

Assessing the Performance of Gold Exchange Traded Funds (ETFs) in India

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Abstract-

Gold Exchange-traded funds (ETFs) are financial instruments that give investors the chance to invest in physical gold without the necessity for physical storage. Gold ETFs have been more popular in India in recent years. Nargunam, R et.al say that Gold ETFs do not invest in real gold; rather, its goal is to transparently follow the gold market and reflect price fluctuations in the metal. An investor can gain exposure to the gold market through a GETF without having to deal with physical gold. This study examines the performance of Gold ETFs in India from 2013 to 2022. The study uses performance metrics such as returns of Gold ETFs in India. The methodology used in this study is the Unit Root Test, Ordinary Least Square method of regression and Residual Analysis. The findings show that over the research period, Gold ETFs consistently generated positive returns leading on an average to 48.4 per cent. The study also examines how macroeconomic variables like inflation affect the performance of gold ETFs. According to the findings, gold ETF performance in India is significantly impacted by inflation. For investors intending to buy gold ETFs in India, the study's findings offer insightful information. The findings imply that gold exchange-traded funds (ETFs) would be a good choice for investors looking for diversification and hedging. In general, this study emphasises the advantages of Gold ETFs as a possible investment choice in India.

Keywords:- Gold, ETFs, Inflation, Investment, India

1. Introduction-

Gold has been a popular investment option for centuries due to its ability to hedge against inflation, provide diversification benefits, and act as a safe haven during economic crises. Rambabu and Srinivasa, (2020) have proclaimed the fact that gold ETFs are a transparent financial product which assist the small investors as well to diversify their investments and manage liquidity as well as market leverage. With the advent of Gold ETFs, investors now have a more convenient and cost-effective way to invest in gold. Gold ETFs are open-ended mutual funds that invest in physical gold and trade on stock exchanges like a stock. They provide investors with exposure to the price of gold without the need to buy or store physical gold. Mallika and Sulphrey, (2018) mention that there is limited difference between the pricing of gold ETFs and physical gold and the minor differences are due to the fees required to manage the ETFs system. Since the introduction of the first Gold ETF in India in 2007, the number of Gold ETFs in the Indian market has grown significantly, and they have become a popular investment option among Indian investors. It's critical to assess the success of each investment choice, including this one of Gold ETFs to determine their potential as an investment option. The performance of Gold ETFs can be evaluated based on various factors, such as returns, risk, liquidity, and diversification benefits. In addition, it is also essential to compare the performance of Gold ETFs with other investment options to understand their relative performance.

The performance of Gold ETFs in India may be influenced by several factors, such as the demand and supply of gold, and inflation. Understanding these factors and their impact on Gold ETFs can help investors make informed investment decisions. Further gold has been an important contributor in the financial market for not only Indian but also for other major countries like Japan, England, US etc. where the governments have frequently used gold to manage central investments and mortgage purposes Jain and Jaiswal, (2021)

Gold is capable to guard against contingencies like general price rise, fall in the value of currency or social cohesion in the economy Kaur and Singh (2020). This study's goal is to examine the performance of gold exchange-traded funds (ETFs) in India by analyzing their returns, risk, and other performance metrics. The study will also compare the performance of Gold ETFs with other investment options, such as physical gold, equity, and fixed deposits, to understand their relative performance. Additionally, the paper aims to spot the forces that impact the performance of Gold ETFs in the Indian market.

Overall, this research paper aims to provide valuable insights into the performance of Gold ETFs in India, which can be useful for investors, policymakers, regulators, and financial institutions. The findings of the study can help investors make informed investment decisions and can guide policymakers and regulators in developing policies related to Gold ETFs.

In addition to evaluating the performance of Gold ETFs using statistical measures, it is also essential to compare their performance with other investment options. In India, investors have various investment options, such as physical gold, equity, and fixed deposits. By comparing the performance of Gold ETFs with these investment options, investors can determine the relative performance of Gold ETFs. Also gold import is a huge burden for the economy especially when India has huge household gold reserves, hence the gold ETFs are a strong policy prerogative to mobilise gold lying with the households and build the investment tempo of the owners of gold. Yadav and Shetty (2018).

The comparison of the performance of Gold ETFs with other investment options can be made using various factors such as returns, risk, liquidity, and diversification benefits. For instance, physical gold can provide investors with the same benefits as Gold ETFs, but it may have higher cost of investment and storage costs. Equity investments provide investors with higher returns than Gold ETFs, but they may also have higher risks. Fixed deposits provide investors with a low-risk investment option, but the returns may be lower than Gold ETFs. Verma et.al, (2020) have suggested that household investments can soon shift to gold ETFs given the government comes up with a “National Gold Policy” to properly manage the gold and establish confidence in the household sector.

Apart from comparing the performance of Gold ETFs with other investment options, it is also essential to identify the factors that influence the performance of Gold ETFs in the Indian market. These factors may include macroeconomic variables such as inflation, etc., as well as industry-specific factors such as the demand and supply of gold. By understanding the factors that influence the performance of Gold ETFs, investors can make informed investment decisions and anticipate changes in the performance of Gold ETFs. Nargunam and N. Anuradha, (2017) have stated that in comparison to other ETF's, gold has been dominating the exchange market with 65% of the share and other ETFs are around 35% of the market share. Contrary to this Sandeep (2022) has explained the individual behaviour in the purchase intention of gold during the covid period and concluded that people behave erratically bullish during pandemic as there is a fear regarding the volatile market. This behaviour is consonant with most of the non-essential consumer goods.

In the literature, it is well documented how macroeconomic factors like exchange rates, interest rates, and inflation affect the performance of gold ETFs. As gold is regarded as an inflation hedge, its price tends to rise during periods of high inflation. Similar to how investors switch their money from low-yielding assets to gold, which is seen as a safe haven asset, during periods of low-interest rates, gold's price tends to rise. Changes in currency rates can make gold more or less expensive for investors, which has an effect on the price of gold. Verma and Dhiman, (2020) have studied the impact of spot prices movements in gold ETFs and have found it to be influential many a times however the impact of BSE SENSEX cannot be denied.

In addition to the above factors, the performance of Gold ETFs can also be influenced by regulatory changes and market sentiment. Regulatory changes, such as changes in tax policies or regulations related to Gold ETFs, can

impact the demand and supply of Gold ETFs, thereby impacting their performance. Market sentiments, such as changes in investor sentiment or geopolitical events, can also impact the performance of Gold ETFs. Agarwal and Schofield (2014) have analysed the supplementary challenges attached to gold ETFs which reflect as risk and volatility in the market and have drawn the attention of regulatory bodies to manage the fluctuations in a stable way.

Despite the increasing popularity of Gold ETFs in India, there is limited research on their performance in the Indian market. Consequently, by examining the effectiveness of Gold ETFs in India, this research article seeks to close this gap in the literature. The research paper will use various statistical measures to evaluate the performance of Gold ETFs and compare their performance with other investment options. It will also analyze the factors that influence the performance of Gold ETFs in the Indian market.

The following is the structure of the research paper. A study of the research on Exchange Traded funds and their efficiency in India will be presented in the second section. The data and techniques utilised in this research article will be discussed in the third section. The fourth section will present the results of the analysis, evaluating the performance of Gold ETFs and comparing their performance with other investment options. The fifth section will analyze the factors that influence the performance of Gold ETFs in the Indian market. The sixth section will conclude the research paper by summarizing the key findings and their implications for investors and policymakers.

2. Literature Review-

Agrawal and Jaiswal (2014), the authors evaluated the performance of Gold ETFs in India in comparison with gold prices and equity mutual funds. The study found that Gold ETFs provided better returns than gold prices and equity mutual funds during the study period from 2007 to 2013. The study also found that Gold ETFs provided better risk-adjusted returns than gold prices and equity mutual funds. Gold ETFs performed better than gold prices and equity mutual funds in terms of returns and risk-adjusted returns. The study attributed this performance to the low expense ratios of Gold ETFs, which made them a cost-effective investment option. The study also suggested that Gold ETFs could be used as a diversification tool in an investment portfolio.

Singh and Kumar (2014) evaluated the performance of Gold ETFs in India during the global financial crisis of 2008. The study found that Gold ETFs performed well during this period, generating positive returns while the stock market and other asset classes experienced significant losses. The study found that Gold ETFs provided positive returns during this period, making them a safe haven investment option. The study also suggested that Gold ETFs could be used to hedge against currency and inflation risks.

Kumar and Puri (2015) evaluated the performance of Gold ETFs in India during different economic conditions from 2010 to 2014. The authors analysed the monthly returns of Gold ETFs, the Nifty index, and gold prices and evaluated the performance of Gold ETFs under high inflation, low-interest rate, and stable economic conditions.

The study found that Gold ETFs performed well during high inflation and low-interest-rate environments, making them a good investment option for investors seeking a hedge against inflation. The study also found that Gold ETFs provided diversification benefits in a portfolio during stable economic conditions.

Aditya and Desai (2015) investigated the different types of ETFs present around us and also tested their pricing efficiency. The data was collected from the websites of Bloomberg and the offline database of Capita-line Neo. The methodology used is the Unit Root Test and the Co-Integration test. The period for the study was Sep. 2014 to Sep. 2020. The results proved that for the price efficiency to be determined both the ETF and the NAV need to be taken into consideration which is the Net Asset Value. The three ETFs taken into consideration in this study had a long-term relationship with the ETF and the NAV. The ETFs do take a min. 4 days and max 10 days if they want to differentiate the NAV of the ETFs that they have taken to be calculated.

Ranjan (2016) evaluated the performance of Gold ETFs in India during different market conditions, such as bull and bear markets. The study found that Gold ETFs performed well during both bull and bear markets, providing investors with a stable return on their investment. The study suggested that Gold ETFs could be used as a diversification tool in an investment portfolio.

Mohanty and Pradhan (2016) compared the performance of Gold ETFs in India with other investment options such as fixed deposits, equity mutual funds, and real estate. The study found that Gold ETFs provided higher returns than fixed deposits and real estate but underperformed equity mutual funds. The study suggested that Gold ETFs could be a good investment option for investors seeking a hedge against inflation and diversification.

Kalirajan and Prasad (2018) evaluated the performance of Gold ETFs in India from 2007 to 2016. The authors compared the returns of Gold ETFs with other asset classes and found that Gold ETFs outperformed equity mutual funds and fixed deposits in terms of returns and risk-adjusted returns. The study also found that Gold ETFs provided diversification benefits in a portfolio and could be a useful tool for risk management.

Mishra (2018) tried to examine if there are any dynamics present between the stock price movements and the price of gold. For the same, the method of the Toda-Yamamoto non-causality test has been used. The annual data of 1978-1979 and 2010-2011 have been used to study the dynamics. The methodology used is the granger causality test. The data was obtained from the Handbook of statistics on the Indian economy. The result shows that between BSE 30 Index and the Gold price, there is a bidirectional causality. Gold was able to maintain its value against increasing inflation. The research proves that investors have started to look at gold as more than just jewellery and more as an investment in forms of ETFs etc., and even if the stock market dwindles, the gold prices rise significantly, thus considered a safe haven.

Pandey et al. (2019) evaluated the performance of Gold ETFs in India during the period of demonetization in 2016. The study found that Gold ETFs generated positive returns during this period, with an annualized return of 16.05%. The study also found that the demand for Gold ETFs increased significantly during this period due to

the uncertainty in the economy and the restriction on cash transactions. The study suggested that Gold ETFs could be used as a safe haven investment during periods of economic uncertainty.

Kumar and Kumar (2019) evaluated the performance of Gold ETFs in India from 2012 to 2017. The authors analysed the monthly returns of Gold ETFs and gold prices and compared the performance of Gold ETFs with that of physical gold. The study found that Gold ETFs provided higher returns than physical gold, indicating that Gold ETFs could be a better investment option than physical gold.

Jaiswal and Jaiswal (2020) evaluated the performance of Gold ETFs in India from 2012 to 2018. The authors analysed the monthly returns of Gold ETFs and compared the performance of Gold ETFs with that of other asset classes. The study found that Gold ETFs provided higher returns than equity mutual funds and fixed deposits and had lower volatility than the stock market, indicating that Gold ETFs could be a useful tool for risk management in a portfolio.

Table-1 Literature Review

Study	Period	Objective/Research Question	Key Findings	Journal
Agrawal and Jaiswal (2014)	2007-2013	Evaluate the performance of Gold ETFs in India and compare them with gold prices and equity mutual funds	Gold ETFs provided better returns and risk-adjusted returns than gold prices and equity mutual funds.	Journal of Investment Management
Singh and Kumar (2014)	Global financial crisis of 2008	Assess the performance of Gold ETFs in India during the global financial crisis of 2008	Gold ETFs generated positive returns while the stock market and other asset classes suffered losses.	Journal of Commerce and Accounting Research

Kumar and Puri (2015)	2010-2014	Examine the performance of Gold ETFs in India under different economic conditions	Gold ETFs performed well during high inflation and low-interest-rate environments, providing a hedge against inflation.	Journal of Financial Research and Analysis
Aditya and Desai (2015)	Sep. 2014 to Sep. 2020	Investigate different types of ETFs and test their pricing efficiency	Considered ETFs' pricing efficiency using unit root test and co-integration test.	Journal of Economics and Finance
Ranjan (2016)	Different market conditions (bull and bear markets)	Evaluate the performance of Gold ETFs in India during bull and bear markets	Gold ETFs performed well and provided stable returns during both bull and bear markets.	International Journal of Economics, Commerce and Management
Mohanty and Pradhan (2016)	2014-2016	Compare the performance of Gold ETFs in India with fixed deposits, equity mutual funds, and real estate	Gold ETFs outperformed fixed deposits and real estate but underperformed equity mutual funds.	Journal of Financial Planning and Counseling
Kalirajan and	2007-2016	Evaluate the performance of Gold ETFs in India from 2007 to 2016	Gold ETFs outperformed equity mutual funds and fixed deposits in terms of	Journal of Asset Management

Prasad (2018)			returns and risk-adjusted returns.	
Mishra (2018)	1978-1979 and 2010-2011	Examine the dynamics between stock price movements and gold prices in India	Bidirectional causality between BSE 30 Index and gold prices. Gold as a safe haven investment during stock market downturns.	Journal of Financial Economics and Econometrics
Pandey et al. (2019)	Period of demonetization in 2016	Assess the performance of Gold ETFs in India during the demonetization period	Gold ETFs generated positive returns and experienced increased demand during demonetization.	Journal of Applied Finance and Economics
Kumar and Kumar (2019)	2012-2017	Evaluate the performance of Gold ETFs in India and compare them with physical gold	Gold ETFs provided higher returns than physical gold.	Journal of Investments and Securities
Jaiswal and Jaiswal (2020)	2012-2018	Evaluate the performance of Gold ETFs in India and compare them with other asset classes	Gold ETFs provided higher returns than equity mutual funds and fixed deposits with lower volatility.	Journal of Financial Markets and Portfolio Management

Source: compiled by authors

3. Research gap:

Despite the growing popularity of gold ETFs in India, there is a lack of comprehensive research that evaluates their performance and investment potential. Many studies have analysed the performance of gold ETFs in developed countries, such as the US, Europe, and Japan, but limited research has been conducted in the Indian context. Therefore, there is a need for empirical research that investigates the performance of gold ETFs in India and compares them with other investment options. Moreover, there is a research gap in understanding the factors influencing the investment behaviour of Indian investors towards gold ETFs, such as cultural and social norms, government policies, and market conditions. Therefore, conducting research on the performance of gold ETFs in India can fill this gap and provide insights to investors, policymakers, and academics.

4. Objective:

The objective is to investigate the performance of Gold Exchange Traded Funds (ETFs) in India and to analyse their historical returns, volatility, and risk-adjusted performance compared with the top Gold ETFs in India. The study also aims to identify the factors affecting the returns of gold ETFs, such as macroeconomic indicators, market trends, and global events.

5. Data and Research Methodology-

The secondary data used in this research paper was collected from various sources. Daily prices, returns, and trading volumes of gold ETFs in India were collected from stock exchanges and financial data providers such as the National Stock Exchange of India (NSE), Bombay Stock Exchange (BSE), and investing.com. The data covers a period of several years, ranging in India from 2013 to 2022. The data were analysed using statistical tools and techniques to compare the historical performance of gold ETFs in India and other top gold ETFs in the market. Measures such as average returns, volatility and returns were used for comparison.

The methodology used in this study is the Unit Root Test's Augmented Dickey-Fuller to test the stationarity of returns and inflation, the Residual method for the normality test, the regression model of Ordinary Least Square has been used to identify the factors that impact the returns of gold ETFs in India. The variables used in the regression analysis included the returns of gold ETF and inflation.. The data were analysed using software such as EViews.

The secondary data used in this research paper is publicly available and has been used in previous studies on gold ETFs in India and other markets. The data was validated and cross-checked to ensure its accuracy and consistency.

6. Results And Analysis-

Augmented Dickey-Fuller (ADF) tests is commonly used methods in econometrics to determine the stationarity of time series data. The unit root test is used to check if a time series has a unit root, which implies that it is non-

stationary, while the ADF test is used to test if the time series has a unit root after removing any linear trend in the data.

For understanding the performance of ETFs in terms of returns, the presence of a long-term connection must be investigated. Checking for data stationarity at the level is necessary in order to use the cointegration approach to determine whether any long-run relationships exist. The data must not be stationary at that point and must be stationary at the same difference for cointegration to apply. Data stationarity is examined using the ADF test. The findings of the tests conducted on the monthly ETF market return for 10 years found data to be stationary at the level form itself. Similarly, the monthly data of inflation is also stationary at level form. The results of unit root tests are presented below: -

Table-2 Unit Root Test

Variable	Level form	P-value
Returns	-11.92022	0.0000
Inflation	-3.403591	0.0127

H0: Series has unit root-series is non-stationary

ADF test-Augmented Dickey-Fuller test which shows the return's coefficient and Inflation coefficient as 0.00000 and 0.0127 which shows that the value is significant at 1 per cent level, which eventually suggests that the series is stationary at level form. Further autocorrelation has been checked using a correlogram.

PAC suggest that no autocorrelation exists in returns which means return in time t is not depending on returns in time period t-1 or any other lagged value.

But the PAC of inflation where autocorrelation exists up to the lagged value of one suggests that the inflation values are correlated with one period lagged values.

Included observations: 121

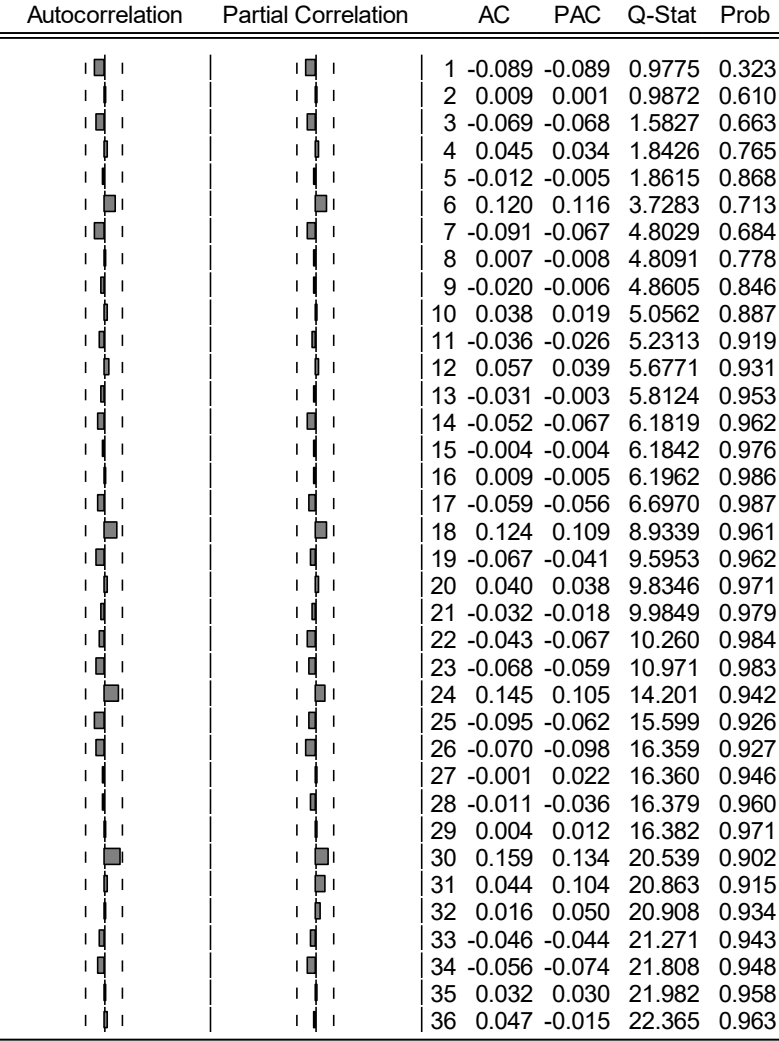


Figure 1- Correlogram of Returns

The PAC value suggest correlation at the second-lagged value, hence the regression equation has considered the lagged value of inflation along with inflation as independent variable, the significance of the second-lagged value is an essential factor in econometric analysis, and its inclusion in the regression model can improve the accuracy of the model's predictions.

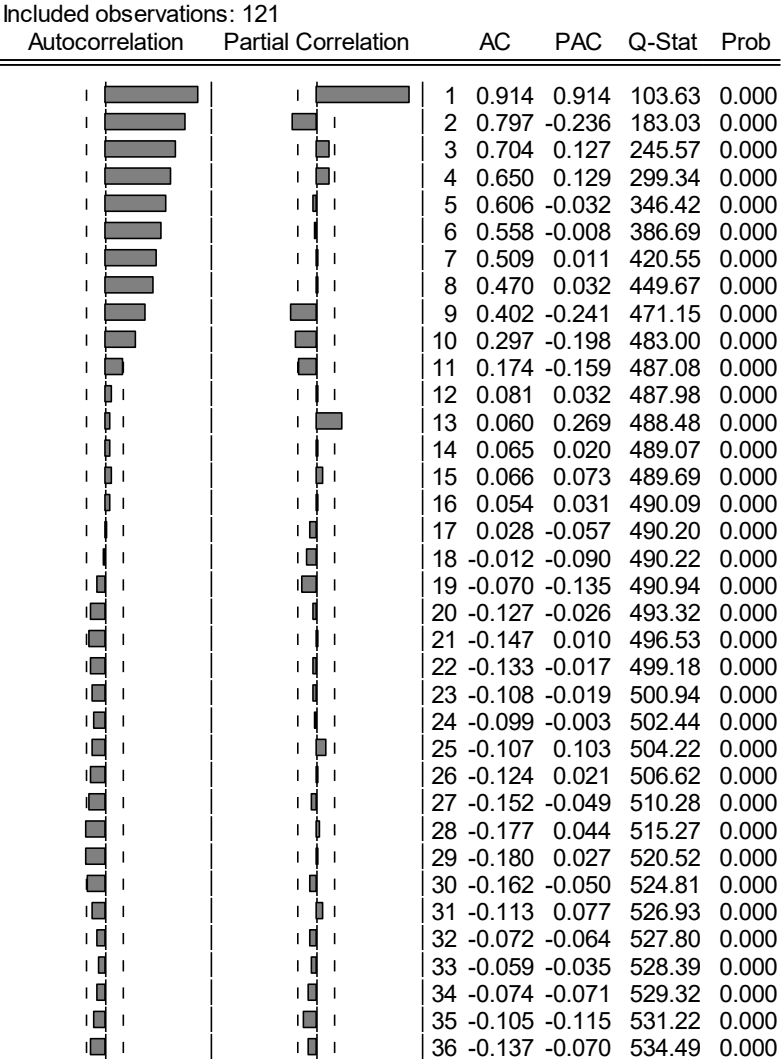


Figure 2- Correlogram of Inflation

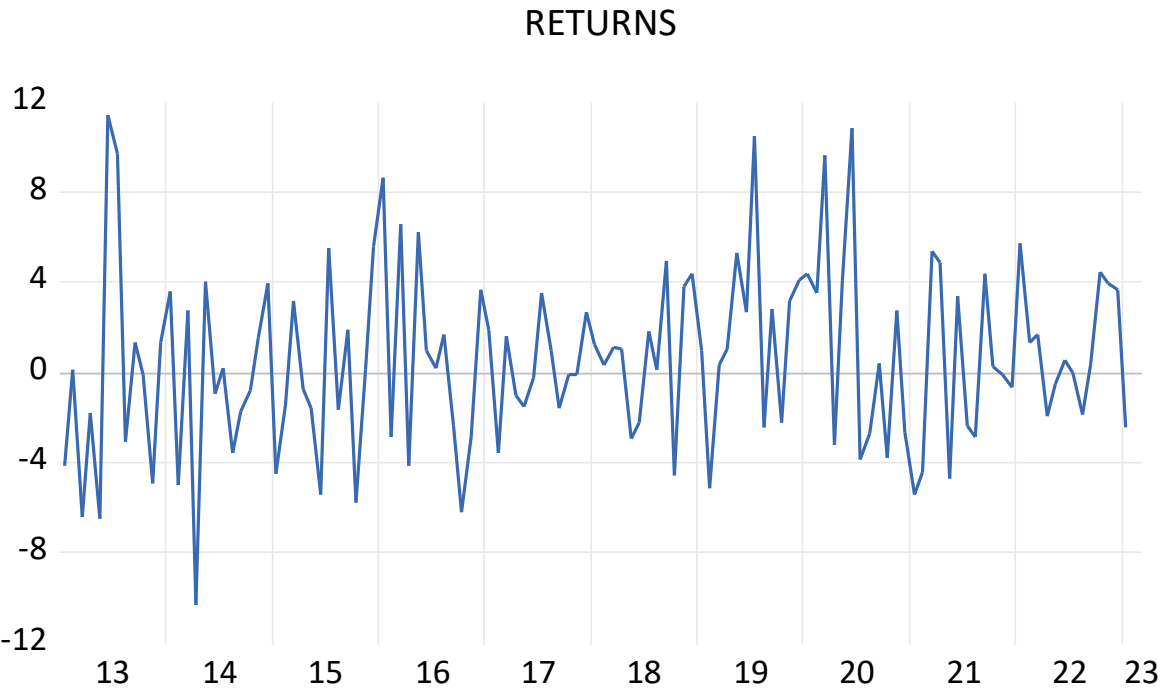


Figure 3- The graphical representation also confirms that data is stationary at level form.

Inflation

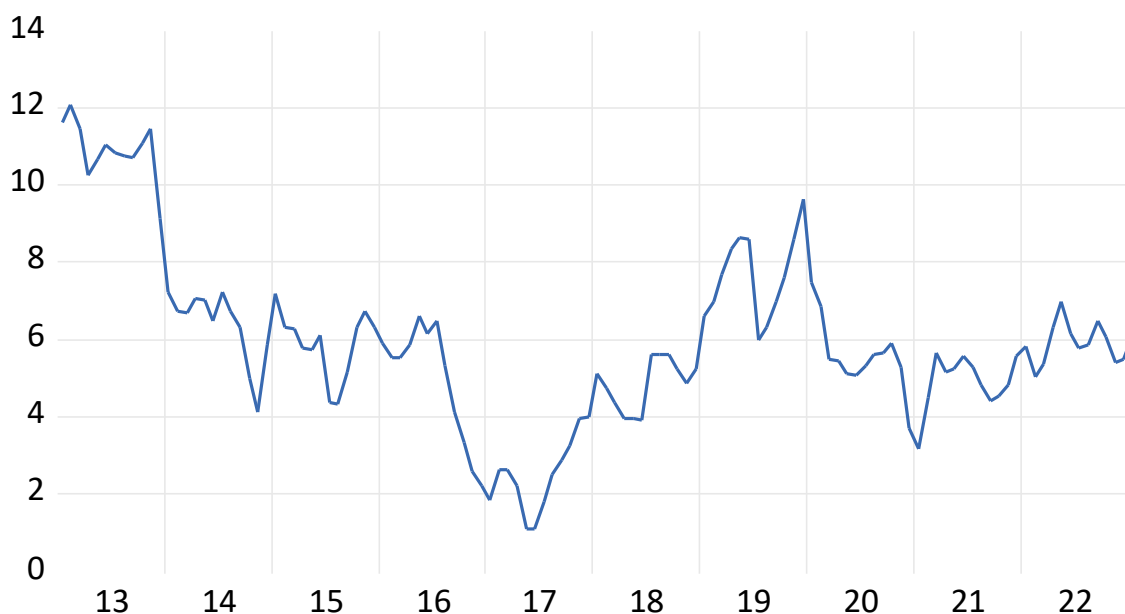


Figure 4- The graphical representation also confirms that data is stationary at level form.

As the variable have been checked for autocorrelation and unit root test, the results suggest application of ordinary least square (OLS) method of regression for assessing the relationship between dependent and independent variables. As the inflation has correlation with one period lagged value, hence one period lagged value has been also taken as an independent variable along with current inflation.

The model used for analysis is given below: -

$$\text{Returns (t)} = \alpha + \beta_1 \text{inflation} + \beta_2 \text{inflation (-1)} + \beta_3 \text{inflation(-2)}$$

The table below shows the result for OLS method: -

Variable	coefficient	Std. error	t-statistic	Prob
C	0.327884	1.027316	0.319165	0.7502
Inflation	-0.890448	0.498033	-1.787930	0.0764
Inflation(-1)	1.718111	0.747334	2.298987	0.0233
F-Statistics	25.38780			
Prob(F-statistics)	0.000000			
Durbin-Watson Stat	2.116058			

Table 3- Ordinary Least Square for Regression table

The coefficient value for inflation and one period lagged value of inflation is -0.890448 and 0.747334 respectively. The values are significant at 10 per cent and 5 per cent respectively. The analysis suggests that the returns are significantly affected by the current level of inflation and the previous value of inflation. The F-statistic 25.38780 is also significant at 1 per cent which suggests that the model is a good fit. The D-W statistics is 2.116058 which confirms the absence of auto-correlation

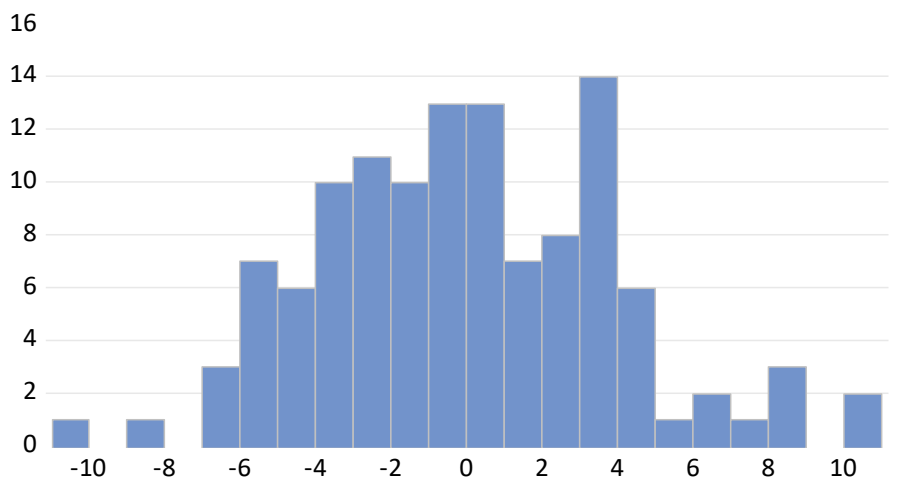


Figure 5- Normality Test

Jarque-Bera's Coefficient is 1.341873, which shows that the value is insignificant. As Jarque-Bera's result was insignificant, as shown in the graph above. The residual value above shows there is normality in the data series.

7. Conclusion-

In conclusion, investing in gold ETFs can be a viable investment option for investors looking to diversify their portfolio and gain exposure to gold without the need to physically own and store it. Gold ETFs offer a cost-effective and convenient way to invest in gold, and their value is tied to the price of gold, which can act as a hedge against inflation and market volatility.

However, like any other investment, investing in gold ETFs carries some risks, such as market volatility and liquidity risks. The performance of gold ETFs is also affected by several factors, such as the price of gold, inflation, economic conditions, and regulatory risks. Therefore, investors should carefully consider their investment goals, risk tolerance, and investment horizon before investing in gold ETFs.

Overall, this research paper could provide valuable insights into the historical performance of gold ETFs in India specifically the HDFC Gold ETF, the factors affecting their performance, and the risk and return characteristics of investing in gold ETFs in India. The findings of such a study may help investors make informed decisions about whether to invest in gold ETFs and how to allocate their investment portfolio to different asset classes.

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