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A study on performance of gold ETFs trading in national stock exchange in India

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Abstract
Gold is considered as one of the best investment avenue in India and the traditional method of investment. In the past few years growing demand of Gold and boom in capital market gave rise to many investment options in gold like Gold futures in Commodities, Gold ETFs etc. This paper aims to study the performance of selected gold ETFs traded in NSE in India and to analyse the variations and risk behavior pattern of Gold ETFs in India which are traded in NSE. The data collected for this study was taken from NSE website for three years from 1st Jan 2015 to 31st December 2017. It also tries to evaluate the relationship of Gold ETFs with the Spot Price and Nifty 50 by using Correlation. It is found that ETFs are positively correlated to spot Gold Price and it is negatively correlated to Nifty50.

Keywords: NSE, Gold ETFs, beta, standard deviation, alpha, Sharpe's index, Treynor's Ratio, correlation

1. Introduction
ETFs are basically a mutual fund schemes or index funds that are listed and traded in the stock exchange just like stocks in the equity market. It can be bought or sold throughout the trading day and priced continuously like other any other stock in an exchange. These ETFs trade at an approximately same price as the net asset value of its underlying asset in a particular trading day. ETFs can be bought or sold through online demat account or by just making a call to a broker. It enables the investor to invest with one security in the entire Market. Thus it will benefit the investors both from the flexibility as well as diversification. (Ilan Guedj & Jennifer Huang, 2009)[1] In this study "Are ETFs Replacing Index Mutual Funds" made a comparison between Open Ended Mutual Fund (OEF) and Exchange Traded Funds. They say that ETFs is a suitable investment for investors with longer investment origin.

The ETFs first came into existence in 1993 in USA and since 1999 it started in Europe. Central Fund of Canada was the first gold exchange traded product, it was a closed-end fund which was founded in 1961. In early 2007 only the emergence of Gold ETFs can be traced in India.

There are various types of ETFs which are traded on the Stock Exchanges like Equity Index ETFs, Gold ETFs, Liquid ETFs and International Index ETFs. They track an index such as Nifty 50, S&P, NASDAQ 100, and NIFTY CPSE Index which make them cost effective, and maintain complete transparency on the holdings to an investor. ETFs are different from futures even though both allows index as an underlying but futures is a derivative product trading in NSE - F&O segment With a contract of maximum three months whereas ETFs is a cash market product trading in capital market segment in NSE and it can held for as long as investor wants. (M.Jayanthi, Ms., & Ms.T., 2013) [2]. In their study said that some ETFs are illiquid which impacts on buying and selling flexibility. To identify the growth of Gold ETFs in India the author have studied on return, AUM, NAV. He also said that, Gold ETFs turn out to be a good investment option for investors to hedge their assets against the uncertain global market scenario.

1.1 Conceptual Framework of Gold ETFs
Gold ETFs are held in the form of demat holdings or in the paper form. This is mainly for the purpose of investors who wants to invest in bullion market without any physical delivery. They can buy a single ETFs just like any other stock. It is a passive investment instruments that are based on gold prices and invest in gold bullion. Because of its direct gold pricing, there is a complete transparency on the holdings of an ETF. Further due to its unique structure and creation mechanism, the ETFs have much lower expenses as compared to physical gold investments. According to (DR. (Mrs.) Prashanta Athma & Mrs. K.Suchitra, 2017) [3] in their study "Gold Exchange Traded Funds: Global Scenario" it was found that Gold price are less volatile when compared to Equity market which creates confidence among the investor believing as a strong asset to invest. (MOHDSALEEM & Matloobullah Khan, 2013) [4] In his study "The overview of gold etfs and its various positive features" defines the risk diversification, tax advantage of Gold ETFs by reading various research papers and by personal experience.

1.2 Current Scenario
Currently there are 8 gold ETFs trading in NSE. The list of gold ETFs currently traded in NSE are as follows

Table 1: List of Gold ETFs trading in NSE

Issuer	Name	Symbol	Launch Date
Axis Mutual Fund	Axis Gold ETF	Axisgold	Nov 2010
Birla Sun Life Mutual Fund	Birla Sun Life Gold ETF	Bslgoldetf	May 2011
HDFC Mutual Fund	HDFC Gold Exchange Traded Fund	Hdfcmfgetf	Aug 2010
IDBI AMC	IDBI Gold ETF	Idbigold	Nov 2011
Kotak Mutual Fund	Kotak Gold Exchange Traded Fund	Kotakgold	Jul 2007
Quantum Mutual Fund	Quantum Gold Fund (an ETF)	Qgoldhalf	Feb 2008
UTI Mutual Fund	UTI GOLD Exchange Traded Fund	Goldshare	Mar 2007
Reliance Nippon Life Asset Management	Reliance ETF Gold BEES	Goldbees	Mar 2007

***Source*:** (NSE)

The lot size of all Gold ETFs is one gram except KOTAKGOLD and QGOLDHALF which is 1/10th of one gram and ½ gram respectively. According to AUM figures in India the best Gold ETF is the Reliance ETF Gold Bees. At the end of December 2015, Gold Bees had a declared AUM figure of Rs. 1,636.65 crore. The NAV of this scheme stood at Rs. 2,726.76 per unit on February 11, 2016

As per Amfi data, in 2017 around Rs 730 crore was pulled out of 14 gold-linked ETFs as compared to Rs 942 crore in 2016. This was the fifth consecutive year by making outflow from Gold ETFs Since last 3 years the investors are shifting toward equity than the Gold ETFs as it gives good return. However it is difficult to predict the demand for Gold ETFs due to low return on investment when compared to Equity.

2. Methodology & Statistical Tools Used in the Study

Presently there are eight funds traded in NSE. The data was collected from NSE website. The funds selected are trading for the last two years in the stock Exchange. The sample period is from 1 January 2015 to 31st December 2017 because this period witnessed the decline in the demand of Gold ETFs and the gold.Various authors use different tools for discussion in their study such as (Sreenivasulu Sunkara & M. Srinivasa Reddy, 2017) [5] have calculated CAGR, Absolute return to track the performance of gold ETFs and physical gold.

(Tim Leung & Brian Ward, 2015) [6] in his study "The Golden Target: Analysing the tracking performance of leveraged Gold ETFs reveals that market-traded LETFs do not track a leveraged position in gold effectively over a long horizon, and the dynamic leveraged futures portfolio achieves lower tracking errors over multiple years.

The tools used in this study are as follows:

2.1 Mean

The mean is an average of the expected return over a period of time. The mean allows investors to gain some insight into stock prices, economic data, and a host of other information.

$$\text{Mean}=\frac{\Sigma X}{N} \quad \text{Eq. (1)}$$

Where X= Expected Return

2.2 Standard Deviation

Standard Deviation is the measure of variation in the individual returns from the average expected return for a certain period. It is used to measure the investment volatility

$$\sigma = \sqrt{(Y-Y)N} \quad \text{Eq. (2)}$$

Where, Y = fund return

2.3 Beta

Beta measures no diversifiable (systematic) risk which shows how the price of a security responds to market forces. In effect the more responsive the price of a security is to change in the market, the higher will be its beta. It is calculated by relating the returns on the security with the market returns.

$$\beta = n\sum XY - (\sum x \sum y) / n\sum x - (\sum x)^2 \quad \text{Eq. (3)}$$

Where, X =index return,
Y = fund return.

2.4 The Sharpe's index

The Sharpe's Index measures the excess average return earned in excess of the risk free rate per unit of volatility or total risk

$$S = RP - Rf / \sigma p \quad \text{Eq.(4)}$$

Where S = Sharpe's Index
R_P = average monthly return of fund.
R_f = risk free return *.
* Risk free return (R_f) is taken as 7.48%

2.5 Jack Treynor measure

It is used to measure volatility by using Beta or Market Risk. Treynor Ratio is also known as "Reward to Volatility Ratio"

$$Tn = RP - Rf / \beta p \quad \text{Eq. (5)}$$

Where Tn = Treynor's index
R_p = average return on portfolio
R_f = risk free return
β_p = beta coefficient of portfolio.

2.6 Alpha

It is a measure of showing the fund performance whether it performed better or worse relative to its bench mark

$$\alpha = Y - \beta X \quad \text{Eq. (6)}$$

Where, X =index return
Y = fund return

2.7 Correlation

Correlation is a measure to show how strongly two or more variable are correlative with each other. A positive *correlation* defines to what extent to which these variables increase or decrease in parallel and a negative *correlation* both the variable move in opposite direction.

3. Empirical Results and Discussions

Analysis and interpretation of data usually done by using some financial tools some of the tools used in this study are Beta, Alpha, Standard Deviation, Sharpe Index, Treynor Index and correlation

Table 2: showing the results of tools used

Parameters	Gold Share	Bsl Gold Etf	Gold Bees	Axis Gold	Idbi Gold	Kotak Gold	Qgold Half	Hdfcmfgetf
Mean	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Beta	-0.1160	-0.1233	-0.1725	-0.0675	-0.1315	-0.1153	-0.1572	-0.1374
Alpha	0.0262	0.0247	0.0140	0.0367	0.0229	0.0264	0.0173	0.0216
SD Daily	0.0070	0.0141	0.0071	0.0088	0.0122	0.0078	0.0063	0.0068
SD Annualised	0.1901	0.3832	0.1923	0.2393	0.3327	0.2127	0.1729	0.1847
Sharpe Index	-0.3929	-0.1948	-0.3885	-0.3123	-0.2244	-0.3512	-0.4321	-0.4043
Treynor Ratio	0.6441	0.6055	0.4329	1.1067	0.5676	0.6480	0.4752	0.5436

3.1 Graphical Analysis

The following are the graphical representation of Beta, Alpha, Standard Deviation, Sharpe's Ratio, Treynor Ratio.

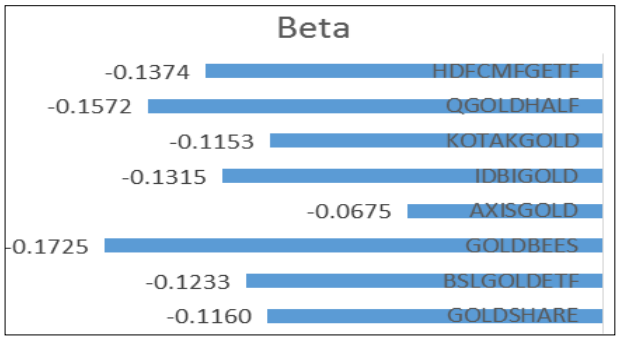

Fig 1: Showing Beta Value of Selected Gold ETFs

The above chart defines how theprices respond to the NSE Nifty50 index. From the chart it is clear that AXIS GOLD (-0.0675) followed by KOTAK GOLD (-0.1153),Goldshare (-0.1160) and so on. GOLDBEES comprises the least beta value of -0.1725 which means it is highly negative correlated with the Nifty index Movements. According to *(Goyal, 2014)* [5] in his study "Accelerating Growth of Gold ETF in India" stated that "systematic risk for the Gold ETFs are negative implying that inclusion of Gold stocks in the investor's portfolio will make it more diversified and riskless. Investment in Gold can be beneficial to both retail and the institutional investors." The reason behind negative beta value is because of Gold price which always depends on global market and there is an inverse relationship between gold price and market.

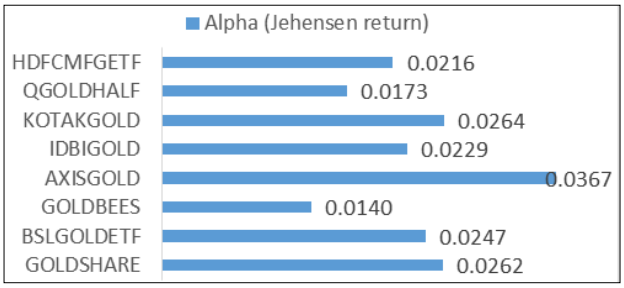

Fig 2: Showing Alpha Values of Selected Gold ETFs

By investigating the values of Alpha by calculating Jehensen Return on selected 8 ETFs traded in NSE, it was found that AXIS GOLD is having the highest Alpha of 0.036 value which is positive outperformed ETF. The second outperformed ETF was KOTAKGOLD with 0.0264 and even GOLDSHARE with 0.0262 with 0.0002 difference. GOLDBEES have outperformed the market index with least Alpha value of 0.0140.

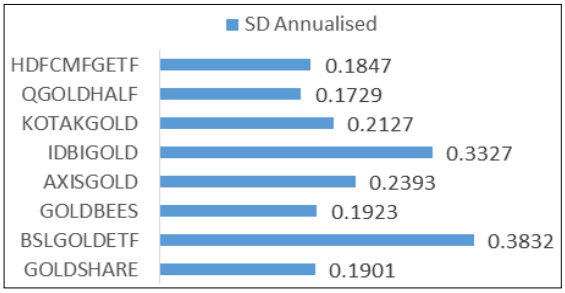

Fig 3: Showing Standard Deviation Values of Selected Gold ETFs

The Standard deviation measures the variation and volatility between individual return and expected return. Out of the 8 Gold ETFs traded in NSE BSL GOLD ETF is having the highest standard deviation of 0.3832 which is followed by IDBI GOLD with 0.3327, AXIS GOLD of 0.2393, KOTAK GOLD with 0.2127, GOLBEES with 0.1923, GOLDSHARE with 0.1901 and HDFCMF gold ETF with 0.1847. The least standard deviation was achieved by QGOLD HALF with 0.1729 which indicates that the fund will be less volatile that all other gold ETFs.

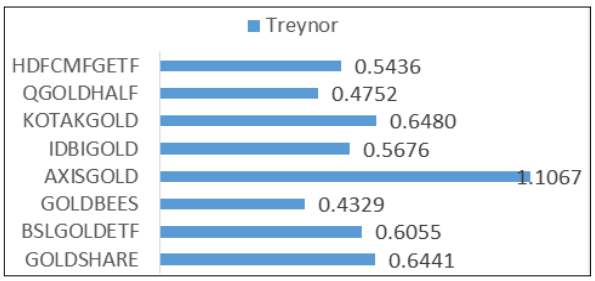

Fig 4: Showing Treynor Ratio of selected Gold ETFs

The stock performance of Treynor ratio is measured on the basis of Market performance. Here we can see that all the selected Gold ETFs is having positive ratio even though the beta value is negative because the return on investment is less than the risk free rate. So in the above figure the maximum ratio is followed by AXIS GOLD i.e. 1.1067. The same tendency was followed by Kotak gold (0.6480) and GOLD SHARE (0.6441).

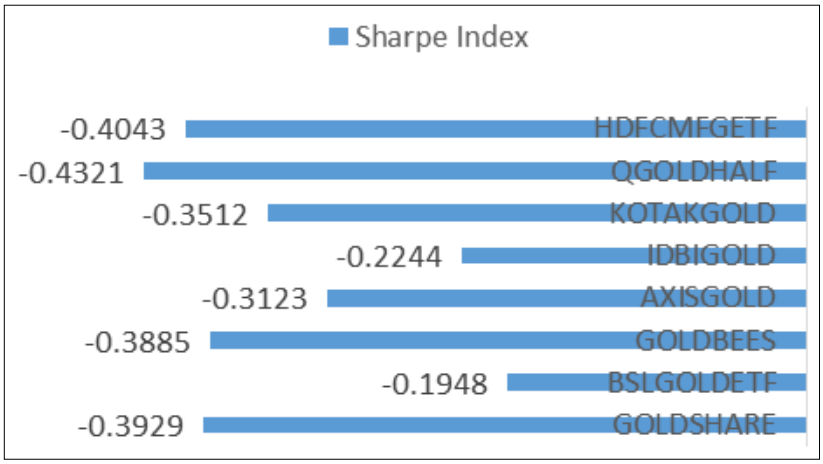

Fig 5: Showing Sharpe's Ratio of Selected ETFs

The Share Ratio rule states that maximum value of the fund shows the better performance in the market. So from the above chart it is shown that the Sharpe's ratio of all ETFs are negative which means that the investment return is less than the risk free rate. But if we see the eight gold ETFs in that BSL GOLD ETF shows the highest Sharpe's index (-0.1948) followed by IDBI GOLD(-0.2244), AXIS GOLD (-0.3123), KOTAK GOLD (-0.3512), GOLDBEES (-0.3885) and GOLDSHARE (-0.3929). HDFCM Gold ETF and QGOLD HALF is an underperformed ETF because it shows the Sharpe's Index of -0.4043 and -0.4321**.**

3.2 Relationship between Gold ETFs, Spot Market Gold Price, and Nifty 50 Index

Table 3: Correlation between the ETF's, spot Gold price and Nifty50

Parameters	Gold Price	Nifty50	Gold Share	Bsl Gold Etf	Gold Bees	Axis Gold	Idbi Gold	Kotak gold	Qgold half
Gold Price	1								
Nifty50	0.3608	1							
Gold share	0.9701	0.2877	1						
Bslgoldetf	0.9583	0.3116	0.9656	1					
Gold bees	0.9807	0.2970	0.9913	0.9715	1				
Axis gold	0.8915	0.1203	0.9412	0.9282	0.9385	1			
Idbi gold	0.9406	0.3099	0.9655	0.9451	0.9664	0.9330	1		
Kotak gold	0.9544	0.2603	0.9807	0.9580	0.9808	0.9516	0.9574	1	
Qgold half	0.9705	0.2751	0.9880	0.9646	0.9932	0.9447	0.9596	0.9836	1
Hdfcmfgetf	0.9700	0.2803	0.9922	0.9697	0.9933	0.9509	0.9729	0.9833	0.9903

From the table it is observed that GOLDBEES of Reliance Niffon life Asset (0.9807) is highly positively correlation to the spot market Gold prices which is followed by QGOLDHALF(0.9705), GOLDSHARE of UTI (0.9701), HDFCMFGETF (0.9700), BSLGOLDETF (0.95839), KOTAKGOLD (0.95446) of Kotak Securities, IDBIGOLD (0.9406), and AXISGOLD (0.891583). The NIFTY50 have low positive correlation with the spot gold price which is 0.3608. According to (Dr. Vipin Kumar Aggarwal, Silky Jain, & Anchal Aggarwal 2013) [8] study on "Gold vs. Gold ETFs: Evidences from India" they concluded that the gold ETFs have lesser variability as compared to the physical gold and hence the performance of gold ETFs is better than the physical Gold in the current scenario.

It is also observed that all the ETFs has least positive correlation with the Nifty 50 index. But when we see all the ETFs BSLGOLD (0.3116) is highly correlated with the NIFTY50 index and AXISGOLD is least positively correlated with Nifty50.

4. Conclusions

ETFs introduced a new investment opportunity for the investors in the Indian Market. It is the easiest and convenient way of trading without any concern of safety, storage to it. It will be in electronic form in the investor's demat holdings which diversify their portfolio. The current study concludes that the investment in Gold ETFs is a good investment option to investors who want to hedge their assets in an uncertain global market conditions. But in the recent few years there has been downtrend in demand in gold due to inadequate return in ETFs investment. Therefore investors these days prefer to buy physical gold rather than Gold ETFs.

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