Available online @ https://jjem.jnnce.ac.in
https:www.doi.org/10.37314/JJEM.SP0106
Indexed in International Scientific Indiexing (ISI)
Impact factor: 1.395 for 2021-22
Published on: 08 December 2023

Crypto currencies and Central Bank Digital Currencies (CBDCs): A Comparative Analysis

Abhishek S[1*]
1*PES Institute of Advanced Management Studies
abhisheks@pestrust.edu.in

Sinchana K S[2*]
2*PES Institute of Advanced Management Studies
sinchanaakshara16@gmail.com

Abstract

The emergence of crypto currencies and the growing interest in Central Bank Digital Currencies (CBDCs) have sparked significant discussions in the financial and economic sectors. This paper aims to provide a comprehensive comparative analysis of crypto currencies and CBDCs, exploring their origins, functions, advantages, and challenges. Through this analysis, we seek to shed light on the implications of these digital currencies for the global financial landscape. The study's aim is to shed light on the potential consequences of these digital currencies for the global financial landscape, offering a comprehensive examination of these innovative financial instruments.

Key Words: *Crypto currencies, Central Bank Digital Currencies, Financial System, Central Bank.*

1 Introduction The emergence of cryptocurrencies, spearheaded by Bitcoin in 2009, has ushered in a new era of decentralized digital currency. Concurrently, central banks across the world have been exploring the development of Central Bank Digital Currencies (CBDCs) as a response to the digital transformation of financial systems (Blakstad, 2018). This paper seeks to provide a comprehensive comparative analysis of these two digital currency paradigms, shedding light on their origins, functions, advantages, challenges, and potential impacts on the global financial landscape.

The primary purpose of this paper is to offer an extensive analysis of cryptocurrencies and CBDCs, focusing on their historical evolution, technological

aspects, functions, regulatory landscapes, economic and social implications, and future outlook. By comparing and contrasting these digital currency forms, we aim to provide a holistic view of their roles in modern finance.

The primary purpose of this paper is to offer an extensive analysis of cryptocurrencies and CBDCs, focusing on their historical evolution, technological aspects, functions, regulatory landscapes, economic and social implications, and future outlook. By comparing and contrasting these digital currency forms, we aim to provide a holistic view of their roles in modern finance.

2 Overview of Crypto Currencies and CBDCs

Cryptocurrencies are digital or virtual currencies that use cryptographic techniques to secure financial transactions, control the creation of new units, and verify the transfer of assets. They are typically decentralized and operate on a blockchain or distributed ledger technology. CBDCs are digital forms of national fiat currencies issued and regulated by central banks. They can be both centralized and decentralized depending on the design choices of the issuing authority.

3 Historical Evolutions

Cryptocurrencies emerged with the launch of Bitcoin by an anonymous entity known as Satoshi Nakamoto in 2009. Since then, thousands of different cryptocurrencies have been created.Cryptocurrencies encompass a wide array of digital currencies, with Bitcoin, Ethereum, and Litecoin being some of the most well-known examples. Each cryptocurrency has its unique features and use cases.

CBDCs have been explored and developed by various central banks over the past decade, with a focus on enhancing the efficiency and security of payments and settlements. Notable CBDC initiatives include those by the People's Bank of China (e-CNY), the European Central Bank (Digital Euro), and the U.S. Federal Reserve (Digital Dollar Project). These initiatives vary in design and objectives.

4 Technology and Infrastructure

❖ Blockchain Technology in Cryptocurrencies

Cryptocurrencies operate on blockchain technology, which is a decentralized and immutable ledger system. This technology ensures security, transparency, and decentralization in cryptocurrency transactions.

❖ **Distributed Ledger Technology (DLT) in CBDCs**

CBDCs may use Distributed Ledger Technology (DLT) to enhance efficiency and security, but they can also operate on centralized databases. The choice of technology depends on the central bank's goals and preferences.

❖ **Security and Privacy Considerations**

Cryptocurrencies utilize cryptographic security to protect transactions and digital wallets. Privacy can vary depending on the cryptocurrency, with some being more private than others.

CBDCs can be designed to ensure transaction privacy or offer varying degrees of traceability, depending on the central bank's policies and the needs of the financial system.

5 Functions and Use Cases

Crypto currencies

- Medium of Exchange: Cryptocurrencies are often used for peer-to-peer transactions and international remittances.
- Store of Value: Some individuals use cryptocurrencies as a long-term store of value, akin to digital gold.
- Unit of Account: While less common, some businesses price their goods and services in cryptocurrencies.

CBDCs

- Payments and Settlements: CBDCs can enhance the efficiency and security of payment systems and interbank settlements.
- Financial Inclusion: CBDCs can facilitate financial inclusion by providing access to a digital form of national currency for those without traditional bank accounts.
- Monetary Policy Tools: CBDCs may offer central banks new tools for implementing monetary policy and influencing the money supply.

6 Regulatory Environments

Cryptocurrencies

- Global Regulatory Landscape: The regulation of cryptocurrencies varies widely across countries and regions, with some embracing them, while others have imposed strict regulations.
- Challenges and Concerns: Regulators have expressed concerns about consumer protection, market integrity, and anti-money laundering when it comes to cryptocurrencies.

CBDCs

- Central Bank Authority: CBDCs are issued and regulated by central banks, providing a high level of control and oversight.

- Policy Frameworks and Control: Central banks can design CBDCs with specific policy objectives in mind, such as enhancing monetary policy or financial stability.

7 Advantages and Challenges

Cryptocurrencies

Advantages

- Decentralization and Trust: Cryptocurrencies operate on decentralized networks, reducing the need for intermediaries and fostering trust.
- Borderless Transactions: Cryptocurrencies enable international transactions without the need for currency conversion.
- Security and Transparency: The blockchain ensures the security and transparency of transactions.

Challenges and Risks

- Price Volatility: Cryptocurrencies are subject to significant price volatility.
- Regulatory Uncertainty: The regulatory environment for cryptocurrencies is uncertain and can change rapidly.
- Lack of Consumer Protections: Some crypto currency users may lack protections offered by traditional financial systems.

CBDCs

Advantages

- Monetary Policy Tools: CBDCs can provide central banks with new tools for implementing monetary policy.
- Financial Inclusion: CBDCs can promote financial inclusion by providing access to digital currency.
- Efficient Payments: CBDCs can enhance the efficiency of payment systems.

Challenges and Implementation Issues

- Privacy Concerns: CBDCs may raise concerns about the privacy of financial transactions.
- Technological Infrastructure: Developing the necessary technological infrastructure for CBDCs can be complex and costly.
- Centralization: Depending on their design, CBDCs may be more centralized than crypto currencies.

8 Economic and Social Impacts

Cryptocurrencies

- Financial Inclusion: Cryptocurrencies can provide financial services to unbanked and under banked populations.

- Decentralization and Trust: The trustless nature of cryptocurrencies reduces reliance on centralized institutions and intermediaries.

CBDCs

- Monetary Policy and Economic Stability: CBDCs can enhance a central bank's ability to implement monetary policy and maintain economic stability.
- Privacy and Digital Divide: Privacy concerns may arise with the use of CBDCs, and the digital divide must be addressed to ensure broad access.

9 Future Prospects and Integration

- **Coexistence and Synerg**

Cryptocurrencies and CBDCs can coexist and potentially complement each other, with cryptocurrencies serving as a decentralized, borderless medium of exchange and CBDCs providing stable, government-backed digital currency.

- **International Collaboration and Standards**

International collaboration is essential for setting global standards in the use of digital currencies to ensure interoperability and regulatory coherence.

- **Adoption and Integration in the Global Economy**

Widespread adoption of digital currencies, whether cryptocurrencies or CBDCs, may lead to profound changes in the global financial landscape, requiring adaptation in areas such as international finance, taxation, and legal frameworks.

10 Concluding Remarks – In three dimensions

- **Summary of Key Findings**

This paper has explored cryptocurrencies and CBDCs comprehensively, highlighting their differences and commonalities, advantages, challenges, and impacts.

- **Implications for the Financial Ecosystem**

The coexistence of cryptocurrencies and CBDCs may lead to a more diverse, efficient, and inclusive financial ecosystem. Regulatory frameworks must evolve to accommodate these digital currency forms.

11 Future Trends and Research Directions

On-going research and analysis are necessary to understand the evolving landscape of digital currencies and their influence on the financial world.

References

- Cunha, P. R., Melo, P., & Sebastião, H. (2021). From bitcoin to central bank digital currencies: Making sense of the digital money revolution. Future Internet, 13(7), 165.
- Blakstad, S., Allen, R., Blakstad, S., & Allen, R. (2018). Central bank digital currencies and cryptocurrencies. FinTech revolution: Universal inclusion in the new financial ecosystem, 87-112.
- Ward, O., & Rochemont, S. (2019). Understanding central bank digital currencies (CBDC). Institute and Faculty of Actuaries, 1-52.
- Auer, R., Frost, J., Gambacorta, L., Monnet, C., Rice, T., & Shin, H. S. (2022). Central bank digital currencies: motives, economic implications, and the research frontier. Annual review of economics, 14, 697-721.
- Zhang, T., & Huang, Z. (2022). Blockchain and central bank digital currency. ICT Express, 8(2), 264-270.
- Dr. Dileep Kumar S. D., and Abhishek S. (2023). Central Bank's Digital Currencies – Opportunities and Challenges. Prateeksha Publications, 189-197.