

Original Article

Digital Currency: Research at the State Bank of Vietnam

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Abstract: As digital currencies continue to grow, central banks must increase the effectiveness of their methods of payment in order to increase pressure to adapt. In response, central banks have initiated exploratory projects to research the potential issuance of Central Bank Digital Currencies (CBDCs). This form of digital currency is expected to offer numerous advantages in payment operations and implementing monetary policies compared to traditional paper money. This analysis aims to elucidate the key features of central bank digital currencies and examine whether they can fulfill the functions of money in payment operations and the execution of central bank monetary policies.

Keywords: Digital currency, Fiat currency.

I. CONTEXT FOR THE EMERGENCE OF CENTRAL BANK DIGITAL CURRENCY (CBDC)

Nearly two decades after the broad use of fast networks and technological gadgets, central banks worldwide are presently investigating the potential for creating independent digital currencies. Similar to physical banknotes and coins, central bank digital currency (CBDC) is nominally fixed, globally accessible, and legally recognized as a means of payment for all transactions. Therefore, CBDC is fundamentally distinct from other electronic currencies. (such as Bitcoin, Ethereum, and Ripple). These virtual currencies are created by private organizations (often referred to as cryptocurrencies) and have experienced significant market volatility in recent years.

According to statistics from Ward and Rochemont (2019), based on reports on private cryptocurrencies from various countries worldwide, these private cryptocurrencies have generally generated negative sentiment towards central banks and market participants in general. Many countries believe that these private cryptocurrencies do not fulfill the functions of money. They are highly volatile speculative instruments, distorting markets, diverting investments from the real economy, and creating bubbles. They can create opportunities for high-tech criminals, putting consumers and investors at risk, as they still have to go through intermediaries known as “bitcoin miners” to maintain their ledger. Even the European Central Bank (ECB) views them as “seeds of financial crisis.” The table below summarizes central banks’ responses to private cryptocurrencies since January 2019.

Table 1: Responses of Central Banks Worldwide to Private Cryptocurrencies

Attitudes and Policy Perspectives	Countries
In general, a negative outlook	Azerbaijan, Australia, Bank for International Settlements, Canada, China, European Central Bank (ECB), Finland, France, Hong Kong, India, Indonesia, Japan, Malaysia, Netherlands, New Zealand, Norway, Russia, South Africa, South Korea, Switzerland, United Kingdom, United States.
Will implement prohibitive policies	China, India, Indonesia, Morocco, South Korea, Thailand.
Will implement monitoring policies	No significant financial stability risks: Australia, India, United States. Prepared to take action if necessary: Brazil, Malaysia, Russia, Singapore, Switzerland, United Kingdom. Investor warnings issued: Canada, China, France (Bitcoin), ECB, Germany, Hong Kong, United Kingdom.
Will implement regulatory measures	Integrated into existing financial regulations: Canada, Hong Kong, Indonesia, Japan, Mauritius, Singapore, United States. New regulatory frameworks: France (ICO), Gibraltar, Japan, Mauritius, Thailand. Consulting on regulations: Israel, Russia, South Africa.
Will implement supportive policies	Brazil, Japan, Malta, Sweden, Venezuela, Bermuda, Germany, Israel, Switzerland, Ukraine.

Source: Compiled by Ward and Rochemont (2022)



The transition from fiat currency to private cryptocurrencies has challenged money central banks' functions, the financial intermediate model, and monetary policy transmission. The swift growth of cryptocurrencies has put pressure on central banks to upgrade the effectiveness of existing payment networks. Therefore, central banks have initiated exploratory projects to research the potential issuance of Central Bank Digital Currencies (CBDCs). A range of models are examining issues such as the impact of CBDC on matters pertaining to interest rates, stability of finances, and security that demand serious consideration. These changes in financial intermediaries will also have implications for banks' capital allocation and liquidity.

Clearly, technological innovation has created conditions for the development of digital currencies. For example, blockchain enables transactions without the need for financial intermediaries or regulatory authorities. This has led to praised advantages seen as the key to future international trade growth. However, concerns about performance, scalability, interoperability, and security have made central banks think this technology is not developed enough to replace the current monetary system.

Through this analysis, we will clarify the key features of central bank digital currencies, examining whether they can fulfill the functions of money in payment operations and the execution of central bank monetary policies.

II. CONCEPTS AND BENEFITS OF CENTRAL BANK DIGITAL CURRENCY (CBDC) AND CHALLENGES TO MONETARY POLICY

A) Concept of Central Bank Digital Currency (CBDC)

According to the International Payment Bank, the term "Central Bank Digital Currency" (CBDC) is poorly defined. It can be used for many different ideas. But most people think of it as brand-new money introduced by the central bank. To put it another way, it is a central bank obligation that acts as an archive of value and a medium of exchange and is expressed in an existing unit of account. To be clear, it is important to consider CBDC in relation to other currencies. The Venn diagram titled "Currency Flower" presents a classification of currencies (Bech and Garratt (2017)). This variation is centered around the combination of four key attributes: issuer (central bank or other entities), form (digital or physical), accessibility (broad or restricted), and technology (token-based or account-based). Usually, one of two basic technologies powers money: worth-keeping accounts or tokens. Reserve balances and the majority of commercial bank money are account-based, whereas cash and numerous other kinds of digital currency are token-based.

Therefore, based on the descriptions above, CBDC is a type of digital currency issued by the central bank with broader accessibility than mandatory reserve money, with additional functionalities for retail transactions, a distinct operational structure compared to other forms of central bank money, and the potential for interest payments at rates different from reserve rates.

B) Benefits of Issuing CBDC and Challenges to Monetary Policy

CBDC ensures that the public can use it as a legal form of payment alongside physical cash.

The use of physical cash is decreasing as electronic payments through cards and contactless apps become more convenient. While it's unlikely that central banks will completely eliminate money taken out of the payment system, there is a potential as a result of the drawbacks of actual currency. Cash is frequently used for illegal activities, money laundering, and tax evasion since it is intrinsically hard to track down. Cash also poses security risks in transportation and payments. Therefore, future governments may seek to eliminate cash to reduce crime and improve tax collection. Thus, CBDCs are created by central banks to ensure they retain the role and functions of money.

On a technological basis, CBDCs can increase the productivity and security of both retail and large-value payment systems. This digital currency can enhance payment efficiency for retail payments at point-of-sale (POS), online, and peer-to-peer (P2P). CBDCs can also benefit wholesale and interbank payments, for example, by enabling faster settlement and extending operating hours.

Transactions on CBDCs are typically conducted using tokens issued by the central bank. Similar to Bitcoin, this approach uses distributed ledger technology (DLT) to authenticate payment transactions and confirm each token's owner without needing the central bank or any other settlement or clearing organization to get directly involved. However, the central bank will regulate the CBDC token supply unlike bitcoin and other cryptocurrencies. They shall be regarded as legal currency and fixed at a nominal amount. Moreover, the central bank can create open protocols for updates, integration, and transactions into these distributed ledgers (DLTs) in the context of cryptocurrencies, which has shown to be a challenging task.

However, each token's whole ownership history needs to be kept in an encrypted blockchain, and every payment network node must have a copy of that blockchain. Fresh payment transactions must be validated before being permanently

recorded on the blockchain. Mining is the term for that verification process, which entails intricate and power-consuming computational processes. For instance, miners earn around 0.8% of the total transaction value as revenue in the case of Bitcoin. Therefore, the verification costs for token-based systems can be significant.

Clearly, blockchain technology offers several benefits, such as reducing transaction costs by eliminating intermediaries, improving cross-border payment efficiency, and allowing small companies to access global markets. It can enhance the speed, efficiency, and transparency of debt markets and improve the transparency and security of all transactions. It also enhances market supervision and regulation. However, the physical performance significantly affects the transaction speed of the blockchain. Figure 3 shows the transaction execution speed per second for each payment method, with only 7 transactions per second for Bitcoin, compared to 24,000 transactions for the VISA payment system. This demonstrates the slowness of token-based payment systems.

Competition from Private Cryptocurrencies: The benefits of widespread access to central bank digital currency may be limited if privately issued cryptocurrencies overshadow the legal tender. The commercial aim of private cryptocurrency providers is to maximize their profits, which is unsuitable for them to act as legal tender. Issues related to social welfare are addressed using legal tender, and if privately issued cryptocurrencies gain dominance, it may increase social welfare costs. The issue of receiving subsidies could be disadvantageous for the public.

Challenges to Monetary Policy: If legal tender significantly diminishes, the central bank's best course of action will rely on individual cryptocurrency issuers' decisions. This may seriously impair the central bank's capacity to carry out its role as the last-resort lender and restrict its ability to transmit monetary policy. If central bank digital currency is intended to replace privately produced cryptocurrencies, it can lessen this rivalry.

From a technical standpoint, central banks can easily pay interest on this form of digital currency. Regardless of whether they are held by financial institutions, businesses, or people, all money kept at the central bank would be earning an identical nominal interest rate. This approach is encapsulated in Friedman's analysis (1960), which stated that money issued by the government is necessary for an effective financial system to yield returns similar to other risk-free assets. This rationale underlies central banks worldwide paying interest on their reserves held electronically at the central bank.

Paying interest on CBDC can enhance the competitiveness of the banking system. Banks would need to offer attractive interest rates to retain customers, as customers could opt to transfer funds into CBDC accounts to earn higher interest. In a stable price environment, interest rates on CBDC are typically positive. However, in the event of severe adverse disruptions to the economy, putting downward pressure on the overall price level, The central bank may lower CBDC rates of interest in an effort to promote price stability and the recovery of the economy when necessary. This approach provides advantages over the circulation of physical cash because physical cash significantly constrains the ability to cut policy interest rates to deal with severe adverse shocks. This was evident during the 2008-2009 financial crisis.

During that crisis, when the policy interest rate hit the zero lower bound (ZLB), it could still not stimulate consumer spending, forcing governments to implement unconventional policies like quantitative easing to rescue the economy. Therefore, the zero lower bound (ZLB) on policy interest rates has constrained monetary policy effectiveness and limited the central bank's ability to respond to adverse economic shocks. This is because when interest rates approach zero, depositors can withdraw assets bearing interest and opt for holding cash to avoid negative interest rates.

Hence, by replacing paper currency, the effective lower limit (ELB) constraint on policy interest rates would be removed with CBDCs, enabling central banks to implement negative real interest rate policies in times of economic distress. Removing the effective lower bound (ELB) on interest rates can expand the range of policy rates, which can only be achieved when the problem of holding cash to evade negative interest rates is addressed. With central bank digital currency, The effective lower limit (ELB) on nominal interest rates will no longer be used to guide monetary policy decisions. As a result, to restore equilibrium in prices, the rate of interest on CBDCs can act as the main tool of monetary policy without using other monetary tools like quantitative ease or fiscal measures.

III. ESTABLISHING A CBDC MODEL DURING GLOBAL TRENDS TRANSFORMATION

If the CBDC model is established using tokens, it may reduce the efficiency of physical transactions. An alternative design (similar to debit cards) for the CBDC model can address this issue. In this scenario, digital money would be held by people and businesses in specified accounts, particularly at supervised custodial entities or in CBDC accounts at the CENTRAL BANK. In this method, the CENTRAL BANK would handle every transaction involving payments by only debiting the payer's CBDC account and crediting the recipient's CBDC account. A significant one benefit of an account-based system is the potential for quick and economical CBDC payments. Naturally, during the initial setup of each CBDC account, the account holder's identity would need to be verified through procedures like opening an account at a commercial bank.

However, financial transactions can be completed quickly and securely after that (for example, by employing two-factor authentication with a mobile phone and digital PIN), enabling banks to keep an eye out for any odd activity and put fraud protection measures in place or additional security measures when necessary.

Implementing an account-based CBDC could result in significant efficiency gains. Consumers often incur significant fees for transferring money, and retail businesses also bear substantial costs for verification and currency conversion when receiving payments via debit and credit cards.

As previously indicated, accounts kept directly with the Central Bank may be used to construct an account-based CBDC. It's possible to provide CBDC through accounts at the Central Bank in today's world of vast data storage and fast networks, as demonstrated by Ecuador's recent experience. Ecuador was one of the pioneering countries in implementing CBDC, introducing its own digital currency (DE) in 2014. By February 2015, it functioned as a functional means of payment, allowing eligible users to transfer money through a mobile app.

Furthermore, according to the approach proposed by Dyson and Hodgson (2017), CBDC can be made accessible to the general public via specifically approved accounts at commercial banks under supervision. The Central Bank would keep matching sums in these banks' individual reserve accounts. This approach can be particularly advantageous for commercial banks. Recent experiences in Kenya demonstrate public-private partnership frameworks' viability and potential advantages. Furthermore, the recent strategy used by the U.S. Federal Reserve to create distinct accounts for maintaining consumer funds at systemically significant financial market utilities (FMUs) is almost identical.

Finally, CBDC does not need to monopolize the payment system; instead, it can complement payment services offered by commercial organizations. People and companies will still have the freedom to hold money with private organizations and use virtual currency and private networks to make transactions. Several financial institutions have already taken a proactive approach to creating new payment networks by utilizing distributed ledger technology (DLT) and modern approaches. Nevertheless, in the absence of CBDC competition, these isolated networks could become increasingly profitable at scale and potentially establish a monopoly. Therefore, it may complicate government regulations and unclearly mitigate risks, preventing price disruptions for consumers and small businesses. Certainly, public-private CBDC partnerships appear attractive, even to many multinational banks.

CENTRAL BANKS cannot abruptly phase out cash usage. Therefore, CENTRAL BANKS can gradually render physical cash obsolete by making CBDC widely available to the public, such as by establishing conversion fees between cash and CBDC. The fee levels could be low or even waived for small and infrequent transfers to avoid burdening low-income households. Such arrangements would promote individual choice while opposing money laundering, tax evasion, and other illegal activity. If preferred, people can still maintain their privacy by engaging in small cash transactions or using virtual or other personal payment methods.

IV. DIGITAL CURRENCY ISSUANCE PROJECTS IN CHINA AND OTHER DEVELOPED COUNTRIES

Alongside the potential benefits of CBDCs, the People's Bank of China (PBoC) began experimenting with using digital renminbi (RMB) in April 2020, developed on blockchain technology. As a result, China became one of the first major economies to pilot a new CENTRAL BANK digital currency (CBDC). The digital RMB trial activities were conducted in three cities, Shenzhen, Suzhou, and Chengdu, as well as in the Xiongan New Area economic region. PBoC introduced the digital currency through a two-tiered system, with both the CENTRAL BANK and commercial banks being legitimate issuers.

In conjunction with Chinese President Xi Jinping's recent call for the rapid development of blockchain technology, the rollout and experimental use of the digital RMB serves as a prime example of China's ambition to become a leader in digital currency. Furthermore, China's state-owned newspaper declared that "the country's digital currency system provides an alternative to the functions of the USD-based payment system."

Beyond China, several large economies, including the United States, have also taken early steps towards developing their own digital currencies as part of economic stimulus legislation. Meanwhile, the European Central Bank (ECB) has recently published research documents analyzing the potential benefits of its own digital currency.

V. CONCLUSION

The new form of CBDC results in various legal consequences. Thus, it raises important legal questions for central banks and policymakers worldwide. Many countries have developed their central bank laws and currency laws to empower their central bank with a "mandate" to issue CBDC.

The current legal framework of Vietnam provides that the State Bank of Vietnam is the only agency in the country issuing banknotes and metal coins of the Socialist Republic of Vietnam and is responsible for ensuring the sufficiency of

banknotes and coins for the economy. As discussed above (within the attached detailed article), to prepare for the issuance of digital Vietnamese Dong, the country should carry out legal reforms to broaden the mandate of its State Bank to digital currency issuance and circulation and recognize the digital form of the official currency and to establish legal provisions and standards for professional issuance and circulation of digital currency and use of it as a means of payment in the economy.

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