2.12	11.48
03-Apr-17	50.071	0.55	194.12	0.53	34.7707	0.71	33.7285	0.47	0.56	2679.6466	0.42	0.53
30-Jun-17	51.741	3.34	201.49	3.80	36.6098	5.29	34.9294	3.56	4.00	2655.2163	-0.91	3.01
03-Jul-17	52.259	1.00	203.15	0.82	36.7468	0.37	35.2205	0.83	0.76	2637.4328	-0.67	0.47
29-Sep-17	53.126	1.66	208.44	2.60	38.7025	5.32	35.8512	1.79	2.84	2770.1312	5.03	3.28
03-Oct-17	53.328	0.38	209.72	0.61	38.8469	0.37	36.1092	0.72	0.52	2734.6496	-1.28	0.16
29-Dec-17	60.238	12.96	222.71	6.19	41.7816	7.55	38.8337	7.55	8.56	2714.438	-0.74	6.70
01-Jan-18	60.212	-0.04	221.29	-0.64	41.5397	-0.58	38.6218	-0.55	-0.45	2704.3616	-0.37	-0.44
28-Mar-18	55.457	-7.90	209.23	-5.45	40.3238	-2.93	37.2226	-3.62	-4.97	2848.8013	5.34	-2.91
02-Apr-18	56.601	2.06	210.87	0.78	41.138	2.02	37.7016	1.29	1.54	2815.6601	-1.16	1.00
29-Jun-18	54.823	-3.14	213.96	1.47	43.004	4.54	37.5662	-0.36	0.63	2792.5327	-0.82	0.34
02-Jul-18	54.831	0.01	212.88	-0.50	42.9388	-0.15	37.2928	-0.73	-0.34	2790.9034	-0.06	-0.29
28-Sep-18	51.9	-5.35	212.14	-0.35	41.8128	-2.62	36.6567	-1.71	-2.51	2795.548	0.17	-1.97
01-Oct-18	52.011	0.21	214.17	0.96	41.5856	-0.54	36.8138	0.43	0.26	2802.4398	0.25	0.26
31-Dec-18	53.49	2.84	216.24	0.97	42.8968	3.15	37.2378	1.15	2.03	2899.165	3.45	2.31
01-Jan-19	53.539	0.09	216.78	0.25	42.9711	0.17	37.3135	0.20	0.18	2896.1199	-0.11	0.12
29-Mar-19	56.284	5.13	226.74	4.59	43.7618	1.84	39.2092	5.08	4.16	2884.9825	-0.38	3.25
01-Apr-19	56.362	0.14	227.51	0.34	43.9584	0.45	39.3546	0.37	0.32	2886.2588	0.04	0.27
28-Jun-19	54.312	-3.64	227.32	-0.08	45.8746	4.36	40.514	2.95	0.90	3138.9801	8.76	2.47
01-Jul-19	54.49	0.33	228.45	0.50	46.2392	0.79	40.7433	0.57	0.55	3094.5764	-1.41	0.15
30-Sep-19	51.641	-5.23	220.84	-3.33	46.8797	1.39	39.9462	-1.96	-2.28	3094.5764	0.00	-1.83
01-Oct-19	50.617	-1.98	218.02	-1.28	46.6851	-0.42	39.5741	-0.93	-1.15	3459.3968	11.79	1.44
31-Dec-19	53.599	5.89	232.77	6.77	49.2595	5.51	41.5712	5.05	5.80	3542.3884	2.40	5.12
01-Jan-20	53.642	0.08	233.06	0.12	49.2832	0.05	41.5936	0.05	0.08	3546.6201	0.12	0.09

31-Mar-20	39.019	-27.26	165.05	-29.18	38.5476	-21.78	29.7516	-28.47	-26.67	3945.5288	11.25	-19.09
01-Apr-20	38.257	-1.95	159.72	-3.23	37.1961	-3.51	28.6937	-3.56	-3.06	3923.043	-0.57	-2.56
30-Jun-20	47.684	24.64	197.12	23.42	43.359	16.57	35.4602	23.58	22.05	4357.7623	11.08	19.86
01-Jul-20	47.687	0.01	198.86	0.88	43.5585	0.46	35.7372	0.78	0.53	4396.1989	0.88	0.60
30-Sep-20	55.063	15.47	213.87	7.55	46.5177	6.79	38.3293	7.25	9.27	4515.8866	2.72	7.96
01-Oct-20	54.985	-0.14	216.95	1.44	47.1392	1.34	38.8041	1.24	0.97	4518.9332	0.07	0.79
31-Dec-20	65.256	18.68	265.87	22.55	59.367	25.94	48.3637	24.64	22.95	4484.4619	-0.76	18.21
01-Jan-21	65.988	1.12	266.4	0.20	59.6423	0.46	48.5691	0.42	0.55	4483.2782	-0.03	0.44
31-Mar-21	73.408	11.24	280.89	5.44	60.764	1.88	51.7916	6.63	6.30	39.4654	-99.12	-14.78
01-Apr-21	74.353	1.29	284.57	1.31	61.3918	1.03	52.3649	1.11	1.18	40.0452	1.47	1.24
30-Jun-21	82.607	11.10	304.67	7.06	66.5911	8.47	55.0242	5.08	7.93	41.7397	4.23	7.19
01-Jul-21	82.753	0.18	303.98	-0.23	66.8211	0.35	54.9398	-0.15	0.04	41.8549	0.28	0.08
30-Sep-21	90.992	9.96	342.92	12.81	75.555	13.07	61.6006	12.12	11.99	40.9075	-2.26	9.14
01-Oct-21	91.223	0.25	341.58	-0.39	75.1007	-0.60	61.3505	-0.41	-0.29	41.297	0.95	-0.04
31-Dec-21	91.299	0.08	340.06	-0.44	73.9333	-1.55	60.9785	-0.61	-0.63	42.8219	3.69	0.23
Mean Return										2.28	Mean Return	1.65
Std Deviation										7.70	Std Deviation	6.64