

Research on Digital Currency Prototype System Design

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Abstract

With the gradual rise of financial technology, traditional currency tends to be eliminated due to various limitations. Digital currency technology based on blockchain technology came into being. With the gradual deepening of the central bank's research on legal digital currency, the implementation of legal digital currency will be not only the inevitable choice of China's economic development, but also the inevitable requirement to comply with the trend of economic globalization and informatization.

Keywords

Digital Currency; Third Party Payment; International Market.

1. Introduction

with the vigorous development of information technology and digital economy, digital currency which is equivalent to current paper money and supports controllable anonymity came into being, and has been piloted in many countries. By analyzing the development status and characteristics of China's digital currency, this paper explores the important role of China's digital currency in promoting the sustainable and stable development of China's economy and finance and the internationalization of RMB from the perspectives of payment system, monetary policy, financial stability and RMB internationalization.

2. Development and Characteristics of Digital Currency

① Development and characteristics of digital currency in China

Since 2014, the people's Bank of China has actively explored digital currency and achieved phased results. Theoretical research and development experience have world leading advantages. In 2014, the central bank established a digital currency research group and a digital currency Research Institute in 2017. In 2018, it successfully built a trade finance blockchain platform. In 2019, it said it would speed up the research and development of legal digital currency and speed up the construction of digital currency legal system in Shenzhen, Suzhou, Chengdu Closed loop pilot projects will be carried out in xiong'an and the indoor arena of the future Winter Olympic Games. China strictly controls its digital currency. The people's Bank of China banned financial institutions from participating in currency transactions as early as 2013. In 2017, seven ministries and commissions including the people's Bank of China issued the announcement on preventing the financing risk of token issuance (hereinafter referred to as the announcement). It is pointed out that "the token or 'virtual currency' used in token issuance financing is not issued by the monetary authority, has no monetary attributes such as legal compensation and compulsion, has no legal status equivalent to currency, and cannot and should not be used as currency in the market". Obviously, the first issuance of currency (ICO) is a currency issuance activity initiated by non monetary financial institutions, In essence, it is an unauthorized illegal financing activity. Organizations and individuals engaged in various currency issuance financing activities need to stop the currency issuance financing activities immediately. Complete foreign exchange settlement. Before the announcement, the national Internet Financial Risk Management Office issued the notice on the clean-up and rectification

of token issuance and financing. Digital currency is facing special legal threats, so it should actively respond and play a role. As a leader in the future international monetary field, the Central Bank of China actively participates in the legal research of digital currency.

② Development and characteristics of digital currency abroad

At present, central banks around the world are actively exploring and strengthening the issuance and application of legal digital currency in order to develop global finance and break sanctions. In 2015, the Central Bank of Ecuador launched the national version of digital currency to alleviate inflation. In April 2018, the Central Bank of Sweden provided consumers, enterprises and public institutions with legal e-krona; In September 2019, the Central Bank of Brazil announced that it would launch a new digital currency payment system based on large-scale chain technology by 2020. The Management Committee of the European Central Bank said that the Central Bank of Brazil is actively exploring and studying the digital currency of the Central Bank of Brazil. So far, many countries have made great progress in the research and development of central bank digital currency, and plan to issue "central bank digital currency".

In order to reduce currency transaction costs and strengthen financial supervision, countries actively develop or explore the issuance of digital currency by central banks. Ecuador, Senegal, Tunisia and Uruguay have issued their own digital currencies, mainly to promote inclusive finance and reform the domestic financial system. Sweden, Thailand, Russia, Bahamas and other countries plan to introduce central bank digital currency. Its main purpose is to supplement cash flow and reduce transaction costs. At present, Britain, Kenya, Singapore, Canada and other countries are still in the research stage, and the national authorities have some confidence in its development. The Federal Reserve said that the United States has not decided whether to issue digital currency and believes that the currency should be used as a supplementary payment tool for cash and electronic payment, not a substitute.

According to a recent report of the bank for International Settlements (BIS), cdbc will grow rapidly by 2020. By July 2020, at least 36 central banks around the world announced the cdbc plan. Uruguay, Ecuador and other Latin American countries took the lead in completing the cdbc retail pilot project. Other countries have also begun to develop and test CBDC. The Eastern Caribbean monetary union, composed of eight other economies such as Anguilla and Saint Lucia, said that it is testing the legal digital currency based on the blockchain. The Central Bank of Brazil also said that Brazil should officially adopt CBDC by 2022. In Asia, the Central Bank of Korea plans to test Fiat digital currency by 2021 and has reviewed its first phase of research and development. The Central Bank of Japan also announced plans to test the basic functions of legal tender in fiscal year 2021.

3. Impact Analysis of Digital Currency

① Impact of domestic issuance of digital currency

A. The impact of digital currency on third-party payment

(1) Change the pattern of payment market

Digital money, WeChat payment and Alipay are digital Renminbi display methods. However, digital currency has greater payment convenience and credit support. The existing third-party payment requires both buyers and sellers to be the other party, and both parties can pay under the condition of network. The digital currency payment allows both parties to pay offline. More importantly, the RMB payment service of the digital central bank is better than the third-party payment service, such as unlimited compensation, anonymous control, etc. Digital currency is the responsibility of the central bank and is directly related to the clearing system of the central bank, because it does not depend on the account. The whole payment process can be completed by completing the transfer of currency ownership. Therefore, it has the characteristics of "payment is settlement". In addition, compared with the three party payment methods such as

microfinance and Alipay, the central bank's digital currency has higher legal status and technical advantages. However, it will be the choice of the market whether it can finally replace the new electronic payment means and become the main payment means in the form of mainstream currency and even cross-border digital currency.

(2) Replace part of credit investigation and risk control business

The credit investigation and risk control business of third-party payment institutions are supported by the big data obtained from their payment business, so as to expand microfinance products such as cash loans, such as borrowing and spending. In addition, these institutions can judge the credit status of users according to the repayment time, and can better provide risk identification services for enterprises, that is, the application of digital currency login does not include the operating system of third-party payment institutions. The third-party payer cannot access the relevant payment data, and a large amount of data may lose the data source of credit and risk control services, and the enterprise will face great direct survival pressure. Although third-party payers can participate in digital currency operation, anonymous control, etc. Their data scope is limited by third-party payers, which affects their business development. In short, digital currency will become a part of the third-party payment transaction. Whether considering the third-party payment user flow or embedded data source, the big data credit and risk control business based on the user identity information of the payment account, the business data of big data, and the transaction data will be seriously affected, If we want to further develop this business, we need to consider new directions. Similarly, if the third-party payment can act as an app for the landing of digital currency, the problem of data limitation will be alleviated. If the central bank needs to establish its own payment channels and complete closed-loop planning, the plan will be completely independent of the third party payment institutions. Other businesses based on Alipay's derivative business will be replaced, but the third party payment institutions have advantages in scenario coverage. Early promotion of digital money may also require support from these organizational scenarios. In the future, third-party payment institutions need to deal with the scene cooperation and differentiated competition with other digital currency operators, and timely participate in the central bank's digital currency issuance mechanism.

② The impact of issuing digital currency abroad

(1) To improve the settlement efficiency of the international settlement market, the impact of digital currency on the international settlement market is huge. In international trade, the international settlement market plays a media role. In foreign exchange transactions, the payment process needs to transfer funds from the first account.

The bank for International Settlements first carries out liquidation, then foreign exchange conversion, and then foreign bank liquidation. The whole process involves multiple stages, which not only has complex steps, high transaction cost, but also takes a long time. When funds arrive at the final receiving bank through the paying bank, they need to go through several banks, and the business hours of each bank are different. Each bank must go through the workflow related to anti money laundering and anti terrorist financing, and the payment time will be extended to. However, the emergence of digital currency has helped us simplify the payment process. The payment funds do not have to be transferred to the bank for International Settlements for clearing, but directly to the exchange institution that accepts digital currency, and then from this institution to the seller. On the one hand, it has accelerated the launching process of the original "global Interbank Financial Telecommunications Association" (Swift), shortened the time of cross-border settlement, and on the other hand, reduced the cost of cross-border settlement.

(2) Stable currency value

International trade is divided into two links: commodity transfer process and currency transfer process. The standardized operation of international commodity trade constitutes the international trade system. The institutionalization of cross-border currency flows constitutes the international monetary system. The impact of the international monetary system on international trade can be imagined. Maintaining currency stability has always been an important part of the international monetary system. Traditionally, the international exchange rate system is divided into fixed exchange rate system and floating exchange rate system, but both fixed exchange rate system and floating exchange rate system are easy to cause currency fluctuation and affect the normal operation of international trade. Under the floating exchange rate system, the instability of exchange rate will increase the uncertainty of international economic exchanges. International settlement may even lead to the transfer and redistribution of international wealth. To a certain extent, this has caused the instability of the international trade market, promoted the sharp increase of international capital flows, increased the difficulty of cost calculation and international settlement, and may even cause the transfer and redistribution of international wealth, and exacerbated the turbulence of the international trade market to a certain extent. Therefore, when foreign exchange fluctuates greatly, it will directly affect the export volume of international trade, so as to avoid taking risks. Under the fixed exchange rate system, because the exchange rate remains relatively stable, the exchange rate can hardly play the role of economic leverage in regulating the balance of payments. When a country has a balance of payments deficit, the exchange rate of its own currency will fall. In order to preserve the value of its own currency and maintain the fixed exchange rate mechanism, it is necessary to adopt a deflationary monetary policy or fiscal policy, otherwise fiscal deflation may lead to deflation, decline in exports and instability of the local currency. Due to the technical advantages of digital currency, even in the absence of network, both parties can trade freely and easily without the participation of third-party intermediaries. If digital currency is used as a global currency in the future, it will eliminate the uncertainty of exchange rate to a great extent, help maintain currency stability, promote healthy economic development and promote the stability of the international monetary system.

(3) Enhance the security of trade and financial services

With the frequent trade between countries, the development of international trade will accelerate. Security is the primary consideration for all countries to trade. Digital currency is a special technological innovation in the financial market. Its emergence will greatly improve the security of national trade and financial services. The digital currency wallet implements hierarchical management. If users make a large number of payments or transfers, they must use a high-density combination of real name information. This process can provide complete transaction records and find data sources. Its existence is based on real-time synchronization, which will make the data more secure and reliable.

In addition, there are some difficulties in the credit business between the previous commercial banks. The borrower's repayment ability and personal credit are the most concerned problems of commercial banks. Individual credit information can only be downloaded and referred to in the credit investigation center with my consent. In this process, there may be errors in the bank's judgment of the borrower because the data is not updated in time. However, the real-time and synchronous digital currency transaction data reduces this error to a certain extent and improves the security of financial services.

4. Advantages and Disadvantages of Physical Currency and Digital Currency

(1) Advantages and disadvantages of digital currency

Advantages:

① It can effectively reduce costs and improve payment efficiency.

In the issuance of digital currency, its storage and circulation are respectively changed from physical space storage to digital space storage, and logistics transportation to digital transfer, which saves the recovery, inventory, destruction and other links and related costs of traditional currency, and improves the convenience. In the transaction link, digital currency can only be recorded in the electronic account book without creating and maintaining personal accounts. Moreover, due to its decentralized nature, it can easily and quickly transfer domestic and foreign funds at low cost without using a third-party clearing institution.

② It can improve safety and reduce the possibility of counterfeiting. Digital currency transactions need to be confirmed and recorded by many nodes through the network. Based on the principle of cryptography, it is very difficult to forge and tamper with any transaction, which improves the security of digital currency transactions.

③ It is conducive to improving regulatory efficiency and building an efficient and stable financial system. Each transaction record of digital currency is traceable, anti-counterfeiting and tamper proof, which can provide a continuous and comprehensive data basis for macro monetary policy. Through big data analysis, it can accurately monitor the currency circulation speed, flow direction and monetary structure, assess financial risks, and help regulatory departments master the implementation of credit and industrial policies, so as to adjust relevant policies in time, Support social and economic development.

Disadvantages:

① Because of its legitimacy, non-legal digital currency will be difficult to circulate on a large scale all over the world.

② Because of its anonymity, non-legal digital currency may be used to evade supervision and engage in illegal or criminal activities, such as tax evasion and capital control, asset transfer, ICO financing scam and Ponzi scheme, which will damage the interests of investors and cause financial risks.

③ Speculation and speculation on illegal fixed digital currency seriously threaten its value storage function. Fourth, the security of the illegal fixed digital currency trading platform needs to be further improved. Recently, the theft of trading platforms in Japan, South Korea and other countries shows that relevant trading institutions have deficiencies in network security and protecting investors' assets. Such events may affect the stability of the financial market.

④ Some illegal fixed digital currencies cannot meet the needs of daily economic activities because of their underlying data structure and algorithm, resulting in long payment and settlement time and low work efficiency.

(2) Advantages and disadvantages of real currency

Advantages:

① It has its own value and use value

② Advantages of metal currency: stable value, easy to divide, easy to preserve, easy to carry, etc.

③ Alternative currency mostly refers to paper currency, which has the advantages of convenient transaction and high credit.

Disadvantages:

① The issuance of real currency needs to go through design, printing, return, storage and other links, as well as the production of relevant equipment. The cost of issuing a set of real currency is high. When it is divided, its value will be greatly reduced and the transaction scale will be small.

- ② With the further expansion of production and circulation of metal currency, the quantity of precious metal currency materials can not meet the needs of commodity circulation, and it is inconvenient to carry metal currency in long-distance bulk trade.
- ③ Because of the close relationship between paper money and fiscal deficit, it is easy to lead to the confusion of money circulation.

5. Conclusion

Digital currency plays an important role in stabilizing the development of the financial industry and promoting the internationalization of RMB. Its development is of great significance to China. Although we have taken the lead in the field of digital currency, we should also realize that digital currency can not completely replace traditional currency and will have a great impact on the interior, We must take a comprehensive view of the double-edged sword of digital currency, give full play to the advantages of digital currency, avoid or guard against its risks, and constantly promote the sustainable and stable development of China's economy and the internationalization of RMB.

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