Economic Policy and Planning in India Post COVID 19

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Macro Policy decisions for Covid-19 and Stock Market Responses in India

Dr. Sreeja Sukumar K., Sri. Thommachen K.T. and Viswan M.G.

Abstract

The stock market provides the world with useful information regarding the expected future of the economy and the stock price reactions could be utilised to find out the merit of the macro policy interventions of the Governments and the Central banks. Such Studies would enable to evolve suggestions for preventing a further downturn of market besides mitigation of the virus spread. This paper attempts to study association between macro policies and interventions of the Central government and Reserve Bank of India on the stock market index nifty. The study attempts to examine the impact of these policy interventions across different industrial sectors of the economy. The study distinguishes the index movement in different phases of covid-19 spread in India relating the government decisions and announcements to each distinct lockdown period and its effect in turn on the market indices. This study also attempts to examine the relationship between the stock index and the number of covid-19 new cases reported daily. Stock market indices are taken as the dependent variable and the number of daily new cases of covid-19 in India is taken as the independent variable. Besides, other independent qualitative dummy variables were created representing each lockdown period as well as unlock periods. The study found that there is no significant relationship between the new cases of covid-19 and the overall market index nifty during the earlier phases of lock down but has showed a positive change in latter lock down period from May 18 onwards. The study found that the government decisions for containment of the virus and the strategies for stimulating the economy through economic relief packages and interest rate cut downs have responded well.

Assistant Professor, Dept. of Commerce, St. Peter's College, Kolenchery, Kerala

Associate Professor, Dept. of Economics, St. Joseph's College, Devagiri, Calicut, Kerala.

Assistant Professor, Dept. of Commerce, S.S.V. College, Valayanchirangara, Kerala

1. INTRODUCTION

The pandemic Covid-19 that originated at Wuhan in China in the end of December 2019 and which vehemently spread to 215 countries is making huge impact on the world economies including financial markets. According to WHO report on 9th August 2020, there were 1,94,62 112 Covid-19 disease cases and 7,22,285 deaths reported globally. As a measure to curb the disease, almost all countries declared nationwide lockdown which adversely affected all areas of the business activity both demand and supply side and the capital markets world over crashed during the initial worry during March, 2020. Countries including U.S, China, Britain and India had declared rescue measures for the economy at different levels which is proposed to boost the stock market and provide relief to the economy.

The stock market provides the world with useful information regarding the expected future of the economy. It is also suggested that stock price reactions could be utilised to find out the merit of the policy interventions of the central and state governments and the central banks. This would enable to evolve suggestions for preventing a downturn of asset values and the mitigation of virus spread. This paper attempts to study association between macro policies and interventions of the central government and RBI on the stock market index nifty. The study attempts to examine the impact of these policy interventions across different industrial sectors of the economy.

2. ESSENCE OF RELATED LITERATURE

The economic literature for the recent period from 2019 till today is infused with fresh perspectives on the impact of covid-19 pandemic. Research studies threw light on the impact the virus bought on the socio, economic and political environment of different countries and in specific how it affects financial markets and discussed how economy and business and industry could be resilient.

An early study on the impact of Covid-19 on Chinese stock market during January 10 to March 16 conducted by Awadhi.et.al (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020) using panel data regression analysis of stock returns taking into account the market capitalization, market to book ratio, number of confirmed Covid-19 cases and death cases, reported significant

negative impact of this pandemic on stock returns. Their results also show variations in returns in different classes of shares as well as in different sectors of the economy. Similar was the study by Mazur, Dang and Vega (Mazur, Dang, & Vega, 2020) which reported the impact of Covid-19 on S&P 500 during March 2020 and how the index composition played up in determining the direction of S & P 500. Their results showed industries like health care and health devices, food and grocery distribution have performed well whereas petroleum and real estate industries affected the worst. There were many such studies focusing on the impact of Covid-19 concentrating on U. S. capital market.

Studies in entirely different angle could be found. A comprehensive study by (Erdam, 2020) found that the performance of stock market indices was negatively related to the level of freedom. Stock market indices of 75 countries were observed. Another view of the stock markets as documented by Albuquerque et al (Albuquerque, Koskinen, Yang, & Zhang, 2020) show that stocks of firms having high environmental and social ratings rewards better during the Covid-19 period. These results are supported by the cross-section results of stock returns studied by Garel and Petit-Romec (Garel & Petit-Romec, 2020).

Comparative studies between bond issue and equity issue during these times found that (Halling, Yu, & Zechner, 2020) bond issues have substantially increased irrespective of the credit rating, and equity issues were less in the first 4 weeks of the pandemic and the maturities of the bonds also found to be more than the average when compared with issue at normal times. The determinants of corporate bond spreads also differed from normal times.
A very different and interesting study was done by (Ramelli & Wagner, 2020). They reported significant rebound of stocks during 'recovery' after the analysis of 31200 firms headquartered in 90 different countries. They also made assertions of the impacts of policy interventions of the Governments and the Central banks on the asset prices. They analysed stock returns with accounting variables of firms across different periods labelled as 'Incubation, Outbreak and Fever'. This study asserted how stock market reactions could be used as evidence on policy intervention (Ramelli & Wagner, COVID-19 and the Stock Market, 2020).

There are numerous articles on different socio, economic and health aspects of covid-19 but, comprehensive academic research studies for examining the stock index behaviour across a period of time to pinpoint the effectiveness of macro policy decisions in India could not be found.

3. STATEMENT OF THE PROBLEM

According to WHO, Fever cases due to acute pneumonia was detected in the Wuhan province of China on December 31, 2019 and suspecting the source of outbreak of fever from the seafood market, it was closed down by the Chinese health authorities. Later in January on 20th the virus was confirmed being transmitted from human to human. Travel to and from China to other countries resulted in the spread of the disease from China to many parts of the world and consequently it was declared a pandemic by WHO on 11 [th] of March 2020,similar to Ebola, Spanish flu etc which had caused severe damages to the economy and in the loss of millions of lives on earth.

In India, the first confirmed case of Covid19 was reported on January 30th, 2020 in the state of Kerala. Later, Religious tourism, weddings and thickly populated vast slums of the Indian metropolitan cities triggered the spread of virus. However, Covid-19 pandemic is more than a health crisis. It has jeopardised the lives and livelihood and also has severely affected all economies of the world. The global stock markets have also responded with worrying volatility and investors have scooped down to panic selling and the market wide circuit breakers have been triggered four times in March alone (Funakoshi & Hartman, 2020). It is interesting to note that amidst the pandemic surge, the Indian stock market is rallying through the period of lock down after an initial dip in March 2020.

The stock market behaviour definitely could be responsive to the lure for gambling at these times of volatility or to the infusion of more funds into the economy by lowering of interest rates but, to what extend the government decision for containment and mitigation of Covid 19 virus has attributed to the changes in the stock market indices? It is important to distinguish between the index movement in different phases of covid-19 spread in India, to ascertain the impact of government decision on the market indices.

After the reporting of the first Covid case in India on January 30th, 2020, the Government of India declared a lock down in March, from 24th to April 14. Later the 2nd lock down (April 15 to May 3), 3rd lockdown (May 4 to May 17), 4th lockdown (May 18 to May 31)5th lockdown (June 1 to 7). Subsequently, the unlock process started from June 8 to June 30 and 2nd unlock from July 1 to July 31.

This study attempts to examine the relationship between the stock index and the number of covid-19 new cases reported daily in India and whether an association relates it to the government decisions taken during different phases of lockdown in India.

4. OBJECTIVES OF THE STUDY

1. Examine the performance of nifty over the different phases of lockdown in India.
2. Examine the performance of selected sectoral indices during the different phases of lock down in India.
3. Examine the nature of impact of government decisions on nifty during different phases of lock down in India.

5. METHODOLOGY OF RESEARCH

The study uses secondary data collected from the official websites of National Stock Exchange and from Yahoo finance. The daily stock market index, Nifty, and the various indices representing sectors such as auto, bank, pharma, consumer durables, financial services, FMCG, IT, media, metal, oil and gas and realty are collected. The daily stock market indices from January 30, 2020 to July 31, 2020 count up to 184 observations.

Stock market indices are taken as the dependent variable and the number of daily new cases of Covid-19 is taken as the independent variable. The nifty data and sectoral index data were collected from yahoofinance.com and the official website of National Stock Exchange. The data for Covid-19 cases taken from worldometers.info which is an authorised data centre. Besides, other independent qualitative dummy variables were created corresponding to each lockdown period as well as unlock periods. The dummies and the corresponding periods are D2 (April 15 to May 3), D3 (May 4 to May 17), D4 (May 18 to May 31), D5 (June 1 to 7), D6 (June 8 to June 30) and D7 (July 1 to July 31).

The time series variables are tested for stationarity to avoid the problem of spurious regression caused by regressing the non-stationary variable on another. Augmented Dickey Fuller test shows that 'new cases are I (2) while all other variables are I (1) series. Since autocorrelation was detected using Breusch Godfrey Serial correlation LM test, HAC standard errors has been used in the analysis.

Table 1: Augmented Dickey Fuller Test Results for Nifty, Sectoral Indices and Covid-19 New cases

Variables	Ho	t statistic	P value
Newcases	Level	5.127205	1.0000
	First Difference	-2.242411	0.4628
	Second Difference	-11.56659	0.0000**
Lognifty	Level	-1.618504	0.4711
	First Difference	-13.75994	0.0000**
LogAuto	Level	-1.557215	0.5024
	First Difference	-12.80550	0.0000**
Logbank	Level	-1.827299	0.3664
	First Difference	-12.81337	0.0000**
Logfinancial	Level	-1.845708	0.3575
	First Difference	-12.91689	0.0000**
Logmedia	Level	-1.869949	0.3460
	First Difference	-12.69057	0.0000**
Logmetal	Level	-1.811139	0.3743
	First Difference	-13.67326	0.0000**
Log Oil and gas	Level	-1.277381	0.6398
	First Difference	-14.60108	0.0000**
Logpharma	Level	-0.276947	0.9246
	First Difference	-12.73886	0.0000**
LogPvtbank	Level	-1.835524	0.3624
	First Difference	-12.38520	0.0000**
LogPsubank	Level	-2.270449	0.1827
	First Difference	-14.90639	0.0000**
Logrealty	Level	-2.212291	0.2027
	First Difference	-12.21288	0.0000**

p values. ** shows significance at 5 % level.

Nifty and indices representing various sectors were regressed against the new cases of covid19 and 7 dummy variables; representing the different lock down periods. Preliminary regression analysis found all these variables to be non-stationary (Table 1). Therefore, the first difference was taken in the case of

all indices–market index as well as sectoral indices and the Augmented dickey fuller tests shows that these variables are I (1) series and second differences of the new cases of covid-19 taken as it is I (2) series.

The regression equation used is:

$$Y_t = \alpha_1 + \alpha_2 D2_t + \alpha_3 D3t + \alpha_4 D4_t + \alpha_5 D5_t + \alpha_6 D6_t + \alpha_7 D7_t + \alpha_8 D8_t + \beta t\, X\, t + u_t$$

Where,

Y_t = Return on indices

$X\, t$ = *New cases of Covid 19 in second difference*

$D2_t$ = 1 Lockdown 2

= 0 otherwise.

$D3_t$ = 1 Lockdown 3

= 0 otherwise

$D4_t$ = 1 Lockdown 4

= 0 otherwise

$D5_t$ = 1 Lockdown 5

= 0 otherwise

$D6_t$ = 1 Lockdown 6

= 0 otherwise

$D7_t$ = 1 Unlock 1

= 0 otherwise

$D8_t$ = 1 Unlock 2

= 0 otherwise

6. RESULTS AND DISCUSSION

6 (1) Performance of nifty over the different phases of lockdown in India.
This section will describe the performance of stock index nifty in India during the period from January 30, 2020 to July 31, 2020. Even though the government decisions basically aims at mitigating the virus and also to stimulate the economy, several studies report changes in the stock market in reaction to these government interventions (Ramelli & Wagner, COVID-19 and the Stock Market, 2020) and these studies point out a negative relationship between the rise in covid-19 cases and the stock markets, in the short run (Al-Awadhi, Alsaifi, Al-Awadhi, & Alhammadi, 2020).

The stock market response to the changes in the number of new covid-19 cases reported was examined and is furnished in Table 2.

Table 2: Dependent Variable: D(LOGNIFTY)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.006729	0.003153	-2.134052	0.0342
NEWCASES	1.63E-07	5.67E-07	0.287171	0.7743
D2 (Lock down 1)	0.010274	0.006347	1.618766	0.1073
D3(Lock down 2)	0.007970	0.005864	1.35906	0.1759
D4(Lock down 3)	0.005815	0.003625	1.604071	0.1105
D5 (Lock down 4)	0.019058	0.003631	5.249004	**0.0000****
D6(Lock down 5)	0.007708	0.003890	1.981518	**0.0491****
D7(Lock down 6)	0.008846	0.003642	2.429257	**0.0162****
D8(Lock down 7)	0.008392	0.003426	2.449123	**0.0153****

p values. ** shows significance at 5 % level.

As described in the methodology section, it is possible to identify 7 distinct periods of lock down and unlock in India. The period from March 24 to May 17 (Lock down 1, 2 and3) are represented by D2, D3, D4 (Table 2) and does not significantly vary from the reference period which is represented by the constant C (-0.006729), representing the period from January30 to March 23). However, the coefficients of D5, D6, D7 and D8 are significantly higher than the reference period. Thus, change in nifty in relation with new covid-19 cases is positive in the lock down period from May 18 (Table 2).

7. (2). PERFORMANCE OF SELECTED SECTORAL INDICES DURING THE DIFFERENT PHASES OF LOCK DOWN IN INDIA.

Table 2 shows the sectoral indices performance during the period from January 30, 2020 to July 31, 2020. The significant p values of the coefficients are only reported in table 2 showing how the sectoral indices reacted to the change in new cases of covid-19. Details of regression analysis between sectoral indices and covid-19 new cases are available on request.

Table 3: Sector wise Performance across different phases of containment of Covid-19.

Sector	Lock Down 1 D2	Lock Down 2 D3	Lock Down 3 D4	Lock Down 4 D5	Lock Down 5 D6	Unlock 1 D7	Unlock 2 D8
Pharma	0.018052 **(0.0025)****	0.003573 (0.3277)	0.005835 (0.1438)	0.006398 (0.1218)	0.007837 **(0.0377)****	0.002753 (0.4066)	0.007554 (0.0709)
Metal	0.016004 **(0.0067)****	0.006853 (0.4664)	0.009956 **(0.0333)****	0.026236 **(0.0000)****	0.014231 **(0.0251)****	0.009343 (0.0531)	0.011621 **(0.0073)****
Media	0.012411 (0.0648)	0.009771 (0.0801)	0.012165 **(0.0325****)	0.022720 **(0.0002)****	0.017034 (0.1888)	0.011950 **(0.0228)****	0.007961 (0.0597)
IT	0.005986 (0.3146)	0.008876 (0.1423)	0.006812 (0.1195)	0.010358 **(0.0161)****	0.008187 **(0.0443)****	0.006296 (0.1249)	0.011283 **(0.0071)****
FMCG	0.012758 **(0.0038)****	-0.000176 (0.9598)	0.005425 (0.0690)	0.011157 **(0.0028)****	0.005034 **(0.0437)****	0.005405 (0.0759)	0.004872 **(0.0478)****
Financial Services	0.009106 (0.2863)	0.008749 (0.3399)	0.003583 (0.4895)	0.028400 **(0.0000)****	0.007930 (0.1328)	0.011164 **(0.0244)****	0.007610 (0.1211)
Consumer Durables	0.010267 (0.0721)	0.003334 (0.5862)	0.004607 (0.2446)	0.022407 **(0.0000)****	0.005113 (0.2672)	0.006567 (0.0623)	0.007245 (0.0517)

(*Table 3 continued*)

(*Table 3 continued*)

Sector	Lock Down 1 D2	Lock Down 2 D3	Lock Down 3 D4	Lock Down 4 D5	Lock Down 5 D6	Unlock 1 D7	Unlock 2 D8
Bank	0.011681 (0.2104)	0.009208 (0.3062)	0.004006 (0.4643)	0.030755 (**0.0000**)**	0.010946 (0.0591)	0.011869 (**0.0225****)	0.008976 (0.0853)
Auto	0.013174 (0.1741)	0.009701 (0.1840)	0.011951 (**0.0158**)**	0.023546 (**0.0000**)**	0.011470 (**0.0047**)**	0.011266 (**0.0027**)**	0.010953 (**0.0022**)**
Oil and Gas	0.014856 (**0.0050**)**	0.011783 (**0.0107**)**	0.006029 (0.1278)	0.017680 (**0.0000**)**	0.013070 (**0.0062**)**	0.009768 (**0.0108**)**	0.009058 (**0.0242**)**
Private Bank	0.013173 (0.1997)	0.010679 (0.2627)	0.004615 (0.4215)	0.032346 (**0.0000**)**	0.010777 (**0.0443**)**	0.012782 (**0.0166**)**	0.009683 (0.0775)
PSU Bank	0.009360 (0.0617)	0.007218 (0.2986)	0.005670 (0.3087)	0.024789 (**0.0001**)**	0.024800 (0.0530)	0.014650 (**0.0024**)**	0.009103 (**0.0326**)**
Realty	0.013374 (**0.0448**)**	0.008253 (0.2530)	0.010055 (0.0518)	0.033400 (**0.0000**)**	0.017570 (**0.0005**)**	0.011359 (0.0534)	0.011780 (**0.0008**)**

Coefficients are shown in the table along with the p values in brackets.

** P values shows significance at 5 % level.

(D2……D8 represents the dummy variables).

Almost all sectors except the Pharma is found to improve in relation to the reference period during lockdown 4 (May 18 to May 31). Majority of the sectors were found to positively react to the covid-19 new cases. During the earlier periods of lockdown from March 24 to May 17 none of the sectoral indices except Realty, Oil and gas and Metals showed significant improvement with reference to the base period. At the onset of outbreak of the virus, the stock market indices around the world had declined instilling fear in the investors and redirection of investments towards gold is suspected, attributing to the significant change in Metals in comparison with the reference period.

8. (3). THE NATURE OF IMPACT OF GOVERNMENT DECISIONS ON NIFTY DURING DIFFERENT PHASES OF LOCK DOWN IN INDIA.

The stock price reactions could be examined to find out the merit of the macro policy interventions of the Central Governments and the Central banks. Such Studies would enable to evolve suggestions for preventing a further downturn of market besides mitigation of the virus spread. The finance minister, Govt. of India announced certain relief measures in view of the covid19 outbreak. A relief package covering food, employment, health care and social security for Rs. 1.7 trillion was declared on March 26. The Reserve Bank India also declared economic stimulus packages between March 27 and April 17. Government of India announced a 20-lakh crore relief package (Aatma Nirbhar Bharat Abhiyan) which is 10% of GDP on May 12.

Major policy changes and announcements made in India during the month of May had clearly supported the stock market index from spiralling down (Table 2, Lock down 4). The period of lock down 4 to 6 is characterised by the Reserve Bank's liquidity measures and interest rate cuts. During the period from fourth lock down (May 18 to July 31) nifty has positively reacted to the government interventions. It was at this time Reserve Bank of India had initiated several liquidity boosting measures including interest rate cuts and the government announcing 20 lakh crore packages. The study found that there is no significant relationship between the new cases of covid-19 and the overall market index nifty during the earlier phases of lock down, but, has showed positive change in latter lock down periods from May 18 onwards (Table 2).

Performance of various indices based on sectors also shows as positively responding to government relief packages. During the earlier periods of

lockdown from March 24 to May 17 none of the sectoral indices except oil and gas and metals showed significant improvement with reference to the base period. Pharma index was found to positively react to the Covid spurt in the period of first lock down itself but, showed no change during the lockdown or unlock periods till July 31. Talks about developing a vaccine this time around had instilled hope in the world. Even though it requires minimum 10 years to build up a vaccine and we have to face the dark truth that a vaccine for Ebola virus was developed 43 years after it hit the world by storm and that no one has made any progress in vaccination against HIV and such other diseases (Mullard, 2020), the possibility of a forthcoming corona vaccine is still bleak. To attribute the change to new favourable information in the pharmaceutical sector requires further research.

CONCLUSION

The study assumes that macro policy decisions and its announcements invariably influence the public confidence and their financial behaviour. Secondly, it reasonably relates the macro policy decisions to each distinct periods of lock downs and unlock processes. The federal reserve bank interest rate cuts in U.S introduced to boost the economy from potential spiralling down got an unexpected response in way of the declining of the market index (Smialek & Tankersley, 2020). This indicated that methods to stimulate the economy by interest rate cuts did not respond well. But at this time in India the number of cases of covid-19 was far below the astonishing rate at which corona virus was spreading in U.S. During the lock down 4, following RBI's announcements of interest rate cuts, Nifty as well as many of the sectoral indices have improved slightly compared to the reference period. This study found that the government decisions for containment of the virus and the strategies for stimulating the economy through economic relief packages and interest rate cut downs have responded well. Reduction of the bank lending rates and cash and free food grains distribution have built up confidence in the minds of the people. The study found that there is no significant relationship between the new cases of covid-19 and the overall market index nifty during the earlier phases of lock down but has showed a positive change in latter lock down period from May 18, 2020 onwards. As an afterthought, why did many of the economically well-developed nations behave differently from developing economies in the face of huge blows to economic stability? The answer lies not solely in how financially resilient these economies are but in how significantly different is the way in which people as a mass respond

to and contain the problem. The message to live with the virus is especially true for the vast number of Indian middle class and poor. The impact of publicly available information on the pandemic; like the world wide news on the spread of corona and mitigation measures adopted by different countries, is bound to affect the private choices of people and firms and the resultant impact on the economic indices is inevitable. The learning lessons derived would enable the government to construct appropriate policies for recovering from the current economic devastations and those imminent in the future.

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