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The Impact of Digital RMB Issuance on Payment and Settlement System

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Abstract

The payment system is the basis for the normal operation of economy and finance. This paper takes the legal digital currency as the starting point and the payment system as the foothold, starting from the systematic risk impact of issuing legal digital currency on the payment system, and analyzes its possible consequences. Due to the unbalanced development of China's economic system and the complex structure of the payment system, the issuance of legal digital currency will encounter many problems. This paper analyzes the actual risks that China may face when issuing legal digital currency by combining theory and empirical analysis with China's actual national conditions. Finally, in view of the above problems, this paper puts forward practical policy recommendations.

Keywords

Digital RMB; Payment System; Systemic Risk.

1. Introduction

After the 21st century, the Internet, big data, cloud computing, artificial intelligence and other information technologies have developed rapidly, and the digitization of economic and social life has become the general trend. At the same time, the influence of financial technology on the evolution of money has been further deepened, and the form of money and its circulation mode have become increasingly digital and networked, giving birth to a new form of money: digital money. Digital currency is the basic framework for the development of digital economy, and it is also the basis and basis for occupying a favorable position in international competition. At the same time, the dream of converting credit cash into digital currency has taken the lead in private practice. As a monetary authority, it is of great significance for the central bank to catch up. Zhou Xiaochuan, then governor of the people's Bank of China, said that with the development, innovation and Internet of finance, physical currency will inevitably be replaced by legal digital currency, and currency digitization is a historical necessity.

The legal issuance and circulation of digital currency can significantly reduce the various costs of traditional credit cash, strengthen the central bank's control over the monetary system, improve the payment and settlement efficiency of the financial system, and become a new financial infrastructure supporting the vigorous development of the digital economy. At the same time, the circulation of legal digital currency in the society will inevitably have a great impact on the current payment and settlement system and the financial and trade system. From the perspective of economic research, the future form of money is destined to evolve to legal digital money. The flow of digital money in society is bound to have a huge impact on monetary policy, payment system and even the entire economic system. These problems are very important research directions.

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2. Overview of Legal Digital Currency

2.1. Generation of Digital Currency

The form of currency choice depended on the level of science and technology at that time, and the choice and use of currency materials were closely related to the industrial technology at that time. Throughout the history of currency development, it is not difficult for us to summarize the morphological evolution of currency. It has developed from physical form to precious metal form, token form, credit currency form and electronic currency form. With the development of modern electronic network technology and blockchain technology, it provides new possibilities and important technical support for the further evolution of currency form to digital currency. Since the 1980s, the electronic currency has ushered in a new derivative development. There have been gradually deepening electronic currency and cryptocurrency that has broken away from the virtual currency, namely digital currency.

Digital currency is the product of the combination of money and the latest financial technology. It is a higher stage of the development of digital currency. The acquisition, holding, payment and transfer of money are finally reflected in the accounting changes of the computer system, which makes the digital currency and the digital economy better combined. Digital currency, represented by digital codes, is perfectly combined with e-commerce, online finance and other online transactions. Paper money can only enter the electronic accounting system after it is deposited in the bank. Theoretically, each digital currency can track its source and all transaction processes, so that the government can effectively monitor the amount and information of currency in circulation and issuance [1].

2.2. Characteristics of Digital Currency

First, legal digital currency is endorsed by the state's sovereign credit institutions. The legal digital currency is endorsed by the national sovereign credit cooperatives, and the central bank is the ultimate debtor. Its value is guaranteed by national sovereignty. Therefore, its scope of use is the same as that of sovereign currency in theory. Sovereign currency is protected by the compulsory circulation of law and has the nature of compulsory legal compensation. In fact, legal digital currency needs to be used on the premise that the payment systems and payment terminals of both parties are compatible with digital currency, so its scope of use is limited by the infrastructure such as systems and equipment to a certain extent. The issuance, operation, circulation, recovery and destruction of legitimate digital currencies need to be regulated by national laws and regulations.

Second, legitimate digital currencies are still issued and managed centrally. Legal digital currency is a kind of legal currency, which is naturally centralized distribution and management, different from the decentralization of private digital currency. The main body of issuing and managing legal digital currency is the central bank, whose purpose is to provide a safer and more effective currency form for the whole society. The legal digital currency is maintained by the central bank, the central bank and the centralized management institution, and its value is guaranteed. From a macro perspective, the issuance and management of legal digital currency with the central bank as the core is an important means for the central bank to implement macro-control and monitor economic operation. From the micro point of view, the public does not need to pay settlement fees and other use costs in the legal circulation of digital money.

Third, legal digital currency belongs to the category of cash. Legal digital currency is a new form of legal tender. It replaces the storage mode and circulation path of credit cash with digital currency account, e-wallet and network system. In terms of currency classification, legal digital currency is the same as credit cash and belongs to M0 cash category. At the same time, legal digital currency and credit cash will coexist in parallel for a long time, and then gradually

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replace them. Compared with credit cash, legal digital currency can save circulation costs and improve the convenience and transparency of trading activities.

Fourth, legal digital currency belongs to public goods. Legitimate digital currency is not generated spontaneously by bottom-up demand, but is a public goods promoted from top to bottom. Therefore, in order to become the lubricant for the normal operation of modern market economy, it is necessary to ensure the legal protection of currency issuance and the general trust and recognition of the public on currency. The cultivation of trust and identity needs to be based on the quality, security and reliability of legal digital currency. As a public product, the core of legal digital currency is security, convenience, compatibility, standardization and service support. This is the unity of value rationality and instrumental rationality.

2.3. Payment Attribute of Legal Tender

2.3.1. Recording Mechanism

Rong Gang et al. (2017) believed that the smooth progress of payment must solve the problem of trust. The technical function of money is essentially a recording mechanism. Although legal digital currency is the next stage of currency development, it is still endorsed by government credit in essence [2]. At the initial stage, legal digital currency mainly plays a role of substitution for M0. For China, the main components of M0, including cash such as banknotes and coins, are inconvenient in use. In the existing monetary system, cash is at risk of being used for money laundering and other illegal and criminal activities. Compared with traditional cash, digital currency has many advantages in recording information. Dai Jinping (2016) believes that the good information recording function of legal digital currency can greatly alleviate the moral hazard and adverse selection problems in transactions, so as to promote the conduct of transactions. Legal digital currency can record transaction information in a timely, complete and detailed manner, ensure the transparency of transaction information, and greatly reduce the possibility of forgery and tampering of transaction information [3]. At present, the construction of personal credit reporting system in China faces many obstacles. The biggest problem is the lack of complete and transparent information of users. Legal digital currency can help regulators establish the credit records of the public, promote the improvement of the credit system, and promote the construction of a credit society. The excellent information record of legal digital currency is also conducive to the government's supervision of the monetary and financial system to ensure the healthy operation of the economy. The central bank and relevant regulatory agencies can make statistics and Analysis on the transaction information of legal digital currency, and more accurately calculate the transaction data such as currency circulation speed, circulation direction and currency structure. Monitor the economy through comprehensive transaction data and accurately assess financial risks, so as to provide reference for the formulation of monetary policy. Due to the improvement of the role of legal digital currency in record keeping, illegal acts such as tax evasion, money laundering, bribery, black market transactions and illegal transfer of funds will be significantly reduced. The central bank can also use the big data system to build a more efficient and stable financial system

2.3.2. Portability

There is a cost to carry money, and holding cash is no exception. In the current monetary system, the government needs to invest a lot of costs to ensure the normal operation of the issuance, transportation, circulation and withdrawal of paper money. However, legal digital currency does not need physical media and exists in digital form. Compared with the printing cost of issuing paper currency, the issuing cost of legal digital currency is very small. At the same time, the legal digital currency does not require the withdrawal, counting and destruction of paper money, and the circulation cost has also been significantly reduced. Legal digital currency can bring great benefits to users. The use of legal digital currency for payment and settlement

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breaks through the previous restrictions on the use of traditional cash. Due to the development of digital technology and Internet technology, people can use legal digital currency for transactions more conveniently and quickly. The substitution of legal digital currency for cash makes it unnecessary for commercial banks to deal with cash business with complex operation and high cost. In a word, compared with traditional currency, legal digital currency reduces the holding cost and improves the transaction efficiency.

2.3.3. Identifiability

Legal digital currency is cheaper and harder to counterfeit. The cryptographic algorithm of digital currency can first prevent the currency from being forged, and through the identification in the transaction process, prevent the illegal use of user funds, and improve the security. Taking the current popular private digital currency as an example, it is almost impossible to crack the user's wallet with its encryption algorithm and current computer technology. Legal digital currency should not only learn from the existing experience of private digital currency, but also adopt advanced anti-counterfeiting methods to ensure the security of legal digital currency and minimize the risk of counterfeiting and embezzlement of legal digital currency.

3. Improvement of the Current Payment System by Digital RMB

3.1. Overview of Current Payment System

Modern payment system is mainly composed of payment instruments, payment system, payment service organization, payment system supervision and management and other elements. There are two types of payment instruments: cash and non cash. Non cash payment instruments include bills, exchange, bank cards, etc. With the continuous development of the Internet, new payment tools and methods are emerging. The Internet and mobile devices have become new payment channels. There are many new payment tools and methods, such as personal online payment, electronic bill, electronic currency, etc. The payment system is a set of framework provided by the payment service organization for payment, settlement and clearing. The current China payment service organization is a multi-level payment service organization with the people's Bank of China as the core, commercial banks as the main body, and chartered clearing institutions and Payment institutions as the supplement. The main bodies of payment services in China include more than 4000 commercial banks, more than 200 Payment institutions and 5 authorized clearing institutions. These service organizations provide 11 subsystems including large amount real-time payment system and small batch payment system. This constitutes a diversified payment and clearing system in China.

Payment system supervision refers to the public policy behavior to improve the security and efficiency of the payment system, especially to reduce systemic risks. Payment system supervision is a complex social system, which requires the unity and joint efforts of the central bank, banking regulatory agencies, commercial banks and third-party payment institutions.

3.2. Problems and Deficiencies of the Current Payment System

The deep integration of payment and settlement with new financial technologies has brought about the improvement of payment efficiency and the expansion of payment scope on the one hand; On the other hand, it also causes many problems and deficiencies. This paper analyzes the credit risk, liquidity risk and operation risk of the payment system, and discusses the shortcomings and problems of the current payment system.

3.2.1. Inadequate Credit Risk Management

In order to better control the credit risk in the payment system, the Central Bank of China has mainly taken preventive measures. The central bank has established a review system and set standards for payment businesses based on risk measurement. When processing payment businesses, the payment system will classify payment businesses according to their credit risk

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and refuse to implement payment businesses with excessive credit risk. The central bank has also set up a strict access threshold to audit the credit of participants in large-scale payment systems. Banks with low credit will reduce their daytime credit lines or even prohibit them from obtaining daytime overdrafts. However, there are still many shortcomings in the credit risk management of the payment system in China. First, credit management lacks a clear management framework. Although credit limit control and other measures can reduce credit risk, there is no complete set of management framework for credit risk. Comprehensive and multi-level risk management can not fundamentally solve the problem of credit risk. Second, the identification of credit risk is not enough. It is not possible to completely identify credit risk only by relying on previous measures. We must establish a perfect credit risk assessment mechanism to identify the possibility of credit risk in advance. Once the payment and settlement participants default or overdraw, the central bank often can only impose high interest to restrain their behavior. Third, the current payment and settlement system lacks diversity of management measures to solve credit risk, and large credit risk exposures cannot be fully covered, and the central bank may suffer large losses. Fourth, the supervision of third-party payment institutions is insufficient. The third-party payment is set up by private institutions, and the transaction information is not transparent. It is difficult for the central bank to track the transaction information in the third-party payment system. Once the third-party payment fails to provide payment and settlement services due to credit risk, it will damage the interests of users. The credit risk of the third-party payment system is more complex, and China has not issued relevant laws and regulations, which has increased the exposure of credit risk [4].

3.2.2. Inadequate Liquidity Management

First, commercial banks' calculation of daily funds is not accurate, and their amount cannot be accurately estimated, which leads to the inconsistency between the actual demand amount and the estimated amount. If the actual demand amount is greater than the estimated amount, it will cause liquidity tension. On the contrary, it will generate too much liquidity and increase the cost of commercial banks. Second, the fund allocation of payment and settlement is difficult to meet the demand. The setting of the clearing window in the afternoon greatly increases the fund management cost of the payment and settlement participants who need liquidity in the morning. Third, the fund scheduling procedure is complex. Some payment and settlement participants often need several hours to complete the allocation of liquidity funds. Fourth, in recent years, China's interest rate is low. With the motivation of obtaining higher returns, funds will flow from the banking system to the market with higher returns. China's capital market is developing very rapidly, which is often the inflow direction of bank capital, and the outflow of funds is often large-scale, which makes commercial banks face the challenge of liquidity management.

3.2.3. Inadequate Management of Construction and Operation Risks of Payment System

In the study of payment and settlement system risk, not only credit risk and liquidity risk should be considered, but also the construction and operation risk of payment system is also very important. If the infrastructure of the payment system can not operate normally, it will cause heavy losses.

The construction and operation costs of the current payment system are centralized. The construction of payment infrastructure is mainly undertaken by the head office of the people's Bank of China. The centralization of infrastructure will affect the operation of the entire payment and settlement system and increase the risk exposure. Due to the failure to promote the cooperation and participation of the branches of the people's Bank of China and other commercial banks in infrastructure construction, their understanding of the payment and settlement system is not deep enough, which is not conducive to the management of the

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payment and settlement system. Once problems occur, the participating institutions cannot effectively cooperate to deal with them. The infrastructure construction of the payment and settlement system did not make full use of the existing infrastructure and infrastructure construction experience of these institutions, resulting in a waste of resources. At present, China's large-scale payment system can not effectively monitor the operation of the system. Once there are problems in the payment and settlement system, they can not be found and solved in time, which will lead to the expansion of the losses of the payment and settlement system.

3.3. Optimization of Digital RMB to Payment System

3.3.1. Optimization of Credit Risk

It is necessary to build a reasonable payment and settlement system to issue legal digital currency. Otherwise, the system risk in the payment and settlement system will not be reduced but may be intensified. Once the infrastructure of the payment and settlement system can adapt to the issuance of legal digital currency, the benefits will be obvious. First, reduce regulatory costs. Thanks to the recording mechanism of legal digital currency, legal digital currency is fully placed under the supervision of the central bank to reduce the supervision cost, so that the relevant regulatory authorities can effectively supervise and manage the payment system, prevent the occurrence of credit risk events, and ensure the normal progress of transactions. Second, the improvement of the credit system. The regulatory authorities can obtain transaction information, user information and the whole currency circulation process from the record payment and settlement system, analyze the collected information, establish a scientific credit risk assessment mechanism, prevent possible credit risk events in advance, and take targeted measures to minimize the damage. The payment and settlement system under the legal digital currency will be able to track all the trading information of traders, and the regulatory authorities can further improve the credit system to prevent traders from losing due to information asymmetry.

3.3.2. Optimization of Liquidity Risk

The more flexible monetary policy under the statutory digital currency helps the central bank to manage the liquidity of the payment system. The arrangement of liquidity by the central bank is very important to the payment system, which determines the cost of liquidity and the motivation for delayed payment.

First, by replacing the cash in circulation, the monetary multiplier is more sensitive to the changes of deposit reserve ratio and benchmark interest rate, and improves the effectiveness of monetary policy tools. Because the cash in circulation is not sensitive to the changes of deposit reserve ratio and benchmark interest rate, it is less affected by monetary policy tools and affects the effectiveness of policy transmission mechanism. By adjusting the benchmark deposit interest rate, the central bank can increase the opportunity cost for residents to hold cash, and convert the cash held in their hands into digital currency, so as to bring the cash in circulation into the policy transmission mechanism, so that monetary policy tools can play a better role and guide banks, enterprises and residents to adjust their economic activities and decisions in a timely and reasonable manner.

In addition, in order to meet policy needs, the central bank needs to predict the future liquidity in order to take timely action. However, in China, the interest rate transmission mechanism is still imperfect, the benchmark lending rate (LPR) does not play a good role in guiding the inter-bank offered rate (Shibor), and the response of bank loans to the base interest rate is slow. The issuance of legal digital currency can promote the central bank to better implement a series of policies. The advantages of legal digital currency in information recording enable the central bank to track currency transaction information and facilitate the central bank's policy-making.

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The programmability of legal digital currency is also conducive to the central bank's targeted design of its progress to meet the policy requirements. For example, by adding forward-looking condition design, legal digital currency can accurately set the time of monetary policy implementation, flow direction and specific interest rate setting. It can be seen that legal digital currency, on the one hand, can ensure the smooth implementation of monetary policy and timely adjust the liquidity in the payment system by accurately mastering the information of the payment system, on the other hand, introducing new policy tools.

3.3.3. Optimization of Construction and Operation Risks of Payment System

The issuance of digital RMB is based on the "dual structure". The payment system is jointly maintained by the central bank, commercial banks and other financial institutions. As digital RMB is a supplement to cash M0, the original monetary system has not changed. Therefore, legal digital currency does not increase the possibility of construction and operation risks of the payment system.

Legal digital currency can mitigate the construction and operation risks of the payment system. Legal digital currency is safe and reliable, which can not only prevent external risks such as hacker attacks, but also prevent errors in the payment system itself. While relying on the infrastructure of the central bank, legal digital currency can make use of the infrastructure of existing banks. While ensuring security, it can also disperse the risks caused by centralization.

4. Impact of Digital RMB Issuance

4.1. Impact on the Issuance System of Legal Digital Currency

(1) Digital RMB publishing system. The Central Bank of China has adopted a dual system of "Central Bank - Commercial Bank" for the release of digital RMB. Under the dual structure, the legal digital currency flows from the central bank to the commercial banks. In order to meet the capital payment needs of customers, the commercial banks transfer the legal digital currency from the bank library to the users' wallets. With their own resources and technical advantages, commercial banks have undertaken the issuance of some digital RMB, shared the pressure and risks of the central bank, and jointly maintained the operation of the payment system with the central bank. This is essentially the same as the mechanism under the existing credit currency.

(2) Risk analysis of binary system. In terms of credit risk, the functions of the central bank have not changed much. The original money supply system still exists, the nature of the payment system has not changed, commercial banks can still provide services to customers normally, and the existing financial system will not be subverted, thus reducing the possibility of credit risk. In terms of liquidity risk, the liquidity risk in the payment system mainly stems from the failure of the payment and settlement participants to complete the payment in time. The traditional policy tools and policy transmission tools under the dual structure are still applicable. Legal digital currency can make the monetary policy under the dual structure work better. In terms of the construction and operation risks of the payment system, in the dual structure, the central bank can cooperate with commercial banks and other financial institutions. As we all know, financial institutions have natural advantages in financial innovation. Commercial banks and third-party payment institutions have rich experience in the field of financial science and technology, and are relatively mature in the provision of infrastructure. Due to the importance of legal digital currency, the design of binary structure must have very high security standards, and must deal with extreme situations such as administrator identity being tampered with, hackers being attacked or business interruption due to failure.

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4.2. Impact on Third-Party Payment Institutions

4.2.1. Connotation of Third Party Payment

The reason for the third-party payment is that the transaction efficiency of the traditional payment method is not high. In the past, the completion of the transaction required the buyer and the seller to pay the goods and funds simultaneously, so the transaction efficiency was low. However, the online payment business provided by commercial banks has complicated operation, steep learning curve and high learning cost. Moreover, because each bank account is not common, there are many obstacles when traders with different bank accounts conduct transactions. As an intermediary, third-party payment provides users with convenient clearing services, reduces the timeliness requirements, and does not need the cost of cross bank transfer, which truly meets the needs of the society. Third party payment has improved China's payment system and enhanced social welfare. As a payment tool, third-party payment also has a strong record maintenance function. Third party payment has rich experience and accumulated objective transaction information by handling a large number of transaction settlements. For example, in the credit system of Alipay, users accumulate credit by continuously using Alipay for transactions, increase sesame credit points, and default will reduce credit. Alipay users can judge the other party's credit through sesame credit rating during transactions. The use of sesame credit can reduce information asymmetry in transactions and promote the completion of transactions. Third party payment establishes users' credit system by processing information and analyzing traders' behavior. It can be seen that the credit system emerging from the third-party payment is the improvement of China's personal credit reporting system, making the trading market more transparent. Third party payment improves the convenience of payment. Third party payment is the product of financial development and scientific and technological innovation. The development of mobile communication technology and Internet technology makes it easy for users to complete payment through computers and mobile devices [5].

4.2.2. Risk Analysis of Third Party Payment

In the same way as analyzing the impact of legal digital currency on the payment system, this paper analyzes the three risks of the payment system.

(1) Credit risk. Third party payment also has its own risks. When users use it for transactions, the funds required by the transaction are kept by the institution for a certain period of time, which makes the third-party payment institution have considerable funds at its disposal in a short time. The third-party payment institution has the obligation to keep the customer's transaction funds, but similar to the liquidity cost, the third-party payment institution has the motivation to use the temporarily idle funds for other purposes, such as investment, to make profits for itself. In case of improper use, the deposited funds will not be recovered and may cause heavy losses. If the third-party payment institution fails to complete the payment and settlement in time due to the loss of deposited funds, it will cause losses to users. In serious cases, it may even lead to a credit crisis in the third-party payment system and the bankruptcy of the third-party payment institution, making it completely unable to perform the function of payment and settlement. The deteriorating operating environment will also increase the credit risk of third-party payment institutions. The competition in the third-party payment market is fierce. The survival of the fittest competition mechanism may make some poorly managed third-party payment institutions bankrupt and cause losses to users. In addition, China currently lacks legal norms in terms of third-party payment, and the third-party payment institutions have many deficiencies in corporate governance, management and operation, which may also increase credit risk.

(2) Liquidity risk. The risk of retained funds lies not only in the possibility of loss of funds due to the third-party institutions' use of the retained funds for investment, but also in the fact that

the use of the retained funds for investment will lead to a shortage of liquidity. Once an unexpected event occurs and the third party is required to pay the funds in advance, the payment settlement may not be completed on time due to the failure of the investment funds to provide liquidity immediately.

(3) Construction and operation risks of payment system. The third-party payment also has the construction and operation risk of the payment system. A considerable number of third-party payment enterprises do not have a sound operation and management system, resulting in the security risk of the platform. The standards of the third-party payment enterprises in terms of network security technology are not consistent, and their professionalism is also questioned. In addition, the third-party payment platform has defects in system maintenance and security measures. Once it is attacked by an external attack, it may affect the operation of the third-party payment system, or it may cause the user's information to be leaked and the fund to be lost.

4.2.3. Impact on Third Party Payment

First, users will incur conversion costs from using third-party payment to using legal digital currency. Users need to pay a certain learning cost to master the new payment tool of digital RMB. Moreover, the use of digital currency generally has digital technology electronic equipment. If users need to pay a large cost to use legal digital currency, it will greatly reduce the implementation speed of legal digital currency. Secondly, from the perspective of money users, we can examine people's demand for different forms of money, including digital money. The purpose of cash held by the public is to use it for payment, so as to meet daily needs such as consumption. Otherwise, it will be invested in savings and other purposes in order to obtain returns. Under this condition, if users can easily convert their low liquidity assets such as savings into highly liquid legal digital currency without cost, and the legal digital currency shopping cost is low, money users will use digital currency more. In addition, with the expansion of the total amount of digital economy, the use of digital currency will gradually increase. Relying on the bank payment system, third-party payment can easily convert savings into cash. Through years of operation, Tencent, Alibaba and other Internet companies have formed a complete user ecosystem and met the various needs of users. In order to truly replace the third-party payment, the legal digital currency should not only be convenient to use, but also create a scene and ecology suitable for the use of legal digital currency, which must rely on the strong support of the government, otherwise the public will prefer the third-party payment. Finally, they face different risks. With the increasing importance of third-party payment, especially the dominant third-party payment system is becoming more and more systemically important. Regulators are also preparing to incorporate it into the macro prudential regulatory framework. In general, unlike legal digital currency, the third-party payment system has brought more and more challenges to China's regulatory authorities. There are many third-party payment systems. In addition to WeChat payment and Alipay, there are also a wide variety of third-party payment systems. Third party payment is often set up by different private institutions, so different third-party institutions will build their own unique payment system, which leads to repeated construction of payment system infrastructure. Due to the needs of competition, the data and information collected by the third-party payment system are generally not shared, which leads to the isolation of information, making it difficult for regulators to collect accurate information, which is not conducive to the implementation of penetrating supervision.

4.3. Construction Risk of Digital RMB Payment System

The issuance of digital RMB requires the transformation of the infrastructure of the payment system. As a digital currency, digital RMB needs to adopt extremely high technology in any link of circulation to reduce the construction and operation risk of the payment system. Once the digital RMB infrastructure is damaged, the entire financial system will suffer losses.

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To cope with a large number of transactions, the current distributed ledger technology can not fully meet the requirements of the central bank payment system. In the legal digital currency project conducted by the Bank of Canada, the distributed bookkeeping Technology (DLT) is used to build the payment system, but the performance of the distributed bookkeeping technology is not optimistic. According to the report, the trading system using the distributed ledger technology is difficult to process a large amount of instantaneous transaction data. After the official issuance of digital RMB, the importance and transaction scale of digital RMB are far beyond the requirements of bitcoin. The payment infrastructure established by the central bank must meet the transaction needs of the society. The issuance of digital RMB will have a far-reaching impact on the payment system of the whole country. Therefore, the construction of the payment system must consider the requirements of scalability, compatibility and transaction throughput.

5. Suggestions

The role of digital RMB in payment and settlement lies in that it is first of all a payment instrument. Digital RMB has a huge potential impact on the society. If there is any omission in the design, it will not only affect the efficiency of transactions, but also cause systemic financial risks. In particular, digital RMB must perform better than traditional currencies in terms of payment and settlement functions. Therefore, the top-level design of digital RMB must keep improving. The top-level design of digital RMB is embodied in the design of currency itself, as well as the relevant issuance mechanism and supervision mechanism. The purpose of this chapter is to put forward practical suggestions to reduce the impact of digital RMB on the payment and settlement system.

5.1. Improve the Construction of Financial Infrastructure and Reduce the Operational Risk of Payment System

We will improve the financial infrastructure for digital RMB. The actual application scenarios and end markets of RMB can be built, and some regions can be selected for pilot. In terms of circulation, we should ensure the stability and security of the issuance, transfer and return of the central bank's digital currency. In terms of payment services, it is necessary to guide telecom service providers to improve service quality, increase optical fiber facilities, and increase network bandwidth and coverage to meet the requirements of the retail industry. In terms of technical supervision, we actively used leading technologies such as big data analysis, artificial intelligence and algorithms to set up a central bank digital currency monitoring center to track abnormal digital currency transaction information in real time and do a good job in risk prevention and control. We will build an all-round, cross platform and multi domain financial infrastructure for digital currency to ensure the smooth issuance and circulation of digital RMB.

5.2. Improve the Issuance Rules of Digital RMB and Reduce Liquidity Risk

Strengthen the top-level design of the distribution architecture. In terms of system architecture selection, the central bank can put forward its own needs and designate multiple institutions for technology research and development based on its own advantages. From this, the central bank can choose a design route as the main framework, and make use of the unique advantages of other institutions to integrate all technical levels and improve the issuance system of digital RMB. The central bank needs to ensure the flexibility and openness of supervision. We will bring new businesses derived from the central bank's digital currency into the regulatory system, ensure the property safety of digital currency and the legitimate rights and interests of its holders, prevent and resolve systemic financial risks, maintain financial stability, and ensure the healthy and sustainable development of the financial market. Guarantee the liquidity of commercial banks and third-party payment institutions. For commercial banks, the central

bank should avoid the decline of demand deposits and increase liquidity risk due to the issuance of digital RMB. For example, the digital currency stored in the digital wallet can be linked to the demand deposit of commercial banks, or a certain service charge can be charged to convert the demand deposit into digital currency. This can minimize the loss of demand deposits of commercial banks and ensure the creation of currency liquidity of commercial banks.

5.3. Improve the Regulatory System Related to Digital RMB and Reduce Credit Risk

The central bank can jointly establish a digital currency monitoring and analysis center with other regulatory authorities to monitor the supply and demand, transaction volume and delivery area of digital currency, evaluate the transmission effect of the central bank's digital currency issuance on monetary policy, the operational efficiency of the financial system, the impact of the creation and run of commercial banks' credit currency on traditional legal tender, and make full use of big data analysis and cloud computing to accurately crack down on digital currency fraud, money laundering Terrorist financing and other illegal and criminal activities to prevent fluctuations in the existing financial market caused by the issuance of digital RMB. Third party payment institutions can be allowed to join the circulation system of digital RMB. Users can freely choose to use bank current deposit or central bank digital currency payment in daily payment to optimize users' payment experience. It plays an auxiliary role in anonymous transactions, covering issuance, supervision and illegal account processing, maximizing the participation of third-party payment platforms in the whole process of digital currency issuance and circulation, and reducing the shock to third-party payment institutions.

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