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China's digital yuan trials proceeding apace

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Executive Summary



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China is conducting a slew of public-private collaborative trials in preparation for the digital yuan's official launch. Sub-wallets have been developed to facilitate digital currency usage on e-commerce sites. However, a number of key issues remain to be addressed, including updating laws and regulations and building out a digital currency ecosystem.

Digital yuan in testing phase

China is ramping up geographically circumscribed trials of its digital yuan (e-CNY), actively recruiting private-sector participants, experimenting with various use cases and expanding the trials in scale and both geographic and sectoral scope¹⁾ (Exhibit 1). A December 2020 e-CNY trial in Suzhou lasted more than twice as long as,

NOTE

1) China plans to steadily expand its e-CNY trials' geographic scope beyond the initial four locations plus the 2022 Winter Olympics. In November, the Chinese media report that a second round of trials would take place in six additional cities/provinces, including Shanghai, Changsha and Hainan Province.

Exhibit 1: Recent e-CNY developments

Apr 2020	DCRI designates Shenzhen, Suzhou, Xiong'an, Chengdu and 2022 Winter Olympics as e-CNY trial locations.
Apr	Mega-mall in Chengdu named as e-CNY trial site.
Apr	Suzhou city is reported to pay 50% of transportation allowances in e-CNY to their government/institutional organization employees.
Apr	Some bank employees in Shenzhen pay CCP/labor union dues in e-CNY.
Apr	Conference held to promote e-CNY trial in Xiong'an; 19 participating merchants named, including McDonald's, Starbucks and JD.ID X-Mart.
Jul	Major ride-hailing service Didi Chuxing partners with DCRI to research e-CNY use cases in smart mobility sector.
Jul	Major O2O consumer service provider Meituan and video-sharing site Bilibili form alliance with banks involved in e-CNY project.
Aug	Four major banks internally test e-CNY wallets in Shenzhen.
Aug	Some public employees in Suzhou are paid their salaries in e-CNY.
Aug	McDonald's and 18 other merchants in Xiong'an accept e-CNY on pilot basis.
Aug	China Construction Bank tests digital currency wallet using smartphone app.
Oct	e-CNY trial conducted in Shenzhen, with participants making 62,788 payments totaling e-CNY8,764,000.
Oct	City Commercial Banks Clearing partners with DCRI to provide urban commercial banks and private banks with one-point access to e-CNY interconnection platform.
Oct	Rural Credit Banks Funds Clearing Center partners with DCRI to provide rural financial institutions with one-point access to e-CNY interconnection platform.
Nov	State Grid Xiong'an Financial Technology Group partners with DCRI to promote e-CNY innovation and its application to electric-bill payments.
Nov	FinTech company Lakala partners with DCRI to promote innovative e-CNY functionality and applications in retail payment space.
Nov	Media report that six more cities/provinces will be added as e-CNY test locations, including Shanghai, Qingdao, Dalian and Hainan Province.
Dec	e-CNY test conducted in Suzhou, with participants spending e-CNY8,478,000 online and e-CNY10,490,000 offline (respectively 44.7% and 55.3% of total).
Dec	Online P&C insurer ZhongAn underwrites insurance policies with premiums payable in e-CNY.
Dec	ertain cafes in Beijing start accepting e-CNY. Beijing Subway commences e-CNY test on its Daxing Airport Line in preparation for Beijing Winter Olympics.
Jan 2021	Second e-CNY trial conducted in Shenzhen.

Source: NRI, based on media reports

2) The Shenzhen trial was conducted on October 12-18 with the participation of 50,000 consumers and 3,389 merchants. The Suzhou trial took place on December 11-27 with 100,000 consumer participants and 10,368 participating merchants.

3) The two additional banks were Postal Savings Bank of China and Communications Bank. They joined Bank of China, Agricultural Bank of China, Industrial and Commercial Bank of China and China Construction Bank.

4) In the e-commerce trial, e-CNY could be used for online and C.O.D. payments.

5) Didi Chuxing and Meituan Dianping respectively have 450mn and 550mn users as of July 2020.

6) Per an October 22, 2020, media report on the 2020 Financial Street Forum Annual Conference.

7) The six banks' sub-wallets differ in terms of which apps they can be pushed into. All six can be pushed into JD.com's app. Bank of China's sub-wallet can be pushed into Bilibili's app also; Industrial and Commercial Bank of China's sub-wallet can be pushed into both Didi Chuxing and Meituan Dianping's apps.

and had twice as many consumer participants, three times as many participating merchants²⁾ and two more participating banks than, a similar trial conducted two months earlier in Shenzhen³⁾. The Suzhou trial also tested online payment on JD.com⁴⁾, a major Chinese e-commerce site, and offline-payment function.

Meanwhile, e-CNY use cases are increasing through public-private collaboration. For example, Didi Chuxing and Meituan Dianping, both of which operate ride hailing and food delivery services, have started to accept e-CNY payments on a pilot basis in collaboration with the PBoC's Digital Currency Research Institute (DCRI). With one billion users⁵⁾ between them and a combined geographic footprint that extends beyond China to Australia and even the US, the two companies have the potential to broadly expand e-CNY usage.

The ongoing series of trials are showcasing e-CNY wallets' functionality and UX. To use e-CNY, you must have a hardware wallet or a software wallet held at an authorized bank. There are four types of software wallets, each subject to usage limitations that differ depending its personal information authentication requirements (Exhibit 2). These limitations could prevent a sudden drain of bank deposits into e-CNY. At least one of the four types of wallets does not need to be linked with an ID or mobile phone number⁶⁾. That type could potentially be used by foreign visitors.

The Suzhou trial was the first to use sub-wallets, which can be "pushed" into mobile apps of online platforms like JD.com⁷⁾. The pushing is done by selecting a platform from a list displayed in the wallet's UI. The sub-wallet push feature is currently limited to a small number of platforms but more will likely be added going forward.

Exhibit 2: Types of e-CNY wallets

(CNY)

	Type 2	Type 3	Type 4
Authentication requirements (surmised)	Real name, ID, bank card	Telephone number, email address	User name, password
Maximum balance	10,000	2,000	1,000
Maximum payment	5,000	2,000	500
Daily usage limit (cumulative)	10,000	2,000	1,000
Monthly usage limit (cumulative)	300,000	50,000	10,000

Note: Type-1 wallets' authentication requirements and usage limits have not been publicly disclosed.
Source: NRI, based on media reports

Once a sub-wallet has been pushed into a platform's app, the app user can spend e-CNY on that platform without having to re-enter a password. Platforms cannot refuse to accept e-CNY, which is legal tender. Nor can they access users' personal information, which is protected. The sub-wallet feature is expected to help expand e-CNY use cases and curb market dominance on the part of major platforms.

The e-CNY trials have featured some innovative hardware wallets, including a wearable one that debuted in Beijing in December 2020 and a wallet in the form of an NFC (near-field communication) IC card⁸⁾ with an embedded micro display⁹⁾. The latter was tested in Shanghai by the Postal Savings Bank of China in January 2021. Additionally, Huawei's Mate 40 smartphone comes with a built-in hardware wallet. Easy to use even by the elderly, such hardware wallets may play a role in bridging the intergenerational digital divide.

8) The card is linked to a software wallet and can access e-CNY stored on a server. Bluetooth is used to integrate the card with a smartphone.

9) It displays the transaction amount, wallet's balance and number of offline payments remaining before the wallet's usage limit is reached.

Regulatory issues

While technical preparations for the e-CNY's launch are well underway, regulatory groundwork is lagging behind. In February 2020, the PBoC issued Financial Distributed Ledger Technology Security Standards, a set of technical regulations on controllable anonymity in e-CNY transactions, including provisions on privacy protection and raw data's accessibility to regulatory authorities. In October, China amended its PBoC Law to add provisions on the e-CNY, including legal authorization to issue it and a prohibition against counterfeiting it.

China's Renminbi Management Regulations, however, have not been updated since 2018. They lack provisions on e-CNY issuance and even a definition of the digital currency. China's current Anti-Money Laundering Law (enacted in 2007) likewise needs to be updated. Its purview, currently limited solely to financial institutions, needs to be broadened to include digital currency, electronic payment services and businesses involved in digital currency trading. Other matters on which China has yet to adopt laws and regulations include digital taxation, and collection, management and use of electronic payment data.

Chinese authorities are already confronting an anti-counterfeiting challenge in the form of counterfeit e-CNY wallets that have recently surfaced. To deal with the counterfeiting issue, the authorities need to expeditiously build out payment infrastructure and issue coherent business, technical and security standards.

A second challenge is how to popularize the e-CNY in a country where third-party payment services are widely used. However, one sector with low mobile payment penetration is finance. Mobile payments' usage rate for financial transactions in China is only 35%¹⁰⁾. Mobile payments have substantial scope to increase their share of financial product purchases.

10) According to Ipsos China's 2019 Q3 research report on third-party mobile payment usership (November 7, 2019).

Another possibility is digital currency usage in the public sector. The e-CNY could expand mobile payment usage for paying utility, medical and tax bills, all of which have low third-party payment usage rates due mainly to convenience or security factors¹¹⁾. China could build a payment ecosystem in the public services space in collaboration with third-party payment services¹²⁾.

11) Per a Data100 Market Research report on third-party mobile payments (June 29, 2020).

12) Like bank deposits, e-CNY also is a third-party means of payment. It is expected to improve the payment system through mutually complementary coexistence, not competition, with third-party payment services.

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