THE RESPONSE OF FINANCIAL MARKET INDICES TO COVID-19 PANDEMIC

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Abstract

Indices are a crucial part of the global investment business. The main objective of the study is to determine the impact of COVID-19 on stock indices to analyse financial markets' response. The study applied a log-log simple regression model to analyse the effects of COVID-19 on stock indices by using EVIEWS. The result shows that COVID-19 has a substantial negative impression on market indices. In addition, critical analysis findings are benchmark index like the S&P 500, and Dow Jones Industrial Average has plummeted. On the other hand, indices like FTSE 100, NIKKEI 225, NASDAQ 100, SSE 50, DAX, HENG SENG, MOEX.ME and SENSEX have shown a negative percentage change. Moreover, Global stock markets have posted the biggest fall since the 2008 financial crises. It was recommended that future researchers should conduct different stock indices and sample period, the impact of COVID-19 on economic factors like GDP, inflation, interest rate, and effects of COVID-19 on credit markets.

Keywords: Response, financial market indices, COVID-19, pandemic, China

JEL Classification: G01, G15, G19

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1. Introduction

SARS (Severe Acute Respiratory Syndrome) in 2003, a new virus named "2019-nCoV" (novel Coronavirus), has identified the first time in Wuhan, a city of China, in December 2019. Later on, novel coronavirus (2019-nCoV) referred to the new name "coronavirus disease 2019" by World Health Organization (WHO), while the coronavirus study group (CSG) of the international committee proposed "SARS-CoV-2" as name to novel coronavirus (Guo et al. 2020). The coronavirus disease causes a respiratory illness with symptoms of flu, cough, and fever. In more severe conditions, difficulty in breathing ends with fatal. The hazardous side of this COVID-19, it is spread very vastly from human to human by via droplets inhalation and physical contact. According to the WHO (World Health Organization) report at the end of January, China has 9,720 confirmed cases of COVID-19. With 213 deaths and 106 confirmed cases in 19 countries spread by travel to and from Wuhan. With this dispersion rate, WHO declared a global health emergency in the mid of January (World Health Organization, 2020).

World Health Organization (WHO) shared some statistics about the COVID-19 epidemic outbreak at the end of the first quarter of 2020. The origin-country of epidemic China has 82,545 confirmed cases with 3,314 deaths. Infectious disease blowout very fast in the European region: Italy, with 101,739 confirmed cases, and 11,591 deaths, Spain has 85,195 confirmed cases, and 7,340 deaths, followed by Germany with 61,913 confirmed cases, and 583 deaths, and France with 43,977, and 3,017 deaths. COVID-19 has infected 22,145 people in the United Kingdom. The USA has lead in this epidemic outbreak with 140,640 definite patients, and 2,398 deaths. All over the world, it was challenging by COVID-19 epidemic outbreaks with 7,500,890 confirmed patients, and 36,405 deaths (World Health Organization, 2020).

The dispersion of coronavirus much more than SARS and MERS even infected cases of SARS in a month are less than coronavirus affected cases within a week. According to the current situation fatality rate of coronavirus about 2.2% less than SARS, about 10%, while MERS had around 35% fatality rate (Kelland, 2020).

The objective of the study is to determine the impact of COVID-19 on stock indices to analyse financial markets' response to novel coronavirus (COVID-19).

2. Literature Review

The increase in economic activities regionalization and financial market liberalization started since the 1980s caused integration among world economies. Recently due to infectious disease COVID-19, worldwide capital markets are unstable. The epidemic outbreak covered 208 countries to date updated due to which a completely locked down in around the world. The interruption in economic activities like production, supply chain value, household spending, and services facilities caused the economic supply and demand shocks.

The U.S security and Exchange commission terminated stock exchanges trading for 15 minutes four times in March to bring out the market from panic trading. Before this, in 1987 and 1997, stock trading had halted due to the market crashed.

When S&P 500 has dripped more than 7% from the previous close, the trading stopped during the opening hour on March 9, 12, 16, and the mid of the day on 18th March. The trading of Dow and NASDAQ has shut down in the response of the S&P 500 pause. As the Dow and S&P 500 prices have plunged, the Chicago Board of Exchange's volatility has increased (Hartman, 2020).

FTSE 100 had been gaining since 2011, presently just within a month index has plunged to its lowest level. To avoid the severity of damages, governments and central banks restricted the economic activity. Investor anxiety affects Wall Street, impels it into a fast bear-market. Dow Jones Industrial Average company's share prices fell by more than 20% from its latest peak. Dow jones has plummeted by 12.9%, index worn-out by almost 3000 points on 16, March referred to worst day. World second-largest economy was fighting against COVID-19 in late January, china's global supply chain disrupted when the central city Wuhan locked down. Asian powerful economy suffers from a fall in GDP since 1976. By the fall in shares prices world, the wealthiest people have lost $1tn. Italian debt suffered its biggest selloff since 2011 (Wearden, 2020). The U.S and German bond market has also suffered 10-year bonds yields fell by 20 points in the first week of March. Almost 7000 stock in global equities has lost $6trillion of their market value at the start of March. Half of the German market, half of Japanese, nearly 80% of South Korean shares, and emerging markets have moved in bear-market (Wilkes, World Economic Forum, 2020).

Like the 2008 recession where stock markets had crashed, and interest rate reduction strategies were implemented, global financial

crises have been seen in 2020 due to COVID-19. US Federal Reserve and bank of Canada have reduced interest rates from 1.75% to 1.25%, bank of England reduced from 0.75% to 0.25% within the first two weeks of March (Yik, 2020). The Managing Director of IMF, Kristalina Georgieva, declared global growth would be a drip in 2020 below the preceding year due to COVID-19. Low income and emerging economies will get $50 billion by the IMF to tackle the financial emergency. According to estimation, one-third of economic losses will suffer as a direct cost, while two-thirds will be indirectly affected by the harsh circumstances for business and financial markets (Georgieva, 2020).

As the spread of COVID-19 in China, it has restricted activities like traveling, transportation, labour mobility, and working hours in February, therefore, output decline. Global financial uncertainty caused the assumption that global GDP growth will be low and might be below zero in the first quarter of 2020. It might be possible global growth declined ½ percentage in this year based on 2019. Countries like Japan, Korea, and Australia are interrelated with china though their economic activities like production, imports, exports, and supply chains also suffer from infectious disease (Organisation for Economic Co-operation and Development, 2020). The Chinese exports reduced by 2% on annual based due to Manufacturing Production Manager's index (PMI) dropped by 22 points in February. According to today's statistics, Chinese manufacturing intermediates' inputs trade covered 20% of global trade. COVID-19 has a disruption in Chinese manufacturing inputs that are crucial to the global value chain. The interruption in china's supply chain has affected many companies' production around the world (United Nations Conference on trade and development, 2020). The financial markets have undergone restrictions due to coronavirus outbreak, Euro Stoxx 50 plummeting 8.3% to its lowest level. Australia manages A$17.6 billion against coronavirus dispersion to avoid severe recession (Shalal, 2020).

Financial markets and several industries have revealed severe adverse conditions in response to COVID-19. Eurostoxx 50 has dropped by 50% while S&P 500 reduced by 18% from its peak in mid-February, this decrease in index points critical than SARS. European countries and the U.S have locked down to prevent the virus spreads; therefore, GDP growth and output plummeted. Tourism in Italy has fall 40% to 80% while in France, 30% to 40% due to the epidemic situation (Demertzis et al. 2020).

Germany's financial market also feels panic. DAX blue-chip stock index dropped by 8 % (updated till 10th March) its worst day since from 9/11 attack. Germany's industrial state, North Rhine-Westphalia, has 1200 confirmed cases of infectious disease, which contributed 20% to the country's productivity.

To tackle financial panic, the government facilitates company financing, credit collateral, and tax relief (Ferguson, 2020). This is the worst quarter for Asia-Pacific stock markets since 2008. Japan Nikkei index has plunged by 20%. Australian S&P/ASX dropped by 24% while Indian Sensex index points fell 28% (Wilkes, The Guardian, 2020).

3. Research Methodology

The present study is undertaken to investigate the impact of the COVID-19 on the financial market's indices from the 1st of January to 31st of March 2020 in China, USA, UK, Japan, Germany, Hong Kong, Russia and India.

Time series data are collected from www.finance.yahoo.com, www.investing.com, and www.worldmeters.info. The independent variable is the number of COVID-19 confirmed cases, and the dependent variables are the stick indices. The study use DJI, GSPC and NDX from USA, FTSE100 from UK, NIKKEI225 from Japan, DAX from Germany, SSE50 from China, HENGSENG from Hong Kong, MOXE.ME from Russia, SENSEX from India as a sample of stock indices. To examine the nature of relationship correlation test analysis carried out. The study applied a log-log simple regression model to analyse the effects of COVID-19 on stock indices by using EVIEWS.

The following statistical equation was used to determine the significant impact of an independent variable on the dependent variable:

$$\ln Y = \alpha 0 + \beta 1 \ln X + \varepsilon \qquad (1)$$

Where, $\ln Y$ is the natural log of Dependent Variable, $\ln X$ is the natural log of Independent Variable. The $\alpha 0$ is constant, and $\beta 1$ is the coefficient parameter, ε is error term.

4. Empirical results and discussion

Table 1

Correlation and Regression results between COVID-19 confirmed cases and financial market Indices

Dependent Variable: DJI	Correlation	Coefficient	R-squared	Adj. R-squared	t-statistic	prob.
USA(CNFC)	-0.489611	-0.038501	0.827046	0.823366	-14.99159	0.0000
Dependent Variable: GSPC						
USA(CNFC)	-0.490543	-0.034485	0.823838	0.82009	-14.82564	0.0000
Dependent Variable: NDX						
USA(CNFC)	-0.436039	-0.025848	0.740481	0.73496	-11.58035	0.0000
Dependent Variable: NIKKEI225						
JAP(CNFC)	-0.743763	-0.083538	0.770544	0.763373	-10.3663	0.0000
Dependent Variable: FTSE100						
UK(CNFC)	-0.500029	-0.043484	0.846819	0.843083	-15.05516	0.0000
Dependent Variable: DAX						
GER(CNFC)	-0.565361	-0.045365	0.836125	0.832314	-14.81198	0.0000
Dependent Variable: SSE50						
CHN(CNFC)	-0.358255	-0.012285	0.158358	0.13923	-2.877282	0.0062
Dependent Variable: HENGSENG						
HK(CNFC)	-0.728409	-0.040471	0.522099	0.511709	-7.089016	0.0000
Dependent Variable: MOXE.ME						
RUS(CNFC)	-0.321044	-0.032249	0.588366	0.577811	-7.46621	0.0000
Dependent Variable: SENSEX						
IND(CNFC)	-0.715961	-0.064277	0.890752	0.888021	-18.05932	0.0000

Source: Regression analysis

Table 1 shows the correlation and regression results between COVID-19 confirmed cases and financial market indices. The correlation analysis reveals that -0.489611 value indicates a significant negative relationship between USA COVID-19 cases and the DJI index. While 0.0000 value of probability means COVID-19 has a significant impact on DJI. The higher the R-squared 0.827046, indicate better the model fits data. GSPC and NDX indexes have a significant negative relation to COVID-19 with -490543 and -0.436039, respectively. Probability of less than 0.05 interprets the considerable impact of independent on a dependent variable with higher R-squared 0.823838 and 0.740481. COVID-19 profoundly influences NIKKEI225 due to a high correlation -0.743763. The coefficient of COVID-19

indicates that by each additional case of the virus, NIKKEI225 reacted with -8.35%. FTSE100 index decreases 4.34% with the one other COVID-19 case in the UK. Critical analysis reveals that all countries COVID-19 confirm cases have a significant impact on their respective stock indexes with negative correlation. But China SSE50 index shown a very low coefficient for COVID-19, it responds just -1.22% with an added case. Lowest R-Squared 0.158358 specifies weak fitness of model for COVID-19 confirm case and SSE50 index. After that, Russia and Hong Kong also have a low coefficient of -3.22% and -4.04%, R-squared 0.588366, and 0.522099, respectively, compared with the USA and the UK.

Table2

Indices Prices and % change of first quarter, 2020

Indicies	2019	Jan		Feb		Mar		Q1	
	price	price	% change	price	% change	price	% change	price	% change
DJI	28,538.44	28,256.03	-0.99	25,409.36	-10.07	21,917.16	-13.74	21,917.16	-23.20
GSPC	3,230.78	3,225.52	-0.16	2,954.22	-8.41	2,584.59	-12.51	2,584.59	-20.00
NDX	8,733.07	8,991.51	2.96	8,461.83	-5.89	7,813.50	-7.66	7,813.50	-10.53
NIKKEI225	23,656.62	23,205.18	-1.91	21,142.96	-8.89	18,917.01	-10.53	18,917.01	-20.04
FTSE100	7,542.40	7,286.00	-3.40	6,580.60	-9.68	5,671.96	-13.81	5,671.96	-24.80
DAX	28.10	27.10	-3.57	24.95	-7.93	20.59	-17.47	20.59	-26.73
SSE50	3,063.22	2,932.49	-4.27	2,821.04	-3.80	2,689.38	-4.67	2,689.38	-12.20
HENGSENG	28,189.75	26,312.63	-6.66	26,129.93	-0.69	23,603.48	-9.67	23,603.48	-16.27
MOEX.ME	107.75	109.94	2.03	99.08	-9.88	97.25	-1.85	97.25	-9.74
SENSEX	41,253.74	40,723.49	-1.29	38,297.29	-5.96	29,468.49	-23.05	29,468.49	-28.57

Source: www.finance.yahoo.com

Table 2 shows the Indices Prices and % change in the first quarter, 2020. There are three major indices: DJI, GSPC and NDX in

the United States mutually exertion as security market indicator series. The empirical data revealed a continuous downfall from January 2020 to March 2020 with an increasing trend in benchmark index S&P500 and DJI. At the end of the first quarter of this year, DJI has dropped 6,621.28 points with -23.20% changes while the S&P 500 move from 3,225.52 points to 2,584.59 with 20% decrease. In the first month of the year, NDX has gain 2.96% after that index plunged by 10.53% due to COVID-19. The drip in NIKKEI 225 by -1.91% in January indicates the impact of the epidemic outbreak started in China. After the dispersion of the virus outside china, NIKKEI 225 proceeds with a decrease of 8.89% in Feb and 10.53% in March. In general, FTSE 100 is a leading indicator of the United Kingdom's (UK) financial markets. FTSE 100 is the most popular and widely used market index in Europe. This year starts with 7,286 points of FTSE 100, but on the 31st March, the exposed index of 5,671.96 points has collapsed 24.80%. DAX is the main stock index in Germany; index price fell from 28.10 to 20.59 in the Q1 (Quarter 1). SSE 50 related to Shanghai Stock Exchange, china was in the lead of an epidemic outbreak in the first two months, so that's why at the end of the third month, SSE 50 shown overall 12.20% negative change. Aggregate fall in Q1 by HENG SENG is 16.27% directs the Hong Kong stock market and fronts crises. Russian stock market index MOEX.ME displayed gain in January, then a negative % change point out loses. There is a major drop of 8,828.80 points in March, with an -23.05% change in SENSEX trading in the Bombay stock market.

The decreasing pattern in prices declared, there are stock market crises all over the world. The negative % change in the Q1 column specifies all the indices have collapsed. This is an excellent recession time period since 2008 crises, global countries adopting some precautionary measures like; trading halt, decrease in interest rates, ease in collateral policies, and relaxation in credit policies, government central banks funding to control and limit global crises.

5. Conclusion

Based on the findings, there is a significant negative relationship between COVID-19 and stock indices. This means that financial market indexes decrease with an increase in COVID-19 cases. Moreover, the impact of COVID-19 on financial markets is significant because all the sample indices are responding noteworthy

in inversely proportional. Empirical results elaborate the SSE50 index responding less adversely as compared with other indices. COVID-19 has severe effects on global financial markets; even the developed economies exchanges responding slumped.

Based on the results, the researchers hereby recommend for future researchers should conduct with different stock indices and sample period, the impact of COVID-19 on economic factors like GDP, inflation, interest rate, and effects of COVID-19 on credit markets.

6. Acknowledgements

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