Investment in Chinese Traditional Stock Markets and Alternative Markets under the COVID-19 Crisis

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Abstract: The past three-year period has witnessed a COVID-19 health crisis, which has also affected Chinese economic development, leading to the downturn of Chinese stock markets. This has changed public attitudes towards risks in investment, accompanied by investors' shift in different kinds of assets, among which are the alternative assets. This paper manages to construct investment portfolios under the COVID-19 crisis with Chinese traditional stock markets and particular alternative assets - real estate, gold, and bitcoin - testing whether and how these alternative assets are worthy to be included in the investment portfolio for different purposes. Using Markowitz's Mean-Variance model and a series of standardized analyses, it has been found that the Chinese stock market and real estate market experienced a downturn from the beginning of the COVID-19 in the short run. The price of gold and bitcoin have relatively small correlations with other indexes as a hedge for investment portfolios, and bitcoin far outweigh other assets for its higher returns and Sharpe Ratio during the pandemic. A possible explanation of COVID-19 impacts on Bitcoin has also been proposed. It is suggested that investors could take a wait-and-see attitude toward the Chinese traditional stock market and real estate market, while Bitcoin deserves prudent investment in this stressful period.

1. Introduction

1.1 Chinese Stock Market Under COVID-19

The past three-year period has witnessed a COVID-19 health crisis, which has also disrupted Chinese economic development. Although several governmental measures have effectively restricted the dissemination of the coronavirus, there is still a decline of Chinese GDP by 6.8% during the first quarter of 2020 [1]. By increasing uncertainty and volatility, the COVID-19 epidemic raises the investment risk of stocks, making negative impacts on most of the Chinese stock markets. These are noticed by the policymakers and the private investors as shown by the "2021 White Paper on the New Middle Class" that the disposable income for investment has declined in 2020 and rebounded slightly in 2021 among the new middle class, revealing public awareness of risk in investment. The assessment of the worldwide economic effect of the coronavirus outbreak by Louhichi et al. has revealed the impact of the fear sentiment of Covid-19 on stock market performance [2]. Hence, more investors began to shift to alternative assets such as real estate, Bitcoin and gold to hedge this risk from traditional equity and bonds.

1.2 Alternative Assets

Alternative assets are a subset of an existing asset class, be it different from bonds, stocks, etc, especially in the investment strategies [3]. Different types of alternative assets provide various functions for investors to reduce investment risks, store purchasing values, etc. Among various alternative assets in China, three particular alternative assets are chosen to be analysed with Chinese traditional shares: Gold and Bitcoin are two of the best-known alternative assets in risk management all over the world while real estate serves as the main component of government income and citizens' wealth in China, taking a large part of Chines Gross Domestic Products.

1.2.1 Gold

Gold is a valuable metal that is utilized as both a property and a financial asset for investors and central banks. Even being deprived of the ability of exchange after the crash of the gold standard, there is consensus on the value of the investment in this hoarding asset. Following the financial crisis and people's need for more secure investment options, gold demand has been on the rise in recent years, stimulating most studies and research on its ability to hedge. These academic studies into the role of gold in investment can be divided into opposite groups. On one hand, some have pointed out the hedging and safe-haven role of gold, by confirming the weak or negative correlations between gold and other assets [4-6]. Arouri et al. examine and find significant volatility transmission between the Chinese stock market and the world gold market with the VAR–GARCH framework, proving the characteristics of gold as both dynamic and save-heaven enough to contribute to the risk-adjusted performance of a well-diversified stock portfolio since gold market outperforms traditional stock portfolios [7]. Beckmann and his colleagues delve into the relationship between gold and Chinese sectorial stocks from 2009 to 2015, confirming the weak tail dependence between the two assets, underling the role of gold as a risk-reducing asset in addition to the Chinese stock portfolios [8]. Yousaf et al. delves into the safe-haven and hedging roles of gold against Asian stock markets, showing gold's ability to hedge portfolio returns during the COVID-19 outbreak [9]. This function of gold outweighs that of oil and that of Bitcoin in this period but varies in the long run [9,10].

On the other hand, some recent studies have argued that gold is believed to lose its traditional ability in hedging the negative effects of the stock market since a financial crisis in 2015 as well as during the period of COVID-19, implying a higher marginal risk of investment in gold [11-13]. Bekiros et al. and Shahzad et al. have explained the weakness of gold to hedge by the quickening in the financialising process of the commodity market and the reaction of gold prices to the different events of the recent years [12,13]. Zhang et al. has checked the volatility spillovers among gold spots, gold futures, stock, bond, and oil in China in each period, denying the spillovers from gold to either stock or bond and therefore concluding that gold, although as a good diversifier in reducing risk, has a limited role in hedging or protecting due to the weak interrelation of Chinese stocks and Chinese bonds [14].

1.2.2 Bitcoin

Bitcoin is a type of new digital currency, known as an electronic cryptocurrency, and is the first digital currency to be circulated globally. Similar to global exchange rates, the exchange rate of Bitcoin against the Chinese yuan or other currencies is determined by supply and demand. Despite Chinese prohibition on the transaction of Bitcoin, it has still been traded and has become one of the 10 most preferred assets among the Chinese middle class in 2018 [15].

Previous studies focused on Bitcoin have delved into the behaviour and role of Bitcoin in financial markets, as well as making the comparison with other assets. The characteristics drawn from the behaviour of cryptocurrencies, most represented by Bitcoin, has agreed with its speculative bubbles and higher volatility than that of many other assets such as oil futures [16,17]. Bitcoin has been widely accepted as a useful hedge for equities and bonds, improving portfolios' performance by reducing risks [18,19].

However, the superiority of Bitcoin compared to gold in terms of portfolio diversification hedging ability has been confirmed to be time-limited before it crashed in 2013 [20,21]. Opponents of Bitcoin regard it as worthless to be considered as a safe haven due to its high volatility, low liquidity, and high transaction costs even in the normal market conditions [22]. It has higher volatility than gold, exchange rates, and most of the stocks [23,24]. Symitsi and Chalvatzis have claimed that its high volatility will not be offset by its low correlation, by which it reduces the risk of investment portfolio [25].

1.2.3 Real Estate

Real estate property for investment is the most popular asset held by the new Chinese middle class in 2018. According to the Chinese National Bureau of Statistics, the GDP transaction that arose from the housing industry has taken up 7.5% of the total GDP in 2020 in China although there is a sharp decline in the price of houses in many cities in China.

1.3 Research Gap

Research into the impacts of COVID-19 on investment mainly focuses on specific behaviour and prospects of Chinese stock markets, or the behaviour and comparison among Bitcoin, Gold, and other indices, including US dollars and oil futures. There are very a few studies analysing the investment in real estate under COVID-19 with the new government policies or to make a clear comparison of it with gold and Bitcoin. Pho et al. compare Bitcoin and gold in terms of diversified portfolios in China, showing the lower risks of gold as a better portfolio diversifier than Bitcoin, which, on the other hand, better increases the return and the risk [15]. The stochastic dominance results suggest that portfolios diversified by gold outperform portfolios diversified by Bitcoin. This outcome is proven to be resistant to the influences of time, frequency, and currency, providing investors with a clear index while making decisions.

Due to the truth that Chinese investors are less likely to invest in foreign assets, only the three most representative composite indexes in the Chinese stock market will be considered in this study. Thus, the comparison among the three alternative assets in the Chinese stock market under the circumstance of COVID-19 may aid Chinese governments and investors in making decisions towards investment and savings.

While Section 1 has analyzed the background and previous studies, the remainder of the paper is organized as follows to examine the problem. Section 2 explains the data and method used to get empirical statistics. The discussion of the results will be presented in Section 3. Section 4 makes the concluding remarks.

2. Data and Methodology

2.1 Data

The data set of this paper consists of 6 groups of closing daily prices in time series accessed from Investing.com, and it contains indexes of three traditional assets and real estate in China, gold, and Bitcoin from December 2019 to January 2021. The roles that Bitcoin, Gold, and real estate can act in Chinese stock markets since the outbreak of COVID-19 are examined with the representative stock indices: Shanghai Stock Exchange T-Bond Index (SSEBI), China Securities 300 Index (CSI300), and Shanghai Stock Exchange Composite Index (SSEC). The indices are extracted from the Investing.

To indicate the relative investment performance of each index since the outbreak of COVID-19, Section 2.2 explains how the standardized asset value is examined and section 2.3 demonstrates the formulas calculating the daily returns for the indices.

2.2 Standardization

The composite index of Chinese stock markets and alternative assets are standardized concerning the closing price of 3rd December 2019 for a clear demonstration of returns and volatility. The relative price is calculated as the percentage of this closing price, shown by Equation (1), in which P represents the closing price of stocks or alternative assets and R depicts the relative price changes within each index.

$$R_i = \frac{P_i}{P_1} \tag{1}$$

2.3 Markowitz's Mean-Variance Model

Daily returns are calculated as the Chinese Yuan change in the price of consecutive days as a percentage of the closing price of the previous day, given by the equation:

$$R_i = \frac{P_i - P_{i-1}}{P_{i-1}} (i > 0) \tag{2}$$

*R, P, and i represent the daily returns, the closing price of the stocks and indices, and the day since 3rd December 2019.

To test the expected returns and volatility, the mean and standard deviation of the calculated daily returns has been derived by R software. The Sharpe ratio, which represents the return of an investment compared to its risks, has also been derived, aiming at better measuring the performance of the stocks and assets during this period. The equation is given as:

$$S_p = \frac{R_p - R_f}{sd} \tag{3}$$

*S_p, R_p, R_f, and sd represents the Sharpe ratio, mean returns of the Portfolio, returns of risk-free stocks (which is deliberately set to be equal to the mean returns of Shanghai Stock Exchange T-Bond Index (SSEBI)), and the standard deviation of the mean returns for each asset, respectively.

By selecting 5000 groups of random weights with the sum equal to one, the model of the investment portfolio has been made via R Software. 6 randomly selected weights in each group will be assigned to each stock or asset, representing the proportion of investment. To satisfy the demand for high returns, minimal risks, and high returns per unit of risk, the portfolio with the highest mean, lowest standard deviation, and highest Sharpe ratio are selected.

The correlation between the portfolio is also calculated to check the basic hedging ability of alternative assets.

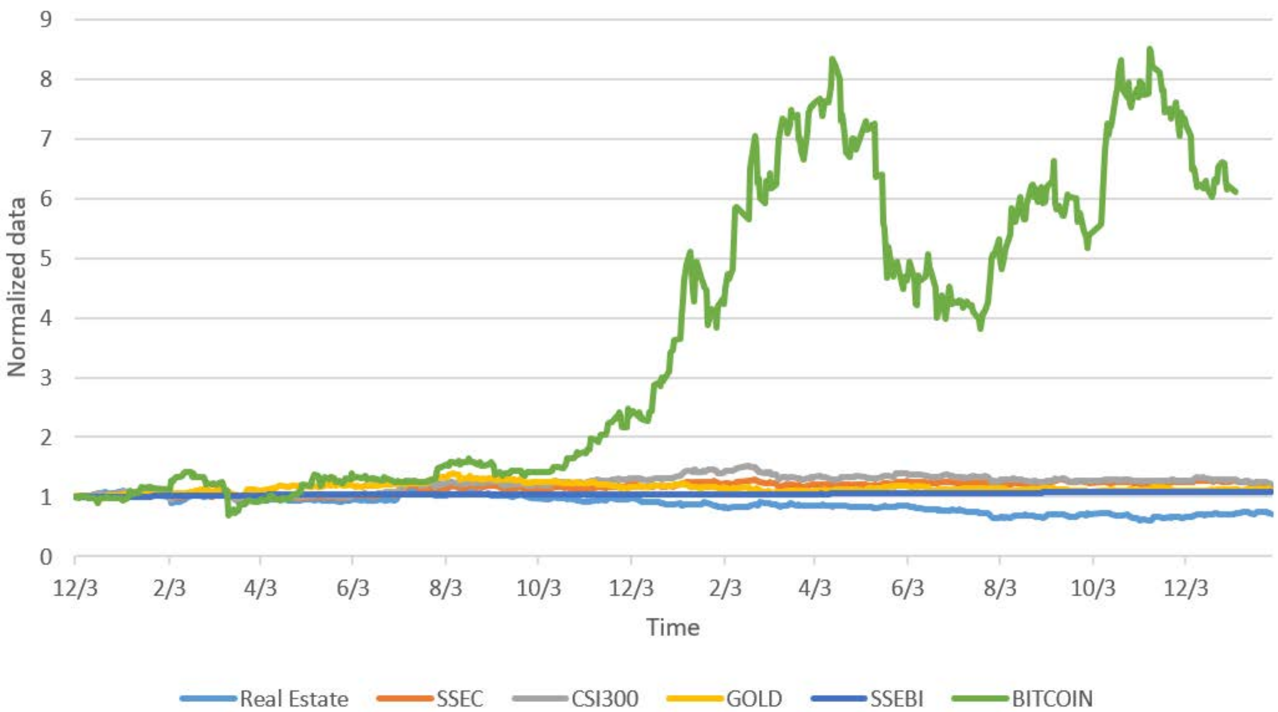

Figure 1 Standardization of the Composite index of Chinese stocks and alternative assets

Table 1. Daily Returns, Risks, and Sharpe Ratio of Chinese stocks and alternative assets

Assets	SSEBI	SSEC	CSI300	Gold	Bitcoin	Real Estate
Mean of Daily Returns (%)	0.1629	0.5205	0.5726	0.2788	4.7313	0.5129
Standard Deviation	0.0004	0.0110	0.0129	0.0100	0.0475	0.0162
Sharpe Ratio	0.3969	0.0473	0.0444	0.0279	0.0997	-0.0317

Table 2. Correlations of Chinese stocks and alternative assets

	SSEC	CSI300	SSEBI	Real Estate	Gold	Bitcoin
SSEC	1	0.9601	-0.1517	0.6265	0.0842	0.0089
CSI300	0.9601	1	-0.1344	0.5705	0.0786	0.0112
SSEBI	-0.1517	-0.1344	1	-0.1088	0.1041	-0.0226
Real Estate	0.6265	0.5705	-0.1088	1	0.0132	-0.0408
Gold	0.0842	0.0786	0.1041	0.0132	1	0.0847
Bitcoin	0.0089	0.0112	-0.0226	-0.0408	0.0847	1

3. Results and Discussions

3.1 Standardization

Figure 1 has illustrated the results. Since the outbreak of COVID-19, Chinese traditional stock markets, as well as the investment in real estate, kept wobbling and falling despite the risk-free stock – national T-Bond. While the first wave of decline was in February, a short-term resurgence was followed by an around-four-month beer market. During this period, the price of gold had the trend to increase while the relative change of Bitcoin fluctuated within 50% of the original price. During the post-COVID-19 period, there is an increase and then decrease in the price of Chinese traditional stocks and the gold market, while the latter decrease earlier. The price of the real estate index keeps dropping and has no trend to resurge.

In comparison, the price of Bitcoin soared exponentially since July 2020, fluctuating dramatically and even reaching more than 8 times its original price. The relative price change has been compared, clearly showing the notable change in the price of Bitcoin, implying the profitable returns of investment in Bitcoin since 2020. It has also revealed the significant difference between the change of the price of Bitcoin and that of other assets.

3.2 Markowitz's Mean-Variance Model

As shown in Table A, the average daily return of Bitcoin (4.7313%) is almost 10 times the returns of other indices, with its large standard deviation of 0.0475, while the Sharpe ratio of the Shanghai Stock Exchange T-Bond Index (SSEBI) is far higher than other assets. The model of the investment portfolio which try to sort the investment proportion with the highest returns, therefore, has shown its 100% preference in investing all in Bitcoin during these three years, which, according to the diversification effect, is unrealistic. Similarly, the model has chosen almost full investment (99.27%) in Shanghai Stock Exchange T-Bond Index (SSEBI) for the lowest variance, reflecting its stability.

The results of the correlation testing have proved the weak connection between the price changes of Gold, Bitcoin and traditional stocks, respectively. To be specific, the correlation between bitcoin and other assets is even smaller than that of gold, implying its stronger hedging and diversified ability than gold. The correlation of the Stock Exchange T-Bond Index (SSEBI) is also relatively low compared to the other three assets. The price changes of real estate have a fairly strong positive relationship with that of China Securities 300 Index (CSI300), and that of Shanghai Stock Exchange Composite Index (SSEC), be it 0.5705 and 0.6265, separately. In other words, real estate may not be able to hedge for the Chinese traditional market, and its price tends to vary with that of Chinese traditional stocks. It can be speculated from its high standard deviation that although the returns have reached 6 times than before the COVID-19 crisis, for the future prospect, Bitcoin is believed to have high volatility and continue to fluctuate rather than remain stable or increasing.

3.3 Impacts of COVID-19

The Chinese and global stock market has become more uncertain and volatile because of the COVID-19 epidemic. The period from December 2019 to July 2020 has witnessed a sharp decline and fluctuation in Chinese traditional stock markets, which supports the strong correlation of COVID-19 outbreaks and the negative returns in the Chinese stock market in the short run. Although the price has rebounded since 2020, the Chinese traditional stock market, as well as the Chinese housing market do not have desired prospects for investment during the three-year period. Due to various shut-down of working areas during the epidemic, relatively lower-income might hinder investors to take the risk in the stock market. The gold, which was believed to be the “most popular hedge” for the investment portfolio, has successfully diversified the investment portfolio during the COVID-19 crisis. However, it still fails to provide returns high enough to offset all the possible impacts of the downturns of the stock market and safeguards gains.

In contrast, the situation for Bitcoin is different. Since the crash of Bitcoin price in 2013, the price of Bitcoin has been stagnated for many years [20]. In the short run from 2020, there existed unexpected soaring price and high volatility in the investment of Bitcoin, although yielding relatively high returns than other indices, verifying the speculative bubbles and uncertainty of Bitcoin. In particular, investment in Bitcoin during the COVID-19 can hedge the negative growth of traditional Chinese stocks and bonds as well as make great profits.

By analysing the volume of trade (accessed from Investing.com), it can be concluded that the price of Bitcoin was trending gradually high due to speculative behaviour for the virtual mining industry in January 2020, a large amount of selling by investors. However, as the epidemic progressed, this upward trend did not continue and instead fluctuated in March. This can be attributed to the fear sentiments of high risks in investment during economic downturns as investors hesitate to take the risks for possible higher returns. Statistics have shown that the volume of trade for Bitcoin tends to increase due to strong fear and concerns of COVID-19 [2,24]. At this stage of the epidemic, the returns for the virtual mining industry have experienced a half-decline, reducing from 1800 bitcoin to 900, leading to short supply and thereby rapid rising price in the market. Compared to the liquid supply of currencies, Bitcoin has limited supply, be it 6.25 bitcoin per 10 minutes in “drug mines”, which allows it to store value, safeguarding the purchasing power against inflation. Policymakers have also boosted the price changes of Bitcoin, not only regulatory decisions but also policy to tackle the problems of COVID-19. At the beginning of the COVID-19, policymakers around the world have announced a series of the economic stimulus plan, aiming at boosting the recovery of economics. For example, the United States has decided to invest two trillion dollars in infrastructure construction for the revitalisation of the economy. This tends to contribute to more demand for Bitcoin as the US dollars depreciate with rising inflation.

4. Conclusion

This study uses a standardized analysis and Markowitz’s mean-variance model, attempting to construct an investing model for Chinese stock markets since the end of 2019. The returns, risks, and Sharpe ratios of some particular stocks favoured by the Chinese are listed and compared. The result has shown that the unexpected outbreak of the pandemic is accompanied by downturns of the Chinese traditional stock market, including the market of real estate, but it has a weak correlation with the safe hedge---- Gold and Bitcoin. The relatively high Sharpe ratio of Bitcoin has implied the advantages of Bitcoin as both an alternative investment or the hedge of the portfolio in terms of high returns during the downturn of Chinese stock markets. Moreover, attempts are made to examine the reasons why Bitcoin has experienced significant changes in COVID-19 stock markets and to predict the prospects of investment. It is wise for investors and corporations to take a wait-and-see attitude towards the Chinese traditional stock market or invest in a diversified portfolio. Investment in Bitcoin is encouraged at the present while the investors have to realize the characteristics of speculative bubbles and volatility of Bitcoin. It is hard to predict and tend to vary with international relations, national decisions, the development of and the public emotion towards COVID-19, etc. Further research is going to consider the impacts of geographical shocks in post-COVID-19 period on the Chinese investing market.

References

[1] A. D. Kaye, C. N. Okeagu, A. D. Pham, R. A. Silva, J. J. Hurley, B. L. Arron, N. Sarfraz, H. N. Lee, G.E. Ghali, J. W. Gamble, H. Liu, R. D. Urman, E. M. Cornett, Economic impact of COVID-19 pandemic on healthcare facilities and systems: International perspectives, Best Practice & Research Clinical Anaesthesiology, vol. 35, no. 3, 2021, pp. 293-306. DOI: 10.1016/j.bpa.2020.11.009.

[2] W. Louhichi, Z. Ftiti, H. ben. Ameur, Measuring the global economic impact of the coronavirus outbreak: Evidence from the main cluster countries, Technological Forecasting & Social Change, vol. 167, 2021. DOI: 10.1016/j.techfore.2021.120732

[3] M.J.P.Anson, F.J. Fabozzi, F.J. Jones, The handbook of traditional and alternative investment vehicles: investment characteristics and strategies, John Wiley & Sons, vol. 194, 2010.

[4] D.G.Baur, B.M.Lucey, Is gold a hedge or a safe haven? An analysis of stocks, bonds and gold. Financial Review, vol.45, no.2, 2010, pp.217–229. DOI: 10.1111/j.1540-6288.2010.00244.x

[5] D.G.Baur, T.K.McDermott, Is gold a safe haven? International evidence, Journal of Banking and Finance, vol. 34, no.8, pp.1886–1998, 2010. DOI: 10.1016/j.jbankfin.2009.12.008

[6] D.Hillier, P.Draper, R.Faff, Do precious metals shine? An investment perspective, Financial Analysts Journal, vol.62, 2006, pp.98-106. DOI: 10.2469/faj.v62.n2.4085

[7] M.H.Arouri, A. Lahiani, D. K. Nguyen, World gold prices and stock returns in China: Insights for hedging and diversification strategies, Economic Modelling, vol.44, 2015, pp.273–282. DOI: 10.1016/j.econmod.2014.10.030

[8] J. Beckmann, T. Berger, R. Czudaj, T.-H.-V. Hoang, Tail dependence between gold and sectorial stocks in China: perspectives for portfolio diversification, Empirical Economics, vol.56, no.3, 2017, pp.1117–1144. DOI: 10.1007/s00181-017-1381-8

[9] I.Yousaf, E.Bouri, S.Ali, N.Azoury, Gold against Asian Stock Markets during the COVID-19 Outbreak, Journal of Risk and Financial Management, vol.14, no.4, 2021. DOI: 10.3390/jrfm14040186

[10] T. Klein, T. P. Thu, T. Walther, Bitcoin is not the New Gold – A comparison of volatility, correlation, and portfolio performance, International Review of Financial Analysis, vol. 59, 2018, pp. 105-116, ISSN 1057-5219, DOI: 10.1016/j.irfa.2018.07.010.

[11] N.Shrydeh, M.Shahateet, S.Mohammad, M.Sumadi, D.McMillan (Reviewing editor), The hedging effectiveness of gold against US stocks in a post-financial crisis era, Cogent Economics & Finance, vol.7, no.1, 2019. DOI: 10.1080/23322039.2019.1698268

[12] S.Bekiros, S. Boubaker, D.K.Nguyen, G.S.Uddin, Black swan events and safe havens: The role of gold in globally integrated emerging markets, Journal of International Money and Finance, vol.73, 2017, pp.317-334. DOI: 10.1016/j.jimonfin.2017.02.010

[13] S.J.H.Shahzad, E.Bouri, D.Roubaud, L.Kristoufek, B.Lucey, Is Bitcoin a better safe-haven investment than gold and commodities?, International Review of Financial Analysis, vol. 63, 2019, pp.322-330, DOI: 10.1016/j.irfa.2019.01.002.

[14] Y. Zhang, M. Wang, X. Xiong, G. Zou, Volatility spillovers between stock, bond, oil, and gold with portfolio implications: Evidence from China, Finance Research Letters, vol. 40, 2021, . DOI: 10.1016/j.frl.2020.101786

[15] K. H. Pho, S. Ly, R. Lu, T. H. van. Hoang, W.-K. Wong, Is Bitcoin a better portfolio diversifier than gold? A copula and sectoral analysis for China, International Review of Financial Analysis, vol. 74, 2021, 101674. DOI: 10.1016/j.irfa.2021.101674

[16] G.P.Dwyer, The economics of Bitcoin and similar private digital currencies. Journal of Financial Stability, vol.17, 2015, pp.81-91. DOI: 10.1016/j.jfs.2014.11.006

[17] K.H.Al-Yahyaee, W.Mensi, S.M.Yoon, Efficiency, multifractality, and the long-memory property of the Bitcoin market: A comparative analysis with stock, currency, and gold markets. Finance Research Letters, vol.27, 2018, pp.228–234. DOI: 10.1016/j.frl.2018.03.017

[18] L. Fang, E.Bouri, Gupta, D.Roubaud, Does global economic uncertainty matter for the volatility and hedging effectiveness of Bitcoin? International Review of Financial Analysis, vol. 61, 2019, pp.29- 36. DOI: 10.1016/j.irfa.2018.12.010

[19] K. Guesmi, S. Saadi, I. Abid, Z.Ftiti, Portfolio diversification with virtual currency: Evidence from bitcoin. International Review of Financial Analysis, vol.63, 2019, pp.431–437. DOI: 10.1016/j.irfa.2018.03.004

[20] E. Bouri, N. Jalkh, P. Molnar, D. Roubaud, Bitcoin for energy commodities before and after the December 2013 crash: Diversifier, hedge or safe haven, Applied Economics, vol.49, no.50, 2017, pp.5063–5073. DOI: 10.1080/00036846.2017.1299102

[21] J.Bouoiyour, R.Selmi, M.E.Wohar, Safe havens in the pace of presidential election uncertainty: A comparison between Bitcoin, oil and precious metals. Applied Economics, vol.51, 2019, pp.6076–6088. DOI: 10.1080/00036846.2019.1645289

[22] L.A.Smales, Bitcoin as a safe haven: Is it even worth considering?, Finance Research Letters, vol.30, 2019, pp.385–393. DOI: 10.1016/j.frl.2018.11.002

[23] E.Symitsi, K.J.Chalvatzis, The economic value of Bitcoin: A portfolio analysis of currencies, gold, oil and stocks, Research in International Business and Finance, vol.48, 2019, pp.97-110. DOI: 10.1016/j.ribaf.2018.12.001

[24] C. Chen, L. Liu, N. Zhao, Fear Sentiment, Uncertainty, and Bitcoin Price Dynamics: The Case of COVID-19, Emerging Markets Finance and Trade, vol.56, no.10, 2020, pp.2298-2309, DOI: 10.1080/1540496X.2020.1787150