***Data Analysis on Comparative Study on Pre & Post Lockdown effects of Economy on different Sectors***

**Questions Related to Project**

1. **How does the stock market affect the economy?**

Movements in the stock market can have a profound economic impact on the economy and individual consumers. A collapse in share prices has the potential to cause widespread economic disruption. Most famously, [the stock market crash of 1929](https://www.economicshelp.org/blog/76/economics/wall-street-crash-1929/) was a key factor. Yet, daily movements in the stock market can also have less impact on the economy than we might imagine.[1]

One well-known joke is:

*Stock markets have predicted 10 out of the last three recessions.*

### 2008 Share price falls

However, the fall in share prices 2008/09 was reflecting the real economic problems and after the share price falls of 2008, we did get a steep recession starting at the end of 2008 early 2009. The falling share prices and financial uncertainty contributed in a small way to the economic downturn.

### 2020 Share price falls

The fall in share prices since the start of the year primarily reflect concern and uncertainty over the global spread of Coronavirus. Share prices have fallen 15% and could fall further. There are good reasons to believe these share price falls do reflect a real economic shock and could be the precursor to a recession in 2020. The share price falls reflect – not market adjustment – but an awareness of disruption of supply chains, a disruption to the free movement of people and goods, and a shock to aggregate demand as consumers and business cut back on consumption and investment.

*In other words, share prices alone do not cause economic recessions, but if share prices reflect a fundamental weakness in the economy – then they may be the harbinger of an economic slowdown.*

1. **How are the Quarters divided for the Fiscal Year?**

There are 4 quarters in the fiscal year that is April, May, June (Q1), July, August, September (Q2), October, November, December (Q3) & the final that is January, February, March (Q4).

Example: FY 2019-2020 is the fiscal year that is going to end in March of 2020.

1. **Q4 FY 2019-20 GDP growth estimates Highlights**

India’s economy slowed down to 3.1 percent in Q4 on the back of the coronavirus pandemic superimposed on a prolonged slowdown. Though the GDP growth estimates have surpassed most estimates made by various economists and rating agencies, the government has left a caveat that the figures can be revised as the current data is insufficient. With the release of Q4 GDP growth, the full year 2019-20 GDP growth stood at 4.2 percent. The government has also revised down the GDP growth in Q1, Q2, and Q3 to 5.2 percent, 4.4 percent, and 4.1 percent respectively. As India travels through the path of economic uncertainty, the GDP growth in the fourth quarter becomes important as it includes the figures for one week of lockdown. It is also expected that today’s figures will help to determine the impact of the pandemic more clearly. Meanwhile, the growth rate of eight core industries for April 2020 fell by 38.1 percent, compared to a fall of 9 percent in March 2020. The output of electricity fell by 22.8 percent, while the output of cement fell by 86 percent; steel by 84 percent; fertilizer by 4.5; refinery by 24.2 percent; crude oil by 6.4 percent; and coal by 15.5 percent in April 2020. Even before the coronavirus cases started to surge in India, the country’s economy was struggling through a prolonged economic slowdown.[2]

1. **India’s GDP with the current Fiscal Year that is FY 2020-2021**

India's GDP growth for the current fiscal is expected to slow down to 4.8 percent.

India's GDP growth for the fiscal year 2019-2020 was estimated at 5 percent and is forecast to slow down to 4.8 percent for the current fiscal 2020-21.[3]

Economic growth for the country could stand at 5.1 percent for the fiscal year 2021-22

1. **Parameters related to the Stock Market**
2. In stock trading, the high and low refer to the maximum and minimum prices in a given period.
3. Open and close are the prices at which a stock began and ended trading in the same period.
4. Volume is the total amount of trading activity.
5. Valuable information can be gleaned from understanding the open, high, low, close of a stock, and as well as its trading volume.
6. Open means the price at which a stock started trading when the opening bell rang.
7. It can be the same as where the stock closed the night before, but not always. Sometimes events such as company earnings reports that happen in [after-hours trading](https://www.investopedia.com/terms/a/afterhourstrading.asp) can alter a stock’s price overnight.
8. Then there is “close”. Close refers to the price of an individual stock when the stock exchange closed shop for the day. It represents the last buy-sell order executed between two traders. In many cases, this occurs in the final seconds of the trading day. For less actively traded stocks, the last trade of the day could be well before the closing bell, depending on when the last buy and sell orders were last paired.[4]

## **Why is a Stock’s Closing Price Significant?**

While much fanfare surrounds the stock market’s opening bell and opening prices, it is a stock’s closing price that determines how a share performed during the day.

The close price is considered the reference point for any time frame. It’s the price traders agreed on after all the action throughout the day. When researching historical stock price data, financial institutions, regulators, and individual investors use the closing price as the standard measure of the stock’s value as of a specific date. For example, a stock’s close on December 31, 2019, was the closing price for not only that day, but also that week, month, quarter, and year.

The difference between the stocks open and close divided by the open is the stock’s return or its performance in percentage terms. If we want to take a longer-term view of a stock’s performance, such as one-year, we would use the closing price from a year ago and compare it to the closing price from today to get the annual return.[4]

1. **What is the reason for the market down?**

Economic factors, varying interest rates, declining economy, inflation, deflation, tax increases, financial and political shocks, changes in the economic policy, changing the value of the Indian Rupee, are some of the many factors that can cause a decline in the share market.

1. **What is the reason for the decrease in share price mean?**

The price of a share changes because there's a change in the supply and demand equilibrium. When the demand for a stock is high but supply low, it causes the price of those shares to rise. Similarly, if the supply is high, but the demand is low the sharepricedecreases.

**Steps**

1. The data for the stock for every sector was collected from

<https://www.moneycontrol.com/>

1. For every sector 4 companies’ stocks were gathered respectively
2. The first datasets for each sector was related to Pre-Lockdown

Pre-Lockdown 01-01-2020 to 25-03-2020

1. The second datasets for each sector was related to Post-Lockdown

Post-Lockdown 26-03-2020 to 25-06-2020

1. Each dataset contained 60 days of data for every stocks
2. The excel file contained columns such as

Dates, High, Low, Close & Volume

1. It was converted into the CSV file for performing the operations with Python
2. Different statistical tools were applied such as

Central Tendency, Measure of Spread, Plotting & Analysis

1. The percentage were calculated to understand the change of mean for Close
2. Comparative study was done on both the obtained values to understand the use case.

**Results**

1. **Stock Closing Price Analysis in Percentage for Various Sectors**

* The + sign indicates the Increase
* The – sign indicates the Decrease

1. **Agriculture**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Bombay Burmah** | **JK Agri Genetic** | **Kaveri Seed** | **Nath Bio Genes** |
| **Pre-Lockdown** | 1067.64 | 381.05 | 450.46 | 310.11 |
| **Post-Lockdown** | 893.08 | 435.13 | 420.67 | 270.64 |
| **Percentage change** | -16.35 % | + 14.19 % | - 6.61 % | - 12.72 % |

1. **Aviation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Global Vectra** | **Interglobe Avi** | **Jet Airways** | **Spice Jet** |
| **Pre-Lockdown** | 52.54 | 1314.33 | 29.14 | 83.48 |
| **Post-Lockdown** | 47.72 | 993.62 | 21.76 | 45.25 |
| **Percentage change** | - 9.17 % | - 24.40 % | - 25.32 % | - 45.79 % |

1. **Infrastructure**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **ABB India** | **Adaniports** | **Hindustan Urba** | **Larsen** |
| **Pre-Lockdown** | 1215.91 | 351.34 | 683.02 | 1215.64 |
| **Post-Lockdown** | 850.41 | 300.89 | 491.62 | 872.24 |
| **Percentage change** | - 30.05 % | - 14.35 % | - 28.02 % | - 28.24 % |

1. **Manufacturing**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Asian Paints** | **Graphite India** | **M** | **Marico** |
| **Pre-Lockdown** | 1797.09 | 258.30 | 501.72 | 306.37 |
| **Post-Lockdown** | 1646.82 | 185.45 | 395.82 | 307.66 |
| **Percentage change** | - 8.36 % | - 28.20 % | - 21.10 % | + 0.42 % |

1. **Real Estate**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **DLF** | **Marathon Realty** | **Oberoi Realty** | **Rodium Realty** |
| **Pre-Lockdown** | 216.94 | 79.33 | 511.18 | 103.83 |
| **Post-Lockdown** | 142.39 | 48.85 | 342.01 | 91.01 |
| **Percentage change** | - 34.36 % | - 38.42 % | - 33.09 % | - 12.34 % |

1. **Restaurants**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Advani Hotels** | **Chalet Hotels** | **Indian Hotels** | **Mahindra Holida** |
| **Pre-Lockdown** | 50.70 | 314.06 | 130.10 | 214.77 |
| **Post-Lockdown** | 39.96 | 148.54 | 76.85 | 150.78 |
| **Percentage change** | - 21.18 % | - 50.70 % | - 40.90 % | - 29.79 % |

1. **Tourism**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Cox & King** | **Thomas Cook** | **Crown Tours** | **Transcorp Intl** |
| **Pre-Lockdown** | 0.96 | 49.67 | 17.88 | 11.73 |
| **Post-Lockdown** | 0.99 | 27.59 | 17.41 | 8.37 |
| **Percentage change** | + 3.12 % | - 44.45 % | - 2.62 % | - 28.64 % |

1. **Trading**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Name** | **Adani Enterpris** | **Hexa Tradex** | **MMTC Ltd** | **Sundram** |
| **Pre-Lockdown** | 211.94 | 11.07 | 18.36 | 443.82 |
| **Post-Lockdown** | 142.77 | 9.24 | 14.67 | 306.43 |
| **Percentage change** | - 32.63 % | - 16.53 % | - 20.09 % | - 30.95 % |

1. **Mean Change in Percentage for Various Sectors**

|  |  |  |
| --- | --- | --- |
| Sr No | Sector Name | Mean Percentage |
| 1. | Restaurants | - 35.64 % |
| 2. | Real Estate | - 29.55 % |
| 3. | Aviation | - 26.17 % |
| 4. | Infrastructure | - 25.16 % |
| 5. | Trading | - 25.05 % |
| 6. | Tourism | - 18.14 % |
| 7. | Manufacturing | - 14.31 % |
| 8. | Agriculture | - 5.37 % |

The above table shows the mean percentage of every sector arranged in the decreasing order. The mean percentage is the total of percentage change that is obtained from above tables for every sector.

For Example: The mean percentage of Agriculture is

**Mean Percentage = -16.35 +14.19 -6.61 -12.72 = - 21.49 / 4 = - 5.37 %**

It can be observed that the most effected sector is Restaurants according to the mean percentage that is - 35.64 % and the least effected sector is Agriculture that is - 5.37 %

The Pie Chart showing the change

**References**

[1]<https://www.economicshelp.org/blog/221/stock-market/how-does-the-stock-market-effect-the-economy-2/>

[2]<https://economictimes.indiatimes.com/news/gdpgrowth#:~:text=India's%20GDP%20growth%20for%20the,%2D22%2C%20the%20report%20said.>

[3]<https://www.financialexpress.com/economy/q4-fy-2019-20-gdp-growth-data-live-updates-coronavirus-one-week-lockdown-effect-varied-estimates/1974880/>

[4]<https://analyzingalpha.com/open-high-low-close-stocks>

[5]<https://www.moneycontrol.com/>