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# Cryptocurrency in a Pandemic Era: Analyzing the Impact of COVID-19 During and Post-Crisis Periods on Digital Currencies

**[1]Dr. Jawad Karamat, [2]Naseer Muhammad, [3]Dr Samina Begum, [4]Muhammad Subhan, [5]Dr. Arooj Zeb, [6]Dr. Muhammad Imran shah**

*[1]Assistant Professor, Center for Management Science and Commerce, University of Swat.*
*[2]PhD scholar Department of Management Sciences, University of Malakand*
***Email:*** *naseerahmadmaju@gmail.com*
*[3]Assistant Professor Department of Management Sciences, Women University Mardan*
***Email:*** *drsamina@wumardan.edu.pk*
*[4]Department of Management Science, Islamia College University Peshawar*
*Email: muhammadsubhanicp2020@gmail.com*
*[5]Assistant Professor Department of Management Sciences, Virtual University of Pakistan*
*[6]Assistant professor Department of Commerce. Gomal University Dera Ismail Khan*
*Email: imranabc77@gmail.com (Corresponding Author).*

## Abstract

In this study, we explore how and to what extent economic crises, especially the current COVID-19 pandemic, have affected the investment dynamics of cryptocurrencies. The results found with cryptocurrency stationarity and characteristics such as Augmented Dickey-Fuller and Phillips-Perron analysis established the fact that cryptocurrencies get affected easily by market fluctuations and demands thus causing certain forms of non-stationarity during the time of the COVID-19 pandemic. Nonetheless, the evaluation highlights serious hazards to trading in cryptocurrencies particularly for inexperienced traders during a time of economic uncertainty. According to the study, while seeking to invest in the future of digital currencies, investors need to balance their portfolios with the current conventional funds to help them minimize risks while at the same time maximising their returns by diversifying into the new innovative digital currencies. In addition, the study notes the importance of quality regulation and investor awareness to deal with the issues of cryptocurrency investment. The research brings insight into the debate as to whether cryptocurrencies are still efficient investment instruments during global volatilities.

**Keywords:** Cryptocurrencies, Economic crises, COVID-19 pandemic, Augmented Dickey-Fuller test, Phillips-Perron test.

**Introduction:**

Economic decline has negative effects on the global markets and these have frequent interferences. Although such time remains as periods that test many individuals' abilities and arguments, they also remain as unique investment periods rewarding only those able to operate in these difficult circumstances. The coronavirus (COVID-19) outbreak in China quickly became a global phenomenon that affected societies and economies in a short period. According to Jabotinsky and Sarel (2020), traditional financial markets, therefore, are expected to give negative responses to this pandemic in the long-term repercussions to the geopolitical landscape of the global economy in the future.

In general, investment activities are negatively influenced by declines in economic performance while at the same time creating opportunities for large gains. The current crisis – characterized by the fact that it is unprecedented and rather severe – has its problems. During such a period, some of the Investment assets either depreciate or may not appreciate while others may appreciate. There are times when investors want to have cash because of risks or severe economic downfall that exist on the market. One typical action when a crisis occurs is to use available liquidity to make new investments which will generate even greater returns after the crisis; such an action is supported by proponents of investment under unfavorable economics.

Entrepreneurial initiatives and projects have gradually become regarded as a more effective form of investment than gold, dollars, and real estate in a crisis. This, in turn, raises questions on if, indeed, crises help create wealth and which investment choices offer the highest riches when crises are in play. While some markets which include oil and traditional stock markets might reduce as observed by Elsayed and Abdelrhim (2020) there are other markets like E-commerce which might expand.

The present economic recession as a result of the COVID-19 pandemic crisis makes many seek safety in investments. Gold, silver, diamonds, and jewellery are used as safeguards against

volatility and are considered to be sound money being conservative in nature which are usually the best investments after a crisis.

In terms of investing during the crises in the stock market, investing in having shares of local private companies is dangerous and will deteriorate savings. On the other hand, investing in government joint-stock companies or firms that supply bare essential materials to the industries could be less risky and maybe even more profitable. Government bonds are rated as the safest resource in the stock exchange with lesser returns because they are issued by some of the most reputable entities in the financial markets so investors can always get their monies back in the worst of economic times.

The paper by Bouoiyour & Selmi (2020) investigates whether Bitcoin can act as a haven asset when investors are unsure about the investment environment, with a focus on the COVID-19 pandemic in China case. They investigated questions such as whether Bitcoin can be a haven if incoming information about the virus leads to greater volatility in the price of Bitcoin and if it conforms with the efficient market hypothesis. Thus, the outcome revealed that although Bitcoin is a very speculative investment, during the pandemic, it gives rather a secure image which investors seek in uncertain times, although it exhibited inefficient market behaviour by failing to respond to the outbreak immediately.

This is contrary to the current financial research which shows that markets are efficient but not neutral; the efficiency level varies depending on the market conditions or crises. Specifically, research has shown this in the case of traditional assets where different markets exhibit different degrees of predictability in returns thereby providing support for the adaptive markets hypothesis (Kim et al., 2011; Urquhart et al., 2016). Cryptocurrencies have undergone significant interest from investors, traders, and other players in the financial markets because of their non-tied status to conventional financial institutions and their capability for portfolio diversification with ordinary assets (Dibeh et al., 2012; Kouatli and Yunis, 2021). However, there is still no consensus as to whether cryptocurrency market efficiency is stable in different market conditions or during a crisis. Scholars including the IMF have observed that the post-pandemic Bitcoin has been increasingly associated with the US markets regarding volatilities and efficiency. Similar evidence of the telecommunication of volatility between these markets has also been established (Bouri et al.,

2017; Shahzad et al., 2019). Surprisingly, the efficiency of Bitcoin seems to be gradually growing less efficient but they are still relatively inefficient markets. The other Cryptocurrencies like Ethereum, XRP, Binance, and Cardano too are on the upside in terms of market relevance and investors' attention but have limited research scrutiny. Some of the studies relate to their function as hedges during the COVID-19 crisis (Ustaoglu, 2022; Kumar et al., 2022).

## Literature review

### Cryptocurrency Investment

The fluctuating characteristics of investors in cryptocurrency especially Bitcoin have led to increased research on the characteristics of haven assets. Shahzad et al. (2019) compared the volatility of Bitcoin with that of mainstream commodities and gold; the authors then concluded that Bitcoin and gold are more reliable safe havens though this feature could vary with time. Guesmi et al. (2018) also extended their study on the comparative analysis of Bitcoin with other asset classes such as gold oil and stock in emerging countries and found that Bitcoin has less risk associated with investment.

On the same note, Smales (2018) revealed that Bitcoin does not fit the haven category due to high volatility and costs of transactions, and lower liquidity. Likewise, Bouoiyour & Selmi (2020) have applied the COVID-19 period in the evaluation of Bitcoin concluding that although it indeed revealed certain aspects of a safe-haven asset, the high volatility rank and the delayed pass-through effect of market shocks prevent this conclusion.

While Kelly et al. (2016), and Goodell et al., (2020), for instance, explored cryptocurrencies and Economic Policy Uncertainty (EPU), Wang et al., (2020) for example, showed that there is a positive relationship between EPU and bitcoin investment return where periods of high EPU means the increased return on investment in Bitcoin. Aysan et al. (2019) also responded to how geopolitical risks, the global, affected Bitcoin as there was a positive relationship between the two, showing that geopolitics tension raised both price volatilities and returns.

In line with this analysis, Bouri et al. (2017) responded that Bitcoin equities are influenced by uncertainty in the same manner, but more noticeably at greater quantiles and short frequencies. Chan et al. (2017) focused on analyzing the statistical characteristics of cryptocurrencies indicating

that the returns are non-normal and the GHD is the most suitable model for major cryptocurrencies including Bitcoin and Litecoin.

Sapuric and Kokkinaki (2014) conducted a study testing the fluctuation of the Bitcoin rates relative to most world currencies over four years evidence of Bitcoin's higher level of volatility while drawing attention to the relative stability of its rates depending on the transaction traffic. In a qualitative study, Briere et al. (2015) evaluated Bitcoin's position in a diversified investment portfolio, revealing that it has both high return and zero correlation with all other forms of investments thereby facilitating diversification.

Richards (2015) surveyed potential drivers of Bitcoin prices in the Chinese market and found that Bitcoin is a hybrid of standard portfolio assets and speculative investments. In their study 'Medians and the Volatility of Bitcoin: A Finnish View," Glaser et al. (2014) also pointed out that Bitcoin is characteristic of the financial market because it relies on a technology known as the blockchain, or due to its autonomy from the conventional monetary measures.

Historically gold has been associated with safe-haven assets in economic turmoil. Research has it that investors run to gold prices when markets are uncertain; therefore, during these times, prices of gold are high (Baur & McDermott, 2010). This trend bears testimony to the fact that gold can be trusted to protect the value of your investments against inflation and devaluation of currencies.

In the same context, the authors consider the performance of silver and platinum as representatives of precious metals that also express their ability to function as anti-crisis investments, but their rates' behaviour is less stable than that of gold. However, Beckmann et al., (2011) made a comprehensive comparison of precious metals to equities and bonds and proved that gold and silver for example indeed offer higher returns during periods of high risk.

Now the literature provides a highly nuanced view of the investment prospects of both cryptocurrencies and precious metals for the first time. Cryptocurrencies labelled specifically as bitcoins have high potential returns but at the same time, these investments are drenched in more risk compared to stocks since they are volatile and sensitive to sentiment and geopolitical factors. Currently gold and other bullion have remained crucial forms of haven, particularly in periods of volatility in the global market. This bi-criteria analysis facilitates the calculation of the risks and

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benefits as seen with each type of investment so that investment planning offers a systematic approach to risk management in volatile economic conditions.

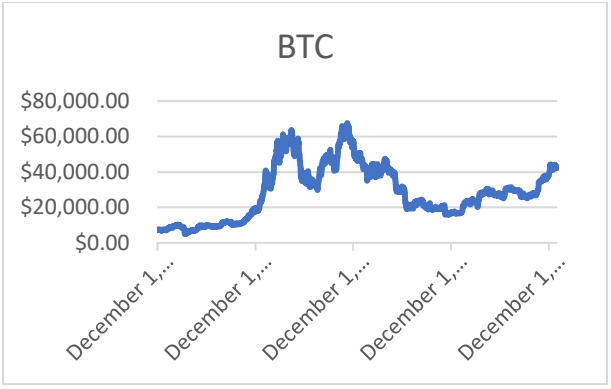
## Data and Methodology

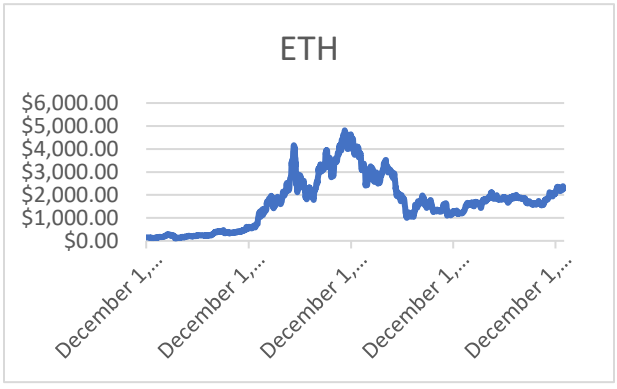
### Data

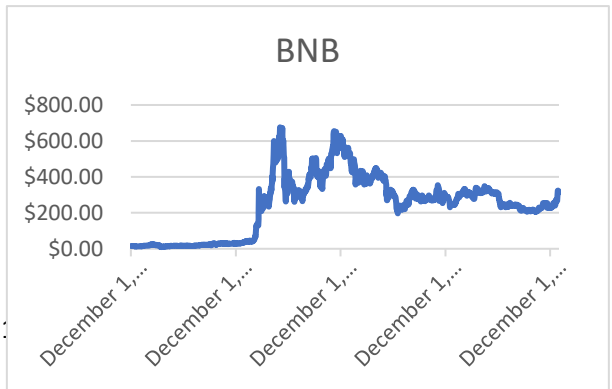
Our study examines the daily closing prices of four major cryptocurrencies: Recent popular coins include Bitcoin, Ethereum, BNB and ADA (Cardano). Together, these represent more than two thirds of the market capitalization of all cryptocurrencies in the market today. These specific cryptocurrencies were chosen because of the high daily trading volume, and the age of the coins ranging from Bitcoin, Ethereum and to some which are relatively newer like BNB and Cardano.

We analyzed the price movements of these cryptocurrencies during two distinct periods: for the time of COVID-19 from December 1, 2019, to December 31, 2021, or 762 observations and for the period after COVID-19 from January 1, 2021 to December 31, 2023, which would give 730 observations. All the price data was sourced from (**Source:** coinmarketcap.com). The fluctuation in the prices of these five cryptos is as shown in Figure 1 below.

### Raw Data



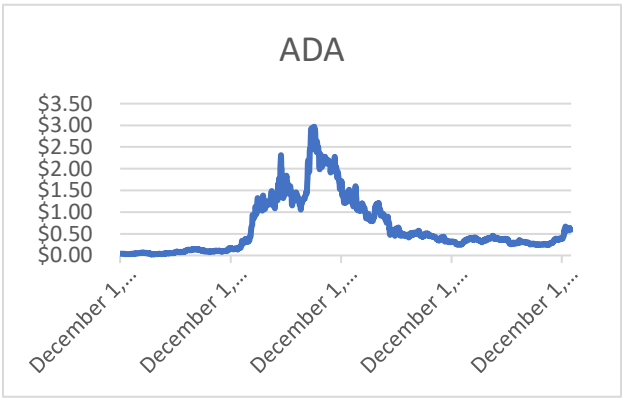



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**Figure1: Raw Data**

The depicted diagrams show the fluctuations of the prices for 4 leading cryptocurrencies, namely BTC, ETH, BNB, and ADA (Cardano) for a given time frame. There is a daily closing price chart for each one and both show extreme fluctuation and different patterns throughout the various stages.

- **Bitcoin (BTC):** An apex over $60,000 is evidenced for the channel followed by oscillations and then a clear trend towards a higher value at the end of the period under consideration.
- **Ethereum (ETH):** Is moderately high rising slightly above $ 4000 after which there is a slight fluctuation and an overall declining trend settling at around $ 2000.
- **Binance Coin (BNB):** It features a high price which touched $600; however, it dropped to reach the stable price of about $300.
- **Cardano (ADA):** Approximately reached its highest at $3. There it dropped to $0.00, continued declining and stabilized the prices slightly above $1. 00.

These trends described here show that the market for these assets depends on various economic events, such as the COVID-19 pandemic, proving the non-essential nature of these assets and the existence of speculative features. They are essential, especially for investors where it helps in analyzing the historical data to be in a position to predict the future fluctuations of these cryptocurrencies.

**ADF (Augmented Dickey-Fuller) Test Equation**

The Augmented Dickey-Fuller (ADF) test is a type of statistical test called a unit root test. The purpose of the ADF test is to determine whether a time series is stationary or not, primarily by evaluating the presence of a unit root in the series (Dickey and Fuller, 1979). The equation for the ADF test is typically represented as follows:

$$\Delta yt=\alpha+\beta t+\gamma yt-1+\delta 1\Delta yt-1+\delta 2\Delta yt-2+\cdots+\delta p-1\Delta yt-p+1+\epsilon t$$

Where:

- yt is the time series.
- Δ is the difference operator, Δyt=yt−yt−1\
- α is the intercept.
- βt is the trend component.
- γ is the coefficient on the lagged level of the series, yt−1y_{t-1}yt−1, which is the key to testing for a unit root.
- δ1,δ2,...,δp−1 are the coefficients on the first p−1 lagged differences of the series.
- ϵt is the error term.
- p is the number of lags used in the regression, determined based on information criteria like AIC or BIC.

**PP (Phillips-Perron) Test Equation**

The Phillips-Perron (PP) test is another type of unit root test used to determine the stationarity of a time series. It addresses some of the limitations of the ADF test by allowing for more general forms of the error structure. The PP test modifies the test regression from the ADF test by directly correcting the statistics to account for serial correlation and heteroscedasticity in the errors without adding lagged difference terms (Philips and Perron, 1988). The equation is similar to the ADF equation but does not include lagged difference terms:

$$yt=\alpha+\beta t+\rho yt-1+\epsilon t$$

Where:

- ρ typically represents the coefficient on the lagged level of the series, similar to γ ADF test.

**Vector Autoregression (VAR) Equation**

Vector Autoregression (VAR) is a statistical model used to capture the linear interdependencies among multiple time series. VAR models generalize the univariate autoregressive model by allowing for more than one evolving variable. All variables in a VAR are treated symmetrically;

each variable is a linear function of past lags of itself and past lags of the other variables (Sims, 1980). The VAR equation for a system with kk variables is:

$$Yt=v+A1Yt-1+A2Yt-2+\cdots+ApYt-p+Et$$

Where:

- Yt is a vector of endogenous variables at time t.
- $V$ is a vector of intercepts.
- A1,A2,...,Ap are the coefficient matrices.
- p is the number of lags included in the model.
- Et is a vector of error terms which are assumed to be white noise.

Each element in the Yt vector is modeled as a linear combination of lagged values of all the variables in the vector. The optimal number of lags pp is often selected based on information criteria such as the Akaike Information Criterion (AIC) or the Schwarz Bayesian Criterion (SBC).

**Descriptive Statistics**

| Set | Observations | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| **During Covid** | | | | | |
| BTC | 762 | 28358.1 | 19757.74 | 4971 | 67567 |
| ETH | 762 | 1484.07 | 1433.284 | 110.61 | 4812.09 |
| BNB | 762 | 192.0464 | 213.5809 | 9.39 | 675.68 |
| ADA | 762 | 0.7615486 | 0.8272285 | 0.02 | 2.97 |
| **Post Covid** | | | | | |
| BTC | 730 | 28528.68 | 8332.11 | 15787.28 | 47686.81 |
| ETH | 730 | 1891.257 | 577.3999 | 993.64 | 3829.57 |
| BNB | 730 | 295.4778 | 65.37775 | 197.04 | 531.4 |
| ADA | 730 | 0.4948904 | 0.2704319 | 0.24 | 1.59 |

The dataset gives some statistical features of four selected cryptocurrencies: BTC, ETH, BNB, and ADA for two-time intervals, which are traditionally referred to as ‘During Covid’ and ‘Post Covid’.

It presented the sets of observations with the measures of central tendency and the variability of their means, minimum and maximum price for each type of cryptocurrency with further visualization of the variation of price about the changes in the economic environment.

During the Covid period, all the cryptocurrencies have been highly volatile as indicated by high standard deviation about the means. Bitcoin with an average price of $28,358. 10 with the standard deviation of 19,757$. These oscillations, observed in the 74 stocks at the PSE ranged from a low of $4971 to a high of $67567 dollars, revealing severe market responses to pandemic-related volatilities. Other tokens like Ethereum, BNB, and ADA also followed similar trends of high levels of volatility and a fairly large trading range, this was evident in Ethereum which rose to $4,812. 09 was recorded at $110 to the lowest. This high volatility in all cryptocurrencies indicates that the pandemic introduced a lot of turmoil and speculative actions in the cryptocurrency markets.

After the Covid crisis, it is observed that fluctuation in the value of bitcoins and other listed cryptocurrencies has slowed down a lot and stabilization has happened at the floor level. The mean price of Bitcoin as depicted above was almost stable, with a slight variation over the Covid period, while the standard deviation gave a picture of $8,332 which was a great improvement. 11 and the range of choice based on the price became significantly less. In the same way, Ethereum not only raised the average price to $1,891. 257; Its mean reversion was also considerably lower as evidenced by less fluctuation and a more compact range of prices. As for BNB and ADA, the situation was as follows: The price variations for these tokens were also considerably lower and the dispersion, Conclusion concerning the market situation showed Even after the pandemic, the market was much more stable in terms of these assets.

**ADF and PP tests**

| Variables | ADF Test | PP Test | 5% Critical |
|---|---|---|---|
| **During Covid** | | | |
| BTC | -1.021 | -1.029 | -2.860 |
| ETH | -0.625 | -0.534 | -2.860 |
| BNB | -0.793 | -0.715 | -2.860 |
| ADA | -1.205 | -1.082 | -2.860 |
| **Post Covid** | | | |
| BTC | -1.853 | -1.901 | -2.860 |
| ETH | -3.2036 | -3.214 | -2.860 |
| BNB | -3.608 | -3.609 | -2.860 |
| ADA | -3.320 | -3.310 | -2.860 |

This analysis discusses the results from Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests applied to the daily closing prices of major cryptocurrencies—Bitcoin (BTC), Ethereum (ETH), Binance Coin (BNB), and Cardano (ADA)—during two distinct periods: "During COVID-19" and "Post COVID-19". These tests are important when it comes to the stationary test of time series data before any type of time series analysis such as; forecasting and modeling.

Relative to time series analysis, stationarity is a key assumption that states that properties of the series such as the mean, variance, or standard deviation, and the autocorrelation function, among others, are constant through time. This is because financial time series data are non-stationary and cause unreliable and spurious results in the predictive models. Therefore, we first check whether the time series is stationary or not as it is a necessary procedure before another diagnosis.

The ADF and PP are techniques by which tests for the presence of a unit root in a time series are conducted and the null hypothesis is that the series contains a unit root implying that the series is non-stationary. The ADF test uses an autoregressive model and chooses an information criterion

over various lag orders to offset the existence of higher-order dependent variables while the PP test modifies the test statistics of ADF correcting serial correlation and heteroscedasticity without incorporating lagged difference terms into the model.

The critical value of the given test at a 5% level of significance is -2. 860 for both tests. This means that if the test statistic is less than -2; It is assumed that when the test statistic is equal to or less than -2 we will fail to reject H0. At 860 we fail to support the null hypothesis that the variable has a unit root and therefore can be stationary.

ADF and PP test statistics equal to -1. 021 and -1. 029, respectively, are higher than the tabulated critical value. This means that we cannot reject the null hypothesis of a unit root for BTC in the course of COVID-19 and therefore remains non-stationary. Like BTC, for all three coins, namely ETH, BNB and ADA, their respective test statistics exceed the critical value, thereby suggesting that their prices were non-stationary during the COVID-19 pandemic period.

On the contrary, the test results show a different story notably evidenced by Ethereum, Binance Coin, and Cardano in the period after COVID-19. Nevertheless, the results display non-stationarity indicated by the negative values for ADF and PP statistics of -1. 853 and -1. 901 respectively; which fail to surpass the critical bound. All these cryptocurrencies present test statistics which are less than the critical value and ETH has -3. 2036 and -3. 214, BNB at -3. 608 and -3. These outcomes imply a rejection of the null hypothesis, and we could conclude that the cryptos enumerated above became stationary after the period of the COVID-19 outbreak.

ETH, BNB, and ADA being non-stationary during COVID-19 but moving to capture a stationary characteristic post-COVID-19 could be an indication of several things. This transition could be attributed to some kind of stabilization in the cryptocurrency market after the initial alert caused by the COVID-19 pandemic, which may be due to the increase in maturity of the market and subsequent regulations or improved economic situation. On the other hand, non-stationarity in Bitcoin price may be due to its nature of being a ‘digital gold’ which may have retained its vulnerability to various market sentiments and other macro-economic factors.

**VAR**

| Variables | Coef. | Z | P>\|Z\| |
|---|---|---|---|
| **During Covid** | | | |
| BTC | 0.9555 | 26.36 | 0.000 |
| ETH | 0.8898 | 24.68 | 0.000 |
| BNB | 0.8459 | 23.59 | 0.000 |
| ADA | 0.8931 | 24.75 | 0.000 |
| **Post Covid** | | | |
| BTC | 0.9913 | 26.75 | 0.000 |
| ETH | 0.9854 | 26.62 | 0.000 |
| BNB | 0.8989 | 24.35 | 0.000 |
| ADA | 0.9756 | 26.33 | 0.000 |

The provided data details coefficients, Z-statistics, and P-values from a vector autoregression (VAR) analysis conducted on four major cryptocurrencies—Bitcoin (BTC), Ethereum (ETH), Binance Coin (BNB), and Cardano (ADA)—during two distinct periods: "During COVID-19" and "Post Covid-19" Our model of analysis is the so-called 'time series analysis' because it analyzes different changes over time and is a form of time series vector autoregression (VAR) analysis to look at the interactive effects of several economic time series variables during an intermediate period "During COVID-19".

The coefficients are labelled Coef. and represent how strongly the past values of each cryptocurrency are related to their current value. The larger the coefficients, the higher the degree of current price dependence on its past values. Z-statistics (Z) gives the level of standard deviation from each coefficient that deviates from zero and this shows the significance observed. P-values (P>|Z|) check the hypothesis that each coefficient is equal to zero implying that it does not have an effect. A p-value of 0.000 indicates that there is strong evidence to reject the null hypothesis hence supporting the relationships.

All cryptocurrencies present unique coefficients that state a highly strong level of past dependence on each crypto coin. If we take the Coefficient of determination, BTC holds the highest dependency of 0. 9555, while ADA stands at the average worth of 0 thereby indicating a strong brand image of the company. 8931, ETH at 0.8898, while BNB's market share price came to 0. 8459. These high Z-values provide additional support to the stability of these relations, indicating a high level of autoregressive behaviour in the course of the reshuffling of prices amid a pandemic.

After the COVID-19 period, the coefficients are generally higher especially for BTC and ETH indicating even stronger autoregressive dynamics with the coefficients of 0. 9913 and 0. 9854, respectively. This implies that the per cent change in the prices of BTC and ETH is more inclined in their preceding prices as the market possibly moved to a ranging or low volatility phase. BNB and ADA also retain considerable coefficients, while ADA slightly decreases its dependency ratio as compared to the COVID-19 period.

**Findings**

The debate on the investment trends of cryptocurrencies and more especially Bitcoin and the more conventional haven asset such as gold has been quite active in the last few years, coupled with much research done on the same subject. This is so because digital currencies and the overall economies driven by events such as the COVID-19 pandemic are very unstable.

Bitcoin and other cryptocurrencies have received so much attention given their ability to serve as investment assets outside the traditional financial institutions. The study by Shahzad et al. (2019) made a comparison of the higher volatility of Bitcoin with the traditional commodities and it was determined that Bitcoin and gold might be used as better safe havens although this attribute can be relative and volatile over time. In the same vein, Guesmi et al. (2018) also took this study further by comparing Bitcoin to other asset classes such as gold, oil and stocks in emerging economies and the results implied that overall, Bitcoin is less risky for investment.

However, the idea of Bitcoin being a haven is not well accepted. Smales (2018) noted that since Bitcoins are highly volatile, have high transaction costs and lower liquidity to qualify as 'safe havens'. Similar to this opinion, Bouoiyour & Selmi (2020) examined the Bitcoin during the period of the COVID-19 outbreak and established that Bitcoin revealed high volatility along with a slow-

reacting pattern towards the various market disturbances to be classified as a safe-haven asset efficiently.

Another research growth area has been the link between Cryptocurrencies and Economic Policy Uncertainty (EPU). Some studies examining the relationship between cryptocurrencies and EPU include Kelly et al., (2016), Goodell Et al., (2020) while Wang et al., (2020) established a positive association between EPU and bitcoin investment returns indicating that a high EPU period is associated with high investment returns on bitcoin. Subsequently, Aysan et al. (2019) extend the analysis regarding the role of geopolitics for Bitcoin and establish that geopolitical risks result in higher volatility and returns of Bitcoin.

Bouri et al. (2017) also pointed out that the Bitcoin equities have a positive response to uncertainty especially at the higher quantile and at the short frequencies. This corresponds with Chan et al. (2017) who after analyzing the mean and variance of cryptocurrencies reiterated that cryptocurrencies returns are non-normal and that the generalized hyperbolic distribution is the most suitable model for the major cryptocurrencies such as bitcoin, Litecoin among other.

In terms of portfolio diversification, Briere et al. (2015) undertook an evaluation of the role that Bitcoins played and found that they provided high yields and near zero links with other classes of investments. This discovery implies that whereas Bitcoin is highly unpredictable, it offers standalone values within the construction of an assortment of performance portfolios, namely in conditions of volatile markets or subpar producing usual financial assets.

In the past, gold was viewed in the context of a safe-haven asset, which gets demand during the economic crisis (Baur & McDermott, 2010). They also hold appreciable value in association with other depreciable currencies thus acting as a hedge against inflation and devaluation of currencies. Beckmann et al (2011) also vindicated the view that gold and silver give better returns during the high level of market risk than equities and bonds. This further underline the use of gold and other such metals traditionally as tools of investment, especially during a volatile market environment.

**Conclusion and Recommendation**

From the cryptography coins' detailed examination, especially Bitcoin, and the comparison with the traditional haven investment, including gold, complex patterns in investment during volatility

can be observed, including during the COVID-19 pandemic. As much as cryptocurrencies have been embraced as new decentralized digital currencies with potentially high yields, their fluctuating nature is problematic and can cause more problems in crises as evidenced in the current COVID-19 period.

These statistics coupled with the non-stationary nature of cryptocurrencies due to their price volatility during the pandemic period concluded using the Augmented Dickey-Fuller and Phillips-Perron tests imply that they can easily respond to changes in customer preferences and market conditions. This was especially evident during the Covid-19 when traditional markets were also threatened but suffered less fluctuation compared to digital currencies such as Bitcoin, and Ethereum among others.

As much as the examples show that there are possibilities of high returns on investments, the rationale used shows the need to be very careful. This means that investors should maintain a balance of these two types of assets, especially with emerging markets such as the crypto market. This could help to avoid risks while at the same time harnessing growth opportunities offered by digital currencies in periods of market recovery and the future. Second of all, the stable character of gold and its history of being used when there is trouble gives the right balance to the high risk correlated with cryptocurrencies.

To the policymakers and the financial regulators, there are signs of improvement in the existing frameworks guiding the cryptocurrency markets. That more effective framework can contribute to the stabilization of such markets and can be an incentive towards transforming such markets from mere speculative ones to becoming more productive ones to the wider pool of investors. Efforts to educate the investors on the nature of risk and returns of investing in cryptocurrencies should also be pursued to help cultivate a more informed base of investors.

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