

Analysis of the Policy Implications of the Positioning of e-CNY as M0

Author: Fan Yifei, Deputy Governor of the People's Bank of China

The People's Bank of China is steadily advancing the e-CNY research and development pilot work. The e-CNY is the digital form of fiat currency issued by the People's Bank of China with authorized operators providing exchange and circulation services to the public. It is a value-based, quasi-account-based and account-based hybrid payment instrument, with legal tender status and loosely-coupled account linkage, and supports managed anonymity. We believe e-CNY should be mainly positioned as M0, the most liquid form of money supply (also known as cash in circulation) which conveys significant theoretical implications and policymaking choices.

1. E-CNY's position as M0 is determined by the nature of currency and the law of evolution.

The historical evolution of the fiat currency is driven by technology and demand, gradually transitioning from a physical form to a digital form. Unit of account, store of value, and medium of exchange are the basic functions of fiat currency. Measurable, confirmable, and transferable are important factors of currency functioning. In various historical periods, the productivity growth has spawned new demands, and technology development and iteration has promoted the evolution of money from physical, metal, paper money to electronic and digital forms to improve the efficiency of currency circulation and improve consumer welfare.

Currency is derived from the barter exchange in the early periods of human society. Some rare and precious items that are easy to preserve and carry, such as shells, have become universal equivalents. With technological advances in smelting and other technologies, metal currencies such as copper, iron, gold, and silver began to emerge. Once society entered the stage of refined division of labor and large-scale production, the demand for money continued to increase. Metal currencies were inconvenient to carry and divide, and thus were difficult to meet the needs of commodity economy and production development. Paper bank notes based on commercial credit subsequently appeared. Later, supported by national credit, the fiat currency issued by central banks gradually replaced bank notes, completing the evolution of fiat currency from metals to banknotes and coins.

Payment tools based on deposits in commercial banks have since realized digitalization thanks to recent advances in network technologies and mobile payment. However, currency in the form of commercial bank deposits cannot replace fiat currency to perform the function of scale of value or unit of account. For this reason, in the course of evolution of currency morphology, no matter how

active privately issued currencies are, it is necessary for a country to issue centralized and unified fiat currency. Historically, private currencies and foreign currencies have co-existed with fiat currencies to varying degrees. The situation that issuers and users of private currencies standardizing weight and percentage of coins by themselves increased social and economic transaction cost. After the founding of the People's Republic of China, the state issued fiat currencies in the form of banknotes and coins that the public trusted, effectively reducing transaction costs and promoting economic development. Cryptocurrencies such as Bitcoins and global stablecoins have recently entered the game, setting off a new round of currency competition between private currency, foreign currency and fiat currency. Government needs to use new technologies to digitize M0 and provide a universal base money in response to the digital economy development.

M0 digitalization is a supply-side structural reform driven by the law of currency evolution and payment demand. With the development of information technology, wholesale funds are digitalized by electronic payment systems. Interbank payment and clearing systems (including HVPS, BEPS, IBPS), commercial bank intra-bank systems and non-bank payment institutions support the circulation of M1 and M2 money supply have been steadily improved and upgraded, so as to better meet the needs of economic development. As a result, replacing M1 and M2 with e-CNY will neither improve payment efficiency but even will cause a huge waste of existing systems and resources.

The rapid development of electronic payment, especially mobile payment, has met the needs of economic development and encouraged the public to use electronic payment tools. Yet for this type of electronic payment tool which is based on commercial bank deposit and tightly coupled with accounts, there remains much room for improvement in service coverage, financial inclusion, payment efficiency, user privacy protection and anonymity arrangements. On the other hand, despite the use of cash declining, the demand for cash remains certain growth, indicating that the supply of fiat currency in the retail sector has not kept up with demand. The public still depends heavily on cash especially in places where financial services are lacking. Thus, the demand and expectation for the digital fiat currency is real and justified. Yet the cost of physical cash management is high, and physical cash can be used for money laundering and other illegal activities.

Moreover, in the context of the increasing digitization of the economy and the gradual decrease in the use of physical cash, the equal-value exchange of commercial bank deposits into central bank currencies is the foundation of public confidence in commercial bank deposits. The use of decentralized technologies such as cryptocurrencies in making payments will harm the monetary sovereignty and makes the digitalization of cash even more urgent.

The historical trend on currency evolution requires us to work on the supply side. The central bank, as the provider of base money, should respond to the needs of the retail sector and supply e-CNY to safeguard the stability of the monetary and financial system. The central banks need to use new technologies to digitalize M0 and supplement the existing electronic payment system by maintaining the attributes and characteristics of M0 and derive new value-based functions different from electronic payment tools.

2. From the perspective of M0's management model, issuing currency is the mandate of the central bank, e-CNY should be kept under central bank's centralized management.

To issue fiat currency is the inherent mandate and the basis for duty performance of a central bank. Under the modern central bank system, the central bank is the bank for a country, the bank for currency issuance and the bank for banks. It serves as the foundation for safeguarding national monetary sovereignty, providing means of payment for commodity circulation and exchange as well as regulating the base money and money supply. With the founding and improvement of China's socialist market economy, the PBC has returned to the role of the central bank since 1984. The transition from the monistic system of the PBC to the "central bank-commercial bank" dualistic system guarantees the central bank's currency issuance mandate and gives full play to the comparative advantages of commercial banks and the decisive role of the market in resources allocation, which formed a currency circulation system where central bank currency and commercial bank deposit currency coexist harmoniously. E-CNY will adopt the existing currency issuance system. The central bank plays a central role in the e-CNY system and is responsible for issuing e-CNY to authorized commercial banks and managing the full life cycle of the currency. Commercial banks and other institutions are responsible for providing e-CNY exchange and circulation services to the public.

It is vital to keep the centralized management over e-CNY issuance.

First, it will safeguard the legal tender status and the monetary sovereignty. The centralized management of the e-CNY helps resist erosion by de-centralized assets such as Bitcoins and global Stablecoins. It prevents losing issuance mandate to others in the digital economy era. By serving the national development and reform, it could maintain the stable, secure and legal tender status of the fiat currency.

Second, centralized management of e-CNY will improve the efficiency of the payment system and facilitate the implementation of monetary policy. The settlement upon payment ameliorates the capital turnover efficiency for merchants, solves liquidity problems at small and medium-sized companies as well as boosts

currency circulation speed and monetary policy transmission efficiency. It will also help break down retail payment barriers and market segmentation, avoid market distortions, protect the rights and interests of financial consumers and promote financial inclusion.

Central banks and monetary authorities of major economies around the world all take a centralized method to manage cash in order to ensure their ability to take in charge of currency issuance and monetary policy. For example, in the US, Europe and China, Fed reserve, ECB and PBC have adopted a centralized cash management model to print, transfer, store, distribute, withdraw, sort and destruct cash. In the UK, although the Bank of England has delegated the functions of printing, clearing and storing of the pound sterling to commercial institutions, the principle of centralized management is also reflected through operation rules, finance management, corporate governance, risk control and regular audits. China in recent years has also begun to explore transferring some duties such as clearing to third-party entities, while keeping hold of crucial processes such as printing, distribution and withdrawal.

There are a number of key measures necessary for the centralized management of e-CNY:

First, the PBC should manage the e-CNY issuance cap as a whole and formulate unified business standards, technical specifications, security standards and application standards.

Second, the PBC should ensure unified management of e-CNY wallets. The central bank and authorized operators should co-build and co-develop the wallet ecological platform under the principle of two-tier operation system and adhere to the unified visual identity framework and anti-counterfeit properties of the e-CNY, while authorized operators achieve their own visual interface and other functions.

Third, the PBC should coordinate and develop the infrastructure of e-CNY, realize the interoperability between authorized operators and ensure the stable and orderly circulation of the e-CNY.

3. From the perspective of M0's management rule, the issuance and circulation of e-CNY should be regulated and managed as cash.

The R&D and issuance of e-CNY conforms to the legal framework of China. *The People's Bank of China Law* has authorized the PBC to issue Renminbi and manage the circulation of Renminbi. The PBC has the mandate and is the only entity to issue the Chinese Renminbi. E-CNY has digital characteristics and is not fully compatible with the rules regarding the circulation of physical cash. So, it is necessary to formulate specific regulations for e-CNY and to build an

environment for its circulation. Regulators should improve laws and regulations as the e-CNY system gradually matures.

E-CNY has the legal tender status. It is mainly positioned as M0 and needs to comply with the cash management laws and regulations such as PBC Law and Renminbi management regulations. As such, no business or individual may refuse to accept it if it is used to pay any public and private debts within the territory of China.

The e-CNY is also subject to laws and regulations on large-value cash management, anti-money laundering and anti-terrorist financing. For example, according to the Notice on large-value cash management regulations, large-value e-CNY deposits and withdrawals should be registered in accordance with the law and all agents involved should report large-value and suspicious transactions to the central bank.

4. From the perspective of M0's fee system, e-CNY is a public goods that the PBC bestows on the public with no interest and no charge for the exchange and circulation.

Fiat currency is a public good, per the definition of public goods in Paul A. Samuelson's 'The Pure Theory of Public Expenditure'. Central banks, therefore, must not charge for cash transactions and shall assume the expenses and costs for its design, production, allocation, transport, storage, withdrawal and destruction.

The e-CNY is mainly positioned as M0, a digital form of fiat currency. The e-CNY is also thus a pure public good.

First, issuance and circulation services of e-CNY is for co-shared and co-benefited by all members of the society, from whom it is indivisible.

Second, an increase in the number of users will not raise the cost of its issuance and circulation nor affect the quality of services to others once the e-CNY system is founded. The e-CNY has a low marginal cost and is non-rival.

Third, no one can exclude others from using e-CNY, so it is non-excludable. Moreover, e-CNY does not bear interest and it seeks to maximize social benefits and welfare.

The PBC implements a free-of-charge policy for e-CNY consistent with case for physical cash. It establishes a free e-CNY value transfer system and financial infrastructure and will not charge the authorized operators exchange and circulation service fees, and commercial banks will not charge individual customers for e-CNY exchange and redemption service fees, as this will save

e-CNY production and circulation costs, reduce taxes and fees, lessen the burden on the real economy, improve the business environment and further stimulate market vitality. At the same time, in order to incentivize all participants and achieve sustainable operations, the government may bear the cost of issuance with reference to the current arrangements for banknote issuance.

5. From perspective of M0's issuance model, commercial banks should assume the accountability of providing e-CNY exchange services to the public.

Commercial banks are required by law to supply e-CNY exchange services.

Currency regulations grant "financial institutions dealing with Renminbi deposits and withdrawals" the right to cooperate with the PBC to manage Renminbi circulation. The issuance of Renminbi banknotes is mainly done via cash-based businesses, so commercial banks have the mandate to provide e-CNY exchange and circulation services. Non-bank payment institutions may not offer currency exchange, cash deposit and withdrawal services under Article 9 of the Administrative Measures for Online Payment Services. They lack the mandate for providing M0-positioned e-CNY exchange services. Only commercial banks can therefore supply e-CNY to the public under current laws and regulations.

It is the best practice worldwide for commercial banks to provide M0 exchange services. Cash issuance in various countries generally adopts the dual model of "central bank and commercial bank". The central bank is the supplier of base money and the regulator of currency circulation. Commercial banks carry out currency issuance, circulation and withdrawal, and provide cash deposit and withdrawal services to the public. Major central banks in the United States, Britain, Germany, and China all transfer cash to commercial banks, and the latter exchange cash with the public. This will not cause financial disintermediation, or have a major impact on the existing financial system and the operation of the real economy.

In order to ensure the security and stability of e-CNY, it is necessary to choose prudently those commercial banks with strong capital reserves and highly developed technological capacities to take the lead in providing e-CNY exchange services.

Firstly, the chosen commercial banks should make full use of existing resources and technological reserves. They should have a mature infrastructure, a complete service system and a large talent pool. The horse racing approach can give full play to the role of the market and enforce the law of survival of the fittest.

Secondly, it can mitigate risks. Commercial banks have rich experience in retail business governance systems and risk control measures. They can effectively

prevent operational risks and enhance the public's confidence in holding and using e-CNY.

Thirdly, it can avoid financial disintermediation. The e-CNY follows the dual 'central bank-commercial bank' currency issuance model. It does not bear interest and thus avoid competition with commercial bank deposits.

Last but not the least, it is conducive to the transmission of monetary policy. Commercial banks' e-CNY services can improve the efficiency of the return of funds, promote their role as financial intermediaries and provide a more direct and efficient channel for monetary policy transmission.

Under the premise of centralized management, the PBC will ensure stability and promote innovation. The PBC will continue to explore different cooperation models between authorized operators and other commercial banks and non-bank institutions to promote the circulation of e-CNY. Commercial banks and other non-bank payment institutions must give full play to their role in the e-CNY system to ensure e-CNY is widely available and without making significant impact the existing financial market.

In the process of physical cash circulation, all commercial banks can offer Renminbi services to the public. In the process of e-CNY circulation, taking into account the technical foundation and system management requirements, authorized operators can work with other commercial banks and related institutions in e-CNY circulation to jointly provide e-CNY services to the public with defined responsibilities and rights. Specifically speaking, authorized operators will open different e-CNY wallets for clients to provide e-CNY exchange and redemption services based on the KYC level under the PBC's cap management.

Authorized operators along with other commercial banks and related institutions will offer e-CNY retail services safely and efficiently under the PBC's supervision, including payment products design, marketing, system development, business processing, operation and maintenance. A level playing field and the market's decisive role in resource allocation is necessary to fully incentivize all market participants and maintain the stability of the financial system.