

# Impact of Covid-19 Lockdown on Stock Market: A Study with Special Reference to Pharma Companies in India.

\*Mohammed Yunus

\*\* Dr. Panduranga V

\*Research Scholar, Central University of Karnataka, Kadaganchi, Aland Road, Kalaburagi.

\*\*Assistant Professor, Department of Commerce, Central University of Karnataka.

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## Abstract

Covid-19 has not only affected the health and daily lives of individuals, but also the economic growth of the nation. This paper examines the impact of the Covid-19 lockdown on the share prices of Indian pharmaceutical companies. Four pharmaceutical companies from the Nifty Fifty Index have been selected, and 28 trading sessions' worth of daily price information has been collected. The lockdown of Covid-19 was announced on March 24, 2020. This analysis evaluated data from 14 trading days prior to the announcement of the lockdown and 14 trading days after the announcement. A statistical tool, such as the Paired t-test, was used for analysis and to determine the impact. It has been determined that covid-19 lockdown significantly impacts the share prices of Cipla business limited and Dr. Laboratories Reddy's Company Limited, but has no significant impact on the share prices of Divi's Laboratories Company Limited and Sun pharmaceutical industries Company Limited.

**Keywords:** Covid-19 lockdown, pharmaceutical industry, pharma share price,

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## I. Introduction

Life expectancy has increased from 64.2 years in 1990 to 72.6 years in 2019, which has increased the importance of the pharmaceutical sector globally (United Nations 2019). Due to its low operating costs and high-quality goods produced throughout the value chain, India, which has the third-largest pharmaceutical industry in the world by volume (McKinsey & Company, 2020), stands out as an appealing location for establishing generic Research and development centres and manufacturing facilities. The financial economy, as well as the pharmaceutical industry, as well as the pharmaceuticals industry, are both challenged by the COVID-19 pandemic. In an effort to stop the spread of COVID-19, our honourable Prime Minister Narendra Modi declared a national lockdown on March 24, 2020. Numerous economic sectors were impacted as a result of the lockdown and its continuation. It has been observed that the lockdown has had an impact on a number of industries, including banking, construction, automobiles, pharmaceuticals, textiles, steel, agriculture, insurance, etc. To determine the effect of COVID-19 lockdown on pharma companies, research was conducted with a primary focus on pharmaceutical companies and share price movement.

## II. Literature Review

Karlsson et al., (2013) investigated the influence of the 1918 flu virus on Sweden's short- and medium-term financial performance. The epidemic was one of the deadliest plagues in the history of creatures, yet it has so far garnered little attention in the financial literature - despite being responsible for a major manpower disruption. In this study, the authors demonstrate ostensibly exogenous disparities in incidence rates amongst Swedish areas in order to approximate the epidemic's severity. The pandemic causes a significant increase in the rates of poor livelihood. There is further indication that the outbreak had a negative effect on resource revenues.

Jonung & Roeger, (2006) in "The Macroeconomic Effects of a Pandemic in Europe - A Model-Based Assessment" describe the probable significant monetary impact of a lethal epidemic affecting the EU in 2006, based on a monthly financial replica. The macroeconomic cost of a virulent disease, assessed as a fall in GDP growth and/or a decrease in the GDP level, is reflected in a composite image of virulent disease. The authors focus on two areas of the European economy that are predicted to be most severely impacted by the attractions and deals: tourism and retail. The consequences are compared to those obtained in comparable research for the United States and Canada.

Jiang Yan et al., (2017) in "H7N9 endangers not only human health but also the stock market," it is said that the virus not only threatens human health but also affects the stock market. Examined the relationship between daily reported H7N9 cases and the Chinese stock market index. In February and March of 2014, data on daily

report H7N9 cases and share market sectoral index were compiled. Novel infectious disease outbreaks result in financial damage, which is reflected in share price movements.

Ashraf, (2020) analyses how the stock market reacted to the spread of the COVID-19 virus. Using daily COVID-19 confirmed cases and fatalities and stock market returns data from 64 countries from January 22, 2020, to April 17, 2020, discover that the stock markets in these countries reacted unfavourably to the rise in COVID-19 confirmed cases. Thus, the opposite was true; as the number of confirmed instances rose, stock market returns fell. Furthermore, the positive reaction of the stock market to the rising confirmed case count was greater than that to the rising mortality count. Evidence from analyses also shows that the initial days after verified cases and again 40-60 days later had a significant negative market reaction. As a whole, the findings imply that stock markets react rapidly to the COVID-19 pandemic, with a reaction that evolves over time and varies with the severity of the epidemic.

Kong et al., (2004) "'Economic Impact of SARS: The Case of Hong Kong," SARS is the most lethal communicable disease of the 21st century. It began in November 2002 in the Chinese area of Guangdong, and by August 2003, it had spread to 29 nations and three regions, affecting 8,422 people and claiming 916 lives. This study analyses the rise in infectious disease in Hong Kong and its impact on the economy. SARS was an unanticipated disappointment. The most significant unenthusiastic cause was on the order side, with local utilisation and the foreign sale of forces associated with visiting the attractions and air travel being severely impacted for a brief period. The economy did not experience a supply disruption since the industrialised base in the Pearl River Delta remained stable and commodities continued to be shipped through Hong Kong as normal. Initial negative data and expectations regarding the unenthusiastic financial repercussions do not materialise. As soon as the eruption was under control, panic and worry immediately subsided, and the economy quickly recovered.

G.Sankararaman et al., (2019) examined the effect of different economic decisions, including the announcement of currency demonetization and the Monetary policy statement issued by Reserve Bank of India, on the performance of chosen equities listed and traded on the Bombay Stock market. The researchers employed the paired t-test and multiple regression analysis to examine the effect of BSE announcements on the behaviour of BSE stocks.

Shakeel & Datta, (2021) studied the impact of COVID-19 lockdown on Share price of selected ten organizations from five sectors, i.e., Banking Sector, Steel Sector, Oil Sector, Pharmaceutical sector and Insurance sector and found that there is a significant impact on share price of companies in banking sector and steel sector, while Oil sector has mixed results IOC has seen a significant impact on share price due to lockdown but ONGC has witnessed no significant impact on share price. It is also observed that there is no significant impact on share price of companies in pharmaceutical sector and Insurance sector.

T.C.Thomas et al., (2020) study show that Covid-19 announcements have an effect on the NIFTY. There were different kinds of stocks in different sectors. The financial sector had the worst return, followed by the pharmaceutical sector. During the covid-19 pandemic, all sectors have reported bad performance. The highest mean return came from sectors like fertilisers and services. After the big news, the stock markets started going up, mostly because the governments announced stimulus packages.

## **OBJECTIVE**

1. To assess the impact of Covid-19 lockdown on the share price of pharma companies and
2. To determine the percentage change in the share price of selected pharma companies before and after the lockdown.

## **HYPOTHESIS**

H0: Covid-19 lock does not affect the share price of the pharmaceutical companies.

H1: Covid-19 lock does affect the share price of the pharmaceutical companies.

## **III. Research Methodology**

Data over a period of 28 days—14 days prior to the announcement of the lockdown (on March 24, 2020) and 14 days after it—has been collected for the current research study from March 2020 to April 2020. The study was conducted using secondary data, which was gathered from the NSE India website. To determine the effect of Covid-19 lockdown on the share price of pharmaceutical companies, analysis was conducted using the closing share price for each day for a period of 28 days, the statistical tool Paired t-test, and a 95% confidence interval or 0.05 level of significance for each test statistic.

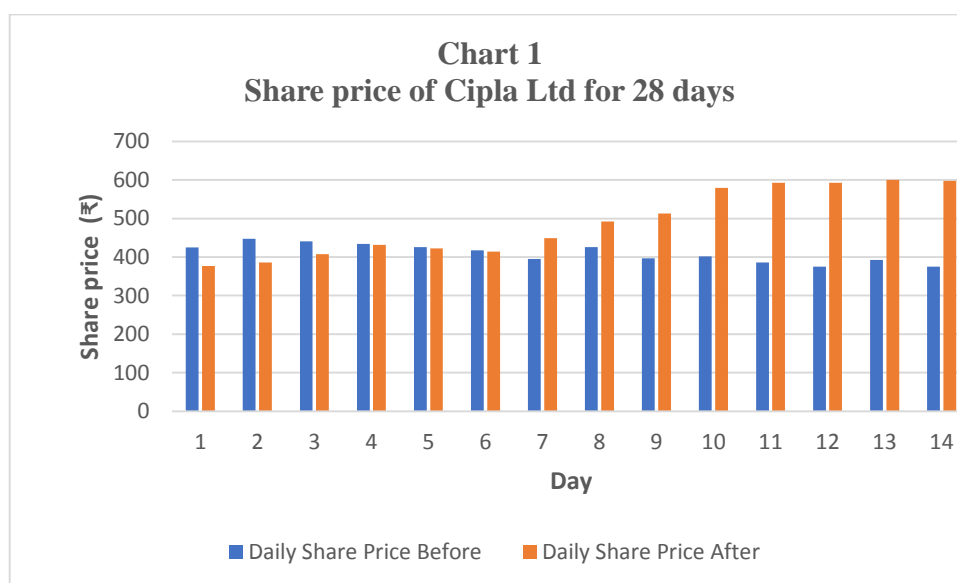
**Data Analysis and Interpretation**

**Table1**  
Share price of Cipla Company Limited for 28 days

Day	Daily share price before 24th March 2020 (₹)	Daily share price after 24th March 2020 (₹)
1	425.3	376.45
2	447.65	386.15
3	440.6	407.65
4	434.4	431.75
5	426.15	422.85
6	417.1	413.75
7	394.75	449.2
8	425.55	492.25
9	396.4	512.75
10	401.75	579.6
11	386	592.85
12	374.7	592.35
13	392.8	600.45
14	375.25	598

**Inference**

From Chart 1 it can be observed that there was a change in share price of Cipla company i.e., an increase of 40.61 per cent during the period of 28 days.



**Table 2**  
t-Test Paired Two Samples for Mean

Cipla Company Limited	Daily share price before 24 <sup>th</sup> March 2020	Daily share price after 24 <sup>th</sup> March 2020
Mean	409.8857143	489.7178571
Variance	580.5586264	7639.027157
Observations	14	14
Pearson Correlation	-0.85255168	
Hypothesized Mean Difference	0	
Df	13	
<b>t Stat</b>	<b>-2.748587235</b>	
P(T<=t) one-tail	0.008291274	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.016582547	
<b>t Critical two-tail</b>	<b>2.160368656</b>	

**Interpretation**

Table 2 shows that the t-statistic is 2.7485, and the critical value for a two-tailed 0.025 significance level is 2.1603. The alternative hypothesis is accepted and the null hypothesis can be rejected because the calculated test statistic of 2.7485 is higher than the rejection point of 2.1603. Therefore, it can be concluded that the lockdown has had a major impact on the share price of Cipla Company Limited.

Table3  
Share price of Divi's Laboratories Company Limited for 28 days

Day	Daily share price before 24th March 2020 (₹)	Daily share price after 24th March 2020 (₹)
1	2183.1	1928.05
2	2174.8	1883.3
3	2223.75	1862.55
4	2240.05	1893.9
5	2181.75	1989.05
6	2149.2	1877
7	1912.85	1901.05
8	1962.7	2067.85
9	1891.9	2168.95
10	1895.3	2310.9
11	1805.25	2341.2
12	1870.95	2395.45
13	1994.9	2393.2
14	1851.75	2332.2

**Inference**

From the Chart 2 it can be observed that there was a change in share price of Divi's Laboratories Company i.e., an increase of 7.00 per cent during the period of 28 days.

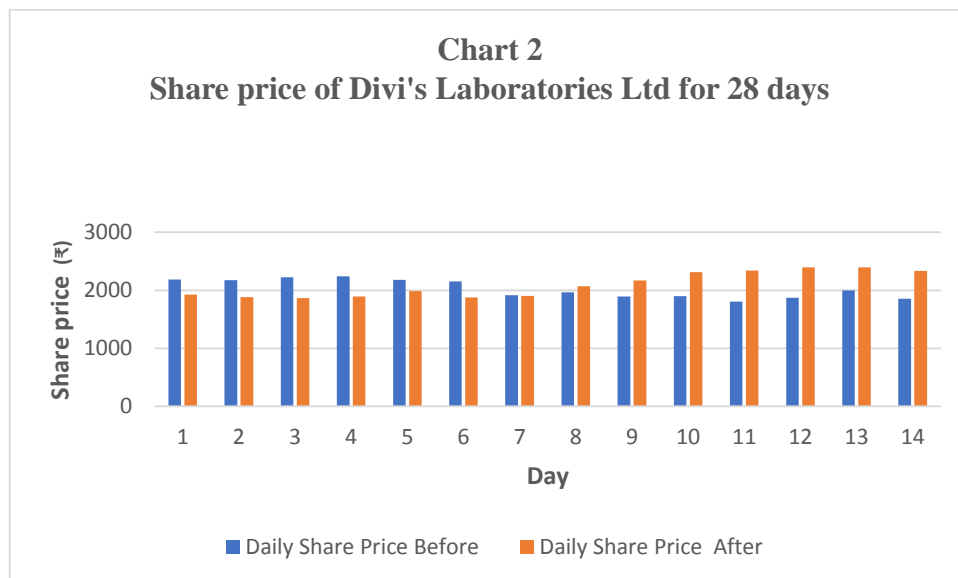


Table 4  
t-Test Paired Two Samples for Mean

Divi's Laboratories Company Limited	Daily share price before 24 <sup>th</sup> March 2020	Daily share price after 24 <sup>th</sup> March 2020
Mean	2024.160714	2096.046429
Variance	25162.28507	47108.02595
Observations	14	14
Pearson Correlation	-0.79558493	
Hypothesized Mean Difference	0	
Df	13	
<b>t Stat</b>	<b>-0.754597005</b>	
P(T<=t) one-tail	0.231971012	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.463942023	
<b>t Critical two-tail</b>	<b>2.160368656</b>	

**Interpretation**

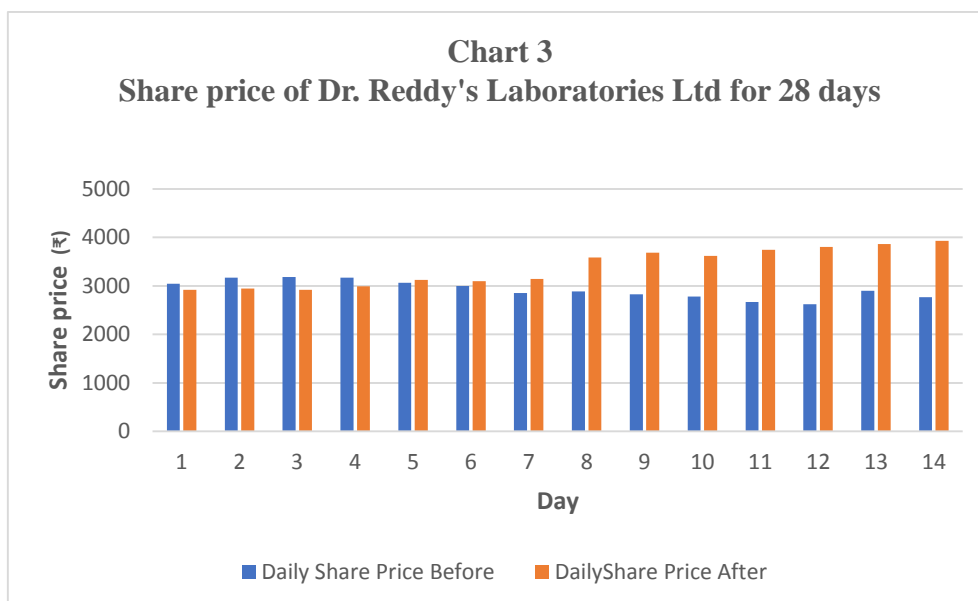
Table 4 shows that the t-stat is 0.7545 and the critical value for a 0.025 significance level (two-tailed) is 2.1603. It was found that the calculated test statistic of 0.7545 is less than the rejection point of 2.1603, indicating that the null hypothesis is accepted and the alternative hypothesis can be rejected. As a result, the lockdown had no significant impact on the share price of Divi's Laboratories Company Limited.

Table5  
Share price of Dr. Reddy's Laboratories Company Limited for 28 days

Day	Daily share price before 24th March 2020 (₹)	Daily share price after 24th March 2020 (₹)
1	3043.7	2922
2	3171.35	2948.55
3	3184.45	2916.5
4	3170.95	2994.25
5	3061.25	3120.75
6	3000.6	3095
7	2850.4	3146.8
8	2885.1	3583.2
9	2826.95	3683
10	2781.2	3621.55
11	2668.45	3746.6
12	2623.95	3807.6
13	2897.25	3860.65
14	2768.4	3929.55

**Inference**

From the Chart 3 it can be observed that there was a change in share price of Dr. Reddy's Laboratories Company i.e., an increase of 29.00 per cent during the period of 28 days.



**Table 6**  
**t-Test Paired Two Samples for Mean**

Dr. Reddy's Laboratories Company Limited	Daily share price before 24 <sup>th</sup> March 2020	Daily share price after 24 <sup>th</sup> March 2020
Mean	2923.857143	3384
Variance	34310.53033	154142.6773
Observations	14	14
Pearson Correlation	-0.856690017	
Hypothesized Mean Difference	0	
Df	13	
<b>t Stat</b>	<b>-3.077127345</b>	
P(T<=t) one-tail	0.004413469	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.008826938	
<b>t Critical two-tail</b>	<b>2.160368656</b>	

**Interpretation**

It is observed from Table 6 that the t-stat is 3.0771 and critical value for a 0.025 significance level (two-tailed) is 2.1603. It was found that the calculated test statistic of 3.0771 is greater than the rejection point of 2.1603 and therefore, the alternative hypothesis is accepted and we can reject the null hypothesis. Thus, it can be said that there is a significant impact of the lockdown on the share price of Dr. Reddy's Laboratories Company Limited.

**Table 7**  
**Share price of Sun pharmaceutical industries Company Limited for 28 days**

Day	Daily share price before 24 <sup>th</sup> March 2020 (₹)	Daily share price after 24 <sup>th</sup> March 2020 (₹)
1	393.55	347.65
2	405.45	338.3
3	404.9	338.25
4	400.9	332.7
5	393.35	352.3
6	385.95	343.55
7	354.8	375.95
8	384.2	417.35
9	368.55	436.7

10	370.15	454.45
11	362.75	462.35
12	360.4	449.2
13	365.25	463.7
14	324.5	457.1

**Inference**

From the Chart 4 it can be observed that there was a change in share price of Sun pharmaceutical industries Company Limited i.e., an increase of 16.00 per cent during the period of 28 days.

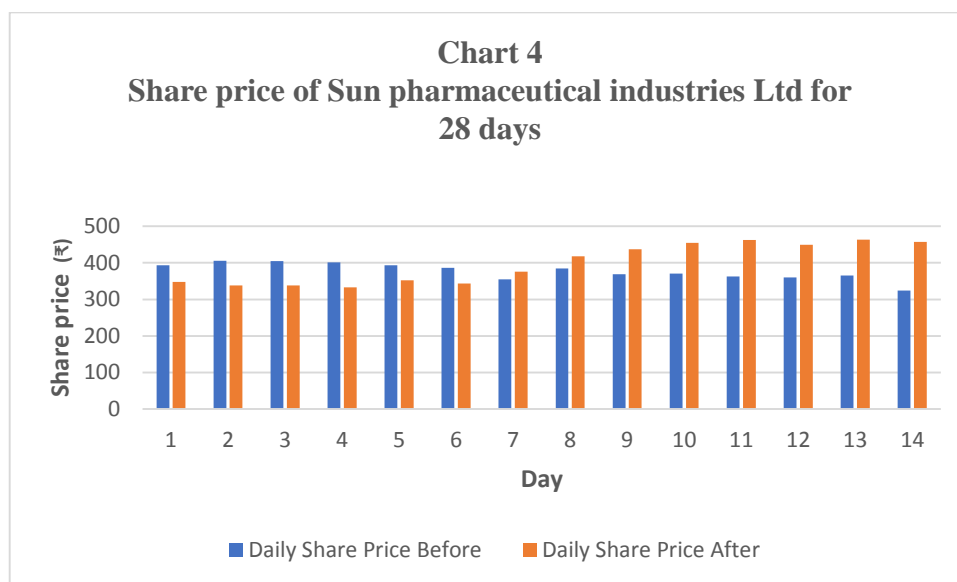


Table 8  
t-Test Paired Two Samples for Mean

Sun pharmaceutical industries Company Limited	Daily share price before 24 <sup>th</sup> March 2020	Daily share price after 24 <sup>th</sup> March 2020
Mean	376.7642857	397.825
Variance	524.2701648	3007.908365
Observations	14	14
Pearson Correlation	-0.779237456	
Hypothesized Mean Difference	0	
Df	13	
<b>t Stat</b>	<b>-1.063604274</b>	
P(T<=t) one-tail	0.153433131	
t Critical one-tail	1.770933396	
P(T<=t) two-tail	0.306866261	
<b>t Critical two-tail</b>	<b>2.160368656</b>	

**Interpretation**

Table 8 shows that the t-statistic is 1.0636, and the critical value for a 0.025 significance level (two-tailed) is 2.1603. The calculated test statistic of 1.0636 is less than the rejection point of 2.1603, so the null hypothesis is true and the alternative hypothesis can be rejected. So, we can say that the lockdown didn't have a big impact on the price of Sun pharmaceutical industries Company Limited shares.

#### IV. FINDINGS

The findings of the study are presented in the following Table:

Sector	Company	Percent Change in Share Price	Impact on Share Price	t-test	Impact of lockdown on Share Price
Pharma	Cipla Ltd.	40.61	Increase	Accept the alternate hypothesis	Yes
	Divi's Laboratories Ltd.	7.00	Increase	Accept the null hypothesis	No
	Dr. Reddy's Laboratories Ltd.	29.00	Increase	Accept the alternate hypothesis	Yes
	Sun Pharmaceutical Industries Ltd.	16.00	Increase	Accept the null hypothesis	No

#### V. Conclusion

Pharmaceutical industry promises to grow at a rapid pace in the future due to development in lifestyle of people and life expectancy. India is leading its way to become the frontrunner in pharmaceutical industry from its current position of third. This paper studies the impact of covid-19 lockdown on share price of pharma companies. NSE Nifty 50 index consists four pharma companies. The closing price have been taken for the analysis. The results show that covid-19 lockdown significantly affects the stock performance of the sector. It was observed that during the 28 trading sessions the share prices of all four pharma companies has increased. Paired sample t-test results shown that there was significant impact of covid-19 lockdown on the share price of Cipla company limited and Dr. Reddy's Laboratories Company Limited and there was no significant impact of covid-19 lockdown on the share price of Divi's Laboratories Company Limited and Sun pharmaceutical industries Company Limited.

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