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INSTITUTE

# Incentives for the Birth of the e-CNY

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# Contents

**New Zealand Asia Institute**

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**About this report**

---

**Highlights**

---

**Introduction**

---

**Issues Arising from China's Booming Third-Party Payment Market**

---

**Advantages and Benefits of e-CNY**

---

**Advantages and Benefits of Third-Party Payment Processing Services**

---

**Impacts of e-CNY on the Third-Party Payment Market**

---

**Opportunities for Third-Party Payment Platforms**

---

**Notes**

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# New Zealand Asia Institute

## Enhancing New Zealand's understanding of and engagement with Asia

The New Zealand Asia Institute (NZAI) undertakes research focusing on engagement with Asia, provides a forum for informed debate, and offers a bridge to Asia-related expertise and research within the University of Auckland.

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## About this report

This report is the second in a series of working papers that report on a research project 'Understanding China's Digital Yuan.' Since the concept of Bitcoin was proposed in 2008, there have been three major rounds of discussions on the topic of digital currency in China's academic, policy and interested public circles. The first round focused on Bitcoin's potential to grow into a new generation of legal tender, the second on Libra's capability to become a 'super-sovereign' currency for cross-border settlements, and the third on central bank-issued digital currencies (CBDC). These discussions have inspired the People's Bank of China (PBC) to begin digital yuan research in 2014, establish the China Digital Currency Research Institute in 2016, complete the R&D and system testing in 2019, launch in 2020 the e-CNY (Chinese yuan), also commonly referred to as digital RMB or the Digital Currency/Electronic Payment (DCEP), and to lately conduct on-the-ground trials.

This working paper series examines these developments and the issues they present for regulators and users, as viewed by Chinese commentators and others.

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## Highlights

- The rapid development of the third-party payment market in China is an important push and pull factor in the launch of the digital RMB.
- The e-CNY's design and features have sparked discussions about whether its issuance will break the duopoly of Alipay and WeChat Pay in China's third-party payment market.
- China's leading third-party platforms' money market services and social networking functions suggest that the potential short-term impact of the e-CNY on third-party platforms could be limited.
- The digital yuan is still a new and evolving phenomenon of China's e-commerce thus necessitates the support of third-party platforms for its promotion and, in turn, provides opportunities for the platforms to reinvent themselves for continued and new business opportunities.

## Introduction

The emergence and development of China's digital currency has been both recent and rapid. Simply put, the evolution of alternative methods of payment, especially third-party payment systems and providers, has greatly promoted the birth of the e-CNY. As recently as a decade ago, China was a country highly dependent on cash transactions. Although in 2010, the number of EFTPOS/debit cards reached 1.8 per capita, nearly 61% of retail consumption was still completed by cash payment.<sup>1</sup> Yet the rise of a vibrant fintech industry and the development of a flourishing e-commerce sector have since rapidly and significantly changed the state of affairs.

For example, in the ten years from 2009 to 2018, the amount of cash (MO) in circulation in China increased from 3.82 trillion<sup>2</sup> to 7.32 trillion *yuan*,<sup>3</sup> an impressive increase of 91%. At the same time, however, the monetary value of non-cash payments jumped from 715.75 trillion<sup>4</sup> to 3768.67 trillion *yuan*,<sup>5</sup> an increase of 427%. With the popularity of smartphones in China, third-party payment platforms, mainly represented by WeChat Pay and Alipay, have sprung up and developed rapidly. These platforms have made substantial achievements in the fields of living expenses payments, online payments, domestic offline transactions, and cross-border payments. Satisfying consumers' needs for convenient, quick and low-cost ways of payment and settlement, Chinese third-party payment platforms have continued leveraging their growth opportunities to enrich their application scenarios.<sup>6</sup>

In 2015, there were 82.145 billion transactions conducted through third-party payment platforms. By 2018, this number rose to 530.61 billion, a six-fold increase in three years.<sup>7</sup> According to a survey conducted by the People's Bank of China in 2019<sup>8</sup>, the number and the monetary value of mobile payment transactions respectively accounted for 66% and 59% of the total, while the figures of those paid in cash were 23% and 16%, and in bank card were 7% and 23%. In addition, 46% of respondents reported that they had never used cash during the survey period. It can be seen that with the development of China's digital economy,

the utilisation rate of cash in China is declining, and non-cash payment methods are playing an increasingly important role in the national economic life, especially the retail sector.

## Issues Arising from China's Booming Third-Party Payment Market

Although the third-party payment system has brought innovative changes and appealing convenience to Chinese consumers and greatly promoted the development of China's retail industry, it has also brought challenges and potentially serious risks. For example, that transactions can be conducted via WeChat Pay and Alipay by scanning QR codes greatly facilitates interactions between buyers and sellers in the retail sector. However, because of the convenience of electronic payment, some merchants refuse to accept cash and to serve those who are uncomfortable with or have doubts about mobile payment apps. Therefore, an issue for China has been how to promote the digitisation of cash (Mo) in circulation to meet the needs of the general public for convenient and safe transactions.

From the perspective of market structure and competition, it is true that the expansion of the third-party payment market has in recent years spawned many third-party payment companies (such as Alipay, Tencent Financial Technology or WeChat Pay, UnionPay Commerce, 99 Bill, Allin Pay, or Yi Qian Bao). Yet, taking the data of 2020 as an example, almost 90% of China's third-party payment market were transactions using Alipay (48.8%) or WeChat Pay (33.67%). This has created a duopolistic market situation.<sup>9</sup> Secondly, business barriers between the platforms create problems because they do not recognise each other and consumers cannot transfer money between accounts. Even Alipay and WeChat pay have this problem. Finally, yet importantly, transaction information by third party payment platforms is routed through payment channels and big data technology, which is not conducive to safeguarding financial and personal information.

As is happening in many other parts of the world, China's thriving digital economy and e-commerce is accompanied by a growing public interest in and demand for digital currency. China is thus faced with the challenge of financial regulation and supervision of the development of a private virtual currency. The existing online game virtual currency represented by 'Q coin', and the already popular virtual currency composed of digital tokens such as 'credit points' and rebate-focused consumer 'red packets/envelopes' have certainly put a great deal of pressure on Chinese financial market regulatory authorities and supervisory agencies.

Whether searching for solutions or for alternative internet money tokens, Chinese economists and finance specialists have been paying attention to functions of the world's popular types of cryptocurrencies. Their widely shared opinion is that since Bitcoin and other similar types of digital or virtual currencies adopt the anonymous nature of blockchain and encryption technology, they may become payment tools for illegal economic activities and, in turn, threaten domestic financial security and social stability. Meanwhile, launched by commercial institutions and anchored to sovereign currencies, global 'stablecoins', such as Diem (formerly known as Libra), will likely bring serious challenges to the management of cross-border capital flows and trade finance.<sup>10</sup> Growing public interest in mobile payment and concerns about risks related to cryptocurrencies have helped push forward the development of the digital RMB.

# Advantages and Benefits of e-CNY

## Anonymity and privacy

An important characteristic of China's existing payment system and evolving third-party platforms is that bank accounts are tightly coupled. In other words, consumers need to bind their bank accounts, make payments through commercial banks or third-party payment platforms, and then settle. The payment and settlement are not carried out simultaneously, and the time required is affected by the type of transaction and the amount of money. In addition, third-party platforms as well as financial institutions are in full control of their clients' complete payment and settlement information. This creates the risk of personal data being excessively exposed to unauthorised entities.

In contrast, the e-CNY is like cash but in digital form. It does not depend on, or is only loosely coupled with, bank accounts. Under the two-tier operating structure, it is traded in a peer-to-peer manner, namely, directly between two parties (such as consumers and merchants) using digital wallets. Given its 'loosely coupled feature', e-CNY can be circulated like cash while consumers can enjoy controllable anonymity. Moreover, the e-CNY is supported by a variety of technologies, including a digital certificate system, digital signature, and secure encrypted storage to make unfeasible double-spending, counterfeiting, illegal duplication, falsified transaction, and repudiation. All these features allow the e-CNY to have a safe life cycle and for risk management to be effective.<sup>11</sup>

## Banking access threshold

The system and application design of the e-CNY is widely anticipated in China to lower the threshold for financial services. The expected result is believed to be a boon particularly for the 'unbanked' and 'underbanked' population and groups, including financially disadvantaged elderly, those living in remote or isolated areas, and short-term foreign residents. This is because, to enjoy the convenience of mobile payment, people just need to get in touch with commercial banks or financial institutions authorised by the People's Bank of China (PBC) and choose to open different levels of e-CNY wallets according to the different strengths of identity authentication (such as mobile phone numbers, e-mails or ID cards). No matter which level of the wallets, their holders do not need to bind a bank account for payment transactions.<sup>12</sup>

## Business barriers

As mentioned, because of business competition and barriers, transfers cannot be made between different third-party payment platforms. Even the two dominant players of China's third-party mobile payment market, Alipay and WeChat Pay, do not accept each other's payment products or transactions. While not expected to replace third-party platforms, the e-CNY is designed to break down connectivity barriers in digital payment transactions. Given the cash (Mo) nature of the digital *yuan*, consumers can complete payments just like using banknotes and coins, irrespective of which third party or intermediate institutions provides the services to their e-CNY wallets.<sup>13</sup>

## Withdrawal cost

The PBC takes the same approach to managing the e-CNY as it does to cash. Specifically, it does not impose exchange and circulation service fees on designated e-CNY operating agencies. The designated agencies in turn are expected to not charge individual customers service or facilitation fees. In contrast to the e-CNY's zero withdrawal cost, third-party platforms continue to require service fees for their payment channels.<sup>14</sup>

## Security

In addition to the ‘controllable anonymity’, the e-CNY’s reliability also comes from the fact that it enjoys the same status of legal tender with the physical Chinese *yuan* and assumes the same importance. The e-CNY can be brought into play in any scenario where paper RMB can be used, and no individual or business or any other entity in China is able to refuse to accept it as a legal means to pay bills or meet financial obligations. By being the electronic form of the national currency, the e-CNY is the direct liability of China’s central bank and is backed by the financial resources of the country.<sup>15</sup> Operators of existing third-party payment platforms, on the other hand, are primarily fintech or commercial companies. They typically rely on their reputation as the guarantee of financial services security, which cannot rule out bankruptcy risks and transaction management failures.

Facilitating the reliability of the e-CNY is the fact that the official digital currency is centrally supervised by the PBC and loosely coupled with bank accounts. This structural design is expected to enable the realisation of ‘settlement upon payment’, and thereby help improve the turnover rate of merchants’ funds and the implementation efficiency of monetary policy.<sup>16</sup> Such centralised management is reported to also make the e-CNY conducive to removing payment barriers, breaking retail market divisions, and preventing market distortions.<sup>17</sup>

These factors suggest that the e-CNY may be a great improvement over the existing third-party payment platforms because users do not need to bind their bank accounts. Nor would they be subject to the involvement of other intermediate agents, such as card issuers, merchant acquirers, and clearing agencies, in processing payments.

## Programmability

The e-CNY obtains programmability from deploying smart contracts that do not impair its monetary functions. Under the premise of security and compliance, this add-in feature enables automatic and self-executing payments according to the conditions or terms agreed upon by both parties.<sup>18</sup> This ‘smart’ function is still out of reach for the existing third-party payment platforms.

## More transaction scenarios

Like the physical CNY, the e-CNY wallet app allows ‘dual offline’ transactions when both the payer and payee are not connected to the internet. Although not formally recognised as a panacea for financial inclusion, this feature is viewed as offering a better guarantee for those who do not use the internet or are in areas with poor or unstable network coverage to have ready access to the convenient and efficient payment services supported by the e-CNY system.<sup>19</sup> Third-party payment platforms, on the other hand, require internet or telecom connections for payment transactions. Not containing the ‘dual offline’ feature limits their service coverage.

## Maintaining fair competition in the retail payments market

By removing various technical and operational barriers in the retail payment market, the e-CNY is anticipated to not just help improve the functional usability and social accessibility of affordable and effective digital payment tools and financial services. It is also expected to inspire a coordinated development of various existing mobile payment methods. The digital RMB and general electronic payment tools are seen as being both different and complementary, and hence able to join efforts in creating a fair and inclusive retail payments market.<sup>20</sup>

# Advantages and Benefits of Third-Party Payment Processing Services

## Seamless convergence with money market funds

Many third-party platforms in China offer payment services for money market funds. Users just need to transfer their bank account deposits to their accounts on the third-party platforms through which they can pay for purchasing money market funds. That third-party platforms enable their users to carry out payment directly for money market fund shares meets their dual needs for wealth management as well as payment.<sup>21</sup> To date, e-CNY wallets have yet to be directly and seamlessly connected with money market funds.

Money kept in the third-party payment platform accounts, on the other hand, belongs to the deposit currency (M1 and M2) category, which will generate some returns for the user. Money market funds cannot be redeemed during non-trading hours, but users of third-party platforms, such as WeChat Pay and Alipay, can still make payment with their funds' money in after-market hours. The e-CNY is a debt of the PBC to the holder, it is positioned as cash (M0), has the same status as the physical CNY, and thus does not generate interest for the holder. Yet the e-CNY adopts a payment-as-settlement model, which means e-CNY wallet users cannot use their money market funds shares to make payments during non-trading hours.<sup>22</sup>

## Closer to target users

WeChat Pay has been rapidly increasing its shares in China's third-party payment market. One important contributing factor is that its developer, Tencent, has both facilitated its growth into the most frequently used social media app for the smartphone in China, and made it a mobile wallet for Chinese consumers. The e-CNY wallet, however, lacks social networking and other functions. The single-purpose e-CNY app may thus not easily incite public interest or motivate consumers to use its wallet.<sup>23</sup>

## Consumers' payment habits

Another oligarch in China's third-party payment market is Alipay. An important reason for its success is that it is connected to 'Taobao.com', China's largest online shopping platform, and provides payment solutions for consumers and merchants on Taobao. Coupling with China's most popular e-commerce platform helps foster public familiarity with Alipay. With its competitive advantage in the third-party payment market, Alipay has also been designated by many local government agencies to be their primary online payment services provider.<sup>24</sup>

## Credit investigation and loan services

Third-party payment platforms typically use Big Data to aggressively promote microfinance and, at the same time, to actively develop their third-party credit investigation business. For example, Alipay resorts to Big Data to analyse users' transaction behaviour, score their credit (named Sesame Credit), and provide them with their credit ratings. Many commercial banks also use a Sesame Credit Score to help decide what risk control, loan issuance, or other follow-up services to offer their customers. There are, however, publicly voiced concerns that potential structural and design flaws may result in the platform credit system misleading consumers or causing significant harm to them.<sup>25</sup>



# Impacts of e-CNY on the Third-Party Payment Market

## Short-term effects

Launched in four Chinese cities in April 2020, the e-CNY pilot programme has now been expanded to 23 cities with a total population of 260 million.<sup>26</sup> Many Chinese think and 'feel' that the third-party payment platform, which they have been using, will remain their 'wallet', and that the e-CNY will be the 'money' in it. Chinese believe third-party payment platforms should be in the same 'dimension', that there should not be much competition between them, and the impact of the e-CNY on third-party payment platforms should be limited.<sup>27</sup>

Whether the above understanding is premature, third-party payment platforms are already extremely popular among the Chinese both when they live in China and when they travel overseas. The e-CNY however, is still in the pilot phase, and there is not yet a fixed timetable for its official launch. Even after its issuance, the e-CNY may require help from third-party payment platforms for its promotion, application, and circulation. Chinese economists and finance specialists maintain that all this implies the potential for a partnership arrangement between the e-CNY and third-party payment platforms.<sup>28</sup>

In any case, third-party payment platforms have already developed many payment scenarios that are widely used and commonly liked by the Chinese public. Consumers, merchants, businesses, and many other private and public entities are also very much accustomed to using the platforms for making payments and settling transactions. Additionally, leading third-party payment platforms provide a wide range of financial market products that can bring reasonably stable returns to their users. Equally important for consumers is the fact that merchants bear all the payment and settlement fees required by third-party platforms, and there are no additional charges for shoppers. Given that the e-CNY imposes no fees on its wallet holders, it may prove just as appealing to the Chinese public. Yet if it does not offer interest, or generate returns, or provide investment and 'wealth management' products, third-party payment platforms may remain highly attractive for users. The underlying reason is simple: diversified services offered by the platforms maintain and increase user loyalty and retention.<sup>29</sup>

## Long-term effects

Providing payment services and solutions is the core business of Chinese third-party payment institutions. Their main innovation is mobile payment services operated and performed on the Internet platform. The e-CNY focuses on replacing cash (Mo) in circulation and is mainly used in the retail sector, which is similar to third-party payment. Yet the e-CNY is endorsed by the central bank's credit and has an unlimited legal tender status. It thus has a higher degree of security and reliability than that of a third-party payment. Supported by QR code scanning, near field communication (NFC), dual offline, and other advanced payment technologies, the e-CNY further increases the efficiency and convenience of payments settlement and enhances the applicability of the central bank's digital currency.<sup>30</sup> This suggests that the issuance of the e-CNY may in fact pose challenges to the payment services of third-party platforms.

It is widely recognised and publicly acknowledged in China that its third-party payment market has in recent years been functioning in a duopolistic competition framework. In the second quarter of 2020, for example, the two giant mobile payment service providers, Alipay and WeChat Pay, had a market share of 55.39% and 38.47% respectively. That the two platforms accounted for over 90% of the third-party mobile payment market has itself fueled great public interest in whether the digital RMB can break the duopoly.<sup>31</sup> Studies published by Orient Securities, a Chinese investment bank and brokerage firm, suggest that the answer to the question will likely be positive. An important reason is that in addition to its safer

and more convenient features, the e-CNY will help enhance the competitive importance of commercial banks in the mobile payment market. Specifically, commercial banks will be designated as e-CNY's operating agencies and hence play a leading role in the development of a digital RMB ecosystem.<sup>32</sup>

Additionally, the e-CNY offers more extensive payment scenarios than Alipay, WeChat Pay, and other third-party platforms have been able to. These include:

1. loose account coupling, that is, no need to bind a bank account as required by third-party payment processors;
2. dual-offline payment which is not possible on mobile payment platforms;
3. a legal tender of payment that merchants cannot refuse to accept as they can with Alipay and WeChat Pay;
4. no business barriers, such as those that disable direct transfers between third-party payment platforms;
5. programmability that enables automatic payment transactions according to the conditions and rules agreed upon by the payer and the payee.

Equipped with these features, the e-CNY may exert substitution effects on third-party payment platforms, and hence push them to reinvent themselves for a more inclusive financial market.<sup>33</sup>

Besides the domestic retail market, the e-CNY will also have a significant impact on the cross-border payment business of third-party payment platforms. Due to China's foreign exchange control, cross-border payments processed on third-party platforms are mainly B2C transactions. The design of the e-CNY for cross-border usage is intended to achieve 24/7 synchronous, or simultaneous completion of exchange and payment settlement.<sup>34</sup> The e-CNY's advantages of instant exchange and higher security may attract more users of cross-border payment services from third-party payment platforms.

## Opportunities for Third-Party Payment Platforms

The exchange, payment, and management of a digital currency all need the support of a digital wallet. Given the central role of the digital wallet in the digital currency payment system, third-party platforms can rely on their technical sophistication to provide wallet development services for the e-CNY. Participating in the development of the standards of digital currency wallets will also give them a competitive edge in providing technological support for e-CNY operation.<sup>35</sup> That the digital *yuan* is still a new and evolving phenomenon of China's e-commerce also necessitates the support of third-party payment platforms for its promotion among Chinese consumers and businesses.<sup>36</sup> In their complementary interactions, the e-CNY and its circulation services will create increments for commercial banks and the third-party payment market, including hardware replacement, software iteration, transaction records, and other links.<sup>37</sup>

## Notes

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- <sup>33</sup> HUANG Minxue, 'Shuzi renminbi de shichang fazhan yu yunzuo jili' [Market development and operation mechanism of the digital RMB], *Renmin luntan* (People's Tribune), No. 29, 2021, pp. 78-81.
- <sup>34</sup> XIE Yuxin and MA Kun, op. cit.
- <sup>35</sup> Ibid.
- <sup>36</sup> PBC, July 2021, op. cit., p. 8.
- <sup>37</sup> Orient Securities, op. cit., p. 17.