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A POTENTIAL SAFE-HAVEN OF CRYPTOCURRENCIES DURING THE COVID-19 PANDEMIC AND RUSSIA-UKRAINE WAR

FATMA KHALFALLAH

Higher Institute of Management of Tunis, Tunisia. Email: Khalfallah.fatma@gmail.com

Abstract

We empirically analyze the COVID-19 epidemic and the conflict between Russia and Ukraine's implications on the top-6 cryptocurrency as a hedge and safe shelter towards economic policy uncertainties. For main analysis, the GARCH approach is used. According to our findings, bitcoin cannot serve as a successful hedge or protection against EPU throughout the COVID-19 outbreak and battle. Confirms that cryptocurrencies are not regarded as a reliable safe haven in general.

Keywords: Cryptocurrencies, Russia-Ukraine war, COVID-19, Safe-haven, Economic policy uncertainty.

INTRODUCTION

One of the biggest problems facing the world economy is the COVID-19 epidemic, which originated in China and quickly turned into a global health and financial crisis, There is a lot of curiosity about how this outbreak could affect cryptocurrency markets, it is the subject of a wealth of scholarly research.

The cryptocurrency is differ from traditional assets with his proprietary block chain technology (Nakamoto, 2008) and in times of financial market turbulence, the virtual currency acts as a hedging mechanism, which has raised serious concerns among the market participants and policymakers.

In fact that, cryptocurrencies are frequently viewed as "safe haven" investments compared to other asset classes like stocks, the US currency and gold (Bouri, Gupta, Tiwari and Roubaud, 2017 ; Akhtaruzzaman et al., 2020; Goodell, 2020, Mariana et al. 2021, Mokni, Youssef and Ajmi, 2022).

In contrast, volatility persistence is an important aspect of cryptocurrencies; and virtual currencies tend to be more volatile than conventional financial assets (Fakhfekh and Jeribi, 2020; Haroon and Rizvi, 2020; Akyildirim et al., 2021; Sensoy et al., 2021; Smales, 2021).Recent research on the COVID-19 financial crisis has shown that Bitcoin leaves its security and hedging features during major economic downturns (Corbet et al., 2020; Conlon & McGee, 2020; Vidal-Tomás, 2021b, Conlon et al., 2020, Yarovaya et al., 2021). Covid-19, based on the study, generates more risk and discontinuities in digital currency markets than in foreign markets for shares, and both Ethereum and Bitcoin are not safe havens for most international equities markets.

In such manner, Salisu, A. A., and Ogbonna, A. E. (2021) explore the connection between dread prompting news (as estimated by G-pattern data all through COVID19 is declarations) and ensuing vacillation for four the computerized monetary standards (Bitcoin, Ethereum, Litecoin, and Wave) to decide if the cash's exorbitant unpredictability is a consequence of monetary data.

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The results they obtained show that the volatility of cryptocurrency earnings during the Coronavirus epidemic is larger than during other financial crises, such as the global economic meltdown.

Using an asymmetrical TGARCH (1, 1) model, Nicholas Apergis (2022) investigates how the COVID-19 pandemic could be used to forecast the conditional risk of five main digital currency (Ethereum, Bitcoin, XRP, Litecoin, and Dash). The findings suggest that the COVID-19 outbreak has a beneficial impact on the conditioned volatility of these values.

Nitithumbundit and Jenny S.K. Chan (2022) employ the VARMA-MSVG paradigm to examine four cryptocurrencies: bitcoin, Ripple, which Dash, e and Litecoin in the context of Covid-19. They have distinguishing features such as high volatility, a low return, and residual instability.

Khaled Mokni, Manel Youssef, and Ahdi Noomen (2022) investigate how gold and the top five cryptocurrencies might be utilized as a hedge and safe shelter in the face of unpredictable economic policies (EPU) before as well as during the COVID-19 crisis.

The core research used GARCH as the model, with SHI serving as a gauge of resilience. According to their findings, neither good nor digital money are deemed as refuges during COVID-19 breakouts or viable hedges against unpredictable political events (UPR). As the SHI shows negative returns and an unpredictability during Coronavirus, digital currencies frequently capability as unfortunate places of refuge.

As a result, the literature review on the usage of cryptocurrency as a place of refuge during the time frame of COVID 19 yields inconclusive results and falls short of providing persuasive proof of the crisis's consequences. In addition, the entire globe has witnessed an unprecedented occurrence in the form of the war among Russia and Ukraine, yet few research on the influence of such an event on the market for cryptocurrency have been undertaken. Rabeh Khalfaoui and colleagues (2022).

As a result, this work contributes to the (limited) literature on finance and overcomes these constraints. We use Baur and McDermott (2010), one of the most popular approaches for analyzing the protective and hedges properties of assets. We are the first to examine the possibility of a digital currency to safeguard the EPU throughout the COVID-19 epidemic and the Ukrainian-Russian conflict using this way.

DATA AND METHODOLOGY

We utilize day to day information to look at the effect of Coronavirus and the Russia-Ukraine battle on the profits and instability of six most predominant cryptographic forms of money from Walk 10, 2019 to October 31, 2022. The coins of *Bitcoin, Ethereum, the Litecoin Tether, which is XRP, and BNB* are among the cryptocurrencies we examined.

We likewise use the everyday US money related arrangement record delivered by Bread cook (2016) throughout a similar time span, and we help each of our information through the www.coinmarketcap.com site. The example time is separated across three sub-test timeframes: before the Coronavirus pandemic, during the Coronavirus breakout on Walk

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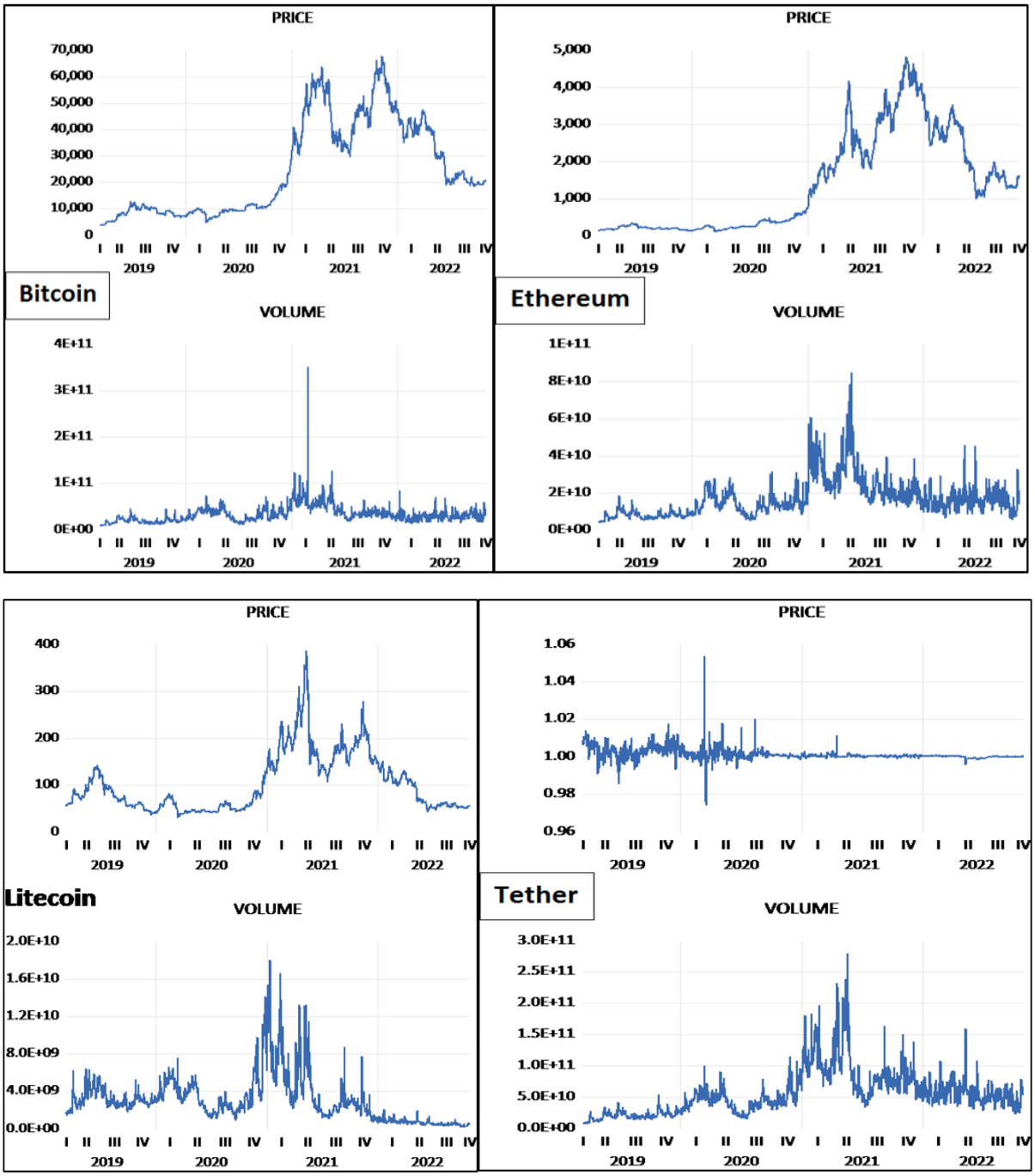
11, 2020, and following the Russian control of the Ukrainian country on February 24, 2022.

1) Fig. 1. Price and volume of cryptocurrency from 10/03/2019 to 31/10/20



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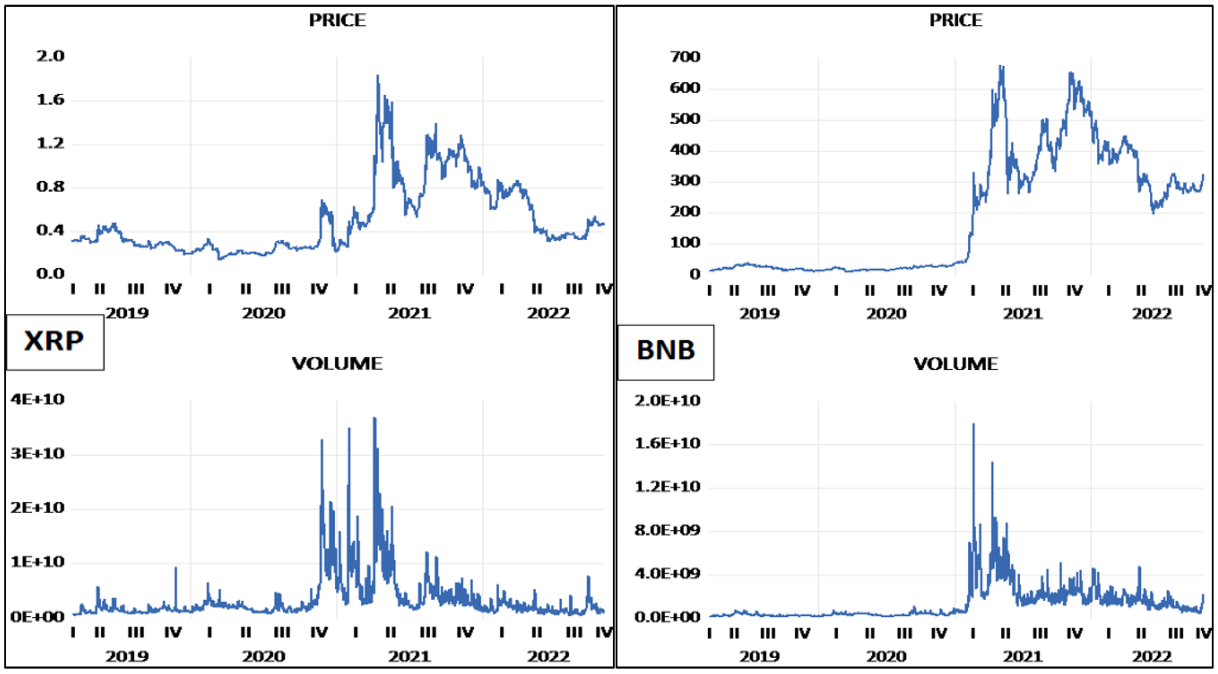

2) Fig. 2. Index of uncertain economic policy in the United States

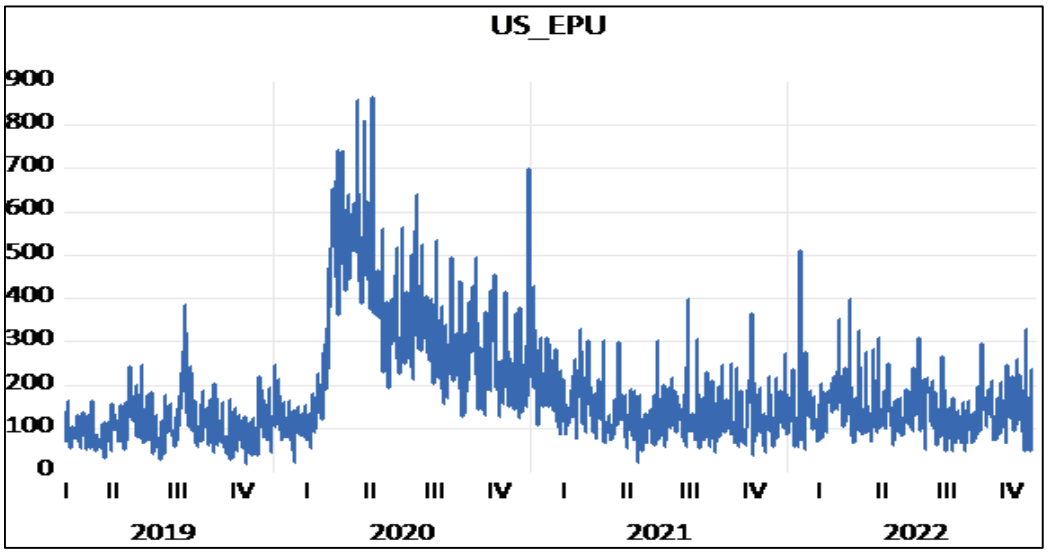

Fig.1: charts the price changes for cryptocurrency and trade volume over the study period.

Bitcoin prices are expected to fall in the first half of 2019 before slowly climbing in the initial three months of 2020 as the corona virus epidemic spreads over the world, according to the evolutionary directions. In late 2021 and early 2022, bitcoin begins to decline as the health crisis subsides and even volumes and prices stagnate during the Russia-Ukraine war.

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Similar to Bitcoin, Ethereum has adopted the same strategy, with the exception of times of war, when a minor progression in price and volume has been extensively observed.

Regarding Tether, it is observed that its price followed the same path as the bitcoin except that at the end of 2021 gradually declined and during the war phase recorded a slight evolution. In contrast, Litcoin's volume and price reached a big peak during the crisis and a significant low point during the war.

The most notable price movement for the other cryptocurrencies, XRP and BNB, occurred during the period of Covid-19, when these currencies reached extremely high peaks.

The shift in the value of the uncertainty in economic policy index (EPU) across the sample period is seen in Figure 2. During the current COVID-19 health crisis, there was a rise in the US EPU index. Rising from 100 to around 900, and remained stable during the war, hovering around 300.

3) Table 1 Preliminary testing and descriptive statistics

A1. Stationarity test

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB	USEPU
ADF	-37.67287	-39.12837	-16.39579	-16.75571	-38.67191	-17.33774	-16.39802
PP	-37.66319	-39.03928	-39.18819	-334.4380	-38.62937	-41.51073	-128.6049
KPSS	0.226153	0.130229	0.079080	0.050171	0.047563	0.074423	0.029775
ERS	0.036954	0.037190	0.073054	1.148231	0.037267	0.023641	0.024517

A2. Normality test

	BITCOIN	BNB	ETHEREUM	LITECOIN	TETHER	US_EPU	XRP
Mean	0.001237	0.002340	0.001835	-2.81E-05	-6.64E-06	0.000291	0.000299
Median	0.001368	0.001206	0.001966	0.000579	-7.00E-06	-0.012145	0.000515
Maximum	0.171821	0.529218	0.230695	0.248434	0.053393	1.533585	0.444756
Minimum	-0.464730	-0.543084	-0.550732	-0.449062	-0.052570	-2.119934	-0.550503
Std. Dev.	0.038757	0.053594	0.049526	0.052189	0.003564	0.460241	0.058459
Skewness	-1.267885	-0.221478	-1.283054	-1.022539	0.355353	-0.022199	-0.101984
Kurtosis	20.52707	22.71839	17.20576	12.62939	82.58515	4.025954	18.99851
Jarque-Bera	17393.30	21573.91	11556.88	5374.323	351289.8	58.48371	14197.00
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1.646098	3.114238	2.442340	-0.037370	-0.008836	0.387591	0.397458
Sum Sq. Dev.	1.997811	3.820169	3.262221	3.622573	0.016894	281.7226	4.545214
Observations	1331	1331	1331	1331	1331	1331	1331

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A3. Ljung-Box tests and F heteroscedasticity test

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB	USEPU
Q(9)	16.616	24.230	27.017	317.50	6.6972	34.785	239.88
Qs(9)	24.880	41.276	80.100	368.85	94.813	118.07	84.132
ARCH(9)	2.62898	4.139585	7.795190	65.68008	7.926008	9.512988	10.12209

An overview of the returns of the EPU index and the six major cryptocurrencies can be found in Table 1. Statistics indicate that all cryptocurrencies have positive daily average returns, except Litecoin, Tether, and the EPU index, which have negative daily average returns.

Litcoin is also the riskiest cryptocurrency due to its huge standard deviation, followed by XRP and BNB. Tether has the lowest number when contrasted with the standard variation quantities, followed by Bitcoin.

Except for Tether, the substantial negative skewness values imply that all-time series beneath investigation are slanted to the left. Besides, all series display overabundance kurtosis, demonstrating a disproportionate dispersions with fat tails, and all periods reject the invalid speculation as a probability of ordinariness, as per the Jarque-Bera test.

We direct many tests to search for a unit root in the return series, including the enhanced Dickinson-Fuller (ADF) of Dickey and Fuller's (1979), the test created by Phillips and Pascal (1988), and the Elliot and partners (1996). KPSS is also used to survey solidness.

All returns series derived on the PP, the ADF, and the ERS reject the value of the base null hypothesis, according to the results. These findings show that all lines are a zero-order stable. The KPSS test yields comparable findings when used to examine the durability of the analysis.

The Ljung-Box test on offers and yielding square reveals that all series exhibit considerable autocorrelation. This implies that the GARCH approach is capable of appropriately fitting the data.

METHODOLOGY

Utilizing Baur and McDermott's (2010) GARCH demonstrating, we break down digital currency supported and safe harbor highlights even with capriciousness in financial approaches.

Models of hedged and safe a haven

In accordance with Baur and McDermott (2010), the following model is calculated in order to analyze the security and safe a haven aspects of the crypto-currencies investigated.

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$$r_{cryp,t} = a + b_t r_{EPU,t} + \varepsilon_t \quad \text{Eq. (1)}$$

$$b_t = c_0 + c_1 D(r_{EPU} q_{90}) + c_2 D(r_{EPU} q_{95}) + c_3 D(r_{EPU} q_{99}) \quad \text{Eq. (2)}$$

$$h_t = \pi + \alpha \varepsilon^2_{t-1} + \beta_{h_{t-1}} \quad \text{Eq. (3)}$$

Where $r_{cryp,t}$ is the 'log-returns' of cryptocurrency at time t. $r_{EPU,t}$ Signifies the economy policies index's log-difference.

Eq describes the relationship between the digital currency asset as well as shifts in uncertain economic policy. (1)

Eq. (2) is utilized to describe the boundary as a powerful interaction. The fanciful qualities D (.) in Eq. (2) are intended to catch serious EPU moves and are set to one in the event that those changes surpass the 90%, 95%, and close to 100% quantiles of the dispersion of EPU changes, and zero in any case.

If any one of the c_1, c_2 or c_3 boundaries is adequately not the same as nothing. There is proof of a nonlinear relationship with bitcoin and developments of the EPU file. In the event that of the limits in Eq. (2) are non-positive, cryptographic money goes about as a delicate place of refuge from EPU. (Counting). In case these qualities are negative and subsequently really enormous, mechanized assets give a safeguarded cover against EPU. Assuming the contention is set to c_0 is either 0 (for a weak hedge) or negatives (for a strong hedge), and the sum of the parameters c_1, c_2, and c_3 is not more positive than what it's worth of c_0, Cryptocurrencies can then be used as a form of insurance against EPU.

By inserting Eq (2), we can see if cryptocurrency may be utilized as a kind of protection both the COVID-19 epidemic during the Russia-Ukraine war. The following formula may be used to calculate

$$b_t = c_0 + c_1 D(\text{covid} - 19) + c_2 D(Russia - Ukranie - war) \quad \text{Eq (4).}$$

By plugging in Eq (2), we can determine if bitcoin may be used to defend against the COVID-19 outbreak during the war between Ukraine and Russia. To compute, use the following formula: c_1, c_2 is either zero or negative. If the result of the test is affirmative, a cryptocurrency cannot be considered a safeguard against EPU during the COVID-19 during the remainder of the conflict.

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4. RESULTS AND DISCUSSIONS

4.1. Hedging and security characteristics

This part compares the hedging and security capabilities of the six cryptocurrencies under consideration.

To accomplish this, we first utilize Engle's (1982) Curve test during the three sub-time frames to decide if the picked GARCH model sufficiently made sense of our information over the three example periods. The aftereffects of the test are displayed in Table A1. During the Coronavirus pestilence, we found proof of Curve impacts. In the symptomatic examination, A2 and A3 show how the numerical system might be utilized to explore bitcoin supporting and place of refuge highlights in regard to EPU. Eq. (3) is taken out from the referenced beforehand model because of the absence of AR CH impacts all through the Coronavirus pandemic.

4) Table A1 shows the ARCH test with nine delays on the results set before, during, and after the COVID-19 viral epidemic and the Russia-Ukraine war.

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB
Panel-A: pre-COVID-19 period: 03/10/2019 - 03/10/2020						
F-Statistics	2.936126	0,711331	0,556954	2,009578	2,207582	0,84767
p-value	0,0023	0,6986	0,832	0,0375	0,0212	0,5726
Panel-B: COVID-19 period: 03/11/2020 - 02/23/2022						
F-Statistics	2,568614	5,982043	6,723199	16,59721	4,355234	9,599189
p-value	0,0065	0,000	0,000	0,000	0,000	0,000
Panel-C: R-U war period: 02/24/2022 - 10/31/2022						
F-Statistics	1,144312	2,355412	4,120844	0,968209	2,793192	7,106694
p-value	0,3324	0,2031	0,0001	0,4671	0,0040	0,0000

5) **Table A2 The model's residual diagnostic (1) – (3).**

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB
Panel-A: pre-COVID-19 period: 03/10/2019 - 03/10/2020						
Q(4)	0,3350	0,8316	3,4201	56,3470	5,8417	2,6935
	0,987	0,934	0,490	0,000	0,211	0,610
Qs(4)	28,374	6,0320	3,7752	15,048	17,394	2,8489
	0,000	0,197	0,437	0,005	0,002	0,583
ARCH-F	-0,813616	-0,626240	0,057571	1,160883	-1,047747	-0,121037
	0,4164	0,5316	0,9541	0,2465	0,2955	0,9037
Panel-B: COVID-19 period: 03/11/2020 - 02/23/2022						
Q(4)	11,745	15,349	12,810	141,33	2,8449	21,104
	0,019	0,004	0,012	0,000	0,584	0,000
Qs(4)	2,2849	8,1688	17,952	162,99	32,516	41,336
	0,684	0,086	0,001	0,000	0,000	0,000
ARCH-F	-0,396366	-0,909678	-0,412766	-1,367381	-0,21165	1,492438
	0,692	0,3633	0,6799	0,1719	0,8324	0,1360
Panel-C: R-U war period: 02/24/2022 - 10/31/2022						
Q(4)	3,3332	2,875716	7,3265	19,816	10,238	12,386
	0,504	0,0031	0,120	0,001	0,037	0,015
Qs(4)	5,1491	16,385	33,625	9,2367	20,902	48,733

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	0,272	0,003	0,000	0,055	0,000	0,000
ARCH-F	0,708531	0,985579	0,9550	-0,054348	-0,582083	-0,203867
	0,4793	0,3254	-0,056457	0,9567	0,5611	0,8386

6) **Table 2: Trading and Security characteristics of cryptocurrencies versus EPU before, after the COVID-19 Virus outbreak and during and R-U war.**

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB
Panel-A: pre-COVID-19 period: 03/10/2019 - 03/10/2020						
A	-0,106529	-0,76244	-0,044526	0,070473	-0,3725	-0,10789
	0,9152	0,4463	0,061134	0,022004	0,2057	0,0478
C_0	-0,854020	-0,031823	-0,017604	-0,002326	0,5734	-0,00457
	0,3937	0,0190	0,10616	0,0006	0,4089	0,0186
C_1	-0,811345	0,0007	-0,041195	0,0008	-0.2387	-0.70081
	0,4177	0,0062	0,9152	0,0062	2.8067	0.0037
C_2	0,315753	4,879001	-0,101529	0,0001	-0.2937	6.180
	0,7524	4,4472939	1,300206	0,0022	3.2921	4.0031
C_3	-0,153219	-7,492341	-1,408911	0,004950	4.9926	-1.6740
	0,8783	2,005754	0,6962	0,147268	5.8901	0.5468
π	0,9419	0,014914	1,720083	0,01712	0.9961	1.4489
	0,3501	0,005856	0,2148	0,002740	0.1792	0.0017
α	0,072873	0,362261	0,100341	0,2977	0.0641	0.02411
	0,0673	0,7174	0,0306	0,0213	0.0091	0.0034
β	0,9203	0,9957	0,6962	0,7174	0.9517	0.9891
	0,0766	0,0373	0,0306	0,0421	0.0721	0.0393
Panel-B: COVID-19 period: 03/11/2020 - 02/23/2022						
A	0,5606	1,08068	-0,039206	0,026386	-0.0074	− 0.0811
	0,7524	0,362261	0,0420	0,1056	0.0003	0.0017
C_0	-5,242653	-0,024653	-0,016941	-0,003644	-3.7421	-6.0056
	4,141551	0,134553	0,100341	0,0091	0.0051	3.2100
C_1	10,340	5,445745	0,5314	0,0054	-4.2971	-0.2387
	6,6102	6,120656	0,2148	0,0071	0.0721	2.8067
C_2	1,7799	-8,518731	-0,626507	0,0019	9.7945	-1.2901
	3,0064	33,186	0,3710	-0,002496	18.2420	3.6101
C_3	-8,194523	-5,342859	-2,466544	-10,22820	-15.2856	-7.3326
	4.3E + 09	6.2E + 10	2.3E + 08	0.3E + 09	3.1E + 09	7.1E + 10

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Panel-C: R-U war period: 02/24/2022 - 10/31/2022						
A	0,784091	-0,895610	-0,895700	0,054510	− 0.6725	-0.09415
	0,4332	0,3711	0,3710	0,0072	0.2309	0.0691
C_0	-4,139243	-0,106529	-2,466544	-0,915659	1.3478	-5.0067
	0,9152	0,9152	0,2976	0,3607	0.6700	0.0041
C_1	2,751764	0,362214	1,567356	2,228585	4.2387	0.8260
	0,0062	0,0067	0,3932	0,1139	0.8874	0.0004
C_2	3,591551	7,042832	5,472398	7,190155	8.2937	4.5639
	0,0062	4,7384	0,2526	3,6737	1.2672	0.0291
C_3	-1,463725	-4,542004	-3,414659	-4,139243	-3.2342	-1.7803
	0,1441	2,6344	2,5914	0,7389	1.4811	0.1803

The results of the model being examined in three different time periods are presented in Table 2. The table provides value estimations C_0 and the aggregate impact of severe market situations, which is the result of C_0 and C_1 for the 10% quantile, C_0, C_1, and C_2 for the 5% quantile, and C_0, C_1, C_2, and C_3 for the 1% quantile. The main board (A) shows the outcomes before the Coronavirus pandemic, while the subsequent board (B) shows the outcomes during the pandemic. The third board (C) shows the outcomes during a conflict period, without considering any inconstancy conditions, as there are no Curve impacts during this sub-period.

Since the boundary is little, the outcomes in boards (A) suggest that digital currency can't working as a fence versus monetary strategy vulnerability preceding the wellbeing emergency. Moreover, the significance of factors c1 and c3 shows that at the 10% and 1% rates of the market, Ether can work as a powerless shelter against the whimsical idea of financial strategy. Dollar and XRP, on the other hand, and have significant but advantageous coefficients, indicating that they are useless as a hedge on the unpredictability of economic policy. Because of either negative or positive but small coefficients, we failed to record any safe haven features for Bitcoin, Litecoin, or BNB.

Our study's findings are consistent with (Corbet et al., 2020; Conlon & McGee, 2020; Chen et al., 2020; Vidal-Tomás, 2021b, Conlon et al., 2020, Yarovaya et al. 2021) who show that the bitcoin market is unable to hedge around EPUs.

Board (B) of Table 2 presents gauges for a similar model during the latest wellbeing occasion, after the decree of Coronavirus as a pandemic. Over the course of this time, digital currencies have demonstrated unfit to work as a fence or anchor against a spike in EPU.

Similarly, throughout the war period, cryptocurrencies exhibit both positive and negative values that lack significance, suggesting that they don't serve as a safeguard or a secure place against the heightened EPU during this time. Panel (C), Table 2.

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To strengthen the credibility of our analysis, we are exploring the use of cryptocurrencies as a form of security during both the COVID-19 virus tragedy and the war period through model specification in Eq (4).

As shown in Table 3, the safe haven feature coefficient estimated for each of the six cryptocurrency in the current COVID-19 crisis and conflict period has little statistical significance. They were not efficient repositories of value or efficient hedges against volatile markets at the time. Our findings are consistent with Salisu, A. A., & Ogbonna, A. E. (2021), Nicholas Apergis (2022), and Khaled Mokni , Manel Youssef , Ahdi Noomen (2022).

7) Table 3 Security characteristics of cryptocurrencies versus EPU during the COVID-19 Virus outbreak and R-U war Period

	Bitcoin	Ethereum	Litecoin	Tether	XRP	BNB
a	0.0195	-0.1962	-0.0349	0.0074	− 0.3923	− 0.10789
	0.1645	0.1967	0.1611	-0.0632	0.1356	0.2156
C_0	-0.1740	-0,031823	-0,017604	-0,002326	0,5734	-0,00457
	0.2934	0,019	0,10616	0,0006	0,4089	0,0186
C_1	-0,811345	0,0007	-0,041195	0,0008	-0,2387	-0,70081
	0,4177	0,0062	0,9152	0,0062	2,8067	-0,70081
π	0,9419	0,014914	1,720083	0,01712	0,9961	1,4489
	0,3501	0,005856	0,2148	0,00274	0,1792	0,0017
α	0,072873	0,362261	0,100341	0,2977	0,0641	0,02411
	0,0673	0,7174	0,0306	0,0213	0,0091	0,0034
β	0,9203	0,9957	0,6962	0,7174	0,9517	0,9891
	0,0766	0,0373	0,0306	0,0421	0,0721	0,0393

Covid-19 and the conflict between Russia and Ukraine are only two of the extraordinary and unexpected occurrences that have occurred recently and had an impact on the world's financial system.

Research on the role of cryptocurrencies in the financial markets as a safety net and shelter from the risky environment sparked by these crises has brought up an important topic.

By conducting a study on the six most popular cryptocurrencies (Bitcoin, Ethereum, Litecoin, Tether, XRP, and BNB), we have endeavored to add to the assortment of information on this subject by assessing the level of supporting and place of refuge worth of these resources.

We evaluate the influence of COVID-19 and the conflict between Ukraine and Russia on the volatility as well as returns of a set of six key digital currencies from the 10th of March in through October 31, 2022, using daily data. We also utilize the daily US Economic Policies Index. Three sub-sample times comprise the sample time: before the COVID-19 pandemic, on March 11, 2020, during the COVID-19 breakout, and on February 24, 2022, following Russia's invasion of Ukraine.

Using this method, we assess the safety and safe haven qualities of the coins under consideration Baur and McDermott (2010).

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CONCLUSION

The findings of our analysis coincide with those of (Corbet et al., 2020; Conlon & McGee, 2020; Chen et al., 2020; Vidal-Tomás, 2021b; Murphy et al., 2020; Yarovaya et al., 2021) who demonstrate that the cryptocurrency market cannot hedge against EPUs. Following the declaration of COVID-19 as a pandemic throughout this most recent outbreak of illness, cryptocurrency were inadequate to act as a protection or anchor against an increase in EPU.

Similar to this, during the conflict, cryptocurrencies display both positive and negative numbers that are unimportant, indicating that they are neither a defense nor a secure location against the increased EPU at this moment.

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