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Short-Run Performance of Gold Futures in Indian Commodity Market

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ABSTRACT

This paper aims to study the short-run performance of spot and futures prices of gold contracts in the Indian commodity market. Time series data for one year starting from April 2014 to March 2015 is used for analysis. The data collected through NCDEX website and 10 grams gold contract prices in spot and future market only considered for this study. Normality test was performed (Descriptive statistics and Jarque –bera test) to find out the distribution of the data. Correlation is used to study the relationship between risk and return on the spot and future prices. It is found from the analysis that the gold futures price and returns are not normally distributed. Spot market outperformed the futures market in terms of return and risk.

KEYWORDS :

I. Introduction

The consumption of Gold is different for individuals, industries and countries. According to World Gold Council, gold is consumed in 50% in Jewellery, 40% in Investments and 10% in the Industry. In recent times, China has become the world's largest single consumer of gold and toppled India for the first time with Chinese consumption increasing by 32 percent in a year, while that of India only rose by 13 percent and world consumption rose by 21 percent. Unlike India, where gold is used for mainly for jewelry, China uses gold for manufacturing and retail. The price of gold in the spot market is highly volatile due to the demand factors for its multi usage.

In the year 2014, 39.71 Lakhs of contracts on gold were traded on the Multi Commodity Stock Exchange in India. India is the largest consumer of Gold in the world accounting for nearly 25% of the total gold consumption in the world. Most of India's gold consumption is in the form of jewelry and as an investment. Indian gold demand is supported by cultural and religious traditions which are not directly linked to global economic trends as a result of which demand remains steady even during high prices.

Gold Futures contract started trading on the NCDEX platform from 2004 onwards has witnessed considerable volatility. Using futures platform importers & domestic buyers can minimize their price risk. A wide range of Market participants ensures better price discovery. With ever -increasing import demand, importers can insure themselves against price risk. The disparity between import prices provides good arbitrage opportunities to the various market participants.

This paper is divided into four sections i.e., Section 1 deals with introduction, section 2 deals with available literature on this study, section 3 deals with methodology, section 4 deals with results and discussions and section 5 deals with conclusion and directions for further research.

II. Review of Literature

Johsy&Ganesh (2015) analyzed the price discovery process of gold spot and future prices in the Indian commodity market. They argued that spot market is dominated in the price discovery process of gold. Johansen co-integration test was performed to test the long run dynamic relationship between the spot and future prices of gold. It is revealed from the test that the gold price in the spot and future market were co-integrated and they share common long- run information in price discovery.

Pandey Piyush (**2014**) examined the price discovery and volatility spillover between spot and future for gold market in India. Five year's spot and future prices of gold (starting from 2009 to 2014) were used for the empirical analysis. Co-integration was used to test the price discovery process and the results indicated that there was bidirectional causality exists between spot and future prices of gold. EGARCH Model was applied for the volatility spillover and the researcher found that spot market lead the future market in India.

Srinivasan and Ibrahim (2012) made an attempt to examine the price discovery process and volatility spillovers in the Indian gold futures market. They employed Johansen's Vector Error Correction Model (VECM) and the Bivariate ECM-EGARCH (1,1) model. It was identified from their study that the spot market of Gold plays a dominant role and serves as an effective price discovery tool. And also the study investigated that the spot market spillovers the information for the futures market.

III. Methodology

This study is based on empirical in nature.

Secondary data which are collected through NCDEX website and one-year data from April 2014 to March 2015 is gathered for analysis. Prices of 10 grams gold contract were only collected for this study. To test the following hypothesis,

Hypotheses of the study

H01: There is no significant relationship exist between return and risk of spot prices of gold

H02: there is no significant relationship exist between return and risk of future contract prices of gold

H03: Prices of the gold in the futures market are normally distributed

H04: Prices of the gold in the spot market are normally distributed

Objectives of the study

The primary objective of the study is to find the performance of gold futures in the Indian commodity market for the short-run period. To achieve the primary objective, the following secondary objectives were framed;

- To assess the normality of spot and futures prices of gold contract in the Indian commodity market
- To study about the relationship between risk and return of spot and futures prices of gold contract

IV. Results and discussions

Table No 1. DESCRIPTIVE STATISTICS AND TEST OF NORMALITY FOR SPOT AND FUTURE PRICES OF GOLD CONTRACT

	SPOT PRICES	FUTURES PRICE
Mean	24643.27	27450.19
Median	24550.00	27282.50
Std. Dev.	845.5235	1118.932
Skewness	0.324377	0.669044
Kurtosis	3.053205	3.177131
Jarque-Bera	4.960963	21.25500
Probability	0.083703	0.000024

From the descriptive statistics for spot and futures prices of gold contract (refer table no 1), it is observed that the sample means of spot and futures market prices are positive (24643.27 & 27450.19) and the standard deviation ranges from 845.52 (spot) to 1118.93 (futures). The values of skewness and kurtosis indicate that the distributions of spot and futures market prices are positively skewed (0.32 for the spot, 0.67 for the futures) and leptokurtic relative to the normal distribution. The Jarque-Bera test statistic accepts normality at the five percent level of statistical significance of the spot prices of gold and rejects normality at the five percent level of statistical significance for future price.

TABLE NO 2. DESCRIPTIVE STATISTICS AND TEST OF NORMALITY FOR RATE OF RETURN FOR SPOT AND FUTURES PRICES

	Return of futures	Return of spot
Mean	-0.00686	-0.00034
Median	-0.005	-0.00041
S.D	0.880915	0.008997
Kurtosis	6.111715	4.253526
Skewness	1.00	0. 32
Jarque-Bera	464.54	22.49
Probability	0.00	0.00

From the descriptive statistics for rate of return of spot and futures prices of gold contract (refer table no 2), it is observed that the sample means of spot and futures market returns are negative (-0.00686 & -0.000341) and the standard deviation ranges from 0.88 (spot) to 0.008 (futures). The values of skewness and kurtosis indicate that the distributions of spot and futures market returns are positively skewed (1.00 for the spot, 0.32 for the futures) and leptokurtic relative to the normal distribution. The Jarque-Bera test statistic rejects normality at the five percent level of statistical significance for the spot and future returns of gold. .

Table No 3: Relationship between return and risk of gold spot prices

Correlations			
		RETURN	RISK
RETURN	Pearson Correlation	1	.247
	Sig. (2-tailed)		.439
	N	12	12
RISK	Pearson Correlation	.247	1
	Sig. (2-tailed)	.439	
	N	12	12

The Pearson correlation coefficient has been used to test the whether there is significant relationship exist between return and risk of the gold spot prices. It is found from the Pearson correlation r(11)= 0.247 and p value is 0.439. Hence, the null hypothesis is rejected with 5% significance level that there is significant relationship exist between return and risk of the gold spot prices.

Table No 4: Relationship between return and risk of gold futures

Correlations			
		RETURN	RISK
RETURN	Pearson Correlation	1	-.188
	Sig. (2-tailed)		.538
	N	12	12
RISK	Pearson Correlation	-.188	1
	Sig. (2-tailed)	.538	
	N	12	12

The Pearson correlation coefficient has been used to test the whether there is significant relationship exist between return and risk of the gold futures. It is found from the Pearson correlation r(11)= -0.188 and p value is 0.538. Hence, the null hypothesis is accepted with 5% significance level that there is no significant relationship exists between return and risk of the gold futures.

V. Conclusion

From this study, it is observed that the spot prices of the gold contract are normally distributed and returns of spot prices of gold are not normally distributed. The results of future contract prices and returns are not normally distributed and most of the studies noticed that the future prices and returns are not normally distributed (Gupta, 2006). The return and risk of spot contract are outperformed the future market return and risk. The study can be extended for a long- run period and it can be studied for other bullions and other commodity futures.

Appendix

Chart No.1: The Spot Price Movement during April 2014 to March 2015 (for 280 days)

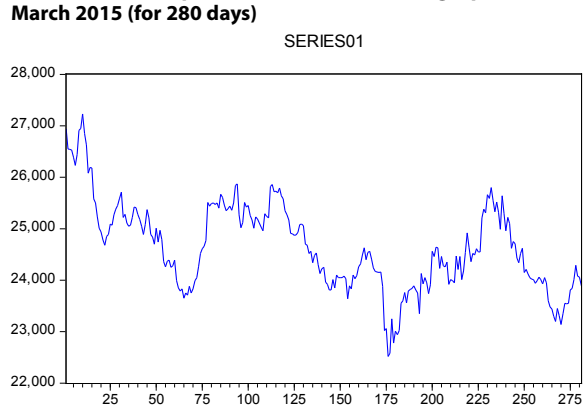


Chart No.2: The Future Price Movement during April 2014 to March 2015 (for 280 days)

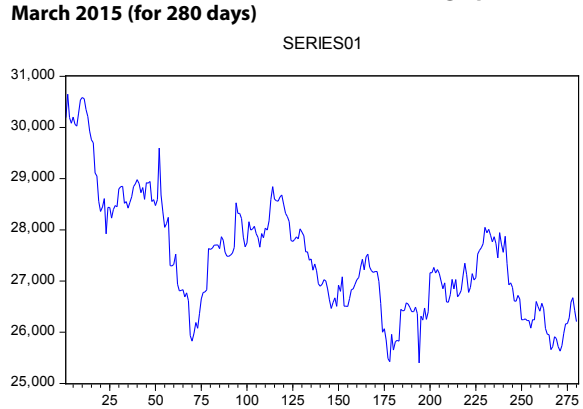


Chart No.3: Return of Spot price movement during April 2014 to March 2015 (for 280 days)

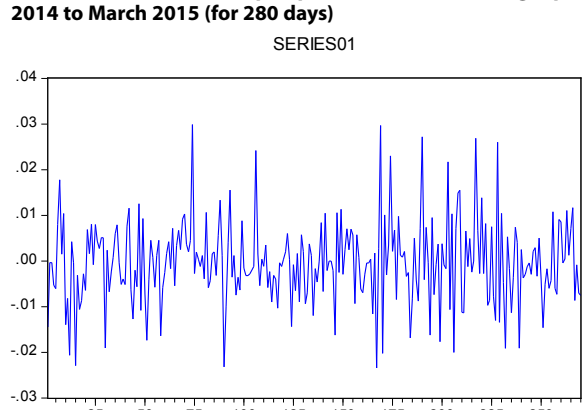
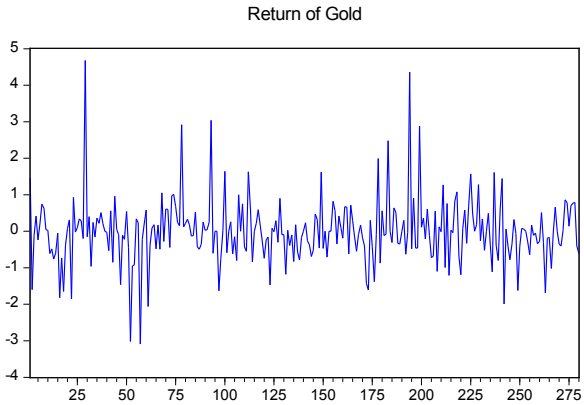


Chart No.4: Return of future price movement during April 2014 to March 2015 (for 280 days)



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