Research on the potential impact of CBDC on China’s monetary policy framework

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Abstract. Central Bank Digital Currency (CBDC) has the characteristics of traceability and editability. This article respectively elaborates on these two technical characteristics that are different from traditional currencies, and analyzes their impact on the basic elements of the monetary policy framework, namely the ultimate goal of monetary policy, the anchoring method of intermediary goals, monetary policy tools, and the transmission mechanism of monetary policy. After analysis, the research results show that the traceability and editability of CBDC can respectively improve and optimize the basic elements of the monetary policy framework, and optimize our country's monetary policy framework as a whole. It is recommended to legally clarify the subjects and procedures that can access CBDC data and edit CBDC algorithms to ensure that the traceability and editability of CBDC are not abused. At the same time, pay close attention to its impact on various basic elements, and promptly Adjust the proportion of these two features in the implementation of monetary policy so that monetary policy can achieve the desired effect.

Keywords: CBDC; traceability; editability; monetary policy framework.

1. Introduction

Since its conception, fiat digital currency has attracted considerable attention for its impact on the formulation and implementation of monetary policy. Because Central Bank Digital Currency (CBDC) has traceability and programmability that traditional currencies do not have, many countries currently hold a long-term optimistic attitude towards the role of CBDC.[1] Among them, the most popular role is its impact on monetary policy. Some existing literature suggests that the CBDC will have a significant impact on the amount of China's base currency [2,3], the amount of reserves[4], and the currency multiplier[5]. It will also affect existing monetary policy tools and measures of monetary policy intermediation[6,7,8,9], thus affecting the effectiveness of monetary policy transmission. But the overall impact on the monetary policy framework is less clear. This paper aims to examine the impact of CBDC on the fundamental elements of the monetary policy framework, and to use CBDC to optimize the shortcomings of the traditional monetary policy framework and empower the central bank to perform the functions of monetary policy formulation and implementation.

2. The operating mode and technical characteristics of CBDC

2.1 Operation mode of CBDC

CBDC is a legal currency issued by the central bank, supported by national credit, and is the digital form of legal currency. It adopts the existing "two-tier operating system" of "central bank-commercial bank-individual user", with the People's Bank of China facing commercial banks, and commercial banks or institutions facing individual users.

CBDC is issued by the People's Bank of China and is the People's Bank of China's liability to CBDC holders. Commercial banks open "digital currency accounts" at the People's Bank of China. The central bank's digital currency system is open to the public, and all social entities can download the system. , and open the only digital currency "basic account" with the central bank; in the central bank's digital currency system, social entities can choose different commercial banks to open
"digital wallets", and any type of digital wallet that is successfully opened has the ability to withdraw, redeem the basic functions of return, consumption, transfer and inquiry; the digital wallet of individual users maintains a linkage relationship with their basic account at the central bank. When individual users redeem, spend, or transfer digital currency, their digital currency wallet carriers must confirm with each other and generate a business link code. The relevant information and the link codes of the two parties are transmitted simultaneously to the central bank and their own digital wallets. The bank performs accounting processing; Banks that open digital wallets add their own identification to the processed accounting information and send it to the People's Bank of China to adjust their digital currency account balances; the People's Bank of China transfers the digital currency generated by individual users through a commercial link code. Check the incoming and outgoing items, and after confirming that they are consistent, adjust the account balance for both payer and payee. Based on the information sent by the bank that opened the digital wallet, the account balances of the two banks will be adjusted accordingly after the consistency is verified through the business link code.

At this point, the information of the entire life cycle of CBDC has been loaded on the CBDC in the form of "data" and stored in the CBDC dedicated network ecosystem led by the central bank and jointly built by designated operating agencies.

2.2 Technical characteristics of CBDC

Technical features such as traceability and editability are the main differences between legal digital currencies and traditional banknotes.

2.2.1 Traceability

During the CBDC's circulation, its holder information, currency delivery information, transaction content, etc. are recorded in digital form on the string corresponding to the CBDC. The circulation of CBDC can not only become a weapon for the country to prevent and punish illegal activities such as online gambling, money laundering, tax evasion, etc., but the central bank can also formulate more effective monetary policies based on the flow and circulation speed of CBDC it controls.

2.2.2 Editability

CBDC achieves editability by loading smart contracts or algorithms that do not affect the currency function. Currency issuers can load algorithms that achieve a specific purpose or meet specific conditions on the CBDC to achieve a specific policy objective; Both parties can also conduct automated payment transactions based on mutually negotiated conditions and rules to promote innovation in business models....

3. The impact of CBDC on the basic elements of the monetary policy framework

3.1 Optimize the ultimate goal system of monetary policy

At present, our country is facing a very severe internal and external environment. The macroeconomy will simultaneously face many problems such as supporting the real economy, stabilizing prices, employment, market expectations, exchange rates, etc., and these problems are interdependent and mutually restrictive. Triggering the critical point will have an impact on China's economic development. Even if the central bank can make timely and accurate judgments on changes in the economic situation, it will be difficult to achieve a dynamic balance among numerous monetary policy objectives when multiple objectives are highly concentrated and conflicts intensify. The traceability and editability of CBDC will push China's monetary policy framework into a new era of digital regulation.
First, CBDC can improve the central bank’s control over the ultimate goal system of monetary policy. The traceability of CBDC can enable the central bank to overall grasp the amount of currency in circulation and the flow of funds, reversing the situation in which the central bank's control over M2 has declined due to the booming development of financial markets and third-party payment businesses. Editability allows the forward-looking conditions to be set in advance based on the ultimate goal of monetary policy and the priority relationship between the goals at the time of issuance. After the currency is released, it will be triggered one by one according to the preset conditions and the priority relationship between the goals, making the currency policy goals have a forward-looking guidance function, can effectively avoid conflicts between monetary policy goals, and help achieve the overall strategy and strategic layout of economic development.

Secondly, CBDC can enrich the ultimate goal system of monetary policy. With the development of third-party payment business, China has established multiple parallel payment and settlement systems. In view of China's diversified payment and clearing systems, the central bank currently conducts classified rating supervision of the payment system from aspects such as the security of reserves, the implementation of the real-name system, and the performance of anti-money laundering obligations. The traceability of legal digital currencies makes it possible for unified supervision of China's payment and settlement system. According to the central bank's current design of CBDC payment scenarios, although the collection and payment of CBDC can be carried out through various methods such as online and offline, all clearing work needs to be completed through the online clearing system. As CBDC is about to be officially put into use, the online payment and clearing system will surely become the infrastructure to maintain the smooth operation of the economy in the future. In order to ensure the security and efficient operation of a country's legal currency system and maintain the basic national credit of CBDC, the central bank is very likely to "maintain the safe and efficient operation of the payment and clearing system" as another goal after maintaining financial stability.

3.2 Improve the intermediary target anchoring method

As digitalization brings new drivers to our country's economic development, our country's business model is undergoing tremendous changes. The financial industry, which mainly provides financing services, will carry out more frequent financial innovations as business models change, and the social financing structure will also undergo tremendous changes. The existing statistical indicators of social financing scale can no longer accurately reflect the financial system's provision for the real economy. Financing volume, the effectiveness of the monetary policy intermediary target anchoring method is gradually weakening.

The traceability of CBDC can improve the timeliness and accuracy of the central bank's acquisition of monetary capital flows, price levels, market conditions and other information. It not only shortens the time for the central bank to collect and analyze economic information, but also reduces the "rough judgment" of the previous central bank, proportion of inaccurate information. When the timeliness and accuracy of basic economic information improves, the central bank's understanding of market development and the accuracy of its forecasts of future development will improve, which will help provide a more scientific and reasonable "anchor" for the implementation of macro policies. The editability of CBDC can set forward-looking conditions such as macro leverage ratio and cross-cyclical monetary policy design when the currency is issued, which can help guide the market to achieve rational and stable expectations.

3.3 Enrich monetary policy tools

In the traditional real currency scenario, when structural monetary policy tools are used too frequently or in many fields, the impact of structural monetary policy tools will not only be limited to the structural field, but will also extend to the total impact. And although the central bank will restrict the use of funds released through structural monetary policy tools, when the central bank accurately invests base money in specific areas through structural monetary policy tools, the central
bank cannot accurately control the subsequent liquidity and flow of funds, which will also invisibly amplify the aggregate effect of structural monetary policy tools. The technical characteristics of CBDC can overall reduce the aggregate effect of structural monetary policy tools. The central bank can use the editability of CBDC to load the specific purposes and triggering conditions of structural monetary policy tools into CBDC, so that CBDC can directly reach the industries or fields where structural monetary policy attempts to act. Precise currency injection will improve the effectiveness of the central bank's structural monetary policy, objectively help reduce the central bank's similar monetary policy operations in traditional banknote scenarios, and overall reduce the total volume effect of structural monetary policy tools. At the same time, the central bank can fully understand the overall development and production factor needs of specific industries and regions through the traceability of CBDC, and on this basis, innovate other unconventional monetary policy tools to improve the flexibility and precision of the central bank's monetary policy.

3.4 Smooth monetary policy transmission mechanism

Unlike traditional paper money scenarios where monetary policy is transmitted through interest rates, credit, asset prices, exchange rates and other paths, CBDC fundamentally improves the timeliness and accuracy of monetary policy transmission mainly through technical means.

First, the traceability of CBDC improves the central bank’s availability and controllability of major economic information. In the traditional paper money scenario, frequent financial innovation and the expansion of corporate financing channels will increase the cycle and difficulty for the central bank to obtain economic information in a timely and accurate manner. The issuance of CBDC enables the central bank to collect all data on important information such as the total amount of currency, currency structure, circulation speed, and related behaviors of economic entities formed by CBDC in circulation based on its own operation and management authority over CBDC. Carry out real-time monitoring, statistics and analysis. Therefore, the issuance and circulation of CBDC will change the path and method for the central bank to obtain relevant information under traditional banknotes, and improve the central bank's ability to track currency in a timely manner and regulate the market.

Secondly, the editability of CBDC can "effectively reduce the time lag and leakage of monetary policy in the transmission process."[10] Currency issuance empowered by digitalization gives the central bank the ability to directly control all currencies circulating in society. Before the issuance of CBDC, the central bank can directly set its own monetary policy guidance as the trigger condition for the CBDC to take effect and be withdrawn. CBDC is invested in specific fields or industries to enhance the accuracy of central bank currency injection and the transmission effect of monetary policy. Editability provides the possibility for non-banking sectors to enter the central bank's balance sheet. While expanding the central bank's balance sheet, it also changes the tradition that the central bank can only affect the credit availability of economic entities through money supply, which greatly increases the central bank’s monetary policy intentions can directly affect the scope and smooth the central bank’s monetary policy transmission mechanism.

4. Summary

This paper studies the potential impact of China's CBDC on the monetary policy framework. The study results show that the traceability and editability features of China's CBDC will have an impact on the basic elements of China's monetary policy framework, namely the ultimate goal of monetary policy, intermediary target anchoring methods, monetary policy tools, and monetary policy transmission mechanisms all have a positive impact. Based on the above research results, this article puts forward the following policy recommendations: First, legally clarify the subjects and procedures that can access CBDC data and edit CBDC algorithms to ensure that the traceability and editability of CBDC are not abused; Secondly, pay close attention to their impact on various basic
elements, and promptly adjust the proportion of these two features in the implementation of monetary policy, so that monetary policy can achieve the expected results.

References