

Institutional Investors And Commodity Derivative Market In India - A Semi-Log Growth Model

Dr.M.Anbukarasi
Assistant Professor
School of Commerce
Bharathiar University
Coimbatore – 641 046.
anbujan2011@gmail.com

M.Devaki
Ph.D Research Scholar
School of Commerce
Bharathiar University
Coimbatore – 641 046.
deva.shylu@gmail.com

Abstract

The study aims to documents the presence of escalation on Institutional Investors and Commodity derivatives market by using the Semi-Log Growth Model with the monthly dataset from April 2016 to October 2019 with 43 Observations. To construct the semi log growth model need to fulfill the four assumptions they are i) There is no serial correlation in the data, ii) The data are normally distributed, iii) There is no Heteroskedasticity and iv) The data must be stationary. These assumptions are fulfill means the predicted growth model is fit. Variables have been chosen for the study are Institutional Investors and Commodity derivative market in India. Institutional investors are classified into two they are Foreign Institutional Investors and Domestic Institutional Investors; Bullion segment is selected in Futures Commodity Derivative market in that gold and silver commodity is chosen for analyzing purpose. A Semi-log Growth model demonstrates that there is presence of escalation in chosen Institutional Investors and Futures Commodity Derivatives market in India. Therefore, the study exemplifies that the investors can bravely invest in the commodity derivative market in India.

Keywords: Commodity Derivatives, Bullion market, Institutional Investors, Growth model

Introduction

Commodity derivatives are investment paraphernalia that permit investors to revenue from convinced commodities devoid of possessing them. Construction of a forward market in commodities was a momentous of human being modernization. The principal impulsion for this rationale arises out of the straightforward fact that while the assembly of farming foodstuffs was largely recurring and theme to a number of possibilities, utilization was and motionless is not. Fundamentally, the forward market endow with a apparatus by which the projection of future production and utilization were brought to bear on today's price in a coherent way that, among other things, reputable a link between current and upcoming

production and utilization cycles, in that way make possible the inter-temporal smoothing of prices. An Institutional investor is a person which pools money to acquisition of securities, real property and other investment assets or originate loans. Institutional Investors include banks, credit union, insurance companies, pensions, hedge funds, REITs, investment advisors, endowments and mutual funds. Not only by these avenues can they also include in the commodity market. Here the institutional investors are Foreign Institutional Investors as well as Domestic Institutional Investors.

Review of Literature

(Kabir & Ikram, 2012) investigating the Role of Financial Derivatives and its Impact on Indian Capital Market: A Case Study of National Stock Exchange (NSE) since 2000. This paper focuses and analyzes the role of financial derivatives in the Indian Capital Market. The efforts are also made by the researchers to test its impact on Indian Capital Market. The data analyzed in this paper has been collected from the related source i.e. NSE India. The sample consists of monthly average of stock indices of NSE (i.e. S&P CNX Nifty) and indices of derivatives i.e. (Future Index Nifty) in India. Researchers employed correlation, regression and t-test approach with market data for the period April 2000 to March 2010 and also analyzed the impact of sectoral index of futures on Indian Capital Market. The result [shows](#) that there is a higher fluctuation in the market which shows the high volatility and higher risk in the market. On the basis of the data analyzed, they found out that there is a significant relationship between the movement of the Financial Derivatives and Capital market.

(Dhandayuthapani & Sudha, 2018) examines a study on performance of Commodities Derivatives Trading in India. The major objective of their study is to figure out the trading practices and level of performance with special reference to one of the major commodity exchange in India, that is Multi Commodity Exchange (MCX). It is found that the trading in commodity derivatives is about three times more than in physical market, whereas, it is more than ten times in advanced economies.

(Knaut & Paschmann, 2019) analyzed price volatility based on the example of German electricity markets. They develop a theoretical model to replicate the price formation in the day-ahead and intraday auction which is sequential short-term electricity markets with 60-minute and 15-minute products. The theoretical model is then transferred into an empirical analysis to first validate the modeling approach and second to comparatively assess the impact of increasing product granularity and restricted market participation. In this paper they

found that the high quarter-hourly price volatility in real-world data is essentially triggered by two factors. First, the high variability of demand and renewable electricity generation create a need for sub-hourly product granularity. Second, they identify that the supply curve in the intraday auction inclines compared to the day-ahead auction. Based on their empirical results, they derive a proxy for welfare losses related to restricted participation which approximated EUR 108 million in 2015 and EUR 55 million in 2016.

Statement of the Problem

The institutional investor's assessment to endow in the commodity market will verify the altitude of finances offered and the resourceful performance of the market. Consequently investment pronouncement require to go through a methodical analysis of the situations widespread based on a number of dynamics, though despite of the speckled information obtainable that justifies rationality and illogicality, investors are eager to stay away from suspicions allied with the vital decisions they employ in. Thus, investors have to consider the growth of the futures commodity derivative market. This coins the researcher to investigate the study on growth of institutional Investors and futures commodity derivatives market in India.

Objective

The main objective is to study the growth of Institutional Investors and Select commodity futures market in India.

Hypotheses

- **H₀₁:** There is no Stationarity of Institutional Investors and Select Bullion commodity Derivative Market in India.
- **H₀₂:** There is no Growth in Institutional Investors and Select Bullion commodity Derivative Market in India.

Research Methodology

The study investigates the presence of escalation in the Institutional investors and Bullion Commodity Derivatives futures market in India. The research design is analytical in nature and it consists on secondary data for a period of three years monthly data from April 2016 to October 2019 with 43 observations. The Variables chosen for the study are Institutional Investors, Foreign Institutional Investors and Domestic Institutional Investors; In the Bullion Commodity Derivatives futures market Gold and Silver commodity was selected for research analysis. The data are obtained from Securities Exchange Board of India (SEBI),

Multi Commodity Exchange (MCX) and National Stock Exchange (NSE). Econometric tools adopted for the study are Augmented Dickey-Fuller Unit Root test and Semi-Log Growth Model.

To construct the semi log growth model, need to fulfill the four assumptions. They are:

- i) There is no serial correlation in the data
- ii) The data are normally distributed
- iii) There is no Heteroskedasticity and
- iv) The data must be stationary.

If these assumptions are fulfilled means that the predicted growth model is fit.

Results and Discussion

Augmented Dickey - Fuller Test (Unit Root Test)

H₀: There is no Stationarity of Institutional Investors and Select Bullion Commodity futures Derivative Market in India.

Table 1

Augmented Dickey – Fuller test of Institutional Investors and Select Bullion commodity futures derivative market in India for a period from April 2016 to October 2019

Variables	Level		1 st Difference	
	t statistics	Prob.*	t statistics	Prob.*
FII	-4.335440	0.0069		
DII	-4.056736	0.0141		
GOLD	-1.205160	0.8955	-4.588450	0.0007
SILVER	-1.605528	0.7739	-6.622866	0.0000

Source: Compiled and Calculated

The above table portrays the outcome of the Unit root test to determine the stationarity among the time series data. The Augmented Dickey – Fuller test was used at level and first difference under the postulation of intercept, trend and constant. According to the consequence of the test, Foreign Institutional Investors (FII) and Domestic Institutional Investors (DII) are stationary at level $I(0)$. Gold and Silver Bullion commodity are not stationary at level, but it become a stationary when its first difference $I(1)$ was taken. Hence, the null hypothesis is rejected and demonstrates that the data is stationary for Institutional Investors and Select bullion commodities in India.

H₀: There is no Growth in Foreign Institutional Investors in India

Table 2
Semi Log Growth Model of Foreign Institutional Investors in India for a period from April 2016 to October 2019

Variable	Coefficient	Std. Error	t/F-Statistic	Prob.	Accept / Reject H ₀
LFII	0.201027	0.200887	2.991866	0.0005*	Reject H ₀
Breusch-Godfrey Serial Correlation LM Test: <i>H₀: There is no serial Correlation</i>			0.072869	0.9423	Accept H ₀
Normal Distribution – Jarque-Bera Test <i>H₀: The data is normally distributed</i>			1.857216	0.3951	Accept H ₀
Heteroskedasticity Test: Breusch-Pagan-Godfrey <i>H₀: There is no Heteroskedasticity</i>			0.050813	0.8228	Accept H ₀

Source: Computed

Note: * 5 per cent significant level

The above table demonstrates the semi log growth model for Foreign Institutional Investors in India. The LFII coefficient value shows that 20.10 per cent growth in FII during the study period and the probability value less than 5% level of significance (0.0005). Here the significance value illustrates that there is a growth in FII in India. The Breusch-Godfrey Serial correlation LM Test shows the serial correlation of variable, that the probability value (0.9423) is greater than 5 per cent significance level and it shows there is no serial correlation. Hence, the null hypothesis is accepted. The p-value of Jarque-Bera (J-B) test statistics (0.3951) is not significant at 5 per cent level. Hence, the null hypothesis is accepted and it shows that the data are normally distributed. The probability value of Breusch-Pagan-Godfrey heteroscedasticity test (0.8228) is greater than 5 per cent, hence the null hypothesis is accepted and there is no heteroscedasticity. The estimation had met the assumptions of stationarity, serial correlation, normality and Heteroskedasticity; hence the estimated semi log growth model for growth prediction is fit.

H₀: There is no Growth in Domestic Institutional Investors in India

Table 3
Semi Log Growth Model of Domestic Institutional Investors in India for a period from April 2016 to October 2019

Variable	Coefficient	Std. Error	t/F-Statistic	Prob.	Accept / Reject H ₀
LDII	0.108040	0.003657	29.543341	0.0000*	Reject H ₀
Breusch-Godfrey Serial Correlation LM Test: <i>H₀: There is no serial Correlation</i>			0.609544	0.5487	Accept H ₀
Normal Distribution – Jarque-Bera Test <i>H₀: The data is normally distributed</i>			0.151217	0.9271	Accept H ₀

Heteroskedasticity Test: Breusch-Pagan-Godfrey <i>H₀: There is no Heteroskedasticity</i>	2.124282	0.1526	Accept H ₀
---	----------	--------	-----------------------

Source: Computed

Note: * 5 per cent significant level

The above table illustrates the semi log growth model for Domestic Institutional Investors in India. The LDII coefficient value shows that 10.80 per cent growth in DII during the study period and the probability value less than 5% level of significance (0.0000). Here the significance value exemplify there is growth in DII in India. The Breusch-Godfrey Serial correlation LM Test shows the serial correlation of variable, that the probability value (0.5487) is greater than 5 per cent significant it shows there is no serial correlation. Hence, the null hypothesis is accepted. The p-value of Jarque-Bera (J-B) test statistics (0.9271) is not significant at 5 per cent level. Hence the null hypothesis is accepted and it shows that the data are normally distributed. The probability value of Breusch-Pagan-Godfrey hetero skedasticity test (0.1526) is greater than 5 per cent, hence the null hypothesis is accepted and there is no heteroskedasticity. The estimation had met the assumptions of stationarity, serial correlation, normality and hetero skedasticity; hence the estimated semi log growth model for growth prediction is fit.

H₀: There is no Growth in Gold Commodity futures market in India

Table 4

Semi Log Growth Model of Gold Commodity for a period from April 2016 to October 2019

Variable	Coefficient	Std. Error	t/F-Statistic	Prob.	Accept / Reject H ₀
LGOLD	0.049936	0.003031	16.4750907	0.0001*	Reject H ₀
Breusch-Godfrey Serial Correlation LM Test: <i>H₀: There is no serial Correlation</i>			0.040228	0.2279	Accept H ₀
Normal Distribution – Jarque-Bera Test <i>H₀: The data is normally distributed</i>			3.791528	0.1502	Accept H ₀
Heteroskedasticity Test: Breusch-Pagan-Godfrey <i>H₀: There is no Heteroskedasticity</i>			0.360766	0.5514	Accept H ₀

Source: Computed

Note: * 5 per cent significant level

The above table exemplifies the semi log growth model for Gold Commodity futures market in India. The LGOLD coefficient value explains that 4.99 per cent growth in Gold commodity during the study period and the probability value less than 5% level of significance (0.0001). Here the significance value represent there is growth in Gold commodity derivative in India. The Breusch-Godfrey Serial correlation LM Test proves the

serial correlation of variable, which the probability value (0.2279) is greater than 5 per cent significant it shows there is no serial correlation. Hence, the null hypothesis is accepted. The p-value of Jarque-Bera (J-B) test statistics (0.1502) is not significant at 5 per cent level. Hence the null hypothesis is accepted and it shows that the data are normally distributed. The probability value of Breusch-Pagan-Godfrey heteroskedasticity test (0.5514) is greater than 5 per cent, hence the null hypothesis is accepted and there is no heteroskedasticity. The estimation had met the assumptions of stationarity, serial correlation, normality and heteroskedasticity; hence the estimated semi log growth model for the escalation of gold commodity prophecy is fit.

H₀: There is no Growth in Silver Commodity futures market in India

Table 5
Semi Log Growth Model of Silver Commodity for a period from April 2016 to October 2019

Variable	Coefficient	Std. Error	t/F-Statistic	Prob.	Accept / Reject H ₀
LSILVER	0.020615	0.002481	8.309149	0.0301*	Reject H ₀
Breusch-Godfrey Serial Correlation LM Test: <i>H₀: There is no serial Correlation</i>			0.196369	0.2681	Accept H ₀
Normal Distribution – Jarque-Bera Test <i>H₀: The data is normally distributed</i>			0.399540	0.8189	Accept H ₀
Heteroskedasticity Test: Breusch-Pagan-Godfrey <i>H₀: There is no Heteroskedasticity</i>			0.330445	0.5685	Accept H ₀

Source: Computed

Note: * 5 per cent significant level

The above table epitomizes the semi log growth model for Gold Commodity futures market in India. The LSILVER coefficient value explains that 2.06 per cent growth in Silver commodity during the study period and the probability value less than 5% level of significance (0.0301). Here the significance value represent there is growth in silver commodity derivative in India. The Breusch-Godfrey Serial correlation LM Test establish the serial correlation of variable, which the probability value (0.2681) is greater than 5 per cent significant it shows there is no serial correlation. Hence, the null hypothesis is accepted. The p-value of Jarque-Bera (J-B) test statistics (0.8189) is not significant at 5 per cent level. Hence the null hypothesis is accepted and it shows that the data are normally distributed. The probability value of Breusch-Pagan-Godfrey heteroskedasticity test (0.5685) is greater than 5 per cent, hence the null hypothesis is accepted and there is no heteroskedasticity. The evaluation had met the assumptions of stationarity, serial correlation, normality and

heteroskedasticity; hence the estimated semi log growth model for the boom of silver commodity divination is fit.

Conclusion

This study shows that the education of investors is massively important for the present situation in India. Investors before making investments need to collect investment related updates of the commodity market. In this way current research is helpful for both the foreign Institutional Investors and Domestic Institutional Investors to invest in the commodity market. The outcome of the research shows that there is a presence of growth in Institutional Investors and Bullion commodity futures market in India, it is concluded that the investors can bravely invest in the commodity market in India.

Reference

1. Bakas, D., & Triantafyllou, A. (2019). Volatility forecasting in commodity markets using macro uncertainty. *Energy Economics*, 81, 79–94. <https://doi.org/10.1016/j.eneco.2019.03.016>
2. Dhandayuthapani, S. P., & Sudha, H. (2018). A Study on Performance of Commodities Derivatives Trading in India. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 2(4), 502–507.
3. Elankumaran, A., & Administration, B. (2013). Impacting factors on Individual Investors ' Behaviour towards Commodity Market in India. *The International Journal's Research Journal of Social Science & Management*, 2(12), 147–153.
4. KABIR, S., & IKRAM, S. (2012). ROLE OF FINANCIAL DERIVATIVES AND ITS IMPACT ON INDIAN CAPITAL MARKET: A CASE STUDY OF NATIONAL STOCK EXCHANGE (NSE) SINCE 2000. *SAJMMR: South Asian Journal of Marketing & Management Research*, 2(4), 63–126.
5. Knaut, A., & Paschmann, M. (2019). Price Volatility in Commodity Markets with Restricted Participation. *Energy Economics*, 81, 37–51. <https://doi.org/10.1016/j.eneco.2019.03.004>
6. Lakshman, M. V, Basu, S., & Vaidyanathan, R. (2013). Market-wide Herding and the Impact of Institutional Investors in the Indian Capital Market. *Journal of Emerging Market Finance*, 12(2), 197–237. <https://doi.org/10.1177/0972652713494046>
7. Nissanke, M. (2012). Commodity Market Linkages in the Global Financial Crisis : Excess Volatility and Development Impacts. *Journal of Development Studies*, 48(6),

732–750. <https://doi.org/10.1080/00220388.2011.649259>

8. Sehgal, P. S., Rajput, D. N., & Dua, M. R. K. (2012). Futures Trading and Spot Market Volatility: Evidence from Indian Commodity Markets. *Asian Journal of Finance & Accounting*, 4(2), 199–217. <https://doi.org/10.5296/ajfa.v4i2.1990>
9. Zhang, Y., & Lin, J. (2019). Can the VAR model outperform MRS model for asset allocation in commodity market under different risk preferences of investors? *International Review of Financial Analysis*, 66. <https://doi.org/10.1016/j.irfa.2019.101395>
10. Chaves, D. B., & Viswanathan, V. (2016). Momentum and mean-reversion in commodity spot and futures. *Journal of Commodity Markets*, (2006). <https://doi.org/10.1016/j.jcomm.2016.08.001>