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DIGITAL CURRENCY AND CENTRAL BANK DIGITAL CURRENCIES (CBDCS): EXPLORE THE RISE OF DIGITAL CURRENCIES, INCLUDING CRYPTOCURRENCIES LIKE BITCOIN AND STABLE COINS, AND THE POTENTIAL IMPLICATIONS OF CENTRAL BANK DIGITAL CURRENCIES (CBDCS) ON MONETARY POLICY, FINANCIAL STABILITY, AND CROSS-BORDER TRANSACTIONS

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A B S T R A C T

The advent of digital currencies has been a transformative phenomenon in the world of finance, marking a significant shift from traditional fiat currencies to innovative, technology-driven alternatives. Among these, cryptocurrencies, led by Bitcoin, and stable coins have garnered considerable attention, while Central Banks have begun exploring the concept of Central Bank Digital Currencies (CBDCs). This article delves into the rise of digital currencies, examining the evolution of cryptocurrencies, the emergence of stable coins, and the potential of CBDCs, highlighting both the benefits and challenges associated with these novel forms of exchange.

K E Y W O R D S

Cryptocurrency, market position, stability, monetary policy, affects, market prices

Introduction

In a world where electronic payments are increasingly popular for transactional purposes, standard attributes of state central bank money, such as central bank account penetration or even physical cash circulation, are under pressure. Now, the emergence of challenger digital currencies on both nPls and WplCODs has made the challenges even more difficult and urgent. As a consequence, even though the possibility of being crowded out via the sCoD is regarded as theoretically possible but statistically unlikely in the short run, if the use of physical, including cash, CCs does have some undesired social effects, central banks will face difficult trade-offs. The social cost behind maintaining physical CCs and introducing wCoDs is essentially the price for the independence of central banks' account and ledger rights. Nevertheless, the challenge is to design and implement the additional wCoD(s) in a way that takes the banking system's legal exposure into consideration, possibly by developing the new

wCoD on top of, rather than replacing or excluding the current one on the ledger of the account-based system.

An expanding body of literature offers insights on the emergence and design of digital currencies, from various perspectives such as monetary economics, computer science, law, political science, and the private sector. So far, however, most studies have focused mainly on either cryptocurrency in the private sector, like Bitcoin, or central bank digital currencies (CBDCs) in public institutions, while disregarding the connections between the two. More often than not, they are viewed as mutually exclusive, dual systems serving as different rotation centers of the holder-defined currency spectrum, which anchors the issuance of the state central bank money. However, in our view, the barrier between the two is permeable. Central banks may turn to cryptocurrency technologies or even establish partnerships with Bitcoin entrepreneurs to develop and implement their own digital versions of the banknotes, coins, and reserves because, as has been observed by Bofinger, some property-based central bank money functions that are currently only fulfilled by cryptocurrencies and remain absent in the account-based commercial bank money can instead be taken over by CBDCs.

Definition and Types of Digital Currencies

Digital currency is a new form of currency that can be found on the Internet or on mobile telephone gadget, using a digital wallet to pay for goods and services and, with particular ease, purchases or transactions. The majority of digital currencies are founded on blockchain technology that started with Bitcoin, a cryptocurrency. Nonetheless, the operation regimes of digital currencies are diverse, and it is essential to evaluate the various operational requirements, in particular, the accountability and danger management of the participants in the digital currency system. At present, with the endorsement of major central banks, the idea of central bank digital currencies, or CBDC, namely, CBDC adopted by the central banks, an advanced phase of the present legal currency, has received emphasis. In this era, digital currencies can be categorized into the following types: 1) Cryptocurrency: Crypto cash is a new form of "non-bank" private currency that concerns traditional financial institutions. The general idea of Bitcoin is the equalization of peer-to-peer networking. It is activated solely by decentralized entities, and its limitation stops the double option problem of itself. Democratic flaw control (based on the "Pow" - proof of work) has permitted the removal of the central supervision system. 2) Digital value asset: The digital value asset (DVA), for "non-mined" assets, breaks the property rights associated with them; for goods, the third-party authentication principle is applied. In fact, such digital assets represent a particular "store of value and are worth 881.8 US dollars in terms of market value by 2021. 3) Central bank digital currency (CBDC) 2: CBDC refers to a digital legal-tier liability of the central bank freely accessible to consumers, companies and government agencies. The use of CBDC places both the central bank and the domestic financial system in a new world. Due to the related distinctions in specific operational conditions, this study will no longer explore central bank digital currencies, only considering that the central bank digital currency can refer to either the balance of the central bank or the currency distributions of the central bank, and the topic has received more attention in the technical literature.

Digital currencies are a new concept of currency that corresponds to the digital era. Digital currencies are based on cryptographic protocols and are often independent of entities that establish or guarantee their value, thus making them revolutionary instruments. The new features of digital currencies such as smart contracts, automated transactions, privacy, decentralized autonomous organizations,

consensus mechanisms, etc. are inherited from the cryptographic technologies used. In this paper, the principal consultancy of 3 digital currencies is surveyed compared with current legal and private money. The most important cryptocurrency is Bitcoin, designed as a response to the most important problems related to the current money, i.e., those associated with non-privacy and lack of control over it by the central financial authority. Although it seems that Bitcoin has achieved these goals, it also has problems in terms of scalability and unsustainability and is used to finance criminal activities as, for instance, scandals related to the self-styled "dark web" showed. Furthermore, the market of digital coins is every day increasing, and the technology seems to be very promising in terms of applications, automatically funded companies and so on.

Historical Evolution and Adoption

The year 2009 is the most influential year for cryptocurrency as it marks the launch of Bitcoin. In 2008, Satoshi Nakamoto, a pseudonymous person or group of people, released a paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System" that described an electronic cash system without the need for a central authority. Bitcoin is now being used to carry out secure, peer-to-peer transactions within the Bitcoin network, also commonly referred to as the Bitcoin blockchain. In the same year, the first block of the blockchain—called the genesis block—is created by Nakamoto on January 3, 2009. Prior to Bitcoin, currency systems implemented with cryptographic techniques have been introduced with companies like Flooz and e-Gold (2005), both of which were canceled in the years following the 9-11 attacks due to the impossibility of preventing fraud and the abuse of the system for illegal purposes. In the following years, many other digital currencies were introduced, but Bitcoin is still the most famous and widely used.

The concept of cryptocurrencies first emerged in the early 1980s. DigiCash was the first electronic money company, which was founded by David Chaum in 1989. DigiCash offered a service where transactions were completely anonymous and untraceable, a feature that has spawned a vast number of illegal activities such as money laundering. In 2001, the NSA published a paper called "How to Make a Mint: The Cryptography of Anonymous Electronic Cash". The paper suggested that the United States government could implement its own cryptocurrency because there were benefits to either cash or card transactions. The publication from the NSA certainly gave the cryptocurrency debate for cashless payments a certain boost.

The inception of Bitcoin in 2009 marked the beginning of the cryptocurrency era. Satoshi Nakamoto's pioneering work introduced the concept of a decentralized, trustless, and secure medium of exchange, unshackled from the constraints of traditional financial systems. The underlying blockchain technology, which enables the creation of an immutable, distributed ledger, has been instrumental in fostering confidence in this new asset class. The remarkable success of Bitcoin has inspired the creation of numerous alternative cryptocurrencies, or altcoins, which, collectively, have spawned a lucrative market.

One of the primary drivers of the cryptocurrency phenomenon is the allure of decentralized finance (DeFi). By bypassing traditional intermediaries, such as banks, individuals can engage in peer-to-peer transactions, unhindered by geographical or institutional barriers. This democratization of finance has sparked a global interest, particularly among the younger demographic, who are drawn to the prospect of financial autonomy and the potential for substantial returns on investment. Moreover, the cryptographic security and transparency inherent in blockchain technology have

instilled confidence in this fledgling asset class, as evidenced by the meteoric rise of cryptocurrency prices in recent years.

In parallel to the growth of cryptocurrencies, the emergence of stable coins has addressed a significant concern regarding the volatility endemic to this market. Stable coins, such as USDT (Tether) and USDC (USD Coin), are pegged to the value of fiat currencies, mitigating the risks associated with cryptocurrency fluctuations. This innovation has broadened the appeal of digital currencies, attracting investors seeking refuge from market turbulence. The development of stable coins has also facilitated the integration of cryptocurrencies into mainstream commerce, as merchants and consumers gain confidence in their use as a reliable medium of exchange.

In response to the rapid growth of digital currencies, Central Banks have initiated exploratory initiatives to develop their own digital currencies, CBDCs. The People's Bank of China, the European Central Bank, and the Bank of England, among others, have undertaken research and pilot projects to create digital currencies that can coexist with traditional fiat currencies. CBDCs aim to harness the benefits of digital currencies, such as increased efficiency, reduced costs, and enhanced financial inclusion, while addressing concerns related to monetary policy, financial stability, and consumer protection.

The potential benefits of CBDCs are multifaceted. They could enable faster, more secure, and cheaper transactions, particularly in the context of cross-border payments. Additionally, CBDCs could reinforce financial inclusion, as individuals without access to traditional banking services could utilize digital wallets to conduct transactions. Furthermore, CBDCs could provide Central Banks with a novel tool for monetary policy implementation, allowing for more precise control over the money supply and interest rates.

However, the rise of digital currencies, including cryptocurrencies and CBDCs, also presents various challenges. Regulatory frameworks are still in their infancy, and the lack of standardization and oversight raises concerns regarding Anti-Money Laundering (AML) and Combating the Financing of Terrorism (CFT) compliance. Furthermore, the environmental impact of cryptocurrency mining, which is energy-intensive, has sparked debates about sustainability. The potential for cyber-attacks and data breaches also requires concerted efforts to ensure the security of digital currency systems.

Conclusion

In conclusion, the rise of digital currencies has transformed the financial landscape, offering novel opportunities for innovation, financial inclusion, and efficiency. Cryptocurrencies, led by Bitcoin, and stable coins have paved the way for a decentralized, technology-driven revolution in finance. Meanwhile, Central Banks are actively exploring the potential of CBDCs, which could augment the existing financial infrastructure. As this nascent industry continues to evolve, it is crucial to address the challenges and risks associated with digital currencies, ensuring that the benefits of this financial revolution are accessible to all.

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