

Impact of Covid -19 Pandemic on Green Industry

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ABSTRACT

The paper investigates the COVID-19 Pandemic's impact on India's Greenex industry. For this purpose, the present study selected the BSE Greenex Index from the BSE (Bombay Stock Exchange) of India. By using the logarithm to convert daily price into the daily returns for further analysis. Descriptive Statistics, ADF Test, Q-Q Plot and GARCH (1, 1) Model were used and its results showed that the BSE Greenex index recorded positive return with the highest return. The ADF Test confirmed that the data attained the Unit root at level difference. The study also found that the BSE Greenex Index were volatile throughout the COVID 19 Pandemic Period. Thus the study concluded that COVID 19 Pandemic influenced the Indian Greenex sectors, during the study period.

Key words: Greenex Index, Stock Market, COVID 19 Pandemic

Introduction

The concept of Socially Responsible Investment (Sustainable) stocks is getting popular as an alternative to the traditional profit-maximizing securities because it acknowledges the need to fulfil social objectives such as environmental conservation, social justice, and economic progress. The whole earth has just been afflicted by the highly communicable and dangerous virus COVID19. Not only did the COVID-19 epidemic impair people's health, but it also had a detrimental influence on financial markets and enterprises. The government's enforcement of curfews, lockdowns, travel bans, and the closure of industries, retail stores, trades, and enterprises has shaken all economies (Senol and Zeren, 2020). Thus, the study selected the one of the well renowned and sustainable index of the India namely

BSE Greenex Index for the testing of volatility. As a result, the current study investigates the impact of the COVID 19 Pandemic on the volatility of the Indian Greenex Index.

Background Literature

According to Zhang *et al.* (2020) and Morales and Andreosso-O'Callaghan (2020), the emergence of COVID-19 has significantly increased the volatility of global stock markets. COVID-19 has spillover effects on Asian, European, and American stock markets. The findings of ARCH-based models revealed that the quantity and growth rate of new cases on a daily basis had a large and beneficial impact on stock market volatility. However, Onali (2020) found that the cases and fatalities of COVID-19 had no effect on the returns of US financial markets. Few studies found that infectious disease outbreaks have

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an impact on key stock markets and their world-wide returns (Estrada and Lee, 2020). Investing in sustainable indices, on the other hand, provides enough financial returns throughout COVID-19 (Sharma *et al.*, 2021; Omura *et al.*, 2021). The analysis of literature revealed that the COVID-19 Pandemic effected the Greenex Sector both favourably and badly. As a result, the current study seeks to examine the impact of COVID-19 on the Indian Greenex Index.

1. Objectives of the Study

- To test the normality, Unit root of the daily returns of BSE Greenex
- To analyse the Volatility of the daily returns of BSE Greenex

2. The study's hypotheses

- H01: The Daily returns of BSE Greenex are not normally distributed and attained unit root during the study period
- H02: The Daily returns of Sample Greenex index are not volatile during the study period.

Methodology

The BSE Greenex was used as a sample indicator for assessing the impact of the COVID 19 pandemic on the Greenex sector in the research. This sample Greenex index was selected from the Bombay Stock Exchange of India and The Greenex Index's daily price was obtained from the BSE's official website for the period of March 2020 to December 2021. At

$$R_t = \ln \frac{P_t}{P_{t-1}}$$

the outset, logarithmic daily returns have been calculated by the following formula:

The return during the 't' time period is denoted by R. P_t is the stock's price at the conclusion of the time period; P_{t-1} is the stock's price at the beginning of the time period; and ln is the natural log. For testing the study's hypotheses, the researchers employed the following statistical methods.

- Descriptive Statistics – it was used for describe the daily returns of the Indian Greenex index during COVID – 19 Pandemic.
- The unit root of the daily returns of the Greenex index during the COVID – 19 Pandemic was determined using the Augmented Dickey-Fuller (ADF) Test.
- The Greenex index's volatility was investigated

using the GARCH (1, 1) Model during the COVID – 19 Pandemic.

Results and Discussion

The results of Descriptive statistics is displayed in the Table 1. It shows that mean return of BSE Greenex index is positive with the risk (standard deviation) value of 0.01681 and the Skewness values is negative, it indicates the daily returns of the Greenex was negatively skewed. The Kurtosis value is greater than three it shows the leptokurtic in the data. Finally, the Jarque-Bera test confirmed that the daily returns of BSE Greenex were normally distributed, during the study period. The unit root data were drawn through the ADF Test (Table 2) and Q-Q Plot (Figure 3), it explores that daily returns of the BSE Greenex were stationary at level difference, because the ADF test statistics result exceeded the test critical threshold.

Table 1. Descriptive statistics for Daily Returns of BSE Greenex

Descriptive Statistics	Nifty Energy Index
Mean	0.00084
Max.	0.08634
Mini.	-0.09711
Std. Dev.	0.01681
Skew.	-0.4873
Kurt.	9.76066
J.-B.	968.122

Table 2. ADF test for Daily Returns of BSE Greenex

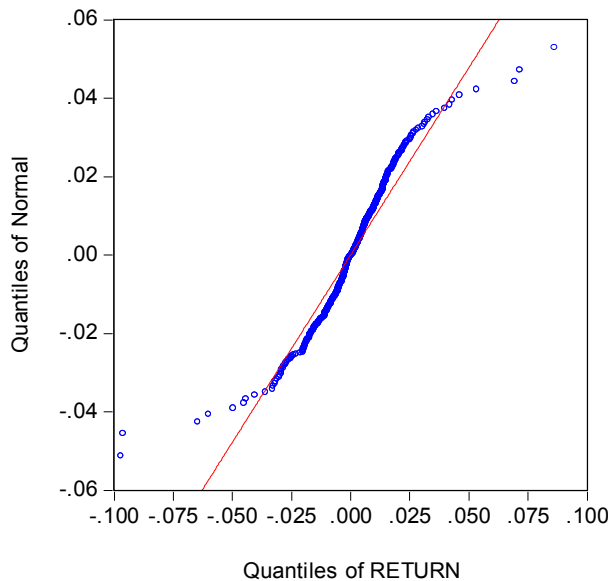
	t-Statistic	P- Value
Statistic Value	-23.367	
Test c. values:		0.000
	1%	-3.4433
	5%	-2.8671
	10%	-2.5698

Q-Q Plot for Daily Returns of BSE Greenex

The results of GARCH (1, 1) Model Shown in the Table 3. The sum of RESID (-1) and GARCH (-1) is 0.939657, which is near to one. Thus, the results confirmed that the daily returns of BSE Greenex were volatile throughout the COVID 19 Period therefore, the hypothesis H02 daily returns of BSE Greenex are not volatile is rejected. The Akaike info criterion also proved that the COVID 19 influenced the daily returns of Indian Greenex sector.

Table 3. GARCH (1, 1) Model for Daily Returns of BSE Greenex

Sample Variable	Co-Ef.	Error	z	P-Value
Mean Equation				
C	0.001195	0.000631	1.8945	0.0582
Equation of Variance				
C	0.00000142	0.000000463	3.0746	0.0021
RESID.	0.12083	0.023022	5.24846	0
GARCH	0.818827	0.036498	22.4349	0
R ²	-0.000484	Mean-var		0.00082
Adjusted R ²	-0.000484	S.D.-var		0.01688
S.E.	0.016886			-5.62577
Sum squared resid	0.141705	SC		-5.59195
Log	1404.818	HQC		-5.6125
D.W.	2.17992			



Conclusion

The present study analysed the impact of COVID 19 on Indian Greenex sector by using Descriptive Statistics, ADF, Q Q Plots and GARCH (1, 1) Model. The study used the BSE Greenex index as a sample index to test the impact. The findings of the Descriptive Statistics, ADF and GARCH (1, 1) Model indicates that the daily returns of BSE Greenex were gained positive mean return with the highest risk during the study period. The GARCH model results concluded that the return data of the BSE Greenex were volatile and it proved that the COVID 19 Pandemic are influenced the price fluctuation of BSE Greenex. Therefore, the study concluded that the daily returns of the Indian Greenex sectors were in-

fluenced by the Pandemic, throughout the research period.

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