

Impact Of Covid – 19 On The Behaviour Of Economic Indicators In India

Dr. Sreeya B

Associate Professor, Department of Management Studies

Saveetha School of Law, Saveetha Institute of Medical and Technical Sciences (SIMATS)

Chennai – 77, Tamil Nadu, India

sreeyab.ssl@saveetha.com

<https://orcid.org/0000-0002-7261-5237>

ABSTRACT

Five economic indicators such as Nifty Index 50, Exchange Rates, FII, DII and Gold value were considered for identifying the impact of COVID – 19 on the Indian Economy. Regression analysis was used to form a linear equation based on the economic indicators and through ARIMA Modeler, Gold value and FII value was forecasted. It was found that FII is highly volatile among the other economic indicators and the value of Gold will only increase and FII will increase and stabilize in the future. It can be concluded that the Indian economy will take more time for its revival.

KEYWORDS: Economic indicators, FII, DII, Currency Value, Gold, Modeling

INTRODUCTION

COVID – 19 has become a threat to the world economy. The biggest challenge in the future will be revival from the current position. There are many indicators which reflect the economy growth. Among the various countries, India is not an exception on this pandemic situation. This study has made an attempt to analyze the impact of COVID – 19 on the behaviour of economic indicators in India. As there are many economic indicators such as GDP, FDI, FII, DII, Stock Market Indices, Gold and silver values, Oil Prices, Exchange rates, Export, Import, etc. This research has taken five major economic indicators into consideration such as Nifty 50 Index, Exchange rates for INR/USD, FII values, DII values and Gold values for analyzing the impact of COVID – 19. This study has viewed the behaviour of economic indicators in two aspects such as before COVID – 19 and during COVID – 19 (further in the study mentioned as after COVID – 19, for better understanding). Further in the study “After COVID – 19” is implied as “After the beginning of spread of COVID – 19”.

The various economic indicators in India that are considered for the study are discussed briefly. The **Nifty** (BSE & NSE) is considered as an important economic indicator. People believe that huge decrease in Sensex/Nifty points is a sign of a future recession, whereas huge increase in sensex points is viewed as future economic growth. Though BSE sensex is traditionally viewed as an economic indicator in India, it also includes few controversies. The reasons for why Sensex/NIFTY might be considered as economic indicator include the traditional valuation model of stock prices and the "wealth effect." The traditional valuation model of stock prices suggests that Nifty reflect expectations about the future economy. The "wealth effect" means that Nifty indicates economic activity by being cause to the economic growth.

The strength of currency is another important economic indicator of the country. The value of currency indicates its demand in the global market. This is driven by the amount of foreign investment in the country. It is a fact that to do business in a country it has to be done in its respective currency. It means that if a greater amount of foreign investment is planned to be done in the country then large amount of the respective currency will be bought by these investors. The rise in value of the currency would indicate an increase in interest of doing business with that economy. In contrary, the leftist economy does not invite foreign investment. They directly enter into bilateral trades with other economies. There is no demand for the currency in the global market. In that scenario, value of the currency may not be an economic indicator of the country.

Foreign Institutional Investments (FIIs) and Foreign Direct Investments (FDIs) are other leading economic indicators of our economy as it highly influences our stock market. Foreign Institutional Investors are foreign bodies which are allowed to invest in the Indian share markets. FIIs are the major sources of liquidity for the markets. FIIs investment is often termed as ‘hot money’ as FIIs are allowed to buy and sell just like other domestic investors (up to a certain level). When FIIs invest large amounts in the Indian share markets, it is viewed as future prospects of the economy. This indicates positive economic outlook and vice versa. Foreign Institutional Investors (FIIs) are one of the biggest drivers of India’s financial markets. They have invested around Rs 12.30 lakh crore (US\$ 174.55 billion) in India between FY02-21 (till June 09, 2020). Investments of FIIs in India are regulated by the Securities and Exchange Board of India (SEBI) and Reserve Bank of India (RBI).

Domestic institutional investors are those institutional investors which undertake investment in securities and other financial assets of the country. Domestic Institutional investment is referred to the investment done by institutions or organizations such as banks, financial services and insurance companies etcetera in the security and financial assets of a country. In short, domestic institutional investors use accumulated funds to trade in securities and real assets of their country. LIC is the biggest DII in our stock market, with an average investment of over Rs 50,000 crore every year. Domestic institutional investments are influenced by the economic and political trends in the country. As FIIs, the domestic institutional investors also affect the net investment flows into the economy.

The price of the **Gold** is also a direct indicator of nation's economy. Increase in the price of the gold indicates decline in economy. The price of the gold is determined by factors like Inflation, Gold reserves of the government, global trends, interest rates and jewelers market. The present gold prices in India have increased from around Rs 32,000 per 10 grams to nearly Rs 46,800 per 10 gram. Gold is mostly imported commodity into India; the depreciation of the rupee vis-a-vis the US dollar in the recent days has increased the gold price in India.

Even though, various countries facing the challenges in this pandemic situation, this study has focused on the behaviour of economic indicators in India. The study brings out the relationship between the mentioned economic indicators and the comparison between the trend of economic indicators before and after COVID -19. Finally, the researcher has made an attempt to forecast the trend of certain economic indicators.

OBJECTIVES

- To understand the trend of five economic indicators in India such as Nifty, Exchange rates, FII, DII and Gold values for the period of before COVID – 19 and during COVID -19 (January 2020 to June 2020)
- To examine the difference between the before and after impact of COVID – 19 (January 2020 to June 2020) on the five economic indicators in India such as Nifty, Exchange rates, FII, DII and Gold values
- To analyze the relationship among the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold values in India
- To determine a linear relationship between the five economic indicators in India such as Nifty, Exchange rates, FII, DII and Gold values
- To forecast the trend of Gold and FII in India based on the other economic indicators

LITERATURE REVIEW

The authors have studied the US exchange rates market with respect to three currencies such as EUR, Yuan and Sterling during the COVID - 19. This study analysed the impact of COVID – 19 on Exchange rates market through GARCH model. It was found that there is positive impact of COVID on the US exchange rate. The study was concluded with the forecasted results of exchange rates, **Benzid, et. al., (2020)**. The researcher have used ARCH and GARCH test results to analyse the behaviour of Indian stock market based on oil prices, FII and exchange rates. The data was used from 31st January to 29th March, 2020. It was concluded that there is difference in behaviour during long run and short run, 31% is adjusted for the stability in the short run, **Soumya Ganguly, et. al., (2020)**. The researcher has found that there is fluctuating market and slowdown in economic conditions due to this pandemic situation. The study has used KLSE Index and exchange rate for the purpose of analysis. It was concluded that the movement of equity market can be understood with the help of this study for making investment decisions, **Nashirah Abu Bakar, Sofianrosbi, (2020)**. This paper examined the gold and oil prices with respect to COVID – 19. The researcher has used A-MF-DFA to analyse the data. It was found that there is opposite effect regarding the trend, it showed downward trend before the COVID – 19. It was concluded that there is a change in the trend before and after this pandemic situation, **Walid Mensi (2020)**. This study analysed the twenty one stock market indices toknow about the short term impact due to this pandemic situation. It was found that this pandemic situation had direct impact on the stock market. It was concluded that Asian countries faced more negative return compared to the other countries, **HaiYue Liu, et.al., (2020)**. The author focused on some of the indicators such as GDP, Unemployment rate, policy changes, etc. The study established the relationship between the lockdown and demand and supply of the economy. It was concluded that there is impact between pre-crisis and during crisis in the economy, **Ruchi Saini, (2020)**.

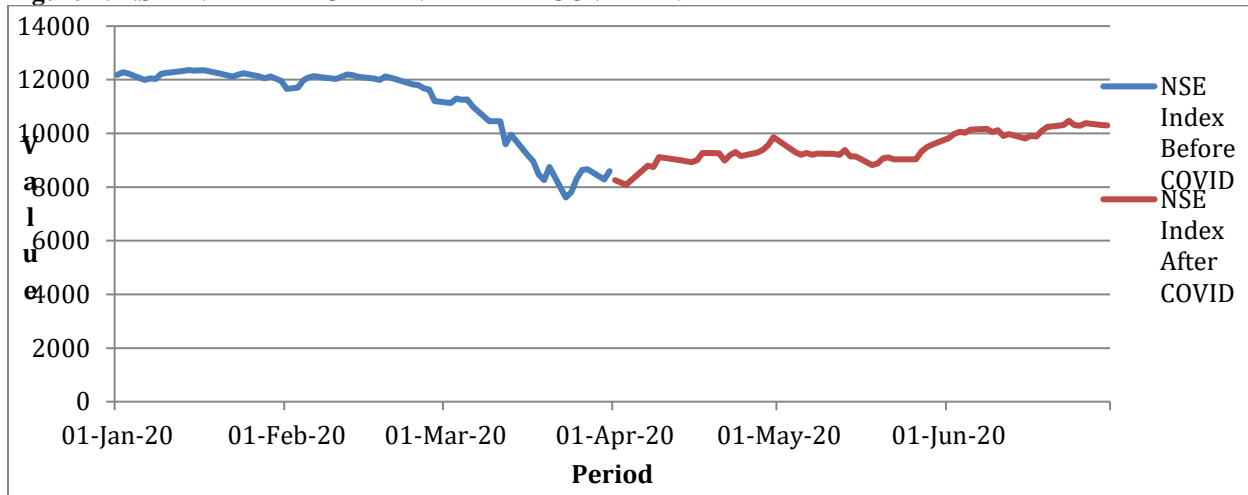
METHODOLOGY

The researcher has adopted analytical research for the purpose of the study. Five economic indicators such as Nifty Index 50, Exchange Rates, FII, DII and Gold value were considered for identifying the impact of COVID – 19 on the Indian Economy. Exchange rate for INR/USD was considered. The observation period were from 1st January, 2020 to 30th June, 2020, for the purpose of analysis the observation period is divided into before COVID-19 (January 2020 to March 2020) and after COVID-19 (for during COVID-19, from April 2020 to June 2020). The study has used graphical representation - Line Chart to analyze the trend of all the five economic indicators. The researcher has also used Paired sample test to bring out the before and after impact, Correlation was used to determine the relationship among the five economic

indicators, Regression analysis was used to form a linear equation based on the economic indicators and through Time Series ARIMA Modeler, Gold value and FII value was forecasted.

ANALYSIS

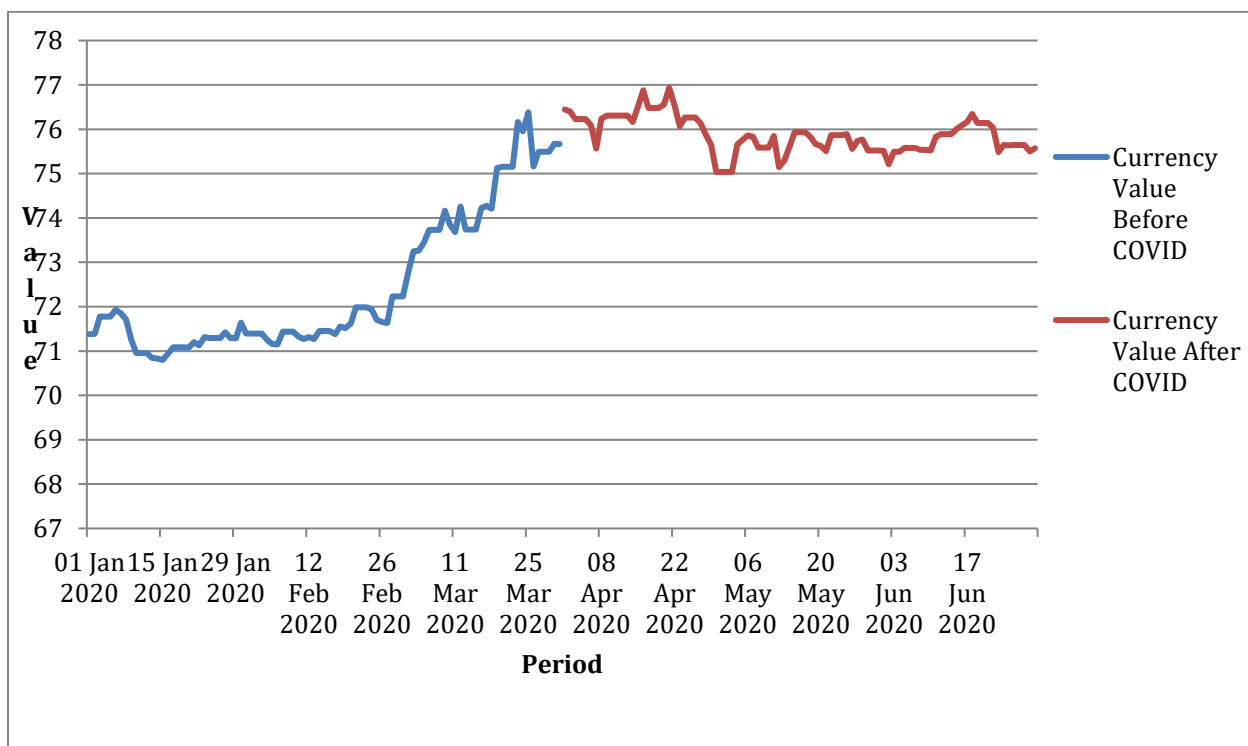
Figure 1: NSE INDEX BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 1) shows the trend of Nifty value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID-19.

Inference: The line chart (Fig. 1) shows the movement of Nifty 50 index before COVID-19 and after COVID-19. It can be clearly seen from the graph that there is a fall in Nifty index values during the month of March 2020, the period when this pandemic disease started to spread in India. It can also be seen from the graph that after COVID-19 outbreak, there is volatility in the Nifty values and by the end of June 2020, the values are increasing. This shows the increase in the confidence level of investors, but it is not increased to the level of before COVID.

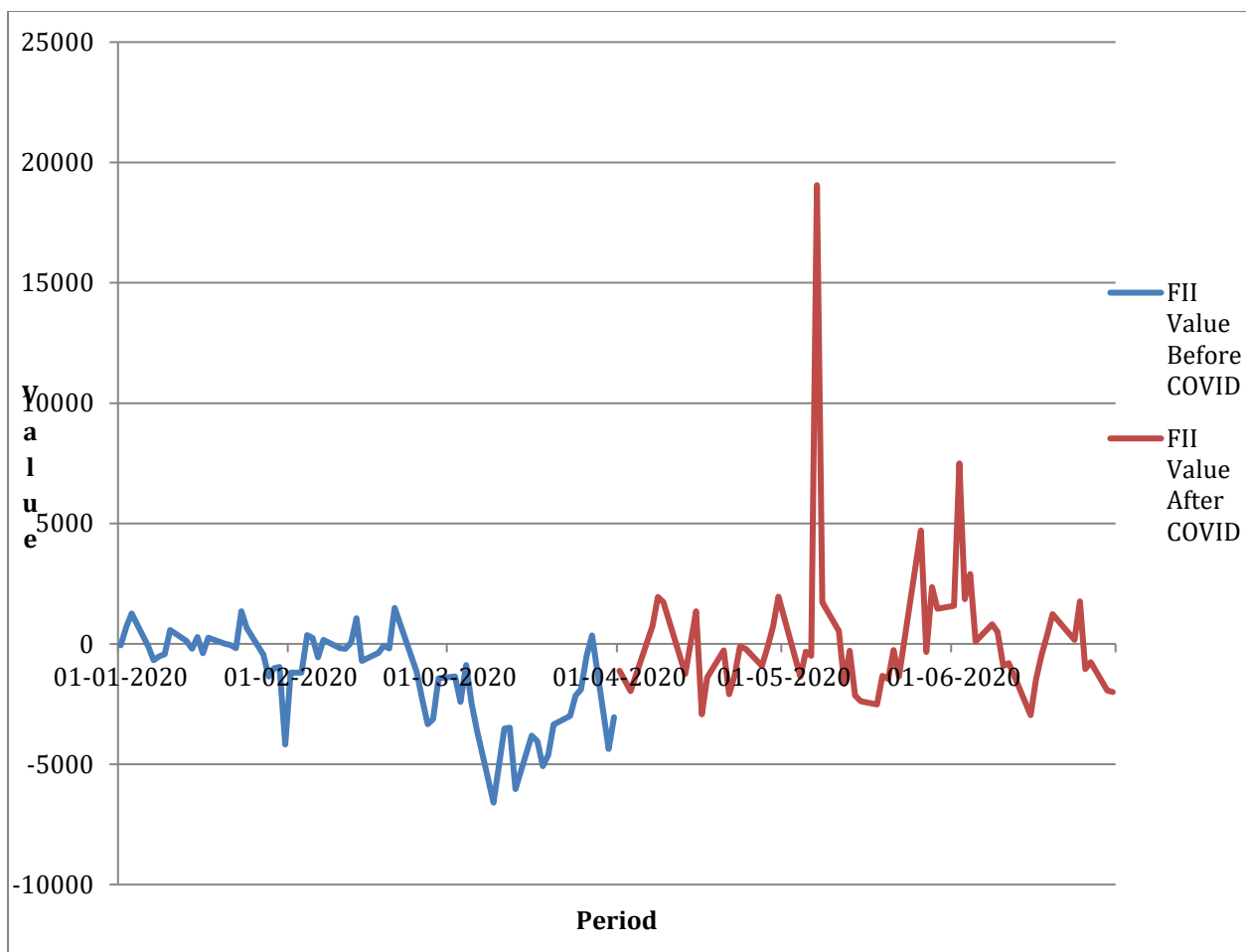
Figure 2: CURRENCY VALUE BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 2) shows the trend of Currency value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID–19.

Inference: The line chart (Fig. 2) shows the movement of exchange rates for INR/USD before COVID–19 and after COVID–19. It can be clearly seen from the graph that there is an increase in currency values during the month of March 2020, that too exactly when this COVID started to spread in India. The line chart also infers that after COVID–19, the exchange rates are fluctuating. At the end of the June, the currency value started to decrease slightly and it looks like it is stabilizing the trend. Even though the other economic indicators also one of the reason for exchange rates, but the major impact may be due to the shift in the exports and imports of the country.

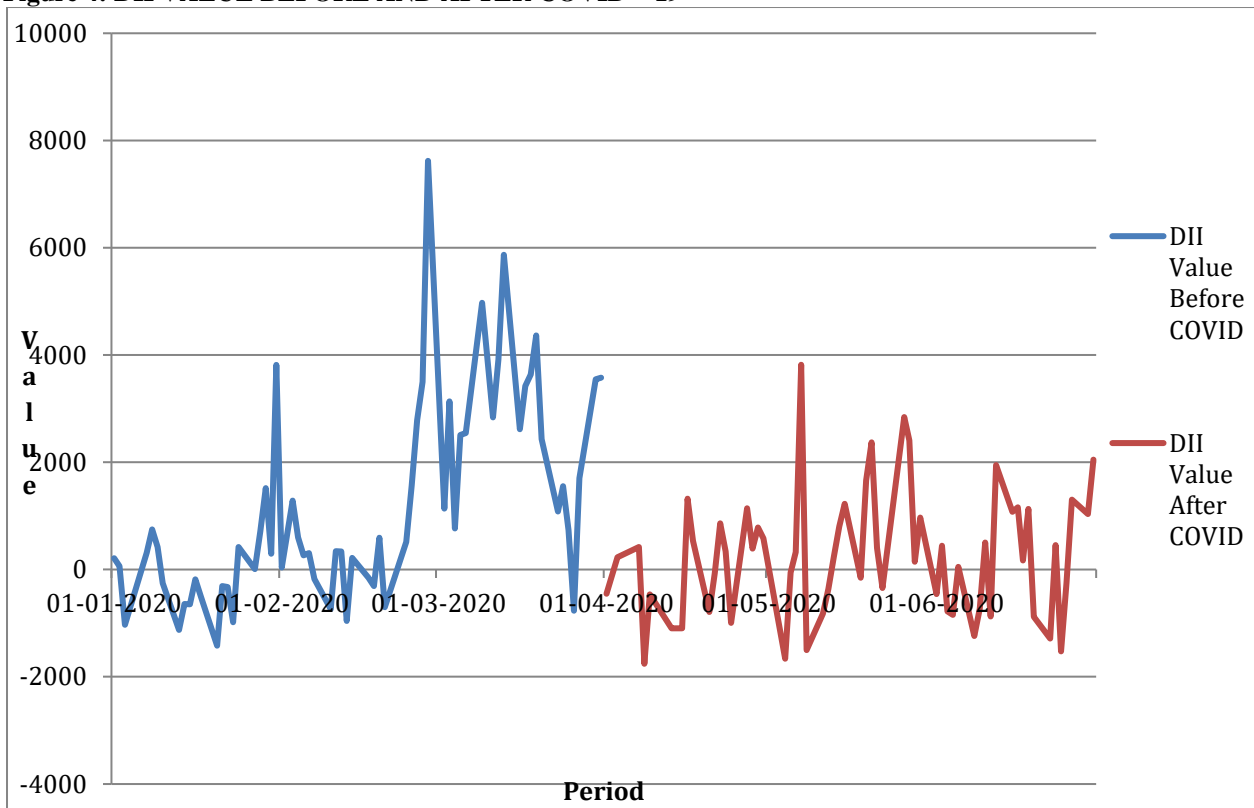
Figure 3: FII VALUE BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 3) shows the trend of FII value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID–19.

Inference: The above chart (Fig. 3) shows the behaviour of FII before COVID–19 and after COVID–19. The graph clearly shows that the FII started to fluctuate drastically once this pandemic situation started in the other parts of the world during the month of January and February, 2020. FII has reached its extreme low which is nearly negative 5000 between the month of March and April, 2020. After April 2020, India entered the phase of pandemic situation in peak, but also FII increased in the month of May and it was highly fluctuating, decreased to the negative values in the mid of June, 2020. The increase in FII in the month of May, 2020 may be because other countries facing severe problems due to COVID -19, India’s phase by phase lockdown would have created a safe projection and positive impact on the investors. But after that since India also facing severe problems, because of which FII would have drastically decreased.

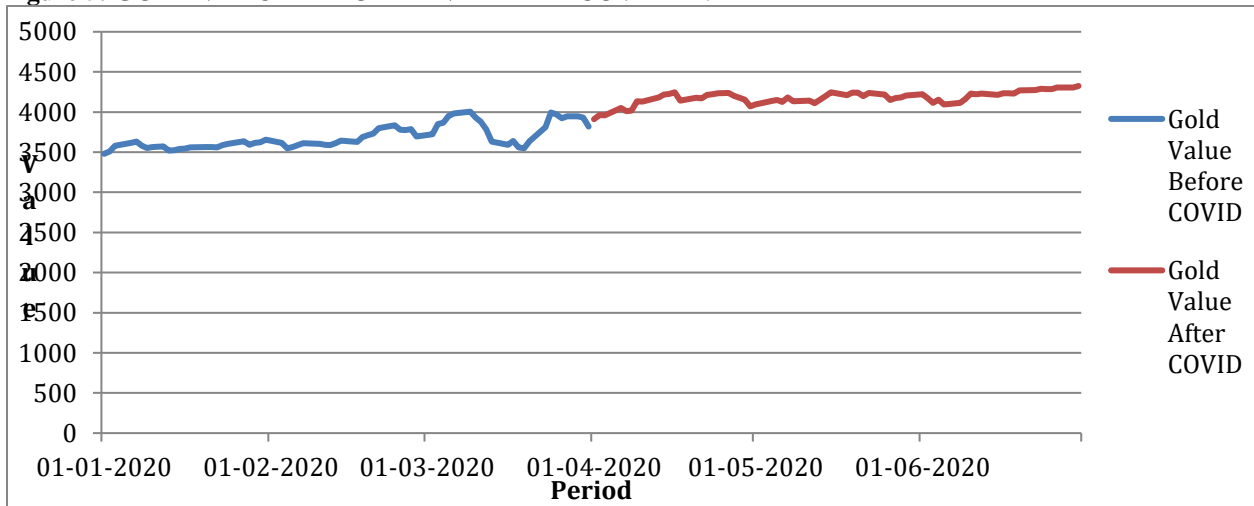
Figure 4: DII VALUE BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 4) shows the trend of DII value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID–19.

Inference: The above chart (Fig. 4) shows the behaviour of DII before COVID–19 and after COVID–19. From the line chart, it can be understood that DII has increased to the peak during first week March, 2020 but due to the pandemic situation DII has started to decrease drastically. DII has become highly volatile during this period. It is also found that DII has decreased to the negative values in the month of April and May and it slowly started to increase at the end of June, 2020. Even though, in India cases of COVID -19 is still increasing, Domestic Institutional Investors started to increase because they would have thought that the same thing prevails all over the world and it will stabilize in future.

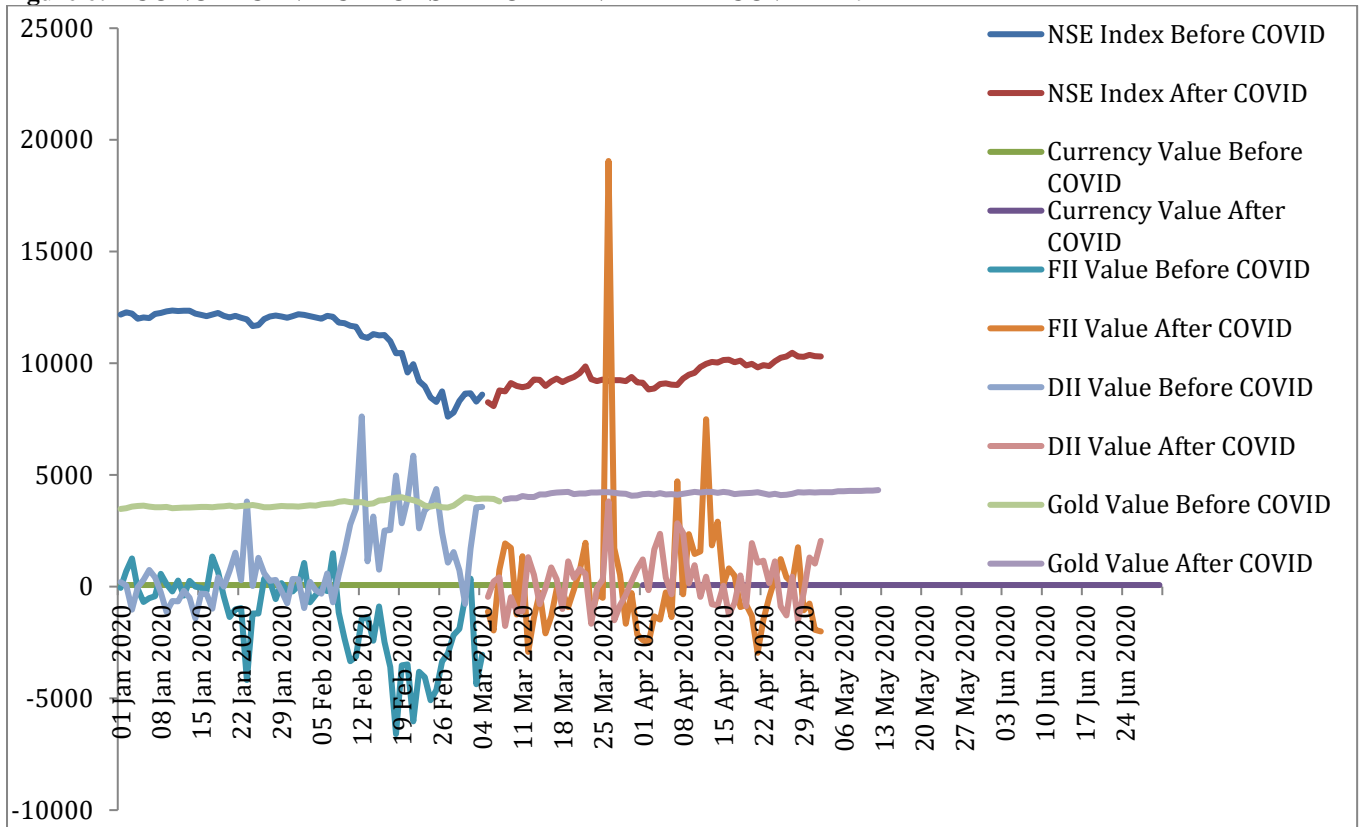
Figure 5: GOLD VALUE BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 5) shows the trend of Gold value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID–19.

Inference: The line chart (Fig. 5) shows the trend of Gold values before and after COVID. From the graph it is clear that Gold values show an increasing trend from the month of January 2020 to June 2020. But the value of Gold increased drastically during the COVID period. It can be concluded that the increase in Gold value symbolizes the decline in the economy growth.

Figure 6: ECONOMIC INDICATORS BEFORE AND AFTER COVID – 19



Legend: Line Chart (Fig. 6) shows the relationship between the five economic indicators of India such as NIFTY, Currency rate, FII value, DII value and Gold value for the six month time period from 1st January, 2020 to 30th June, 2020, which is divided into two periods as before and after COVID-19.

Inference: The above chart (Fig. 6) shows the relationship of trend among all the mentioned economic indicators in India. Among the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value, Foreign Institutional Investors is highly volatile among the other economic indicators. The next economic indicator which is more volatile is DII. This may be because investors face high risk during this pandemic situation; this may be the reason for high volatile for FII and DII among the other economic indicators.

Table 1: DESCRIPTIVE STATISTICS FOR THE FIVE ECONOMIC INDICATORS BEFORE AND AFTER COVID – 19

Economic Indicators		Mean	N	Std. Deviation	Std. Error Mean
Nifty	Nifty Before COVID - 19	11429.73	59	1261.640	164.252
	Nifty After COVID - 19	9497.54	59	557.074	72.525
Currency Value	Currency Value Before COVID - 19	72.45	91	1.595	.167
	Currency Value After COVID - 19	75.87	91	.408	.043
FII Value	FII Value Before COVID - 19	-1261.52	59	1881.843	244.995
	FII Value After COVID - 19	240.66	59	3103.661	404.062
DII Value	DII Value Before COVID - 19	1098.36	59	1889.882	246.042
	DII Value After COVID - 19	247.64	59	1175.309	153.012
Gold Value	Gold Value Before COVID - 19	3685.89	66	148.016	18.219
	Gold Value After COVID - 19	4178.30	66	84.119	10.354

Legend: The above table (Table 1) shows the descriptive statistics, which includes mean, number, standard deviation, and standard error mean for the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value before and after COVID-19.

Inference: From the descriptive statistics table (Table 1), it can be found that from the means value of FII that FII flows in to the country is high before COVID - 19 and it drastically reduced to 240.66 after COVID outbreak. The same scenario is there for the means of Nifty and DII also. But the mean value of Exchange rates and Gold has increased. Also the Standard deviation values of FII flows in to the country and DII, it is clear that SD of FII after COVID (3103.661) is higher than the FII before COVID (1881.843), which shows that there is huge variability in the FII inflows/outflows in the country after COVID outbreak. This may be due to the foreign institutions may be cautious on investments in India during COVID outbreak.

Table 2: RELATIONSHIP FOR THE FIVE ECONOMIC INDICATORS BEFORE AND AFTER COVID – 19

Economic Indicators		Correlation	Sig.
Nifty	Nifty Before COVID - 19 & Nifty After COVID - 19	-.736	.000
Currency Value	Currency Value Before COVID - 19 & Currency Value After COVID - 19	-.234	.025
FII Value	FII Value Before COVID - 19 & FII Value After COVID - 19	-.021	.877
DII Value	DII Value Before COVID - 19 & DII Value After COVID - 19	-.166	.208
Gold Value	Gold Value Before COVID - 19 & Gold Value After COVID - 19	.361	.003

Legend: Correlations table (Table 2) shows the relationship between the before and after COVID-19 status of the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value.

Inference: From the correlations table (Table 2), it can be inferred that there is significant relationship between the before COVID situation and after COVID situation for the following economic indicators such as Nifty (0.000), Currency value (0.025), and Gold value (0.003) except FII (0.877) and DII (0.208). Economic indicators such as Nifty (-0.736), Currency value (-0.234), FII (-0.021) and DII (-0.166) has a negative relationship between before and after COVID – 19, which shows that indirect relationship prevails among the economic indicators, i.e., if the value increases before COVID, it started to decrease after COVID and vice versa. But Gold (0.361) shows a positive relationship between before and after COVID, which results in constant increase in Gold value irrespective of the situation. This may be because of the other economic indicators impact on the Gold value.

Table 3: PAIRED SAMPLE TEST FOR THE FIVE ECONOMIC INDICATORS BEFORE AND AFTER COVID – 19

Economic Indicators		t	df	Sig. (2-tailed)
Nifty	Nifty Before COVID - 19 - Nifty After COVID - 19	8.661	58	.000
Currency Value	Currency Value Before COVID - 19 - Currency Value After COVID - 19	18.799	90	.000

FII Value	FII Value Before COVID - 19 - FII Value After COVID - 19	-3.150	58	.003
DII Value	DII Value Before COVID - 19 - DII Value After COVID - 19	-2.739	58	.008
Gold Value	Gold Value Before COVID - 19 - Gold Value After COVID - 19	-28.287	65	.000

Legend: Paired Sample Test table (Table 3) shows the difference between the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value before and after COVID.

Inference: Since p value is less than 0.01 for all the mentioned economic indicators, it is evident that there is a significant difference between all the economic indicators such as Nifty, Exchange rates, FII, DII and Gold in India before and After COVID pandemic.

Table 4: CORRELATION FOR THE FIVE ECONOMIC INDICATORS

		Nifty	Currency	FII	DII	Gold
Nifty	Pearson Correlation	1	-.607**	.077	-.160	-.641**
	Sig. (2-tailed)		.000	.398	.078	.000
	N	123	123	123	123	123
Currency	Pearson Correlation	-.607**	1	.249**	-.187*	.912**
	Sig. (2-tailed)	.000		.006	.038	.000
	N	123	182	123	123	133
FII	Pearson Correlation	.077	.249**	1	-.348**	.187*
	Sig. (2-tailed)	.398	.006		.000	.038
	N	123	123	123	123	123
DII	Pearson Correlation	-.160	-.187*	-.348**	1	-.050
	Sig. (2-tailed)	.078	.038	.000		.584
	N	123	123	123	123	123
Gold	Pearson Correlation	-.641**	.912**	.187*	-.050	1
	Sig. (2-tailed)	.000	.000	.038	.584	
	N	123	133	123	123	133
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Legend: The above table (Table 4) shows the relationship among the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value during this pandemic situation.

Inference: Correlation table (Table 4) shows that there is significant relationship between the economic indicators such as Nifty and Exchange rate (0.000), Gold (0.000), Exchange rate and FII (0.006), DII (0.038) Gold (0.000), FII and DII (0.000), Gold (0.038). Among all the related economic indicators, exchange rates and gold are highly positively related, which means both has direct relationship. Then it is clear that if exchange rate increases, value of gold will also increase.

Table 5: MODEL FIT: REGRESSION BASED ON THE ECONOMIC INDICATORS

Model Summary									
Model	R	R Square	Adjusted Square	RStd. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.919 ^a	.845	.840	105.944	.845	161.364	4	118	.000

a. Predictors: (Constant), DII, Nifty , FII, Currency

Table 6: REGRESSION: COEFFICIENTS BASED ON THE ECONOMIC INDICATORS

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	-3688.845	534.305		-6.904	.000
Currency	106.024	6.283	.860	16.875	.000
Nifty	-.020	.009	-.103	-2.080	.040

FII	.002	.004	.016	.393	.695
DII	.016	.007	.100	2.470	.015

a. Dependent Variable: Gold

Legend: The above table (Table 5) shows the model fit summary for the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value using Regression. The next table (Table 6) shows the co-efficient table of regression analysis for the linear equation based on the economic indicators.

Inference: Since the $p < 0.01$, null hypothesis is rejected at 1% level of significance. Therefore the regression model is proceed to the next stage for verifying the model fit, as there exists relationship between the independent variables and the dependent variable. The R value is 0.919 and adjusted R square value is 0.840, which explains that model fit is good, since both the values are nearer to 1. R Square is 0.845, which means that the mentioned independent variables cause **84.5%** impact on the determination of value of Gold. The remaining 15.5% impact may be caused by the other economic indicators in India. The linear equation for the established model is as follows:

$$Y = 106.024X_1 - 0.020X_2 + 0.002X_3 + 0.016X_4 - 3688.845$$

Where

Y denotes the Value of Gold (Dependent Variable)

X₁, X₂, X₃, X₄ are considered as the Independent Variable

X₁ denotes Exchange rates,

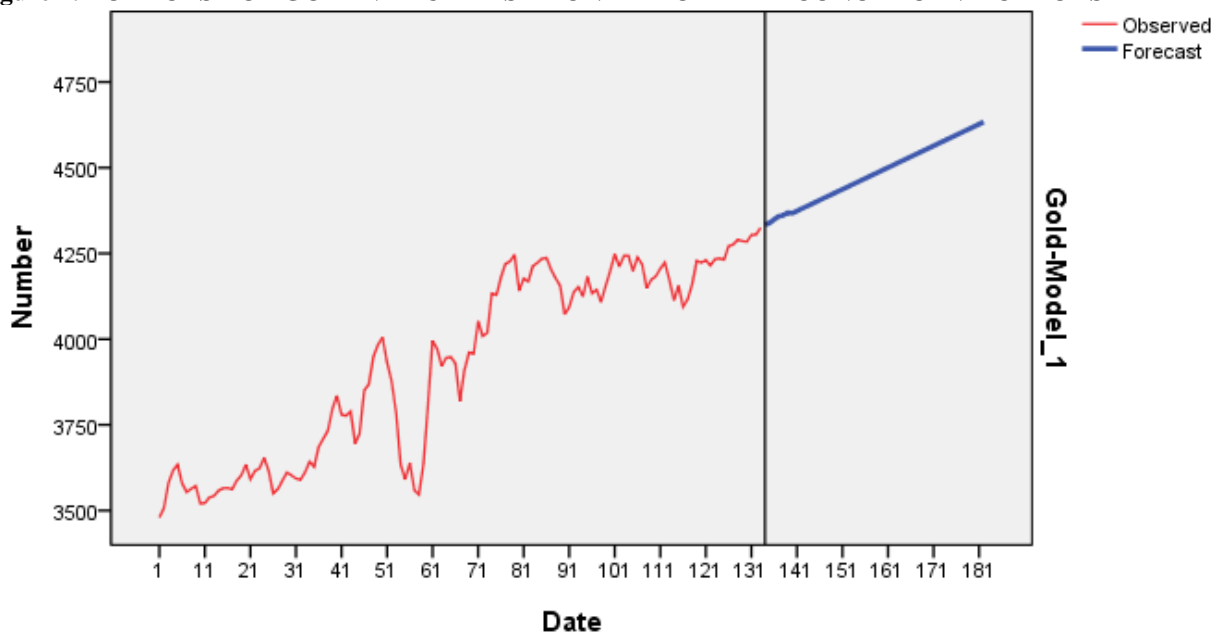
X₂ denotes Nifty 50 Index,

X₃ denotes FII, and X₄ denotes DII

Table 7: TIME SERIES ARIMA MODELER FOR GOLD VALUE BASED ON THE OTHER ECONOMIC INDICATORS

	R-squared	Statistics	DF	Sig.
Gold-Model_1	.969	20.624	17	.024

Figure 7: FORECAST OF GOLD VALUE BASED ON THE OTHER ECONOMIC INDICATORS



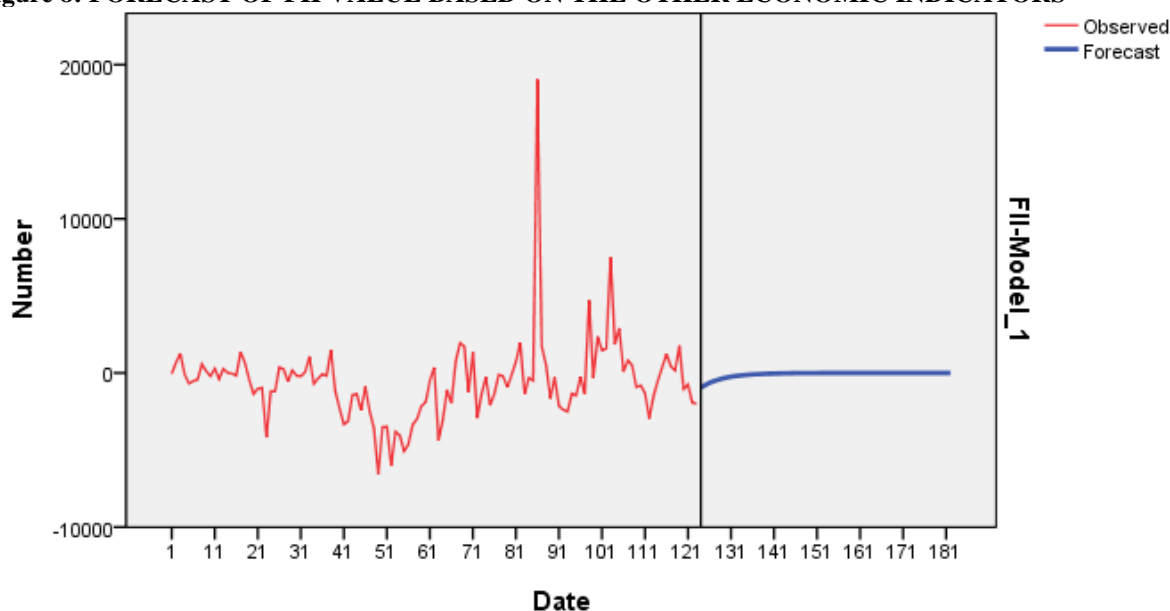
Legend: The above table (Table 7) shows the model summary for the Time Series ARIMA Modeler for Gold value based on the other economic indicators. The above figure (Fig. 7) shows the forecast of gold value based on the other economic indicators.

Inference: The above table (Table 7) shows that the significant value (0.024) is less than 0.05, so the model is fit. R squared value (0.969) is nearer to 1, which means model for Gold value is good. From the chart (Fig.7), it is clearly evident through the forecast line that the prices of gold will increase in the future.

Table 8: TIME SERIES ARIMA MODELER FOR FII VALUE BASED ON THE OTHER ECONOMIC INDICATORS

	R-squared	Statistics	DF	Sig.
FII-Model_1	.781	18.860	16	.027

Figure 8: FORECAST OF FII VALUE BASED ON THE OTHER ECONOMIC INDICATORS



Legend: The above table (Table 8) shows the model summary for the Time Series ARIMA Modeler for FII value based on the other economic indicators. The above figure (Fig. 8) shows the forecast of FII value based on the other economic indicators.

Inference: The above table (Table 8) shows that the significant value (0.027) is less than 0.05, so the model is fit. R squared value (0.781) is nearer to 1, which means model for FII is good. From the chart (Fig.8), it is clearly evident through the forecast line that the FII values will slightly increase and stabilize in the future.

CONCLUSION

As the world economy faces a serious threat due to this pandemic situation created by COVID – 19. It is necessary to analyze the economic indicators for any country. This study made an attempt to analyze the five economic indicators of India before and during the COVID – 19 periods. It was found that among the five economic indicators such as Nifty, Exchange rates, FII, DII and Gold value, Foreign Institutional Investors is highly volatile among the other economic indicators. It was also found that the mean values of Nifty, FII and DII have been decreased before and during the COVID – 19. The study found that value of Gold will increase in the future and FII will increase and stabilize in the future. It can be concluded through the analysis made in this study that the threat created by this pandemic situation for the Indian economy will take more time for its revival.

REFERENCES

- Benzid, Lamia and Chebbi, Kaouther, (2020) The Impact of COVID-19 on Exchange Rate Volatility: Evidence Through GARCH Model, SSRN Publications. <http://dx.doi.org/10.2139/ssrn.3612141>

- HaiYue Liu, 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, Vol.17, PP:2800, DOI: 10.3390/ijerph17082800
- Nashirah Abu Bakar, Sofianrosbi, (2020), Impact of Coronavirus Disease 2019 (COVID-19) to Equity Market and Currency Exchange Rate, Journal of Economics and Finance, Vol.11, PP: 22-31, DOI: 10.9790/5933-1102062231
- Ruchi Saini, (2020), Impact of Corona Virus on Indian Economy. Available at SSRN: <https://ssrn.com/abstract=3595300>
- Soumya Ganguly, Bhunia, Amalendu, (2020) Impact of Crude Oil Prices, FIIs and Exchange Rates on Volatile Indian Stock Market during Lockdown Period of COVID-19, Vol. 24, PP: 1-14
- Walid Mensi, Ahmet Sensoy, Xuan Vinh Vo, and Sang Hoon Kang, (2020), Impact of COVID-19 outbreak on asymmetric multifractality of gold and oil prices, Researchgate publications