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Corona Virus Pandemic: Reaction of Indian Financial Markets

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Abstract

The world is passing through an unprecedented situation caused by the spread of novel corona virus. The entire world moved into a lockdown mode during the early months of 2020, resulting in substantial reduction in the economic activity, increased unemployment and tremendous pressure on the healthcare sector. Almost all nations in the world were affected by the pandemic. The financial markets across the world reacted quickly to the economic reality and went on a downward spiral at a rate not witnessed in the past. Shadowing the global markets, Indian financial market also went through lot of turbulence during the first three months of 2020. But the markets recovered during the next few months. In the light of these developments, the current study attempts to understand how various markets in India reacted during the time of the pandemic. It also looks at the interrelationship between the markets and how the market volatility behaved during this period. Finally, an examination of the factors responsible for the recovery during the later months is carried out. The study uses data related to stock market, commodity market and currency market for a period of seven months from January to July. The entire period of study is divided into three phases: pre-lockdown, lockdown and post-lockdown. Rates of returns generated by the markets during each of these phases are compared. Granger causality test is used to examine the influence of markets on each other. Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model is used to analyse the behaviour of volatility during the period. It is found that the stock markets reacted sharply during the pre-lockdown period and recovered during the lockdown and post-lockdown phases.

The banking and financial services sectors were the most affected, whereas IT and pharmaceutical were the least affected. The market volatility was high during the recovery phase. The recovery of market was mostly led by the shares of technology based firms and positive inflow from Foreign Institutional Investors (FIIs).

Keywords: Covid-19, Financial Markets, Rates of Return, Granger Causality, GARCH

Introduction

The year 2020 started with the outbreak of the Novel Corona Virus, which was called Covid-19. The virus first appeared in China by the end of 2019, which started spreading like a wildfire across the world within no time. The total number of cases were just above 1 lakh in the first week of March 2020 when the World Health Organisation (WHO) declared it a pandemic. The cases jumped to over 2 crores by the beginning of August. Many countries resorted to lockdown to arrest the spread of the virus. Though the first case in India was reported in January, the rapid rise in cases started much later. India's reaction to the virus was through three phrases of lockdowns between 24 March and 31 May. The worldwide spread of virus threw the entire global economy out of gear. Along with slowdown in economic activity, India had to face the humungous task of managing migration of unorganised labour force and the resultant unemployment.

The economic impact of Covid-19 was felt by financial markets across the world. Most of the global indices, including the major indices in India and USA, had a free fall during the first three months of 2020. The crude oil price touched an all time low, while gold emerged as the preferred investment alternative. But the markets were seen recovering during the second quarter of the year. In India too, the markets recovered, in spite of exponential growth in the number of Covid-19 cases during the later period. Figure 1 shows the movement of Nifty, the 50 share index of National Stock Exchange (NSE), along with the number of Covid-19 cases from January to July.

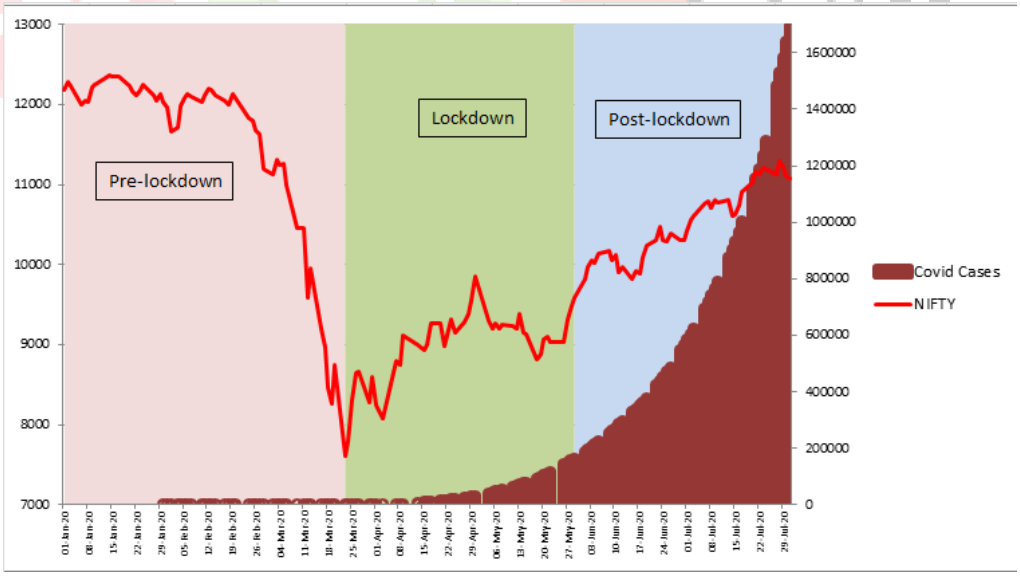

Figure 1: Nifty and Covid-19 Cases

In this background, the current study attempts to analyse how the financial markets in India reacted to the spread of corona virus. It also aims at understanding the interrelationship between the markets and the factors that contributed to the recovery during the later months.

Review of Literature

Financial markets across the world have witnessed many crises in the past, but the current one is unique in the senses that it is caused by a health pandemic and almost all nations in the world are affected by it. Hence, the impact of the pandemic on various aspects, including the reaction of financial markets, has assumed significance and many researchers are simultaneously working on this. However, not many studies are published as of now. A brief summary of the available literature is presented here.

Asraf (2020) examined the reaction of stock markets to Covid-19 across 64 countries between January and April and found that the markets reacted proactively during the early phase. It was also found that the markets were reacting more to the number of positive cases than the number of deaths. Sansa (2020) analysed the financial markets in China and USA during March and found that there is a positive significant relationship between the COVID - 19 confirmed cases and the financial markets. Baker et al. (2020) studied the unprecedented stock market reaction to COVID-19 using the data on how the US markets reacted to earlier crises and the present one. They found that government restrictions on commercial activity and voluntary social distancing, operating with powerful effects in a service-oriented economy, are the main reasons for the US stock market to react forcefully to COVID-19 compared to previous pandemics. Phan and Narayan (2020) analysed the country responses and the reaction of the stock market to COVID-19. They found that the markets overreacted initially and when more information was available during the later phase, there was correction. Goodell (2020) laid down the agenda for future research on the impact of the pandemic on various aspects related to finance such as, economic implications, impact on governments and policy makers, banking and financial services and financial markets. Few more studies in the related area, some which are under print, are given in the reference section. The available literature suggests that most of the markets reacted sharply during the early phase of the pandemic and went on a correction mode later. A comprehensive study on the Indian market was not available, which motivated the current study.

Research Design

Objectives of the Study

a. To analyse the reaction of Indian financial markets to corona virus pandemic
b. To study the behaviour of volatility during the pandemic period
c. To examine the factors that contributed to the post-lockdown revival of the markets

Data Description

The study is based on secondary data related to various indicators of financial markets. Daily data related to the selected indicators are considered for a period of seven months from 1 January to 31 July 2020. The entire period of study is divided into three phases as follows:

Phase I: Pre-lockdown Period: 1 January to 23 March 2020
Phase II: Lockdown Period: 24 March to 31 May 2020 and
Phase III: Post-lockdown Period: 1 June to 31 July 2020

The financial market indicators used in the study are given in Table 1.

Table 1: Data Description

#	Data Series	Source of Data
1	NSE 50 Index (NIFTY)	National Stock Exchange
2	NSE Midcap 150 Index	
3	NSE Smallcap 250 Index	
4	NIFTY Bank Index	
5	NIFTY Financial Services Index	
6	NIFTY FMCG Index	
7	NIFTY IT Index	
8	NIFTY Pharma Index	
10	BSE Sensitivity Index (SENSEX)	Bombay Stock Exchange
11	Gold Price/10 gram at Ahmedabad	Multi Commodity Exchange of India
12	MCX iCOMDEX Composite	Multi Commodity Exchange of India
13	NCDEX Krishi Index (NKrishi)	National Commodity & Derivatives Exchange
14	Crude Oil Price/barrel (WTI)	US Energy Information Administration
15	Dow Jones Industrial Average (DJIA)	Yahoo Finance
16	S & P 500 Index	
17	NASDAQ Composite Index	
18	NYSE Composite Index	
19	Daily share prices of 10 largest constituent stocks of NIFTY	National Stock Exchange

Apart from the above data, the study also considered daily data on the number Covid-19 positive cases reported in India, which was collected from the Ministry of Health and Family Welfare, Govt. of India. The daily net flow of Foreign Institutional Investors (FII) and Domestic Institutional Investors (DII) in the cash market was collected from moneycontrol.com.

Scheme of Analysis

a. The rates of returns for each phases of the study were computed using the following equation. Comparison of the returns was done across variables.

$$Rate\ of\ Return = \frac{(P_E - P_B)}{P_B} \times 100$$

P_E represents price at the end of the period and P_B, price at the beginning. The rates of returns computed here represent the returns for the specific periods, which are not annualised.

b. For the comparison of different markets, a sub-sample of five variables were considered, which included Nifty and Sensex representing the stock market, crude oil and gold prices representing the commodity market and the exchange rate of US Dollar representing the currency market. In order to compute the daily returns, log transformation of the daily data of all the variables, except net flow of FII and DII, was done. The daily rates of returns for each of the variables were computed as follows, where t represents time:

$$Daily\ Returns = ln(P_t) - ln(P_{t-1})$$

c. The interrelationship between the markets was examined using Granger causality test as suggested by Granger (1969). Since Granger causality test is applied to stationary data, Augmented Dickey Fuller (ADF) Test was used to examine the stationarity. Granger causality test considers two variables at a time by employing the following sets of equations. The lag length chosen for the study is 2. Hence, the test examines the influence of two lagged values of one variable on the other.

$$y_t = \alpha_0 + \beta_1 y_{t-1} + \beta_2 y_{t-2} + \emptyset_1 x_{t-1} + \emptyset_2 x_{t-2} + u_{ty}$$
$$x_t = \propto_0 + \gamma_1 x_{t-1} + \gamma_2 x_{t-2} + \theta_1 y_{t-1} + \theta_2 y_{t-2} + u_{tx}$$

The null hypothesis for Granger causality test is that $y_t$does not granger cause x_t (and x_t does not granger cause y_t), which is tested by $\emptyset_1 = \emptyset_2 = 0$ (and $\theta_1 = \theta_2 = 0$). If any of the coefficients are not equal to zero, the null hypothesis is rejected. In the above set of two equations, granger causality may run either in one direction or in both directions. It should be noted that granger causality does not imply cause and effect relationship in the traditional sense. It only measures the influence of the information content in the lagged values of the variables.

d. The behaviour of volatility of the markets was analysed using Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model proposed by Bollerslev (1986). The GARCH model uses a mean equation whose residuals are modeled as conditional variances. The mean equation used in this study is an intercept only model. The basic GARCH (1,1) model is given below.

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta \sigma_{t-1}^2$$

In the above model, $\sigma_t^2$is known as conditional variance, because it is a one-period ahead estimate of the variance calculated based on past information. The conditional variance depends on a long-run average value α_0; volatility during the previous period ε_{t-1}^2; and fitted variance from the model during the previous period σ_{t-1}^2. The GARCH conditional variances for the selected period are estimated using the GARCH (1,1) model. These daily conditional variances of all the markets are compared.

e. The last part of analysis deals with examination of the factors contributing to the recovery of markets during the post-lockdown period, which is done by analysing the movements of 10 stocks constituting the maximum weightage in Nifty. The movements of US indices as well as the effect of net flows of FII and DII are also considered.

Analysis and Interpretation

Reaction of Markets

The rates of returns of various market indicators are given in Table 2. The rates of returns for each phase of the study as well as for the overall period (seven months from January to July) are reported in the table.

Table 2: Rates of Returns

	Pre-lockdown	Lockdown	Post-lockdown	Overall
Panel 1: Financial Markets				
NIFTY	-38.04%	22.81%	12.69%	-9.84%
SENSEX	-37.59%	21.56%	12.92%	-9.66%
NIFTY-Midcap 150	-35.14%	20.07%	12.82%	-8.66%
NIFTY-Small cap 250	-39.73%	19.25%	18.30%	-13.10%
Panel 2: Sectoral Indices				
NIFTY-Bank	-47.86%	12.80%	8.42%	-33.30%
NIFTY-Financial Services	-43.54%	13.17%	8.66%	-27.00%
NIFTY-FMCG	-23.40%	22.40%	4.40%	2.00%
NIFTY-IT	-28.84%	18.08%	26.31%	15.04%
NIFTY-Pharma	-20.13%	47.76%	13.74%	38.43%
Panel 3: Commodity Markets				
Crude Oil	-65.62%	67.23%	22.77%	-34.17%
Gold	3.35%	14.18%	14.92%	37.34%
NKRISHI	-14.78%	1.88%	1.04%	-9.70%
COMDEX	-20.41%	3.83%	13.65%	-5.74%
Panel 4: Currency Market and US Indices				
US Dollar	5.46%	0.83%	-1.17%	4.77%
DJIA	-21.88%	21.41%	0.56%	-8.45%
S & P 500	-24.88%	20.85%	7.74%	0.41%
NASDAQ	-18.42%	26.49%	14.16%	18.18%
NYSE	-31.02%	16.48%	5.30%	-10.98%

Panel 1 of Table 2 provides the rates of returns of the financial markets. It is observed that both Nifty and Sensex behaved almost similarly during all the three phases of the crisis. The markets saw heavy downward movement during the pre-lockdown period, followed by recovery during the lockdown and post-lockdown periods. The recovery during the lockdown period was better than that during the post-lockdown period. Nifty-Smallcap index was the most hit during the pre-lockdown period and the same showed maximum recovery during the post-lockdown period. If one looks at the overall period of seven months, it can be observed that all the indices are below their January levels. The recovery was aided by many factors, which are discussed later. Panel 2 shows movements of selected sectoral indices of Nifty. While all sectors witnessed downturn, banking and financial services were the worst hit and pharmaceutical was the least affected. All sectoral indices recovered during the lockdown and post-lockdown periods, with pharmaceutical showing the best recovery during lockdown and IT exhibiting the best recovery during the post-lockdown period. If the overall period is considered, banking and financial services did not recover much. The banking sector, which was already strained by bad quality assets, was further pushed due to the apprehensions of more assets turning bad. Pharmaceutical, with an impressive growth of 38%, and IT sectors not only recovered the losses, but were trading at levels higher than that of January. The pharmaceutical sector saw the growth on the back of demand for healthcare and possibilities of discovery of vaccine for the virus. The IT

companies were riding the wave on the possibility of many businesses turning digital due to the spread of the pandemic.

Panel 3 of Table 2 shows the rates of returns of commodity market. It can be observed that crude oil suffered heavy loss during the lockdown period. Though the price recovered later, crude was still trading at 34% discount to the price in January. An interesting fact is that the crude prices turned negative on 22 April in the United States. This was due to the huge fall in demand for crude as most of the countries went into the lockdown mode and the suppliers of crude were holding huge stocks. Gold is the only commodity that consistently exhibited positive growth. Gold emerged as the best asset class with 37% returns during January-July period. Gold prices have always risen in response to fall in other asset classes, which was observed during the pandemic situation too. The other two indicators related to commodity market, the indices of NCDEX (NKrishi) and MCX (iComdex), also recorded negative growth during the pre-lockdown followed by recovery during the later period. The recovery of Comdex was better than that of NKrishi due to the presence of gold in the basket of commodities considered for its computation. But, NKrishi is one indicator, which was affected the least during the lockdown. This is because NKrishi is based on prices of agricultural commodities, which were not affected much by the pandemic. One thing that must be kept in mind while looking at these two indices is that they are based on prices of futures contracts on commodities and do not reflect the movement in spot prices.

Panel 4 of Table 2 shows the impact of Covid-19 on the exchange rate and the major indices of the United States. The USD appreciated during the pre-lockdown period by 5%, which was followed by slight weakening during the post-lockdown period. This trend in exchange rate is similar to that observed during the earlier crisis periods, where the US Dollar has appreciated whenever the domestic stock market fell. In case of major indices of USA, all markets fell heavily during the initial phase of the pandemic with NYSE recording the steepest fall. Though the markets recovered subsequently, by the end of July, Dow Jones and NYSE were trading below the January levels and S & P 500 was slightly above the January level. NASDAQ stood apart with lowest rate of fall during the initial phase, followed by the highest rate of increase subsequently.

Table 3 presents a comparison between the stock market indices and the net flow of FII and DII to the cash market. FIIs were net sellers during the pre-lockdown period, which created lot of downward pressure on both Nifty and Sensex. However, the support from DIIs arrested the fall to some extent. FIIs continued to be net sellers during the lockdown period, but turned net buyers during the post-lockdown period. DIIs continued the support during the lockdown period, which was reversed later. If the overall seven months period is considered, the FIIs were net sellers and the DIIs were net buyers. The impact of these flows is clearly visible on Nifty and Sensex.

Table 3: NIFTY, SENSEX and Net Flows of FII and DII

	Pre-lockdown	Lockdown	Post-lockdown	Overall
NIFTY	-38.04%	22.81%	12.69%	-9.84%
SENSEX	-37.59%	21.56%	12.92%	-9.66%
FII (Net Flow)	-72,217.38	-2,878.27	7,983.14	-67,112.51
DII (Net Flow)	63,041.24	22,528.18	-7,573.48	77,995.94
Note: FII/DII Net flow is in Rupees Crores				

Daily Rates of Returns

Summary statistics of daily rates of returns of the five variables is given in Table 4. It is found that all the return series are negatively skewed and leptokurtic with fat tails. None of them are normally distributed and all have ARCH effect in the residuals. The daily rates of returns are used for the granger causality test and volatility modeling.

Table 4: Summary Statistics of Daily Rates of Returns

	NIFTY	SENSEX	Crude Oil	Gold	US Dollar
Mean	-0.00072	-0.00071	-0.00290	0.00220	0.00032
Median	0.00021	0.00041	-0.00112	0.00111	0.00023
Maximum	0.08400	0.08595	2.18717	0.04242	0.01187
Minimum	-0.13904	-0.14102	-2.90745	-0.04876	-0.01206
Std. Dev.	0.02500	0.02588	0.31706	0.01227	0.00375
Skewness	-1.38808	-1.27539	-3.06064	-0.12732	-0.01701
Kurtosis	10.73098	10.10013	65.68864	6.46812	4.66027
Jarque-Bera	404.85*	341.50*	23804.01*	72.55*	16.54*
ARCH Test	4.2359*	4.3905*	3.1196*	4.2213*	3.3685*

** Significant at 5%*

Granger Causality Test

Granger causality test was used in order to examine the interrelationship between the markets. Apart from the five variables considered in Table 4, FII and DII net flows are also used for analysing the granger causality. Since it is necessary to ascertain the unit root property of the data series before applying the granger causality test, Augmented Dickey Fuller (ADF) test for unit root was done for all the variables. It was found that Nifty, Sensex, crude oil price, gold price and USD exchange rate were non-stationary at level, but stationary on first differencing. Since the data series were subjected to log transformation, the first differences represented daily rates of returns. Thus, while the variables were non-stationary, the daily rates of returns were stationary. In case of FII and DII net flows, it was found that the data series were stationary at level itself. (The results of ADF Test are not reported here due to paucity of space).

Pair-wise granger causality test was applied to the variables, the results of which are presented in Table 5. The null hypothesis for the granger causality test is that one variable does not granger cause another variable. The test returns F-statistic. The results of only those causal relationships, which are statistically significant at 5% level are reported in Table 5.

Table 5: Granger Causality		
Variables	F-Statistic	Probability
Gold does not granger cause Nifty	3.4614	0.0342
Gold does not granger cause Sensex	3.3542	0.0378
US Dollar does not granger cause Nifty	6.4463	0.0021
US Dollar does not granger cause Sensex	6.3421	0.0023
Crude Oil does not granger cause US Dollar	5.7641	0.0039
Gold does not granger cause US Dollar	3.1767	0.0448
FII does not granger cause Nifty	4.9214	0.0086
Nifty does not granger cause FII	5.4017	0.0055
FII does not granger cause Sensex	4.7060	0.0106
Sensex does not granger cause FII	5.1637	0.0069
DII does not granger cause Nifty	6.6707	0.0017
Nifty does not granger cause DII	13.7064	0.0000
DII does not granger cause Sensex	6.5567	0.0019
Sensex does not granger cause DII	12.7566	0.0000
FII does not granger cause DII	9.6518	0.0001
DII does not granger cause US Dollar	5.1312	0.0071

Table 5 shows that there is unidirectional causality from gold to Nifty, Sensex and US dollar, whereas none of the variables are seen to granger cause the returns on gold. Crude oil returns granger cause variations in US Dollar. There is unidirectional causality flowing from US dollar to Nifty and Sensex. US Dollar returns are influenced by gold, crude oil and DII. FII flow is found to be influencing the DII flow. It is interesting to note that there is bi-directional causality flowing from FII and DII to Nifty and Sensex and back. The granger causality flows are represented in Figure 2. Since Nifty and Sensex are found to be influenced by the same variables, both are shown together. The unidirectional causality is represented using blue arrows and bi-directional causality using red arrows in Figure 2.

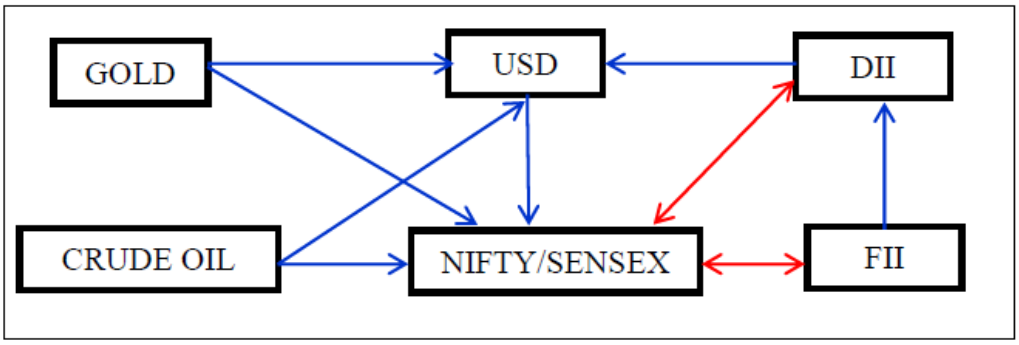

Figure 2: Granger causality flow

It is found that the gold and crude oil prices are not influenced by any other market. The stock market is influenced by all other markets chosen for the study. Stock market is seen causing changes in FII and DII. The currency market is influenced by gold, crude oil and the behaviour of DII and DII in turn is influenced by the actions of FII.

Analysis of Volatility

As explained earlier, the volatility of the markets was analysed using GARCH (1,1) model. The daily conditional variances for seven months as estimated by the GARCH model are shown in Figure 3. Since Nifty and Sensex variances are almost same on most of the days, the variances of only Nifty are shown in Figure 3. Average of daily conditional variances is reported in Table 6.

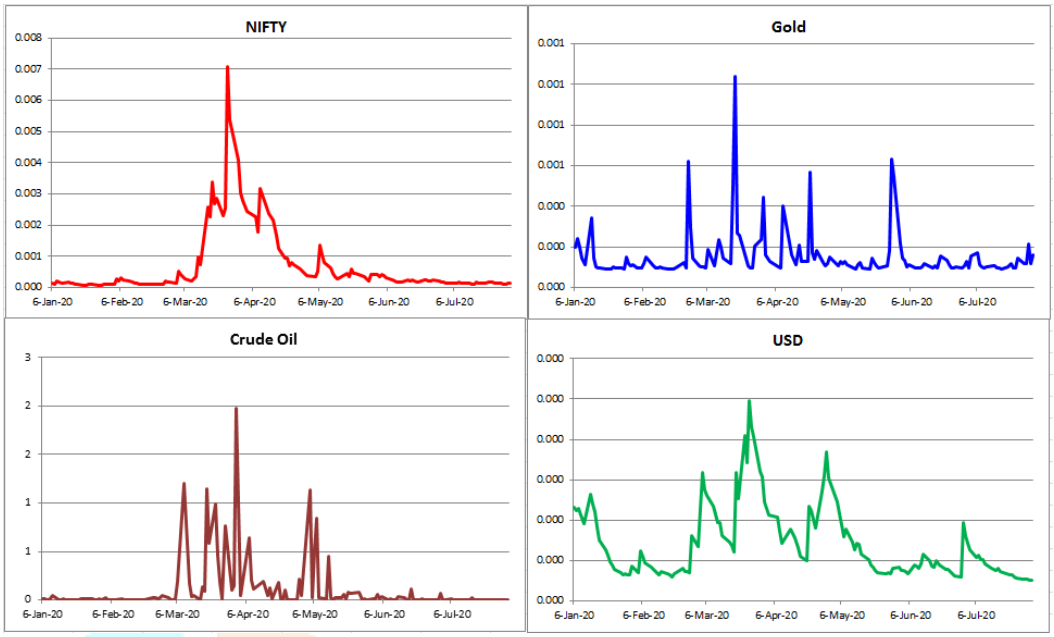

Figure 3: Daily conditional GARCH variances

Table 6: Average of Conditional Daily Volatility					
	NIFTY	SENSEX	Crude Oil	Gold	US Dollar
Pre-Lockdown	0.000501	0.000501	0.096806	0.000165	0.000015
Lockdown	0.001413	0.001447	4.821779	0.000178	0.000019
Post-Lockdown	0.000190	0.000245	0.011266	0.000114	0.000008
Overall	0.000676	0.000703	1.481004	0.000153	0.000014

It is observed from Figure 3 and Table 6 that the volatility of Nifty (and Sensex) exhibited great spike during the lockdown period. The volatility has fallen during the post-lockdown period. The most important aspect related to volatility of the stock market is that it was low during the pre-lockdown period, when the market suffered maximum losses. But, when the market started recovering during the lockdown period, the volatility increased. This shows that, while the fall before lockdown was smooth, there were frictions during the recovery process. The volatility of crude oil prices was impacted by the extreme movements it witnessed during April, when the prices went below zero. This is the reason for the average volatility of crude showing extremely high value during the lockdown period in Table 6. However, this one-time extreme movement has been eliminated while preparing Figure 3 in order to avoid the extreme spike hiding the volatility pattern during the rest of the period. Except few spikes in March and May, the volatility of gold prices has not increased much. The fluctuation in volatility of currency market is also seen to be not very high.

Post-lockdown Recovery

Figure 1 shows that the stock markets in India witnessed recovery during the later phase of the seven months period, when the total Covid-19 cases were rising exponentially in the country. Similar trend is observed in the US indices as well, when the Covid-19 cases were rising rapidly in the US. The markets seem to be exhibiting an unusual pattern with the stock markets rising when the fundamental economic indicators across the world are under pressure. The International Monetary Fund (IMF), in its June projections, predicted -4.9% growth for the world economy and -4.5% growth for the Indian economy in 2020. The only country that is projected to report positive growth rate in 2020 is China

(1%). In this background, it becomes important to examine the factors that contributed to the recovery of stock markets in India.

Though Nifty comprises of prices of 50 stocks, the top 10 stocks constitute 62% of the index. Hence, the performance of these shares is analysed to examine the pattern of recovery. The rates of returns on these shares are reported in Table 7.

Table 7: Rates of Returns on Top 10 Nifty Stocks

	Pre-lockdown	Lockdown	Post-lockdown	Overall
Bharti Airtel	-10.14%	38.36%	-0.58%	22.40%
HDFC	-37.52%	15.45%	-1.74%	-26.79%
HDFC Bank	-39.66%	23.96%	4.57%	-19.22%
HLL	-3.45%	3.98%	4.86%	14.12%
ICICI Bank	-47.09%	14.42%	-0.46%	-35.39%
Infosys	-28.55%	18.61%	36.42%	31.10%
ITC	-35.20%	33.97%	-1.57%	-18.46%
Kotak Bank	-34.40%	8.28%	1.70%	-18.42%
Reliance	-41.44%	61.16%	34.60%	36.93%
TCS	-22.97%	20.09%	11.44%	5.25%

Table 7 shows that while all the stocks suffered negative returns during the pre-lockdown period, ICICI Bank was the most hit and HLL the least. But when the recovery started, Reliance exhibited the maximum gain during the lockdown period. Infosys and Reliance showed impressive growth during the post-lockdown period. A look at the overall period reveals that banking and financial services suffered the major setback. The recovery in Nifty was mostly led by technology based companies like Reliance, Infosys and Airtel. Though Reliance is a diversified company, the latest growth in the share price is due to the increased investment and growth of the Jio platform. This is also seen in Table 2, which indicates that the best performing sector was IT, next only to Pharmaceutical. A similar trend is seen in the US indices (Table 2), where NASDAQ, an index that is weighed more by technology stocks, was the least affected, and also the best performer during recovery. Added to this, the revised confidence shown by FIIs, who turned net buyers (Table 3) during the post-lockdown period, also helped the recovery. The Reserve Bank of India (RBI) announced monetary easing measures to aid recovery in March and May. The Government of India announced a series of relief measures in May, which were aimed at arresting the fall in growth and bringing the economy back on track. These announcements by RBI and the Government also added to the confidence in the market and supported the recovery. The positive news related to research on development of vaccine against the virus was also welcomed by the markets.

Discussion on Results

The financial markets in India reacted sharply to the Covid-19 pandemic during the initial phase, but recovered later. Gold emerged as the preferred asset class during this period. But, a deeper understanding reveals that the market recovery is mostly aided by technology based stocks and the pharmaceutical sector. These two sectors are riding on the hope that the spread of pandemic will provide better returns to pharmaceuticals; and digital transformation of businesses will benefit the technology firms. However, the fundamental economic conditions are not showing signs of recovery. India is facing many issues like a strained banking sector battling the ill-effects of lockdown, dislocation of labour force, reduced industrial activity, reduced demand in many service sectors like tourism, travel,

hospitality etc and rising unemployment. Under these circumstances, whether a recovery of stock market led by technology stocks is sustainable is a big question. Since the same trend is observed in the US markets, any correction in the international markets will have ripple effects on Indian market as well. Since the stock market is influenced by prices of gold and crude oil and the exchange rate, the movements in these markets are also expected to influence the future direction of the stock market in India.

Conclusion

The study was aimed at understanding the behaviour of Indian financial markets during the Covid-19 pandemic. It was found that the markets recovered after heavy fall during the initial phase. The volatility of the market was more during the recovery phase. The initial reaction of the market is quite obvious, given the fact that the whole world came to a standstill due to lockdown imposed by many countries and the resultant slowdown in the economy. The international markets too reacted sharply. But the recovery that followed seems to be not grounded on economic fundamentals, which casts a shadow on it's of sustenance. The future direction of the market will depend on how fast the vaccine is developed and how quickly the economies around the world are able to pull back to the growth trajectory.

Reference

1. Ashraf B N (2020), Stock markets' reaction to COVID-19: Cases or fatalities?, *Research in International Business and Finance*, 54 (2020).

2. Baker Scott R, Nicholas Bloom, Steven J. Davis, Kyle Kost, Marco Sammon and Tasaneeya Viratyosin (2020), The Unprecedented Stock Market Reaction to COVID-19, *Hoover Institution, Economics Working Paper 20112*.

3. Bollerslev, Tim (1986), Generalized Autoregressive Conditional Heteroskedasticity, *Journal of Econometrics*, 31.

4. Granger, C W J (1969), Investigating Causal Relations by Econometric Models and Cross-spectral Methods, *Econometrica*, 37 (3).

5. Goodwell, John W (2020), COVID-19 and finance: Agendas for future research, *Finance Research Letters*, 35 (2020).

6. International Monetary Fund (IMF) (2020), *World Economic Outlook* Update, June. (https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020)

7. Liu Hai Yue, Aqsa Manzoor, CangYu Wang, Lei Zhang and Zaira Manzoor (2020), The COVID-19 Outbreak and Affected Countries Stock Markets Response, *International Journal of Environmental Research and Public Health*, 17.

8. Rizwan M S, Ahmad G, and Ashraf D (2020), Systemic risk: The impact of COVID-19, *Finance Research Letters* (Article in Press).

9. Sansa, Nuhu A (2020), The Impact of the COVID - 19 on the Financial Markets: Evidence from China and USA, *Electronic Research Journal of Social Sciences and Humanities*, 2(II).

10. Zhang D, Hu Min and Ji Qiang (2020), Financial markets under the global pandemic of COVID-19, *Finance Research Letters* (Article in Press).