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Performance Evaluation of Gold Exchange Traded Funds in the Indian Capital Market

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Abstract

Fears of a global downturn and increased volatility in equity and debt markets, geopolitical changes like rift between US and Iran, epidemic like the corona virus in China have contributed to the increase in investment in Gold and Gold Exchange Traded Funds (GETFs). This research selected ten GETFs from Bombay Stock Exchange (BSE) Ltd, India from 2011 to 2019 in order to evaluate the performance. Correlation and performance indices like Sharpe ratio, Treynor index and Jensen’ s index are used. Though, UTI and SBI were the forerunners among select ten ETFs in this research, but the 2019 witnessed a good amount of Gold fund inflow as compared to 2011 individually. This positive trend could be maintained further, if the Government of India takes appropriate actions in this regard. A good step seen in the current year budget is that the introduction of government bond ETFs, debt ETFs etc. In spite of all this few challenges like volatility, market risk assessment and ethical, professional performance of fund managers would be affecting the investors and the role of fund managers is crucial in managing such funds and the quality of service and awareness would attract more investment in GETFs.

Keywords: Gold Exchange Traded Funds (GETFs), Market risk assessment, Correlation, Sharpe’ s performance index, Treynor’ s performance index and Jensen’ s performance index.

Introduction

ETFs (Exchange Traded Funds) are financial products that are traded on a stock exchange and represent ownership of underlying gold. Investors in Gold ETFs can participate in the Gold market, and the primary investing objective is to provide investors with a simple, cost-effective, and secure means to access the Gold market by offering a return equal to fluctuations in the Gold spot price less appropriate management expenses.

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Investors in the twenty-first century are increasingly cautious of high-risk investments. Because stock prices have been unpredictable in recent days, investors are hesitant to put their money into stocks; instead, they choose to put their money into gold because of its safety and liquidity. Volatility is defined as the variation of a return from its mean values in either a positive or negative direction. In portfolio management, estimating volatility becomes a crucial responsibility. Even during times of recession, the price of gold continues to rise, benefiting investors. Due to its great demand and limited availability, however, investing in gold requires a large sum of money. As a result, it is difficult for small investors to invest.

The Gold Exchange Traded Fund (Gold ETF) plan was created in the United States in 1993 to allow small-time investors to park their money in the gold market. Since 2007, India has favoured the ETF technique. The plan is as follows. ETFs for gold are similar to ETFs for other stocks traded on the stock exchange. It's a stock market-listed and managed mutual fund. Through an online Demat account, they can be purchased and sold. Unlike conventional gold, GTF schemes are more profitable for small investors because the system is more accessible and requires a smaller amount of capital to invest. The goal of this research is to look at the natural world's random relationships and volatility.

The performance of gold is tracked by the Gold ETF. Gold ETFs offer returns that are quite similar to those offered by actual gold before expenditures, and each unit of GETF is equal to one gramme of gold. However, some GETFs offer a unit that is roughly equivalent to the price of 0.5 gramme of gold. The new way of looking at these funds is that they not only tap into Gold's enormous potential, but they also make charges, reducing the risks and liabilities of physically keeping Gold. Furthermore, they are tax-advantaged and simple to acquire and dispose of. Invest in Paper Jewellery today for the greatest kind of gold.

Advantages of Gold ETFs

Diversification: Considered to be a good portfolio diversifier.

Liquidity: Because it trades like a stock, buying and selling takes place swiftly, making it extremely liquid.

Gold ETF provides the security of your investment.

Security: Investing is done electronically, so there's no risk of theft.

Investing in Gold ETFs is far less expensive than buying, selling, storing, and insuring actual gold.

Making and Delivery Fees: Making and delivery fees are not required of investors.

Features of Gold ETFs

- When compared to alternative options, having price exposure to the Gold price could be less expensive.
- Dealing with a Demat account is quick and convenient. Investors won't have to worry about storage or security.
- Pricing transparency Can be exchanged like a stock on a stock market.

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- The minimal lot size to trade on the secondary market is one unit, making it ideal for retail investors.

Table 1: ETFs at BSE Ltd.

S.No.	Scrip Name	Scrip Code	Scrip Id
1	AXIS GOLD	533570	AXIS GOLD
2	BIRLA SUN LIFE GOLD	533408	BSLGOLD ETF
3	GOLD BEES	590095	GOLD BEES
4	HDFC GOLD ETF	533230	HDFCMFGETF
5	ICICI BANK	533244	ICICIGETF
6	IDBI GOLD	533719	IDBI GOLD
7	KOTAK GOLD ETF	590097	KOTAKGOLD
8	QUANTUM GOLD	590099	QGOLD HALF
9	REL GOLD	533891	RELIANCEGOLD
10	RELIGARE GOLD	533172	RELIGAREGO
11	SBI GOLD ETF	590098	SBIGETF
12	UTI GOLD ETF	590101	GOLD SHARE
13	MOTILAL OSWAL MOST SHARES GOLD ETF	534185	MGOLD
14	CANARA ROBECO MUTUAL FUND GOLD ETF	590125	CRMFGETF

Objectives of the Study

1. To analyze the extent of association among select ETFs and BSE Sensex.
2. To evaluate the performance of Gold ETFs and their ability to provide returns.

Statement of the Problem

Traditionally, Indians are fond of buying Gold and value its possession as a symbol of social recognition. Thus investment behavior needs to be improved by making them aware of the benefits derived out of these intangible savings. Today, investment in Gold ETFs have shown slight increment with regard to this avenue. This research focuses on creating awareness among the Indian investors.

Scope of the Study

This research is restricted to a comparison based on BSE SENSEX only and has a limitation of scripts being considered on a particular day and time. The performance of ETFs might vary later. REL GOLD, RELIGARE GOLD, MOTILAL OSWAL MOST SHARES GOLD ETF and CANARA ROBECO MUTUAL FUND GOLD ETF are not considered in this research, as they do not fall in the said time period of analysis

Methodology of The Study

The research is based on secondary information. Annual performance has been taken into account while measuring the Gold ETF's performance. Jensen's Alpha, Mean, Standard Deviation, Beta, Sharpe Ratio, Treynor Ratio Data on gold ETFs was gathered from www.bseindia.com. The performance of ten gold ETFs registered on the Bombay Stock

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Exchange is examined in this research. From 2011 to 2019, the Gold ETFs were thoroughly examined.

A performance metric that considers portfolio risk is the Sharpe performance index. It demonstrates that variability has returned. The greater the ratio, the better the fund's performance in terms of risk-adjusted returns, and the more likely the investor is to keep the fund for higher returns. It shows that such a premium per unit of overall risk poses a concern. It makes use of variance to calculate live risk, average portfolio returns, and the risk-free rate of return. This will be compared to the performance of two other portfolios, each of which requires a different level of variance or risk, and the study will be conducted using Capital Market Line (CML).

Sharpe ratio:

SR (p) = (Rp – Rf)/ Sd (p)

Where, Rp – Returns of the portfolio, Rf – Risk free rate and Sd (p) – Total risk

Treynor performance index is a measure of an investment's variability, with comparable portfolio beta representing risk.

It depicts the risk-adjusted performance of several funds, with greater ratios indicating considerably better fund performance. This takes into consideration the portfolio's systematic risk, and the investor will hold a large number of ETFs. This is based on the current state of the security market (SML). It reflects the excess return per unit of risk, and it implicitly presupposes a well-diversified portfolio.

Treynor ratio:

Tn (p) = (Rp – Rf)/ βp

Where, Rp = Return on Portfolio, RF=Risk Free Rate and βp =Portfolio Beta

Jensen's Success Index is based on the capital asset pricing model, and it gauges a hedge fund manager's performance. Positive alpha may be a favourable indicator of portfolio success, whilst negative alpha may be a terrible indicator. The CAPM calculates the needed rate of return, allowing the investor to assess his investment's projected return. This index analyses investment managers' performance when portfolio risk is taken into account.

Jensen’ s Performance ratio:

Alpha = R (i) – [R (f) + B x (R (m) - R (f))]

Correlation Analysis:

Correlation is a statistical measure that depicts the link between two securities in which a change in one variable may or may not result in a change in the other. This data will assist in determining where one security is closely linked to another.

- When both securities move in the same direction, either up or down, the correlation co-efficient is said to be positive.

- When both securities move in opposite directions, the correlation co-efficient is said to be negative, indicating negative correlation.
- Strong correlation refers to the strength of a relationship between two variables that have a strong relationship.
- Weak correlation exists between variables that are not at all or only slightly associated.
- There is no association when the variables are equal to zero.

For the chosen Gold ETF Funds, correlation was used to review and comprehend the relationship between each of the funds in the study. Positive correlation between funds indicates a strong link in terms of performance (returns), whereas indirect correlation indicates no positive association movement in terms of performance (returns).

Table 2: Annual Returns of ETFs and BSE Sensex

Year	AXIS GOLD	BIRLA SUN LIFE GOLD	GOLD BEES	HDFC GOLD ETF	ICICI BANK	IDBI GOLD	KOTAK GOLD ETF	QUANTUM GOLD	SBI GOLD ETF	UTI GOLD ETF	BSE SENSEX
2011	6.44	18.44	21.79	28.79	11.38	-9.50	29.25	29.67	30.24	29.68	-25.05
2012	12.56	8.19	29.28	12.93	12.23	11.96	10.99	11.33	11.45	11.09	25.05
2013	-7.07	-9.48	11.03	-6.98	-7.52	-6.57	-7.09	-6.17	-7.81	-13.99	8.49
2014	-10.31	-11.81	-6.75	-10.17	-11.52	-6.47	-10.18	-10.03	-9.90	-2.34	29.58
2015	-10.00	-5.29	-9.37	-7.28	-6.63	-10.35	-90.69	-7.20	-7.56	-7.10	-4.98
2016	11.89	8.28	-6.51	10.17	-88.94	4.23	10.90	12.03	10.46	9.52	2.01
2017	-0.35	0.74	12.46	2.70	-0.75	5.39	1.36	1.45	4.19	4.69	27.50
2018	9.22	4.67	2.77	5.61	-89.33	10.28	6.44	6.46	6.73	7.89	5.90
2019	20.11	20.01	6.62	21.11	23.99	24.00	23.82	21.52	22.89	22.48	14.97

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DATA ANALYSIS AND INTERPRETATION

Correlation Matrix

Table 3: Summary of correlation among the selected Gold ETFs

ETF	*AXIS GOLD*	*BIRLA SUN LIFE GOLD*	*GOLD BEES*	*HDFC GOLD ETF*	*ICICI BANK*	*IDBI GOLD*	*KOTAK GOLD ETF*	*QUANTUM GOLD*	*SBI GOLD ETF*	*UTI GOLD ETF*	*BSE SENSEX*
AXIS GOLD	1										
BIRLA SUN LIFE GOLD	0.89	1									
GOLD BEES	0.38	0.44	1								
HDFC GOLD ETF	0.82	0.98	0.56	1							
ICICI BANK	-0.10	0.12	0.49	0.18	1						
IDBI GOLD	0.82	0.56	0.23	0.44	-0.02	1					
KOTAK GOLD ETF	0.69	0.62	0.56	0.69	-0.01	0.50	1				
QUANTUM GOLD	0.82	0.97	0.52	1.00	0.13	0.41	0.69	1			
SBI GOLD ETF	0.81	0.98	0.53	1.00	0.17	0.44	0.69	1.00	1		
UTI GOLD ETF	0.77	0.94	0.44	0.96	0.15	0.43	0.68	0.95	0.97	1	
BSE SENSEX	-0.06	-0.38	0.00	-0.43	0.12	0.43	0.06	-0.47	-0.43	-0.34	1

Source: SPSS Output

Interpretation

Quantum Gold ETF is perfect positive correlation with both the ETFs of SBI Gold ETF (1.00) and HDFC Gold ETF (1.00). It is observed that SBI Gold ETF also has perfect positive correlation with HDFC Gold ETF (1.00). AXIS Gold ETF is strongly and positively correlated with a number of ETFs that is, BIRLA SUN LIFE Gold (0.89), HDFC Gold ETF (0.82), IDBI Gold (0.82), Quantum Gold (0.82), SBI Gold ETF (0.81), UTI Gold ETF (0.77) and KOTAK Gold ETF (0.69). However, it shows weak and negative association with ICICI BANK ETF (-0.10) and BSE SENSEX (-0.06).

The higher values of correlation for a good range of ETFs belonging to HDFC (0.98), SBI (0.98), Quantum (0.97) and UTI (0.94) respectively indicate significant association with BIRLA SUN LIFE Gold ETF. Moderate correlation with ETFs like: Gold BEES (0.44), IDBI Gold (0.56) and Kotak Gold (0.62). But weak and positive correlation with ICICI BANK (0.12) is seen. On the other hand, negative correlation with BSE SENSEX (-0.38) is found to be very low among other ETFs. GOLD BEES has moderate correlation with IDBI Gold ETF (0.23) and displayed no correlation with BSE SENSEX (0.00).

HDFC Gold *ETF* is very strongly associated with Quantum Gold (1), SBI Gold (1) and UTI Gold ETFs (0.96) but possesses positive lower values for IDBI Gold (0.44) and KOTAK Gold ETF (0.69) and much low value for ICICI BANK (0.18), a negative BSE SENSEX (-0.43) is also seen *.ICICI BANK* has very low positive values ranging from (0.12 to 0.17) for four other counter parts Quantum, SBI Gold, UTI Gold and BSE Sensex *b*ut is negatively linked to IDBI Gold (-0.02) and KOTAK Gold ETF (-0.01). The value ranges from 0.41 to 0.50 in case of IDBI Gold and four other associates being Kotak Gold, Quantum Gold, SBI Gold, UTI Gold and BSE SENSEX. A consistent positive association is seen for UTI Gold (0.68), Quantum Gold and SBI Gold however share the same values (0.69); BSE SENSEX has the lowest among all (0.06). Quantum Gold is strong correlation with SBI Gold ETF (1.0) and UTI Gold ETF (0.95). Negative value for BSE SENSEX (-0.47) was found. SBI Gold ETF is only linked to UTI Gold ETF

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(0.97) but BSE SENSEX (-0.34) scored negative digits.

The pattern of combinations in the portfolio ensuring highest return can be attributed to Axis Gold (5 other ETFs with values from 0.81 to 0.89) similarly Birla Sun Life rank second with 4 ETFs followed by HDFC ETF, Quantum Gold and lastly SBI Gold ETF. It can be inferred that SBI Gold, Quantum Gold and HDFC Gold need to gear up and benchmark with the other two – Axis and Birla Gold ETFs.

Table 4: Descriptive Statistics

	AXIS GOLD	***BIRLA SUN LIFE GOLD***	***GOLD BEES***	***HDFC GOLD ETF***	***ICICI BANK***	***IDBI GOLD***	***KOTAK GOLD ETF***	***QUANTUM GOLD***	***SBI GOLD ETF***	***UTI GOLD ETF***	***BSE SENSEX***
Mean	3.61	3.75	6.81	6.32	-17.45	2.55	-2.80	6.56	6.74	6.88	9.27
Standard Error	3.67	3.78	4.44	4.46	14.06	3.90	11.79	4.51	4.64	4.58	5.86
Median	6.44	4.67	6.62	5.61	-6.63	4.23	6.44	6.46	6.73	7.89	8.49
Standard Deviation	11.01	11.34	13.32	13.37	42.19	11.70	35.38	13.52	13.91	13.74	17.58
Kurtosis	-1.44	-1.12	-0.82	-0.84	0.28	-0.49	5.91	-0.77	-0.73	-0.32	0.41
Skewness	-0.06	0.09	0.39	0.37	-1.30	0.58	-2.26	0.43	0.40	0.19	-0.75
Range	30.42	31.82	38.65	38.96	113.32	34.35	119.94	39.70	40.14	43.67	54.63
Minimum	-10.31	-11.81	-9.37	-10.17	-89.33	-10.35	-90.69	-10.03	-9.90	-13.99	-25.05
Maximum	20.11	20.01	29.28	28.79	23.99	24.00	29.25	29.67	30.24	29.68	29.58
Sum	32.49	33.75	61.32	56.88	-157.09	22.97	-25.20	59.06	60.69	61.92	83.47
Count	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
CV	**3.05**	**3.024**	**1.956**	**2.116**	**2.418**	**4.588**	**12.636**	**2.061**	**2.064**	**1.997**	**1.896**

Source: SPSS Extract

Interpretation

It is clear that, BSE SENSEX and UTI Gold ETF provide maximum return due to their efficiency, (mean 9.27 and 6.88), return is more than other ETFs which shows high efficiency. From all the selected ETFs the least return with ICICI BANK which is (-17.45). Except ICICI BANK and KOTAK Gold ETF all other funds are having positive returns. Standard errors of funds differ from mean proportions, with ICICI BANK having a higher SD error and AXIS Gold having a lower SD error.

The median of BSE SENSEX is higher than that of all ETFs. The higher Standard Deviation (SD) with ICICI BANK (42.19) that means this ETF more volatile in the market and it has high risk and the lesser SD with AXIS Gold (11.01) that means it is less volatile and lower risk. The variation from those observed means in case of ICICCI BANK and KOTAK Gold ETF have higher variation. So, higher the variation higher the risk, when compared to Sensex, there is a minimum growth in case of Quantum Gold (29.67), SBI Gold ETF (30.24) and UTI Gold ETF (29.68).

Regarding Coefficient of Variation (CV), BSE SENSEX is having very low CV of 1.896, which indicates that the data pertaining to BSE SENSEX is more consistent when compared to other Gold ETFs. The second and third place goes to Gold BEES (1.956) and UTI Gold ETF (1.997) respectively and they are more consistent when compared to other ETFs. Among the ten Gold ETFs, Kotak Gold ETF data indicate that they are highly inconsistent or low consistent i.e. 12.636 and IDBI Gold 4.588, Birla Su Life Gold 3..024 and Axis Gold 3.05 are very low consistency. As per the CV SBI SENSEX, Gold BEES and UTI Gold are more efficient in terms of their performance and their risk is lower as against others like Kotak Gold, IDBI Gold and Birla Sun Life are non-performers, as they are very risky.

Analysis of ETFs Performance Indices:

Interpretation - Sharpe performance index:

Best performers showed values ranging from (6.59 to 6.02) in the descending order of their performance for the returns on investment with marginal variation. Remaining ETFs scored either average or below average performance on their returns offered to their investors. Sharpe' s Ratio indicates the extent of volatility for ETFs. Investment planning keeping maximum returns could be ensured with intelligent choice of the right ETF. While selecting Gold ETFs, the investors might select those funds that have less volatility or are stronger in terms of providing attractive returns. Among the ten ETFs only two have showed negative values and the remaining eight offer positive returns as per Sharpe' s Ratio.

Interpretation - Treynor performance index:

Treynor performance index indicates that the investments are prone to market risk/ performance. This research investigated the above parameter and found that the worst performer is Gold BEES (-1326.52) as compared to Kotak Gold (-136.12), ICICI Bank (-97.45), IDBI Gold (-3.70) ETFs. This points out that investors need to make wise decisions before investing in such ETFs. However, since the characteristic pertaining to market performance involves volatility, therefore performance of ETFs as per Sharpe ratio needs to be kept in mind. The investors might select the best three or four performing ETFs for better returns for their investments. While selecting Gold ETFs, they might assess market risk and

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select those ETFs that carry low risk and attractive returns. Among the ten ETFs, six ETFs are having positive value, choice can be made by the investor to gain fruitfully.

Interpretation - Jensen performance index:
Jensen Index pointed out that the following ETFs could be chosen for investments and the quality of service delivery and ethical behavior of fund managers is essential for investment protection and maximum returns: Quantum Gold (5.77), SBI Gold ETF (5.59), HDFC Gold ETF (5.27) and UTI Gold ETF (5.20). Investors might evaluate fund performance in the above context and effective decisions could be taken with regard to: ICICI BANK (-21.71), KOTAK Gold ETF (-6.96), IDBI Gold (-4.82), AXIS Gold (0.14), Gold BEES (2.79) and BIRLA SUN LIFE Gold (2.86).

Table No: 5: Attitudes towards Gold ETFs Paired Correlation

Relation between Two models	*Sharpe & Treynor*	*Treynor & Jensen*	*Sharpe & Jensen*
Spearman's Rank Correlation	0.3455	0.5152	0.7576

Table 6: Summary of Sharpe, Treynor and Jensen's Performance measures and ranks list for the selected ETFs.

ETF FUND	*Sharpe Rank*	*Treynor Rank*	*Jensen Rank*
AXIS GOLD	7(3.25)	1(43.61)	7(0.14)
BIRLA SUN LIFE GOLD	6(3.40)	6(10.53)	5(2.86)
GOLD BEES	2(6.51)	10 (-1326.52)	6(2.79)
HDFC GOLD ETF	5(6.02)	4(13.46)	3(5.27)
ICICI BANK	10(-17.54)	8(-97.45)	10(-21.71)
IDBI GOLD	8(2.21)	7(-3.70)	8(-4.82)
KOTAK GOLD ETF	9(-2.91)	9(-136.13)	9(-6.96)
QUANTUM GOLD	4(6.26)	5(13.12)	1(5.77)
SBI GOLD ETF	3(6.45)	3(14.15)	2(5.59)
UTI GOLD ETF	1(6.59)	2(15.97)	4(5.20)

Source: Author's calculation

Ranks were assigned based on the scores of three indices pertaining to 10 ETFs selected in this research. A combined analysis reveals that UTI Gold ETF and SBI Gold ETF are the forerunners among the selected ETFs. Remaining have either moderate or low ranks, this may be due to the returns provided at the time of conducting this research. The performance of ETFs depends on many factors like volatility, assessment of market risk and ethical, professional fund manager's performance. These measures are indicative and solely depend on investor's choice only. This research is a guide post in such a way that investors gain best out of their investments. However, the ETFs performance keeps on fluctuating. Further it can be inferred that Sharpe and Jensen tests (0.7576) were very significant and is followed by

Treynor and Jensen (0.5152) and least correlation exists for Sharpe and Treynor (0.3455). On the basis of the above analysis, it is advised to the investors to choose Sharpe and Jensen tests for their investments in Gold ETFs.

Conclusion

The closing prices of ten BSE-listed gold ETFs ensure investigated and analysed. The final prices are from the BSE Sensex target index. Gold ETFs are a collection of funds that provide investors with a variety of investing options. The performance of Gold ETFs is examined in this research using performance methods such as Sharpe, Treynor, and Jensen performance metrics. Gold ETF trading is expanding over time as gold prices continue to rise and investors continue to participate in these ETFs.

Sharpe performance measures assist investors in analysing portfolio volatility, Treynor performance measures assist investors in determining risk vs rate of return, and Jenson performance measures assist in evaluating fund managers and their performance. These three performance indicators can help investors make informed decisions about where to put their money.

These three performance tools enable an investor to make an informed decision about where to put his money in order to maximise his profits. Investors find it difficult to evaluate funds due to market volatility, and this historical data and analysis will provide them with important information. It is possible to examine the market performance of funds invested in ETF. It is possible to discover the correlation between two or more funds, as well as the impact of one fund on the others.

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