# A Study on impact of exchange rate on stock price during, pre-lockdown & post lockdown

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## Abstract

The outbreak of coronavirus has caused a pandemic of the respiratory disease (COVID19) for which vaccines and targeted therapeutics for treatment were unavailable. The pandemic caused major concern for public health as well as the economy of the world. The COVID-19 is the acronym used for Corona Virus Disease 2019. This study would utilize secondary data from various market indices in stock screening websites. National Stock Exchange (NSE) official website is taken, and for exchanges rates Reserve Bank of India (RBI)'s official website is considered for the study. Looking into the time and money constraints non probability sampling method is used. In which convenience sampling method has been used. This study measured how rapidly security prices respond to announcements of the lockdown due to COVID-19. How NSE clashed and recovered, the correlation of exchange rates and NSE NIFTY is studied. Performance of NSE and exchange rates are studied from their particular websites.

**Keywords- Covid-19, Pandemic, Stock market, NSE, Forex Market, Exchange rate.**

## INTRODUCTION

The outbreak of coronavirus has caused a pandemic of the respiratory disease (COVID19) for which vaccines and targeted therapeutics for treatment are unavailable (Wang etal. 2020). The pandemic caused major concern for public health as well as the economy of the world. The COVID-19 is the acronym used for Corona Virus Disease 2019. This virus causes a pneumonia of unknown cause first detected in Wuhan, China, and first reported to the World Health Organization (WHO) on 31st December, 2019. The World Health Organization announced the official designation of this deadly virus on February 11, 2020.

India has a robust stock market that reacts and responds well to the global situation. The first case was reported in India on 30th January and the lockdown ordered on 24 March, 2020, that was a gap of almost 53 days that was also a matter of concern; what if the Government had ordered the lockdown earlier? It may have

slowed the spreading of the virus in the population. How did the stock market respond to this nationwide lockdown? In this event study, the influence of the lockdown due to COVID-19 on the stock market is explained with the semi-strong form of market efficiency hypothesis (Fama, 1970). They are called event studies (Fama, 1991). This event study measured how rapidly security prices respond to announcements of the lockdown due to COVID-19. The present study attempts to gather evidence in support (if any) of the semi-strong form of EMH in the Indian stock market. (Foster, 2012). The authors of this study made an effort to examine the impact of the lockdown on the stock market and its effect on the Average Abnormal Return of various stocks.

## LITERATURE REVIEWS

**Indrajit banerjee, rupam Bhattacharyya (2020)** conducted research on examining the effect of covid-19 on foreign exchange rate and stock market - an applied insight into the variable effects of lockdown on Indian economy. Aim of the research was the causal relationships and directions among the growth rate of confirmed cases (growth), exchange rate (gex) and sensex value (gsensex) are remaining the same across different pre and post-lockdown phases, attempting to capture any potential changes over time. It is quite evident that these changes are extremely dynamic, and nuanced observation at the rapidly-changing scenario is required for effective policy decisions.

**Kavitachavali, mohammadnooralam, md shabbiralam 2020**, conducted research on stock market response during covid-19 lockdown period in india: an event study article. Aim of the research was to examines the extent of the influence of the lockdown on the indian stock market and whether the market reaction would be the same in pre- and post-lockdown period caused by covid-19. The covid-19 pandemic has affected the global economy of which india is a big participant.

**Daisy basistha, debakshi bora 2020**, the research was conducted on the outbreak of covid-19 pandemic and its impact on stock market volatility: evidence from a worst-affected economy. The aim was to to analyze the effect of covid-19 on the stock market. The coronavirus outbreak has affected the stock price and increased the volatility in the indian stock markets, and affect the financial system.

**Zaky Machmuddah, St. Dwiarso Utomo , Entot Suhartono , Shujahat Ali ,and Wajahat Ali Ghulam 2020**, research was conducted on stock market reaction to covid-19: evidence in customer goods sector with the implication for open innovation .the aim of the research was to observe stock prices of customer goods before and after the covid-19 pandemic using event study and the comparison test the daily closing stock price and volume of stock trade were significantly different before and after covid-19 emergence. A non-financial factor affected the stock price and volume of stock trade.

**Rashmichaudhary, pritibakhshi 2020**, conducted research on "the performance of the indian stock market during covid-19" Aims to analyze the impact of the covid-19 on the return volatility of the indian stock market in the context of standard deviation, skewness, and kurtosis, taking two composite indices, i.e., bse 500 and bse Sensex, Another objective is to compare the composite index bse 500 of india with three global indexes s&p

500 of the us, nikkei 225 of japan, and ftse 100 of the uk.With the number of increasing covid-19 cases, the present market looking divorced with the economic reality and the returns displaying the non-normal distribution with increasing negative skewness and higher positive kurtosis.

## OBJECTIVE OF THE STUDY

    I.    To find out the trend of foreign rate and stock market during covid-19 lockdown period.

    II.    To investigate the relationship between the stock market and exchange market.

    III.    To examine the impact of covid 19 on stock prices and growth rate.

## RESEARCH METHODOLOGY

In the volatile market, the investors are searching for effective investment options with safety avenues and high return This study helps to examine an impact of exchange rate on stock price during pre-lock down and post lockdown. The design of a research is a Cause and effect that helps researcher to conduct a formal investigation and survey. It is an application of methods and procedures for acquiring the information needs for getting a desire outcome. It decides the sources of data and methods for gathering data. My approach to research is descriptive and quite specific. This study would utilize secondary data from various market indices in stock screening websites. National Stock Exchange (NSE) official website is taken, and for exchanges rates Reserve Bank of India (RBI)'s official website is considered for the study. . The data i.e.25 March 2020 to 31 March 2021, which is further divided in different phases and unlock of the duration. Trend analysis will be used for the study of data. Correlation and Multi Linear Regression will be used for the data analysis.

## DATA ANALYSIS

**Exchange rate Correlation with Nifty 50**

| PHASE | | POST-LOCKDOWN | | | |
|---|---|---|---|---|---|
| | | INR/100JPY | INR/1EUR | INR/1GBP | INR/1USD |
| 1 | Nifty 50 | 0.065024052 | -0.107453398 | -0.46903514 | -0.172845978 |
| 2 | Nifty 50 | 0.370357357 | 0.736774157 | 0.495635698 | -0.767931668 |
| 3 | Nifty 50 | -0.553244735 | -0.373936253 | -0.127097971 | -0.652274635 |
| 4 | Nifty 50 | -0.493328753 | 0.728964793 | 0.489519179 | -0.535592028 |
| 5 | Nifty 50 | 0.0170535 | 0.290670533 | 0.184485964 | -0.014207486 |

From the above table we can interprete that in correlation with nifty 50 in different phases of prelockdown have different impact on Exchange Rates.

| PHASE | | PRE-LOCK DOWN | | | |
|---|---|---|---|---|---|
| | | INR/100JPY | INR/1EUR | INR/1GBP | INR/1USD |
| 1 | Nifty 50 | -0.79182518 | 0.570087977 | -0.112247506 | -0.855221973 |
| 2 | Nifty 50 | -0.622666456 | -0.593569032 | -0.476193626 | -0.831925351 |
| 3 | Nifty 50 | -0.143939278 | 0.019569795 | 0.813090628 | -0.889851023 |

From the above table we can interprete that in correlation with nifty 50 JPY , EURO ,GBP & USD is positively corelated in 1st phase and negatively correlated with 2nd and 3rd phase.

| PHASE | | NATION-WISE LOCKDOWN | | | |
|---|---|---|---|---|---|
| | | INR/100JPY | INR/1EUR | INR/1GBP | INR/1USD |
| 1 | Nifty 50 | 0.118581431 | 0.189449238 | 0.208449322 | 0.506235936 |
| 2 | Nifty 50 | -0.684710418 | -0.829886628 | -0.736836617 | -0.825050023 |
| 3 | Nifty 50 | -0.361156659 | -0.766500619 | -0.583577731 | -0.511932682 |
| 4 | Nifty 50 | -0.607489869 | 0.575411065 | 0.684203945 | -0.642548453 |

From the above table we can interprete that in correlation with nifty 50 in different phases of post-lockdown have different impact on Exchange Rates.

**Regression analysis of exchange rates with nifty 50**

<center>PRE-LOCKDOWN</center>

| PHASE-1 | |
|---|---|
| Multiple R | 0.898949799 |
| R Square | 0.808110741 |
| Adjusted R Square | 0.616221482 |
| Standard Error | 56.54624717 |
| Observations | 9 |

| PHASE-2 | |
|---|---|
| Multiple R | 0.934454515 |
| R Square | 0.87320524 |
| Adjusted R Square | 0.83094032 |
| Standard Error | 105.2802157 |
| Observations | 17 |
| PHASE-3 | |
| Multiple R | 0.975120866 |
| R Square | 0.950860704 |
| Adjusted R Square | 0.931204985 |
| Standard Error | 339.6650566 |
| Observations | 15 |

**Phase-1** The multiple correlation coefficients is 0.89. this indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-2** The multiple correlation coefficients is 0.93. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-3** The multiple correlation coefficients is 0.97. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

### NATION-WISE LOCKDOWN

| PHASE-1 | |
|---|---|
| Multiple R | 0.901705142 |
| R Square | 0.813072164 |
| Adjusted R Square | 0.563835048 |
| Standard Error | 226.1018073 |
| Observations | 8 |
| PHASE-2 | |
| Multiple R | 0.911839517 |
| R Square | 0.831451305 |
| Adjusted R Square | 0.719085508 |
| Standard Error | 131.615089 |
| Observations | 11 |
| PHASE-3 | |
| Multiple R | 0.651284118 |
| R Square | 0.424171003 |
| Adjusted R Square | -0.343600993 |
| Standard Error | 150.3653385 |
| Observations | 8 |
| PHASE-4 | |
| Multiple R | 0.709731245 |
| R Square | 0.50371844 |
| Adjusted R Square | -0.157990306 |

| | |
|---|---|
| Standard Error | 139.5934497 |
| Observations | 8 |

**Phase-1** The multiple correlation coefficients is 0.90. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-2** The multiple correlation coefficients is 0.91. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-3** The multiple correlation coefficients is 0.65. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-4** The multiple correlation coefficients is 0.70. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

### POST-LOCKDOWN (UNLOCK)

| PHASE-1 | |
|---|---|
| Multiple R | 0.70191639 |
| R Square | 0.492686618 |
| Adjusted R Square | 0.365858272 |
| Standard Error | 146.6378779 |
| Observations | 21 |
| **PHASE-2** | |
| Multiple R | 0.916937001 |
| R Square | 0.840773464 |
| Adjusted R Square | 0.803308397 |
| Standard Error | 105.6260607 |
| Observations | 22 |
| **PHASE-3** | |
| Multiple R | 0.704798659 |
| R Square | 0.49674115 |
| Adjusted R Square | 0.36253879 |
| Standard Error | 119.4799523 |
| Observations | 20 |
| **PHASE-4** | |
| Multiple R | 0.781044181 |
| R Square | 0.610030013 |
| Adjusted R Square | 0.512537516 |
| Standard Error | 136.5647343 |
| Observations | 21 |
| **PHASE-5** | |
| Multiple R | 0.485015984 |
| R Square | 0.235240504 |

| Adjusted R Square | 0.016737791 |
|---|---|
| Standard Error | 125.9106866 |
| Observations | 19 |

**Phase-1** The multiple correlation coefficients are 0.70. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-2** The multiple correlation coefficients is 0.91. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-3** The multiple correlation coefficients is 0.70. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-4** The multiple correlation coefficients is 0.78. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

**Phase-5** The multiple correlation coefficients is 0.48. This indicates that the correlation among the independent and dependent variables is positive. This statistic, which ranges from -1 to +1, does not indicate statistical significance of this correlation.

## FINDINGS

→ The analysis of this study reported a very weak relationship between exchange rate volatility and the stock market.

→ The stock market was seen to be affected by other macroeconomic variables namely: interest rates, total mining production, money supply and the United States interest rates

→ The relationship between a pandemic and the concurrent economy is quite comparable to the relation observed among health and wealth in general.

→ One of the controlling factors of any disease's scenario i.e. Quality of healthy life which includes purified water, sanitized housing, sufficient nutritious food, good health care etc. is essential in any economy, but the affordability depends on both financial stability and access to required knowledge to enhance and maintain one's health.

→ the relationship between a pandemic and the concurrent economy is exactly C

→ Past works have observed that education, health and social service, insurance received a large amount of loss to GDP in UK, JAPAN, USA, and Europe due to the effects of covid-19 outbreaks

→ The study also mentioned that the outbreak of COVID-19 is creating an insecure feeling to investors in equity market and the exchange rate is also getting affected due to market sentiment.

→ Major findings of the study reveal the volatile nature of exchange rates and NSE Nifty, the two prominent market of world.

## CONCLUSION

In this study, we investigated the effect of COVID-19 on the performance of exchange rate and NSE; the two markets of world. Trend analysis & correlation-regression is used to test the volatility in the stock market by taking the three time periods, before , during and after 1st positive COVID-19 cases in India. These three periods, exchange rates are taken as the independent variable and per day closing price NSE indices are considered as the dependent variable The result revealed that with negative relation, the stock market faces losses during the pandemic, whereas return is shown positive in the pre-COVID-19 phase. By comparing the standard deviation error, it was noticed that the deviation is large during the COVID-19 era than the pre-COVID-19 time. Similarly, the price of the stock indices also shows a significant change. In the pre-COVID-19 period, the price was high but during the COVID-19 period it shows a declining trend up to the 1st lockdown period i.e. to the end of March but after this, it again takes an upward movement gradually. It is on account of the relaxation added to the lockdown policy by the Indian government. The unprecedented pandemic has already brought challenges to almost all countries. Not a single sector is left unaffected because of COVID-19. In brief, the results conclude that the Coronavirus outbreak has affected the stock price and increased the volatility in the Indian stock markets, and affect the financial system. Accordingly, this paper tries to provide a very simple but original statistical analysis of the COVID-19 pandemic by taking the case of the Indian stock market.

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