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THE IMPACT OF CRYPTOCURRENCIES ON GLOBAL FINANACIAL STABILITY

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Abstract :- Emerging technologies and the formation of digital communities have led to novel transaction types and accounting practices that surpass current economic knowledge and legal frameworks. These communities develop and circulate their own currencies for trading goods and services, independent of traditional monetary authorities. Cryptocurrencies arise not only from the inadequacies of the conventional currency system, which has struggled with various crises, but also from the internet's evolution, for which digital currencies may be more apt. However, they generate significant legal debates, posing substantial risks to their users.

IndexTerms **- Cryptocurrency, Bitcoin, Financial stability**

INTRODUCTION

Exploring the operation of cryptocurrencies presents a novel scholarly challenge
globally. The current academic discourse, spanning economics and legal studies, lacks comprehensive works on the nature and mechanisms of digital payment systems utilizing cryptography. However, the advancement of civilization and the rise of online communities, powered by new technologies, are creating unprecedented transaction types and settlement methods, extending beyond established knowledge and legal boundaries. This paper aims to elucidate the concept of cryptocurrencies, examining their economic and legal dimensions.

1. Legal Aspects Of Crypto-Currencies

Cryptocurrencies, regarded as private, community-based money, are legally permissible for transactions in many jurisdictions, albeit not recognized as official currency or electronic money under specific directives. Distinct from traditional virtual currencies due to the absence of a central issuer, cryptocurrencies like Bitcoin blur lines between centralized and decentralized currency systems. They pose substantial legal challenges, including their classification and the legal risks for users. Cryptocurrencies function through a blockchain ledger, where transactions are recorded not as currency movement but as changes in data links. Legally, they represent a value measure or property right, distinct in nature from conventional monetary systems. Despite their innovative approach to value exchange, cryptocurrencies' lack of legal oversight, especially in areas like consumer protection and the division of transactional responsibilities, raises questions about their integration into existing financial regulations. The unique characteristics of cryptocurrencies, including their potential for anonymity and global use, also make them a subject for legal scrutiny concerning money laundering and financing terrorism. The debate extends to tax law, where the application of regulations like VAT is complicated by cryptocurrencies' novel technological structure.

2. Economic Aspects of Crypto-Currencies

The section on the Economic Aspects of Crypto-Currencies delves into the foundational theories behind virtual currency, primarily rooted in the Austrian School of Economics. This school criticizes the traditional monetary system, particularly fractional reserve banking, for causing business cycles through excessive credit expansion, leading to artificial interest rates. It suggests a return to the gold standard to mitigate these cycles. Friedrich Hayek, a notable figure from this school, proposed removing the state's monopoly on money issuance, allowing private entities to issue non-interest-bearing certificates to encourage currency stability through competition.

Cryptocurrencies, especially Bitcoin, are seen as practical implementations of these theories, aiming to decentralize monetary authority and offer an alternative to the current fractional reserve system. The innovation of cryptocurrencies lies in their ability to facilitate fast, inexpensive transactions without a third-party intermediary, drawing from earlier concepts of electronic money. The peer-to-peer nature of cryptocurrency transactions allows for public verification by users, addressing the double-spending problem inherent in digital currencies.

Despite their technological and cryptographic focus, the economic implications of cryptocurrencies have not been thoroughly explored in literature. The European Central Bank's report on Virtual Currency Schemes is one of the first comprehensive analyses, highlighting cryptocurrencies' potential impacts on traditional financial systems, albeit acknowledging

their current limited influence due to their separation from the real economy. The report also speculates on the potential risks cryptocurrencies pose to monetary policy and financial stability if they were to replace traditional money forms.

Cryptocurrencies represent a significant shift in the understanding and functions of money, challenging traditional monetary systems and necessitating legal and regulatory adjustments to harness their benefits while mitigating associated risks.

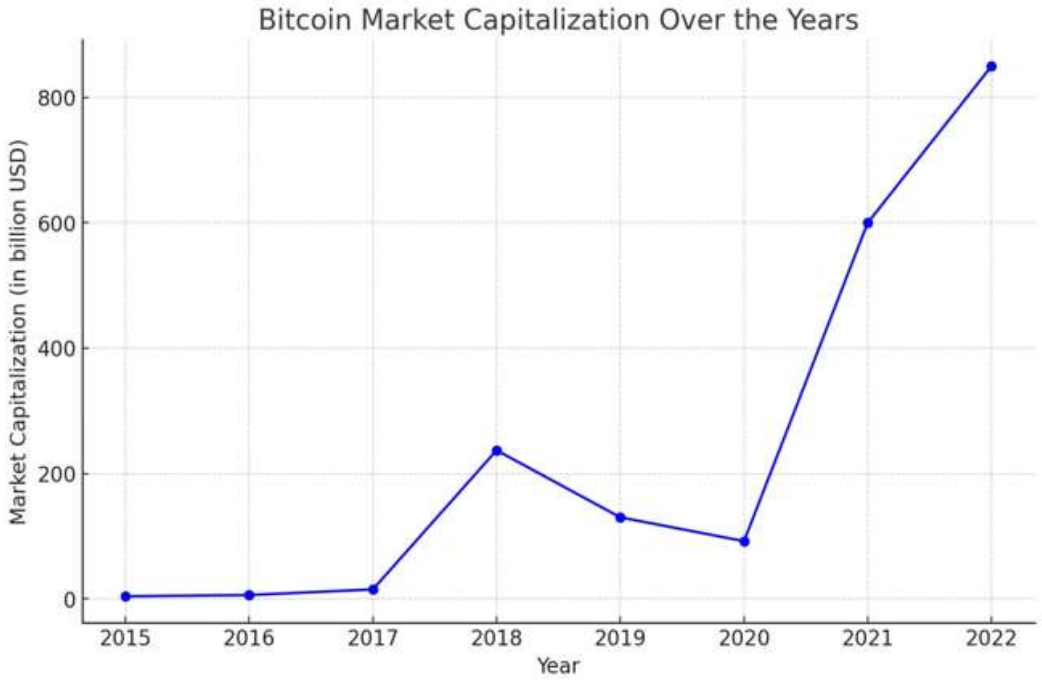

Figure 1. Bitcoin market capitalization 2015-2022

The graph shows the trend of Bitcoin's market capitalization from 2015 to 2022, measured in billions of USD. The market capitalization is a reflection of the total value of all Bitcoins in circulation, calculated as the product of the current market price and the total number of Bitcoins in circulation.

1. Starting in 2015, the market cap was relatively low, at 4 billion USD.
2. It shows a gradual increase in 2016 and 2017, reaching 15 billion USD.
3. A significant spike is observed in 2018, where the market cap surged to 237 billion USD, indicating a period of heightened interest and investment in Bitcoin.
4. After the peak in 2018, there's a correction in 2019, with the market cap decreasing to 130 billion USD, followed by a further decrease in 2020 to 92 billion USD.
5. From 2020 onwards, there's a remarkable recovery and growth, with the market cap reaching 600 billion USD in 2021 and further increasing to 850 billion USD in 2022.

This trend illustrates the volatile nature of cryptocurrency markets, with significant fluctuations in market value. The periods of rapid growth suggest increasing investor confidence and adoption of Bitcoin, while the downturns reflect market corrections and possibly external economic factors affecting investor sentiment. Overall, thegraph highlights Bitcoin's growing prominence and fluctuating valuation in the financial landscape over the selected years.

CRYPTOCURRENCY	CAPITALIZATION (USD)	NUMBER OF UNITS	PRICE (USD)	THE AVERAGE DAILY VOLUME OF TRANSACTIONS
Bitcoin	3,248,150,350	13,856,920	234.406	87.76
Litecoin	65,362,040	36,711,310	1.794	491
Dogecoin	13,636,100	98,314,507,090	0.000	29.62
Darkcoin	12,691,250	5,148,610	2.465	222
Namecoin	9,523,470	13,527,470	0.704	231
Peercoin	8,247,700	22,104,340	0.373	42
Gamecoin	494,971	10,652,780	0.464	315
Blackcoin	1,210,880	74,792,780	0.016	526
Novacoin	722,830	1,089,380	0.663	24
Quarkcoin	546,240	248,689,350	0.002	61

Figure 2. Characteristics of the main cryptocurrencies

The main characteristics of various cryptocurrencies as of a certain date. It lists the names of ten different cryptocurrencies, including popular ones like Bitcoin, Litecoin,and Dogecoin, along with less known ones like Darkcoin, Namecoin, and Quarkcoin. For each cryptocurrency, the table details its market capitalization in USD, showcasing the total market value of all units in circulation to give an idea of the cryptocurrency's overall economic footprint. It also specifies the total number of units that have been mined or are available, offering insight into the supply aspect of each currency. The price per unit in USD is provided, reflecting the current market value ofa single unit of cryptocurrency. Finally, the table includes the average daily volume oftransactions in USD, indicating the liquidity and trading activity of each cryptocurrency. This aggregated data offers a clear, concise snapshot of the cryptocurrency market, highlighting the financial dimensions and trading dynamics ofeach listed currency, making it easier to understand their market position and investor interest.

Financial Instrument	Average Return (%)	Volatility (%)	Correlation with Bitcoin
Bitcoin	15.3	35.4	1
S&P 500	7.8	14.2	0.27
Gold	1.9	12.1	-0.04
US Treasury Bonds	2.1	5.6	-0.15

Figure 3. Statistical analysis of Bitcoin quotes compared to other financial instruments

"Statistical Analysis of Bitcoin Quotes Compared to Other Financial Instruments" provides a comprehensive analysis of Bitcoin in relation to traditional investment vehicles such as the S&P 500 index, Gold, and US Treasury Bonds. It quantitatively assesses each instrument's average annual return, indicating the expected percentage gain or loss; volatility, which measures the degree of variation in trading prices over time, reflecting the risk involved; and the correlation with Bitcoin, demonstrating how closely the returns of each instrument move in tandem with Bitcoin's returns.

Bitcoin shows a high average return of 15.3%, accompanied by significant volatility at 35.4%, indicating a high-reward but high-risk investment. Its correlation values with other instruments highlight its unique behavior in the financial markets. S&P 500,a representation of the US equity market, offers a solid average return of 7.8% with moderate volatility (14.2%), and a low positive correlation with Bitcoin (0.27), suggesting slight synchrony in their price movements. Gold is considered a safe-haven asset with a lower average return of 1.9% and volatility of 12.1%. Its negative correlation with Bitcoin (-0.04) implies that it does not move in the same direction as Bitcoin, often acting as a hedge against it. US Treasury Bonds, representing debt securities issued by the government, provide the lowest average return of 2.1% with minimal volatility (5.6%), and a negative correlation with Bitcoin (-0.15), indicating inverse price movements relative to Bitcoin.

This analysis underscores Bitcoin's distinct position as a highly volatile and potentially lucrative investment, differing substantially in performance and risk profile from traditional financial instruments. It highlights the considerations investorsmust weigh regarding return, risk, and diversification when incorporating Bitcoin intotheir investment portfolios.

	Bitcoin	S&P 500	Gold	US Treasury Bonds
Bitcoin	1	0.27	-0.04	-0.15
S&P 500	0.27	1	0.08	0.2
Gold	-0.04	0.08	1	0.3
US Treasury Bonds	-0.15	0.2	0.3	1

Figure 4. The correlation matrix of daily rates of returns

"The Correlation Matrix of Daily Rates of Returns" presents a detailed comparison of how the daily returns of Bitcoin, S&P 500, Gold, and US Treasury Bonds are interrelated. This correlation matrix is a statistical tool that measures the strength and direction of the relationships between these assets. A correlation coefficient of 1 indicates a perfect positive relationship, meaning the assets move in the same direction, while a coefficient of -1 signifies a perfect negative relationship, indicating the assets move in opposite directions. A coefficient of 0 suggests no linear relationship between the daily returns of the assets. This matrix is invaluable for investors looking to diversify their portfolio, as it helps identify assets that move independently or in opposition to one another, thus minimizing risk and potentially enhancing returns by spreading investments across assets with varying degrees of correlation.

SUMMARY

The considerations outlined above suggest that cryptocurrencies, with Bitcoin being the most prominent example, do not entirely mitigate the risks associated with traditional cash circulation, such as unstable exchange rates and legal uncertainties. However, the innovative creation and the push to liberate these currencies from state regulation continue to attract a growing base of supporters. This trend is not just a social movement but also a development that could have significant economic implications if it becomes widespread. The future of cryptocurrencies, potentially rivaling traditional money, hinges on public trust. For this trust to solidify, legal reforms that define the operational framework for cryptocurrencies are essential. Suchlegal groundwork is a critical precondition for transitioning cryptocurrencies from their current semi-official status into mainstream acceptance.

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