

Pricing of Exchange Traded Gold Funds: Capital Asset Pricing Method

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Exchange Traded Gold Funds are units representing value of physical gold and traded through recognized stock exchange. As far as investors are concerned it opens an avenue to trade in the gold bullion market without the necessity of taking physical delivery of gold. The Gold ETF gained wide popularity during volatile market conditions after the great recession in 2009, but gradually the investors began to divert their fund as the market strengthened after a great fall. This study is focused on pricing of major Gold ETF listed with National Stock Exchange of India. It extensively covers computation of returns of Gold ETF from VWAP, assessing the beta co-efficient, evaluating return under CAPM and analyzing the result based on study. The result shows that almost all ETF Gold schemes under study were overpriced.

Key Words : VWAP, Gold ETF, Capital Asset Pricing Methods.



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Gold ETF are considered cheaper than buying gold coins or jewelry because it provides return corresponding to return provided by domestic physical gold price and it is free from other expenses like making charges, VAT, STT etc. Investing with ETF Gold schemes is safer as they are backed by physical possession of gold. ETF is working just like a stock, means the investors can freely purchase and sell ETFs during market hours and the price is determined by demand and supply factors. The values of Gold ETFs schemes are thereby very much closer to value of gold traded in the open market. In India Gold ETFs are sold in smaller unit, say the value equal to one gram of gold, and thereby it is affordable to small net-worth investors also, unlike physical possession of gold coins or bars which can be easily sold through the investors DEMAT account.

When the world economy was in recession, people deemed gold as a safest mode of investment and price of gold has risen sharply. Until 2012, gold price used to rise each year for more than 10 years. But in the first months of 2013, the gold price decreased as the economies across the world began to report the sign of survival. In 2014 a sharp fall

witnessed in gold price to Rs. 2420.96 per gram from Rs. 2958.69 per gram in 2012. The gold-ETF investor base also witnessed a steady decline. The sector lost about a fifth of the total number of folios since May 2013, when the number had touched a high of 605,000 investors, as there was speculation that gold would exceed Rs 35,000/- per 10 gram. As of now, this segment has only 480,000 folios (Source AMFI).

Review of Literature

The first gold ETF was launched in Australia in 2003 with the World Gold Council. All gold ETFs supported by the WGC are 100% backed by the physical metal. Since their inception, the combined value of gold ETFs has grown to more than \$13.3 billion, approximately the market capitalization of the average North American gold mining company. Because of gold's qualities as a hedge against the dollar, inflation, and geopolitical tensions, it is considered a safe haven and preserves its value over time says Rhona O'connell (2007).

An article steered on various positive features of Gold ETF written by Mohdsaleem and Matloobullah Khan (2013); examines the emergence and history of Gold ETFs in India and also explains proper working mechanism of this fund along with portfolio risk diversification, and tax implementation of Gold ETFs fund in India. According to sources highlighted therein first Gold ETF fund was launched by Benchmark Asset Management Company on 15 February, 2007 with a unit equal to 1 gram and it was also listed in NSE with a symbol GOLDBEES. Thereafter government mutual fund Company UTI also launched Gold ETF with NSE symbol GOLDSHARE on 01 March, 2007 and size was same as previous launched company.

A research paper written by P. Krishna Prasanna (2012) evaluates the performance of all the 82 Exchange-Traded schemes floated and traded on the Indian Stock markets. The compounded growth rates across the years 2006-2011 and its trend analysis reveal that the overseas funds as well as the Gold funds were able to impress the investors and mobilize greater resources.

Alok Goyal and Amit Joshi (2011) appraised the performance of Gold ETF's in India by looking into various aspects like financial performance, variations, and analyzed the risk behaviour of the selected Gold ETFs in comparison of NSE. Analysis was made by using financial tools like Sharpe's index, Treynor's ratio by calculating alpha, beta and standard deviation of the selected funds. The study also explored that the beta values were negative which indicated that with

increase in market, gold funds normally fell and vice versa. The study concluded that the trading of Gold ETFs is quite different from that of trading at NSE. Another research paper by Vidhyapriya and Mohanasundari (2014) also analyses the performance of various Gold ETF schemes in India.

M. Nishad Nawaz and Sudindra V. R. (2013) observed in their study various options available for investors in gold investment and to create awareness on various forms of gold investment. The study strongly suggested the investors to invest in gold ETF where possibilities of losses were limited. In an extensive research work, Tim Pullen, Karen Benson, and Robert Faff (2014) compared the investment characteristics of gold assets by employing daily data from 1987- 2010 and summarized gold bullion having a strong hedging role with mere diversifying capability. Secondly the results highlighted that gold stocks, gold mutual funds, and gold ETFs tended to be diversifiers. The study concluded that both gold bullion and gold ETFs showed support for the safe investment property than gold stocks and gold mutual funds.

Ramesh Bollapragada, Igor Savin, Laoucine Kerbache (2013) prepared a research paper on price forecasting and analysis of exchange traded fund. This article addressed various queries like why ETF should be the choice for an investment, what were the key attributes of ETFs, various investments strategies and its implementations with ETFs.

Research Gap

The earlier research works had given an insight into the origin, concept, growth and development of Gold ETF's; and some researchers analyzed the investors' preference towards this instrument and their investment strategies. Even though a few research works can be identified related to the theme of subject, majority of them were hanging around the performance evaluation aspect rather than pricing. More than that Capital Asset Pricing Model was a powerful tool for measuring the asset pricing aspects and unfortunately none of the above researchers used this tool to check pricing of Gold Exchange Traded Funds. Based on the above gap the theme of research "Pricing of Exchange Traded Gold Funds: A Critical Evaluation through Capital Asset Pricing Method" formulated.

Objectives

Objectives comprised:

- To examine the return provided by Gold ETF's listed with NSE during the study period,

- To observe the movement of Gold ETF's in connection with the general market movements, and
- To evaluate the pricing of Gold ETF's using Capital Asset Pricing Method.

Purpose and Methodology

This study extensively covered 12 active Gold ETF's listed with National Stock Exchange of India. The price movements from 1st January 2014 to 31st December, 2014 were observed for the study purpose. During the above period the gold price reported a great fall and this work rationalized the impact of the same with Gold ETFs and checked whether these instruments were correctly priced in India. For the analytical purpose VWAP of 12 securities for 243 working days were considered. The research was steered through the following steps;

- ❖ By observing price movements of various funds for the study period, VWAP of various Gold ETF's were noted (Volume Weighted Average Price was equal to the sum of the volume of every transaction multiplied by the price of every transaction divided by the total volume for the trading day).
- ❖ From the observed price levels daily returns of Gold ETF's (R_p) & NSE Index (R_m) were computed.
Returns can be computed by using $(P1-P0)/P0*100$(1) where $P1$ refers new price level and $P0$ refers previous price level.
- ❖ Then the Returns of ETFs & NSE (R_p & R_m) were annualized by using the daily returns.

- ❖ Computation of the Beta Co-efficient.

Beta can be computed by using $\{(n\sum xy) - (\sum x \cdot \sum y)\} / \{n\sum x^2 - (\sum x)^2\}$(2)

where x refers NSE returns (independent variable) ; y refers Return on ETF's (Dependant variables) and n stands for no. of observed returns.

- ❖ Evaluating Return under CAPM

CAPM = $R_f + \text{Beta}(R_m - R_f)$(3)

where R_f refers Risk-free Return, and R_m stands for return on market Index.

Analysis and Discussions

a) Computation of Return and Beta Co-efficient

For computing the beta co-efficient; the price movements of all selected ETFs were observed from 1st January, 2014 to 31st December, 2014. The daily returns on all ETFs were computed (refer formula 1) from the observed price movements and the same was duly annualized in order to find the annual returns of Gold ETFs. Likewise daily returns of NSE were also computed and annualized in order to get the market return (R_m). The regression values of individual ETF's daily returns were computed against daily NSE returns (Refer formula 2) in order to identify beta of gold funds. Such computation would enable to identify the sensitivity of gold funds towards NSE Index. The annualized individual returns of the Gold ETF's under study and their beta values are represented in the below table.

Table 1: Return & Beta of Gold ETFs

Sl. No	Fund	Portfolio Return (R_p)%	CAPM Return (%)
1	AXIS Gold ETF	-10.83	6.41
2	Canara Robeco Gold ETF	-8.91	8.73
3	Goldman Sachs Gold ETF	-9.26	5.75
4	HDFC ETF	-10.32	5.84
5	ICICI Prudential Gold ETF	-8.91	4.75
6	IDBI Gold ETF	-10.66	5.29
7	Kotak Gold ETF	-9.6	5.76
8	Quantum Gold Fund ETF	-11.18	5.54
9	R* Shares Gold ETF	-9.05	5.99
10	Religare Invesco Gold ETF	-9.11	6.81
11	SBI Gold Exchange Traded Scheme	-9.02	6.07
12	UTI Gold ETF	-1.02	5.24
Where Market Return :28.13% and Risk free return :9%			

Source: Result of analysis

From the above, it is clear that all the funds are generating a negative return during the study period. Quantum Gold Fund exhibits the poorest performance by generating a return of -11.18%. The other funds like AXIS Gold, HDFC Gold, and IDBI Gold were generated returns of -10.83%, -10.32% and -10.66% respectively. These negative returns were reported on account of decline in the gold price during the study period (2014). Sources report that a massive withdrawal of fund from Gold ETF's during this period made the situation even worse. During this period UTI Gold ETF made a big difference by reducing the loss to merely 1.02% where all other similar funds struggling with a loss around 9%. This shows that the investors are exerting great confidence over publically managed fund during the period of hardship.

While conducting a close examination on beta value of the above funds over NSE Index; all the funds possessed a negative beta during the study period. Beta co-efficient is a strong symbol on the sensitivity towards market changes. During the period of study the NSE Index generated a positive return of 28.13%, which strongly signals that the investors are highly favoring equity shares rather than Gold/Gold

ETF's. The negative beta co-efficient obtained for the above funds will again support this argument. ICICI Pru Gold ETF has generated the most negative sensitivity towards market index with a beta co-efficient of -0.22. From this we can infer that when the market gets strengthened more fund from ICICI Gold ETF has diverted towards equity shares. In other words, this can be reasoned as Gold ETFs perceived as a viable alternative by the investors during declining market trend. And during the period of recovery it was quite natural that the investors repositioned their investment goals.

b) Computation of return under CAPM

Capital Asset Pricing Method was used to evaluate the pricing of gold funds; and before computing CAPM, the NSE return and Risk free return were computed based on some realistic assumptions. The NSE Index has produced a return of 28.13% during the study period and bank rate for the year 2014 was 9%; has been considered as risk free return. Here CAPM of each funds were computed by using appropriate values like beta, index return and risk free return (Refer formula 3). Table 2 will give a better understanding on CAPM returns of various Gold ETFs for the year 2014.

Table 2: Return under Capital Asset Pricing Method

Sl. No	Fund	Portfolio Return (Rp)%	CAPM Return (%)
1	AXIS Gold ETF	-10.83	6.41
2	Canara Robeco Gold ETF	-8.91	8.73
3	Goldman Sachs Gold ETF	-9.26	5.75
4	HDFC ETF	-10.32	5.84
5	ICICI Prudential Gold ETF	-8.91	4.75
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Where Market Return :28.13% and Risk free return :9%			

Source: Result of analysis

For evaluating pricing of portfolios under CAPM, the estimated return will be compared with CAPM return and if the estimated return values are higher than that of CAPM values the portfolio is assumed to be underpriced. And if the estimated return values are lower than that of CAPM

values the portfolio is assumed to be overpriced. It is a common investment principle that if a fund is overpriced it has to be sold; and if a fund is underpriced it has to be bought.

While referring Table no.2 Canara Robeco Gold ETF has produced the highest CAPM value of 8.73% but at the same time the estimated return of this fund is merely -8.91%; this shows that the fund is overpriced and selling the scheme is the best investment strategy. UTI Gold ETF has generated a fairly reasonable return of -1.02% during 2014 while comparing with other Gold Funds. But it has generated a CAPM return of 5.24% strongly indicating that this fund also priced above the normal standards. From the above analysis it can be easily inferred that all the above funds possess a return value much lower than that of CAPM value. Hence we can conclude that during 2014 all the Gold Exchange Traded Funds listed with NSE were overpriced; there by the investors tend to encash their investment in order to avoid possible future losses.

Summary of Findings

The major findings of the study can be summarized as below;

- All funds (Gold ETFs) during the study period possessing a negative return, strongly highlight the decline in gold price during 2014. The general return trend with respect to all Gold ETFs are found to be the same as they are issued on the backing of Gold.
- While examining the beta of Gold ETF's with NSE Index; a negative relation was found i.e., when gold price tends to decline, Gold ETF schemes become less attractive; and the investors withdraw their fund from these schemes by preferring equity based funds.
- CAPM shows that all the funds were overpriced during the study period as estimated returns were much lower than that of CAPM returns. If a fund is overpriced, naturally the investors tend to withdraw their investment. In the present scenario, investment in gold/ Gold ETF's found to be less attractive as other investment options are providing a much better return.

Conclusion

The investment decisions are subject to analysis on risk return characteristics. Gold ETFs are considered to be the safest mode of investment during the period of recession; and rather than waiting for a longer period investors begin to diversify their investment once the market recovered. The return, risk factors are highly correlated with demand

and supply factor in the market. In this research work, the fund pricing factor has been analyzed by using CAPM; as per law of demand when the demand for a commodity decreases, the price will decrease. The above theory has been justified here with the analysis by using CAPM on pricing of Gold ETF's.

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