

# The Development and Impact of Central Bank Digital Currency

Xujia Huang<sup>1,†</sup>, Ziyu Yang<sup>2,†</sup>, Chenkai Zhou<sup>3,†</sup>

<sup>1</sup> La Trobe of business, La Trobe University, Melbourne, 3000, Australia

<sup>2</sup> Deakin of business, University of Deakin, Melbourne, 3000, Australia

<sup>3</sup> Villanova school of business, Villanova University, Villanova, 21410, United States

<sup>†</sup> These authors contributed equally

\*Corresponding author. Cczhou7@villanova.edu

## ABSTRACT

Digital currency, which is a kind of digital token that exists on a distributed and decentralized ledger, is under the spotlight of the public's discussion. Chinese government desires to promote the establishment of a currency service system that is oriented to the digital economy era, which is beneficial to the public, and universally innovative and open. This essay introduces the reasons that the Chinese government aims to promote a new type of digital RMB, and the disadvantages the digital currency is facing now such as regulatory problems compared with existing third-party payment methods and the impact of the promotion of digital currency on third-party payment. To solve these problems, this study focuses on the integration of third-party payment and digital currency, the traffic of third-party payment and digital currency users, and the security of the blockchains. This study aims to solve the practical problems which the digital currency might face and help to promote the development of digital RMB.

**Keywords:** Digital currency, Network technology, Government policy

## 1. INTRODUCTION

### 1.1. Background

In recent years, with the rapid development of the digital economy, big data, and blockchain technology, paper money is gradually disappearing from People's Daily transactions due to its various limitations. As early as the 1990s, some scholars pointed out that economic exchanges in cyberspace need new means of payment different from paper bills. Digital currency is then defined as a digital unit that is stored electronically in a card or electronic terminal with a chip and can complete payment independently without relying on banks. Therefore, the emergence of digital cryptocurrency and distributed ledger technology is one of the important reasons to promote central banks to put forward legal digital currency strategies. The continuous development of distributed ledger technology not only promotes the continuous evolution of digital cryptocurrencies but also provides broader possibilities for central banks to establish a larger clearing and settlement system and issue legal digital currencies. At the same time, third-party payment platforms represented by Alipay are increasingly connected with People's Daily life. Private

currencies such as Bitcoin pose a threat to the stability of China's financial market. Therefore, the implementation of digital RMB by the Central Bank has become an inevitable trend. In existing studies, this paper intends to analyze the impact of the issuance of digital currency by the Central bank on the third-party payment platform from the perspective of government supervision and regulation and put forward relevant policy suggestions to promote the reform and innovation of the third-party payment platform.

### 1.2. Related Research

First of all, Yao adopted the results of the Chinese Name Bank Digital Currency Research Institute in 2018. Some quantitative conclusions about DFC are analyzed from four dimensions of monetary value, technical level, implementation means, and technical scenario. Yao believes that the following views are worth referring to: as the technology develops, the DFC's advantages will be more obvious, and the DFC's quality is higher than the private digital currency. At the same time, Yao noted that the DFC will be an effective tool for the government to macro-regulate the market [1]. In addition, Ulrich adopted the International Journal of Political Economy findings in 2019. Some quantitative conclusions of DFC

are analyzed from the effect of It on CBDC. Ulrich. Bindseil thinks the following view is worth reference: As IT develops, CBDC will be more advantages, but on the other hand, this phenomenon will also have some negative effects. At the same time, Ulrich. B analyzed the impact and variability of CBDC on the financial system. Ulrich. B clearly shows that a well-controlled CBDC is feasible in the Chinese market [2]. On the other hand, Itai. A adopted the results from the Central Bank study in 2018. Some quantitative conclusions of DFC are analyzed from the form of digital currency. Itai believes that the following factors have an impact on the promotion of CBDC: First, the main factors affecting CBDC include the exposure of digital currency to user privacy. Secondly, the extensive market circulation of CBDC needs a more rigorous regulatory system. Itai concluded that a well-controlled CBDC was feasible in the Chinese market [3].

First, Arauz researched the issues surrounding privacy and anonymity in the context of central bank digital currency (CBDC). He finds central banks calibrating the design criteria for CBDC must strike a balance between data protection and the individual's right to privacy on the one hand, and the prevention of financial crime on the other. Meanwhile, when it comes to protecting user privacy in a CBDC system, this paper argues that independent central banks are ideally positioned to serve as an honest brokers. In this respect, gaining the public's trust and acceptance will be a key challenge for central banks [4]. In the meantime, Zhang illustrated that the issuance and circulation of legal digital currency backed by national credit will surely bring profound changes to society. From the legal point of view, the advent of legal digital currency will face multiple risks, such as frequent crime, lack of law, and institutional incompatibility. Therefore, it is necessary to upgrade technology, improve legislation, strengthen the application and supervision of the legal system, and provide a strong legal guarantee for the central bank to issue legal digital currency [5].

For Lin and his team, they in the legalization of digital currency as the research object, analyzing the definition of digital currency, combined with the basic principle of a digital currency issued by the central bank, this paper discusses the present situation of our country's law system of digital currency and specific problems, and combined with the actual situation of our country, analysis of the legal regulation system for digital currency path optimization, It provides a reference for the legal process of digital currency in China [6]. At least, Zheng and Ni argued that as third-party payment tools have replaced most cash payments, this phenomenon has intensified the competition between fiat digital currencies and third-party payments in the payment experience. By comparing the differences between legal digital currency and third-party payment in terms of theoretical basis, payment process, and deposit process, the possible

impact of legal digital currency on third-party payment at the technical and theoretical levels is discussed [7].

Also, Cryptocurrencies offer an alternative way to settle payments and automate contracts, and they function in an open and decentralized manner independent of any controlling entity while ensuring anonymity. The advantage of a traceable currency goes beyond monetary policy. The ability to see anything and everything that is going on is a clear advantage from a government's point of view, in both domestic and foreign affairs. Much like a radioactive tracer used to establish flow profiles in oil wells, digital currencies can show the movement of money in an economy [8]. Besides, Yang. J and Yan.S discuss a special type of cryptocurrency called Stablecoin, such as Libra (proposed by Facebook) and Tether, which share a decentralized nature with Bitcoin, but differ in that Stablecoin attempts to maintain price stability. There are generally two ways to ensure that Stablecoins are stable – through collaterals or algorithms. Collateralized Stablecoins are usually backed by reserve assets, including fiat currency reserves like the US dollar, commodities like oil, or precious metals like gold or silver [9]. Zhengwen.S argues that the biggest feature of digital currency is that it can record and track the whereabouts of every transaction. This is the biggest advantage of blockchain technology. Of course, the central bank has already stated that the technology of digital currency is not limited to the blockchain, but it is more or less likely to adopt blockchain technology. This feature of digital currency can clearly understand the flow of statistical funds, reflect which industries are gold-absorbing, and reveal the rise and fall of industries. This is a major disadvantage of the current monetary system [10].

### **1.3 Objective**

The Chinese government promotes Digital RMB, which is a digital form of legal tender issued by the People's Bank of China. However, the disadvantages the digital currency is facing now such as regulatory problems compared with existing third-party payment methods and the impact of the promotion of digital currency on third-party payment. This study builds three solutions for these problems which are the integration of the third-party payment and the digital currency, the traffic of third-party payment and digital currency users, and the security of the blockchains. Thus, this study states that these solutions can moderately solve the problems.

## **2. CHARACTERISTICS AND DEVELOPMENT OF DIGITAL CURRENCY**

Digital secret currency is a medium of exchange issued and circulated on the Internet-based on P2P technology and cryptography technology. Most digital

currencies have features such as availability, digital form, central bank issue, and basic currency. China's modern digital currency system is to establish a centralized settlement system of a central commercial bank, commercial bank, and currency users. Each transaction used is finally settled in the public ledger and corresponding accounts at all levels. The characteristics of legal digital currency are combined with the characteristics of centralization based on decentralization, which is mainly reflected in the technical structure of digital currency, while centralization is adopted in the management and issuance to ensure that it can resist market shocks in the issuance process and develop into a stable and reliable currency. In addition, the central bank, the issuing subject of legal digital currency, can reduce the cost of processing token verification information, such as verifying the correctness of the key in the process of currency transaction, to clarify the responsibility subject in the management of legal digital currency. At the same time, the government granted it the status of legal currency to strengthen the supervision of currency circulation and international transactions. China's research and development of digital currency aim to create a new type of digital RMB to meet the cash needs of the public in the digital economy, to support the financial infrastructure in the retail payment sector, support the development of China's digital economy, and improve the development level of inclusive finance. In addition, legal digital currency is guaranteed in terms of security and supervision, attracting international trade and investors to use digital RMB and speeding up the process of RMB internationalization.

### ***2.1 The advantage of the digital RMB***

Traditional paper money has some disadvantages compared with digital currency. For example, first of all, because of the high cost of making traditional paper money. The high cost will put some financial pressure on the government. It takes longer and costs governments more to create paper money. Secondly, compared with digital currency, paper money is not convenient for users to carry. When you use traditional paper money, the user usually gets more change after making a payment. So later, Alipay and WeChat payment and other electronic payment methods appeared in our life. Here, we have to mention the difference between Alipay and WeChat Pay and electronic money. For example, Alipay and WeChat Pay are like wallets, while electronic money is like money in a wallet. And electronic money is a good way for governments to control the market. Governments can see where the money is coming from. Last but not least, the emergence of digital money will bring us greater convenience. Compared with traditional paper money, digital money has greater convenience in the way of use. Some people may ask, what are the advantages of a digital currency compared to Alipay and WeChat

payment? The answer is that digital currencies do not rely on the Internet and do not require additional fees. And electronic money is issued by the government. Compared with WeChat Pay and Alipay and other popular payment methods in China, it is more secure. So that's where digital money comes in.

### ***2.2 The Government's attitude towards the digital currency***

For the promotion of digital currency, the Chinese government has always held a supportive attitude. The Chinese government will take all the advantages of digital money but also put it under the control of the government. In 2014, the People's Bank of China (the central bank) launched a digital currency research program. At present, the digital currency will process closed tests in Suzhou, Xiong'an, Chengdu, Shenzhen, and other places. The digital currency issued by the government can improve the efficiency to track the flow of every money, combat black market transactions, financial corruption, and reduce the tax revenue lost by the government. Also, the government intends to enhance the management of currency. Digital currency is issued directly by the central bank and directly faces the public.

## **3. PROBLEMS EXISTING IN THE APPLICATION OF DIGITAL CURRENCY**

Digital currency also has some disadvantages compared to popular payment methods such as WeChat Pay and Alipay. For example, digital currency as a newly emerging payment method still has a long way to go in terms of supervision and regulation. In recent years, more and more people have become accustomed to using Alipay or WeChat payment. Compared with digital currencies such as Alipay and WeChat Pay, Alipay has more loyal users and a better regulatory system. The emergence of digital currencies is likely to change the way some users pay. For example, medical experts say it is possible that in the future health insurance and pensions will also be paid with digital currency. It also means that people of all ages will have to adapt to digital currency in the future. Some traditional people, such as the elderly, may not be able to adapt to digital currency quickly. Therefore, how to get people to adapt and trust digital currency as soon as possible will be a problem for the government. On the other hand, because of the rapid development of the IT industry in recent years, some companies also bring a lot of employment opportunities. If digital currencies gradually replace payment methods such as Alipay and WeChat Pay, this phenomenon is likely to lead to a decline in the performance of these companies and the unemployment of some workers. The rise in unemployment is likely to intensify social tensions.

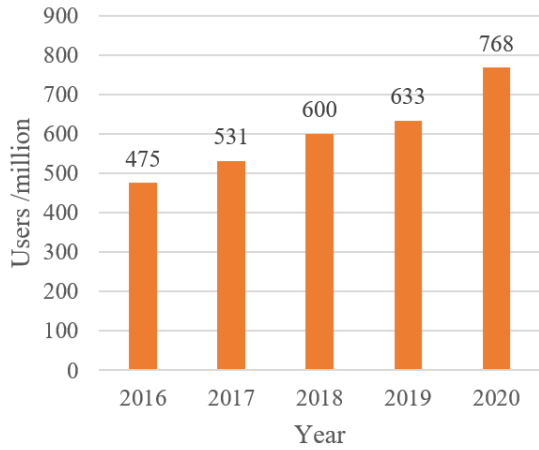


Figure 1 Utilization rate of Alipay users from 2017 2020

#### 4. THE IMPACT OF THE PROMOTION OF DIGITAL CURRENCY ON THIRD-PARTY PAYMENT ON USER DIVERSION AND COOPERATION

In the short term, the role of digital currency in the

diversion of a third-party payment platform business is not obvious. First, third-party payment platform is tightly coupled account, unable to realize cross-platform, digital currency and central bank have no such restrictions, followed by users in the use of third-party payment platform of must be on a good network environment to complete the transaction, to a certain extent had limits on pay for the scene, the function of digital currency and central bank, with its offline payment, Provides users with more diverse scenarios. However, compared with the legal digital currency, the third-party payment system has been very mature and widely accepted by the public, while the central bank digital currency is still in its infancy, and the acceptance degree of users is unknown. In addition, the third-party payment platform also provides diversified asset management products. It is the diversified services of the third-party payment platform that increase the stickiness of customers to the third-party payment platform. Users may be more inclined to use the third-party payment platform for payment in the same payment environment. Therefore, although the digital currency of the Central Bank will generate user diversion on the third-party payment platform by its advantages, the overall impact is not significant.

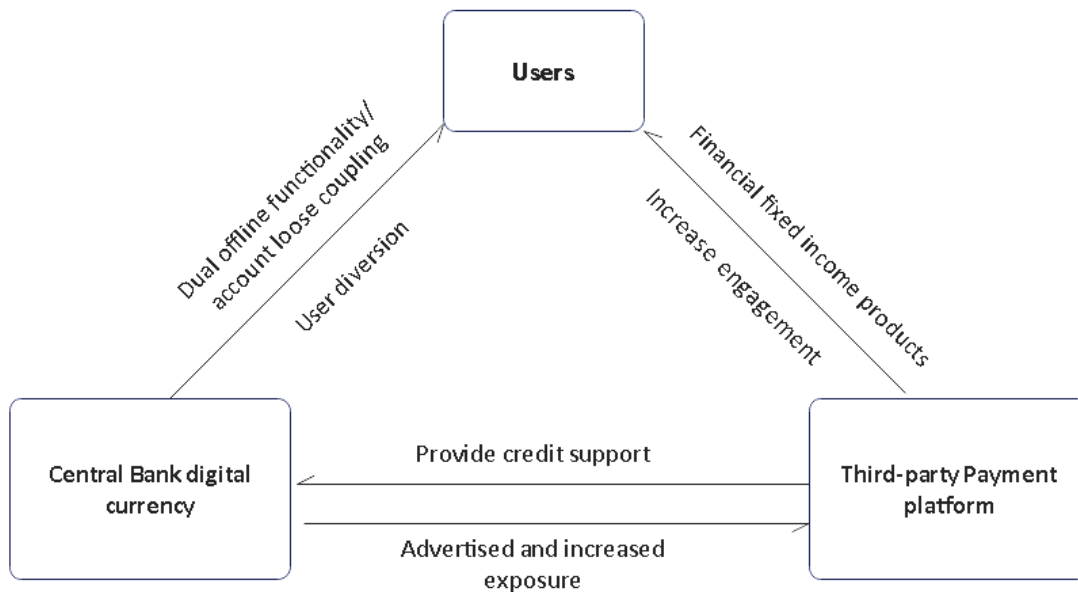


Figure 2 The short-term impact of issuing digital currency

In the long run, the central bank's issuing of digital currency is to build a new payment system that will change the structure of China's existing payment ecosystem. On the one hand, with the characteristics of offline payment and higher credit endorsement, the digital currency of the Central Bank will make the long-term advantages of third-party payment platforms no longer prominent. Users can not only pay by scanning code in digital RMB APP but also pay by hard wallet card on POS machine. According to industry information, the transaction scale of bank card receipt and scanning code

payment is more than 50% of the transaction scale of third-party payment. For third-party payment platforms, bank card accept payment list and sweep code is an important part of core business payment services business, once the bank digital currency absorbs cutting-edge technology and true at the retail end fall to the ground, will with its advantages of the third-party payment platform without fee payment services have a huge impact. On the other hand, is the issuance of digital currency by the central bank will have an impact on the sales of asset management products of third-party

payment platforms. In the public information related to central bank digital currency, the Hong Kong Monetary Authority is working with the People's Bank of China Digital Currency Research Institute to test the central bank digital currency, and make corresponding technical preparations, and is expected to launch "Wealth management link" and other asset management products in the second half of the year. If in the process of the issue of the future, the third-party payment platform can not be paid into the People's Bank of China digital currency industry or to promote the development of the central bank digital currency cancel third-party payment flat-tube products sales interface from Taiwan, will the third-party payment platform of information technology products sales bring to life, if the third party payment platform to integrate into the central bank of digital currency payment of ecological, And retain the sales interface of the existing asset management products, then the issuance of digital currency by the central bank will have less impact on the asset management products?

## **5. THE SECURITY PROBLEM OF DIGITAL CURRENCY**

Digital currency is controllable by the government because it should maintain the ability to avoid crimes. Also, it should be anonymous as well to protect users' privacy. However, the concept of complete anonymity is impractical. If digital currency only protects users' privacy and ignores the importance of the ability to avoid crimes, there will be a negative impact on society. If the government puts too much weight on anonymity, the digital currency may be targeted by criminals and become an illegal trading tool. In general, if the digital currency cannot meet the design of anti-money laundering, anti-terrorist financing, anti-tax evasion, etc., it will be rejected. Banks will focus on financial attributes, and three-party payment companies will focus on personalized professional services derived from users. The overall construction content includes a banking system, various digital wallet forms, security chip solutions, identity authentication, encrypted transmission, and big data analysis system.

## **6. SOLUTION**

### ***6.1 The scheme is based on the integration of Alipay and digital***

While digital currency still has some drawbacks, it is still a long way from being accepted by most users. After all, in recent years, most consumers have been used to using Alipay or WeChat Pay to pay. But as technology advances, there are solutions to these problems. Most consumers and businesses will also gradually choose the payment methods that can bring convenience and discounts to themselves. There are the following solutions to the problems of digital currency mentioned

above. First, Alipay and digital currency can be fused. In other words, the government is gradually putting digital currency into the market while trying not to change some of the current advantages of Alipay. This does not change the consumption habits of most users, but it will also bring greater profits and convenience to the enterprise. At the same time, because digital currency can effectively regulate the circulation of money, this method can also make society more stable. Second, doing so can gradually increase users' trust and acceptance of digital currencies. Because there is usually a process between the emergence of new things and being accepted by the masses in the market. Digital currency policymakers should give the market and consumers some time to accept it, and constantly optimize the policy.

### ***6.2 Scheme for third payment and digital currency user traffic'***

At the same time, some third-party payment platforms, as the dominant C-end traffic enterprises, C-end products refer to some mobile applications directly facing users, such as Alipay, should help the implementation of the application scenarios corresponding to the central bank's digital currency, divert the Central Bank's digital currency, and facilitate the rapid circulation of the Central Bank's digital currency. At present, the application scenarios mainly focus on catering service, shopping consumption, leisure and entertainment, transportation and other retail scenarios, and consumers can enjoy the convenience brought by opening digital RMB wallet. In addition, third-party payment platforms master more merchant data. To rely on their traffic advantage for the user to the promotion and popularization of digital currency use common sense, the use of related technologies for merchants to end equipment upgrade to make it as soon as possible in the process of management to adapt to the digital currency, to impel the digitization of merchants to upgrade services, in future development, the third-party payment platform to conform to the trend of The Times, Actively integrate into the payment industry chain of central Bank digital currency and develop together with central bank digital currency.

### ***6.3 Blockchain security solutions***

For digital currency transactions, the security and concurrency capabilities of blockchain are important. Risk control and credit checking business are major business types of third-party payment platforms. The issuance of the central bank's digital currency will have an impact on the risk control and credit checking services of the third-party payment platforms. The central bank's digital currency uses the blockchain to manage the digital currency wallet address in the design process, cutting off the relationship between the original wallet address and the user. Thus, the criminals cannot match the currency

address with the user's identity information so that the blockchain ensures the user's privacy. The lack of protection ability and moral problems of blockchain makes it impossible to form a truly global and reliable trading center. The "decentralization" of the OKEx exchange perfectly solves this problem. At present, the password encryption of the blockchain mostly uses SHA256 encryption and some other commonly used encryption methods, and the protection methods for individual users are relatively simple.

## 7. CONCLUSION

In conclusion, this paper studies the background of digital currency, its advantages and disadvantages, and compares it with similar payment methods in the current market. And through these studies, we draw some conclusions about the future development trend of digital currency. For example, digital may be combined with Alipay to form a payment method that not only stresses users but also speeds up the promotion of digital currency. As a new form of payment, digital currency is still a long way from being accepted by users. We, as users and potential future beneficiaries of digital currency, should look at this emerging payment method in a different dimension.

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