

# Reflections on the Latest e-CNY Pilot Test in China

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## Abstract

In August 2021, China started a new round of pilot test of its digital fiat currency in Shanghai and Suzhou, during which a total of RMB20 million in digital currency was handed out to residents. This pilot test has become a heated topic in China recently and also caught attention all over the world. This paper starts with the definition of e-CNY and its benefits over cryptocurrency and mobile payment systems. It focuses on the pilot tests of China's digital currency and the new characteristics emerging, and anticipates the future trend of the pilot test of China's digital currency.

**Keywords:** digital fiat currency, e-CNY, benefits, pilot test, new characteristics, future trend

## 1. Definition of e-CNY

China's central bank digital currency (CBDC), previously named Digital Currency Electronic Payment (DC/EP), now is often called digital yuan by some press. However, according to a white paper released by the People's Bank of China (PBOC) recently, China's digital fiat currency is called e-CNY, which is a provisional abbreviation following international practices (Kharpal, 2021).

"E-CNY is the digital version of fiat currency issued by the PBOC and operated by authorized operators. It is a value-based, quasi-account-based and account-based hybrid payment instrument, with legal tender status and loosely-coupled account linkage" (PBOC, 2021).

The definition makes it clear that e-CNY is the virtual form of Chinese fiat currency, renminbi (RMB), issued by the PBOC and is legal tender, with the three-legged functionality of money, unit of account, medium of exchange and store of value (Kshetri, 2021).

E-CNY is backed by the sovereign credit of China via the PBOC and is a result of the natural evolution of currency technology and economic activities. PBOC will issue e-CNY and financial institutions will distribute it under the regulation. PBOC will also manage this asset, setting the ground rules for wallet design as well as collecting any data thrown off by transactions. However, e-CNY is not meant to replace physical RMB, and physical cash will exist in parallel for the foreseeable future. Physical RMB is still seen important in a diversified payment system of China considering multiple needs, habits and ages, therefore, the PBOC will neither stop supplying nor replace physical RMB via administrative order (Jiang, 2021).

## 2. Benefits of e-CNY

E-CNY is fundamentally different from cryptocurrencies like Bitcoin, because e-CNY is a fiat currency issued and governed by a central bank rather than relying on a decentralized system managed by users around the world. The technical details of how it works are not public, but PBOC officials have stated that it does not run on a blockchain. By contrast, cryptocurrencies such as Bitcoin are a type of decentralized private money running on a blockchain, produced by solving complex mathematical proofs and governed by disparate online communities instead of a centralized body. E-CNY is a legal tender, but cryptocurrencies are not; one can reject cryptocurrencies as a form of payment. The value of e-CNY, like existing fiat currency, is influenced by policymakers, whereas the value of cryptocurrencies is determined entirely by the market or the expectation of the network and thus is highly volatile.

E-CNY is also different from existing mobile payment systems such as Alipay and WeChat Pay. Alipay and WeChat pay are platforms used as wallets for mobile payments. Alipay is owned by Alibaba and was first used for payments on their website, then grew to become a payment method for different services as well. On the other hand, WeChat pay is a digital wallet featured in the messaging app WeChat.

### *2.1 Benefits of e-CNY over Alipay and WeChat Pay*

E-CNY will have benefits over Alipay and WeChat Pay in the following manners.

First, E-CNY is a legal tender, but Alipay and WeChat Pay are payment tools, which means they still have to operate through commercial banks. Although Alipay and WeChat Pay have been widely used in China, one can still legally refuse to accept payment made via WeChat Pay or Alipay but cannot legally refuse to accept e-CNY because e-CNY, just like cash, is a legal tender backed by the state.

Second, e-CNY is backed by the state and is more trusted by people. The settlement parties of e-CNY and mobile payment are different. The PBOC is responsible for the settlement of e-CNY transactions because e-CNY is a fiat currency. Alipay and WeChat Pay are digital platforms operating on top of existing settlement systems, so their settlement still goes through commercial banks. That means e-CNY is backed by the state unlike Alipay and WeChat pay. This makes the currency more trusted in China as it is very unlikely for a state backed currency to default on its obligations while Alipay or WeChat could possibly go bankrupt.

Third, technological and operational differences exist between them. For instance, e-CNY allows for offline transactions while Alipay and WeChat Pay heavily rely on an Internet connection to process transactions. E-CNY does not need to be associated with a bank account to make payments while Alipay and WeChat Pay do.

Fourth, e-CNY transactions require only having a digital wallet, whereas Alipay and WeChat Pay require the availability of an active bank account to withdraw money from. What's more, Alipay and WeChat Pay charge fees for withdrawing money from the wallet, usually 0.1%, while it is free for merchants to transact with e-CNY, therefore merchants potentially have the economic motivation to switch to e-CNY.

### *2.2 Combating economic crimes and frauds*

Compared to a fiat currency, digital currencies are difficult to counterfeit. China's e-CNY employs asymmetric cryptography to enhance security. The PBOC has stated that transaction records are encrypted, and unauthorized parties cannot access them.

Governments are also likely to use CBDCs to combat economic crimes. At a BIS seminar, the director-general of the PBOC's digital currency institute Mu Changchun proposed global rules, which emphasize the importance of synchronizing the flows of information and funds so that regulators can monitor the compliance of transactions. (Wilson, 2021) A PBOC official noted that the e-CNY's "controllable anonymity," rather than full anonymity, is based on international consensus to satisfy anti-money laundering, anti-terrorism financing, and anti-tax-evasion requirements. By tracking and recording the details of all transactions, the government is in a better position to prevent and control illegal transactions (Zhao, 2021).

## **3. e-CNY pilot tests in China**

China is arguably leading the world in currency digitization because it's one of the world's most digitized payment markets. By December 2020, the number of online payment users in China reached 854 million, accounting for 86.4% of the total number of Internet users. According to "The Overall Operation of the Payment System in 2020" released by the PBOC, 235.225 billion transactions were paid via electronic payment in 2020, with a total transaction value of RMB2711.81 trillion. Among them, there were 123.220 billion transactions paid via mobile payment, worth RMB432.16 trillion, a year-on-year increase of 21.48% and 24.50% respectively. (PBOC, 2021) These statistics make China a great candidate for digitalization of the monetary system. In other words, the Chinese market is already very advanced in electronic payments. The e-CNY would be a way to speed that process up.

### *3.1 The Timeline of e-CNY development and pilot tests*

In 2014, the PBOC set up a special team to conduct a research on digital fiat currency with the scope covering the issuance framework, key technologies, issuance and circulation environment, and international experience.

At the end of 2017, under the organization of the PBOC, some commercial banks and relevant institutions jointly carried out the research, development and testing of the digital fiat currency, e-CNY. On the premises of double-layer operation, cash substitution and controllable anonymity, the top-level design, standard formulation, function development, joint commissioning and testing of the DC/EP system have been basically completed.

In 2020, China started the pilot test of its digital fiat currency. At the preliminary step, "4+1" pilot regions were selected to carry out e-CNY pilot tests — Shenzhen, Suzhou, Xiong'an, Chengdu, and the future winter Olympic scenario. In October, 2020, another 6 pilot cities and provinces were added to the list including Shanghai, Hainan, Changsha, Xi'an, Qingdao, and Dalian.

In October, 2020, the e-CNY pilot test was firstly launched in Shenzhen. The municipal government in Shenzhen carried out a lottery to give away a total of RMB10-million worth of the digital fiat currency. The winners can download a digital currency app to receive the e-CNY and spend it at over 3,000 merchants in a particular district of Shenzhen.

During the previous Lunar New Year, the municipal government of Beijing also handed out RMB10 million in a digital currency pilot test to its residents.

The latest e-CNY pilot test, the “Shanghai-Suzhou Joint e-CNY Pilot Test on JD.com”, was launched on August 6, 2021. In the new pilot test, the Bank of Communications cooperates with JD.com and hands out digital currency worth of RMB 20 million via a lottery on JD.com, one of China’s biggest e-commerce players, to residents of Shanghai and Suzhou. Those who receive the e-CNY can spend it on JD.com’s online shopping platform as well as in real-world scenarios.

According to the white paper published by the PBOC in July, 2021, “as of June 30, 2021, e-CNY has been applied in over 1.32 million scenarios, covering utility payment, catering service, transportation, shopping, and government services. More than 20.87 million personal wallets and over 3.51 million corporate wallets had been opened, with transaction volume totaling 70.75 million and transaction value approximating RMB34.5 billion” (PBOC, 2021).

### *3.2 Characteristics of the new e-CNY pilot test*

The “Shanghai-Suzhou Joint e-CNY Pilot Test on JD.com” was launched by the Bank of Communications, one of China’s major state-owned banks, with the collaboration of JD.com. Together they distributed 500,000 red packets to the residents of Shanghai and Suzhou, with each packet including RMB20 in e-CNY and RMB20 in JD consumption coupons.

Although it is not the first time that China is handing out a large sum of its digital fiat currency, the new round of e-CNY pilot test is not like the tests before. It shows several new characteristics.

#### *3.2.1 The initiative of financial institutions*

Different from the previous rounds of e-CNY pilot tests led by the municipal governments of the pilot cities, this new pilot test is completely led by the financial institution, the Bank of Communications. In other words, e-CNY pilot tests in the past were paid by the local finance; however, this new pilot test in Shanghai and Suzhou is paid by the financial institution.

Some professional in finance says that e-CNY has become a new channel for banks to attract customers and keep them hooked, which helps banks to cater to the enterprises who have special need for e-CNY.

At present, there are many financial institutions engaging in e-CNY businesses. E-CNY has become the trend for future development, and all parties are eager to seize the development opportunity. The six major state-owned banks, including the Industrial and Commercial Bank of China, Agricultural Bank of China, Bank of China, China Construction Bank, Bank of Communications, and Postal Savings Bank of China all have begun to promote digital currency wallets. China Merchants Bank was officially approved by the central bank to participate in the research and development of the e-CNY system. Besides that, other banks that have not been selected into the pilot test list are also actively laying out for e-CNY related systems, which has become a “new fashion”. Minsheng Bank has recently begun to publicly recruit relevant talents for e-CNY operation, and has opened an e-CNY portal in its mobile app. In addition, Bank of Beijing, Guangdong Development Bank, and several other banks have also built relevant systems to undertake e-CNY businesses.

#### *3.2.2 The shift from offline to online scenarios*

A major focus of this round of digital currency pilot test lies in the shift from real-world scenarios to online shopping.

In the e-CNY pilot test in Shenzhen in October, 2020, the government distributed a total of RMB10 million worth of the digital fiat currency, and the residents who received the e-CNY were allowed to spend it over 3,000 merchants in a particular area of Shenzhen, mainly local supermarkets and pharmacies such as Walmart.

The previous e-CNY pilot test carried out in Suzhou in December, 2020, handed out 100,000 red packets of e-CNY to its residents. Besides the more than ten thousand offline merchants participating in the pilot test, JD’s online shopping platform was also included in the pilot test. It was a breakthrough for the e-commerce platform to enter digital e-CNY pilot tests. However, the pilot test was only restricted to a limited extent in Xiangcheng District of Suzhou City.

In the latest “Shanghai-Suzhou Joint e-CNY Pilot Test on JD.com”, the online shopping scenario has been greatly expanded. The new pilot test is co-launched by Bank of Communications and JD.com, who hand out 500,000 red packets of digital currency in a giveaway worth a total of RMB20 million to residents of Shanghai and Suzhou. Each red packet, set to be distributed through a lottery system, contains digital currency worth RMB20 and a JD.com coupon worth RMB20. The RMB20 e-CNY can be used in all online and offline scenarios that support e-CNY, including JD.com, real-world merchants (stores), scenic spots, restaurants, and supermarket chains supporting e-CNY cashier in Shanghai and Suzhou. The RMB20 JD.com coupon in the red packet can be used on the JD app when a customer buys JD’s self-operated goods over RMB200 and pays via the e-CNY wallet of the Bank of Communications. In this way, the scope of online shopping scenarios of e-CNY has been greatly expanded.

### *3.2.3 The cross-regional use of e-CNY wallet*

A more important characteristic of the latest “Shanghai-Suzhou Joint e-CNY Pilot Test on JD.com” is the cross-regional use of e-CNY.

Zhao Guangbin, senior economist of PWC China, explained in an interview that in the previous pilot tests, the e-CNY red packets issued by governments of pilot cities could only be used locally, so they could not really replace the monetary function of RMB. “In the previous pilot tests, the e-CNY wallets of residents of Shanghai could only be used in Shanghai, and they couldn’t be used in Suzhou. But what is under testing now? It is that the residents of Shanghai now going to Suzhou can use their e-CNY wallets there, or in another case, they can stay in Shanghai and do shopping online on JD.com. In both of the cases, cross-regional payment of e-CNY is involved. That’s what under testing. If the enterprise is located in Suzhou, it should be ensured that cross-regional payment of e-CNY is feasible.” Zhao Guangbin said in the interview (Yu, 2021).

If the cross-regional use of e-CNY works well in the test, it will mean a lot to the integration of the Yangtze River Delta, as the integration of finance is of great significance to the integration of the Yangtze River Delta. After passing the test of cross-regional use, e-CNY will take a substantial step toward full-fledged launch.

## **4. The future trend of e-CNY pilot tests**

### *4.1 To expand test scenarios*

Building on the experience from the previous pilot tests and taking into account the development plans and local circumstances of pilot places, the PBOC will further expand test scenarios to cover all possible scenarios in selected pilot regions.

The latest e-CNY pilot test has shown that more and more offline and online scenarios have been integrated in the test covering more and more fields. The e-CNY pilot tests in the future will cover almost all fields of payment in people’s life including fee collecting, catering services, transportation, shopping, and government services and so on. Among them, retail is still the focus of the current e-CNY pilot tests.

Besides the further expansion of the coverage of pilot scenarios, the PBOC will also expand the scope of participating institutions and pilot regions based on the reality of the R & D of the pilot work.

### *4.2 To balance software and hardware wallets*

There are software and hardware wallets, depending on the choice of carriers. A software wallet provides services through mobile payment apps, software development kit (SDK), and application programming interface (API). A software wallet is very convenient and it is welcomed by a lot of people. However, for those people with special needs, the elderly or the disabled, it may be impossible for them to properly use mobile phones. A hardware wallet may be a better choice for them. A hardware wallet uses security chips to support the function of e-CNY and it is supported by IC card and wearable objects. Considering the actual needs of specific groups, the development of software wallets and hardware wallets should be balanced in order to further improve the inclusive nature of e-CNY system. A variety of technical means should be used to reduce the difficulty of using e-CNY.

### *4.3 To strengthen the protection of personal information.*

Laws and regulations related with e-CNY administration should be formulated or revised to enhance protection of personal information. The PBOC will improve the rulebook and technical codes. Additionally, it will improve security management for the e-CNY operational system throughout the entire lifecycle of e-CNY, covering password security, financial information security, data security and business continuity, so as to ensure safe and stable functioning of the system.

## 5. Conclusion

The latest RMB20 million e-CNY pilot test in Shanghai and Suzhou in August, 2021, has shown three clear characteristics when compared with the previous tests. First of all, it is launched and financed by a financial institution, Bank of Communications, instead of local governments. Secondly, the application scenarios of e-CNY have been greatly expanded, especially in the case of online scenarios. Thirdly, the e-CNY wallets of Shanghai residents can be used in Suzhou for the first time. Judged from the new characteristics of the latest e-CNY pilot test and combined with the white paper released by PBOC, it is safe to anticipate that e-CNY pilot tests in the future will focus on the expansion of application scenarios, the balanced development of software and hardware wallets, and the protection of personal information.

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