Research Article

The Impact of International Conflicts on the Cryptocurrency Market: The Case of Israel–Palestine Conflict

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Abstract: In the financial markets, international conflicts have a crucial influence. The ongoing conflict between Israel and Palestine is one of them, which poses hazards to international politics and the economy. This study is the first to examine the potential influence of the Israel-Palestine conflict on the cryptocurrency market. To this end, the event study methodology is used for the period 01.03.2023 – 17.10.2023, and the top ten cryptocurrencies are chosen for analysis based on their market capitalization. The results show that although the Israel-Palestine conflict affected certain cryptocurrencies (including BTC, TRX, SOL, and ETH), it had no statistically significant effect on the market. Furthermore, most of the effect was statistically positive, which may be an indication that the cryptocurrency market is considered a safe-haven. Moreover, the abnormal returns were generally recorded in the days before the event, which may suggest that the event had been anticipated by some cryptocurrencies. These findings could help investors and financial specialists diversify their portfolios and develop hedging strategies by considering the cryptocurrency market as an alternative investing instrument in these kinds of unpredictable times.

Keywords: War, Political Uncertainties, Event Study, Bitcoin, CCI30, Cryptocurrencies, Financial Markets.
Jel Codes : G14, G15, G19.

Uluslararası Çatışmaların Kripto Para Piyasası Üzerindeki Etkisi: İsrail-Filistin Çatışması Örneği

Öz: Finansal piyasalarda, uluslararası çatışmalar önemli bir etkiye sahiptir. İsrail ve Filistin arasında devam eden çatışma, uluslararası politika ve ekonomi için tehlike arz eden çatışmalardan biridir. Bu çalışma, İsrail-Filistin çatışmasının kripto para piyasası üzerindeki potansiyel etkisini inceleyen ilk çalışmadır. Bu amaçla, 01.03.2023 - 17.10.2023 dönemi için olay çalışması metodolojisi kullanılmış ve analizler için piyasa değerlerine göre ilk on kripto para birimi seçilmiştir. Sonuçlar, İsrail-Filistin çatışmasının belirli kripto para birimlerini (BTC, TRX, SOL ve ETH) etkilemesine rağmen, bir bütün olarak piyasa üzerinde istatistiksel olarak anlamlı bir etkisi olmadığını göstermektedir. Dahası, etkinin çoğunluğunun istatistiksel olarak pozitif olduğu bulunmuştur ve bu sonuç kripto para piyasasının güvenli bir liman olarak görüldüğünün göstergesi olabilir. Ayrıca, anormal getiriler genel olarak çatışmanın gözlemlenmediği olaydan önceki günlerde görülmüştür; bu da olayın bazı kripto para birimleri tarafından öngörüldüğünü düşündürebilir. Bu bulgular, yatırımcıların ve finans uzmanlarının portföylerini çeşitlendirmelerine ve kripto para piyasasını bu tür öngörülemeyen zamanlarda alternatif bir yatırım aracı olarak görerek riskten korunma stratejileri geliştirmelerine yardımcı olabilir.

Anahtar Kelimeler: Savaş, Politik Belirsizlikler, Olay Çalışması, Bitcoin, CCI30, Kripto Paralar, Finansal Piyasalar.
Jel Kodları: G14, G15, G19.

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1. Introduction

The financial markets are harmed by worldwide incidents such as wars, pandemics, terrorist attacks, economic downturns, natural disasters, and political turmoil. During these challenging circumstances, investors tend to become more risk-averse and depressed which heightens the level of uncertainty and vulnerability in the financial markets (Kamal et al., 2023; Kumari et al., 2023). Therefore, many investors seek alternative investment tools that could serve as a safe-haven for them. Cryptocurrencies are one of those alternative investments and many researchers proved that they are considered a safe-haven during political uncertainties (i.e., Yen and Cheng, 2020; Colon et al., 2021; Umar et al., 2021; Kevser, 2022), terrorist attacks (i.e., Almaqableh et al., 2022), wars (i.e., Kayral et al., 2023; Oosterlinck et al., 2023), and COVID-19 pandemic (i.e., Corbet et al., 2020; Rubbaniy et al., 2021; Chen et al., 2022; Frikha et al., 2023).

Previously, while plenty of studies employed the event study methodology to assess the impact of particular events (like pandemics, terrorist attacks, good and bad news, etc.) on the cryptocurrency market, very few of them considered the impact of wars (Arouri et al., 2022; Theiri et al., 2023; Daskalakis and Daglis, 2023; Diaconaşu et al., 2023). The conflict between Israel and Palestine is the most recent war and puts numerous nations in danger in the economic, political, and geopolitical areas. This conflict dates back to 1947, but it reached new heights after Hamas attacked Israel on October 7 and Israel formally declared war on October 8[1].

The effect of the current Israel and Palestine conflict on financial markets has not been examined yet, and this study aims to investigate how this recent crisis has affected the returns of cryptocurrencies. The cryptocurrency market is particularly important because it serves as a crucial means of money exchange for the Hamas group; in 2019 they encouraged their supporters to adopt cryptocurrencies for fundraising (Harryarsana, 2022; Akcaci and Gok, 2023). Moreover, as abovementioned, the market may be perceived as a safe-haven during these kinds of risky periods. To this end, the event study methodology is employed for the period 01.03.2023 – 17.10.2023. Based on their market capitalization, the top ten cryptocurrencies are considered for the analyses, and as a benchmark index, Cryptocurrency Index 30 (CCI30) is preferred. This is one of the first studies to clarify the potential consequences of the ongoing global conflict and provide insights into whether the market is still seen as a safe-haven.

In the remaining parts of the study, first, the related literature will be summarized. Second, data and methodology will be defined. Third, the empirical results will be clarified. Finally, the study will be concluded with a discussion of the findings, their policy implications, and suggestions for future research.

2. Literature Background

The effect of wars on stock markets has been discussed by researchers for decades. For instance, Choudhry (2010) and Hudson and Urquhart (2015) examined the effect of World War II on the Dow Jones Industrial Index and the British stock market, respectively, and revealed adverse effects on stock returns. Recently, the Russia-Ukrainian war is one of the current issues that has been the focus of investigations. One of these studies was conducted by Abbasi et al. (2022) in the G7 countries and they concluded that the conflict had a major impact on the stock market indices of Japan, the UK, Germany, Canada, and Italy. Additionally, Yousaf et al. (2022) examined six stock markets together with the G20 countries and demonstrated that the war negatively affected the European and Asian stock markets. Moreover, few studies analyzed the effect on various European markets, and they commonly demonstrated a negative effect (Ahmed et al., 2022; Mojanoski and Bucevska, 2022; Kumari et al., 2023). Overall, investigations have demonstrated that countries closer to the war region and more economically dependent on the sides will be

[1] Retrieved from https://www.emerald.com/insight/content/doi/10.1108/OXAN-DB282522/full/html; and https://www.hrw.org/world-report/2023/country-chapters/israel-and-palestine (Accessed on 30.11.2023).

more severely affected by the conflict (Sun and Zhang, 2022; Sun et al., 2022; Kumari et al., 2023).

Furthermore, the cryptocurrency market is susceptible to geopolitical crises; but, as noted by Alexakis et al. (2024), trading activity in the market tends to increase during these difficult times compared to the stock market. To this end, the effect of the Russia-Ukrainian conflict has been examined also for the cryptocurrency market. The majority of these studies focused on the safe-haven property of cryptocurrencies, and they analyzed whether it was valid during that conflict. According to Mohamad (2022), there is evidence that investors favored safe-haven assets over rubles. In the commodity and cryptocurrency markets, herd behavior was observed, and the assets with the most price movements were Brent and Bitcoin (Mohamad, 2022). Moreover, Frikha et al. (2023) investigated how the COVID-19 pandemic and the Russia-Ukraine war affected commodities, the US and Chinese stock markets, and the four main cryptocurrencies: Bitcoin, Ethereum, BNB, and Ripple. Both gold and cryptocurrencies were determined to be safe-haven assets during the pandemic, but only gold was found to be a safe-haven asset during the conflict. Similarly, the findings of Kayral et al. (2023) suggested that gold and Bitcoin were safe-haven assets during the periods of the pandemic and the Russia-Ukraine conflict. The results of Oosterlinck et al. (2023) also demonstrated that although gold was regarded as a safe-haven during the war, Bitcoin had a higher capacity for asset diversification than gold. In contrast, Ustaoglu (2023) suggested that gold provided a better hedge than Bitcoin.

The remaining studies examined the effect of war on different features of cryptocurrencies (such as returns, volatility, volume, etc.) by using various econometric models. Fernandes et al. (2022) examined the informational efficiency of the top ten cryptocurrencies during the conflict by employing entropy methodology. Their findings suggested that the efficiency during the crisis depends on the market capitalization of the coins (i.e., the ones with greater capitalization had lower efficiency during the war). Appiah-Otoo (2023) used a generalized method of moments (GMM) to investigate the effect of conflict on Bitcoin trading volume and revealed that the impact was stronger during the post-invasion time.

Besides, few studies have employed event study methods to examine the impact of war. Arouri et al. (2022) estimated the abnormal returns of the top ten cryptocurrencies during the Russia-Ukraine war. Their research revealed that all other cryptocurrencies, except Binance coin, had negative returns; on the other hand, Binance coin had positive returns. Theiri et al. (2023) examined the liquidity levels of Bitcoin and Ethereum throughout the war and found that they rose during the first two days leading up to the event and then fell back to where it was before the event. Daskalakis and Daglis (2023) considered Bitcoin prices and volatility during the conflict and revealed that the volume of Bitcoin was more impacted by the conflict than the price. Lastly, Diaconaşu et al. (2023) analyzed the effect of war on commodity, stock, and cryptocurrency markets. In terms of the cryptocurrency market, cumulative abnormal returns of Bitcoin were found not to be statistically significant.

3. Data and Methodology

The ten largest cryptocurrencies by market capitalization have been selected to represent the entire market. The list of the cryptocurrencies with their full name, codes, and market capitalization is shown in Table 1. As of 01.12.2023, the top ten cryptocurrencies were Bitcoin, Ethereum, Tether USDt, Binance, XRP Ledger, Solana, USD Coin, Cardano, Dogecoin, and TRON. The entire global market capitalization is currently $1.44 trillion, of which over 52% is comprised of Bitcoin alone[2]. Daily closing prices of each cryptocurrency are retrieved from www.investing.com.

[2] Retrieved from https://coinmarketcap.com/ (Accessed on 1.12.2023).

Table 1. List of Cryptocurrencies

#	Full Name	Codes	Market Capitalization ($)
1	Bitcoin	BTC	756,020,936,523
2	Ethereum	ETH	252,587,206,184
3	Tether USDt	USDt	89,356,223,159
4	Binance	BNB	34,817,500,187
5	XRP Ledger	XRP	33,041,455,442
6	Solana	SOL	25,993,251,752
7	USD Coin	USDC	24,547,825,851
8	Cardano	ADA	13,444,742,002
9	Dogecoin	DOGE	13,444,742,002
10	TRON	TRX	9,196,791,635

Note: This table shows the ten largest cryptocurrencies based on their market capitalization as of 01.12.2023. The data was retrieved from the coinmarketcap.com website.

To calculate the expected returns of each cryptocurrency, a benchmark index has to be identified which will represent the entire market. Following Tomic (2020), the Crypto Currency Index 30 (CCI30) is preferred as a benchmark. CCI30 was created on 01.01.2017, and it determines the overall increase, and daily, and long-term trends in the market by tracking the 30 biggest cryptocurrencies by market capitalization. Daily values of the CCI30 index are retrieved from https://cci30.com/. All the data covers the period from 01.03.2023 to 17.10.2023.

After all the required data has been collected, the logarithmic returns of each cryptocurrency and CCI30 index are calculated with the following equation:

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad (1)$$

In equation (1), $R_{i,t}$ represents the logarithmic return of cryptocurrency i on day t, $P_{i,t}$ is the closing price of cryptocurrency i on day t, and $P_{i,t-1}$ is the closing price of cryptocurrency i on the previous day.

In this study, the event study approach is used to calculate the impact of the Israel-Palestine conflict. First, the day of the event is determined as 07.10.2023, the day of the Hamas attack on Israel. Second, the event and the estimation periods have to be specified. The event window is the period that is considered to assess the effects of an event. According to Peterson (1989), it could last anywhere from 21 to 121 days; usually, it is set for a short period (Brooks, 2014). Therefore, with a total of 21 days, the event window is defined as 10 days before the event day (referred to as the anticipation period) and 10 days following the event day (referred to as the adjustment period). The estimation period, on the other hand, is utilized to compute the abnormal returns and is the time frame that comes before the event. In this study, the estimation period of the daily dataset is set at 210 days before the event window, following Peterson's (1989) suggestion that it should be between 100 and 300 days.

In the third step, the expected returns of each cryptocurrency have to be estimated. Equation (2) is used to determine the expected returns for each cryptocurrency using the OLS market model, which was proposed by Brown and Warner (1985).

$$ER_{i,t} = \alpha_i + \beta_i R_{m,t} \quad (2)$$

In equation (2), $ER_{i,t}$ denotes the expected return of cryptocurrency i on day t; and $R_{m,t}$ is the market index (CCI30) return on day t. The intercept and slope, denoted as α_i and β_i, respectively, are calculated by regressing the daily cryptocurrency returns throughout the estimation period (-10, -210) against the market returns.

After determining the expected returns, the abnormal returns of each cryptocurrency are computed with equation (3) by deducting the return subject to an event from the expected return that is not (Kothari and Warner, 2007).

$$AR_{i,t} = R_{i,t} - ER_{i,t} \quad (3)$$

Abnormal returns (ARs) show the instant reaction of investors and they could vary over time (Brooks, 2014). As a result, using ARs to observe the general market patterns is challenging. Therefore, cumulative abnormal returns (CARs) are computed to identify the cumulative market reactions prior to and following the event day. CARs demonstrate the market's resilience over the selected timeframes (Mojanoski and Bucevska, 2022). By summing up the daily ARs for the period (p, q) and using the following equation, the CARs are computed for each cryptocurrency for the anticipation period (-10, 0), adjustment period (0, +10), event day (0, 0), and total event window (-10, +10):

$$CAR_{i,p-q} = \sum_{t=p}^{q} AR_{i,t} \quad (4)$$

Next, the common response of cryptocurrencies to the Israel-Palestine conflict is examined by utilizing the following formula to determine the average abnormal returns (AARs) for each day:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t} \quad (5)$$

In equation (5), the AARs are computed for each day by dividing the ARs of each cryptocurrency by the total number of cryptocurrencies (N=10).

To decide whether the abnormal returns for all cryptocurrencies during the aggregated period are statistically significant, the last step involves calculating the cumulative average abnormal returns, or CAARs. Previously computed AARs are added together to determine the CAARs over the anticipation period (-10, 0), adjustment period (0, +10), event day (0, 0), and total event window (-10, +10). The statistical significance of the results is assessed by using t statistics and Microsoft Office Excel is used for all calculations.

4. Empirical Results

First, the descriptive statistics of the dataset are evaluated in Table 2. Throughout the selected period, there are a total of 231 observations for each cryptocurrency. XRP has been found to have both the highest and lowest returns among all cryptocurrencies. By comparing their standard deviations, it is also demonstrated that XRP has the greatest value, indicating its volatile nature. Conversely, having the lowest standard deviation among cryptocurrencies, USDt is the least volatile.

Table 2. Descriptive Statistics

Name	Mean	Max	Min	Std. Dev.	Obs.
BTC	0.000889	0.092003	-0.075561	0.021832	231
ETH	-0.000108	0.071532	-0.082918	0.022602	231
USDt	8.66E-07	0.003482	-0.002884	0.000472	231
BNB	-0.001533	0.072677	-0.096261	0.021075	231
XRP	0.001154	0.548163	-0.150665	0.048443	231
USDC	-8.66E-07	0.024672	-0.034876	0.002930	231
SOL	0.000388	0.169502	-0.107611	0.037921	231
ADA	-0.001542	0.209627	-0.090985	0.030626	231
DOGE	-0.001358	0.195026	-0.117443	0.031368	231
TRX	0.001080	0.100407	-0.114779	0.022177	231

Second, the abnormal returns (ARs) for each cryptocurrency are calculated and the results are shown in Table 3. Except for BTC, ETH, SOL, and XRP, on most days during

the event window, cryptocurrencies do not have significant abnormal returns. The results show that BTC experienced a positive abnormal return on the ninth day following the event, ETH had a negative abnormal return on the fifth day before the event, SOL realized positive abnormal returns both in the pre-event (sixth and seventh days) and post-event days (ninth day), and TRX experienced a positive abnormal return on the fourth day before the event. Overall, except for ETH, the cryptocurrencies reacted positively to the event, and it seems the effect of the event was not long-lasting.

Table 3. Abnormal Returns of Cryptocurrencies

Day	BTC	ETH	USDt	BNB	XRP	USDC	SOL	ADA	DOGE	TRX
t-10	0.0010	-0.0015	-0.0002	-0.0046	-0.0131	0.0002	-0.0003	-0.0072	-0.0051	0.0050
	[0.094]	[-0.182]	[-0.387]	[-0.336]	[-0.344]	[0.071]	[-0.011]	[-0.450]	[-0.234]	[0.288]
t-09	0.0011	0.0088	0.0007	-0.0038	-0.0194	-0.0011	0.0081	-0.0126	-0.0105	-0.0031
	[0.111]	[1.053]	[1.345]	[-0.279]	[-0.508]	[-0.345]	[0.359]	[-0.794]	[-0.482]	[-0.177]
t-08	-0.0082	0.0052	-0.0001	-0.0004	0.0161	-0.0002	0.0113	-0.0011	0.0074	0.0235
	[-0.799]	[0.624]	[-0.186]	[-0.026]	[0.423]	[-0.056]	[0.502]	[-0.067]	[0.340]	[1.352]
t-07	-0.0028	-0.0026	0.0002	-0.0052	-0.0217	-0.0003	**0.0463**	0.0142	-0.0047	-0.0099
	[-0.274]	[-0.306]	[0.434]	[-0.377]	[-0.569]	[-0.094]	**[2.066]****	[0.892]	[-0.216]	[-0.569]
t-06	0.0095	0.0076	0.0001	-0.0050	-0.0287	-0.0002	**0.0709**	0.0100	-0.0137	-0.0040
	[0.922]	[0.903]	[0.131]	[-0.366]	[-0.754]	[-0.075]	**[3.164]*****	[0.626]	[-0.627]	[-0.232]
t-05	0.0047	**-0.0174**	-0.0001	0.0049	0.0134	0.0000	0.0127	0.0070	0.0098	-0.0143
	[0.452]	**[-2.066]****	[-0.103]	[0.356]	[0.351]	[0.010]	[0.567]	[0.439]	[0.447]	[-0.823]
t-04	-0.0039	-0.0041	-0.0003	-0.0039	0.0485	0.0002	0.0105	0.0083	-0.0095	**0.0369**
	[-0.378]	[-0.483]	[-0.611]	[-0.284]	[1.271]	[0.061]	[0.467]	[0.525]	[-0.434]	**[2.122]****
t-03	0.0111	-0.0075	0.0002	-0.0010	-0.0155	0.0000	-0.0216	-0.0080	0.0011	-0.0238
	[1.077]	[-0.891]	[0.421]	[-0.072]	[-0.407]	[-0.010]	[-0.964]	[-0.503]	[0.051]	[-1.366]
t-02	-0.0046	-0.0112	-0.0002	-0.0018	-0.0036	0.0001	-0.0048	0.0196	0.0033	-0.0015
	[-0.447]	[-1.331]	[-0.455]	[-0.128]	[-0.093]	[0.029]	[-0.213]	[1.230]	[0.150]	[-0.085]
t-01	0.0036	0.0050	0.0005	0.0017	-0.0213	-0.0007	0.0131	-0.0017	-0.0083	-0.0233
	[0.353]	[0.592]	[1.100]	[0.127]	[-0.558]	[-0.228]	[0.584]	[-0.106]	[-0.380]	[-1.341]
0	0.0033	-0.0040	0.0000	-0.0009	-0.0036	0.0001	-0.0023	-0.0166	0.0061	0.0111
	[0.324]	[-0.477]	[-0.012]	[-0.064]	[-0.095]	[0.019]	[-0.103]	[-1.043]	[0.278]	[0.637]
t+01	0.0011	0.0029	0.0000	0.0001	-0.0039	0.0001	0.0020	-0.0029	-0.0025	-0.0001
	[0.108]	[0.347]	[-0.012]	[0.004]	[-0.102]	[0.019]	[0.091]	[-0.184]	[-0.114]	[-0.004]
t+02	0.0113	-0.0069	-0.0001	-0.0045	0.0099	0.0008	-0.0118	0.0152	-0.0063	-0.0043
	[1.097]	[-0.826]	[-0.113]	[-0.328]	[0.260]	[0.253]	[-0.526]	[0.958]	[-0.287]	[-0.244]
t+03	-0.0042	-0.0041	-0.0003	0.0175	-0.0082	0.0002	0.0058	-0.0025	0.0123	0.0025
	[-0.408]	[-0.487]	[-0.629]	[1.277]	[-0.214]	[0.053]	[0.261]	[-0.154]	[0.564]	[0.145]
t+04	-0.0116	0.0082	-0.0002	-0.0007	-0.0031	0.0006	0.0092	0.0084	0.0006	0.0027
	[-1.123]	[0.976]	[-0.446]	[-0.051]	[-0.081]	[0.182]	[0.412]	[0.528]	[0.027]	[0.156]
t+05	0.0040	-0.0078	0.0001	0.0030	0.0013	0.0003	-0.0186	0.0060	0.0018	-0.0086
	[0.391]	[-0.933]	[0.165]	[0.221]	[0.033]	[0.089]	[-0.832]	[0.379]	[0.082]	[-0.497]
t+06	-0.0043	0.0000	-0.0001	-0.0013	-0.0095	-0.0004	0.0142	-0.0095	0.0007	0.0015
	[-0.414]	[0.002]	[-0.167]	[-0.097]	[-0.250]	[-0.115]	[0.634]	[-0.598]	[0.031]	[0.084]
t+07	-0.0040	-0.0015	0.0003	0.0020	-0.0036	-0.0003	0.0028	0.0024	0.0222	-0.0088
	[-0.392]	[-0.173]	[0.633]	[0.143]	[-0.095]	[-0.086]	[0.126]	[0.148]	[1.017]	[-0.503]
t+08	0.0056	-0.0038	0.0000	0.0126	-0.0083	-0.0001	-0.0108	-0.0043	-0.0141	0.0145
	[0.547]	[-0.457]	[0.028]	[0.917]	[-0.217]	[-0.035]	[-0.482]	[-0.270]	[-0.644]	[0.834]
t+09	**0.0225**	-0.0009	0.0003	0.0030	-0.0229	-0.0008	**0.0504**	-0.0179	-0.0179	0.0053
	[2.181]**	[-0.104]	[0.535]	[0.221]	[-0.600]	[-0.263]	**[2.251]****	[-1.128]	[-0.820]	[0.307]
t+10	0.0058	-0.0108	-0.0002	-0.0047	0.0021	0.0001	0.0155	-0.0035	-0.0026	0.0035
	[0.564]	[-1.290]	[-0.456]	[-0.342]	[0.055]	[0.031]	[0.693]	[-0.220]	[-0.119]	[0.199]

Note: The first column shows the event days, the "0" indicates the event day. The values in the parentheses are the t-statistics. *,**,*** denote the significance level of p-values at %10, %5 and %1, respectively. The numbers in bold highlight the statistical significance.

Since it is difficult to evaluate overall patterns with the individual abnormal returns, in the third step, the cumulative market reactions (CARs) of each cryptocurrency are evaluated for the anticipation period (-10, 0), adjustment period (0, +10), event day (0, 0) and total event window (-10, +10), and the results are presented in Table 4. According to the results except SOL, none of the cryptocurrencies experienced statistically significant cumulative abnormal returns in any period. Only the Solana coin had statistically significant CARs during the anticipation and total periods, and the returns were positively impacted by the event.

Table 4. Cumulative Abnormal Returns of Cryptocurrencies

Codes	Anticipation Period (-10, 0)	Event Day (0,0)	Adjustment Period (0, +10)	Total Period (-10, +10)
BTC	0.0114	0.0033	0.0263	0.0410
	[0.3513]	[0.3239]	[0.8066]	[0.8698]
ETH	-0.0175	-0.0040	-0.0247	-0.0463
	[-0.6597]	[-0.4767]	[-0.9316]	[-1.2021]
USDt	8.22E-04	-5.73E-06	-2.24E-04	5.92E-04
	[5.34E-01]	[-1.18E-02]	[-1.46E-01]	[2.65E-01]
BNB	-0.0190	-0.0009	0.0270	0.0071
	[-0.4376]	[-0.0644]	[0.6211]	[0.1125}
XRP	-0.0453	-0.0036	-0.0461	-0.0951
	[-0.3758]	[-0.0952]	[-0.3827]	[-0.5442]
USDC	-1.9E-03	5.7E-05	3.9E-04	-1.5E-03
	[-2.0E-01]	[1.9E-02]	[4.1E-02]	[-1.1E-01]
SOL	**0.1461**	-0.0023	0.0589	**0.2027**
	[2.0624]**	[-0.1028]	[0.8309]	**[1.9741]****
ADA	0.0285	-0.0166	-0.0086	0.0033
	[0.5666]	[-1.0428]	[-0.1710]	[0.0455]
DOGE	-0.0303	0.0061	-0.0058	-0.0300
	[-0.4386]	[0.2783	[-0.0834]	[-0.2995]
TRX	-0.0145	0.0111	0.0083	0.0049
	[-0.2630]	[0.6373]	[0.1504]	[0.0614]

Note: The values in the parentheses are the t-statistics. *,**,*** denote the significance level of p-values at %10, %5 and %1, respectively. The numbers in bold highlight the statistical significance.

In the next step, the average abnormal returns (AARs) for each day, including the top ten cryptocurrencies, are computed to depict the entire reaction of the cryptocurrency market to an event. The results are shown in Table 5 and the market seems not affected by the event. There is a statistically significant and positive abnormal return only on the fourth day prior to the event. Since the results of the AARs are unable to capture the performance of the aggregate cryptocurrency market for a specific period, the cumulative average abnormal returns, or CAARs, are computed for the anticipation, adjustment, total periods, and event day at the final stage. The results are presented in Table 6 and none of them are statistically significant. In conclusion, the Israel-Palestine conflict has an impact on specific cryptocurrencies, but overall market performance appears to be unaffected.

Table 5. Average Abnormal Returns of the Cryptocurrency Market

	Day	AARs	t-test
Anticipation Period (pre-event)	t-10	-0.0026	-0.5533
	t-09	-0.0032	-0.6831
	t-08	0.0054	1.1519
	t-07	0.0013	0.2898
	t-06	0.0046	0.9927
	t-05	0.0021	0.4442
	t-04	**0.0083**	**1.7764***
	t-03	-0.0065	-1.3945
	t-02	-0.0005	-0.1001
	t-01	-0.0031	-0.6724
	0	-0.0007	-0.1469
Adjustment Period (post-event)	t+01	-0.0003	-0.0694
	t+02	0.0003	0.0733
	t+03	0.0019	0.4117
	t+04	0.0014	0.3034
	t+05	-0.0019	-0.4006
	t+06	-0.0009	-0.1870
	t+07	0.0012	0.2482
	t+08	-0.0009	-0.1857
	t+09	0.0021	0.4536
	t+10	0.0005	0.1104

Note: The "0" indicates the event day. *,**,*** denote the significance level of p-values at %10, %5 and %1, respectively. The numbers in bold highlight the statistical significance.

Table 6. Cumulative Average Abnormal Returns of the Cryptocurrency Market

Statistics	Anticipation Period (-10, 0)	Event Day (0,0)	Adjustment Period (0, +10)	Total Period (-10, +10)
CAAR	0.0058	-0.0007	0.0035	0.0087
t-stats	0.3958	-0.1469	0.2397	0.4065

Note: *,**,*** denote the significance level of p-values at %1, %5 and %10, respectively.

5. Conclusion

The international conflicts have a crucial role in the financial markets. The ongoing conflict between Israel and Palestine is one of them and creates political, economic, and geopolitical risks globally. This study aims to examine the potential effects of the Israel-Palestine conflict on the cryptocurrency market. To measure the impact, an event study methodology was employed throughout the period 01.03.2023 to 17.10.2023. The date of Hamas's attack on Israel, 7 October 2023, was designated as the event date. The top ten cryptocurrencies based on their market capitalization are used for the analyses and Cryptocurrency Index 30 (CCI30) is considered as a benchmark index. As of 01.12.2023, the top ten cryptocurrencies were Bitcoin, Ethereum, Tether USDt, Binance, XRP Ledger, Solana, USD Coin, Cardano, Dogecoin, and TRON.

To calculate the abnormal returns (ARs) and average abnormal returns (AARs) for each day, as well as the cumulative abnormal returns (CARs) and cumulative average abnormal returns (CAARs) for the anticipation period (-10, 0), adjustment period (0, +10), event day (0, 0), and total event window (-10, +10), the logarithmic returns of each cryptocurrency were first determined. The analysis of abnormal returns (ARs) for each cryptocurrency reveals that ETH experienced a negative AR on the fifth day before the event, SOL realized positive ARs on both the pre-and post-event days, while BTC and TRX showed positive ARs on the pre-event day. Hence, Ethereum was the only coin that was affected negatively by the conflict. The results of the cumulative abnormal returns (CARs) for the specified periods showed that only SOL had positive abnormal returns that were statistically significant over the pre-event and total periods. When the entire market reactions were evaluated with AARs and CAARs, it was observed that there was a statistically significant and positive abnormal return only on the fourth day before the event, and the CAARs were not found to be statistically significant for any of the periods.

To sum up, while the Israel-Palestine crisis had an impact on some individual cryptocurrencies (such as BTC, TRX, SOL, and ETH), its overall market impact was not statistically significant. Additionally, the majority of the individual effects were positive, which may be an indication of the cryptocurrency market's safe-haven characteristic as revealed by earlier research (Yen and Cheng, 2020; Corbet et al., 2020; Rubbaniy et al., 2021; Almaqableh et al., 2022; Oosterlinck et al., 2023). Consequently, this result may provide great insight for investors and financial analysts by perceiving cryptocurrencies as an alternative investment tool in these turbulent periods and using the findings to diversify their portfolios and create hedging strategies. However, to reach more precise conclusions, more comprehensive studies have to be conducted by including all other turbulent events (such as the COVID-19 pandemic and the Russia-Ukrainian war) and particularly examining the safe-haven properties of the market in these periods in future analyses. Moreover, the abnormal returns were typically seen in the days before the event, when the conflict was unobserved, which may suggest that the event had been anticipated by some cryptocurrencies. Although it needs further investigation, this result may be explained by the fact that the Hamas group uses the cryptocurrency market as a major means of money exchange (Harryarsana, 2022; Akcaci and Gok, 2023). Since the war is still ongoing and increases its severity every day, future research may also employ similar research for longer periods and different financial markets.

References

Abbassi, W., Kumari, V., & Pandey, D. K. (2022). What makes firms vulnerable to the Russia–Ukraine Crisis?. *The Journal of Risk Finance*, *24*(1), 24-39.

Ahmed, S., Hasan, M. M., & Kamal, M. R. (2022). Russia–Ukraine crisis: The effects on the European stock market. *European Financial Management*, 1-41.

Akcaci, T., & Gok, A. (2023). Terörizmin Finansmanı ve Kripto Paralar. *Türk Sosyal Bilimler Araştırmaları Dergisi*, *8*(1), 32-46.

Alexakis, C., Anselmi, G., & Petrella, G. (2024). Flight to cryptos: Evidence on the use of cryptocurrencies in times of geopolitical tensions. *International Review of Economics & Finance*, *89*, 498-523.

Almaqableh, L., Reddy, K., Pereira, V., Ramiah, V., Wallace, D., & Veron, J. F. (2022). An investigative study of links between terrorist attacks and cryptocurrency markets. *Journal of Business Research*, *147*, 177-188.

Appiah-Otoo, I. (2023). The Impact of the Russia-Ukraine War on the Cryptocurrency Market. *Asian Economics Letters*, *4*(1), 1-5.

Arouri, M., Ayed, S., & Barguellil, A. (2022). *War and Cryptocurrency markets: An Empirical Investigation*. SSRN. https://ssrn.com/abstract=4116377

Brooks, C. (2014). *Introductory Econometrics for Finance*. Cambridge University Press.

Brown, S. J. & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, *14*(1), 3-31.

Chen, M., Qin, C., & Zhang, X. (2022). Cryptocurrency price discrepancies under uncertainty: evidence from COVID-19 and lockdown nexus. *Journal of International Money and Finance*, *124*, 1-19.

Choudhry, T. (2010). World War II events and the Dow Jones industrial index. *Journal of Banking & Finance,* 34(5), 1022-1031.

Colon, F., Kim, C., Kim, H., & Kim, W. (2021). The effect of political and economic uncertainty on the cryptocurrency market. *Finance Research Letters*, *39*, 1-7.

Corbet, S., Larkin, C., & Lucey, B. (2020). The contagion effects of the COVID-19 pandemic: Evidence from gold and cryptocurrencies. *Finance Research Letters*, *35*, 1-7.

Daskalakis, N., & Daglis, T. (2023). The Russian War in Ukraine and its Effect in the Bitcoin Market. *International Journal of Economics & Business Administration*, *11*(1), 3-16.

Diaconaşu, D. E., Mehdian, S. M., & Stoica, O. (2023). The reaction of financial markets to Russia's invasion of Ukraine: evidence from gold, oil, bitcoin, and major stock markets. *Applied Economics Letters*, *30*(19), 2792-2796.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance, 25*(2), 383-417.

Fernandes, L. H., de Araujo, F. H. A., Silva, J. W., Sobrinho, K. E., & Tabak, B. M. (2022). *Un (punishment) of Russia-Ukraine war in the top ten digital currencies.* Authorea Preprints. https://www.authorea.com/doi/full/10.22541/au.166846329.92068390

Frikha, W., Brahim, M., Jeribi, A., & Lahiani, A. (2023). COVID-19, Russia-Ukraine war and interconnectedness between stock and crypto markets: a wavelet-based analysis. *Journal of Business Analytics*, *6*(4), 255-275.

Harryarsana, I. G. K. B. (2022). A Comparison of Regulation of Bitcoin as Crypto (Digital) Currency. *UNTAG Law Review*, *6*(2), 1-11.

Hudson, R., & Urquhart, A. (2015). War and stock markets: The effect of World War Two on the British stock market. *International Review of Financial Analysis, 40*, 166-177.

Kamal, M. R., Ahmed, S., & Hasan, M. M. (2023). The impact of the Russia-Ukraine crisis on the stock market: Evidence from Australia. *Pacific-Basin Finance Journal*, *79*, 1-27.

Kayral, I. E., Jeribi, A., & Loukil, S. (2023). Are Bitcoin and Gold a Safe Haven during COVID-19 and the 2022 Russia–Ukraine War?. *Journal of Risk and Financial Management*, *16*(4), 1-22.

Kevser, M. (2023). Bitcoin as an Alternative Financial Asset Class: Relations Between Geopolitical Risk, Global Economic Political Uncertainty, and Energy Consumption. *Pamukkale Journal of Eurasian Socioeconomic Studies*, *9*(2), 117-131.

Kumari, V., Kumar, G, & Pandey, D. K. (2023). Are the European Union stock markets vulnerable to the Russia–Ukraine war?. *Journal of Behavioral and Experimental Finance*, *37*, 1-13.

Kothari, S. P. & Warner, J. B. (2007). Econometrics of event studies. *In Handbook of empirical corporate finance (pp. 3-36),* Elsevier.

Mohamad, A. (2022). Safe flight to which haven when Russia invades Ukraine? A 48-hour story. *Economics Letters*, *216*, 1-7.

Mojanoski, G. & Bucevska, V. (2022). Event study on the reaction of the Balkan stock markets to the conflict between Russia and Ukraine. *Croatian Review of Economic, Business and Social Statistics*, *8*(2), 18-27.

Oosterlinck, K., Reyns, A., & Szafarz, A. (2023). Gold, bitcoin, and portfolio diversification: Lessons from the Ukrainian war. *Resources Policy*, *83*, 1-5.

Peterson, P. P. (1989). Event studies: A review of issues and methodology. *Quarterly Journal of Business and Economics*, *28*(3), 36-66.

Rubbaniy, G., Polyzos, S., Rizvi, S. K. A., & Tessema, A. (2021). COVID-19, Lockdowns and herding towards a cryptocurrency market-specific implied volatility index. *Economics Letters*, *207*, 1-6.

Sun, M. & Zhang, C. (2022). Comprehensive analysis of global stock market reactions to the Russia-Ukraine war. *Applied Economics Letters, 30*(18), 1-8.

Sun, M., Song, H., & Zhang, C. (2022). *The effects of 2022 Russian invasion of Ukraine on global stock markets: An event study approach*. SSRN. https://dx.doi.org/10.2139/ssrn.4051987

Theiri, S., Nekhili, R., & Sultan, J. (2023). Cryptocurrency liquidity during the Russia–Ukraine war: the case of Bitcoin and Ethereum. *The Journal of Risk Finance*, *24*(1), 59-71.

Tomic, N. (2020). Measuring the effects of Bitcoin forks on selected cryptocurrencies using event study methodology. *Industrija, 48*(2), 21-36.

Umar, M., Su, C. W., Rizvi, S. K. A., & Shao, X. F. (2021). Bitcoin: A safe haven asset and a winner amid political and economic uncertainties in the US?. *Technological Forecasting and Social Change*, *167*, 1-13.

Ustaoglu, E. (2023). Diversification, hedge, and safe-haven properties of gold and bitcoin with portfolio implications during the Russia–Ukraine war. *Resources Policy*, *84*, 1-11.

Yen, K. C., & Cheng, H. P. (2020). *US Partisan Conflict and Cryptocurrency Market*. SSRN. https://ssrn.com/abstract=3578271

Yousaf, I., Patel, R. & Yarovaya, L. (2022). The reaction of G20+ stock markets to the Russia–Ukraine conflict "black-swan" event: Evidence from event study approach. *Journal of Behavioral and Experimental Finance*, *35*, 100723.

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