

## BITCOIN – HEDGE OR SPECULATIVE ASSET: ANALYSIS OF ITS ROLE AND NATURE<sup>2</sup>

*Bitcoin is regarded as a remarkable achievement of the Fourth Industrial Revolution and ranks among the most intricate technological and financial creations. It has long been the focus of attention of investors who are looking for a safe-haven asset. The purpose of this study is to check whether Bitcoin plays the role of a safe-haven asset (hedge). To achieve this, the impact of economic and political uncertainty (EPU) on the return and variation of Bitcoin is investigated. It is being analyzed whether, in comparison with the development of EPU, the returns and variations of Bitcoin show characteristics typical of safe-haven assets or those of ordinary speculative assets. As EPU levels elevate, it is anticipated that safe-haven assets like gold will see a rise in both their returns and variation, whereas typical speculative assets will experience heightened variation and diminished returns. The study uses ordinary linear regression and quantile regression models that cover data for the period between February 2013 and July 2023. These models play a crucial role in ascertaining if Bitcoin functions as a safe-haven asset during turbulent times and if it holds the capacity to serve as a hedge against economic uncertainty. The results of the study are of paramount importance for investors, as they help them decide whether to include Bitcoin in their portfolios for diversification and protection of their capital during unstable economic conditions.*

*Keywords: Bitcoin; economic and political uncertainty – EPU; safe-haven asset; speculative asset*

*JEL: C52; C58; G15; G17; O33*

### 1. Introduction

In the wake of the global financial crisis and the weakening trust in the existing financial structure, there emerged an increasing level of uncertainty regarding the economic strategies governments and central banks would implement. In this particular situation, Nakamoto (2008) introduced an alternative to traditional trust-based currencies in the form of a "digital currency" called Bitcoin (Nakamoto, 2008). Bitcoin stands as a decentralized digital currency, formulated as an alternative to conventional fiat currencies. It is marked by its autonomy from governments, central banks, and other entities, and has been suggested as a substitute for the ineffective economic and financial norms of the worldwide currency

---

<sup>1</sup> Svetoslav Borisov, Chief Assistant Professor, PhD, University of Economics – Varna, 0889 440855, e-mail: svetoslav\_borisov@ue-varna.bg.

<sup>2</sup> This paper should be cited as: Borisov, S. (2024). Bitcoin – Hedge or Speculative Asset: Analysis of Its Role and Nature. – *Economic Studies (Ikonomicheski Izsledvania)*, 33(5), pp. 148-170.

markets. Since its creation, the value of Bitcoin has significantly increased from \$0.09 on July 18, 2010, to an all-time high of \$68,789 on November 10, 2021 (Bankrate.com, 2023). Bitcoin attracts significant interest from investors and practitioners, especially in periods of financial uncertainty and low trust, which is one of the reasons for its popularity. This rapid growth has encouraged interest in the literature that explains the economic and financial factors that can affect its price (Demir et al., 2018). Nonetheless, the interest in Bitcoin from the financial press and the academic community is accompanied by the perception of it as an extremely volatile commodity. Given its value and potential as an investment tool, modelling the price volatility of Bitcoin is an important factor in decision-making and the application of risk management practices.

Regardless of appearing to be unaffected by economic and financial changes (Kristoufek, 2013), various research studies have demonstrated that Bitcoin becomes more appealing during times of economic uncertainty and when trust in traditional economic and financial institutions is low (Bouri, Gupta, et al., 2017; Demir et al., 2018; Fang et al., 2019). These studies suggest that Bitcoin can be utilized as a hedge against the stock market, potentially addressing the inefficiency of these systems (Dyhrberg, 2016; Selmi et al., 2018; Guesmi et al., 2019).

Despite this, Bitcoin was proposed as a hedge against economic uncertainty, it has faced criticism and is not exempt from it. The speculative nature of cryptocurrency, as indicated by various studies (Cheah, Fry, 2015; Baur et al., 2018; Eom et al., 2019), its tendency to form speculative bubbles (Corbet et al., 2018; Bouri, Shahzad, et al., 2019), high price volatility (Brandvold et al., 2015; Aalborg et al., 2019), and the existence of scandals and fraudulent activities have sparked debates about its appropriateness and function within the financial system (Selmi et al., 2018). The underlying inquiry emerges: Does Bitcoin primarily serve as a medium of exchange and a repository of value?

Therefore, the scientific purpose of this study is to investigate the role of Bitcoin in the context of global economic policy uncertainty (GEPU). The subject of the study is Bitcoin, while the object is the impact of economic and political uncertainty on Bitcoin. The primary focus of the investigation is to determine if Bitcoin can serve as a safe-haven asset or hedge against economic and political instability. This is because Bitcoin operates independently from the current economic and financial system. In addition, it is important to recognize that it can also be viewed as a speculative asset due to its significant level of volatility. The objective is to investigate how Economic Policy Uncertainty (EPU) influences the return and variation of Bitcoin and gold, with EPU defined as "the likelihood of modifications in prevailing economic policies" (Baker et al., 2016). This research assesses the role that Bitcoin plays, by considering the behaviour of the returns and volatility of this cryptocurrency under variations in EPU. This approach is appropriate because it has two key objectives:

The primary aim is to explore the potential of utilizing Bitcoin as a safe-haven asset in mitigating the impact of economic and political uncertainty.

Secondly, the objective is to assess whether Bitcoin can be classified as a speculative asset based on its notable volatility characteristics.

When investors encounter uncertainty regarding upcoming fiscal, regulatory, and monetary policies, it is anticipated that they will seek to increase both their returns and volatility by turning to hedging or safe-haven assets. As volatility increases, speculative assets typically decrease their returns. Furthermore, a significant aspect of this research is the differentiation made regarding the influence of EPU on the returns and variation of Bitcoin across quantiles. The goal is to investigate the behaviour of the returns and variation of Bitcoin in periods of high and low EPU levels.

## **2. Gold and Bitcoin as Strategic Tools for Portfolio Optimization: Analysis of the Benefits of Diversification and Risk Reduction**

Gold has been used as a natural currency and store of value for centuries. During times of market uncertainty, it serves a crucial function as a portfolio balancer and source of liquidity. Gold serves as a safeguard against inflation (Hoang et al., 2016) and illustrates opposing patterns in response to economic indicators (Elder et al., 2012), setting it apart from other assets, notably stocks. When capital markets collapse, gold preserves or further enhances its value. Research has shown that gold functions as a hedge against stocks in regular times and performs as a safe-haven asset during times of stress (Baur, Lucey, 2010) (Beckmann et al., 2015). Based on the findings of Baur and Glover (2012), the behaviour of investors has the potential to diminish the protective characteristics of gold. This phenomenon can occur when there is a notable increase in the allocation of funds towards gold for speculation or hedging. This means that gold can be used not only as a protective asset but also for speculative purposes. On the other hand, Klein (2017) employs a dynamic correlation model and proves that gold plays the role of a hedge for stock markets in the United States and Europe (Klein, 2017). However, this hedging role seems to have declined since 2013.

Currently, public attention is shifting from gold to a new emerging asset called Bitcoin. This asset is portrayed as possessing comparable characteristics to gold, particularly when it comes to its ability to hedge against risks and its role as a secure investment. On January 3, 2009, Bitcoin was introduced as the initial decentralized and entirely digital currency system. It operates on the principles of blockchain technology and verifies transactions through a proof of work mechanism<sup>3</sup>. It quickly gained popularity as an investment option, thanks to its ability to function as a medium of exchange, independence from government authorities, and the ability to trade on specialized exchanges.

Investments in Bitcoin have become easier to access due to the introduction of various Bitcoin funds by major global investment banks like Falcon Private Bank and ARK Investment Management. The Chicago Mercantile Exchange (CME) Group and the Chicago Board Options Exchange (CBOE) introduced a futures contract based on Bitcoin as the underlying asset in December 2017. This move transformed Bitcoin from a peripheral asset

---

<sup>3</sup> Blockchain is a decentralized and publicly distributed database that stores all Bitcoin transactions. It ensures transparency and immutability of records through the utilization of cryptography and a consensus mechanism known as "proof of work." This mechanism addresses the double-spending problem by confirming and validating each transaction within the network. For a more detailed explanation of how Bitcoin functions, you may refer to the research conducted by Selgin (2015).

in the financial world to a mainstream one. This provides Bitcoin with credibility and renders it progressively challenging to disregard as an investment possibility<sup>4</sup>. The minimal correlation of Bitcoin with traditional assets makes it a highly useful tool for diversification (Corbet et al., 2018; Baur et al., 2018; Guesmi et al., 2019) and an important means of hedging against stocks (Balcilar et al., 2017) or the broader stock index (Bouri, Gupta, et al., 2017). Interestingly, during the European debt crisis of 2010-2015 and the Cyprus banking crisis of 2012-2013, Bitcoin was not affected but rather developed successfully (Kristoufek, 2013; Luther, Salter, 2017). This happened when some investors were abandoning sovereign currencies in favour of assets that are not subject to political and sovereign risks. In April 2017, about eight years after its creation, one Bitcoin acquired a greater value than an ounce of gold. As of July 2023, one Bitcoin has a value that is more than 15 times greater than the value of an ounce of gold (Tradingview.com, 2023).

The decentralized nature of Bitcoin, which is not controlled by any government or centralized institutions, including the banking system, implies that it can serve as a significant component in the alternative economy (Fang et al., 2019; Bouri, Gupta, et al., 2017). This opens up the possibility for Bitcoin to function as an instrument for hedging or a safe-haven asset, especially in conditions of loss of trust in the economic system. But does Bitcoin simply act as a medium of exchange or is it rather a mere speculative asset? To gain insight into this role, multiple studies have attempted to elucidate the behaviour of Bitcoin concerning various assets such as stocks (Bouri, Molnár, et al., 2017), bonds (Fang et al., 2019), commodities (Shahzad et al., 2019), gold (Al-Khazali et al., 2018), traditional currencies (Bouri, Molnár, et al., 2017), economic strain (Bouri et al., 2018), and economic policy uncertainty (EPU) (Bouri, Gupta, et al., 2017; Demir et al., 2018; Fang et al., 2019).

The focal point of the debate lies in Bitcoin's ability to represent, or even surpass, the hedging properties of gold compared to the returns of stock markets. Despite specific empirical investigations into both gold and Bitcoin (Bouri, Gupta, et al., 2017; Corbet et al., 2018; Ji et al., 2018), there is still inadequate substantiation about whether Bitcoin and gold jointly assume the roles of safe-haven assets or hedge in the context of equity index shifts during challenging market situations, where hedging assumes particular significance<sup>5</sup>. There is a lack of empirical evidence supporting the advantages of combining gold and Bitcoin in different portfolio compositions and probabilities, particularly in periods when the stock market is experiencing lower returns and both gold and Bitcoin markets are declining.

Although numerous individuals argue that Bitcoin shares certain attributes that render it partially analogous to gold, there exist several underlying distinctions between these two entities. The principal distinctions between gold and Bitcoin encompass their material nature, historical background, intrinsic value, volatility, utility in production, and recognition as a global currency reserve. Unlike gold, Bitcoin is an intangible asset with a relatively short and

---

<sup>4</sup> Baur et al. (2018) establish a weak correlation between Bitcoin and stocks. This signifies that Bitcoin can serve as a diversification asset both during normal and stressful periods. *According to the authors, Bitcoin's primary usage lies within the realm of speculative investments, rather than being regarded as an alternative currency or medium of exchange.*

<sup>5</sup> According to a recent study conducted by Klein et al. (2018) utilizing a combination of methodologies, it is established that the conditional variance properties of Bitcoin significantly differ from those of gold.

contentious history (Bhaskar et al., 2019). The debate surrounding the intrinsic value of Bitcoin continues, as it does not have institutional support. However, recent research indicates that the price of Bitcoin is not solely influenced by speculation (Kristoufek, 2015; Ciaian et al., 2016). As a leading cryptocurrency, Bitcoin exhibits extremely high volatility in financial markets, and despite being on a rather stable downward trend in 2016, it experienced a significant surge starting in early 2017 (Kristoufek, 2018).

These two assets, gold and Bitcoin, share several common characteristics that render them potentially deflationary and uncorrelated with stock markets. While these aspects are well-studied and documented for gold, they are less familiar in the case of Bitcoin. Bitcoin is considered a deflationary asset, as its circulating supply is limited and algorithmically defined to prevent artificial inflation, thereby lacking an inflationary effect. As a result, this leads to a prolonged price rise due to a reasonable level of demand. Both assets are categorized as commodities by the U.S. Commodity Futures Trading Commission and possess production processes – Bitcoin's mining and gold's extraction – although these processes differ physically and technically. Both assets remain beyond the control of sovereign authorities, such as central banks, and have a limited supply<sup>6</sup>. They also exhibit a positive relationship between returns and variation, making them potential hedging tools against inflation and risks associated with capital markets. Moreover, both gold and Bitcoin exhibit asymmetrical responses to positive and negative news, and unlike conventional assets such as equities and bonds, they cannot generate cash flows. Among all these characteristics, the most significant is that both gold and Bitcoin represent effective means of protection against inflation and risks tied to the stock market.

Numerous research works suggest that Bitcoin displays a notably feeble correlation with conventional financial instruments, including stocks and bonds (Dyhrberg, 2016; Bouri, Gupta, et al., 2017; Bouri, Molnár, et al., 2017). This implies that fluctuations in the price of Bitcoin are not closely tied to developments in the stock markets. Intriguingly, studies (Kristoufek, 2015) indicate a mild association between Bitcoin and gold, indicating that these two assets could serve as effective means of diversifying risk, especially when used together.

Bitcoin's capacity to operate as both a hedge and a safe-haven asset is exemplified by its capability to recover and preserve value amidst periods of upheaval (Selmi et al., 2018). This was particularly noticeable after the 2008 crisis when the uncertain economic environment contributed to the rise in Bitcoin's popularity (Weber, 2015). In times of upheaval, Bitcoin was often perceived as a safe-haven asset against the uncertainties linked to traditional financial and economic structures (Bouri, Gupta, et al., 2017). One of the key reasons for the growing interest in Bitcoin was its low transaction fees, further stimulating the demand for this cryptocurrency (Ciaian et al., 2016).

The change in volatility dynamics of Bitcoin in 2017 has a counterproductive effect, as this period is characterized by an influx of new investors and increased liquidity. Nevertheless, trading volumes of Bitcoin and other cryptocurrencies remain relatively low in comparison

---

<sup>6</sup> The supply of Bitcoin is strictly limited, as defined by the Bitcoin protocol itself, which establishes an upper limit of 21 million mined coins in its total issuance. This means that the overall number of Bitcoin coins that can be created is pre-determined and cannot be altered. The process of creating Bitcoin is entirely algorithmic and is executed according to strict rules and protocols.

to traditional financial instruments. This simultaneously presents a challenge and an opportunity for further development and growth, as well as a cautionary signal for institutional investors.

Despite geographical limitations and a lack of global acceptance, the potential for Bitcoin's use as a payment medium is growing. For most of these factors, we can consider gold as almost the exact opposite. As an ideal safe-haven asset, the most challenging characteristics of Bitcoin encompass its questionable history (although many investors believe in its reliability) and high volatility (suggesting that in an ideal scenario, Bitcoin should exhibit a negative correlation with the remaining components of the portfolio, such as a stock index, to qualify as an effective hedging instrument).

### **3. Analysis of the Impact of Economic and Political Uncertainty on the Risk and Return of Bitcoin**

Investors are increasingly showing interest in cryptocurrencies as an appealing investment, considering them as a "safe-haven asset" during periods of market instability. Factors influencing the profitability of cryptocurrencies, due to the inefficiencies of the Bitcoin market, have been a subject of recent research. Some of these studies examine the impact of technical indicators of cryptocurrencies, media exposure, the property of "mean reversion," and conditional tail risks that can be predicted promptly. Moreover, numerous studies demonstrate that cryptocurrency returns can be influenced by macroeconomic circumstances.

A new area of scientific literature explores the relationship between Bitcoin behaviour and economic uncertainty to substantiate its potential role as a safe-haven asset. Only a restricted range of research has directed its attention towards the potential consequences of economic and political uncertainty (EPU) on the returns of cryptocurrencies. In this context, Demir et al. (2018) illustrate that the EPU index within the United States holds the capability to accurately forecast Bitcoin returns (Demir et al., 2018). The outcomes demonstrate a predictable effect of EPU on Bitcoin's returns, indicating a negative correlation between the two. Yet, when delving into quantile distinctions, scholars detect a positive and notable influence on the lower and upper quantiles, underscoring Bitcoin's possible function as a hedge against uncertainty. Correspondingly, Baker et al. (2016) investigated the EPU index's capability to foresee cryptocurrency returns across various nations (Baker et al., 2016). Meanwhile, Xia et al. (2020) underscore the significant influence of EPU in the US on the price of Bitcoin (Xia et al., 2020).

Panagiotidis et al. (2020) contribute further support to the notion that the measure of economic and political uncertainty plays a substantial role in forecasting and shaping the valuation of Bitcoin (Panagiotidis et al., 2020). Their approach relies on an unconventional method known as SPCR (sparse principal component regression). In contrast to prior research and discussions on this topic, they analyze the structural changes in the Bitcoin market, allowing them to assess the impact of EPU on the complex conditional relationships between the Bitcoin market and the US stock market. Subsequently, they determine the effects on the portfolio by examining the influence of EPU on the optimal asset allocation.

Bouri, Gupta, et al. (2017) carried out a research study investigating the potential of Bitcoin to operate as a hedge against global uncertainty, assessed through the primary principal element of the Volatility Index (VIX) across 14 developed and emerging capital markets (Bouri, Gupta, et al., 2017). The results indicate that Bitcoin performs as a means of diversification, hedge, or safe-haven asset in the presence of uncertainty. In subsequent work, Bouri and Gupta (2019) reiterate and assess Bitcoin's capacity to function as a hedge in the context of economic uncertainty (Bouri, Gupta, et al., 2019). They also speculate about the possibility of leveraging these uncertainties for more precise predictions of Bitcoin's price movements.

In addition, Selmi et al. (2018) investigate the function of Bitcoin as a safe-haven asset, hedge, and/or diversification tool in response to considerable variations in oil prices, juxtaposing it with the role of gold (Selmi et al., 2018). The research conducted by them underscores that both Bitcoin and gold operate as safe-haven assets and diversifiers about shifts in oil prices. This signifies that investors have the option to allocate these assets during periods characterized by political and economic upheaval. Wang et al. (2018) investigate the impacts of Economic Policy Uncertainty (EPU) on Bitcoin and suggest that as long as Bitcoin maintains its independence from the conventional economic and financial system, EPU will not have a significant impact on it (Wang et al., 2019). Utilizing Baker et al.'s (2016) metric for economic and political uncertainty (EPU) and the stock market uncertainty index – VIX – as a proxy for EPU, they demonstrate that the transmission of risk to Bitcoin is of negligible significance. This highlights the potential for Bitcoin to function as a safe-haven asset or a diversifier in response to EPU.

Moreover, Fang et al. (2019) explore the repercussions of Economic Policy Uncertainty (EPU) on the enduring variation of Bitcoin, worldwide stock markets, commodities, and bonds (Fang et al., 2019). The outcomes demonstrate that EPU affects the variation of Bitcoin, stocks, and commodities, while its impact on bonds is not similarly pronounced. Moreover, the research reveals a substantial adverse influence of EPU on the correlation between Bitcoin and bonds, coupled with a favourable effect on the correlations between Bitcoin and equities, as well as Bitcoin and commodities. This offers substantiation for the potential capacity of Bitcoin to function as a hedge within distinct economic uncertainty scenarios. Nevertheless, the authors underline that the detected impact remains relatively modest.

In addition, Bouoiyour et al. (2019) affirm the multifaceted utility of Bitcoin as a hedge, a safe-haven asset, and a tool for portfolio diversification to navigate the volatility inherent in the oil sector (Bouoiyour et al., 2019). In a separate investigation, Chan et al. (2019) underscore the potent hedge potential of Bitcoin (Chan et al., 2019), especially when integrated into portfolios encompassing the five primary stock market indices. Simultaneously, research initiated by Bermpei et al. (2019) demonstrates a negative correlation between economic uncertainty and market crashes of Bitcoin, thus investors may wish to hold their Bitcoin reserves to avoid this uncertainty (Bermpei et al., 2019).

Despite the extensive literature supporting Bitcoin's ability to act as a hedging asset against uncertainties and risks, this attribute is not universally accepted by other researchers who consider it from a different perspective. In this context, Klein et al. (2018) depict evidence of

a positive relationship between Bitcoin and market downturns, essentially undermining its hedging capabilities (Klein et al., 2018). In the academic research conducted by Kliber et al. (2019), it is shown that Bitcoin's hedging capabilities are contingent upon the exchange's geographical location where trading is conducted (Kliber et al., 2019).

In a separate research endeavour, Al-Khazali et al. (2018) examine the influence of favourable and adverse macroeconomic occurrences on gold and Bitcoin (Al-Khazali et al., 2018). The results suggest that gold consistently reacts to these events, in line with its established function as a safe-haven asset. In contrast, Bitcoin does not react similarly and does not fulfil the same role as gold. In this context, Shahzad et al. (2020) disclose that the effectiveness of hedging, based on gold, is generally higher in comparison to Bitcoin (Shahzad et al., 2019). They note that economic and political uncertainty in the United States and Japan negatively affects the Bitcoin market, while the situation is favourable in China. In a different research investigation, Liu et al. (2019) ascertained that both Bitcoin and gold are not effective in hedging the risk of economic and political uncertainty in the US (Liu et al., 2019).

Matkovskyy and Jalan (2019) posit that risk-averse investors, particularly during crisis periods, tend to abstain from investing in Bitcoin (Matkovskyy & Jalan, 2019). They examine the influence of Economic Policy Uncertainty (EPU) on the connection between Bitcoin and traditional financial markets. The results of their research reveal that the volatility differential between Bitcoin and conventional markets is generally larger than the volatility differential observed solely within the conventional market. Additionally, the volatility model analysis depicts a multifaceted trend spanning a significant period and culminating in December 2017, marked by a price surge post the introduction of Bitcoin futures. The study results demonstrate that EPU exhibits asymmetric effects on the selected conventional assets.

Aysan et al. (2019) note that trade policy uncertainty can have a substantial impact on Bitcoin's returns and could potentially reduce its effectiveness as a hedge (Aysan et al., 2019). Su et al. (2020) further emphasize that Bitcoin might not consistently function as a reliable hedging tool, underscoring its limited hedging characteristics (Su et al., 2020).

Contemporary research is focused on investigating the potential of the cryptocurrency market as a source of a new kind of asset, offering stability and technological advancement (Liu & Tsyvinski, 2018; Su et al., 2020; White et al., 2020). This perspective is grounded in the argument that the returns of traditional asset markets, especially during periods of heightened volatility, have been adversely affected. Hence, it is appropriate to examine the relationship between the returns of traditional assets and cryptocurrencies, particularly the returns of Bitcoin.

Such a study is of utmost importance to comprehend how returns in these market segments fluctuate during turbulent periods when surrounded by uncertainty. In the context of the broad spectrum of uncertainties and instabilities that financial markets may undergo, the existing literature identifies two types of uncertainties that potentially can impact the returns of financial markets, including Bitcoin at large. These two types of uncertainties are of political and economic nature.



Prior studies direct attention towards the possible function of Bitcoin as an investment tool amid economic uncertainty. These studies highlight the diverse characteristics of Bitcoin as an investment asset and its capacity to serve as a hedging instrument, a safe-haven asset, and a portfolio diversifier. Nevertheless, due to contradictions, the need for additional analyses and comprehensive investigations is underscored to determine the clear role of Bitcoin in investment strategies and the stability of financial markets.

#### **4. Issues and Limitations**

Cryptocurrencies represent a distinct class of assets with unique characteristics that distinguish them from traditional financial assets and instruments. While many of these characteristics are considered advancements in the financial realm, such as decentralization, lack of regulation, low transaction fees, and anonymity, certain features constrain the adoption and utility of Bitcoin and cryptocurrencies as a whole. The most significant questions and limitations associated with the hedge label include liquidity issues, unclear international tax status, and technical specifics.

In comparison to conventional financial assets, cryptocurrencies still suffer from low liquidity. While some of the largest cryptocurrencies (Bitcoin, Ethereum, Ripple, Bitcoin Cash, and Litecoin) are relatively liquid, the overall trading volume of the entire crypto market remains significantly small when compared to the total trading volume of the currency market. It is estimated that the trading volume of cryptocurrencies represents only about 0.1% of the total currency market. This highlights the growth potential and reflects the limitations of the crypto market in its current stage.

The presence of significant price discrepancies between different cryptocurrency exchanges further emphasizes the liquidity issue. Despite arbitrageurs attempting to exploit these discrepancies, the problem is not easily overcome due to the unstable transfers and withdrawals between exchanges, as well as the high volatility of cryptocurrencies. As a result, arbitrageurs fail to eliminate price differences unless they are substantial enough not to vanish before the transfer between exchanges is completed<sup>7</sup>.

A liquidity-related challenge and a potential hedging concern is the lack of a significant number of currency pairs with Bitcoin. Economists argue that only a few currency pairs involving Bitcoin—US Dollar, Euro, Japanese Yen, and South Korean Won—possess sufficient liquidity with corresponding market depth. Historically, the Chinese Yuan pair held a substantial role, but the Chinese government imposed strict limitations on it<sup>8</sup>. Among these

---

<sup>7</sup> In the beginning of 2018, the confirmation time for Bitcoin transactions was affected by significant network congestion, leading to substantial delays. The average transaction confirmation time reached an astonishing 11,000 minutes. Typically, six confirmations from miners are required to complete a Bitcoin transaction, a process that usually takes around 1 to 1.5 hours. However, if the transaction manages to be included in the next block, it is usually confirmed in about 10 minutes. For more information on Bitcoin transfer times between wallets, refer to: (Edge.app, 2022).

<sup>8</sup> In many countries, services exist that offer the opportunity to purchase Bitcoin with the local currency. However, these services are typically characterized by low liquidity, high transaction fees, and are primarily targeted towards small retail investors with limited experience in the field.

pairs, BTC-USD is the most crucial, implying that while Bitcoin might remain independent of the stock market, the risks associated with the exchange rate of the US Dollar indirectly affect Bitcoin (unless hedged against a portfolio denominated in US Dollars).

An important factor that needs to be considered regarding the potential of Bitcoin as a hedging asset is its ambiguous classification, particularly concerning tax systems and taxation as a whole. In this scenario, anonymity intersects with regulation as governments strive to collect taxes and combat money laundering. The issue of taxing cryptocurrencies remains relevant and of interest to researchers (Gross et al., 2017; Sullivan & Burger, 2017). While the problem of tax classification, especially for conventional assets (such as currencies, stocks, and real estate), remains unsolved or internationally harmonized, it is challenging to assume that major institutional investors would view Bitcoin (or another cryptocurrency) as an investment opportunity<sup>9</sup>.

An intriguing aspect of Bitcoin and cryptocurrencies as a whole, which poses a barrier to entry for major players, is associated with the intricacies of the technical realm of cryptocurrencies. These intricacies are unique to this type of asset and are not observed in other financial assets. In addition to the blockchain's function and the time required for transaction execution and confirmation, the topic of forks (divergences, blockchain updates) in cryptocurrencies has become increasingly significant. All cryptocurrencies require constant updates and upgrades to their code to address evolving challenges and enhance their functionality and security. This demands specialized expertise and meticulous attention to detail, which is not as inherent in other types of financial assets.

Updates to the code in the field of cryptocurrencies often come with community conflicts and lead to divisions, resulting in a phenomenon known as forking. In this process, one version of the code continues as the original cryptocurrency, while another version forms a new cryptocurrency. As a result of the fork, two cryptocurrencies are created, each with its blockchain, with the history before the split being identical for both versions. This process is referred to as a "hard" fork.

Although forks share some similarities with stock dividends or splits, they differ significantly. A fork initiates the creation of an entirely new cryptocurrency, which must prove its utility. The price of the new cryptocurrency is determined by its usefulness and investors' interest in it. Typically, the owners of the cryptocurrency from which the fork was made "receive" the newly created cryptocurrency, following a specific ratio or set of conditions.

Forks carry an additional risk associated with the uncertainty about their impact on the price of the original cryptocurrency and whether this price decrease is compensated by the price of

---

<sup>9</sup> By the end of 2017, a significant milestone was achieved in the integration of Bitcoin as a standard financial instrument when both the CME Group and the Chicago Board Options Exchange (CBOE) launched Bitcoin futures contracts. It is noteworthy that both exchanges are regulated and operate in accordance with relevant laws, allowing institutional investors to participate in the market with greater security and confidence. In the same vein, on June 23, 2023, BlackRock, the world's largest asset manager, filed an application to create a US-listed Bitcoin exchange-traded fund (ETF). This news generated substantial interest and excitement within the investment community. See: Reuters.com, (2023).

the newly created cryptocurrency<sup>10</sup>. However, the occurrence of forks is an external factor not directly linked to the financial markets and should not play a key role in evaluating Bitcoin as a hedging asset.

In conclusion, Bitcoin possesses several attributes that make it potentially useful as a hedging asset, but it also has certain characteristics that limit its utility. In the evolving crypto landscape, the appealing aspects of Bitcoin are retained while problematic features can be overcome. However, some of the specific characteristics, such as the claimed anonymity, may require reevaluation and concessions<sup>11</sup>.

## **5. Methodology, Data, and Empirical Results**

### *5.1. Data*

To explore the effects of economic and political uncertainty (EPU) on the returns and variation of both Bitcoin and gold, daily price datasets for Bitcoin and gold are employed for the timeframe spanning from February 2013 to July 2023. Subsequently, these data are recalculated monthly to be compatible with the EPU data.

As a measure of EPU, the Global Economic Policy Uncertainty (EPU) index, derived from the research by Baker et al. (2016) (<http://www.policyuncertainty.com>), is utilized. This index is calculated by tallying the occurrences of specific terms within U.S. newspapers, namely: "economy" or "economic"; "uncertainty" or "uncertain," alongside terms like "legislation," "deficit," "regulation," "Congress," "Federal Reserve," or "White House."

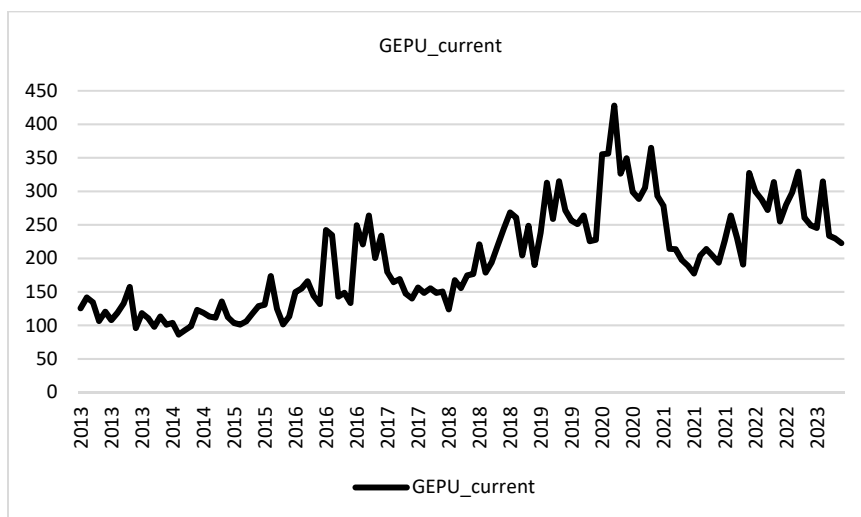
Figure 1 illustrates the evolution of GEPU (Global Economic Policy Uncertainty) over the examined period. It is observed that GEPU peaks during occurrences like Brexit, the crisis in the Eurozone, the U.S. debt crisis, the "fiscal cliff" in the U.S., and the COVID-19 pandemic.

---

<sup>10</sup> Two of the hard forks of Bitcoin are Bitcoin Cash and Bitcoin Gold. While the first one was successful in its development and gained significant popularity, the second one faced challenges and did not achieve the same level of success. Both cryptocurrencies require constant updating and upgrading of their code to remain current and overcome new obstacles that arise in their development and usage.

<sup>11</sup> Currently, it is becoming increasingly common for new registrations on cryptocurrency exchanges to require the Know Your Customer (KYC) procedure, in which the registering user must provide an identification number and corresponding identification information. Although this is usually not mandatory for wallets where investments are stored, there already exist services associated with financial institutions or even founded by them that establish a connection between the traditional financial world and the realm of cryptocurrencies. These services apply the standard KYC process and typically conduct a thorough identity verification akin to what a traditional bank would perform.

**Figure 1. Global economic and political uncertainty for the period February 2013 – July 2023**



Source: Policyuncertainty.com, (2023).

Daily price data for Bitcoin in U.S. dollars, extracted from the website <https://www.investing.com>, is utilized for the analysis of Bitcoin's returns and variation. Figure 2 illustrates the price development of Bitcoin over time. A substantial increase is noticeable in 2017 and 2021, followed by a decline in 2018 and 2022.

**Figure 2. The price of Bitcoin for the period February 2013 – July 2023**



Source: Investing.com, (2023)

For the analysis of gold, daily price data in U.S. dollars is extracted from the source – <https://www.investing.com>. Figure 3 presents the development of gold prices, focusing on the following periods: 2011-2013, 2020, and 2022. The timeframe from 2011 to 2013 holds significant relevance, notably encompassing the repercussions of the global financial crisis, an event that has left lasting effects on the worldwide economy. In 2020, the price of gold reached high peaks, reflecting the significant level of uncertainty triggered by the COVID-19 pandemic, whereas in 2022, the increase can be attributed to the military conflict in Ukraine.

**Figure 3. The price of gold for the period February 2013 – July 2023**



Source: Investing.com, (2023).

Bitcoin and gold returns are calculated daily as follows:

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

Where  $P_t$  is the closing price of asset  $i$  in period  $t$ , while  $P_{t-1}$  is the closing price of asset  $i$  in period  $t-1$ .

Next, the return on asset  $i$  is recalculated on a 30-day basis as follows:

$$R_{i,30} = (1 + R_{i,1}) * (1 + R_{i,2}) * (1 + R_{i,3}) * \dots * (1 + R_{i,30}) - 1 \quad (2)$$

Variation is mathematically determined by calculating the mean value of the squared differences between each element of the data set and the mean value of the entire set. In the

present case, the calculation of the variation pertains to 30 days and is based on daily return data as follows:

$$\sigma_{i,30}^2 = \frac{\sum (x - \mu)^2}{N} \quad (3)$$

Table 1 presents descriptive statistics for the levels of EPU, returns, and variations of Bitcoin and gold. From the table, it becomes evident that EPU exhibits the highest variation and standard deviation, followed by the values of Bitcoin and gold. The maximum 30-day return value for Bitcoin is 3.79%, and for gold, it is 0.17%.

Regarding asymmetry and kurtosis, the coefficients unveil that most analyzed variables, except EPU, exhibit leptokurtic distribution, which is particularly pronounced in Bitcoin's returns. These observations indicate that the distributions of these variables are non-normal, emphasizing the need for applying a quantile approach to accommodate extreme values.

**Table 1. Descriptive statistics of the variables for the period February 2013 – July 2023.**

	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
EPU	341,59	86,28	427,87	199,144	75,685	5728,229	0,502	0,217	-0,528	0,43
RitBTC	4,76	-0,97	3,79	0,055	0,353	0,124	3,476	0,04	25,768	0,08
VitBTC	0,02	0,00	0,02	0,0032	0,00443	0,000	2,522	0,04	5,078	0,08
RitGOLD	0,31	-0,14	0,17	0,002	0,048	0,002	0,213	0,048	0,168	0,095
VitGOLD	0,00	0,00	0,00	0,0001	0,00008	0,000	3,569	0,048	15,78	0,095

Source: Author's calculations.

## 5.2. Methodology

The current study employs a linear regression model to investigate the impact of uncertainty on expected returns and variation of Bitcoin and gold. Additionally, quantile regression is utilized to examine the impact of uncertainty on the extreme quantiles of returns and variation for both assets. It's possible that the distribution of the examined variables may not be normal and could exhibit heavy tails and kurtosis, necessitating the application of a quantile-based approach.

The study aims to analyze whether Bitcoin plays the role of a speculative asset or a safe-haven asset, as often attributed to gold. Therefore, the impact of uncertainty on the returns and variation of both assets in the most extreme quantiles is assessed. The study assumes that a more significant influence of uncertainty can be expected on the returns and variation of Bitcoin and gold at their highest values, where investors' perception of uncertainty is the strongest.

Quantile regression offers an advantage over ordinary linear regression as its estimates are more robust when measuring extreme values. Thus, the ordinary linear regression model is employed to analyze the impact of uncertainty on the returns and variation of Bitcoin and gold, as follows:

$$R_{i,t} = \alpha + \beta EPU_t + \varepsilon_t \quad (4)$$

$$V_{i,t} = \alpha + \beta EPU_t + \varepsilon_t \quad (5)$$

The following notations are used in the study:  $R_{i,t}$  signifies the return of asset  $i$  on day  $t$ , and  $V_{i,t}$  denotes the variation of the same asset on the same day. The constant in the model is denoted as  $\alpha$ , EPU represents the level of uncertainty in the model for the respective day  $t$ , and signifies the intensity of the impact of fluctuations in EPU on  $R_{i,t}$  and  $V_{i,t}$ . The residual error in the model is indicated by  $\varepsilon$ .

To analyze the impact of EPU in the highest and lowest quantiles of the return and variation of Bitcoin and gold, the proposed quantile regression is utilized. It is defined as follows:

$$R_{i,t} = \alpha_\tau + \beta_\tau EPU_t + \varepsilon_{i,t,\tau} \quad (6)$$

$$V_{i,t} = \alpha_\tau + \beta_\tau EPU_t + \varepsilon_{i,t,\tau} \quad (7)$$

Here,  $R_{i,t}$  signifies the return of asset  $i$  on day  $t$ ,  $V_{i,t}$  denotes the variation of the same asset on the same day, EPU stands for the uncertainty level in the model on day  $t$ , while  $\alpha$  and  $\beta$  are parameters of the model reflecting the baseline level of return and the intensity of EPU's impact on  $R_{i,t}$  and  $V_{i,t}$ , respectively. The residual error in the model is represented by  $\varepsilon$ .

The study employs quantile regression, which represents the quintile with values between 0 and 1. The focal point of the study is on quintiles with the most extreme values, namely: 0.01, 0.05, 0.1, 0.25, 0.75, 0.9, 0.95, and 0.99. These quintiles are selected as they reflect the most extreme values in the data distribution, providing insights into the behaviour of asset returns and variation during moments of exceptionally low and high uncertainty.

### 5.3. Results

The current study employs a linear regression model to investigate the effect of EPU on Bitcoin returns. The outcomes, as shown in Table 2, highlight a negative and statistically significant  $\beta$  coefficient for the connection between EPU and Bitcoin's returns, while the relationship between EPU and gold is positive. These results imply that the uncertainty emanating from governmental and central bank actions does possess explanatory capability regarding the returns of gold, reinforcing its function as a hedge against instability.

Conversely, the negative correlation between Bitcoin and EPU suggests that heightened uncertainty does not result in increased returns as observed with gold, thus challenging the concept of Bitcoin's role as a hedge. In line with the hypothesis about Bitcoin's role, several other studies reveal that EPU exerts a negative and substantial influence on stock returns, as

observed with Bitcoin (Dzielinski, 2012) (Antonakakis et al., 2013) (Adjei & Adjei, 2017). Therefore, these results support the assertion that Bitcoin assumes the role of a speculative asset. According to Eom et al. (2019), Bitcoin can also be regarded as a speculative asset since it displays the typical characteristics of such assets: responsiveness to investor sentiment and considerable volatility (Eom et al., 2019).

**Table 2. Estimates of the impact of EPU on Bitcoin and gold returns with simple linear regression for the period from February 2013 to July 2023**

	BTC						GOLD				
	Rbtc						Rgold				
	Unstandardized Coefficients		Standardized Coefficients				Unstandardized Coefficients		Standardized Coefficients		
Coefficients	B	Std. Error	Beta	t	Sig.	Coefficients	B	Std. Error	Beta	t	Sig.
(Constant)	0,179	0,027		6,579	0	(Constant)	0,037	0,012		3,192	0,002
EPU	-0,001	0	-0,385	-4,632	0	EPU	0	0	-0,22	-2,5	0,014

Source: Author's calculations.

When investigating the impact of EPU on the variation of Bitcoin and gold, the results from Table 3 indicate a significant and negative correlation between EPU and the variation of Bitcoin. However, simultaneously, the connection between EPU and the variation of gold is not statistically significant. This negative correlation reinforces the notion that Bitcoin does not function as a hedge against uncertainty.

**Table 3. Estimates of the impact of EPU on Bitcoin and gold variations with ordinary linear regression for the period February 2013 to July 2023**

	BTC						GOLD				
	Vbtc						Vgold				
	Unstandardized Coefficients		Standardized Coefficients				Unstandardized Coefficients		Standardized Coefficients		
Coefficients	B	Std. Error	Beta	t	Sig.	Coefficients	B	Std. Error	Beta	t	Sig.
(Constant)	0,179	0,001		58,749	0	(Constant)	0,0001	0		9,396	0
EPU	-0,001	0	-0,784	-14,002	0	EPU	0	0	-0,125	-1,395	0,166

Source: Author's calculations

Nevertheless, since the modelling incorporates the influence of sentiment generated by EPU on investors, it appears reasonable to delve further into the impact of EPU on the returns and variation of Bitcoin and gold at their extreme thresholds (quantified through quantiles 0.01, 0.05, 0.1, 0.25, 0.75, 0.9, 0.95, and 0.99). To achieve this, the method of quantile regression is employed.

Table 4 demonstrates the variation in the effect of EPU on the returns of Bitcoin and gold across different quantiles. In the lower quantiles, it is established that EPU has a positive effect on the returns of Bitcoin. Nonetheless, in the higher quantiles (0.9, 0.95, and 0.99), this influence becomes negative. Concerning gold, a positive relationship between EPU and its returns is observed, which is statistically significant except for quantiles 0.05 and 0.25. The negative dependency of EPU on Bitcoin's returns contradicts the findings of Bourri, Molnár, et al., (2017), Selmi et al., (2018), and Demir et al., (2018). The diminishing returns of Bitcoin



during times of increased investor uncertainty, as indicated by EPU values, contradict its status as a safe-haven or hedge asset. In contrast, gold exhibits an increase in its returns during more uncertain periods, when conventional speculative assets like stocks experience a decrease in their returns.

**Table 4. Estimates of the impact of EPU on Bitcoin and gold returns with quantile regression for the period from February 2013 to July 2023**

$\tau$	Rbtc					$\tau$	Rgold				
	Coefficient	Value	Std. Error	t	Sig.		Coefficient	Value	Std. Error	t	Sig.
0,01	(Constant)	-0,160495	0,003	-54,899	0	0,01	(Constant)	-0,074	0,005	-14,019	0
	EPU	0	0	17,542	0		EPU	9,849E-05	0	3,948	0
0,05	(Constant)	-0,137	0,015	-9,057	0	0,05	(Constant)	-0,058	0,011	-5,209	0
	EPU	0	0	2,481	0,014		EPU	0,0000665	0	1,264	0,209
0,1	(Constant)	-0,102	0,021	-4,751	0	0,1	(Constant)	-0,057	0,005	-10,594	0
	EPU	0,0000816	0	0,811	0,419		EPU	7,866E-05	0	3,134	0,002
0,25	(Constant)	0,073	0,031	2,327	0,022	0,25	(Constant)	-0,037	0,009	-4,09	0
	EPU	0	0	-2,888	0,005		EPU	3,773E-05	0	0,884	0,378
0,75	(Constant)	0,228	0,043	5,353	0	0,75	(Constant)	0,116	0,016	7,463	0
	EPU	0	0	-2,04	0,043		EPU	0	0	-4,728	0
0,9	(Constant)	0,311	0,06	5,19	0	0,9	(Constant)	0,142	0,018	8,047	0
	EPU	-0,001	0	-2,07	0,041		EPU	0	0	-4,471	0
0,95	(Constant)	0,419	0,047	8,879	0	0,95	(Constant)	0,162	0,018	8,887	0
	EPU	-0,001	0	-3,866	0		EPU	0	0	-4,376	0
0,99	(Constant)	0,423	0,004	101,617	0	0,99	(Constant)	0,181	0,003	53,175	0
	EPU	-0,001	0	-28,943	0		EPU	0	0	-26,402	0

Source: Author's calculations

In the analysis employing quantile regression, a negative and statistically significant connection between EPU and the variation of Bitcoin is established. The results of the gold analysis signify a positive and statistically significant (except for quantiles 0.05 and 0.25) dependency between EPU and its variation.

The positive correlation between EPU and asset variation demonstrates that when governments and central banks generate greater ambiguity regarding economic policies, it results in increased information asymmetry among market participants. This, in turn, results in greater uncertainty in individual investor expectations. The results of this study are consistent with the results of Eom et al. (2019) and Fang et al. (2019), suggesting that gold functions as a safe-haven asset or hedge. However, this study did not establish similar capabilities for Bitcoin. The results of the analysis on the impact of EPU on the variation of Bitcoin demonstrate that Bitcoin can serve as a means of exchange and a speculative asset, but it is not a hedge or safe-haven asset during periods of higher uncertainty.

**Table 5. Estimates of the impact of EPU on Bitcoin and gold variations with quantile regression for the period February 2013 to July 2023**

Vbtc						Vgold					
$\tau$	Coefficient	Value	Std. Error	t	Sig.	$\tau$	Coefficient	Value	Std. Error	t	Sig.
0,01	(Constant)	0,001	0	58,036	0	0,01	(Constant)	0,000031	0	80,531	0
	EPU	-0,000001	0	-16,053	0		EPU	0	0	7,99	0
0,05	(Constant)	0,001	0	44,279	0	0,05	(Constant)	0,000035	0	12,575	0
	EPU	-0,000001	0	-8,679	0		EPU	0	0	0,258	0,797
0,1	(Constant)	0,001	0	54,118	0	0,1	(Constant)	0,000049	0	11,551	0
	EPU	-0,000001	0	-11,351	0		EPU	0	0	-2,218	0,028
0,25	(Constant)	0,001	0	60,777	0	0,25	(Constant)	0,00005	0	6,569	0
	EPU	-0,000001	0	-10,923	0		EPU	0	0	0,018	0,986
0,75	(Constant)	0,001	0	45,605	0	0,75	(Constant)	0	0	8,794	0
	EPU	-0,000001	0	-11,034	0		EPU	0	0	-3,005	0,003
0,9	(Constant)	0,001	0	49,893	0	0,9	(Constant)	0	0	17,045	0
	EPU	-0,000001	0	-10,567	0		EPU	0	0	-5,71	0
0,95	(Constant)	0,001	0	38,659	0	0,95	(Constant)	0	0	15,813	0
	EPU	-0,000001	0	-8,298	0		EPU	0	0	-4,147	0
0,99	(Constant)	0,001	0	181,84	0	0,99	(Constant)	(An unbounded solution for the value of q being equal to 0.99).			
	EPU	-0,000001	0	-33,969	0		EPU				

Source: Author's calculations.

## Conclusion

The swift expansion of Bitcoin, its ability to recover during turbulent periods, and its high volatility, among other characteristics, have sparked increasing interest in the literature on the economic and financial factors that can influence its price. In this particular context, there is an ongoing discussion regarding the function that this cryptocurrency serves. Specifically, there is debate about whether it functions primarily as a means of exchange and store of wealth, a speculative investment, or a safe-haven asset.

This study aims to address the question by examining the impact of economic and political uncertainty on the returns and variations of Bitcoin. The fundamental assumption is that when investors feel uncertain due to ambiguity surrounding fiscal, regulatory, and currency policies that might be implemented, safe-haven (hedging) assets should increase their returns and variation, while usual speculative assets should raise their variation and decrease their returns. To achieve more reliable results, gold is used as a benchmark safe-haven (hedging) asset, and the behaviour of Bitcoin and gold regarding EPU is compared.

To explore the effect of Economic Policy Uncertainty (EPU) on the returns and variation of Bitcoin and gold for the period of February 2013 to July 2023, the EPU measure by Baker et al. (2016) is utilized. To thoroughly examine this influence, two distinct methodologies are employed: ordinary linear regression and quantile regression.

The findings of the research on the impact of Economic Policy Uncertainty (EPU) on the returns of Bitcoin and gold, applied through ordinary linear regression, reveal that EPU harms Bitcoin's returns and has a positive effect on gold's returns throughout the entire sample

period. When examining the effect of EPU on the variation of Bitcoin and gold, it is observed that EPU harms the variation of Bitcoin and has a positive impact on that of gold. These results are corroborated by the quantile regression analysis as well.

An interesting observation is that in the lower quantiles, a positive influence of EPU on Bitcoin's returns is established. However, in the higher quantiles (0.9, 0.95, and 0.99), this influence becomes negative, which contradicts the notion that increasing uncertainty results in higher returns for Bitcoin. As for gold, a positive correlation between EPU and its returns is observed, which is statistically significant except for the 0.05 and 0.25 quantiles.

These results dismiss the significance of Bitcoin as a hedge or safe-haven asset and emphasize its perception as a speculative asset more akin to stocks. Research has shown that Bitcoin is not effective in safeguarding funds during periods of economic instability and is not considered a significant asset for building diversified investment portfolios. The drawn conclusions provide valuable insights for both individual and professional investors, showcasing Bitcoin's behaviour in situations of economic and political uncertainty. The fact that Bitcoin's returns and variation are influenced by EPU suggests that investors can utilize EPU information to enhance their investment choices regarding Bitcoin, considering it as an additional investment tool rather than merely an exchange medium it was created for.

Investors can derive two advantages from this information. Firstly, leveraging the impact of EPU on the returns and variation of Bitcoin, investors can utilize EPU data to enhance their investment decisions regarding Bitcoin. Secondly, the evidence that Bitcoin cannot function as a safe-haven asset, similar to gold, allows investors to dismiss it as a means of protecting their savings during periods of economic uncertainty. These conclusions are also of significance to policymakers in the realm of economic policy, illustrating how uncertainty surrounding the development and implementation of policies tangibly impacts investment assets.

The results of this research hold significance for the literature about Bitcoin's role under conditions of uncertainty. However, it should be noted that this study carries certain limitations. The examination employs monthly data for the global economic policy uncertainty (EPU) index and Bitcoin's prices in US dollars. In the future, it could be explored whether the outcomes remain consistent when using alternative measures of uncertainty and data for Bitcoin denominated in a currency other than the US\$.

Furthermore, this study does not examine the effect of EPU on other cryptocurrencies. Including a wider range of cryptocurrencies in the research could help in comprehending the factors that influence their behaviour concerning EPU. Finally, this study does not aim to construct effective portfolios incorporating Bitcoin, an area of interest for future investigations.

## References

- Aalborg, H. A., Molnár, P., & de Vries, J. E. (2019). What can explain the price, volatility and trading volume of Bitcoin? *Finance Research Letters*, 29. <https://doi.org/10.1016/j.frl.2018.08.010>
- Adjei, F. A., & Adjei, M. (2017). Economic policy uncertainty, market returns and expected return predictability. *Journal of Financial Economic Policy*, 9(3). <https://doi.org/10.1108/JFEP-11-2016-0074>

- Al-Khazali, O., Bouri, E., & Roubaud, D. (2018). The impact of positive and negative macroeconomic news surprises: Gold versus Bitcoin. *Economics Bulletin*, 38(1).
- Antonakakis, N., Chatziantoniou, I., & Filis, G. (2013). Dynamic co-movements of stock market returns, implied volatility and policy uncertainty. *Economics Letters*, 120(1). <https://doi.org/10.1016/j.econlet.2013.04.004>
- Aysan, A. F., Demir, E., Gozgor, G., & Lau, C. K. M. (2019). Effects of the geopolitical risks on Bitcoin returns and volatility. *Research in International Business and Finance*, 47. <https://doi.org/10.1016/j.ribaf.2018.09.011>
- Azzimonti, M. (2018). Partisan conflict and private investment. *Journal of Monetary Economics*, 93. <https://doi.org/10.1016/j.jmoneco.2017.10.007>
- Badshah, I., Demirel, R., & Suleman, M. T. (2019). The effect of economic policy uncertainty on stock-commodity correlations and its implications on optimal hedging. *Energy Economics*, 84. <https://doi.org/10.1016/j.eneco.2019.104553>
- Bankrate.com, (2023). Bankrate: Guiding you through life's financial journey. [online] Available at: <https://www.bankrate.com/investing/bitcoin-price-history/> / [Accessed 14 June 2023].
- Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *Quarterly Journal of Economics*, 131(4). <https://doi.org/10.1093/qje/qjw024>
- Balcilar, M., Bouri, E., Gupta, R., & Roubaud, D. (2017). Can volume predict Bitcoin returns and volatility? A quantiles-based approach. *Economic Modelling*, 64. <https://doi.org/10.1016/j.econmod.2017.03.019>
- Baur, D. G., & Glover, K. J. (2012). The Destruction of a Safe Haven Asset? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2142283>
- Baur, D. G., Hong, K. H., & Lee, A. D. (2018). Bitcoin: Medium of exchange or speculative assets? *Journal of International Financial Markets, Institutions and Money*, 54. <https://doi.org/10.1016/j.intfin.2017.12.004>
- Baur, D. G., & Lucey, B. M. (2010). Is gold a hedge or a safe haven? An analysis of stocks, bonds and gold. *Financial Review*, 45(2). <https://doi.org/10.1111/j.1540-6288.2010.00244.x>
- Beckmann, J., Berger, T., & Czudaj, R. (2015). Does gold act as a hedge or a safe haven for stocks? A smooth transition approach. *Economic Modelling*, 48. <https://doi.org/10.1016/j.econmod.2014.10.044>
- Bermpei, T., Kalyvas, A. N., Neri, L., & Russo, A. (2019). Does Economic Policy Uncertainty Matter for Financial Reporting Quality? Evidence from the United States. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3423646>
- Bhaskar, V., Linacre, R., & Machin, S. (2019). The economic functioning of online drugs markets. *Journal of Economic Behavior and Organization*, 159. <https://doi.org/10.1016/j.jebo.2017.07.022>
- Bilgin, M. H., Gozgor, G., Lau, C. K. M., & Sheng, X. (2018). The effects of uncertainty measures on the price of gold. *International Review of Financial Analysis*, 58. <https://doi.org/10.1016/j.irfa.2018.03.009>
- Bils, M., Klenow, P. J., & Malin, B. A. (2018). Resurrecting the role of the product market wedge in recessions. *American Economic Review*, 108(4-5). <https://doi.org/10.1257/aer.20151260>
- Bouoiyour, J., Selmi, R., & Wohar, M. (2019). Bitcoin: competitor or complement to gold? *Economics Bulletin*, 39(January).
- Bouri, E., Gupta, R., Lau, C. K. M., Roubaud, D., & Wang, S. (2018). Bitcoin and global financial stress: A copula-based approach to dependence and causality in the quantiles. *Quarterly Review of Economics and Finance*, 69. <https://doi.org/10.1016/j.qref.2018.04.003>
- Bouri, E., Gupta, R., & Roubaud, D. (2019). Herding behaviour in cryptocurrencies. *Finance Research Letters*, 29. <https://doi.org/10.1016/j.frl.2018.07.008>
- Bouri, E., Gupta, R., Tiwari, A. K., & Roubaud, D. (2017). Does Bitcoin hedge global uncertainty? Evidence from wavelet-based quantile-in-quantile regressions. *Finance Research Letters*, 23. <https://doi.org/10.1016/j.frl.2017.02.009>
- Bouri, E., Molnár, P., Azzi, G., Roubaud, D., & Hagfors, L. I. (2017). On the hedge and safe haven properties of Bitcoin: Is it really more than a diversifier? *Finance Research Letters*, 20. <https://doi.org/10.1016/j.frl.2016.09.025>
- Bouri, E., Shahzad, S. J. H., & Roubaud, D. (2019). Co-explosivity in the cryptocurrency market. *Finance Research Letters*, 29. <https://doi.org/10.1016/j.frl.2018.07.005>
- Brandvold, M., Molnár, P., Vagstad, K., & Andreas Valstad, O. C. (2015). Price discovery on Bitcoin exchanges. *Journal of International Financial Markets, Institutions and Money*, 36. <https://doi.org/10.1016/j.intfin.2015.02.010>
- Chan, W. H., Le, M., & Wu, Y. W. (2019). Holding Bitcoin longer: The dynamic hedging abilities of Bitcoin. *Quarterly Review of Economics and Finance*, 71. <https://doi.org/10.1016/j.qref.2018.07.004>
- Cheah, E. T., & Fry, J. (2015). Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin. *Economics Letters*, 130. <https://doi.org/10.1016/j.econlet.2015.02.029>

- Cheng, C. H. J., Hankins, W. B., & Chiu, C. W. (2016). Does US partisan conflict matter for the Euro area? *Economics Letters*, 138. <https://doi.org/10.1016/j.econlet.2015.11.030>
- Ciaian, P., Rajcaniova, M., & Kancs, d'Artis. (2016). The economics of BitCoin price formation. *Applied Economics*, 48(19). <https://doi.org/10.1080/00036846.2015.1109038>
- Corbet, S., Lucey, B., & Yarovaya, L. (2018). Datestamping the Bitcoin and Ethereum bubbles. *Finance Research Letters*, 26. <https://doi.org/10.1016/j.frl.2017.12.006>
- Demir, E., Gozgor, G., Lau, C. K. M., & Vigne, S. A. (2018). Does economic policy uncertainty predict the Bitcoin returns? An empirical investigation. *Finance Research Letters*, 26. <https://doi.org/10.1016/j.frl.2018.01.005>
- Dyrberg, A. H. (2016). Hedging capabilities of bitcoin. Is it the virtual gold? *Finance Research Letters*, 16. <https://doi.org/10.1016/j.frl.2015.10.025>
- Dzieliński, M. (2012). Measuring economic uncertainty and its impact on the stock market. *Finance Research Letters*, 9(3). <https://doi.org/10.1016/j.frl.2011.10.003>
- Edge.app, (2022). Need a Crypto Wallet? Get Edge to Manage All of Your Crypto. [online] Available at: <https://edge.app/blog/crypto-basics/how-long-does-it-take-to-transfer-bitcoin-between-wallets/> [Accessed 26 January 2022].
- Elder, J., Miao, H., & Ramchander, S. (2012). Impact of macroeconomic news on metal futures. *Journal of Banking and Finance*, 36(1). <https://doi.org/10.1016/j.jbankfin.2011.06.007>
- Eom, C., Kaizoji, T., Kang, S. H., & Pichl, L. (2019). Bitcoin and investor sentiment: Statistical characteristics and predictability. *Physica A: Statistical Mechanics and Its Applications*, 514. <https://doi.org/10.1016/j.physa.2018.09.063>
- Fang, L., Bouri, E., Gupta, R., & Roubaud, D. (2019). Does global economic uncertainty matter for the volatility and hedging effectiveness of Bitcoin? *International Review of Financial Analysis*, 61. <https://doi.org/10.1016/j.irfa.2018.12.010>
- Gerritsen, D. F., Bouri, E., Ramezanifar, E., & Roubaud, D. (2020). The profitability of technical trading rules in the Bitcoin market. *Finance Research Letters*, 34. <https://doi.org/10.1016/j.frl.2019.08.011>
- Gross, A., Henker, J., Hoelscher, J., & Reed, B. (2017). The role of secondary sources on the taxation of digital currency (Bitcoin) before IRS guidance was issued. *Journal of Accounting Education*, 39. <https://doi.org/10.1016/j.jaccedu.2017.02.001>
- Guesmi, K., Saadi, S., Abid, I., & Ftiti, Z. (2019). Portfolio diversification with virtual currency: Evidence from bitcoin. *International Review of Financial Analysis*, 63. <https://doi.org/10.1016/j.irfa.2018.03.004>
- Gupta, R., Pierdzioch, C., Selmi, R., & Wohar, M. E. (2018). Does partisan conflict predict a reduction in US stock market (realized) volatility? Evidence from a quantile-on-quantile regression model☆. *North American Journal of Economics and Finance*, 43. <https://doi.org/10.1016/j.najef.2017.10.006>
- Hoang, T. H. Van, Lahiani, A., & Heller, D. (2016). Is gold a hedge against inflation? New evidence from a nonlinear ARDL approach. *Economic Modelling*, 54. <https://doi.org/10.1016/j.econmod.2015.12.013>
- Huddy, L. (2013). From Group Identity to Political Cohesion and Commitment. *The Oxford Handbook of Political Psychology: Second Edition*, 4392(631).
- Investing.com, (2023). Investing.com – Stock Market Quotes & Financial News. [online] Available at: <https://www.investing.com/> [Accessed 14 July 2023].
- Iyengar, S., Lelkes, Y., Levendusky, M., Malhotra, N., & Westwood, S. J. (2019). The origins and consequences of affective polarization in the United States. In *Annual Review of Political Science* (Vol. 22). <https://doi.org/10.1146/annurev-polisci-051117-073034>
- Ji, Q., Bouri, E., Gupta, R., & Roubaud, D. (2018). Network causality structures among Bitcoin and other financial assets: A directed acyclic graph approach. *Quarterly Review of Economics and Finance*, 70. <https://doi.org/10.1016/j.qref.2018.05.016>
- Kedar-Levy, H. (2020). Price discovery in the small and in the large: Momentum and reversal, bubbles, and crashes. *Journal of Financial Markets*, 48. <https://doi.org/10.1016/j.finmar.2019.08.001>
- Klein, T. (2017). Dynamic correlation of precious metals and flight-to-quality in developed markets. *Finance Research Letters*, 23. <https://doi.org/10.1016/j.frl.2017.05.002>
- Klein, T., Pham Thu, H., & Walther, T. (2018). Bitcoin is not the New Gold – A comparison of volatility, correlation, and portfolio performance. *International Review of Financial Analysis*, 59. <https://doi.org/10.1016/j.irfa.2018.07.010>
- Kliber, A., Marszałek, P., Musiałkowska, I., & Świerczyńska, K. (2019). Bitcoin: Safe haven, hedge or diversifier? Perception of bitcoin in the context of a country's economic situation — A stochastic volatility approach. *Physica A: Statistical Mechanics and Its Applications*, 524. <https://doi.org/10.1016/j.physa.2019.04.145>

- Kristoufek, L. (2013). BitCoin meets Google Trends and Wikipedia: Quantifying the relationship between phenomena of the Internet era. *Scientific Reports*, 3. <https://doi.org/10.1038/srep03415>
- Kristoufek, L. (2015). What are the main drivers of the bitcoin price? Evidence from wavelet coherence analysis. *PLoS ONE*, 10(4). <https://doi.org/10.1371/journal.pone.0123923>
- Kristoufek, L. (2018). On Bitcoin markets (in)efficiency and its evolution. *Physica A: Statistical Mechanics and Its Applications*, 503. <https://doi.org/10.1016/j.physa.2018.02.161>
- Liu, Y., & Tsyvinski, A. (2018). Risks and Returns of Cryptocurrency. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3226952>
- Liu, Y., Tsyvinski, A., Wu, X., Thank, W., Borri, N., Brunnermeier, M., Daniel, K., He, Z., Karolyi, A., Kwan, A., Li, Y., Roussanov, N., Sheng, J., Sockin, M., & Wachter, J. (2019). NBER WORKING PAPER SERIES COMMON RISK FACTORS IN CRYPTOCURRENCY Common Risk Factors in Cryptocurrency. *NBER Working Paper*.
- Luther, W. J., & Salter, A. W. (2017). Bitcoin and the bailout. *Quarterly Review of Economics and Finance*, 66. <https://doi.org/10.1016/j.qref.2017.01.009>
- Matkovskyy, R., & Jalan, A. (2019). From financial markets to Bitcoin markets: A fresh look at the contagion effect. *Finance Research Letters*, 31. <https://doi.org/10.1016/j.frl.2019.04.007>
- McConnell, C., Margalit, Y., Malhotra, N., & Levendusky, M. (2018). The Economic Consequences of Partisanship in a Polarized Era. *American Journal of Political Science*, 62(1). <https://doi.org/10.1111/ajps.12330>
- Mokni, K., Ajmi, A. N., Bouri, E., & Vo, X. V. (2020). Economic policy uncertainty and the Bitcoin-US stock nexus. *Journal of Multinational Financial Management*, 57-58. <https://doi.org/10.1016/j.mulfin.2020.100656>
- Nakamoto, S. (2008). Bitcoin: a peer-to-peer electronic cash system, October 2008. *Cited On*.
- Panagiotidis, T., Stengos, T., & Vravosinos, O. (2020). A Principal Component-Guided Sparse Regression Approach for the Determination of Bitcoin Returns. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3510816>
- Policyuncertainty.com, (2023). Economic Policy Uncertainty Index. [online] Available at: <https://www.policyuncertainty.com/> [Accessed 14 July 2023].
- Qin, M., Su, C. W., & Tao, R. (2021). BitCoin: A new basket for eggs? *Economic Modelling*, 94. <https://doi.org/10.1016/j.econmod.2020.02.031>
- Reuters.com, (2023). Reuters | Breaking International News & Views [online] Available at: <https://www.reuters.com/technology/bitcoin-hits-1-year-high-amid-blackrock-etf-excitement-2023-06-23/> [Accessed 24 June 2023].
- Robison, J., & Moskowitz, R. L. (2019). The group basis of partisan affective polarization. *Journal of Politics*, 81(3). <https://doi.org/10.1086/703069>
- Selmi, R., Tiwari, A. K., & Hammoudeh, S. (2018). Efficiency or speculation? A dynamic analysis of the Bitcoin market. *Economics Bulletin*, 38(4).
- Shahzad, S. J. H., Bouri, E., Roubaud, D., Kristoufek, L., & Lucey, B. (2019). Is Bitcoin a better safe-haven investment than gold and commodities? *International Review of Financial Analysis*, 63. <https://doi.org/10.1016/j.irfa.2019.01.002>
- Shaikh, I. (2020). Policy uncertainty and Bitcoin returns. *Borsa Istanbul Review*, 20(3). <https://doi.org/10.1016/j.bir.2020.02.003>
- Su, C. W., Qin, M., Rizvi, S. K. A., & Umar, M. (2021). Bank competition in China: a blessing or a curse for financial system? *Economic Research-Ekonomska Istrazivanja*, 34(1). <https://doi.org/10.1080/1331677X.2020.1820361>
- Su, C. W., Qin, M., Tao, R., & Umar, M. (2020). Financial implications of fourth industrial revolution: Can bitcoin improve prospects of energy investment? *Technological Forecasting and Social Change*, 158. <https://doi.org/10.1016/j.techfore.2020.120178>
- Sullivan, C., & Burger, E. (2017). E-residency and blockchain. *Computer Law and Security Review*, 33(4). <https://doi.org/10.1016/j.clsr.2017.03.016>
- Tradingview.com, (2023). TradingView — Track All Markets. [online] Available at: <https://www.tradingview.com/chart/ZW58QRgB/> [Accessed 14 July 2023].
- Triantafyllou, A., Bakas, D., & Ioakimidis, M. (2022). Commodity price uncertainty as a leading indicator of economic activity. *International Journal of Finance and Economics*. <https://doi.org/10.1002/ijfe.2642>
- Umar, M., Rizvi, S. K. A., & Naqvi, B. (2021). Dance with the devil? The nexus of fourth industrial revolution, technological financial products and volatility spillovers in global financial system. *Technological Forecasting and Social Change*, 163. <https://doi.org/10.1016/j.techfore.2020.120450>

*Borisov, S. (2024). Bitcoin – Hedge or Speculative Asset: Analysis of Its Role and Nature.*

---

- Wang, G. J., Xie, C., Wen, D., & Zhao, L. (2019). When Bitcoin meets economic policy uncertainty (EPU): Measuring risk spillover effect from EPU to Bitcoin. *Finance Research Letters*, 31. <https://doi.org/10.1016/j.frl.2018.12.028>
- Weber, B. (2015). Bitcoin and the legitimacy crisis of money. *Cambridge Journal of Economics*, 40(1). <https://doi.org/10.1093/cje/beu067>
- White, R., Marinakis, Y., Islam, N., & Walsh, S. (2020). Is Bitcoin a currency, a technology-based product, or something else? *Technological Forecasting and Social Change*, 151. <https://doi.org/10.1016/j.techfore.2019.119877>
- Xia, P., Wang, H., Zhang, B., Ji, R., Gao, B., Wu, L., Luo, X., & Xu, G. (2020). Characterizing cryptocurrency exchange scams. *Computers and Security*, 98. <https://doi.org/10.1016/j.cose.2020.101993>