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COVID 19: Effect on leading pharmaceutical stocks listed with NSE

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ABSTRACT

The purpose of this study is to examine how Covid 19 outbreak has affected leading pharmaceutical stocks listed with the National Stock Exchange of India. We have selected ten leading pharmaceutical companies listed with NSE, and the selection was purely based on the market capitalization of the companies. The general hypothecation of this study was the pharmaceutical stocks will move against the general market trend (contrarian effect). The study period was classified in to pre-crisis period and Covid 19 crisis period. The data consists of 123 daily price observations of the selected 10 pharmaceutical companies. The period of study is ranging from 3rd September 2019 to 28th February 2020. The results reported that momentum effect is persisting with pharmaceutical stocks as the pharmaceutical stocks are moving in accordance with the general benchmarking index. Only two companies, namely Aurobindo Pharma Ltd and Lupin Ltd reported with varied return trend during the study period. This study also signifies that companies like Sun Pharma, Cipla, Glenmark with strong brand reputation were seems to be sustaining in the crisis period in spite of the general falling market trend. This paper is strongly urge the need for backward integration and enhanced research and development activities to Indian Pharmaceutical sector for ensuring their sustainable long-run operations.



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INTRODUCTION

In several articles, it is well communicated that the corona virus outbreak could hit industries such as Travel, Tourism, Entertainment, Hotels and Airline business. However, pharmaceutical industries can

play a pivotal role during the period of an outbreak of diseases. While observing the recent literature interestingly, it is noticed that the researchers did not put much attention on the Pharmaceutical industry during the coronavirus period. This gap really motivated us to carry out research on the effect of COVID 19 on leading Pharmaceutical stocks listed with NSE. Initially, when COVID 19 reported in China during November 2019 the benchmarking stock index in India, the Nifty, however, seems to be stable or positive as the crisis in China likely to strengthen the domestic business. The epidemic has spread to more than sixty countries since December, including India. Gradually the Nifty began to fall as the number of confirmed cases of coronavirus quickly increasing in the country.

This study is developed on the basis of the theoretical model proposed by Fama (1970). According to this theory, market information plays a sig-

nificant role in shaping investment decisions. He also iterates that 'markets are rational and efficient investors overreact to both good and bad news'. On the basis of this, we can identify two investment strategies viz. Contrarian strategy and Momentum Strategy. In the case of a contrarian strategy, the investors will overreact to the information, whereas in the momentum strategy, the investors will slowly react on market information. In other words, if the investors are moving in accordance with the general market trend can be categorized as a momentum strategy. On the other hand under the contrarian strategy, investors will do just the opposite of the market movements. This theoretical postulation is on the ground that we have to check how the investors react on pharmaceutical stocks during COVID 19 outbreak. The mathematical testing of this research was carried out on the basis of the model proposed by Aravind (2016). The primary objective of this study is to examine the presence of contrarian and momentum effects on the pharmaceutical stocks listed with NSE. For getting a detailed outlook, we have divided the study period in to pre-crisis period (September 2019 to November 2019) and the crisis period (December 2019 to February 2020).

REVIEW OF LITERATURE

Coronavirus is deemed to be transmitted from animals to humans and first reported in China in 2019 (Kothai and Arul, 2020). At present, there is no existence of antiviral drugs for the treatment of CoV infections (Yethindra, 2020). The pharmaceutical sector in India, which is overly dependent on China for ingredients and intermediary products needed to make medicines. As an Impact of COVID 19, this industry is seriously facing disruption of supply (Economic Times, 2020). Line (2020) reported that about 70 percent of India's total activated pharmaceutical ingredients requirement is met by imports from China. Whereas the stock market has witnessed panic sell-off of stocks as the country has confirmed its first Covid-19 death and the number of positive cases in the country neared 80 as on 13th March 2020.

In the above context, we can easily state that the market is very much sentimental and it is affected by the new piece of information Fama (1970); Assogbavi et al. (2005) conducted a research to explore how past information can impact the trading performance in the Canadian market. It was found that there exists strong evidence that supported the momentum investment strategy, which implies buying past winner stocks and selling past loser stocks.

According to Schiereck et al. (1999), equity prices are reflected by the investor's assessment on future companies profit.

The pharmaceutical industry of India ranks 3rd in the world in terms of volume and 14th in terms of value (Gopalakrishnan and Vijay, 2017). This position was attained on account of liberalization and foreign institutional investment in this sector Rao et al. (1999). According to Lynch et al. (2019), Pharmaceuticals contribute a significant percentage to stock markets total volatility. Pandya (2017) has suggested a contrarian stand can bring more profit to the investors both in the short and long run. Aravind (2016), in his study, points that momentum strategy is seems to be suitable for Pharmaceutical stocks based on short term information, whereas for long term investment decision contrarian strategy can generate more profit to the investors. Morrin et al. (2002) has conducted a study by using pharmaceutical securities listed on the New York Stock Exchange. He confirmed that for the pharma sector, there are more contrarian investors than momentum investors. Firoozabadi and Sorkheh (2019) stated that strong herding had a negative effect on the return of the pharmaceutical industry in every period except in the bust periods.

With respect to the theoretical postulation of this study, Ellison and Mullin (2001) reported that contemporary news can influence the movement of pharmaceutical stocks in the short run. Schumaker and Maida (2018) also came out with a similar conclusion by an example as the withdrawal of a popular drug from the product portfolio can result in declining the stock price of a pharma companies. According to Hwang (2013), 'Stock return under performance due to negative events is greater in magnitude and persists longer than abnormal returns due to positive events'. In the context of our study, the unpleasant news of Covid 19 should positively hit pharmaceutical stocks.

In another study Kebriaeezadeh et al. (2014) confirmed that the return on pharmaceutical stocks are depending on multiple factors such as net profit margin, operating cycle, working capital, inflation rate, etc. However, this research remains silent on the variable market information. In the words of Masoumi et al. (2019), positive shocks such as GDP and money supply can positively influence the return of pharmaceutical companies. According to Kim (2009), the best sustainable model for the pharmaceutical industry is to build efficient R&D to produce innovative products and keep more products in the pipeline. The rapid pace of change, suitable line corrections and good policy interventions

Table 1: Returns of Pharmaceutical stocks during COVID 19 crisis

Stock	Prior to Crisis (September 2019 to November 2019)	Crisis Period (December 2019 to February 2020)
Aurobindo Pharma Ltd	29.57%	-11.60%
Cadila Healthcare Ltd	-12.02%	-0.71%
Cipla Ltd	1.18%	14.31%
Divis Laboratories Ltd	-8.50%	-16.57%
Dr. Reddy's Laboratories	-12.55%	-1.90%
Glenmark Pharmaceuticals Ltd	16.18%	18.03%
Lupin Ltd	-7.91%	21.81%
Sun Pharmaceutical Ltd	-0.10%	16.54%
Torrent Pharmaceutical Ltd	-9.83%	-12.87%
Wockhardt Ltd	-6.55%	-18.86%
NIFTY	7.28%	-10.95%

Source: Computed Daily Return from NSE data

are important for fuelling future growth of the pharmaceutical industry in India (Banerjee and Thakurta, 2015).

DATA & METHODOLOGY

This research covers daily returns data of ten leading pharmaceutical companies enlisted with the NSE. They are Aurobindo Pharma Ltd, Cadila Healthcare Ltd, Cipla Ltd, Divis Laboratories Ltd, Dr. Reddy's Laboratories, Glenmark Pharmaceuticals Ltd, Lupin Ltd, Sun Pharmaceutical Ltd, Torrent Pharmaceutical Ltd, and Wockhardt Ltd. These companies were selected on the basis of their respective market capitalization. The daily return data of the selected stocks from 3rd September 2019 to 28th February 2020 was duly considered for this research. It consists of 123 daily price observations of 10 pharmaceutical companies (i.e., 123*10 observations) listed with NSE. Likewise, the NIFTY return for the above time period was also calculated.

For a better representation of results, the performance of pharmaceutical stocks from September 2019 to November 2019 was taken as the pre-crisis period. It consists of 64 daily price observations, each of 10 companies. As mentioned in the literature coronavirus first reported in China in November 2019, thereby we have classified the price observations from December 2019 to February 2020 as a crisis period, even though still the crisis has not settled. For this, we have taken the remaining 59 daily price observations of each company. This is on the presumption that the available time period is only good enough to observe the short-term impact of COVID-19 on pharmaceutical stocks.

DATA ANALYSIS

The daily return data of Nifty as well as pharmaceutical stocks, were computed by using formula

$$R_i = \ln(P_1/P_0) * 100 \quad (1)$$

In the above equation, P1 denotes the price of the new day and P0 stands for the previous day's price. Ri stands for the return of individual stocks.

Table 1 shows the daily returns of various pharmaceutical stocks prior to the Covid 19 crisis as well as during the period of crisis. Interestingly the short term return trend of pharma stocks prior to the Covid 19 crisis was not promising. Only Aurobindo Pharma, Cipla and Glenmark has reported three-month positive returns of 29.57 percent 1.18 percent and 16.18 percent respectively prior to the crisis period. All other stocks reported to have a negative return during the study period. However, during the period of the Covid, 19 crisis, more companies entered into the positive return trend. They are Lupin ltd and Sun Pharma with positive returns of 21.81 percent and 16.54 percent. However, Aurobindo pharma reversed their position to a negative return trend with a reported return of -11.60 percent during the crisis period.

Beta is a co-efficient used for measuring the sensitivity of the stocks returns over market returns. Table 2 gives a better representation of the beta co-efficient of the pharmaceutical stocks returns with Nifty return.

$$\beta = \{(\sum xy) - (\sum x \cdot \sum y)\} / \{n\sum x - (\sum x)^2\} \quad (2)$$

In the above equation, 'n' stands for a number of observations, 'x' denotes independent returns

Table 2: Regression Analysis Result of Pharmaceutical Stocks with NIFTY

Stock	Prior to Crisis			Crisis Period		
	F-Circuit	β	p.value*	F-Circuit	β	p.value*
Aurobindo Pharma Ltd	4.32	0.94	0.04	20.79	2.06	0.00
Cadila Healthcare Ltd	13.61	0.77	0.00	11.05	0.53	0.00
Cipla Ltd	8.72	0.62	0.00	18.09	0.67	0.00
Divis Laboratories Ltd	8.33	0.51	0.01	2.08	0.21	0.10
Dr. Reddy's Laboratories	9.12	0.51	0.00	5.83	0.48	0.02
Glenmark Pharmaceuticals Ltd	4.05	0.31	0.05	34.80	1.42	0.00
Lupin Ltd	4.47	0.43	0.00	39.47	0.86	0.00
Sun Pharmaceutical Ltd	3.74	0.40	0.05	21.60	0.80	0.00
Torrent Pharmaceutical Ltd	2.72	0.37	0.10	6.41	0.57	0.01
Wockhardt Ltd	2.21	0.18	0.10	7.98	1.34	0.00

Source: Data Analysis * Level of Significance 10%

(Nifty) and 'y' denotes the return of dependent variables (return of pharmaceutical stocks).

Here ' β ' indicates the regression results of pharmaceutical stocks returns with the return of the benchmarking index (Nifty). From Table 2, it is clear that the probability values of the test statistics falling within the critical value of 0.10 at 10% level of significance (P values < 0.10). Hence, it is inferred that computed beta values are statistically significant; thereby, it can be applied directly for further analysis.

As the next step, we have computed the abnormal gain earned by individual stocks over the benchmarking index.

$$\alpha_i = R_i - (\beta * R_m) \quad (3)$$

Here ' α_i ' stands for the abnormal gain over a market index, ' R_i ' denotes individual stock return and ' R_m ' represents the nifty return.

Those pharmaceutical stocks offered an abnormal gain over Nifty prior to the crisis period were considered as winner stocks while the stocks that offered an abnormal loss over Nifty prior to the crisis period were categorized as loser stocks (refer Table 3).

From Table 3 it can be observed that companies like Aurobindo Pharma, Cipla, Glenmark Pharma, and Sun Pharma reported to have a positive abnormal return over the market index. Thereby these stocks can be classified as winner stocks prior to the crisis period. All other stocks were categorized as loser stocks.

The general assumption is that the past trend will repeat in the future also. If so, momentum strategies are considered to be ideal. During the crisis

period also the winner stocks viz., Cipla, Glenmark Pharma, and Sun Pharma reported to have a positive abnormal return over the market index. We can easily infer that the brand name and the investors trust and strong supply chain management has really saved the stock return of the above companies during the crisis period. Interestingly Aurobindo Pharma has reported a -18.41 % return compared to a market index during the crisis period. This figure is just opposite to the return movement reported prior to the crisis period. This signifies the contrarian effect attributed with this stock. In other words, during the period of crisis, the investors consider investment in Aurobindo Pharmaceuticals as risky and they have diverted their investment to alternative stocks.

All other loser stocks seem to maintain the same momentum during the crisis period also except Lupin Ltd. The Lupin Ltd has reported with a positive abnormal return of 18.69% over the market index during the crisis period. This move can be recorded as a contrarian movement as a loser stock prior to the crisis period has become a winner stock during the crisis period. The demand for Lupin Ltd stocks has increased during Covid 19 period and this might be happened due to the public's trust on the innovation and R&D capacity of the said company.

To generalize the above results, we have used the criteria suggested by [Forner and Marhuenda \(2003\)](#). During the crisis period, if the difference between average abnormal returns of the winner stocks and loser stocks is a positive figure, it signals the presence of momentum effect This can be mathematically expressed as,

$$W[R_{it} - (t * R_{mt})] - L[R_{lt} - (t * R_{mt})] > 0 \text{ signals momentum effect} \quad (4)$$

Table 3: Return trend and Direction of Movement

Stock	Prior to Crisis		Crisis Period		Movement
	Stock Return (%)	Abnormal Return to Index (%)	Stock Return (%)	Abnormal Return to Index (%)	
Aurobindo Pharma Ltd	29.57	39.81	-11.60	-18.41	Contrarian
Cadila Healthcare Ltd	-12.02	-3.59	-0.71	-6.32	Momentum
Cipla Ltd	1.18	7.99	14.31	9.78	Momentum
Divis Laboratories Ltd	-8.50	-2.89	-16.57	-20.30	Momentum
Dr. Reddy's Laboratories	-12.55	-6.99	-1.90	-5.60	Momentum
Glenmark Pharmaceuticals Ltd	16.18	19.57	18.03	15.77	Momentum
Lupin Ltd	-7.91	-3.21	21.81	18.69	Contrarian
Sun Pharmaceutical Ltd	-0.10	4.32	16.54	13.60	Momentum
Torrent Pharmaceutical Ltd	-9.83	-5.83	-12.87	-15.53	Momentum
Wockhardt Ltd	-6.55	-4.59	-18.86	-20.16	Momentum

Source: Data Analysis

&

$$W[R_{it} - (t * R_{mt})] - L[R_{it} - (t * R_{mt})] < 0 \text{ signals contrarian effect}$$

In our study, the average abnormal return over winner stocks are 14.46% and that of loser stocks are -14.38%. Here the difference is a positive figure (14.46% > -14.38%). Thereby we can infer that the pharmaceutical stocks are moving along with the benchmarking index nifty during the crisis period and Covid 19 effect has negatively affected the stocks of leading pharmaceutical companies.

CONCLUSIONS

This study signifies that the pharmaceutical stocks are maintaining a general momentum with the benchmarking index Nifty. However, there is a general perception that during an outbreak of some diseases, the demand for pharmaceutical stocks should increase. The general hypothesis of this study is that the market will react positively on favorable news. During the crisis period, the general demand for pharmaceutical stocks would enhance with decreasing general market trends. With respect to Covid 19 this general perception didn't worked so far. Because Covid 19 is an epidemic for which proper vaccine/ medicine were not yet invented. As a result, the outbreak of Covid 19 is not going to increase the general supply of vaccines or medicines. Secondly, when Covid 19 hit at its worse in China, it pulls back the profit margin of the Indian pharmaceutical industry. Because the Indian pharmaceutical companies are greatly depending on Chinese pharmaceutical ingredients, and the break-in sup-

ply chain has caused the scarcity of essential components required for production. In this context, we suggest backward integration and investment in R&D activities would help the Indian pharmaceutical companies to sustain in the long run. It is also revealed that companies with a strong brand reputation are sustaining in the crisis period despite the general falling market trend.

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