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# *Covid-19 Pandemic and Cryptocurrency Market: Evidence from Five Cryptocurrencies*

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***Abstract:*** ***The purpose of this article is to examine the performance of cryptocurrency market post COVID-19 pandemic announcement. To examine the performance of cryptocurrency market, we draw a sample of five cryptocurrencies i.e. Bitcoin, Ethereum, Binance Coin, Cardano, and Dogecoin. The daily prices of cryptocurrencies are collected from 11 March 2020 to 10 March 2021. Our results provide that announcement of COVID-19 as pandemic by WHO cause negative returns in cryptocurrencies. All cryptocurrencies experience highly negative returns after announcement of COVID-19 as pandemic. Further, our findings suggest that cryptocurrency market recovered from negative influence of COVID-19 pandemic.***

***Keywords: Cryptocurrency, COVID-19, Pandemic.***

## I. INTRODUCTION

The novel coronavirus pandemic known as COVID-19 has been officially reported to get started in December, 2019. Evolving in the Hubei province of China, the disease has spread over all continents except Antarctica in a concise period (Hui et al., 2020). As of March 20, 2021, the total number of affected people worldwide is 122,498,605, with 2,704,141 deaths across 212 countries and territories (Clickondetroit, 2021). Black Swan events, including terrorist attacks and epidemics, will cause shock, fear and panic among international investors and result in a sharp panic-selling response (Burch et al., 2016). Epidemics will inevitably have the same effect. Nippani and Washer (2004) focus on stock indices of eight seriously affected countries during the SARS period and find that SARS had no negative impact on the affected countries' stock markets with the exception of those based in China and Vietnam. Chen et al. (2007) study the impact of the SARS outbreak on the performance of hotel stocks in exchanges of the Chinese mainland and Taiwan and find a significant negative impact.

Therefore, the effect on COVID-19 pandemic on cryptocurrency market is inevitably. In this study, we examine the effect of COVID-19 pandemic on cryptocurrency market. The rest of the article is organized as follows. In Section 2, we explain the relevant literature. In next section, we show empirical methods to examine the proposed relationships. Section 4 and 5 provides empirical results and concludes the findings, respectively.

## II. LITERATURE REVIEW

The COVID-19 pandemic is expected to leave a lasting scar on the world economy—in global value chain systems, investor and consumer confidence, and human capital. The global economic activities are unlikely to immediately return to its glorious state even if the pandemic is curtailed (Yakubu et al., 2021). The European central bank president Christine Lagarde described cryptocurrency as high speculative asset (Bloomberg, 2021). It is argued that Bitcoin should be considered as a speculative commodity compared to currency (Baek et al., 2015). The average monthly Bitcoin volatility was higher than gold volatility and

the lowest monthly volatility of Bitcoin was less than gold's monthly volatility (Dwyer, 2015). Evidence from GARCH and EGARCH models indicate that Bitcoin volatility is highly unstable in speculative periods whereas in stable periods, S&P500 and fear index (VIX) is reported to influence its volatility (L´opez-Cabarcos et al., 2019). The bullish volatility is triggered by safe-haven effect of cryptocurrencies in time of pandemic uncertainty (Bouoiyour et al., 2020). Thus, cryptocurrencies can be used in diversification of portfolio assets by investors (Briere et al., 2015).

## III. METHODOLOGY

### 3.1 Estimation model

In the first step of analysis, we calculated the daily return of cryptocurrency using equation (1):

$$R_{it} = \ln[\frac{P_{i,t}}{P_{i,t-1}}]*100 \quad (1)$$

Where, $R_{i,t}$ is the return for cryptocurrency i on day *t*, ln is the natural logarithm, $P_{i,t}$ denotes the closing price for cryptocurrency i on day *t* and $P_{i,t-1}$ is the closing price of cryptocurrency i in the previous trading day.

Equation (2) is used to derive the average return for cryptocurrency i. Where $R_{i,t}$ is the daily return of cryptocurrency i from 11 March 2020 to 10 March 2021.

$$\bar{R}_i = 1/N \sum_{365}^{1} R_{i,t} \text{ for i} = 1, 2, 3, \dots, \text{N} \quad (2)$$

### 3.2 Data

To examine the influence of COVID-19 pandemic on cryptocurrency market, We calculated the daily closing prices of five cryptocurrencies i.e. Bitcoin, Ethereum, Binance Coin, Cardano, and Dogecoin, respectively, from 11 March 2020 to 10 March 2021. The daily prices of cryptocurrencies were collected from website https://www.investing.com.

## IV. RESULTS

Table 1 shows the returns by cryptocurrencies on announcement day of pandemic by WHO and one day after announcement day. On day $T_0$, all cryptocurrencies experienced negative returns except Bitcoin. However, on day $T_1$, all cryptocurrencies earned negative returns. Furthermore, Bitcoin, Ethereum, Binance Coin, Cardano, and Dogecoin earned, respectively, -39.18%, -44.55%, -44.08%, -41.49%, and -27.12%. Therefore, our results show that announcement of COVID-19 as pandemic by WHO cause negative returns in cryptocurrencies. All cryptocurrencies experience highly negative returns.

**Table 1:** Returns on $T_0$ and $T_1$

| Cryptocurrencies | $T_0$ | $T_1$ |
|---|---|---|
| Bitcoin | 0.56% | -39.18% |
| Ethereum | -2.98% | -44.55% |
| Binance Coin | -1.78% | -44.08% |
| Cardano | -4.16% | -41.49% |
| Dogecoin | -1.35% | -27.12% |

**Notes:** $T_0$ = Announcement day of pandemic; $T_1$ = One day after announcement day.

Table 2 shows the average returns earned by cryptocurrencies from 11 March 2020 to 10 March 2021. Furthermore, our results show that all cryptocurrencies earned positive returns from 11 March 2020 to 10 March 2021. More specifically, Bitcoin, Ethereum, Binance Coin, Cardano, and Dogecoin earned, respectively, 0.64%, 0.77%, 1.01%, 1.15%, and 1.83%. Therefore, our findings suggest that cryptocurrency market recovered from negative influence of COVID-19 pandemic.

**Table 2:** Average returns from 11 March 2020 to 10 March 2021

| Cryptocurrencies | Return (%) |
|---|---|
| Bitcoin | 0.64% |
| Ethereum | 0.77% |
| Binance Coin | 1.01% |
| Cardano | 1.15% |
| Dogecoin | 1.83% |

Figure 1 shows performance of Bitcoin from 11 March 2020 to 10 March 2021. Our results show that in the month of March 2020 Bitcoin earned heavy negative returns. Thereafter, the performance of Bitcoin is improved.

Figure 1: Return by Bitcoin

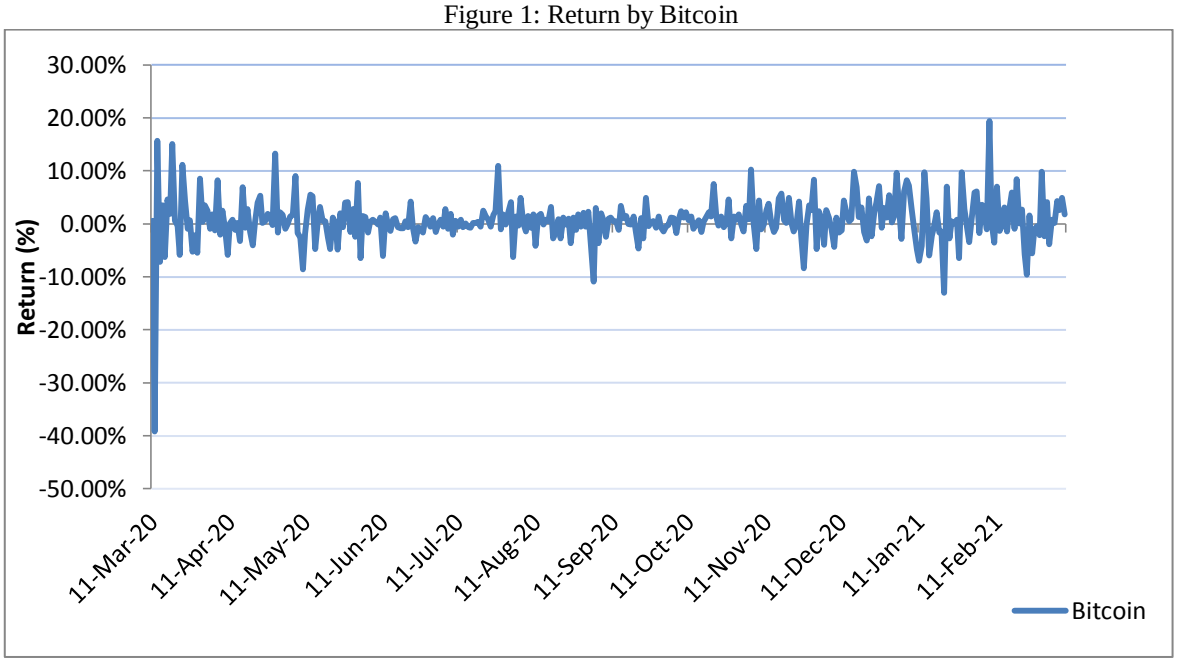



Figure 2 shows performance of Ethereum from 11 March 2020 to 10 March 2021. Our results show that in the month of March 2020 Ethereum earned heavy negative returns. Thereafter, Bitcoin is recovered from setback of COVID-19.

Figure 2: Return by Ethereum

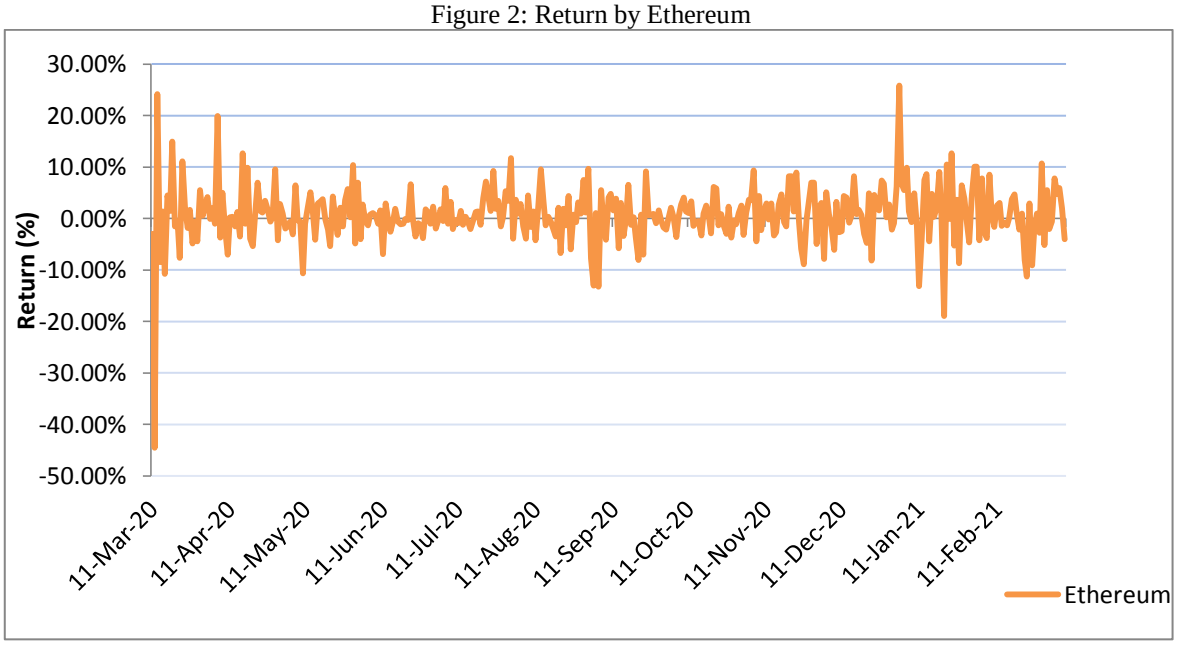


Figure 3 shows performance of Binance Coin from 11 March 2020 to 10 March 2021. In addition, our results show that in the month of March 2020 Binance Coin earned heavy negative returns. Thereafter, Binance Coin is recovered from setback of COVID-19.

Figure 3: Return by Binance Coin

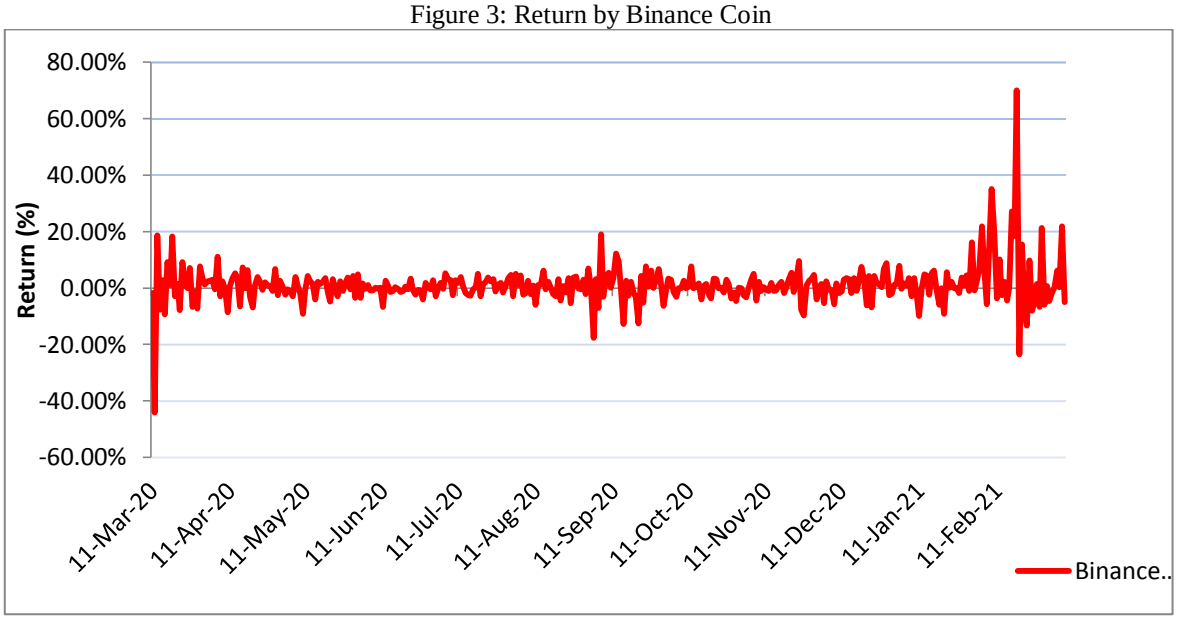



Figure 4 shows returns of Cardano from 11 March 2020 to 10 March 2021. In addition, our results show that in the month of March 2020 Cardano earned heavy negative returns. Thereafter, Cardano is recovered from setback of COVID-19.

Figure 4: Return by Cardano

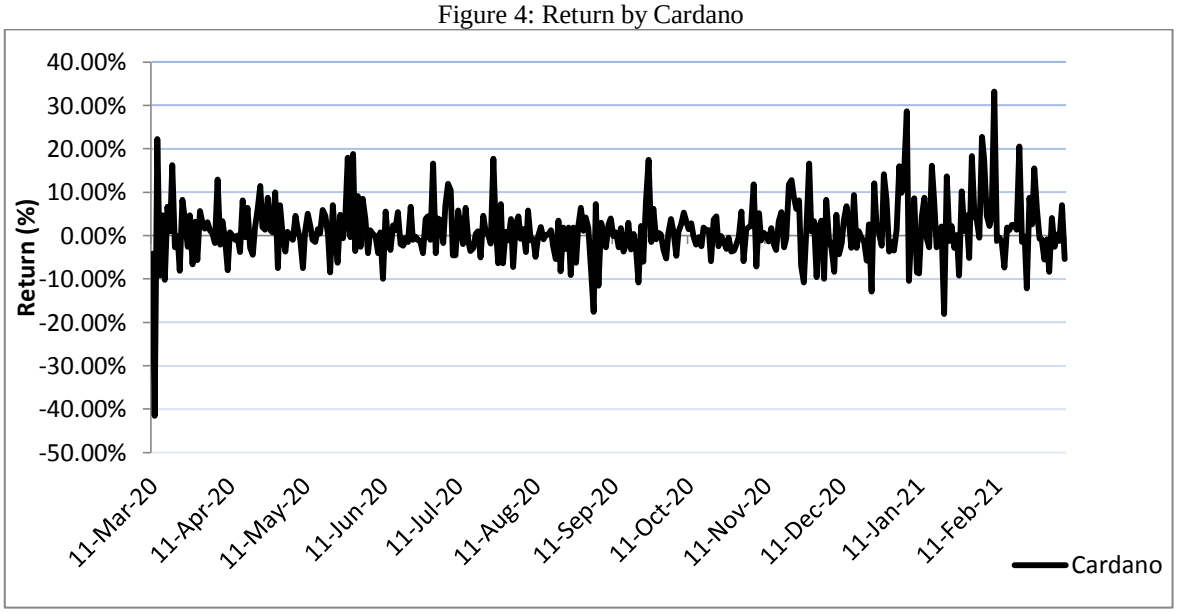
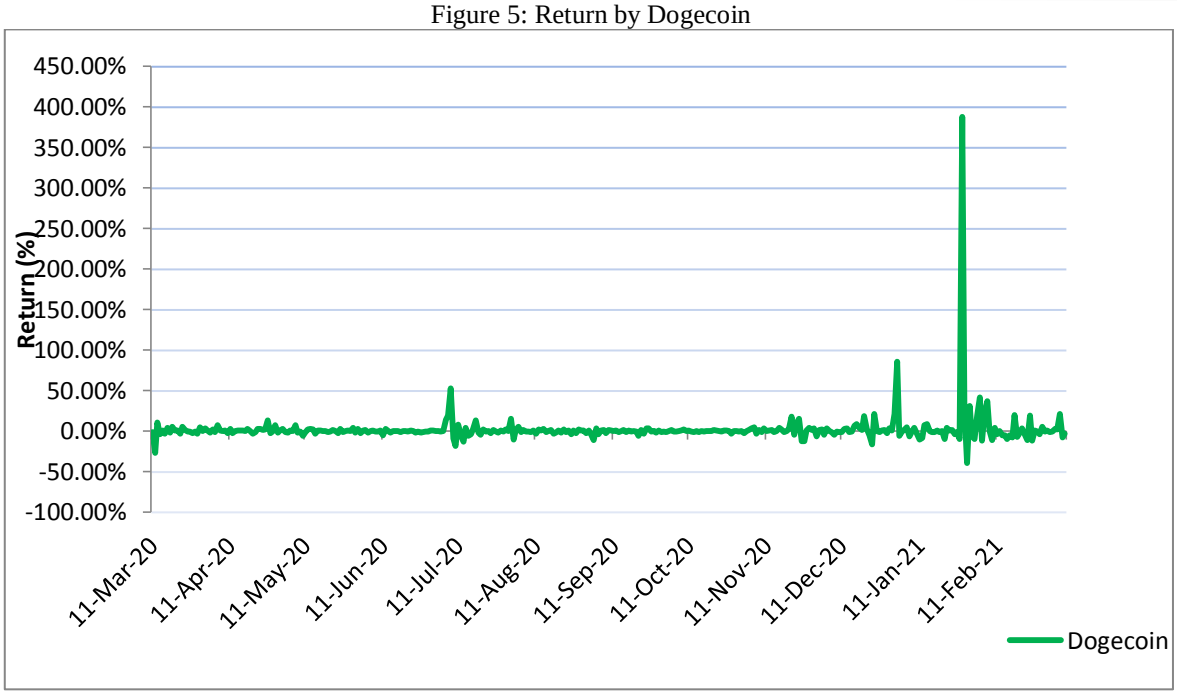



Figure 5 shows returns of Dogecoin from 11 March 2020 to 10 March 2021. In addition, our results show that in the month of March 2020 Dogecoin earned relatively low negative returns compared to other cryptocurrencies. Thereafter, the performance of Dogecoin is stable. On 28 Janruary, 2021 Dogecoin earned more than 387.36%.

Figure 5: Return by Dogecoin




## V. Conclusion

The aim of this article is to examine the performance of cryptocurrency market in the time of ongoing COVID-19 pandemic. More specifically, we examined the performance of cryptocurrencies after announcement of COVID-19 as pandemic by WHO on 11 March 2020. Moreover, this study investigated the performance of five cryptocurrencies i.e. Bitcoin, Ethereum, Binance Coin, Cardano, and Dogecoin from 11 March 2020 to 10 March 2021. Our results provide that announcement of COVID-19 as pandemic by WHO cause negative returns in cryptocurrencies. All cryptocurrencies experience highly negative returns after announcement of COVID-19 as pandemic. Further, our findings suggest that cryptocurrency market recovered from negative influence of COVID-19 pandemic. Therefore, findings of this article provide practical implications for investors who invest in cryptocurrency market.

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