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Relationship between COVID-19 and Commodity Market in India

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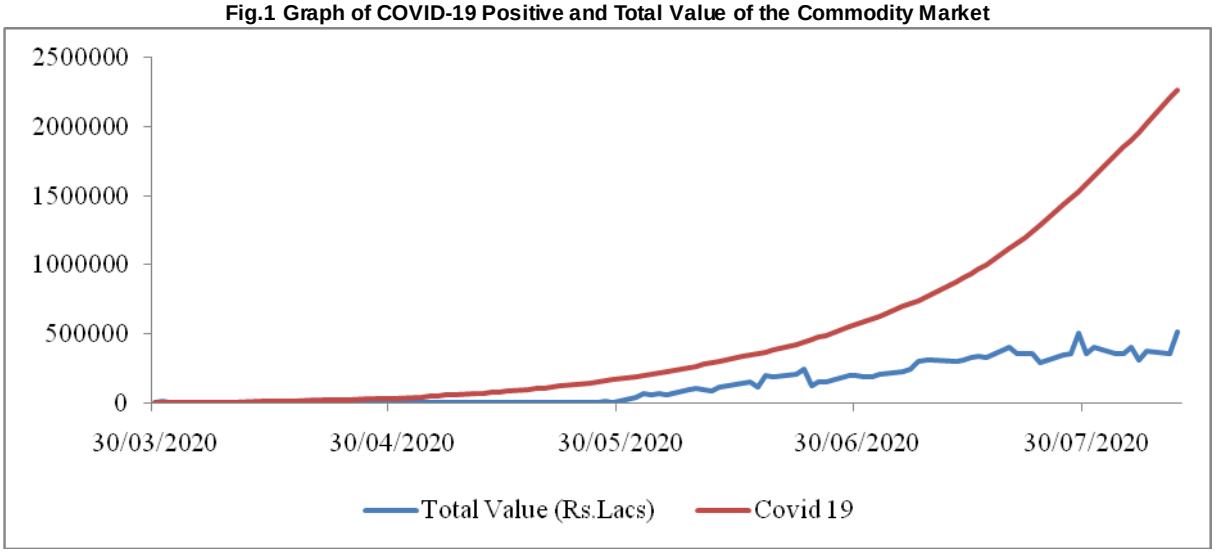
ABSTRACT

COVID-19 means 'Coronavirus Disease-2019' which is generated from Wuhan, China. It becomes pandemic and paralyses the whole world socially and economically. Thus, this paper is going to check the relationship between covid-19 cases and commodity market in India and it is found that the unidirectional Granger Causality running from COVID-19 to the value of the commodity market in India.

1. Introduction

COVID-19 means 'Coronavirus Disease-2019' which is generated from Wuhan, China. It becomes pandemic till now. The whole World engulfed in this pandemic. India, the second largest country in the World, would not be untouchable from this virus. Even USA too, the super power, has paralysed due to this virus. This pandemic has disturbed fully in the whole world in all aspects, especially economic. The employment in the world as well as India too has declined. Implying growth rate of the economy as well as source of income of the people has declined very much. This impacts the consumption behaviour of the people and also disturbs the commodity market in India. The following Fig.1 draw a graph between covid-19 positive cases and value of the commodity market in India during March, 30 to Aug.11, 2020.

Fig.1 Graph of COVID-19 Positive and Total Value of the Commodity Market



Source: Covid-19 positive data is taken from WHO (World Health Organisation) and Total value of the commodity market is taken from BSE (Bombay Stock Exchange) Data is taken from March 30, 2020 to Aug.11, 2020.

This figure shows that since May.1 the COVID-19 cases has sharply increased while value of the commodity market has increases moderately, implying that there is a positive relationship between COVID-19 case and commodity market.

Therefore, the objective of this paper is to check the relationship between COVID-19 positive cases and value of the commodity market in India from first lockdown to mid-August, 2020.

2. Literature Review on COVID-19 and Economy

COVID-19 is the latest severe pandemic hence not too much study would available on this burning topic. Very few studies have been gathered as the literature. However, this pandemic has not be end till now. The literature reviews of this topic are as follows:

According to Bholane (2020) corona virus impacts badly the economic growth, manufacturing activities, contraction in services, declining oil prices and rise in unemployment. Similarly, Routra and Dash (2020) argue that over 50 percent

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of Indian companies see the impact on their operations and nearly 80 percent have witnessed decline in cash flows during COVID-19. They also emphasises that growth story of the economy would be derailed due to severe disruptive impact on both demand and supply sides. Singh et.al (2020) also observe that every sphere of the life has been severely paralysed due to worldwide attack of a global pandemic of COVID-19, still agriculture sector was less affected as the food grain production was recorded the highest ever and sector growth 3.7 percent in absolute term during 2019-20. India will get off such disasters relatively faster as compare to other nations. Khan et.al (2020) said that thousands of human lives were claimed while millions were quarantine because of COVID-19. This also creates global economic disruptions in terms of impeding growth and smooth operations of supply chains, production facilities, tourism industry etc. It not only stops revenue generation but incurs a great costs to nations due to lockdowns of nations in whole world.

On the other hand, Piller.F.T (2020) emphasises that its effects are so drastic that it requires companies and industries not only to manage in the short term but to develop strategic options for the future. However, corona virus is not in the end still now, it is apparent that this pandemic will act as a catalyst, reinforcing the existing trends and thus fundamentally changing our everyday life.

3. Research Methodology

The objective of this paper is to find out the relationship between COVID-19 positive cases and value of the commodity market in India from first lockdown to mid-August, 2020.

Covid-19 positive data is taken from WHO (World Health Organisation) and Total value of the commodity market is taken from BSE (Bombay Stock Exchange) Data is taken from March 30, 2020 to Aug.11, 2020.

In this study, it would like to apply the concept of causality by Granger (1969) for achieving the objective. There are various steps of Granger Causality:

- According to Granger causality, all the variables (say Y_t and X_t)[1] should be stationary. For the stationary, unit root test is applied by ADF (Augmented Dickey Fuller) test.
  $\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \Sigma\alpha_i \Delta Y_{t-i} + \varepsilon_t$
  Where ε_t is a pure white noise term and $\Delta Y_t = (Y_t - Y_{t-1})$. In ADF, it is tested that whether $\delta = 0$ or not. If it is zero, variable has unit root i.e. it is non-stationary. Similarly, unit root test is applied for X_{it}.
- In Granger causality, lag term would be properly defined. In this work lag term is defined either AIC (Akaike Information Criterion) or SBC (Schwarz Bayesian Criterion).
- Finally, Causality Model expressed by Gujarati (2007) as:
  $Y_t = \Sigma\alpha_i X_{it-j} + \Sigma\beta_j Y_{t-i} + u_t$
  $X_{it} = \Sigma\delta_i Y_{t-i} + \Sigma\gamma_j X_{it-j} + e_t$

Where it is assumed that u_t and e_t are uncorrelated. And the direction of the causality depends on the significance level of $\Sigma\alpha_i$, $\Sigma\beta_j$, $\Sigma\delta_i$ and $\Sigma\gamma_j$ with the null hypothesis of no causality between Y_t and X_{it}.

4. Empirical Analysis

The objective of this paper is to describe the relationship between COVID-19 positive and commodity market in India. For this purpose, this paper has applied 'Granger Causality Test' to express this relation.

Granger Causality test has applied only when variables or indicators are stationary. By the Augmented Dickey Fuller test, COVID-19 has test statistic value -9.50 with p-value (0.000) while value of commodity has -14.89 with p-value (0.000); which is statistically significant at 1 percent level of significant at first difference. Both the indicators i.e. COVID-19 positive cases and Value of the commodity market have stationary at first difference.

Table.1 Granger Causality between COVID-19 and Commodity Market in India

Null Hypothesis	Obs.	F-value	p-value	Accept / Reject
Value of the commodity market does not cause COVID-19 positive cases	89	0.0134	0.9081	**Accept**
COVID-19 positive cases does not cause the value of the commodity market	89	5.5678	0.0206	**Reject**

Source: Calculated by Author

According to table.1, the null hypothesis i.e. value of the commodity does not cause the COVID-19 positive cases, is accepted while the reverse COVID-19 cases causes the value of the commodity market. This is the unidirectional Granger Causality running from COVID-19 to the value of the commodity market in India.

5. Conclusion

This paper is going to check the relationship between covid-19 cases and commodity market in India. This paper has taken data from March 30, 2020 to Aug.11, 2020. Covid-19 data is taken from WHO (World Health Organisation) while data of value of the commodity market is taken from BSE (Bombay Stock Exchange). For finding the objective, Granger causality test is applied and it is found that the unidirectional Granger Causality running from COVID-19 to the value of the commodity market in India.

[1] Here i = 1 and 2, 1 for COVID-19 and 2 for Value of the Commodity Market.

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