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Research Paper

Economic risks associated with Bitcoin: a comprehensive analysis

Shurooq Abbas Merza*
*Computer Science and IT faculty, Wasit University, Iraq.

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ABSTRACT

Bitcoin, the pioneering cryptocurrency, has revolutionized the financial landscape, but its use is not without economic risks. This paper provides a comprehensive analysis of the economic risks stemming from the use of Bitcoin. It explores the volatility of Bitcoin and the factors contributing to its price instability, including regulatory uncertainty, cybersecurity threats, and market manipulation. Additionally, it delves into the implications of illicit activities and money laundering associated with Bitcoin, highlighting the need for robust regulatory frameworks to mitigate these risks. The paper also examines the environmental impact of Bitcoin mining, emphasizing its energy-intensive nature and carbon footprint. The systemic risks posed by Bitcoin, such as market volatility spillover, interconnectedness with traditional financial institutions, counterparty risks, lack of regulation, financial crime, and cybersecurity vulnerabilities, are thoroughly analyzed. Through a comprehensive review of the literature and an in-depth understanding of the subject matter, this paper provides insights into the multifaceted economic risks associated with Bitcoin. It underscores the importance of proactive measures to address these risks, including enhanced regulations, transparency, cybersecurity measures, and sustainability practices. By mitigating these risks, the paper argues that Bitcoin can play a more secure and sustainable role in the future of finance.

Corresponding Author:
Shurooq Abbas Merza
Computer Science and IT faculty, Wasit University, Iraq.
Email: smerza@uowasit.edu.iq

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1. INTRODUCTION

1.1 Background of Bitcoin

Bitcoin, introduced in a whitepaper published by an anonymous person or group known as Satoshi Nakamoto in 2008, marked the birth of the first decentralized cryptocurrency. It aimed to provide a peer-to-peer electronic cash system, enabling secure and direct transactions without the need for intermediaries such as banks or governments. Bitcoin's underlying technology, known as blockchain, is a distributed ledger that records all transactions and is maintained by a network of participants, ensuring transparency and security [1].

Bitcoin was officially launched in January 2009, and its early adopters were primarily individuals with a deep interest in cryptography and computer science. As its popularity grew, Bitcoin gained traction as a digital currency and a speculative investment asset. Over time, it has attracted attention from technologists, investors, financial institutions, and even governments worldwide [2].

The key characteristic of Bitcoin is its decentralized nature, operating independently of any central authority. Transactions are verified by network participants through a process called mining, in which powerful computers solve complex mathematical problems to validate and record transactions on the blockchain. Miners are rewarded with newly created bitcoins for their computational efforts.

Bitcoin's limited supply is another fundamental aspect of its design. The total number of bitcoins that can ever exist is capped at 21 million, ensuring scarcity and potentially increasing its value over time. Bitcoin is divisible into smaller units, known as satoshis, with one bitcoin equivalent to 100 million satoshis.

Bitcoin's early years were marked by relatively low adoption and limited real-world use cases. However, as more merchants began accepting Bitcoin as a form of payment, and cryptocurrency exchanges emerged to facilitate buying and selling, its utility and popularity grew. Bitcoin's value experienced significant volatility, with notable price surges and corrections, capturing the attention of mainstream media and investors [3].

As Bitcoin gained momentum, it attracted regulatory attention and scrutiny. Governments worldwide grappled with the need to regulate cryptocurrencies, balancing consumer protection, financial stability, and technological innovation. Different jurisdictions have taken diverse approaches to regulation, ranging from embracing cryptocurrencies to imposing restrictions or bans on their use [4].

As the first and most well-known cryptocurrency, Bitcoin remains at the forefront of the digital asset landscape, shaping the future of finance and challenging traditional financial systems. Its journey from a whitepaper concept to a global phenomenon has sparked ongoing discussions and debates about the economic, social, and regulatory implications of cryptocurrencies in the modern world [5].

1.2 Purpose of the Paper

The purpose of this paper is to explore and analyze the economic risks that arise from the use of Bitcoin. While Bitcoin has gained significant attention and adoption as a decentralized digital currency, it is essential to recognize and understand the potential risks associated with its utilization. By examining these economic risks, the paper aims to provide insights into the challenges and uncertainties faced by individuals, businesses, and regulatory bodies in the context of Bitcoin.

The paper will delve into various dimensions of economic risks, including volatility, regulatory uncertainties, cybersecurity threats, market manipulation, illicit activities, environmental impact, and systemic risks. Each section will explore the specific risks and their potential implications for different stakeholders involved in the Bitcoin ecosystem.

Through this analysis, the paper seeks to enhance understanding of the economic risks associated with Bitcoin and their potential impact on individuals, businesses, and the broader financial landscape. By shedding light on these risks, it aims to contribute to informed decision-making and risk management strategies for those engaged in Bitcoin-related activities.

Ultimately, the paper aims to provide a comprehensive assessment of the economic risks associated with Bitcoin, offering insights and recommendations for individuals, businesses, and regulatory bodies. By addressing these risks and uncertainties, stakeholders can strive towards harnessing the potential benefits of Bitcoin while minimizing the potential negative economic impacts [5].

1.3 Economic Risks Associated with Bitcoin

Bitcoin, as a decentralized digital currency, presents several economic risks that individuals, businesses, and regulatory bodies need to consider [6]. These risks include:

- **Volatility:** Bitcoin's price is known for its significant and rapid fluctuations. The value of Bitcoin can experience sharp increases or decreases within short periods, leading to uncertainty and potential financial losses. This volatility poses risks to individuals holding Bitcoin as an investment and businesses accepting it as a form of payment. It can affect wealth accumulation, investment strategies, and financial planning.
- **Regulatory Uncertainty:** The regulatory landscape surrounding Bitcoin is complex and constantly evolving. Governments worldwide are still developing frameworks to regulate cryptocurrencies effectively. The lack of clear and consistent regulations introduces uncertainties regarding taxation, legal compliance, and the overall legitimacy of Bitcoin. Regulatory ambiguity can hinder mainstream adoption, limit business acceptance, and create challenges for individuals and businesses navigating the legal and regulatory landscape.
- **Cybersecurity Threats:** Bitcoin's digital nature makes it a prime target for cybercriminals. Hacking incidents, phishing attacks, and security breaches pose risks to the security and integrity of Bitcoin holdings and transactions. Individuals and businesses using Bitcoin need to adopt robust security measures to protect against potential losses and unauthorized access to their digital assets.
- **Market Manipulation:** The relatively small size and limited liquidity of the cryptocurrency market make it susceptible to market manipulation. Coordinated buying or selling activities by large holders of Bitcoin, often referred to as "whales," can artificially inflate or deflate prices, leading to market distortions. Such manipulation can affect investor sentiment, create price volatility, and potentially result in financial losses for unsuspecting participants.
- **Environmental Impact:** The process of mining Bitcoin requires significant computational power and energy consumption. As a result, Bitcoin mining operations contribute to carbon emissions and environmental degradation. The environmental impact of Bitcoin mining raises concerns about sustainability and may lead to reputational risks for individuals and businesses involved in Bitcoin-related activities.
- **Systemic Risks:** The interplay between Bitcoin and traditional financial systems can introduce systemic risks. Any significant disruption or failure within the Bitcoin network or related infrastructure could have ripple effects on the broader financial ecosystem. This interdependency can create vulnerabilities during periods of financial instability and pose challenges for regulatory bodies in managing potential systemic risks. Understanding and addressing these economic risks is crucial for individuals, businesses, and regulatory bodies to make informed decisions and develop appropriate risk management strategies when engaging with Bitcoin. By mitigating these risks, stakeholders can work towards harnessing the potential benefits of Bitcoin while navigating the challenges associated with its use [7].

1.4 Volatility of Bitcoin

Volatility is one of the most prominent economic risks associated with Bitcoin. Bitcoin's price has exhibited significant volatility since its inception, characterized by sharp and sudden price fluctuations [8]. Understanding the volatility of Bitcoin is crucial for individuals and businesses involved in Bitcoin-related activities. Here are some key points about the volatility of Bitcoin:

- **Definition and Measurement:** Volatility refers to the degree of variation or rapid changes in the price of an asset over a specific period. It is often measured using statistical indicators such as standard deviation or the average true range. In the context of Bitcoin, volatility reflects the magnitude and frequency of price swings.
- **Factors Contributing to Bitcoin's Volatility:** Several factors contribute to Bitcoin's volatility. The relatively small size of the cryptocurrency market, compared to traditional financial markets, makes it more susceptible to price manipulation and market sentiment. Additionally, Bitcoin's decentralized

nature, absence of a central authority, and limited liquidity can amplify price swings. News events, regulatory announcements, and market speculation also influence Bitcoin's volatility.

- **Impact on Individuals:** Bitcoin's volatility has implications for individuals holding Bitcoin as an investment asset. Rapid price fluctuations can result in significant gains or losses, depending on the timing of buying and selling. High volatility can make it challenging for individuals to predict price movements accurately, impacting their investment decisions and overall wealth accumulation.
- **Impact on Businesses:** Businesses that accept Bitcoin as a form of payment also face the consequences of Bitcoin's volatility. Since Bitcoin's value can change rapidly, businesses accepting Bitcoin may face challenges in accurately pricing products or services. Fluctuations in the value of Bitcoin can affect revenue projections, profitability, and financial planning. Therefore, businesses accepting Bitcoin often need to implement strategies to mitigate the potential risks associated with its volatility.
- **Risk Management Strategies:** To manage the risks associated with Bitcoin's volatility, individuals and businesses can employ various risk management strategies. These may include diversifying investment portfolios, setting clear investment objectives, and using tools like stop-loss orders to limit potential losses. Businesses can consider converting Bitcoin payments into fiat currency immediately to mitigate the impact of price fluctuations.
- **Market Maturity and Potential Mitigation:** As the Bitcoin market continues to mature and attract greater institutional participation, some argue that volatility may decrease over time. Increased liquidity, regulatory clarity, and broader acceptance could contribute to a more stable market environment. However, it is important to note that volatility is an inherent characteristic of Bitcoin and may persist even as the market evolves.

1.5 Factors Contributing to Bitcoin's volatility

Several factors contribute to the volatility of Bitcoin. These factors can amplify price swings and create an environment of uncertainty and rapid changes [9]. Here are some key factors that influence Bitcoin's volatility:

- **Market Liquidity:** Bitcoin's relatively small market size compared to traditional financial markets makes it more susceptible to price manipulation and large price swings. The lower liquidity of the cryptocurrency market means that even a relatively small buy or sell order can have a significant impact on the price of Bitcoin. This lack of liquidity can result in exaggerated price movements and increased volatility.
- **Speculation and Investor Sentiment:** Speculation plays a significant role in Bitcoin's volatility. The sentiments, beliefs, and expectations of market participants can drive price movements. Positive news, such as regulatory developments or institutional adoption, can lead to buying frenzies and price increases. Conversely, negative news, security breaches, or regulatory crackdowns can trigger selling pressure and price declines. Speculative trading and herd mentality among investors can contribute to sudden and drastic price swings.
- **Regulatory Developments:** Regulatory announcements and actions related to cryptocurrencies can have a significant impact on Bitcoin's volatility. Statements from government authorities, changes in regulations, and potential bans or restrictions on Bitcoin can create uncertainty and trigger market reactions. Regulatory clarity or ambiguity can affect market sentiment and lead to volatility as market participants adjust their strategies based on regulatory developments.
- **Technological Advancements and Security Concerns:** Technological advancements and security concerns surrounding Bitcoin can also contribute to its volatility. News of security breaches, hacking incidents, or vulnerabilities in the underlying blockchain technology can erode market confidence and lead to price declines. On the other hand, breakthroughs in technology, such as scalability solutions or improvements in network efficiency, can positively influence sentiment and contribute to price increases.
- **Global Economic Factors:** Bitcoin's price can be influenced by broader economic factors and market trends. Macroeconomic indicators, geopolitical events, monetary policies, and financial market conditions can impact investor sentiment and risk appetite, affecting Bitcoin's price. For example,

during times of economic uncertainty or financial market instability, investors may seek alternative assets like Bitcoin, leading to price increases. Conversely, positive economic conditions or periods of market stability may dampen interest in Bitcoin, resulting in price declines.

1.6 Regulatory Uncertainty

Regulatory uncertainty is a significant factor contributing to the volatility and economic risks associated with Bitcoin [10]. The lack of clear and consistent regulations surrounding cryptocurrencies creates challenges for individuals, businesses, and regulatory bodies. Here are key points regarding regulatory uncertainty and its impact on Bitcoin:

- **Evolving Regulatory Landscape:** Governments worldwide are still grappling with how to regulate cryptocurrencies effectively. The regulatory landscape for Bitcoin and other cryptocurrencies varies widely across different jurisdictions. Some countries have embraced cryptocurrencies and developed comprehensive regulatory frameworks, while others have taken a more cautious or restrictive approach. The lack of standardized regulations creates an environment of uncertainty and ambiguity for market participants.
- **Legal Compliance Challenges:** Due to the lack of clear regulatory guidelines, individuals and businesses engaging with Bitcoin often face challenges in ensuring legal compliance. Determining tax obligations, reporting requirements, and complying with anti-money laundering (AML) and know-your-customer (KYC) regulations can be complex. The absence of regulatory clarity hampers individuals' and businesses' ability to navigate the legal landscape confidently and may deter mainstream adoption.
- **Impact on Business Adoption:** Regulatory uncertainty can hinder business adoption of Bitcoin. Companies considering accepting Bitcoin as a form of payment may be hesitant due to concerns about future regulatory changes or inconsistencies. Businesses require clarity and stability in regulations to ensure compliance, manage risks, and plan their operations effectively. The absence of regulatory certainty may limit the willingness of businesses to integrate Bitcoin into their payment systems or offer Bitcoin-related services.
- **Investor Protection and Consumer Safeguards:** Regulatory uncertainty raises concerns about investor protection and consumer safeguards in the Bitcoin ecosystem. The absence of clear regulations may leave investors vulnerable to fraud, scams, and market manipulation. Consumers engaging in Bitcoin-related transactions may lack the same level of legal protections as traditional financial transactions, potentially exposing them to risks.
- **Global Coordination Challenges:** The global nature of Bitcoin and its decentralized structure present challenges in coordinating regulatory approaches across different countries. Divergent regulatory frameworks can result in regulatory arbitrage, where businesses and individuals seek jurisdictions with favorable regulations, potentially leading to regulatory fragmentation and inconsistent enforcement. Harmonizing regulations across borders can be a complex task and requires international coordination and collaboration.
- **Potential Regulatory Actions:** Regulatory uncertainty also brings the risk of sudden and significant regulatory actions. Governments can introduce new regulations, impose restrictions, or ban cryptocurrencies altogether. Such actions can lead to market disruptions, heightened volatility, and investor panic. Regulatory announcements or rumors alone can trigger price swings, highlighting the sensitivity of Bitcoin to regulatory developments.
- **Need for Clarity and Consistency:** To address regulatory uncertainty, stakeholders emphasize the importance of clear and consistent regulations. A well-defined regulatory framework that balances innovation, consumer protection, and financial stability can foster trust, encourage mainstream adoption, and reduce the associated economic risks. Regulatory clarity provides businesses and individuals with a stable operating environment, enabling them to make informed decisions and develop robust risk management strategies.

1.7 Cybersecurity Threats

Cybersecurity threats are a significant concern when it comes to the use of Bitcoin. The digital nature of Bitcoin makes it an attractive target for cybercriminals seeking to exploit vulnerabilities and gain unauthorized access to digital assets [11]. Here are key points regarding cybersecurity threats associated with Bitcoin:

- **Hacking and Unauthorized Access:** Bitcoin wallets, exchanges, and other digital platforms associated with Bitcoin are vulnerable to hacking attempts. Cybercriminals employ various techniques, such as phishing attacks, malware, ransomware, and brute-force attacks, to gain unauthorized access to Bitcoin holdings. Once compromised, hackers can steal or transfer Bitcoin to their own accounts, resulting in financial losses for individuals and businesses.
- **Wallet Vulnerabilities:** Bitcoin wallets, both software-based (e.g., mobile or desktop wallets) and hardware wallets, can be susceptible to security vulnerabilities. Weak password protection, insecure storage of private keys, or compromised wallet software can expose Bitcoin holdings to theft. It is crucial for individuals to use reputable and secure wallet providers and follow best practices for securing their wallets, such as using strong passwords, enabling two-factor authentication, and regularly updating wallet software.
- **Phishing Attacks:** Phishing attacks are a common cybersecurity threat in the Bitcoin ecosystem. Cybercriminals may impersonate legitimate Bitcoin exchanges, wallet providers, or other service providers to trick users into revealing their private keys or login credentials. Phishing attacks can be conducted through emails, social media, or fraudulent websites. Individuals need to exercise caution and verify the authenticity of any communication or website before providing sensitive information.
- **Exchange Vulnerabilities:** Bitcoin exchanges, where individuals buy, sell, and trade Bitcoin, can be targeted by cybercriminals. Breaches in exchange security can result in the theft of customer funds and personal information. Weak security measures, improper handling of customer data, or insider threats can compromise the security of exchanges. It is crucial for individuals to choose reputable exchanges with robust security measures and consider keeping their Bitcoin in secure wallets rather than leaving them on exchanges.
- **Blockchain Network Attacks:** The underlying blockchain network that supports Bitcoin can also be subjected to cyber-attacks. Attacks such as 51% attacks, in which a malicious entity gains control over the majority of the network's mining power, can compromise the integrity of the blockchain. Although such attacks are challenging to execute, they pose a theoretical risk and can undermine trust in the Bitcoin network.
- **Lack of Regulatory Protections:** Unlike traditional financial systems, Bitcoin transactions may not enjoy the same regulatory protections. If individuals fall victim to cyber-attacks and lose their Bitcoin, there may be limited avenues for recourse or recovery. The decentralized nature of Bitcoin means that there is no central authority or institution responsible for protecting users' funds in the event of a security breach.
- **Importance of Security Measures:** To mitigate cybersecurity risks, individuals and businesses should prioritize security measures. These include using secure and reputable wallets and exchanges, enabling two-factor authentication, practicing good password hygiene, regularly updating software, and being vigilant against phishing attempts. Education and awareness about cybersecurity best practices are crucial to ensure safe participation in the Bitcoin ecosystem.

Cybersecurity threats pose significant economic risks to individuals and businesses involved in Bitcoin. Implementing robust security measures, staying informed about emerging threats, and adopting best practices can help mitigate these risks and enhance the overall security of Bitcoin transactions and holdings.

1.8 Market Manipulation

Market manipulation is a significant economic risk associated with Bitcoin and other cryptocurrencies. It refers to intentional actions taken by individuals or groups to manipulate the price,

volume, or other market indicators of Bitcoin for their own gain. Here are key points regarding market manipulation in the context of Bitcoin:

- **Whales and Large Holders:** Market manipulation often involves large holders of Bitcoin, commonly referred to as "whales." These individuals or entities possess substantial amounts of Bitcoin that allow them to exert significant influence over the market. Their buying or selling activities can create artificial price movements, impacting market sentiment and triggering a domino effect among smaller traders.
- **Wash Trading:** Wash trading involves a manipulator simultaneously placing buy and sell orders to create a false impression of trading volume and activity. It aims to deceive other market participants by making it appear as though there is genuine buying and selling interest in Bitcoin. Wash trading can manipulate market sentiment and attract more traders, leading to increased liquidity and potentially driving up the price.
- **Insider Trading:** Insider trading occurs when individuals with access to non-public information about Bitcoin engage in trading activities based on that information. Insider trading in the cryptocurrency market can distort prices and create unfair advantages for those privy to the information. It is important to note that the decentralized and pseudonymous nature of Bitcoin makes detecting and prosecuting insider trading more challenging than in traditional financial markets.
- **Lack of Regulation and Oversight:** The decentralized and global nature of Bitcoin makes it challenging to regulate and monitor market manipulation effectively. The absence of a centralized authority and fragmented regulatory frameworks across jurisdictions can create loopholes that manipulators exploit. Limited oversight and enforcement mechanisms allow manipulative practices to persist and pose risks to market integrity.
- **Impact on Market Confidence:** Market manipulation erodes market confidence and can deter institutional investors and mainstream adoption of Bitcoin. Price manipulation creates an unpredictable and unfair trading environment, leading to concerns about market stability and credibility. The perception of manipulation can negatively impact investor sentiment and hinder the development of robust and regulated cryptocurrency markets.

1.9 Illicit Activities and Money

Bitcoin has been a subject of concern due to its potential involvement in illicit activities and money laundering. The decentralized and pseudonymous nature of Bitcoin transactions has made it attractive to individuals seeking to engage in illegal activities while maintaining a level of anonymity [11]. Criminals have taken advantage of Bitcoin's pseudonymity to conduct transactions on darknet markets, where illicit goods and services are traded. Additionally, Bitcoin has been used for money laundering purposes, allowing individuals to convert illicitly obtained funds into a seemingly legitimate digital asset. The ease of cross-border transactions further facilitates the movement of funds across jurisdictions, making it challenging for authorities to trace and track the flow of money.

1.10 Environmental Impact of Bitcoin Mining

Bitcoin mining has attracted significant attention due to its environmental impact. The process of mining involves solving complex mathematical problems to validate and add transactions to the Bitcoin blockchain. However, the energy-intensive nature of Bitcoin mining has raised concerns about its contribution to carbon emissions and overall environmental sustainability [12].

Firstly, Bitcoin mining requires substantial computational power, which translates into a high demand for electricity. Many miners rely on energy-intensive hardware, such as ASIC (Application-Specific Integrated Circuit) machines, to efficiently mine Bitcoin. As a result, large-scale mining operations consume vast amounts of energy, often sourced from fossil fuels. This reliance on non-renewable energy sources leads to a substantial carbon footprint and contributes to greenhouse gas emissions.

Furthermore, the process of mining is becoming increasingly competitive, leading to the emergence of mining pools and data centers dedicated solely to Bitcoin mining. These operations consume enormous amounts of electricity, often surpassing the energy consumption of entire countries. The

concentration of mining activities in specific regions, such as China, has raised concerns about the environmental impact in those areas, as coal-based energy sources are prevalent [13].

The industry is also witnessing a growing interest in alternative consensus mechanisms, such as proof-of-stake, which require significantly less energy compared to proof-of-work, the current mechanism used in Bitcoin mining. This shift could potentially mitigate the environmental impact associated with mining.

Governments and regulatory bodies are increasingly recognizing the environmental concerns associated with Bitcoin mining. Some regions have imposed restrictions on mining activities or are incentivizing the use of renewable energy sources. These measures aim to promote more sustainable mining practices and reduce the carbon footprint of the cryptocurrency industry [14].

1.11 Systemic Risks

Bitcoin, as a decentralized and global digital currency, poses systemic risks that can impact financial systems and markets. Here are some key points regarding systemic risks associated with Bitcoin:

- **Market Volatility Spillover:** The extreme volatility of Bitcoin can have spillover effects on traditional financial markets. Significant price fluctuations in Bitcoin may create panic or uncertainty among investors, potentially leading to a broader loss of confidence in financial markets. This could trigger a ripple effect, affecting other asset classes and causing broader market instability.
- **Interconnectedness with Traditional Financial Institutions:** Although Bitcoin operates independently from traditional financial institutions, its integration with the broader financial system is growing. The emergence of Bitcoin futures contracts, exchange-traded funds (ETFs), and other financial products tied to Bitcoin exposes traditional financial institutions to the risks associated with Bitcoin. If a significant disruption or crash were to occur in the Bitcoin market, it could have systemic implications for these institutions and the broader financial system.
- **Counterparty and Systemic Risk:** Bitcoin transactions rely on decentralized peer-to-peer networks, reducing the need for intermediaries like banks. However, this also introduces counterparty and systemic risks. If a major technical flaw or vulnerability is discovered in the Bitcoin protocol or underlying infrastructure, it could result in the loss of funds or widespread disruptions. Such incidents could erode confidence in the technology and have broader implications for financial stability.
- **Lack of Regulation and Oversight:** The decentralized nature of Bitcoin makes it challenging to regulate and oversee its activities effectively. This regulatory gap leaves room for illicit activities, market manipulation, and other abuses that can undermine the stability of the financial system. Without appropriate regulations and oversight, systemic risks associated with Bitcoin may be amplified, potentially leading to financial instability or regulatory arbitrage.
- **Financial Crime and Money Laundering:** Bitcoin's pseudonymous nature has made it attractive to criminals for money laundering and other illicit activities. If illicit funds are transferred into the Bitcoin ecosystem and integrated into the traditional financial system, it could pose risks to the integrity and stability of financial institutions. Authorities face challenges in detecting and preventing such activities, especially when it comes to cross-border transactions and the conversion of Bitcoin into fiat currencies.
- **Cybersecurity and Infrastructure Risks:** The reliance on digital infrastructure and the potential for cybersecurity breaches create systemic risks associated with Bitcoin. If significant vulnerabilities are exploited, it could compromise the security and stability of the Bitcoin network. Attacks on exchanges, wallets, or other critical infrastructure components can lead to financial losses, erosion of trust, and broader systemic implications.

Addressing systemic risks associated with Bitcoin requires a collaborative approach involving regulators, policymakers, financial institutions, and the cryptocurrency industry. Implementing effective regulatory frameworks, enhancing cybersecurity measures, promoting transparency, and conducting thorough risk assessments can help mitigate the systemic risks associated with Bitcoin and ensure the overall stability of financial systems.

2. CONCLUSION

In conclusion, the use of Bitcoin carries economic risks that must be carefully considered. The volatility of Bitcoin poses challenges for investors and can have spillover effects on financial markets. Factors such as regulatory uncertainty, cybersecurity threats, and market manipulation contribute to the volatility and undermine market integrity. Illicit activities and money laundering associated with Bitcoin highlight the need for robust regulatory measures and enforcement to protect against abuse.

The environmental impact of Bitcoin mining is another important concern. The energy-intensive nature of mining and its reliance on non-renewable energy sources contribute to carbon emissions and resource consumption. Efforts to adopt sustainable practices, such as renewable energy usage and alternative consensus mechanisms, are vital for minimizing the environmental footprint.

Moreover, systemic risks tied to Bitcoin can affect financial systems and institutions. Market volatility spillover, interconnectedness with traditional financial institutions, counterparty risks, lack of regulation, financial crime, and cybersecurity vulnerabilities all pose challenges to financial stability. Collaborative efforts between regulators, policymakers, and industry stakeholders are necessary to address these risks and ensure a well-functioning and resilient financial ecosystem.

As the adoption and usage of Bitcoin continue to evolve, it is essential to remain vigilant and proactive in managing the economic risks associated with its use. Striking a balance between innovation and risk mitigation will be crucial in maximizing the potential benefits of Bitcoin while safeguarding against its inherent risks. By implementing effective regulations, promoting transparency, enhancing cybersecurity measures, and fostering sustainability, the economic risks resulting from the use of Bitcoin can be mitigated, paving the way for a more secure and sustainable cryptocurrency ecosystem.

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Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Shurooq Abbas Merza	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

Not Applicable.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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BIOGRAPHIE OF AUTHOR



Shurooq Abbas Merza, is a faculty member in the Department of Computer Science and Information Technology at Wasit University, Iraq. Her research interests are mostly about financial technology, cybersecurity, and how new digital systems affect the wider economy, lately she has also looked at the risks tied to cryptocurrency adoption. In her writing and talks, she focuses on that overlapping area between computing and economic policy, especially when it comes to regulatory, and security related issues in decentralized finance

	systems. She is also part of Wasit University, and their growing computer science research community. Email: smerza@uowasit.edu.iq