

The Development and Impact of Digital Currency from the Perspective of DCEP

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Abstract: *Social production at different stages has given birth to different forms of currency, and the rapid development of the digital economy has also promoted the transformation of currency into a digital form. On the basis of reviewing the development of the digital currency concept, this article summarizes the development and characteristics of the central bank's digital currency DCEP. In addition, by comparing DCEP with Libra, WeChat, and Alipay, the advantages and disadvantages of digital currencies are analyzed, and the possible impact of DCEP is further analyzed and summarized. Finally, combined with the analysis of DCEP, this article puts forward opinions and suggestions on the development of central bank digital currencies. This article believes that compared to private digital currencies, central bank digital currencies are more reliable and stable as a centralized digital currency. However, in the process of its development, attention should be paid to the protection of privacy. In addition corresponding mechanisms should be established to avoid currency overruns and financial disintermediation.*

Keywords: Digital Currency; DCEP; Central Bank Digital Currency; Blockchain

1. Introduction

Money is the product of the development of the commodity economy to a certain stage. From commodity money to metal money to paper money, different forms of money have adapted to different stages of social production. At present, the development of the global digital economy is entering an intelligent stage (digital economy 3.0), Industries such as artificial intelligence, big data, cloud computing, and blockchain are booming. With the change of leading industries and economic forms, currency as a basic element of economic operation has also undergone the transformation of electronization, virtualization and digitalization. Among them, the emergence of digital cryptocurrencies, represented by Bitcoin, has drawn attention from all walks of life to the prospects and development models of digital currencies.

On the one hand, most of the digital currencies represented by Bitcoin are based on blockchain technology and rely on the Internet platform. They have the characteristics of anonymity, low cost, cross-region, decentralization, high diffusion rate and high volatility. The issuance and circulation of these digital currencies has facilitated underground trading outside the supervision, and has also impacted the currency issuance of central banks and the stability of financial markets. On the other hand, encrypted digital currencies also have certain advantages, reducing the cost of issuance and circulation, improving the security and convenience of transactions, and improving the efficiency of the entire payment and clearing system.

Facing the opportunities and challenges under the digital wave, how to propose an efficient and reasonable digital currency issuance and circulation system has become a topic of common concern. The proposal of the central bank's digital currency may be the best solution to this problem.

2. The Concept and Development of Digital Currency

The concept and connotation of digital currency are gradually improved and enriched along with the development of practice. Before the emergence of digital currency, the concepts of Electronics, virtual currency and digital currency have emerged one after another. At this time, digital currency only refers to transaction media supported by digital technology. After that, based on the concept of digital currency, cryptocurrency was derived. The European Central Bank (European, Central, and Bank) first defined virtual currencies, and considered virtual currencies to be unregulated digital currencies. Wagner (2014) defined digital currencies as currencies that were stored and transferred electronically. Bissessar (2016) borrowed from the Bank of England's definition and explicitly proposed that digital currency is a decentralized currency using distributed accounting systems, such as Bitcoin and Litecoin. Kraus (2017) believes that digital currency includes virtual currency and encrypted digital currency. The difference between virtual currency and encrypted digital currency is that virtual currency only circulates in a specific virtual space, and encrypted digital currency has opened the boundaries between virtual and reality. You can buy goods or services in reality and exchange them with real currency.

This paper argues that digital currency can be divided into broad digital currencies and narrow digital currencies. Among them, the digital currency in the narrow sense refers to encrypted digital currency, which is issued by the central bank and has real sovereign currency guarantee. It is a new form of currency development. In the broad sense, digital currencies include narrowly defined digital currencies, as well as virtual and electronic currencies issued by the private sector.

3. General Introduction for DCEP

3.1 Basic information of DCEP

DCEP (Digital Currency Electronic Payment) is an unissued digital currency of the People's Bank of China, a type of Digital Currency. The complete meaning of DCEP is digital currency electronic payment, which is a digital payment tool with value characteristics. Its feature is that it does not require an account to realize value transfer. Its functions and attributes are exactly the same as those of paper money.

Issuance and operation of DCEP: DCEP uses a two-tier operation system, that is, the upper layer is the currency issued by the People's Bank of China to commercial banks, and the lower layer is the commercial bank's currency release to the public. Single-tier operation refers to the issuance of currency by the central bank directly to the public, and commercial banks are added as a transition to the two-tier operation. The two-tier operation system helps to make full use of existing resources to improve the efficiency of issuance and transactions.

Substitution range of DCEP: The substitution range of DCEP is M0, which is the substitution of cash in circulation. DCEP does not intend to substitute M1 and M2, because the substitution of M1 and M2 does not help to improve payment efficiency, and it will cause waste of existing systems and resources. The substitution of M0 can effectively reduce the cost of paper currency and silver coins in the process of issuance, printing and circulation, and reduce the risk of paper currency in illegal activities such as money laundering.

The technical route of DCEP: DCEP does not preset technical routes. The central bank level maintains technology neutrality, and at the commercial bank level, each commercial bank is free to choose the technical route under the conditions that meet the requirements of the customer experience.

3.2 The development of DCEP

The development of the central bank's digital currency can be traced back to 2014. In 2014, Zhou Xiaochuan, then Governor of the People's Bank of China, put forward the idea of "making China's own central bank digital currency". In the same year, the People's Bank of China set up a special research team to conduct research on digital currency issuance and business operation frameworks, the key technologies, the circulation environment, and the legal issues faced were all been thoroughly studied. This was an ideological reform of the traditional financial model and economic system at the time, indicating that the development of digital currency was recognized and accepted at the national level, and it also laid the foundation for subsequent DCEP research.

In 2015, the People's Bank of China went further into the problem such as digital currency issuance and business

operation framework, key technology of digital currency, digital currency issuance and circulation environment, legal problems faced by digital currency, the impact of digital currency on the economic and financial system, the relationship between legal digital currency and private digital currency, international digital currency issuance experience, and achieved staged results. In the same year, the People's Bank of China issued a series of research reports on the issue of digital currencies and completed two rounds of revisions of the prototype of issuing digital currencies. After a year of demonstration, the legal digital currency model is constantly being improved.

The central bank held a digital currency seminar on January 20, 2016, further clarifying the strategic goals of the central bank's digital currency issuance, and proposed that the design of digital currency should be based on the principles of economy, convenience and security. And clear requirements for the early launch of digital currency issued by the central bank. In November, the People's Bank of China identified a pilot application scenario using a digital bill trading platform as a fiat digital currency, and initiated closed development of the digital bill trading platform.

February 2017 The Digital Currency Research Institute of the People's Bank of China successfully tested a digital bill trading platform based on blockchain. According to the arrangement of the central bank, the Shanghai Stock Exchange, together with the Digital Currency Research Institute, organized China Banking Credit Card Company, Industrial and Commercial Bank of China, Bank of China, SPDB and Hangzhou Bank to jointly carry out related work on the construction of digital bill trading platforms based on blockchain technology. In June of the same year, the Digital Currency Research Institute of the Central Bank was established. The main research contents include digital currency legal research, blockchain development, and chip design.

On June 15, 2018, Shenzhen Fintech Co., Ltd., a wholly-owned subsidiary of the Central Bank's Digital Currency Research Institute, was established. Its business scope is "fintech related technology development, technical consulting, technology transfer, technical services; fintech related system construction, operation and maintenance. ". In September of the same year, the People's Bank of China and the Bank of China, China Construction Bank, China Merchants Bank, Ping An Bank, and Standard Chartered Bank launched the "Guangdong-Hong Kong-Macao Greater Bay Area Trade Finance Blockchain Platform" to try to use blockchain technology to solve the financing difficulties and financing costs of SMEs.

In August 2019, the Central Bank held a working video conference in the second half of 2019. The meeting requested to accelerate the development of China's legal digital currency (DC/EP), track and study the development trend of domestic and foreign virtual currencies, and continue to strengthen Internet financial risk management. On August 10, Mu Changchun, deputy director of the

Payment and Settlement Department of the Central Bank, stated at the China Finance Forty Forum that relevant personnel of the central bank have started to develop related systems since last year. In September 2019, the "closed loop test" of China's legal digital currency (DC/EP) began, and the simulation test involved payment schemes of some commercial and non-governmental organizations.

4. Comparison of DCEP and Other System

4.1 Comparison of DCEP and Libra

Technical route: Libra is a hybrid blockchain cryptocurrency based on blockchain technology. Although compared to blockchain currencies such as Bitcoin, Libra can achieve 1000 transactions per second, but its transaction concurrency is still low. And its scalability is poor. DCEP is a hybrid architecture, and the central bank will not interfere with the technical route selection of commercial institutions. When commercial organizations exchange digital currency with the public, they can choose to use blockchain, traditional account systems, electronic payment tools, and mobile payment tools as long as they can meet the central bank's requirements for concurrency, customer experience, and technical specifications.

Issue reserve: Unlike most cryptocurrencies, Libra is fully supported by real asset reserves. For each newly created Libra cryptocurrency, there is a basket of bank deposits and short-term government bonds of corresponding value in the Libra reserve to build people's trust in their intrinsic value. The DCEP issuing reserve is the same as the RMB, and its issuing guarantee is national credit and state-owned commodities.

Stability of exchange rate: The purpose of the Libra reserve is to maintain the stability of the value of the Libra cryptocurrency and ensure that it does not fluctuate sharply over time. However, because the proportion of a basket of currencies cannot be determined, the value of Libra may change with the exchange of different fiat currencies. DCEP is similar to paper currency, so its exchange rate mechanism is the same as the RMB exchange rate mechanism. It is a managed floating exchange rate system based on market supply and demand and adjusted with reference to a basket of currencies.

Listed cost. Because Libra is a digital currency based on a package of currency exchanges, its currency value is not the same as the legal currency of any existing country or region. This means that if you use Libra for transactions, you need to re-establish a price system, which means that the same commodities It is priced in both its domestic fiat currency and Libra. In addition, because Libra's exchange rate may be volatile, it further increases the cost of listing. DCEP is a replacement for M0, and the pricing system can directly follow the previous system.

Cross-border payments: Compared with traditional cross-border payments, Libra is able to transfer funds

quickly, guarantee security through encryption, and easily and freely transfer funds across borders. This method of fund transfer bypasses international clearing systems such as SWIFT and is highly efficient and convenient. The advantage of DCEP is that overseas circulation of RMB can be realized through DCEP, but if the funds need to be converted into foreign currencies and then transferred, it still needs to go through the original system.

Anti-money laundering arrangements: Libra has no effective arrangements to deal with anti-money laundering and counter-terrorism activities. Libra's responsibility for anti-money laundering and counter-terrorism financing is unclear. Because Libra's operating model is that users first buy Libra from dealers, and then dealers buy from associations, but only when the dealer buys Libra does blockchain node accounting occur. Therefore, the dealer has actually become the responsible subject of anti-money laundering. DCEP is a replacement for M0, so its main responsibility for anti-money laundering is borne by the People's Bank of China. DCEP adopts account-based loose coupling, which not only has the convenience of cash, but also realizes controllable anonymity, which is convenient for the central bank to conduct anti-money laundering supervision.

4.2 Comparison of DCEP and WeChat / Alipay

Mandatory: DCEP is a replacement for M0, which is legal tender and therefore mandatory. WeChat and Alipay are online payment tools, and the two are one of the two. They are not mandatory. In actual transactions, merchants can refuse WeChat or Alipay, but not DCEP.

Account dependence: DCEP is a substitute for banknotes, so it does not have to rely on accounts, and its transaction circulation has the characteristics of "point-to-point". Both WeChat and Alipay must be bound to a bank account before they can be traded.

Offline payment: DCEP has the function of offline payment, as long as there is electricity, payment can be made, and WeChat and Alipay require not only electricity but also network status to be connected.

4.3 Possible impact of DCEP

Change payment methods. Before the birth of electronic payment methods, our personal payment mainly relied on cash, debit cards, and debit cards. Later, payment methods such as Internet payment, mobile payment, and QR code payment were gradually born. With the development of Internet technology in China, mobile payment represented by WeChat and Alipay has entered the stage of history. Although mobile payment has facilitated our lives, there are also some problems. For example, it cannot meet the hidden needs, needs to settle through the banking system, and depends on network connectivity. DCEP can realize peer-to-peer offline payments in the future. It can also meet the hidden requirements for regular transactions. It is a

combination of banknotes and mobile phone payments.

Change the way currency is issued. DCEP adopts a two-tier operation issuance system, which is issued by the central bank to commercial banks, and then by commercial banks to the public. Compared with the traditional issuance method, this process avoids the transportation and storage of the previous banknote issuance and circulation, effectively improving efficiency and security; compared with private currencies such as Bitcoin and Libra, it still has national credit guarantee.

Improve the efficiency of currency supervision. Under the traditional system of banknote issuance, due to the high concealment of banknotes, it is not easy to monitor them, which has caused certain obstacles to anti-money laundering. After the release of DCEP, it is technically possible to use big data to identify abnormal transaction behaviors. Due to the loosely coupled account form, it is also possible to track transaction objects, thereby effectively combating illegal behaviors.

Construct a new international payment system. The emergence of DCEP is also conducive to building a new global payment system. On the one hand, the original international payment system was based on the SWIFT and CHIPS systems. Although these systems have played an important role in international payment settlement, under the general trend of digitalization, the disadvantages of these systems are old technology and poor security are gradually exposed. Driven by technologies such as big data, building a new global settlement system has become a common demand of many countries. On the other hand, the issuance of DCEP has made it easier for RMB to circulate overseas. Under the original system, cash was needed to circulate RMB overseas, which was inefficient and unsafe. The issuance of DCEP will change this situation and become an important force to promote the internationalization of RMB.

5. Suggestions and comments

- 1) Insist that electronic money be issued by the central bank, not privately. Due to the great instability of electronic money issuance by the private sector, the best way for sovereign countries is to issue electronic money by the government and the central bank. In this way, the national credit is used to ensure the issuance and circulation of the currency, and at the same time, there is no large-scale impact on the existing economic system because there is no List cost.
- 2) Financial disintermediation should be avoided. Although the DCEP double-layer operation system can avoid financial disintermediation to a certain extent, using DCEP to replace M0 still has a certain opportunity cost for the public, which has formed a certain resistance to the promotion of DCEP. But if interest is paid to DCEP, there is the problem of financial disintermediation, which also needs to be considered by the authorities.
- 3) Avoid currency overruns. The amount of electronic

money issued by the central bank is controlled by the central bank. Like banknotes, there is also the potential for excessive currency issuance. Although decentralized electronic money cannot artificially control the amount of issuance, it also has certain restrictions on economic growth. Therefore, how to establish a corresponding mechanism to ensure economic development and avoid currency oversupply should be the problem that the central bank should solve when designing currency.

- 4) Appropriate security and privacy protection mechanisms should be established. At present, in the application of digital currency, the problem of confidentiality of transaction data in the distributed ledger, the problem of privacy and privilege mechanisms, and the problem of computing and storage efficiency are common. Before the central bank's electronic money is officially launched, the corresponding mechanism should protect the public's property safety and protect the public's privacy.

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