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Sector Wise Stock Market Performance during Pre and Post Covid Era

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ABSTRACT

The spread of the Covid-19 pandemic has an unprecedented and immense impact on the world economy as well as the Indian economy. The stock market, treated as a barometer of the economic activity of any country is adversely affected. Not even in India, countries like Germany, France, the USA, and Spain have been strongly affected. Nationwide lockdown, restriction on the transportation system, demand-supply disequilibrium lead to slow down in the economy and create a fear factor among the participants of the capital market. Rapid fall in the share price and increased volatility are identified during this period. The present study tries to compare the stock price return volatility, no of the transaction, and delivery percentage of various listed companies listed on BSE during the pre and post COVID 19 periods to examine the effect of this pandemic on the economy as a whole.

Period of Study: In this paper, we have consideredthe pre-covid period from 1st September 2019 to 15th March 2020 and post covid period from 16th March 2020 to August 2020.

Sample: for this study, we have selected 50 BSE listed Companies covering 5 sectors, viz. Pharma, Automobile, Industrial Products, Banking and Finance, and Consumer Goods.

Statistical Method: We have used paired sample t-test for comparing the arithmetical mean of different capital market parameters for these two sub-periods for each sector separately and standard deviation of daily return as a measure of volatility.

Conclusion: From the study, we have observed that average daily share price; average daily return; daily no. of transactions and volatility is significantly different from pre and post covid period for most of the sectors. However, we have not perceived any significant difference in the delivery percentage of traded shares of these sectors between two study periods.

Keywords-- Covid-19, Stock Prices, Stock Returns, Volatility, Number of Transactions and Delivery Percentage

I. INTRODUCTION

The spread of the Covid-19 pandemic has an unprecedented and immense impact on the world economy as well as the Indian economy. The stock market, treated as a barometer of the economic activity of any country is adversely affected. Not even in India, countries like Germany, France, the USA, and Spain have been strongly affected. Nationwide lockdown, restriction on the transportation system, demand-supply disequilibrium lead to slow down in the economy and create a fear factor among the participants of the capital market. Rapid fall in the share price and increased volatility are identified during this period. It disrupts the market stability and position of systematic risk in the market. This pandemic is not only affecting public health but the financial market has intensely affected. The market value of Standard & Poor (S&P) 500 indexes declined to 30% since the Covid-19 outbreak. Sensex has also declined to almost 32% during this period. Uncertainty and risk created due to this pandemic, causing significant economic impact all over the globe affecting both advanced and emerging economies such as the US, Spain, Italy, Brazil, and India. Under this backdrop, the Capital market of India has been adversely affected by dramatic movement in stock return. To shed light on this aspect, this paper attempts to undertake a comparative study of few capital market parameters like average closing share price, average daily return, average volatility of daily return, the average number of transactions, and percentage of delivery of traded securities during the pre-covid and post-covid ear, based on 5 important sectors of the economy, like, Pharmaceuticals, Automobiles, Industrial Goods, Banking and Finance and Consumer Goods.This paper is arranged into six sections. Section I starts with an introduction, section II represents a literature review, Section III describes the objectives of the study, section IV describes the research methodology, section V shows results and discussion,andsection VI ends with the conclusion.

II. LITERATURE REVIEW

Sahoo, P., & Ashwin. (September 2020), the study assesses the impact of Covid-19 on the Indian Economy with special emphasis on the manufacturing and MSME sectors. It is expected that growth of manufacturing sectors may decline from 20% to 5.5%, export from 20.8% to 13.7%, and MSME net asset value from 5.7% to 2.1% in 2020-21 financial year over the previous financial year 2019-20. GDP may shrink by -7%. The economy is moving towards a recession. Some fiscal and monetary policy measures are suggested for economic recovery.

Das, K. K., & Patnaik, S. (June 2020), study suggests that the Covid-19 pandemic could lead to a slowdown in domestic demand. Severe job losses and pay cuts and unemployment in the unorganised sector will lead to erosion of purchasing power. Covid-19 has

caused severe disequilibrium in the Indian economy. It is estimated that GDP growth rate to 1.9% for 2020-21 which lowest by the recorded growth rate of 1.15% in 1991-92. An outbreak of Covid-19 has disrupted tourism aviation, telecom, the auto sector, transportation sectors.

Garg, D., K., Gupta, M., & Kumar, M. (Feb 2021), this study indicates that the covid-19 crisis creates the instability of demand, and supply powers will continue even after lockdown. Indian growth fell to 3.1% in the 4th quarter of the fiscal year 2020. Unemployment increased to 26% in April, from 6.7% in March 2020. 140 million people either lost employment during the period or face a severe salary cut. During the first phase of the lockdown Indian economy loses a daily 4.5 billion USD. For the complete lockdown period, the economy will expect to lose nearly 2.8 trillion USD. Export of gems and jewelry drop to 98.74% and leather and the leather product falls to 93.8%.

Mhajan, M. (Sept 2020), the paper studies the impact of the Covid-19 pandemic on the manufacturing sector of India and its impact on unemployment. The paper found that contractual workers are affected in India as workers have moved to the home town due to this epidemic. The manufacturing sector gets affected due to decreasing demand and a broken supply chain. The decline in manufacturing activities will also have an impact on the expenditure on corporate social responsibilities of Indian companies.

Ozili and Arun (2020) in their empirical study to explore the impact of social distancing policy to curb down the spread of the Covid-19 and their economic impact on four Continents, viz. Asia, Africa, Europe, and North America. The study found that lockdown destroyed economic stability and affect stock prices adversely.

Azimili (2020) study empirically the impact of Covid-19 using regression on the intensity and composition of the risk-return relationship in the USA Capital Market. The results indicate that following the COVID-19 outbreak, the degree of association between returns and market portfolio has raised, as a result, the benefits of diversification are reduced. The author also studied the GSIC and stock return relationship and found that the GSIC return relationship revealed an asymmetric pattern, lower tails influenced negatively almost twice as compared to the upper tails.

Shezad et al. (2020) conducted a study to analyze the nonlinear behavior of the return of stock markets of fin the USA, Italy, Japan, and China by using the P-GARCH model. The study confirmed that the COVID-19 pandemic affects the stock returns of the S&P 500 adversely. However, it revealed an inconsequential impact on the Nasdaq Composite index.

Cepoi (2020), an empirical study conducted to find the association between COVID-19 related news and stock market returns across the topmost affected countries. This study identified that the Capital market shows asymmetry dependence on COVID-19 related news. This study is based on panel quantile regression.

Osagie et al. (2020), by applying Quadratic GARCH and Exponential GARCH models with dummy variables found that the COVID-19 adversely affect the stock returns in Nigeria and suggested that a stable political environment, diversification of economy, financial incentive to domestic companies, flexible exchange rate regime can be implemented to improve the condition of the financial market.

Basistha.D and Bora.D (2020), have studied empirically the volatility of BSE Sensex, and NSE Nifty using the GARCH family model. The outcome of the study is that the stock market in India has experienced high unfavorable volatility during the pandemic period. While comparing the results with that of the pre-COVID-19 period, we find that return on the indices is higher in the pre-COVID-19 period than during COVID-19.

India is one of the emerging economies in the world, this paper shows the nature of volatility between the pre and post-Covid-19- period. Few studies have been conducted to focus the comparative study on this connection. In this study, I have attempted to compare the volatility of the returns of NSE- Nifty between these two above-mentioned sub-periods.

III. OBJECTIVE OF THE STUDY

1. To compare the closing average share prices of selected sectors during pre and post covid periods.
2. To compare the average daily return of selected sectors during pre and post covid periods.
3. To compare the average volatility of selected sectors during pre and post covid periods.
4. To compare the number of daily trading of selected sectors during pre and post covid periods.
5. To compare the average delivery percentage of selected sectors during pre and post covid periods.

IV. HYPOTHESIS OF STUDY

Based on the above objectives we have framed the following hypothesis for this study:

a. **H01:** There is no difference in the average closing stock prices during pre and post covid periods.
b. **H02:** There is no difference in the average daily return during pre and post covid periods.
c. **H03:** There is no difference in the average daily transaction during pre and post covid periods.
d. **H04:** There is no difference in the average delivery percentage during pre and post covid periods.
e. **H05:** There is no difference in the average volatility during the pre and post covid periods.

Such hypotheses are tested for each of the following sectors separately:

a. Pharmaceuticals sector
b. Automobile sector
c. Industrial Goods sector
d. Banking sector
e. Consumer Goods Sector

Companies Covered for the Study

Sectors				
Pharmaceuticals	**Automobile**	**Heavy Industrial**	**Banking and Finance**	**Consumer Goods**
WOCKHARDT	TVS MOTOR	TATA STEEL	YES	TITAN
TORRENT	TATA MOTORS	SEMENCE	SBI	P & G
SUN PHARMA	MRF	SAIL	POWER	NESTLE
REDDY	MARUTI	L & T	PNB	ITC
PFIZER	MAHINDRA	JINDAL	IDBI	HUL
LUPIN	J K TYRES	ISGEC	ICICI	GODREJ
CIPLA	HERO MOTOR	HINDUSTAN ZINC	HOUSING	EMAMI
CADDILA	EICHER	HIDALCO	HDFC	DABUR
AUROBINDO	CEAT	GAIL	BANDHAN	COLGATE
ALKEM	BOSCH	BHEL	AXIS	BALRAMPUR

IV. RESEARCH METHODOLOGY

For this empirical study, we have selected five sectors like, Pharmaceuticals, Automobiles, Industrial goods, Banking and Finance, and Consumer goods, and from which a total of 50 widely traded BSE listed large Cap companies are selected for this study purpose. The returns of the stock index are calculated based on the logarithmic transformation of the daily closing share price. we calculate the daily return of the share price data taking the log of the first difference of daily Average Index Value, $R_t = \text{Log}(P_t / P_{t-1})$, Where P_t is the closing share price at time t and P_{t-1} is the corresponding value at time t-1.Volatility has been measured based on the standard deviation of the daily returns.

Sample Period: The sample covers daily observation of Nifty of two-time frames.

Sub Period 1: Pre-Covid-19 era (from September 2019 to March 2020) and

Sub Period 2: Post-Covid-19 era (from April 2020 to August 2020)

Data Source: The entire data has been collected from BSE Website.

Research Tools: To study the difference between the performance of stocks during post covid 19 and pre covid 19 periods, paired t-test was used. First, the 50 companies were grouped into 5 sectors and then the return is calculated based on the daily closing prices of each company was calculated separately for the pre covid and post covid periods. Later the paired sample t-test was performed separately for each sector. To measure the volatility of each sector the average of the standard deviation of stock returns of the companies about that sector was calculated.

Research Software: The entire econometrics analysis has been done using the SPSS-23statistical package.

V. DATA ANALYSIS AND FINDINGS

The analysis of data is done sector wise

Table 1: Pharmaceutical Sector

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	PRE_CLP - POST_CLP	-292.409	310.80027	98.28368	-2.97515	0.01557
Pair 2	PRE_RET - POST_RET	-0.00291	0.00317	0.00100	-2.89887	0.01763
Pair 3	PRE_TRAN - POST_TRAN	-2562.375	2128.11124	672.96786	-3.80757	0.00417
Pair 4	PRE_DELIVERY - POST_DELIVERY	1.090	5.55499	1.75664	0.62096	0.55003
Pair 5	PRE_VOLA - POST_VOLA	-0.0067	0.00693	0.00219	-3.06161	0.01354

The Indian Pharmaceutical sector ranks third globally in terms of volume and tenth in terms of value. The results of the t-test (Table 1) show that the mean value of closing stock prices of selected pharmaceutical companies in this sector has increased during the post covid period by Rs. 292.40 and it is statistically significant based on p-value (0.01557). Hence, we reject the null hypothesis and accept the alternative hypothesis (as the critical t-value is less than the calculated t-value). Similarly, we can accept the alternative hypothesis that there are significant differences in the daily return (increased by 0.00291), volatility (increased by 0.00671), and transaction (increased by 2,562) during these two periods. However, we have not found any statistically significant difference concerning delivery percentage.

Table 2: Industrial Goods Sector

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	PRE_CLP - POST_CLP	112.74620	155.44	49.15759	2.29357	0.04750
Pair 2	PRE_RET - POST_RET	-0.00347	0.00291	0.00092	-3.77613	0.00438
Pair 3	PRE_TRAN - POST_TRAN	-2566.30	2525.85	798.74499	-3.21292	0.01061
Pair 4	PRE_DELIVERY - POST_DELIVERY	-0.32980	6.87597	2.17437	-0.15168	0.88279
Pair 5	PRE_VOLA - POST_VOLA	-0.03581	0.08802	0.02784	-1.28666	0.23032

The heavy industrial sector is the backbone of the Indian Manufacturing Sector. We have observed that the average closing price has dropped significantly during the post covid period though return has increased significantly. Here we observed that the calculated t value of the cases is more than a critical value of t statistics. Hence, we reject the null hypothesis that there is no difference in the average closing price and daily return during the pre and post covid periods. Although we have observed that the number of transactions has increased significantly during the post covid period this is statistically significant at 5%. The results of the Volatility of stock returns of the Industrial sector show that the volatility of stock returns has increased significantly, based on the p-value. This indicates that the pharmaceutical stock's returns have slightly become more volatile in the post covid period

Table 3: Automobile Sector

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	P PRE_CLP - POST_CLP	13972.4870	40844.1980	12916.0695	1.0818	0.3075
Pair 2	PRE_RET - POST_RET	-140.4001	443.9848	140.4003	-1.0000	0.3434
Pair 3	PRE_TRAN - POST_TRAN	-1632.4771	1253.4470	396.3747	-4.1185	0.0026
Pair 4	PRE_DELIVERY - POST_DELIVERY	1.4996	4.9206	1.5560	0.9637	0.3604
Pair 5	PRE_VOLA - POST_VOLA	-0.0127	0.0832	0.0263	-0.4820	0.6413

India is expected to emerge as the world's third-largest automobile market by 2021.From table 3 we have observed that all the parameters except several transactions, are not showing the significant difference between pre covid and post covid era as calculated t-value is less than critical t-value. So, we can accept the null hypothesis that closing price, daily return percentage of delivery, and volatility have no difference between pre and post covid ear. For the auto sector, it may be assumed that the covid pandemic is not creating any significant shock in this sector. Rather, the number of the transaction has increased significantly at 1% level of significance. It indicates that investors are showing increasing enthusiasm in this sector.

Table 4: Bank and Financial Sector

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	PRE_CLP - POST_CLP	169.2146	166.053	52.51081	3.222	0.010
Pair 2	PRE_RET - POST_RET	-0.00170	0.0035	0.00111	-1.531	0.160
Pair 3	PRE_TRAN - POST_TRAN	-6158.835	12440.15	3933.92126	-1.566	0.152
Pair 4	PRE_DELIVERY - POST_DELIVERY	-1.82000	12.765	4.03677	-.451	0.663
Pair 5	PRE_VOLA - POST_VOLA	-0.00671	1.684	0.63676	-1.956	0.148

As per the Reserve Bank of India (RBI), India's banking sector is sufficiently capitalised and well-regulated. The financial and economic conditions in the country are far superior to any other country in the world. Credit, market, and liquidity risk studies suggest that Indian banks are generally resilient and have withstood the global downturn well(Indian Banking Industry Report, Nov 2020). From table 4 we can observe that the mean value of closing share price of selected sample companies in the Banking and Finance sector has decreased by Rs.169.2 during the post covid period from pre covid period and the result is statistically significant at 1% level of significance. Hence we can reject the null hypothesis that there is no significant difference inthe average of the closing share price of the banking sector. However, for the other parameter, we can accept the null hypothesis that there is no statistically significant difference between pre and post covid era.

Table 5: Consumer Goods Sector

		Paired Differences			t	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean		
Pair 1	PRE_CLP - POST_CLP	-123.38	605.1107	191.3528	-.645	0.535
Pair 2	PRE_RET - POST_RET	-0.0021	0.0026	0.0008	-2.566	0.030
Pair 3	PRE_TRAN - POST_TRAN	-2345.50	2538.3119	802.6847	-2.922	0.017
Pair 4	PRE_DELIVERY - POST_DELIVERY	0.4120	8.9988	2.8457	.145	0.888
Pair 5	PRE_VOLA - POST_VOLA	-0.0096	0.0034	0.0011	-8.937	0.000

Indian consumer durables market is broadly segregated into urban and rural markets and is attracting marketers from across the world. The sector comprises a huge middle class, a relatively large affluent class, and a small economically disadvantaged class. Global corporations view India as one of the key markets from where future growth is likely to emerge. The growth in India's consumer market would be primarily driven by a favorable population composition and increasing disposable income. (Indian Consumer durable Industry report 2, Nov 2020). From table 5 we have observed that daily return, volatility, and daily transactions are increased significantly during the post covid era. It is further confirmed by t-statistics as it is significant at a 1% level. Therefore, we can reject the null hypothesis and accept the alternative hypothesis that daily return, volatility, and volume of trades are different from pre covid period to post covid period. This indicates that the Consumer durable sector returns are more vulnerable in the post-COVID 19 periods. Although we have observed no significant change in the mean closing price of shares and deliverable percentage.

VI. CONCLUSION

This paper devotes for comparative study of few capital market parameters to evaluate the impact of covid 19 in the stock market based on few sectors. The closing stock price and daily stock return are the significant parameters to determine the performance of the company as well sector over a specific time. Volatility is an important determinant in investment decisions in the stock market. The investors in the stock market are also likely to be affected by the volatility of stock prices as high volatility would be the reason for huge losses or gains and hence, greater uncertainty. The deliverable percentage indicated the trader's interest in the stock and sector. High-quality shares have generally

a large delivery percentage. A high percentage implies that investors have good faith in the stock for this reason they are prepared to take delivery of this stock for a long-term purpose not for intra-day trading. The volume of trades shows how many transactions were placed on shares for a particular day. It can be used to measure the enthusiasm for the buyers and seller on the security. We have used paired sample t-test for comparing the mean of each sector. In the study, we have observed that the mean closing price and return are decreased for all the sectors except pharmaceuticals and consumer product, as these sectors business is not affected by this pandemic rather they have added value for their shareholders. However, during this pandemic volatility has increased from pre covid era to post covid era. As the stock market is not certain about the persistence of the covid-19 shock in the economy, we observed significant fluctuation in daily return. However, we have not observed any significant difference in the deliverable percentage for all these sectors during these two study periods. Moreover, we have identified that number of daily trades has increased significantly for all sectors except the bank and financial sector, where we have found no significant difference. The paper is, however, not devoid of limitations. They are as follows: first, the data used in this study is restricted up to 6-month pre and post; second, we have considers only five sector for the study and 50 listed companies for this study; last but not least in this study we have closing shares price for calculation of daily return.

REFERENCES

[1] Agarwal, S. & Sing, A. (2020 Jun). Covid-19 and its impact on Indian economy. *International Journal of Trade and Commerce-IIARTC, 9*(1), 72-79.

[2] Sahoo, P. & Ashwin. (2020 Sep). Covid-19 and Indian economy: Impact on growth, manufacturing and MSME sector. *Global Business Review- Sage, 21*(5), 1159-1183. DOI: 10.1177/0972150920945687.

[3] Das, K. K. & Patnaik, S. (2020 Jun). The impact of Covid-19 in Indian economy-An empirical study. *International Journal of Engineering and Technology, 11*(3), 194-202.

[4] Garg, D., K., Gupta, M., & Kumar, M. (2021, Oct). The impact of Covid-19 epidemic on Indian economy unleashed by machine learning. *IOP Conference Series*. Available at: http://:10.1088/1757-899X/1022/1/012085.

[5] Mhajan, M. (2020 Sep.). To study the impact of coronavirus pandemic on the manufacturing sector in India. *Journal of Seybold Report, 15*(9). 26-31.

[6] Chaudhary, M., Sodani, R., P., & Das, S.(2020 Aug). Effect of COVID-19 on economy in India: Some reflections for policy and programme. *Journal of Health Management- Sage, 22*(2), (169-180). DOI: 10.1177%2F0972063420935541.

[7] Poddar, K., A. & Yadav, S., B. (2020 Jun).Impact of COVID-19 on Indian economy- A review. *Journal of Humanities and Social Sciences Research, 11*(2), 15-22. DOI: 10.37534/bp.jhssr.2020.v2.nS.id1033.p15.

[8] KPMG. (2020 Sep). *Covid-19 impact media and entertainment industry*. Available at: https://home.kpmg/in/en/home/insights/2020/09/media-and-entertainment-report-kpmg-india-2020-year-off-script/covid-19-impact-media-and-entertainment-2020.html.

[9] Ahmed, M. & A. E. Aal. (2011). Modelling and forecasting time varying stock return volatility in the Egyptian stock market. *International Research Journal of Finance and Economics*, *78*, 96–113.

[10] Azimili A. (2020). The impact of COVID-19 on the degree of dependence and structure of risk return relationship: A quintile regression approach. *Finance Reseach Letters*.

[11] Baker S R, Bloom N, & Davis S J. (2020) The unprecedented stock market impact of COVID-19. *NBER Working Paper No. 26945*.

[12] Baret S, Celner A, O'Reilly M, & Shilling M. (2020). *COVID-19 potential implications for the banking and capital market sector*.

[13] Cakmakl C, Demiralp S, Kalemli-Ozcan S, & Yesiltas S. (2020). COVID-19 and emerging markets: An epidemiological model with international production networks and capital flows. *NBER Working Paper No. 27191 21*.

[14] Cepoi C O. (2020). Asymmetric dependence between stock market returns ad news during Covid19 financial turmoil. *Finance Research Letters*.

[15] Glosten L, Jagannathan R, & Runkle D. (1993). On the relation between the expected value and the volatility of the nominal excess return on stocks. *Journal of Finance, 48*, 1779-1801.

[16] Goudarzi, H. & C. S. Ramanarayanan. (2010). Modelling and estimation of volatility in Indian stock market. *International Journal of Business and Management* 5(2), 85-98.

[17] Herfero A G. (2020). *COVID-19 and emerging economies: What to expect in the short- and medium-term*. Raisina Debates.

[18] Karmakar, M. (2005). Modelling conditional volatility of the Indian stock markets. *Vikalpa, 30*(3), 21–37.

[19] P, Kumar K V, Raghuram G, Govindaranjan K, & Anand V V. (2014). Impact of global financial crisis on stock market volatility: Evidence from India. *Asian Social Science, 10*(10), 86-94.

[20] Shehzad K, Xiaoxing L, & Kazouz H. (2020). *COVID-19's disasters are perilous than global financial crisis: A rumor or Fact?*. Financial Research Letters.

[21] www.ibef.org.

