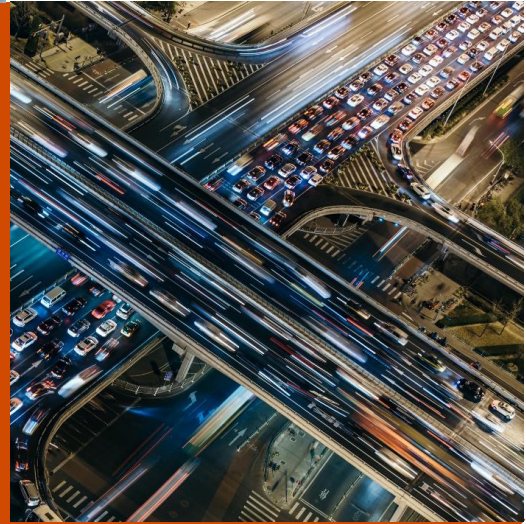


The business implications of China's digital RMB





Abstract



China's digital RMB is expected to establish the infrastructure for the long-term development of the country's digital economy and have a profound impact on business. Compared to banknotes, digital RMB will save costs in terms of printing, circulation and trading and will promote the efficiency and productivity of the financial system and society as a whole. The formation of a digital RMB ecosystem may take time as technology advances and the digital economy penetrates into all areas of life. While the impact on the mobile payments landscape may not be obvious in the short-term, digital RMB may pose a challenge in the medium to long term. Digital RMB may provide the basis and essential infrastructure needed to cultivate innovation in FinTech firms and create business opportunities for commercial banks.

At the end of May 2020, the People's Bank of China (PBOC) Governor Yi Gang disclosed the latest progress on digital RMB. Top-level design, standardisation, research and development and joint trials have been completed based on the ideas of a hybrid model, digital currency as a complement to M0 (physical bank notes and coins in circulation) and controlled anonymity. Internal beta testing of digital RMB has also been piloted in various cities, to assess theoretical reliability, stability of the

system, availability of functions, convenience of procedures, applicability of scenarios and controllability of risks. Subsequently on 12 August, the Ministry of Commerce issued the *Overall Plan for Comprehensively Deepening the Pilot Program of Innovative Development of Trade in Services* which officially announced the implementation of digital RMB pilot projects in the Beijing-Tianjin-Hebei Economic Zone, Yangtze River Delta, Guangdong-Hong Kong-Macao Greater Bay Area and other regions in Central and Western China. Thus, the adoption of digital RMB in China is expected to gradually expand.

The digital RMB is undoubtedly expected to establish one piece of the infrastructure for the long-term development of the country's digital economy and promote China's

competitive edge in the fourth Industrial Revolution (or digital revolution). Its value and far-reaching impact may be no less than that of the country's other ground-breaking homegrown inventions including the BeiDou global satellite-based navigation system, high-speed railway system or C919 civil jet aircraft. Metaphorically speaking, China's digital economy can be viewed as a new energy vehicle whose core component of battery is digital RMB.

Although most domestic consumers are accustomed to mobile payments, which has led to the gradual drop in cash payments, digital RMB may bring about a lot of business opportunities and has the potential to disrupt several industries. This report outlines the business implications of digital RMB.

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What are the main characteristics of digital RMB?

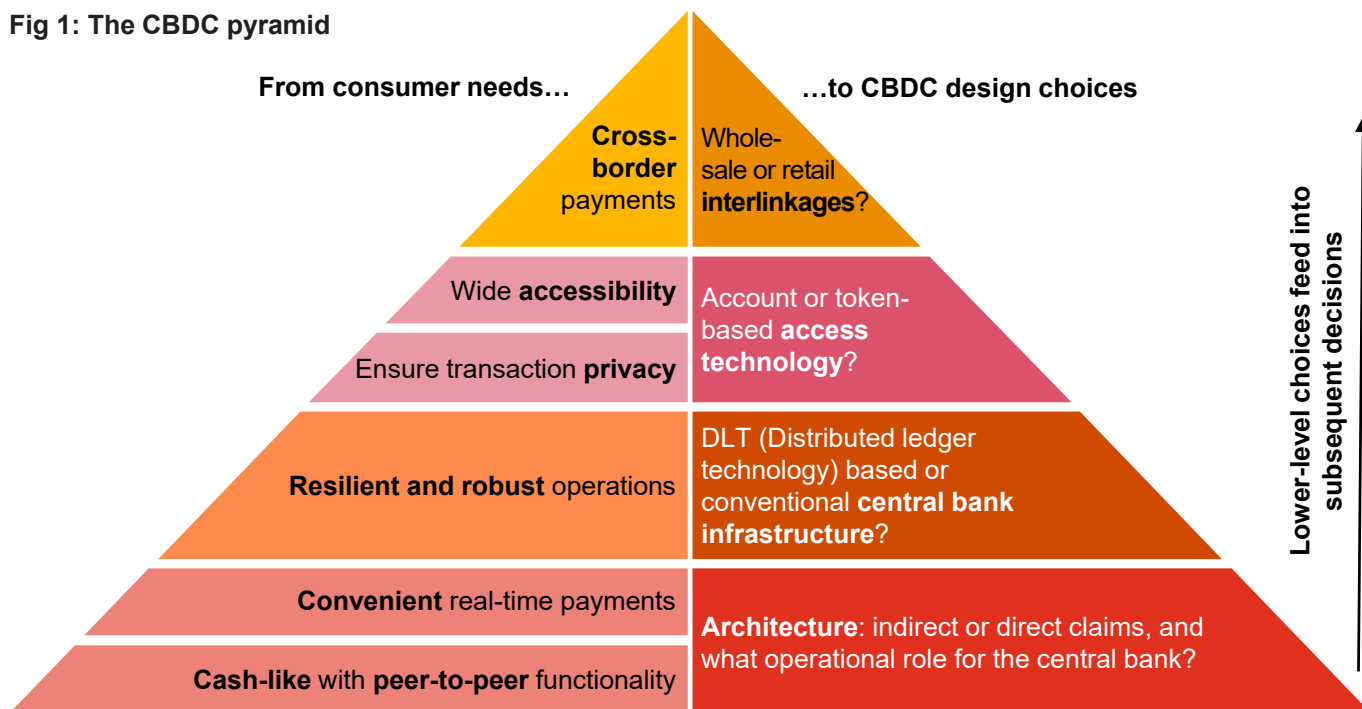
Digital RMB is a Central bank digital currency (CBDC) issued by People's Bank of China (PBOC). CBDCs have been widely recognised in the international community and many central banks around the world have announced ongoing studies on the launch of their own digital currencies. As defined by the Bank for International Settlements (BIS), a CBDC is a new type of central bank currency which is different from physical cash or central bank reserve or settlement accounts. Similar to traditional currencies, CBDCs have four attributes:

1. Issuer (central bank);
2. Form (digital or physical);
3. Level of accessibility (broad or narrow);
4. Technology (peer-to-peer token-based or account-based).

CBDCs refer to digital currencies issued by a country's central bank. These fall into two categories, wholesale CBDCs and retail CBDCs. The former mainly applies to the wholesale setting of interbank payments or securities settlements. The latter applies to the retail setting and is accessible to the public. China is adopting a retail CBDC, and perhaps also cover wholesale in the future.



Fig 1: The CBDC pyramid



Source: Auer and Böhme (2020); BIS¹

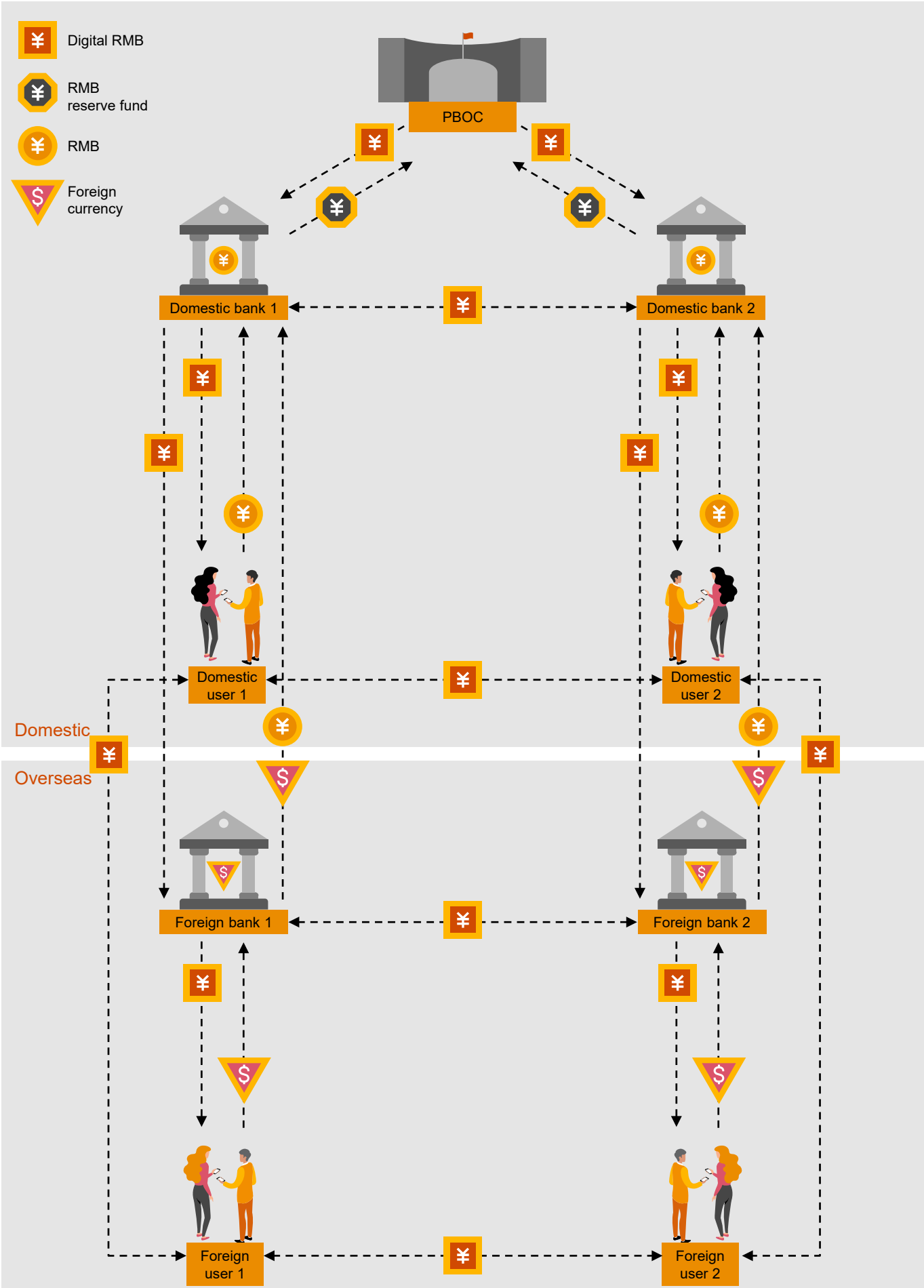
Fig 2: Design characteristics of the PBOC's digital RMB (pilot phase)

Design aspect	PBOC digital RMB design choices	Details
Inter-linkages	Retail & wholesale interlinkages	Tourists and business travellers may be able to use CBDC domestically in China with a foreign cell phone number.
Account on token-based access?	Mostly account-based , allowing for smart money interfaces	Different levels of user identification. Balances and transaction limits increase with the strength of the KYC (Know Your Customer) requirements.
DLT-based or conventional CB infrastructure?	PBOC runs conventional infrastructure and DLT	PBOC runs conventional infrastructure and DLT, private sector free to choose.
Architecture: indirect or direct liability, and what operational role for the central bank?	Hybrid CBDC	CBDC is a direct liability on the central bank, private sector intermediaries ("Authorised operators") execute payments, central bank periodically receives a backup copy of balances and transactions.

Source: Adapted from Auer and Böhme (2020) and conversations with PBOC staff; BIS²

¹ BIS Working Papers: <https://www.bis.org/publ/work880.pdf>
² Same as above

Fig 3: Domestic/overseas digital RMB circulation



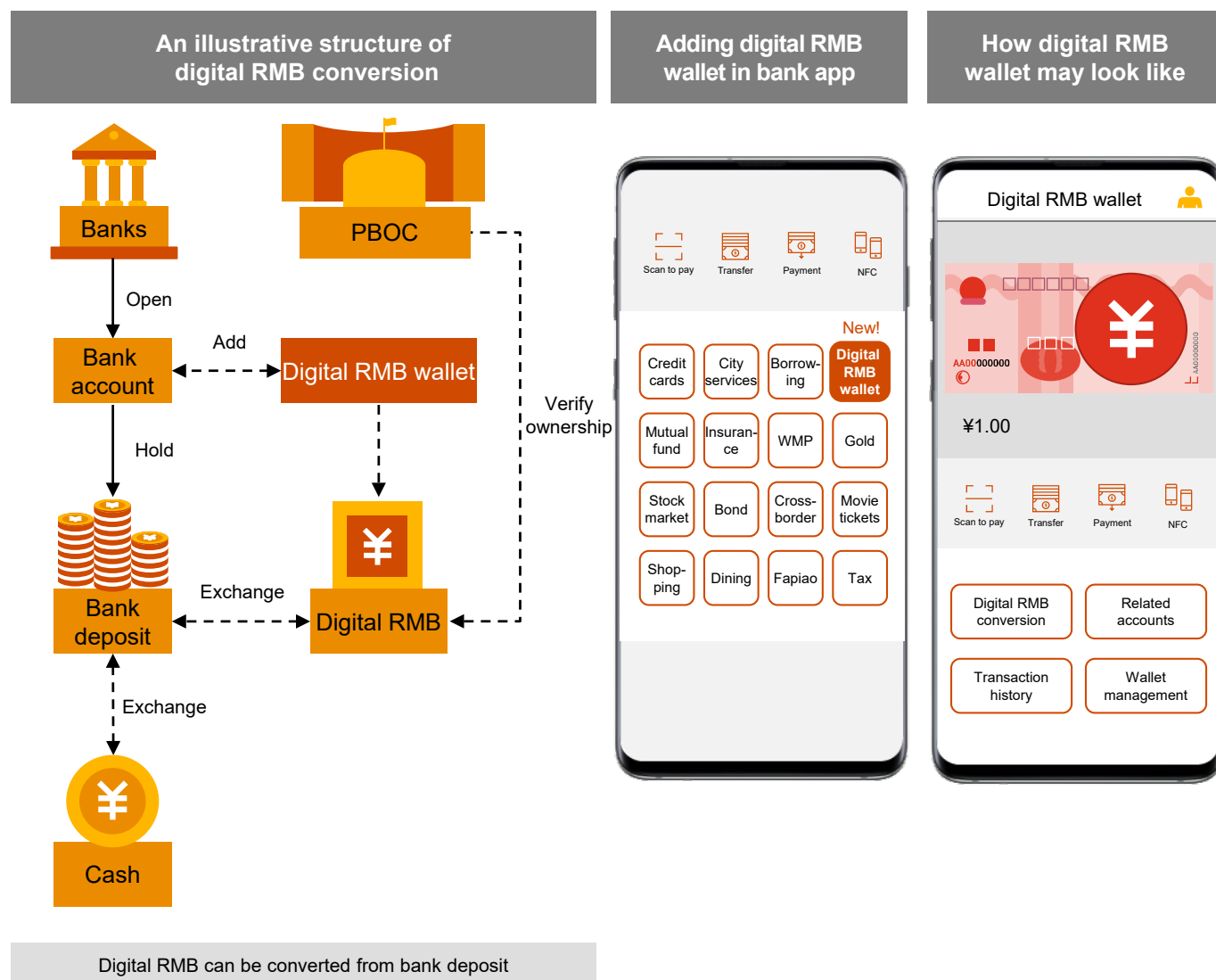
Source: PwC China

According to Mu Changchun, Head of the Digital Currency Research Institute (DCRI) of the PBOC, China's CBDC is a digital form of the RMB rather than an entirely new currency. Issued by the PBOC, the operation and public exchange of the digital RMB is handled by designated

operating agencies (China's commercial banks). Modelled on the account-based system, digital RMB supports "loosely coupled account links" and is a controllable and anonymous payment instrument with value and legal characteristics that are equivalent to banknotes and coins.

Fig 4: Mobile app for digital RMB (for reference only)

Digital RMB wallet may be incorporated in bank mobile apps, but separate from the traditional bank account



This is a hypothetical model based on media reports and public discussions of PBOC officials for illustrative purposes only.

Source: PBOC, Bloomberg; sorted out by PwC China

In other words, the digital RMB as a legal currency acts as a “digital” complement to banknotes, and has three main functions: pricing (measure of value), payment (medium of trading and circulation), and investment (storage of buying power and wealth). Compared to banknotes, digital RMB will save costs in terms of printing, circulation and trading and will promote the efficiency and productivity of society as a whole, laying a solid foundation for long-term development of the country’s digital economy. According to the PBOC, digital RMB has the following main characteristics:



1. Legal tender: Like banknotes, digital RMB is a legal tender for payments that is endorsed by national credit. Both are issued by the PBOC and can be traded in commercial banks. This indicates that the digital RMB follows a hybrid CDBC model.

2. Anonymous dual offline transactions: Digital RMB can be traded or transferred between mobile phones without the need for Internet access. In order to complete a transaction or transfer, mobile phones or devices simply need to make contact. While anonymous trades can be executed this way, large payments or fund transfers will require registration using the user’s legal name, which forms an important foundation for the future cross-border circulation and internationalisation of digital RMB.

3. Equivalence to banknotes: The ratio of the value of digital RMB to banknotes is 1 to 1. Commercial banks need pay 100% of their reserve funds to the PBOC in order for digital RMB to be exchanged to the public. This will prevent speculation of the digital RMB. In the future, digital RMB and banknotes will generally be seen as interchangeable in cross-border trading.



4. Diversified circulation: One of the biggest differences between digital RMB and banknotes is that in the future a digital RMB account can be created based on a number of unique identifiers, for example a digital RMB wallet based on a user’s vehicle license plate number. In this sense, the digital RMB will be able to support various forms of circulation, payment and investment.

5. High level of security: Compared to banknotes that can easily be lost, the digital RMB is a more secure form of payment. As a CBDC, at its core the digital RMB is based on disintermediated digital information, and validation methods and systems can prevent it from being changed in circulation. As such the currency is immune from counterfeiting, tampering or duplication.

6. Bank account is not necessary: A bank account will not be needed in order to create a digital RMB wallet in the future. The digital RMB is compatible with “loosely coupled account links”. “Loose coupling” can reduce the impact of changes and failures of certain systems on the overall operation. This will allow current restrictions to be lifted wherein third party payments are limited to users that hold bank accounts.

What changes might digital RMB bring to consumers?

From a consumer's point of view, digital RMB may play a vital part in payment (medium of trading and circulation) and investment (storage of buying power and wealth). Although most consumers in China have become accustomed to cashless transactions due to the rapid growth of mobile payments in recent years, these are still based on cash that is held in bank accounts. In this context, the rise of digital RMB may provide more choices for consumers.

First of all, in the future consumers will be offered another cash-free option, digital RMB, when transacting in RMB. As digital RMB becomes more prevalent, investment using the digital currency will become possible. However, the promotion of the digital RMB option among consumers needs to be conducted step by step, and ensuring its convenience and additional benefits will be particularly important. This will require further planning by the central bank, commercial banks and other institutions.

For example, given that commercial banks compete for deposits, depositors will not be willing to transfer their deposits from one bank to another without additional benefit.

Second, to ensure consumers are willing to use digital RMB when receiving and making payments, the easiest method may be to extend preferential government policies and provide incentives, for example from the PBOC, Ministry of Finance, state-owned enterprises or any other department concerned as well as offer exemptions or fee waivers from commercial banks. For example, providing domestic residents with the ability to use digital RMB in cross-border trading (i.e. ability to circulate, trade and invest in digital RMB that is below a certain amount with no charge or enable the free flow of RMB funds if it is below a minimum amount). Another example could be that digital RMB accounts can be linked to electronic toll collection (ETC) and petrol station payments, utility bills, medical insurance bills, and pension accounts. The digital RMB can also become a preferred currency for the distribution of government subsidies and wages from private companies and public organisations. This will ultimately save costs and improve efficiency.

Whether or not the characteristics of this new digital currency are accepted by users, commercial banks and other institutions will still have to invest heavily in scenario planning, marketing, and cultivating market demand. Therefore commercial banks will need to adopt "Internet thinking" to promote the digital currency.

In the long run, the formation of a digital RMB ecosystem may take time as technology advances and the digital economy penetrates into all areas of life. Consumers may choose to ultimately hold part or most of their currency in digital RMB. It is hard to tell whether or not digital RMB can develop as rapidly as mobile payments have over the past few years. The key to success lies in whether digital RMB is accepted by consumers and market players including private companies and financial institutions. While the initial acceptance of digital RMB may be slow, as with traditional vehicles that will eventually be replaced by new energy (and self-driving) vehicles, adoption will gradually increase with time.



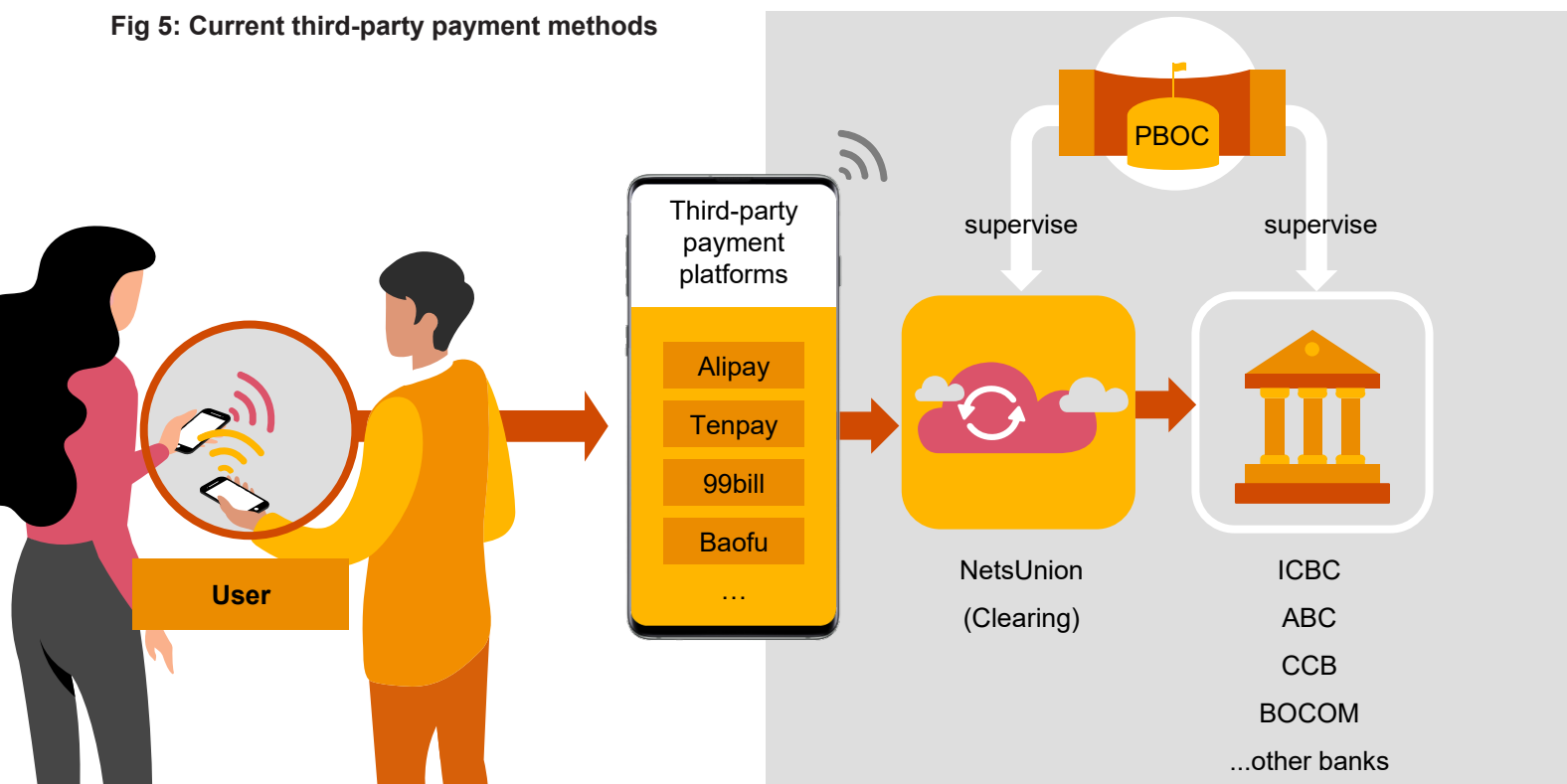
Is it likely that digital RMB will reshape the mobile payments landscape?

Many worry that China's CBDC or digital RMB may disrupt the current mobile payments landscape which is dominated by Alipay and WeChat Pay. In this regard, Mr. Mu Changchun has stated: "The CBDC will not have a significant impact on the current mobile payments landscape. Instead, it will diversify the payment methods available to consumers and satisfy more of users' payment needs". This view was echoed by BIS in its report³: "In addition to providing a convenient complement to cash for use in on-line transactions, a CBDC would also bring more diversity to the

current mobile payments duopoly of Alipay and WeChat Pay, which collectively control 94% of the market for mobile payments". Therefore, digital RMB may bring about new changes to the mobile payments market.

Essentially digital RMB is a type of money or currency, while mobile payments are a method of collecting or withdrawing this money. Thus, the two are categorically different. While conversely there is no difference between digital RMB and bank accounts, and one can easily be converted to another at any point in time.

Fig 5: Current third-party payment methods



Source: PwC China

Furthermore, the greatest value of the mobile payments business for the platform companies lies in derived consumer behaviour beyond making payments as well as the value generated by their large ecosystems (which also benefits the consumers themselves). The success of Alipay and WeChat Pay can be attributed to the strengths and resources of their respective ecosystems. Without their large platforms or ecosystems, it is likely that they will have difficulty in remaining competitive.

As such the impact of digital RMB on the mobile payments landscape may not be that obvious in the short run. However in the medium and long term, the current duopoly may be challenged by policy changes, reshaping of business models, or technological progress. Nonetheless it is too early to tell whether a "tripoly" or another form of intense competition will take shape. In any case, the PBOC as a government division and issuer of a CBDC is unlikely to act as a third competitor within the mobile payments landscape.

³ BIS Working Papers: <https://www.bis.org/publ/work880.pdf>

Will digital RMB lead to tremendous opportunities for FinTech firms and commercial banks?

Digital RMB may provide the basis and essential infrastructure needed to cultivate innovation in FinTech firms. It may also bring about business opportunities for commercial banks and other financial institutions, particularly in areas such as digital transformation.

Focusing on FinTech firms first, the digital RMB fundamentally digitises money, which means that all aspects of the RMB from issuance, circulation, storage, to investment and cross-border flows can be converted into data. This addresses the tough 'last mile' challenge of FinTech firms which is their need to link up and process data using emerging technologies such as big data, blockchain, AI, cloud computing and even IoT. In this sense, in spite of the fact that China already leads the global FinTech landscape, it is expected that the digital RMB will usher in a new era of development for the country's FinTech industry.

As for financial institutions such as commercial banks, it is apparent that the PBOC will not let the digital RMB

become a burden for these organisations. As pointed out by Fan Yifei, deputy PBOC Governor, the introduction of the digital RMB will not cause competition for interbank deposits, nor will it lead to greater reliance on the interbank loan market or impact the lending capacity of commercial banks. Therefore digital RMB will not give rise to any sort of "financial disintermediation".

In any case, as far as commercial banks and other financial institutions are concerned, the fact that digital RMB will cause all aspects of China's currency to easily be converted to data may also bring about unprecedented innovation among banks. In the long run, commercial banks may transform into "credit data management firms" using blockchain technology, biometrics and big data in order to centrally manage clients' financial data. In the future, it may become more challenging to distinguish between commercial banks and FinTech firms as the two may become fully integrated.



What is the potential impact on other fields or industries?

Although the PBOC has stated that the digital RMB will initially act as a complement to M0 (physical bank notes and coins in circulation), judging by the development and application of emerging technologies in the financial industry in recent years (particularly digital technology, the internet, and AI), digital RMB may trigger a domino effect on several other industries and fields.



1. RMB internationalisation and trade settlement:

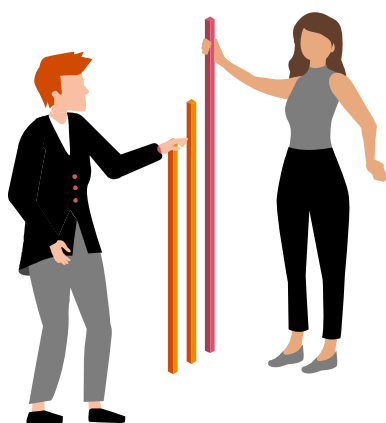
As other countries gradually introduce their own CBDCs, China can take the lead in terms of monetary reforms by piloting the digital RMB or inputting some amount of the digital currency to pursue global convertibility and circulation (this will be technically feasible due to the advantage of traceability). In the area of international trade settlement, as China is expected to be the world's first major economy that launches a digital currency, the country can use its first-mover advantage to create a new global settlement system or can withdraw from long-standing dependence on the SWIFT payments system.

2. Significant opportunities in the corporate customer payments market:

The programmable features of digital RMB have the potential to contribute significantly to the supply chain finance and can make up for the shortcomings of the second generation payments system. From the regulatory perspective, there are numerous application scenarios such as the distribution of subsidies (earmarked funds), charitable donations, and so on.

3. Increase China's financial efficiency and optimise resource allocation:

China's finance and banking industry is not as developed as that of advanced economies and more needs to be done to improve the market-based allocation of financial resources. As the gradual adoption of digital RMB occurs, the costs of the printing and circulation of banknotes and coins will decline. In addition, settlements and transactions across the entire financial system will transition to being conducted using the digital currency, which will lead to a higher level of efficiency. Furthermore, digital RMB may drive the market-oriented allocation of financial resources and lead to financial reforms. For instance, for individuals including entrepreneurs who make loans or borrow money via their digital RMB accounts, given that these accounts are accompanied by a lot of personal information or assets (based on application of the blockchain technology), the likelihood of contract breaches and defaults will decline.



Last but not least, the digital economy has been one of the greatest driving forces behind the sustainable and healthy development of China's economy for the past several years. According to a report by the China Academy of Information and Communications Technology (CAICT), the digital economy now accounts for 36% of China's GDP and is expected to account for more than 50% by 2030. If this occurs, China will definitely be poised to become one of the global leaders in the digital economy. The digital RMB has been supported by rapid growth of the country's digital economy and in turn it will act as a solid foundation and catalyst for this trend to continue. Digital RMB will generate new opportunities in a variety of fields and industries as well as for relevant companies.

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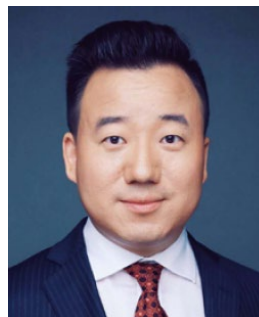
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