



The Pandemic Effect on Stock Markets: A Volatility Perspective

Abhisha. M

Kristu Jayanti College,

ABSTRACT

The Bombay Stock Exchange (BSE) is used in this study's autocorrelation analysis of stock price volatility during the Covid-19 pandemic. With the corporation listed on the Bombay Stock Market (BSE), the closing price serves as the research sample. This work contributes to our understanding of stock prices before and following the COVID-19 pandemic, as well as their impact. Stock markets' reactions to the Covid-19 pandemic seem to be evolving. Since herd mentality in the stock market tends to turn into herd immunity to the virus, recent responses may differ. We investigate the variations in the pandemic's effects on volatility from the pre-pandemic era (2017–2018) to the post-pandemic era (2021–2022). While all the sectors saw short-term effects, the financial industry was most severely affected. Pharma, consumer products, and IT were among of the sectors that saw limited or favorable effects. We talk about possible reasons for the same. These findings might help investors protect their stock portfolios against unanticipated shocks and help them make smarter investment choices to prevent significant, unanticipated losses.

Keywords:

1. Influencing the market price before the COVID-19 epidemic.
2. Stock price impact following the COVID-19 outbreak.

Introduction

Apart from spreading rapidly, the COVID-19 pandemic has also resulted in a slowdown in global economic activity. Around 95% of countries worldwide saw negative economic growth shrinkage, according to a report from the International Monetary Fund (IMF), which also stated that the world economy has drastically declined and is currently in crisis. The stock market had a sharp downturn, with the market value dropping by about thirty percent in a few of weeks. Using the autocorrelation method, this study contributes to our understanding of the impact of the pandemic on stock prices and the volatility of stock prices during COVID-19. The closing price of the Wipro Corporation serves as the research sample. Samples for the years 2017–2018 and 2021–2022 were gathered. Given how important COVID-19 has become for the world, it is crucial to comprehend how it has affected financial markets around the world. This work adds to the body of knowledge on COVID-19 by providing a thorough analysis of the ways in which the pandemic has affected key factors that influence market return and volume as well as the way in which COVID-19 has affected the performance of the Indian stock market.

It investigates the variation in sector performance. This study sheds light on how the Indian market responds to pandemics. This innovative study tackles the question of how COVID-19 has affected the Indian financial market by sector. The main focus of the study is a thorough examination of how the pandemic has affected significant economic sectors as well as the broader market. It is possible to draw stronger and more accurate conclusions from the paper by using more variables. In addition to utilizing many variables for analysis, a two-pronged methodology is used to ensure that the results from both parametric and non-parametric tests are consistent. Because of the way the equations are represented, the findings are homoscedastic and free of both auto-correlation and specification bias.

Literature Review

The amount of empirical study on the impact of COVID-19 on the stock market has expanded dramatically recently in a number of nations, including Indonesia. Numerous studies attest to the fact that COVID-19 has led to a dramatic drop in stock market movements. Numerous nations participated in the research (Khatatbeh et al., 2020; He et al., 2020; Alzyadati & Asfoura, 2021; Khan et al., 2020, among others). In 2020, Khatatbeh et al. conducted an empirical investigation to examine the direct correlation between eleven stock market indexes of COVID-19-affected nations. The research results demonstrate that market returns have become negative after the COVID-19 case was made public and have sharply escalated as the virus spreads further. Alzyadati and Asfoura (2001) determined the Saudi stock exchange's reaction to this work adds to the body of knowledge on COVID-19 by providing a thorough analysis of the ways in which the pandemic has affected key factors that influence market return and volume as well as the way in which COVID-19 has affected the performance of the Indian stock market. It investigates the variation in sector performance. This study sheds light on how the Indian market responds to pandemics. This innovative study tackles the question of how the COVID-19 event has affected the Indian financial market in

terms of different sectors. They came to the conclusion that stock price fluctuations sharply declined as the number of COVID-19 positive cases rose during the epidemic.

Objective of the study

- To comprehend how the COVID-19 pandemic affected stock prices
- To be aware of the stock price before to and following COVID-19

Serial correlation Test

Null Hypothesis (H0): There is no autocorrelation in the closing price of Wipro Company before covid-19 pandemic.

Alternative Hypothesis (H1): There is an autocorrelation in the closing price of Wipro Company before the Covid-19 pandemic.

Output of least square method (Before covid-19)

Dependent Variable: CLOSE_PRICE
 Method: Least Squares
 Date: 03/22/23 Time: 17:42
 Sample: 4/03/2017 3/28/2018
 Included observations: 246

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DATE	-0.525146	0.044457	-11.81242	0.0000
C	387157.3	32747.15	11.82262	0.0000
R-squared	0.363810	Mean dependent var		334.1949
Adjusted R-squared	0.361203	S.D. dependent var		90.46554
S.E. of regression	72.30440	Akaike info criterion		11.40774
Sum squared resid	1275614.	Schwarz criterion		11.43624
Log likelihood	-1401.152	Hannan-Quinn criter.		11.41922
F-statistic	139.5332	Durbin-Watson stat		0.059381
Prob(F-statistic)	0.000000			

Interpretation:

The range of the d value is always 0 to 4. When the time series data has a d value of 2, it is said to have no autocorrelation. Positive autocorrelation is indicated by a d value less than 2 and closer to 0, whereas negative autocorrelation is indicated by a d value bigger than 2 and closer to 4. The Table makes it clear that the d value is approximately 0.059381, which is less than 2 but near to 0. The provided time series data shows indications of positive autocorrelation since the d value is closer to 0.

Interpretation:

The Breusch-Godfrey Serial Correlation LM test's F-statistic value, as shown in Table F, is approximately 1.799.864 with Prob. F (2,242). The time series data that is provided contains 129 observations. As the Prob. Chi-Square value of 0.0000 is less than 0.05 at the 5% level of significance, the null hypothesis is rejected, and we may thus draw the conclusion that the Wipro closing price has autocorrelation.

Auto correlation/ Serial correlation Test

Null Hypothesis (H0): There is no autocorrelation in the closing price of Wipro Company After covid-19 pandemic.

Alternative Hypothesis (H1): There is an autocorrelation in the closing price of Wipro Company After Covid-19 pandemic.

Output of least square method (After covid-19)

Dependent Variable: CLOSE_PRICE
 Method: Least Squares
 Date: 03/22/23 Time: 18:25
 Sample: 4/01/2021 3/31/2022
 Included observations: 248

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DATE	0.368048	0.034635	10.62658	0.0000
C	-271046.7	25562.59	-10.60326	0.0000
R-squared	0.314619	Mean dependent var		596.2492
Adjusted R-squared	0.311833	S.D. dependent var		68.85395
S.E. of regression	57.11838	Akaike info criterion		10.93616
Sum squared resid	802577.4	Schwarz criterion		10.96450
Log likelihood	-1354.084	Hannan-Quinn criter.		10.94757
F-statistic	112.9243	Durbin-Watson stat		0.033039
Prob(F-statistic)	0.000000			

Interpretation:

The range of the d value is always 0 to 4. When the time series data has a d value of 2, it is said to have no autocorrelation. Positive autocorrelation is indicated by a d value less than 2 and closer to 0, whereas negative auto correlation is indicated by a d value bigger than 2 and closer to 4. The Table makes it clear that the d value is approximately 0.033039, which is less than 2 but near to 0. The provided time series data shows indications of positive autocorrelation since the d value is closer to 0.

Breusch-Godfrey Serial Correlation LM Test:

(After covid-19)

F-statistic	2406.515	Prob. F(2,244)	0.0000
Obs*R-squared	236.0341	Prob. Chi-Square(2)	0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 03/22/23 Time: 18:30

Sample: 4/01/2021 3/31/2022

Included observations: 248

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DATE	-0.004438	0.007644	-0.580595	0.5620
C	3275.347	5641.833	0.580547	0.5621
RESID(-1)	0.999306	0.064078	15.59525	0.0000
RESID(-2)	-0.021211	0.064239	-0.330183	0.7415
R-squared	0.951750	Mean dependent var		1.50E-11
Adjusted R-squared	0.951157	S.D. dependent var		57.00264
S.E. of regression	12.59783	Akaike info criterion		7.920924
Sum squared resid	38724.09	Schwarz criterion		7.977592
Log likelihood	-978.1945	Hannan-Quinn criter.		7.943736
F-statistic	1604.343	Durbin-Watson stat		1.670696
Prob(F-statistic)	0.000000			

Interpretation:

The Breusch-Godfrey Serial Correlation LM test's F-statistic value, as shown in Table F, is approximately 2406.515 with Prob. F (2,244). The time series data that is provided contains 129 observations. As the Prob. Chi-Square value of 0.0000 is less than 0.05 at the 5% level of significance, the null hypothesis is rejected, and we may thus draw the conclusion that the Wipro closing price has autocorrelation.

Conclusion

The majority of the global capital markets have been impacted by COVID-19, as seen by the significant volatility that has caused stock prices to drop and caused losses for many investors. The impact of the COVID-19 pandemic on stock prices, both before and after, is examined theoretically and empirically in this paper. The test findings demonstrate that COVID-19 has caused a sharp decline in stock prices. In immediate response to COVID-19, investors sold their shares, resulting in abnormal returns that were negative.

References

- Stock price volatility during the COVID-19 pandemic: The GARCH model