Julia Parzonka

e-mail: 182117@student.ue.wroc.pl

Uniwersytet Ekonomiczny we Wrocławiu

Can Cryptocurrencies Be Treated as a Safe Haven?*

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Abstract: In late February 2022, the escalation of the Eastern European conflict triggered a global stock sell-off. Over the course of the day, the MOEX plummeted by 33%, WIG20 recorded an 11% drop and the VIX fear index surged. Instinctively, investors began to relocate the capital to traditional safe assets. This article aimed to verify whether cryptocurrencies can be treated by investors as a financial safe haven. The article presents the post-war-outbreak behavior of major cryptocurrencies in comparison with selected stock market indices and traditional safe havens. Three hypotheses were tested: whether cryptocurrencies can be a safe haven during crises, whether certain types of cryptocurrencies are outperforming others at protecting capital, and how the time horizon affects their properties. Despite the uncertainty in the scientific world, the article proves that cryptocurrencies do not meet the criteria for safe havens. The analysis and modeling were based on the DCC-GARCH approach.

Keywords: safe haven, cryptocurrency, dynamic correlation, DCC-GARCH, financial market

1.   Introduction

In late February 2022, the escalation of the Eastern European conflict triggered global stock sell-off, leading investors in Poland and Russia to liquid their shares in panic. Firstly, the Russian stock market experienced a significant decrease in the value of its main index, MOEX, which plumped down by 33.28%. The same day, the Warsaw Stock Exchange's main index, the WIG20, recorded a loss of 10.87%. Simultaneously, the VIX index also referred to as the "fear gauge", surged, and usually, drastic declines in stock markets accompany such behavior. Thus, a general

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increase in risk aversion was noted what with the ongoing unstable geopolitical situation continuing to wreak havoc on global markets. The question of which assets can provide a financial safe haven has never been more relevant. Instinctively, investors transferred capital to assets that are considered safe in such situations, such as Swiss franc and gold. Yet, could cryptocurrencies offer something that traditional safe haven assets cannot?

This article's main and primary goal is to examine whether cryptocurrencies, as a new asset class, can be recognized by an investor as a safe haven asset. The time period to be studied is connected with the outbreak of war in Eastern Europe.

In the article, three hypotheses have been verified. The first hypothesis focuses on determining whether the largest cryptocurrencies, namely Bitcoin, Ether, and Tether, demonstrated the safe haven features during the commencement of the Russian-Ukrainian war.

The second hypothesis aims at verifying whether certain types of cryptocurrencies outperform others in terms of capital protection during times of crisis. Since the cryptocurrency market has expanded and developed over the years, numerous types of coins with varying natures and behaviors have emerged.

The third and last hypothesis aims to investigate the potential impact of the time horizon on the properties of cryptocurrencies as safe haven. If any of the cryptocurrencies can be considered a safe haven asset, it would be beneficial for investors to understand for how long the protection for the portfolio has been provided.

R program and Python have been used to provide a comprehensive analysis of the relationship between examined assets that required modeling time-series data. To be able to execute the research, a necessary script was written in those programs to verify the aforementioned hypotheses using the multivariate DCC(1,1) GARCH model under specific restrictions. The "*dccspec*" and "*dccfit*" functions were used to estimate and analyze the dynamic conditional correlations between different financial assets.

2.   Literature Overview

Since their inception, cryptocurrencies have gained a lot of attention. Assuming cryptocurrencies constitute a new class of assets, they might be expected to behave in some ways like traditional financial assets. For investors, this could mean that cryptocurrencies represent a new opportunity to diversify their portfolios or act as a safe haven during times of market crisis. In literature, both sides of the problem have been considered and different conclusions have been drawn upon the topic.

It is reasonable to divide the analysis period into two phases, before and after the outbreak of the COVID-19 pandemic. As the pandemic has been recognized as the most significant global crisis since World War II, it presents a unique opportunity

to assess the properties of cryptocurrencies as a safe haven or hedge against market downturns. Initially, Bitcoin has been compared to gold as those assets share some similarities. First, value is derived due to scarcity of supply, where supply is not controlled by any government but by independent agents. The supply of both assets is finite, in the case of Bitcoin, mining is limited by the design of its conceptual protocol. Given gold's well-known hedging capabilities against traditional assets, especially stocks and bonds, investors and scientists found it a tempting reason to believe that Bitcoin might exhibit similar correlations (Dyhrberg, 2015). Gold has also been found as a hedge against the U.S. dollar mostly because the production of this pair of assets is not controlled by the same institutions (Capie et al., 2005), Bitcoin as well. Another finding states that Bitcoin is a safe haven for the Canadian Dollar, Swiss Franc, and Great Britain Pound indicating that during periods of extreme crisis in each of these currencies, an investor might transfer their capital to Bitcoin (Urquhart and Zhang, 2019). Additionally, cryptocurrency exchanges are open anytime, therefore trading is continuous which makes it more accessible than any other asset. According to Corbet et al. (2018), crypto assets such as Bitcoin, Ripple, and Litecoin offer the advantage of being non-correlated with conventional assets. As a result, they can serve as an effective means to hedge a mainstream assets portfolio. Consequently, it has been revealed that the safe-haven role of Bitcoin, gold, and commodities are time-varying and differ across the stock market indices and in fact, each of Bitcoin, gold, and the commodity index can be considered as a weak safe-haven asset in some cases. Besides, Bitcoin has been believed to serve as a hedge against uncertainty in global equity market, both in times of extreme uncertainty and bear market, but on shorter investment horizons (Bouri et al., 2017). However, Bitcoin is not the only currency that has been taken under the loop, yet, due to its size, it is the most often considered. Nevertheless, Bitcoin and Ether have been found to be suitable as short-term safe havens during extreme stock market declines. Moreover, Ether was seemingly a better safe haven than Bitcoin during the pandemic, however, at the same time Ether volatility was the highest of examined assets such as Bitcoin, gold, and S&P500 before and during the pandemic (Mariana et al., 2021) arguing itself whether it could be treated as "safe".

It has been proved that cryptocurrencies could be treated as virtual gold. Implying that Bitcoin is the new gold, the consideration of whether it can also show a safe haven property has been put in question. Nevertheless, cryptocurrency may add some diversification benefits to a portfolio but given the lack of correlation, when it comes to hedging equity risk, Bitcoin and cryptocurrencies are more "fool's gold than digital gold" (Horstmeyer et al., 2022). Following the World Health Organization's declaration of a global pandemic, and a subsequent two-week period, it is noteworthy that neither Ether, Bitcoin, nor Litecoin have demonstrated a safe haven effect for European indices, as evidenced by a positive dynamic correlation (Yatie, 2022). Strong opponents argue that the cryptocurrency market,

as an example of mania, should not be considered a safe haven even if it were to meet the existing criteria. This is because the high cost of transacting in terms of fees and time during periods of high volatility and substantial volume could lead to the least desirable characteristics of Bitcoin appearing at the worst possible time, especially during a financial crisis (Smales, 2018). Additionally, other findings from the period during and after the COVID-19 pandemic state that Bitcoin and Ether are not safe havens for almost all of the indices. Bitcoin and Ether are not, in general, found to act as a safe haven for international equity markets (Conlon et al., 2020). Moreover, during a bear market, Bitcoin not only does not act as a safe haven but also moves in lockstep with the S&P500, increasing downside risk for an investor who allocated his capital to Bitcoin (Conlon and McGee, 2020). The absence of major crises at the time of observations calls into question the extent to which such positive results hold up in the context of more severe global crises, such as the COVID-19 pandemic or the Russian-Ukrainian war.

The turning point is happening when distinguishing stablecoins from typical cryptocurrency generalization. Even though those coins should be stable based on an algorithm rendering them stable by the design, they not always are and sometimes experience value fluctuations, though those are still relatively small compared to other assets in this class. The most recent research shows that stablecoins indeed act as weak safe havens when considering moments of financial market turmoil (Kołodziejczyk, 2023) and that including them in a portfolio can be beneficial. A portfolio created with Tether has outperformed both: a portfolio without any safe haven asset and a portfolio with traditional safe haven such as gold (Xie et al., 2021). Another study adds that Tether has safe haven properties across all indices examined during the COVID-19 bear market but may be redundant as an asset since it is pegged to the US dollar (Conlon et al., 2020). Stablecoins can indeed provide a reliable option for investors seeking to protect their portfolios during times of economic uncertainty. For optimization purposes, it has been tested that the portfolio made up of the top ten cryptocurrencies is the best for diversification, ether and Bitcoin alone do not exhibit the safe haven properties. However, third, the biggest cryptocurrency, tether, has been a safe haven for the European stock market during 2020 (Gambarelli et al., 2023) and it has been found to serve as a safe haven in particular in the pandemic periods, regardless of the investment horizon (Kliber, 2022).

In conclusion, it has been widely acknowledged that this problem is complex, with conflicting opinions and quantitative proofs from different studies. The COVID-19 pandemic provided a golden opportunity to assess the properties of cryptocurrencies as a safe haven during serious market distress. Shortly after the COVID-19 pandemic outbreak in 2020, another market distress occurred due to the Russian-Ukrainian war. Therefore, the debate on whether cryptocurrencies can be treated as a safe haven asset during times of crisis continues.

3. Data and Methodology

3.1. Data

In this article, 7 financial instruments (i.e., Polish and US T-Bond with a 10-year maturity, WIG20, S&P500, Gold, Platinum, Swiss Franc) as the representatives of the considered markets have been collected and compared to 3 of the largest cryptocurrencies (i.e., Bitcoin, Ether, Tether) to establish the correlation between them. The article considers the Polish market and the US market as a global benchmark.

The historical listing data for these instruments was downloaded from Stooq.pl. The data was then preprocessed in Python and R programs.

This article tests the safe haven properties of cryptocurrencies during a European crisis resulting from the Russian-Ukrainian war therefore analysis window (reference period) is concentrated on the period of May 24, 2021, until May 24, 2022, 9 months before and 3 months after the war outbreak, showing a one-year perspective on a market. For the purpose of this research, a pre-war reference period is set as 9 months before the war outbreak and simultaneously 14 months after the COVID-19 announcement. Including the COVID-19 period would have a significant impact on some assets and falsify the result. The analysis will cover both short-term (3 days) and longer-term periods (14 days, a month, and two months) after.

3.2. Methodology

Although valuable insights can be gleaned from the observed price movements, it is essential to consider a more rigorous approach. Following previous studies by Mariana et al. (2021), Omane-Adjepong and Alagidede, (2021), Siemaszkiewicz (2021), and Choudhury et al. (2022), the DCC-GARCH (Engle, 2002) methodology can be utilized to find a dynamic correlation and, as a result, examine the safe haven properties of Bitcoin, Ether, and Tether.

Table 1. Stationarity of the data measured with the ADF test

Asset	DF statistics	*p*-value	Result
BTC	−9.725	0.01	Stationary
ETH	−9.827	0.01	Stationary
USDT	−12.457	0.01	Stationary
CHF	−11.880	0.01	Stationary
PLB	−10.107	0.01	Stationary
USB	−10.747	0.01	Stationary
GOLD	−10.679	0.01	Stationary
PLAT	−11.782	0.01	Stationary
WIG	−9.764	0.01	Stationary
SP500	−10.202	0.01	Stationary

Source: own elaboration.

The first step was to achieve stationarity by calculating the logarithmic returns of each of the assets. Subsequently, the ADF test was employed to ascertain that the transformed data is in fact stationary (Table 1).

Then the confirmation of whether the data series exhibits the volatility clustering has been checked and confirmed with the ARCH-LM test (Table 2). In conclusion, the *p*-value of F-statistics is below 0.05 in all cases, it implies a rejection of the null hypothesis and acceptance of the alternative hypothesis, meaning that all examined assets can be fitted into the GARCH model.

Table 2. The ARCH-LM test results

Asset	χ^2	Degrees of freedom	p-value	Result
BTC	29.279	12	0.003581	ARCH effect
ETH	45.502	12	8.45e-06	ARCH effect
USDT	186.470	12	< 2.2e-16	ARCH effect
CHFUSD	62.043	12	9.55e-09	ARCH effect
PLB	219.400	12	< 2.2e-16	ARCH effect
USB	645.500	12	< 2.2e-16	ARCH effect
GOLD	91.379	12	2.67e-14	ARCH effect
PLATINUM	236.650	12	< 2.2e-16	ARCH effect
WIG	180.000	12	< 2.2e-16	ARCH effect
SP500	499.010	12	< 2.2e-16	ARCH effect

Source: own elaboration.

Given the assumption of data stationarity and the presence of the ARCH effect, the suitability of employing the GARCH model for data modeling is verified. Generally, the model is composed of 3 elements – conditional variance, conditional correlation and vector autoregressive (VAR). Essentially, the DCC (m, n) model, introduced by Engle (2002), specifies the matrix as:

$$R_t = Q_t^{*-1} Q_t Q_t^{*-1}, \tag{1}$$

where:

$$Q_t = \left(1 - \sum_{m=1}^{M} a_m - \sum_{n=1}^{N} b_n\right)\bar{Q} + \sum_{m=1}^{M} a_m \left(\vartheta_{t-m}\vartheta'_{t-m}\right) \sum_{n=1}^{N} b_n Q_{t-n}, \tag{2}$$

assuming that $a + b < 1$, Q_t represents the variance-covariance matrix of standardized errors, which unconditional (so time-independent) variance-covariance matrix $\bar{Q}$ is obtained in the first step of estimation, Q_t^* is a diagonal matrix consisting of the square roots of diagonal elements of Q_t. Additionally, $\vartheta_{it} = \frac{\varepsilon_{it}}{\sqrt{h_{it}}}$ represents the elements of the vector of standardized errors (Papla and Piontek, 2006).

To estimate this model, the R programming language was utilized. The "*dccspec*" and "*dccfit*" functions were employed to obtain and analyze the dynamic conditional correlations.

The final step involved finding $\bar{\rho}$ (the average dynamic correlation) for each pair of financial instruments during specific time periods, both before and after the outbreak of war. This analysis allows to assess how correlations between these instruments evolved in response to significant events.

4. Results

The DCC-GARCH model was established for each pair of assets over a specific time period spanning from June 1, 2017, until November 18, 2022 (which coincided with the day of model creation). As a result, the final dataset comprised 1223 observations of ten distinct assets used to determine the dynamic conditional correlation between the pairs.

Table 3. Descriptive statistics of data used for the DCC-GARCH model

|	DCC-GARCH model establishment period (June 1, 2017 – November 18, 2022)									
	BTC	ETH	USDT	CHF	GOLD	PLATINUM	10 PL T-BOND	10 US T-BOND	S&P500	WIG20
Mean	0.0014	0.0012	0.0000	0.0000	0.0002	0.0000	0.0006	0.0005	0.0004	−0.0002
Median	0.0005	0.0001	0.0000	0.0002	0.0005	0.0007	−0.0003	0.0007	0.0010	−0.0006
Std. Dev.	0.0510	0.0670	0.0055	0.0046	0.0091	0.0173	0.0254	0.0398	0.0135	0.0156
Minimum	−0.3188	−0.4285	−0.0748	−0.0240	−0.0587	−0.1330	−0.1601	−0.3137	−0.1277	−0.1425
Maximum	0.2408	0.3464	0.1133	0.0218	0.0460	0.1016	0.1751	0.3678	0.0897	0.0810
Observations	1223	1223	1223	1223	1223	1223	1223	1223	1223	1223

Source: own elaboration.

To illustrate how the correlation changed over time, the following graphs are provided for each cryptocurrency (Figures 1-3). Moreover, the parameters for all DCC-GARCH models have been statistically significant.

Consequently, the dataset was subjected to a more detailed analysis, focusing on different time horizons for potential impact assessment. These time horizons include 2 months, 1 month, 14 days, and 3 days following the outbreak of war. In addition, a reference period from before the war was established as a baseline for comparison against the results obtained after the outbreak (Table 4).
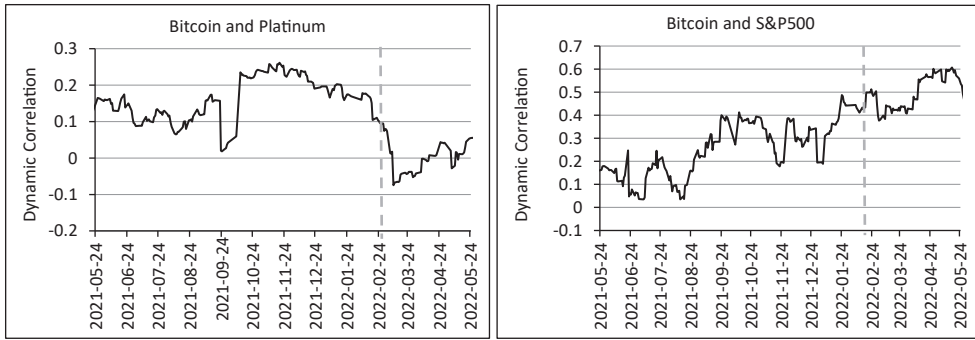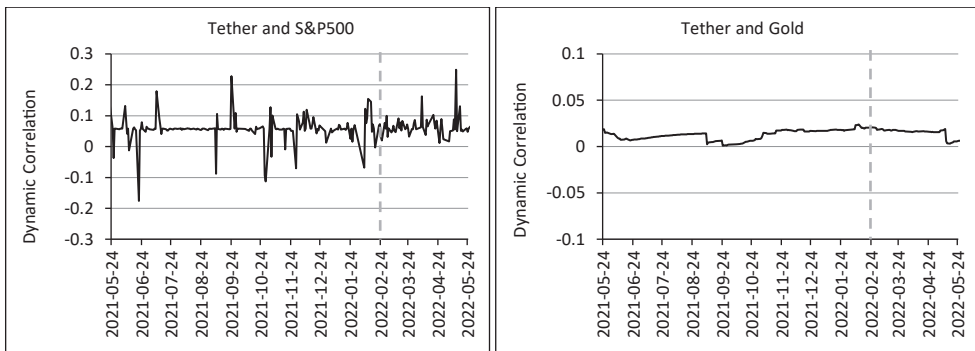
Figure 1. Dynamic correlation charts of Bitcoin (examples), where the dashed line denotes the day of war outbreak

Source: own elaboration.
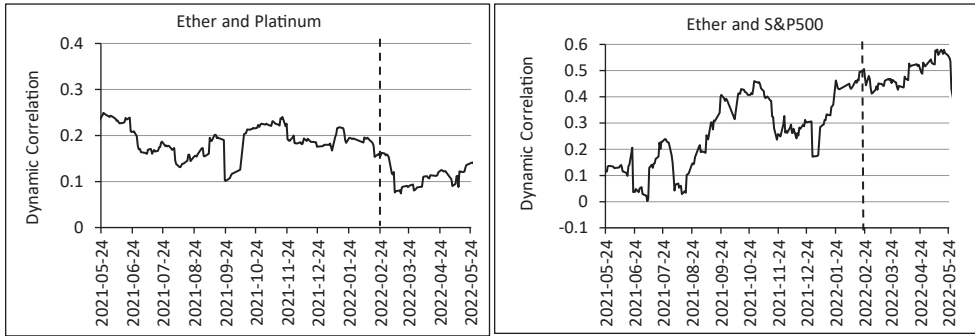
Figure 2. Dynamic correlation charts of Ether (examples), where the dashed line denotes the day of war outbreak

Source: own elaboration.

Figure 3. Dynamic correlation charts of Tether (examples), where the dashed line denotes the day of war outbreak

Source: own elaboration.

Table 4. The mean of the DCC of the selected asset pairs for the considered period

	24.05.2021-24.02.2022 (9 months before)		
	BTC $\bar{\rho}$	ETH $\bar{\rho}$	USDT $\bar{\rho}$
Swiss Franc	−0.0243	−0.0897	−0.0514
Gold	0.0207	0.1224	0.0179
Platinum	0.0676	0.1312	−0.0100
10Y PL Bond	−0.0097	−0.0162	−0.0133
10Y US Bond	0.0514	0.0306	−0.0390
S&P500	0.1229	0.1582	0.0555
WIG20	0.1106	0.1336	0.0286
	24.02.2022-24.04.2022 (2 months)		
	BTC $\bar{\rho}$	ETH $\bar{\rho}$	USDT $\bar{\rho}$
Swiss Franc	−0.0936	−0.0897	−0.0514
Gold	0.0119	0.1224	0.0174
Platinum	−0.0051	0.1086	−0.0100
10Y PL Bond	−0.0159	−0.0162	−0.0133
10Y US Bond	0.0554	0.0314	−0.0390
S&P500	0.4576	0.4642	0.0639
WIG20	0.1779	0.2116	0.0286
	24.02.2022-24.03.2022 (1 month)		
	BTC $\bar{\rho}$	ETH $\bar{\rho}$	USDT $\bar{\rho}$
Swiss Franc	−0.0972	−0.0897	−0.0514
Gold	0.0427	0.1224	0.0183
Platinum	0.0021	0.1135	−0.0100
10Y PL Bond	−0.0156	−0.0162	−0.0133
10Y US Bond	0.0606	0.0331	−0.0390
S&P500	0.4262	0.4491	0.0594
WIG20	0.1836	0.2221	0.0286
	24.02.2022-10.03.2022 (14 days)		
	BTC $\bar{\rho}$	ETH $\bar{\rho}$	USDT $\bar{\rho}$
Swiss Franc	−0.0906	−0.0897	−0.0514
Gold	0.0755	0.1224	0.0189
Platinum	0.0512	0.1396	−0.0100
10Y PL Bond	−0.0124	−0.0162	−0.0133
10Y US Bond	0.0606	0.0336	−0.0390
S&P500	0.4267	0.4428	0.0538
WIG20	0.1741	0.2251	0.0286
	24.02.2022-28.02.2022 (3 days)		
	BTC $\bar{\rho}$	ETH $\bar{\rho}$	USDT $\bar{\rho}$
Swiss Franc	−0.0770	−0.0897	−0.0514
Gold	0.0798	0.1224	0.0205
Platinum	0.0969	0.1599	−0.0100
10Y PL Bond	−0.0094	−0.0162	−0.0133
10Y US Bond	0.0722	0.0354	−0.0390
S&P500	0.4939	0.4657	0.0424
WIG20	0.1634	0.2139	0.0286

Source: own elaboration.

Firstly, Bitcoin's correlation with stock indices intensified significantly, reaching levels of 0.4576 (moderate degree) for the S&P500 and 0.1779 (very low degree) for the WIG20. The correlation between Bitcoin and gold remained at a very low positive degree. Considering the correlations with stock indices, it raises doubts about gold's status as a safe haven asset 2 months after the war outbreak. However, it is important to note that this analysis focuses on assessing the safe haven properties of cryptocurrencies, not traditional safe havens. Ether demonstrated similar behavior to Bitcoin, showing a correlation with the S&P500 of 0.4642 (moderate degree) and with WIG20 of 0.2116 (low degree). Gold and Ethereum exhibited a very low degree of positive correlation at 0.1224. Surprisingly, even Tether displayed a positive correlation with stock indices, with values of 0.0639 for the S&P500 and 0.0286 for the WIG20. In all cases, the positive correlation between cryptocurrencies and stock indices increased compared to the reference period. The highest correlation between Bitcoin and the S&P500 was observed during the 3 days after the war outbreak, reaching a moderate level of 0.4939. Similarly, the highest correlation between Bitcoin and the WIG20 occurred throughout the one month after the war outbreak, at a low level of 0.1836. Across all time frames, the cryptocurrencies displayed negative correlations with the Swiss Franc and 10-year Polish Treasury bonds.

The primary hypothesis aimed to determine whether cryptocurrencies could serve as safe haven assets during the outbreak of the Russian-Ukrainian war, specifically within the Polish market and the global market. The obtained results, however, proved that cryptocurrencies cannot be treated as a safe haven asset. Not only does not cryptocurrency protect an investor from the Polish market but also in the global context. From the perspective of this research, all of the cryptocurrencies have been rejected as a safe haven assets. Instead of exhibiting a negative correlation and providing a shield against losses on indices such as WIG20 and S&P500, they displayed varying degrees of moderate, low, or very low positive correlation. These findings suggest that cryptocurrencies fail to offer the expected protection during the crisis caused by the Russian-Ukrainian war outbreak. Consequently, investors should stay cautious and consider other investment options when seeking to hedge against market volatility or uncertainty during such periods.

The second hypothesis aimed to examine whether certain types of cryptocurrencies outperform others in terms of capital protection during times of crisis. In fact, Tether demonstrated a lower degree of correlation with stock indices. However, it is important to note that despite the lower correlation, it remained positive and did not turn negative after the war outbreak. The results indicate that none of the major cryptocurrencies demonstrated safe haven properties. While Tether displayed a relatively lower correlation, suggesting a potential advantage in terms of capital protection, it still exhibited a positive correlation rather than the desired negative correlation. Hence, it can be concluded that no particular cryptocurrency outperformed others in terms of acting as a safe haven asset during the crisis. The findings suggest that investors should not trust or rely on

cryptocurrencies in terms of capital protection as a safe haven asset during the crisis, regardless of the type of coin.

The third hypothesis aimed to investigate the potential impact of the time horizon on the properties of cryptocurrencies as safe haven assets. Previous literature has suggested that cryptocurrencies' behavior may vary depending on the time frame. Nonetheless, the findings from this study indicate that cryptocurrencies did not exhibit safe haven properties across any of the tested time frames. Regardless of whether it was short-term (3 days), medium-term (14 days, 1 month), or relatively long-term (2 months), none of the cryptocurrencies under consideration demonstrated safe haven properties. Additionally, the correlations between cryptocurrencies and stock indices remained relatively constant throughout these periods, maintaining a positive relationship. Moreover, these correlations were significantly stronger than in the reference period (before the war outbreak). These results suggest that the time horizon did not significantly alter the behavior or safe haven properties of cryptocurrencies within the scope of this research.

5. Conclusion and Remarks

If it is assumed that the DCC-GARCH model accurately captures financial instrument correlations, it can be expected that cryptocurrencies will not serve as safe haven assets.

During the war outbreak, the correlation between Bitcoin, Ether, Tether, and stock market indices has increased significantly instead of becoming negative and providing protection against losses on those indices. Therefore, none of the selected cryptocurrencies could be treated as a safe haven asset during the crisis of the Russian-Ukrainian war. This is true for both the Polish market and the global market.

Furthermore, compared to Bitcoin or Ether, Tether demonstrated a lower degree of correlation with stock indices. However, the positive correlation still excludes it from being considered a safe haven asset, although it may serve as a diversifier. Further research is required to confirm this.

The research proposed four different time frames in which cryptocurrencies could potentially exhibit safe haven properties. However, no trend was observed in any of the time frames tested (3 days, 14 days, 1 month, or 2 months). Moreover, during these periods, correlations remained relatively constant and were more intense than in the reference period.

Overall, since the price movements of Bitcoin, Ether, and Tether are more closely and consistently aligned with the stock market rather than with gold or any other traditional safe haven asset and none of the cryptocurrencies have become negatively correlated with the stock market when the war started, clearly indicates that cryptocurrency cannot be treated as a safe haven. Even though the literature overview does not put it clearly and there were some doubts, cryptocurrency is not an asset to which investors could transfer capital to protect its portfolio value during a crisis.

The selection of safe haven assets holds dominant importance in professional portfolio management. It serves as a crucial element in mitigating potential losses and even presents opportunities for gains when others are experiencing losses. Making the wrong choice or neglecting to include safe haven assets in the portfolio results in wrong investment decisions, leaving investors vulnerable and exposed to market uncertainties and eventually, leading to capital reduction. Professional and intelligent investors shall be aware of the associated risks and shall seek safe haven assets to protect the value of one's portfolio – cryptocurrencies, however, should not be found on an investor's safe haven list.

In most cases, including this thesis, it is commonly assumed that rates of returns follow a multivariate normal distribution. However, it is important to recognize that financial returns often exhibit characteristics that deviate from strict normality, such as fat tails, skewness, and others. To enhance the accuracy of capturing these empirical features and further improve the results, it is recommended to research the specific distribution exhibited by each instrument. This entails considering alternative distributions and modeling techniques, such as employing a copula mechanism that allows for the isolation of the dependency structure within a multivariate distribution, enabling a comprehensive assessment of the joint behavior of multiple variables while accounting for their individual marginal distributions. Also, the research assessed only safe haven properties and in the future it might be extended to diversifier and hedge properties as well. The above-mentioned improvements might be crucial for risk management, portfolio optimization, and the evaluation of assets' properties.

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Czy kryptowaluty mogą być traktowane jako bezpieczna przystań?

Streszczenie: Pod koniec lutego 2022 r. eskalacja konfliktu w Europie Wschodniej wywołała globalną wyprzedaż akcji. W ciągu dnia MOEX spadł o 33%, WIG o 11%, a wskaźnik strachu VIX odnotował wzrost. Inwestorzy zaczęli instynktownie przenosić kapitał do tradycyjnych bezpiecznych aktywów. Celem niniejszego artykułu była weryfikacja, czy kryptowaluty jako relatywnie nowy rodzaj inwestycji mogą być traktowane przez inwestorów jako finansowa bezpieczna przystań. W artykule przedstawiono zachowania głównych kryptowalut po wybuchu wojny w porównaniu z wybranymi indeksami giełdowymi i tradycyjnymi bezpiecznymi przystaniami. Przetestowano trzy hipotezy: czy kryptowaluty mogą być bezpieczną przystanią podczas konfliktów, czy pewne rodzaje kryptowalut są lepsze w ochronie kapitału oraz jak horyzont czasowy wpływa na ich właściwości. Pomimo niepewności w świecie naukowym, artykuł dowodzi, że kryptowaluty nie spełniają kryteriów bezpiecznych przystani. Analiza i modelowanie zostały oparte na metodzie DCC-GARCH.

Słowa kluczowe: bezpieczna przystań, kryptowaluty, dynamiczna korelacja, DCC-GARCH, rynek finansowy