



# Impact of COVID 19 on Gold Derivative Trading in India

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**Abstract--** Gold is considered to be one of the safest heavens for investors. When coronavirus or COVID 19 declared as global pandemic, investors globally turned towards gold for some period as it was steady with its performance. Later, the prices have come down and now there is all time high record in gold prices in India. Hence, an attempt has been made to study the gold derivative market performance in India with regard to pre and post COVID 19 period. The daily closing prices of gold futures traded in Multi Commodity Exchange of India Limited are taken for a period of one year for the purpose of study. Statistical operations are performed with the help of E views. Time series models like ADF test, GARCH (1, 1) are used to study the stationarity and volatility in returns to examine the performance of gold futures during the pre and post coronavirus period.

**Key words--** Gold futures, COVID 19, MCX and Time Series Models

## I. INTRODUCTION

The Lockdown had a very bad effect on agri commodities as mandis were closed for certain period of time. Decrease in demand and shutdown of factories

across the world has drop down in the demand of exports of commodity derivatives like pulses, food grains etc. However, during the crash of stock and commodity markets gold is the only commodity that shown brighter as traders and investor turned to the safety of bullion.

The base metal performance was very bad after the coronavirus passed to over 21 countries. In order to overcome the spread of virus many countries have announced lockdown. It was after the lift of lockdown, the things started looking a bit better. Gold prices witnessed a important upsurge in the recent months owing to risk-off sentiment and importance of investment in yellow metal as a safe haven asset.

Gold has reached an all time high record of price around 54000 Indian rupees per 10grms in the domestic market. White metal as well recording it's all time high price post lockdown in the nation. By looking at the performance of gold and its importance as a safe haven to investment, here in this paper an attempt has been made to examine the performance of gold during the pre and post period of COVID 19.

## II. REVIEW OF LITERATURE

S.No.	Author	Title	Source	Findings
1	Stephen W.Salant and dale W.Henderson (2016)	Market Anticipations of government policies and the price of gold	Journal of Political Economy, Vol.86, No.4, P-627-648	analysed the effects of anticipations of government sales policies on the real price of gold. Although the risk of a future government gold auction depresses the price, it also causes the price to rise in percentage terms faster than the real rate of interest and at an increasing rate. Even risk-neutral investors require this rate of return as inducement to hold gold in the face of the asymmetric risk of a price collapse. Announcements making a government auction more probable cause a sudden drop in the price. Government attempts to peg the price or to defend a price ceiling with sales from its stockpile must result eventually in a sudden attack by speculators
2	P Sarvanan and M k Srikanth(2015)	Gold Monetization Scheme	Economic & Political Weekly, online-2349-8846	analysed the performance of gold monetisation scheme introduced by the government for optimum utilisation of gold by the investors and also towards reducing India's current account deficit. They have opined that GBS attracts the investors as it carries a higher rate of interest than that of investment in physical gold and the exchange traded funds. Further concluded that time will decide whether the tax and the interest rate incentives offered by the government will determine the success of this scheme.



3	Rudra Prosad Roy and Saikat Sinha Roy (2015)	Financial Contagion and Volatility spillover: An exploration into Indian Commodity Derivative Market	Researchgate, <a href="https://www.researchgate.net/publication/287994787">https://www.researchgate.net/publication/287994787</a>	measured the cause and effect of financial contagion and directional volatility spillover in the Indian financial market taking into accounts the effects of gold, stock, foreign exchange and government securities markets on Indian Commodity Derivatives market by considering daily return of commodity spot indices by applying DCC-MGARCH model. Results show that commodity and foreign exchange markets are the net receivers of volatility and are transmitted to commodity market mostly from gold market stock market. These results have significant implications for optimal portfolio selection.
4	Tim Leung and Brain Ward (2015)	The Golden Target: analysing the tracking performance of leveraged gold ETFs	studies in economics and finance, vol. 32 Iss 3 pp. 278-297.	made an attempt to understand the tracking errors of leveraged exchange traded funds (LTFs) on gold and demonstrate improved tracking performance dynamic portfolios of gold futures. The results suggest that market traded LTFs do not track a leveraged position in gold effectively over long horizon and the dynamic leveraged futures portfolio achieves lower tracking errors over multiple errors.
5	Bhaskar Goswami and Isita Mukherjee (2015)	Risk-Return analysis of different commodity futures in Indian derivative Market	International Journal of Research in Finance & Marketing, vol.5, issue6(June), PP- 73-78	made a comparative analysis of risk-return on agricultural commodity futures, Metals, Energy, oil & oil related products over a period of 2004-2012. Agricultural and Metal futures occupy a modest position with respect to risk and return. Energy futures earned lowest risk and return where as oil & oil relate products earned highest risk and return by confirming high returns are generally associated with high risk with general theory of risk and return.

### III. RESEARCH GAP

Though many studies have been taken place examining the performance of stock market during the period of COVID 19 researches relating to specifically in evaluating the performance of gold derivatives in India are limited. Hence, an attempt has been made to examine the performance of gold derivatives trading in India during the pre and post COVID period.

### IV. OBJECTIVE

To analyze the performance of Gold derivatives in India during the pre and post COVID period.

### V. HYPOTHESIS

**Null Hypothesis:** There is no change in volatility of gold returns in pre and post period of COVID 19

### VI. METHODOLOGY

The daily closing prices of gold futures traded in MCX are collected from the official website for a period of one year with regard to pre and post period of COVID 19. The study is restricted only to Multi Commodity Exchange of India Limited.

### VII. ANALYSIS

#### A. Data Analysis and Results

Table 1: Descriptive statistics of Gold Future Returns - MCX

Particulars	PRE_LOG RETURNS	POST_LOG RETURNS
Mean	100.0718	100.2511
Median	100.0627	100.2358
Maximum	102.1422	103.6181
Minimum	97.66718	95.59778
Std. Dev.	0.846557	1.261378
Skewness	-0.233498	-0.424162
Kurtosis	3.466134	4.390024
Jarque-Bera	2.739179	12.26468
Probability	0.254211	0.002171
Sum	15110.84	11127.87
Sum Sq. Dev.	107.4988	175.0182
Observations	151	111

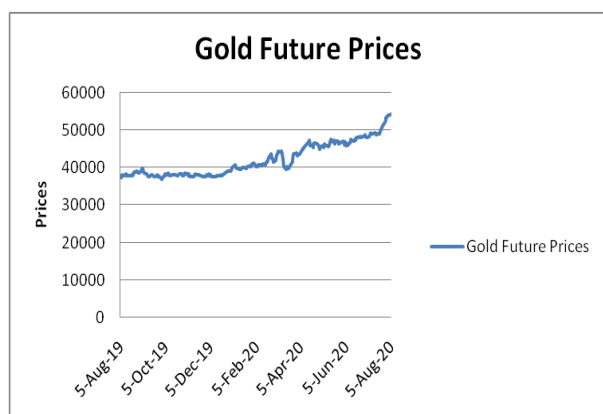
The above table shows the descriptive statistics of the daily of futures markets of commodity gold for near



month contracts over the sample period. It shows that there is no much difference in the mean prices of pre and post COVID 19 period of future near month contracts. Negative skewness was observed in the prices of futures for near month contracts. The presence of negative skewness indicates a distribution with an asymmetric tail extending towards left side, i.e. longer tail on lower-return side of the curve and hence a higher probability of earning negative returns. A small kurtosis figure ( $<3$ ) is also observed, indicating a platykurtic distribution which implies that values in the distribution are wider spread around their mean value.

### B. Trend Analysis

**Table 2: Trend analysis of Gold Futures for the period Aug 2019 to Aug 2020**



The above table represents the trend line of Gold Futures prices traded on Multi Commodity Exchange of India Limited for the period Aug 2019 to Aug 2020. It is very much evident from the above table that gold prices are recording its all time high prices post lockdown resulting

**Table 4: Impact of COVID 19 on Gold Futures Price Volatility**

### GARCH (1, 1) Model

Period	Variable	Coefficient	Std. Error	z - Statistics	Prob.
Pre - period COVID 19	Constant	100.0756	0.063378	1579.038	0.0000
	ARCH (RESID(-1) <sup>2</sup> )	0.150535	0.103229	1.458271	0.1448
	GARCH (-1)	0.650739	0.235967	2.757759	0.0058
Post Period COVID 19	Constant	100.3351	0.090995	1102.644	0.0000
	ARCH (RESID(-1) <sup>2</sup> )	-0.06543	0.018747	-3.490199	0.0005
	GARCH (-1)	1.084988	0.000273	3972.841	0.0000

**Z-test critical Values – 1% level – 2.58; 5% level – 1.96; 10% level – 1.645**

### Volatility in Pre –period

In pre-period, the co-efficient of constant is 100.0756 and its calculated value of z-statistics is more than the critical value causing to reject the null hypothesis at 1% significance level indicating the unconditional volatility has its impact on gold futures prices. ARCH co-efficient is 0.1505 and GARCH coefficient is 0.650739 and calculated value of z-statistics of both the variable is more than the critical value causing to reject null

in shift of investors from other investments to investment in yellow metal.

**Table 3: Testing of Stationarity of Gold Futures Returns**

### Augmented Dickey Fuller Test – MCX – Gold

Particulars	Near Contract	Month
	t-Statistic	Prob.*
Gold - Pre Period Future Returns	-12.55164	0.0000
Gold -Post Period Future Returns	-9.548777	0.0000

Test critical values: 1% level -3.432948; 5% level

-2.862574; 10% level -2.567366

\*MacKinnon (1996) one-sided p-values

The table 3 shows the calculation of stationarity test on the log values of futures returns for near month contracts of gold - MCX. Most commonly log returns tend to be stationary, but to confirm the Stationarity of the series statistically, augmented version of Dickey Fuller test has been employed. The null hypothesis is that series is non-stationary and if the calculated value exceeds the critical value null hypothesis may be rejected implying the stationary characteristics of the series. The results of the test confirm that the data series of futures returns is stationary ( $p < 0.05$ ).



significance level indicating the unconditional volatility has its impact on gold futures prices. ARCH co-efficient is -0.06543 and GARCH coefficient is 1.084988 and calculated value of z-statistics of both the variable is more than the critical value causing to reject null

hypothesis and accepting alternative hypothesis at 1% level of significance, inferring that effect of the recent news and the old news in the market is significant on gold futures prices.

**Table 5: Johansen Co-integration Test**

**Series: Pre and Post COVID 19 Period Future Prices – Gold – India**

Hypothesized No. of CE(s)	Trace Test				Max-Eigen Value Test			
	Eigenvalue	Statistic	Critical Value	Prob.**	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.226921	44.88352	15.49471	0.0000	0.226921	27.28169	14.2646	0.0003
At most 1	0.153	17.60183	3.841466	0.0000	0.153	17.60183	3.841466	0.0000

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

The table 2 shows the results of Johansen test of cointegration. The analysis of the results reveals that there is a presence of two co integration equation between pre and post COVID 19 period of gold futures prices that are traded in Multi Commodity Exchange of India Limited. The Trace test results points out that the number of co integration equations are two, where as Maximum Eigen value test results also confirms the presence of two cointegration equation.

### CONCLUSION

It is evident from the above results that the reason why yellow metal is considered to be one of the safest haven. It can also be concluded that there is a change in volatility of returns in gold futures prices caused due to corona virus or COVID 19 and attracted many investors it as a safer asset for investment. For a country like India where investment in gold is considered as a tradition, made many investors turn bull as the future prices of gold are on a increasing trend. Hence, It can be concluded that irrespective of the market conditions and pandemic situations the yellow metal is considered to be one of the safest haven for investors after all “Gold is Gold”.

### References

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