

6

Digital connectivity in China and Asia: The case of mobile payments

Yiping Huang and Xun Wang

Introduction

China seems unlikely to develop a new payment system, especially given its state-owned bank-dominated financial system. Many individuals hold at least two bank accounts (with 5.46 cards per person in 2018), as different banks provide differentiated services with different fees. Additionally, Union Pay, a bank card-based network that connects the accounts of different banks in China, has been functioning since 2002.

While China has the largest card system in the world, with nearly 9 billion cards, according to the People's Bank of China (PBC 2020), 91 per cent of these are debit cards—indicating an underdeveloped social credit system. To access this card-based payment system, merchants are supposed to be equipped with card-reader terminals connected via the internet to communicate and pay the processing fee for each transaction. These are two main reasons many merchants show little interest in this payment system.

Most small businesses do not have access to the card-based payment system and cash remains a dominant medium of exchange. Cash has disadvantages, however, including losses due to theft and the fact it is cumbersome for

merchants to handle large amounts. In these circumstances, an alternative payment system that lowers the processing cost and simplifies transactions might become more popular in China.

Smartphones and QR-codes are vital components in the revolution of mobile payment systems. Smartphones provide a network of communication thanks to the rapid development of the internet and QR-codes allow small businesses that are not connected to the internet to access the payment system. More importantly, the adoption of QR-codes significantly reduces the processing fees for merchants.

In this chapter, we introduce the innovation and development of China's mobile payment system, especially from the perspective of the development path of Alipay. We argue that the mobile payment system has complemented the traditional bank-based financial sector by improving individual and household risk-sharing and promoting entrepreneurship in China. We explore the prospects for cooperation in mobile payments between Asian and other emerging and developing economies and also analyse issues and challenges to be addressed to further digital connectivity in this region.

The rise of China's mobile payment system

Alipay and WeChat Pay are now the two dominant platforms for payments in the Chinese market. As shown in Figure 6.1, the number of active users of both platforms has grown substantially since 2013. After the advent of the payment code in 2017, the number of Alipay's active users experienced sharp growth, rising from 520 million to 900 million in 2018. And it has been estimated that WeChat Pay, as part of the largest social network platform, has about 1 billion regular active users.

Estimates suggest more than 90 per cent of residents in large cities in China use Alipay or WeChat Pay as their primary payment method, with cash second and debit/credit card third (Klein 2019). The transaction volume of mobile payments in China reached RMB277 trillion (more than US\$41 trillion) in 2018 (Figure 6.2), 92.6 per cent of which were made via Alipay (53.8 per cent) and WeChat Pay (38.9 per cent).

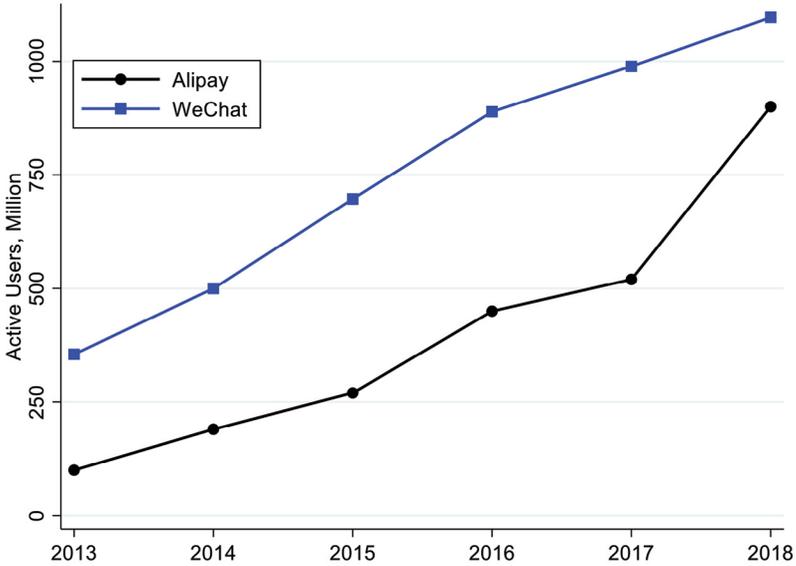


Figure 6.1 Active users of Alipay and WeChat, 2013–18 (million persons)

Sources: Statista (www.statista.com); China.org.cn; Xinhua News Agency (www.xinhuanet.com); Technasia (www.technasia.com).

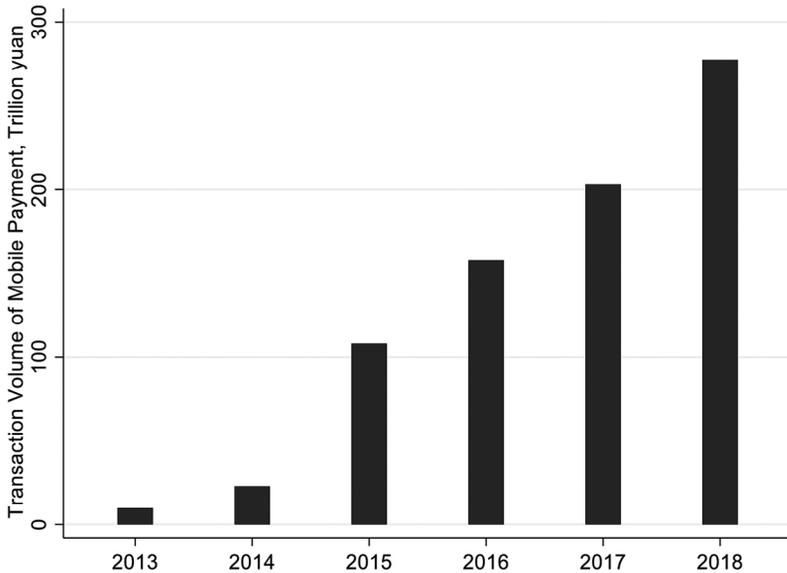


Figure 6.2 Transaction volume of mobile payments in China (RMB trillion)

Sources: CEIC; PBC (www.pbc.gov.cn/en/3688006/index.html).

Making a cross-country comparison, China has ranked number one in mobile payment markets (for transaction volume and penetration rate) in the world. The proportion of adults using mobile payments in China was as high as 76.9 per cent, and the proportion in rural areas was 66.51 per cent in 2017. The penetration rate of mobile payments in China was 77 per cent in 2016, while the rate was 48 per cent in the United States, 47 per cent in the United Kingdom, 48 per cent in Germany and 38 per cent in France. The penetration rate in Japan was only 27 per cent—far lower than in China.

Mobile payments in China have played an increasingly important role in the settlement system. According to a report on the overall operation of the payment system, the number of mobile payment transactions grew at an annual rate of 61 per cent, reaching 60.5 billion, in 2018. Mobile payment platforms have evolved into their own ecosystems, covering businesses such as financing, financial management, credit references and big data, which will continuously reshape China’s financial structure.

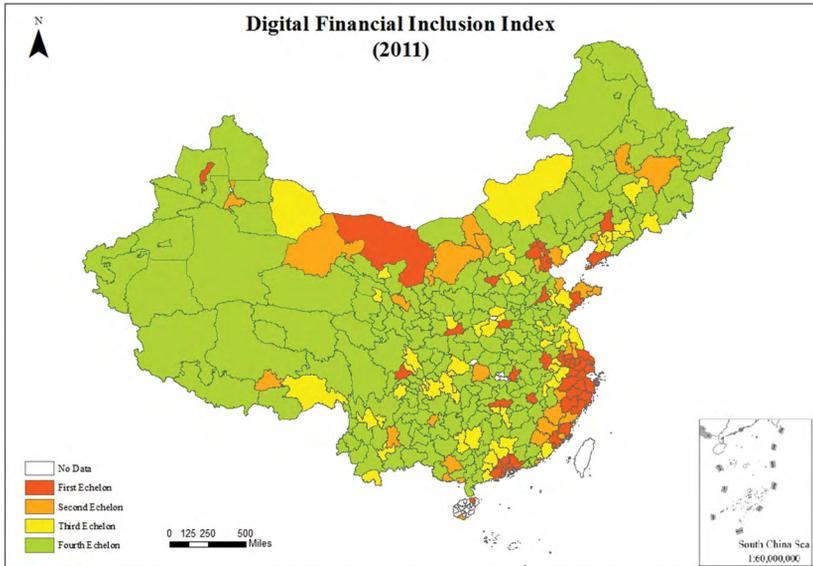


Figure 6.3 Rapid regional convergence of fintech development, 2011

Note: The echelon classification rule is as follows: taking the highest-level index of the year as the benchmark, cities with an index higher than 80 per cent of the benchmark index are classified as the first echelon; 70–80 per cent are the second echelon; 60–70 per cent are the third echelon; and less than 60 per cent are the fourth echelon.

Source: Institute of Digital Finance (2011–18).

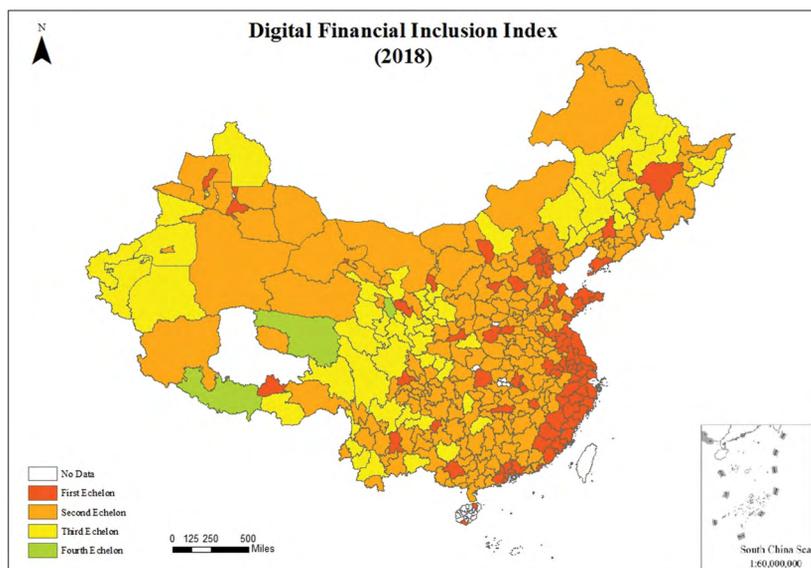


Figure 6.4 Rapid regional convergence of fintech development, 2018

Note: The echelon classification rule is as follows: taking the highest-level index of the year as the benchmark, cities with an index higher than 80 per cent of the benchmark index are classified as the first echelon; 70–80 per cent are the second echelon; 60–70 per cent are the third echelon; and less than 60 per cent are the fourth echelon.

Source: Institute of Digital Finance (2011–18).

The rapid development of digital finance in China is uneven. The growth in the eastern coastal region has been fastest, with central provinces coming in second and the western region third. It is worth noting that the central and western regions have narrowed the gap with the eastern region very significantly. The Peking University Digital Financial Inclusion Index shows rapid regional convergence of fintech development in China, as shown in Figures 6.3 and 6.4 (see more in Guo et al. 2019).

How China's mobile payment system has evolved: The case of Alipay

With the popularity of personal computers increasing after 2000, more and more individuals were able to use them to easily access the internet. Initially lacking a well-developed social credit system, e-commerce in China grew very slowly. The trade volume of online shopping website Taobao in 2003 was only RMB34 million. Users were concerned about the

security of their money. So, the biggest problem with online transactions was the lack of trust due to information asymmetry between the buyer and the seller.

Alipay was initially developed to solve Taobao's trust issues by providing secure transactions. The secured transactions work like this: the buyer chooses goods on Taobao and pays via Alipay; Alipay informs the seller to deliver the goods and sends the payment to the seller after the buyer confirms receipt of the goods. During this process, Taobao serves as a trading intermediary that temporarily holds the money for the two parties.

With more and more goods supported by secured transactions, the volume of bank account transfers increased the pressure on banks, so that, for example, the West Lake Branch of the Industrial and Commercial Bank of China once even hoped to stop cooperation with Alipay. Meanwhile, Taobao was required to pay expensive transfer fees to the banks. How to reduce the transfer costs and the pressure on the banks? If every user in the Alipay ecosystem has a virtual account, into which the buyer can deposit their money, and the seller can receive the money automatically after a successful transaction, the efficiency of settlement would be significantly improved and the transfer cost tremendously reduced.

Driven by this innovative idea, Alipay was separated from Taobao in December 2004 and focused mainly on development of a payment system and the promotion of social trust. To promote users' confidence in Alipay, in February 2005, cofounder Jack Ma announced full compensation coverage for payments using the system. At that time, another problem about which users often complained was the success rate of payments, which ranged from a low of 40 per cent to a high of 66 per cent in 2010. That is, bad payment experiences were causing merchant on Taobao to lose roughly half of their customers.

Quick payment was the alternative solution, the basic logic of which was that Alipay would send the bank a deduction order on the user's account on behalf of the user. This was quite hard to arrange in 2010 as this logic contradicted banks' traditional risk management. Traditionally, by methods such as the U-Shield app, banks had to ensure a deduction order was issued by the user. While security was enhanced, the convenience of payment was greatly reduced. To complete a payment, it is necessary to

insert a U-Shield and then jump to the payment page provided by the bank. For each additional operation, the probability of payment failure will increase.

Alipay finally persuaded banks by paying risk-loss margins and arranging deposits with the branches, which greatly helped Alipay expand the coverage of online payments. Compared with the one-step quick payment, under traditional online banking services, consumers needed to jump through seven webpages to complete a payment. More importantly, the success rate with quick payments reached 95 per cent, which is 30 percentage points higher than that with the business-to-consumer model of online banking. In this sense, quick payment enhanced the convenience of online payments in the era of the personal computer and also paved the way for mobile payments.

The advent of Apple signalled the coming era of smartphones and mobile internet—the uptake of which accelerated after 2010. One year after the introduction by Tencent of WeChat, which is now the most popular social media platform, mobile internet users exceeded desktop users for the first time, in 2012. In 2013, Alipay launched its ‘All-In’ strategy and shifted its business focus to the area of wireless networks.

Since restructuring in 2013, Alipay’s wallet is no longer just a simple payment tool, but also has been positioned as a mobile life assistant and financial platform. Yu’e Bao, which functions as a money market fund in the new version of Alipay, rapidly occupied the dominant share of the mobile wealth management product market due to its double function of allowing deposits and paying interest. As shown in Figure 6.5, the interest rate paid on the balance in Yu’e Bao is, on average, 2 per cent higher than that of term deposits in a bank. Alipay is therefore known as the only wallet that makes money.

The ubiquity of Alipay’s payment QR-code, which launched in 2017, enabled the expansion of mobile payment services to small businesses due to the ease of transaction and lower processing fees. Merchants are not required to be online or download the Alipay app. All they need are two numbers: one for the mobile phone and one for the bank card. Alipay can then help the merchants associate with the QR-code for payment. When the consumer scans the code for payment, the money is directly transferred to the merchant’s bank account.

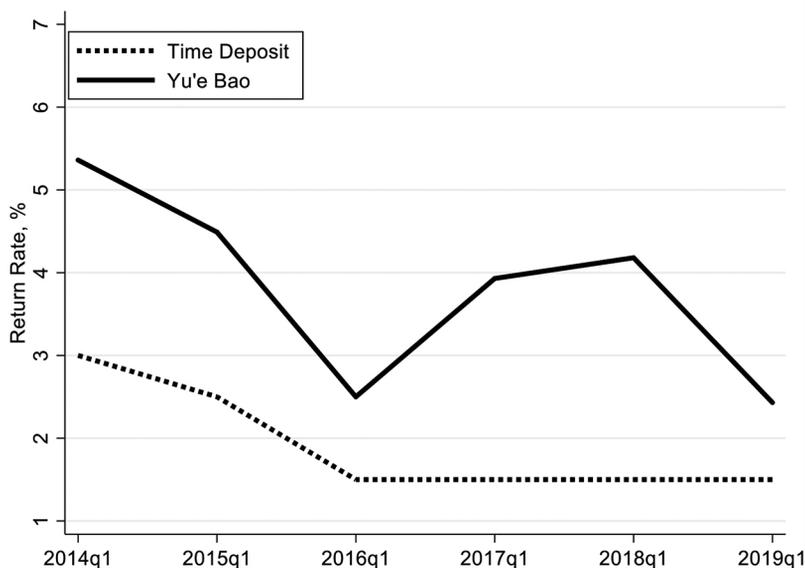


Figure 6.5 Return rates on term deposits and Yu'e Bao (per cent)

Source: Authors' calculations using data from CEIC.

Regulation of mobile payments in China

The relaxed regulations and legal guarantees provide an active institutional environment for China's mobile payment system. China enacted a law relating to electronic signatures in 2004, which established their legal validity for online contracts. Since 2005, the State Council has released a series of policy documents to accelerate e-commerce development. Alipay and WeChat Pay were launched accordingly without legal risks. The PBC did not begin to regulate and licence mobile payments until 2010.

The PBC released its 'Measure for the Administration of Payment Services for Nonfinancial Institutions' in June 2010, recognising the legal status of payment institutions. Since then, the central bank has issued nearly 270 third-party payment licences to Alipay and other payment companies and adopted prudential and inclusive regulations for this industry. These have allowed the rapid growth of mobile payments almost without compliance costs, entry barriers or regulatory constraints. With the rising risks in the peer-to-peer lending market, regulation of digital finance, including mobile payments, has been strengthened since 2015.

Table 6.1 Main policy documents on mobile payments in China

Year	Policy decision	Regulatory organisation
April 2009	Announcement on the registration of nonfinancial institutions engaged in payment and settlement services	PBC
June 2010	Administration of payment services for nonfinancial institutions	PBC
December 2010	Regulations on the administration of payment services for nonfinancial institutions	PBC
February 2011	Guidance on the supervision and management of payment services for nonfinancial institutions	PBC
May 2011	Notice on regulating management of commercial prepaid cards	State Council; PBC
March 2012	Management of anti-money-laundering and antiterrorism financing for payment agencies	PBC
July 2012	Notice on establishing a regulatory reporting system for payment agencies	PBC
September 2012	Management methods on prepaid card business for payment agencies	PBC
June 2013	Deposit methods for the customer provisions for payment agencies	PBC
July 2013	Administrative methods on bank card-acquiring business	PBC
December 2013	Notice on the pilot of foreign exchange payment services for cross-border e-commerce for third-party payment agencies	State Administration of Foreign Exchange
April 2014	Notice on strengthening the management of cooperative business between commercial banks and third-party payment agencies	China Banking Regulatory Commission; PBC
January 2015	Guidance for the pilot of cross-border foreign exchange payment services for payment agencies	State Administration of Foreign Exchange
July 2015	Guidance on promoting the healthy development of internet finance	PBC; Ministry of Finance; China Banking Regulatory Commission; China Security Regulatory Commission; China Insurance Regulatory Commission
December 2015	Management methods for internet payment services of nonbank payment agencies	PBC

Year	Policy decision	Regulatory organisation
April 2016	Implementation plan for special rectification of internet financial risks	State Council
April 2016	Implementation plan for special rectification on financial risks of nonbank payment agencies	PBC; Ministry of Finance; National Development and Reform Commission
August 2016	Specifications for barcode payment services	Payment Clearing Association

Source: PBC (www.pbc.gov.cn/).

Improving individual and household risk-sharing

Informal social networks in China provide an important means by which households and individuals share risk, while the insurance they provide is often incomplete. A number of reasons for this incompleteness have been proposed, including moral hazard and limited commitment, both of which result in positive correlations between consumption and realised income.

Transaction costs—the cost of transferring money or other forms of resources between individuals—are another source of the incompleteness. The rapid development and acceptance of mobile payments are a recent innovation in China, and have allowed individuals to transfer purchasing power within the ecosystems of Alipay or WeChat Pay, dramatically reducing the cost of sending money across large distances and between bank accounts.

Since China's accession to the World Trade Organization (WTO), families and social networks in China have been dispersed over large distances due to internal migration, mainly from the western provinces to the eastern coastal areas. This migration is largely motivated by employment and other opportunities. By the end of 2018, there were 288 million migrant workers in China, of whom more than 60 per cent were intercity migrants, leaving their home city for another to find work. Furthermore, more than 70 per cent of these workers did not bring their family members with them. In this context, lowering transaction costs could have significant impacts on the frequency and size of internal remittances, and hence the ability to smooth risk.

One predominant use of Alipay and WeChat Pay is for person-to-person remittances. Before mobile payment systems were available, most households delivered remittances through China Post or by bank transfer—a relatively costly and time-consuming process. Mobile payments require only several simple steps; not only are the actual costs of the transfers lower, but also the convenience and time saved mean substantial reductions in the total cost of sending and receiving money (see more detailed analysis in Wang et al. 2019).

Promoting entrepreneurship and innovation

Although most Chinese small and medium-sized enterprises (SMEs) are privately owned, they play an important role in supporting innovation, creating jobs and promoting local and national economic growth in China. SMEs are, however, suffering from significant credit constraints. In China's state-owned bank-based financial system, SMEs have to rely heavily on retained earnings to finance investments and operational costs.

Mobile payment systems in China not only facilitate payments and transfers, but also promote entrepreneurship and innovation. Lower-cost transfers and real-time payments motivate the setting up and operation of small business activities. Before mobile payments were available, it was inconvenient for vendors to break up and deposit large amounts of cash in their bank account.

With mobile payment systems, vendors need only post a QR-code on the door of, or somewhere conspicuous in, their premises. The adoption of QR-codes allows merchants who are not connected to the phone or internet to still access the payment system. It is easy for consumers to scan the QR-code and transfer money, with payments directly deposited into the vendors' bank accounts or digital wallets.

Apart from the convenience, the lower fees are a huge incentive for small businesses. A small business is generally charged more than 0.5 per cent of a payment in processing fees in the card-based system (0.5 per cent for debit cards and 0.6 per cent for credit cards). With mobile payments, processing fees vary from 0 per cent to 0.3 per cent. Some empirical studies have shown that the adoption of mobile payments significantly boosts the number of newly registered businesses (Huang et al. 2019).

More specifically, mobile payments promote agricultural households to start informal businesses and existing informal businesses to continue their operations or to transition to formal business (Wang 2019). The impact on entrepreneurial activities is associated with significant increases in income.

China's payment enterprises go global

Chinese payment technology has started to support mobile payment businesses in Asia, Europe and Africa. Unlike the approach to going global taken by the original equipment manufacturer trade and subsequent overseas mergers and acquisitions, Alipay's approach seems to be more popular. Its unique approach is characterised by 'local partnership plus knowhow output', which has greatly facilitated the outbound travel of Chinese tourists and, at the same time, helped to develop the local mobile payment system.

According to Ant Financial, Alipay has established cooperation with more than 250 financial institutions around the world. On the one hand, it provides offline payment services for overseas merchants and users; on the other, Alipay provides Chinese consumers with online payment services in 55 countries and regions around the world, covering catering, supermarkets, department stores, convenience stores, duty-free shops, theme parks, airports, and so on. Alipay offers real-time tax rebates at airports and urban areas in 35 countries and access to public transport systems in more than 20 countries.

Alipay has helped establish local versions in nine economies in Asia: Thailand (TrueMoney), the Philippines (GCash), Indonesia (DANA), India (Paytm), Malaysia (TnGD), Pakistan (easypaisa), Bangladesh (bKash), South Korea and Hong Kong (AlipayHK). In Thailand, TrueMoney's and Alipay's QR-codes are often posted together for Thai people and Chinese tourists, respectively. The number of Paytm users in India has increased from 25 million before 2015 to more than 250 million—making it the fourth-largest digital wallet in the world.

The existing international payment services are slow (with transactions often taking two to three days) and costly (with a processing fee of 7.3 per cent of the total sale, on average). In 2018, cross-border remittances based on blockchain technology became available between AlipayHK and

GCash, which achieved real-time transfers with relatively lower costs. Advanced technology supports this rapid development—for example, Alipay’s recognition of risk control now occurs within 100 milliseconds and its asset loss rate is less than 0.5 millionth, which is far lower than the 0.2 per cent of other international third-party payment companies. Alipay and its local partners have now served more than one billion active users worldwide.

Comparative advantage of China’s fintech companies

One striking achievement in recent years has been the leapfrogging development of Chinese fintech. According to a report by the Peterson Institute for International Economics, while the United States and other developed countries have advantages in most technological innovations, China has taken a leading position in mobile payments.

China’s fintech development currently leads the world, whether in terms of technology or business models. From the perspective of technology, China’s big data analysis technology is more advanced than that of other Southeast Asian economies. For example, Thailand’s TrueMoney wants to introduce China’s risk-assessment model, while China’s Alibaba has begun to provide a cross-border payment system based on blockchain for Hong Kong and the Philippine markets.

In terms of their business models, China’s fintech companies have expanded from payments to loans (microloans, Ant My Loan), insurance and financial management (Yu’e Bao). In contrast, the business model of Southeast Asia’s payment providers is still at an elementary level, focused mainly on payments. Chinese fintech’s business model also provides a reference for India and other Southeast Asian economies.

The popularity of smartphones and the internet has driven the transfer from online to mobile payments in China. When the volume of nonbank payments reached RMB9.2 trillion in 2013, Alipay surpassed PayPal to become the world’s largest online payment platform. One year later, nonbank online payments grew by nearly 170 per cent and exceeded the payment volume of debit cards soon after.

How have mobile payments in China leapfrogged the card-based system? The simple answer is the low penetration rate of credit cards and the rapid growth of big tech companies, which stimulated the emergence and rapid development of the online payment system in China. After 2000, China's internet companies began to expand. Due to the backward payment infrastructure, low penetration rate of credit cards and low level of e-banking business, e-commerce companies in China were encouraged to develop new payment tools to expand their market. Therefore, internet companies, including Tencent and Alibaba, have successively established payment systems to solve specific problems.

Alipay, launched in 2004, was originally designed to address the issue of a lack of trust between e-commerce participants due to information asymmetry. However, early in the 1990s, credit cards were widely accepted and could be used to initiate a refund, which allowed holders to conveniently pay at home and abroad. In this context, US e-commerce companies such as eBay and Amazon did not need to establish new payment systems to solve the trust problem.

However, one thing that should be kept in mind is the leapfrogging development of mobile payments in China has not been accompanied by the establishment of a sound social credit system. Consequently, in the absence of effective financial supervision, regulatory arbitrage by internet platforms is likely to lead to rapid growth in payment and peer-to-peer markets, damage to the legitimate rights and interests of consumers and even financial risk contagion.

Insufficient supply of inclusive financial services in Asia

Generally, the financial systems in Southeast and South Asia are underdeveloped, except for Singapore's, and there is a severe shortage of formal financial services. In Southeast Asia, 60 per cent of people do not have a bank account. Credit card penetration rates in Indonesia, the Philippines, Vietnam and other countries are less than 2 per cent. In India, 60 per cent of business orders are paid in cash. Although there are 800 million bank accounts in India, only 250–300 million people use them, and the formal financial services in Bangladesh are even more backward. Meanwhile, these regions have large populations and a very

young demographic structure (70 per cent of people in Southeast Asia are aged under 40 years), so they have a strong ability to accept new technologies. Therefore, the fintech markets in Southeast and South Asia boast very broad prospects. In fact, the development of fintech can to a large extent help relieve the problem of insufficient coverage of financial services and improve the welfare of local residents.

Compared with China, Southeast Asia's fintech is still in its initial stage and the accompanying infrastructure lags far behind. Therefore, the fintech business model in the region differs greatly from that in China and service provision is still at an elementary level, focusing mainly on payments. On the one hand, new regulatory licences must be acquired before businesses can provide high value-added services such as loans. On the other hand, Southeast Asia has not accumulated sufficient technology and data to expand other fintech services on a large scale. Of course, both ECP and TrueMoney, which promote e-commerce and e-wallets, respectively, have indicated they want to expand into the loans and insurance sectors. Indeed, Paytm has begun to provide financial services such as 'digital gold' for individuals and credit support for small businesses—on a small scale. In the future, Paytm hopes to provide credit assessment services for Indian residents who lack credit reporting services and increase their credit support on this basis. In Bangladesh, bKash has also expressed strong interest in Ant Financial's successful experience of using payment information to grant lines of credit.

Second, poor infrastructure and poor financial literacy in Southeast and South Asia also restrict the development of fintech. When ECP provided e-commerce services, many local banking systems failed to support online transfers and most local residents had poor basic financial knowledge, hindering the promotion of fintech products. In such circumstances, local fintech providers were required to develop new business models. The ability to 'top up' is very important for e-wallet users. In China, most users top up their balance or WeChat wallet via a bank transfer. However, due to the lack of banking services in Southeast Asia and other regions, e-wallets are mainly topped up offline at retail stores and other places, rather than via bank transfer. For instance, TrueMoney signed a partnership agreement with the largest local retail store, 7-Eleven, so that residents can deposit money into their wallets at its stores. TrueMoney also provided its own ATM to allow residents to top up their accounts. Bangladesh faces a similar situation. Due to insufficient coverage of bank

outlets, it is difficult to convert money into digital currency. To solve this problem, bKash set up 187,000 agents nationwide. Customers can visit an agent to convert digital currency in the bKash system into cash.

In a word, the business models of fintech companies in Southeast and South Asia are still backward. Most focus on payments. Meanwhile, poor infrastructure restricts fintech's expansion. At present, fintech companies have begun to set out plans to provide more comprehensive services with higher value added and have innovated according to their respective environment, demonstrating great potential for development.

Local examples of payment enterprises in Asia

With the promotion of ECP, which is headquartered in Singapore but serves the whole of Southeast Asia, two major problems with e-commerce have been solved. The first is the high cash-on-delivery rate. In the past, this rate reached 99 per cent of e-commerce payments in the region, but the cost of cash payment is very high, so e-payments can reduce this cost. The second problem is the low success rate of online payments in Southeast Asian countries, which is caused by two main factors. First, due to poor infrastructure, users have to spend more time making online payments through banks, and the success rate is low. Of course, users can transfer money to a bank account offline and make a payment, but this is inconvenient. Second, e-wallets are not widely accepted by users. Many users do not keep money in their e-wallets, so if they need to buy goods, they have to visit a nearby outlet (such as a convenience store) to deposit money into their wallets within 24 hours of a purchase. As a result, the payment success rate is low. ECP enables users time to get accustomed to using an e-wallet, which significantly improves the success rate of payments and helps enterprises expand their business in a more convenient and quick manner.

TrueMoney in Thailand and Paytm in India are mainly designed to operate in a market that has insufficient formal financial services. Bank cards are not widely used in either country and many payments are still made in cash. Using TrueMoney or Paytm to make e-payments can reduce the high cost of using cash. In addition, young people who do not have

a credit card cannot buy goods or play games online. TrueMoney can provide young people with these new services, while Paytm offers lower payment rates for businesses, as well as credit support for those small businesses that cannot get a bank loan.

In Bangladesh, bKash was also created against a background of inadequate formal financial services, including an underdeveloped system for online payments. Anyone wanting to buy a mobile phone or computer in Bangladesh must purchase it offline, which is very inconvenient. Second, there is a charge of \$0.12 to open a bank account, which is a very high cost for many poor people. More importantly, banks do not provide free access to the internet. Young people from rural areas working in the cities are unable to remit their salaries back home. One of the more common practices is to ask a truck driver to deliver the money, but this practice is inefficient and very risky. To reduce the time and capital costs of transactions, the founder of bKash decided to create a new medium to solve these problems and provide low-cost services for the poor and small businesses.

AlipayHK launched its cross-border e-wallet remittance service based on block chain to solve the pain point of cross-border transfers, which have always been a cumbersome procedure but are very important throughout Southeast Asia. For example, a large number of Filipino maids work in Hong Kong and need to transfer their salaries back to the Philippines. Currently, the methods for cross-border transfers include cash, bank transfers or transfer by a remittance company. These traditional cross-border businesses involve many participants, different laws and regulations in each jurisdiction and exchange rate issues, so the process is very complex and it can take 10 minutes to several days to make a payment. AlipayHK's cross-border e-wallet remittance business can achieve real-time domestic transfers, provides customer service around the clock and is safe and transparent. Bangladesh has a similar demand for such a service. There are 10 million Bangladeshi working abroad and unofficial statistics suggest 15 billion Bangladeshi taka (US\$177 million) are remitted through official channels. Overseas remittances are very expensive, so bKash strives to use block chain technology to make such transfers much faster, cheaper and more convenient.

Challenges and competition in Asia's payments market

There is fierce competition in the payments market in Southeast and South Asia, with China's Ant Financial and Tencent and Amazon and Google from the United States all actively expanding their services in the region. So far, however, no company has taken a dominant position. Driven by these multinational corporations, local fintech companies have also seen rapid development.

Ant Financial has established nine e-wallets through cooperation in Southeast Asia and invested in Lazada, the largest e-commerce company in the region. Supported by Tencent, Shopee has also grown rapidly in Southeast Asia. In addition to financial support, Chinese fintech companies send technical teams to local companies to help them develop. Apart from Chinese enterprises, Amazon, Google, WhatsApp and other US companies are actively gaining market share in Southeast and South Asia. In some countries, there is even competition between the QR-code standards adopted by Chinese-funded corporations and those adopted by US-funded firms.

Of course, the regulatory authorities of each country are more prudent about the foreign enterprises that carry out financial business in their jurisdiction and generally do not want them to hold all the market shares. Institutions such as Ant Financial, Tencent and LU.com are very successful in China and have a good reputation in the global market. Local regulatory authorities and fintech companies are willing to cooperate with these Chinese enterprises, but of course, most such companies carry out business in Southeast and South Asia through strategic shareholding, rather than controlling as major shareholders.

Attitudes and practices of financial regulation in Asia

The governments of Thailand, Singapore, India and Hong Kong take an open and inclusive attitude towards the monitoring and regulation of fintech. Of course, different governments have different motives. Thailand and India hope fintech can improve their financial efficiency and support the development of inclusive finance. Hong Kong and

Singapore, as international financial centres, are more concerned with how to maintain their leading edge and pay more attention to cross-border payments and other business. To promote the development of fintech, the Thai and Singaporean governments have formulated development plans and designated special departments and personnel for coordination and implementation. Both countries have also adopted the regulatory sandbox approach to support fintech innovation.

An official development plan provides one of the guarantees for the orderly development of the fintech industry. In August 2015, the Singaporean Government began a six-month study of fintech to investigate key issues such as whether it is helpful to Singapore's financial system and how much risk comes with it, after which it developed a fintech development program. The Government of Thailand organised the Ministry of Finance, its central bank and other departments to implement the multisector 'National Master Plan for E-Payment', promoted the PromptPay payment system and used the unified Thai standard QR-code to guide the development of the country's fintech industry.

To support innovation, Singapore and Thailand have introduced a regulatory sandbox to allow fintech companies to move beyond existing regulatory frameworks and conduct small-scale experiments. A regulatory sandbox can control major financial risks while also effectively supporting innovation. Of course, due to different national conditions, Singapore and Thailand took different approaches when implementing the regulatory sandbox.

Generally speaking, these governments want to create a regulatory environment suitable for fintech innovation, while paying attention to the risks fintech may bring.

Conclusion and prospects for regional digital connectivity

Common demand lays the basic foundation for digital connectivity in Asia and other regions. China has started to take the lead in mobile payments within the past 16 years and has made outstanding achievements in promoting the development of inclusive finance. However, fintech development in China is driven mainly by market demand and technological innovation. One basic fact in China is that the services

provided by the traditional financial sector are insufficient, especially for small and microenterprises and low-income groups. And the credit card penetration rate in China is still less than 20 per cent.

A similar situation also exists in other developing Asian countries, where some problems are even more prominent—for example, before the availability of mobile payments, most migrant rural workers delivered remittances home informally through friends or bus drivers, which is an expensive approach and one that is fraught with delay and risk. The development of fintech can serve as an important complement to the traditional financial sector and is one that all developing countries need.

Regulatory authorities and fintech companies in Asia have shown a strong desire to cooperate with Chinese enterprises. The Monetary Authority of Singapore has welcomed China's fintech companies, including Ant Financial and Tencent, which have set up branches in Singapore. In many ways, financial technology and its development path are most suitable for developing countries. The regulatory authorities and fintech companies in countries including Thailand, India, Malaysia and Pakistan are actively exploring the possibility of business cooperation with Chinese companies.

While finance is among the most strictly regulated sectors and financial cooperation remains a sensitive issue for every country, business cooperation initiated by fintech companies seems to be much more successful and sustainable. Alipay has kept a relatively low profile in cooperating with overseas partners, by providing technology support and holding a relatively small share in enterprises.

More importantly, payment technology in China is relatively mature and is still developing rapidly. For example, Alipay's technological capacity has increased from about 200 transactions per second to more than 210,000 transactions per second. Chinese companies aim to work with local partners to provide payment systems that incorporate local technology, culture and policies. Through cooperation with Alipay, the number of users of Paytm in India increased dramatically, to more than 20 million within one year.

Moving forward, we think the following issues should be addressed properly: first, data. Who owns the data—individuals or big tech companies? Data are becoming an important resource, but the significance of consumer privacy should be highlighted as well.

Second is the problem of digital inequality, as many people do not have access to mobile payment services. Perhaps countries should adopt wider coverage of digital finance, education on inclusive finance and measures to create greater financial openness regarding access to mobile payments.

The third issue is financial risk. What are the right strategies for dealing with risk, including cyberattacks and the disintermediation of financial services? Digital finance can raise the risk of financial contagion without effective financial regulation—which brings us to the final issue. As big tech companies expand into financial services, building on mobile payments, how should these companies be regulated? How can we balance efficiency and stability? On the one hand, regulatory authorities should improve efficiency by transforming from an institution-based regulatory framework to functional regulation and adopting more advanced supervision technology. On the other hand, conduct regulation should be emphasised and strengthened to enhance the protection of financial consumers in China, probably by learning from the experience of Australia's 'twin-peak' regulatory framework (a combination of prudential and conduct regulation).

References

- Guo, F., Wang, J.Y., Wang, F., Kong, T., Zhang, X. and Cheng, Z.Y. 2019. *Measuring China's digital financial inclusion: Index compilation and spatial characteristics*. Institute of Digital Finance Working Paper. Beijing: Peking University.
- Hexun. 2018. '支付宝的15年—使命、泪水与成长? [15 years of Alipay: Mission, tears and growth?].' *Hexun*, 12 November. Available from: news.hexun.com/2018-11-12/195185325.html.
- Huang, Z., Shen, Y., Guo, F. and Huang, Y. 2019. *Digital finance supports high-quality economic development in China*. Institute of Digital Finance Working Paper. Beijing: Peking University.
- Institute of Digital Finance. 2011–18. *Peking University Digital Financial Inclusion Index*. Beijing: Institute of Digital Finance, Peking University.
- Klein, A. 2019. *Is China's New Payment System the Future?* Brookings Economic Studies. Washington, DC: Brookings Institution.
- PBC, 2020. Report on the Overall Operation of the Payment System in China. People's Bank of China.

- Wang, X. 2019. Mobile payment facilitates income? A perspective of entrepreneurial activity. Mimeo. Beijing: Institute of Digital Finance, Peking University.
- Wang, X., Wang, X., Huang, Y. and Zheng, S. 2019. *Digital finance and risk sharing: Household-level evidence from China*. Institute of Digital Finance Working Paper. Beijing: Peking University.

This text is taken from *New Dimensions of Connectivity in the Asia-Pacific*, edited by Christopher Findlay and Somkiat Tangkitvanich, published 2021 by ANU Press, The Australian National University, Canberra, Australia.

doi.org/10.22459/NDCAP.2021.06