

# **A Western Diet with Chinese Spices – The Specificities of Payments in China\***

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*Overall, in China the payment system is less developed and electronic payment methods are less widely used than in European countries, while in this regard China is also relatively underdeveloped among the BRICS countries.<sup>1</sup> That said, data indicate that in accordance with China's economic growth since the turn of the millennium, major changes have also been taking place in this field. Although it enjoyed a monopoly in the country until recently, the Chinese payment card system now competes with international card companies, and innovative mobile payment solutions are also popular. This latter is also remarkable because despite the steady growth in the number of people using mobile payment solutions in Western states, even the most developed payments systems have so far failed to convince a wide range of consumers to use the latest technologies. By contrast, in China a significant group of consumers has skipped over arguably traditional payment methods such as credit transfers or card payments, and switched from cash usage directly to mobile payment solutions. This has also caused the role of banks to become less central, and that of other payment service providers more prominent, which may also significantly influence the situation of the banking sector going forward.*

**Journal of Economic Literature (JEL) codes:** E42, G18, O33

**Key words:** payments, payment systems, China

## **1. Introduction**

The modernisation of the Chinese banking system has been a gradual process since the 1970s, as part of which the initially one-tier banking system evolved into a two-tier banking system through the establishment of specialised commercial banks. Although the People's Bank of China (PBC) has been acting as the central bank since 1984, the Central Bank Act was only adopted officially in 1995 (*Komlóssy et al. 2015:2*). Under the Central Bank Act, the PBC is required to operate payment and settlement systems, and is authorised to supervise payments and to ensure compliance with regulations on money laundering. As of 2014, the banking system

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\* The views expressed in this paper are those of the author(s) and do not necessarily reflect the official view of the Magyar Nemzeti Bank.

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<sup>1</sup> BRICS stands for five major emerging economies (Brazil, Russia, India, China, South Africa).

was comprised of 3 policy banks,<sup>2</sup> 5 state-owned commercial banks, 12 privately-owned commercial banks, 133 urban commercial banks, 665 rural commercial banks, 1,596 rural credit cooperatives, 1 postal savings bank, 41 foreign financial institutions, and 1,153 township banks (*PBC 2015:149*).

Similarly to other areas of the economy, payments have seen a gradual opening-up in recent years. This involved a number of measures to increase the international prominence of the RMB, China's currency, such as the establishment of international clearing centres and the launch of a new clearing system to facilitate cross-border payments. Operational since 2015, the China International Payment System (CIPS) handles cross-border RMB transactions for 11 hours a day, currently involving 19 banks, 8 of which are subsidiaries of non-resident banks.

The liberalisation of payment cards also started recently, and important changes may occur in the long term due to the fact that since June 2016 international card companies have been allowed to clear card transactions, breaking up the monopoly of the Chinese card system UnionPay. The measure was preceded by a decision of the World Trade Organization (WTO), which declared the closed Chinese market and the monopoly of UnionPay to be in violation of the organisation's rules. Although this opening is not expected to produce radical short-term changes in market structure, and the local card system will presumably retain its dominance, over the long term foreign card companies will also be allowed to participate in clearing the increasing volume of card payments. Market participants outside China had long been looking forward to the measure, and UnionPay and VISA had previously entered into a Memorandum of Understanding on security, innovation, and reducing the ratio of the population without any bank relations. A further market shift may be produced by the appearance of innovative, primarily card-based payment services such as ApplePay or SamsungPay on the Chinese market. These two service providers offer their payment services in association with UnionPay.

However, the uniqueness of China's payments system primarily lies in participants that offer payment services outside of the banking system and the conventional payment infrastructure. State-owned commercial banks have lost their monopoly in a major part of the payments market due to their late response to new competitors' innovative solutions. Not only has this enabled third-party providers to compete internationally in the field of payment services, these providers have also been emerging as a threat to conventional payment services providers in other fields of banking services (e.g. deposit taking).

As indicated by the foregoing, the impact of this opening may be felt in many areas of payments in the future: it may promote international trade by making cross-

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<sup>2</sup> Specialised state-owned banks serving economic policy purposes: China Development Bank, Export and Import Bank, Agricultural Development Bank.

border transactions easier to clear, and it may contribute to the establishment of a consumption-driven economy through innovative payment solutions that facilitate retail trade, while larger participants in China's payment system may enter the international scene, offering more intense competition to payment solutions that dominate in the West.

## 2. The level of development of payments in China in international comparison

In order to be able to adequately interpret the data on China's payment system, it is appropriate to first assess the level of development of the country's payments in an international comparison. According to the global survey conducted by MasterCard (*Thomas 2013*), cash transactions are predominant in China, with a mere 10 per cent of all transactions conducted using electronic payment methods. This puts China in the "transitioning" group out of the four groups used in the survey (advanced, tipping point, transitioning, inception); on the other hand, the results are qualified by the fact that of the BRICS countries, only Brazil ranks higher with a 5 per cent higher cashless share, and the shortfall against Japan is also only 4 per cent (*Annex, Figure 1*). By comparison, according to surveys on the payment habits of Hungarian households (*Ilyés – Varga 2015:30*), in Hungary the share of electronic payments is above 20 per cent, i.e. over twice that of China. According to the international statistics of BIS (*2015*), the number of credit transfers and card payments per inhabitant is significantly lower in China than in either advanced Western states or the BRICS countries (*Annex, Table 1*). It should be noted that while these indicators may be useful in judging the broad trends, they fail to show a number of underlying factors: the low Chinese values represent only averages, which conceal the differences between payments in relatively underdeveloped rural areas characterised by a population without a significant penetration of bank relations that conducts most of its transactions in cash or by cheque, and the high volume of electronic payments in mostly urban areas. Importantly, on the other hand, this relatively low level of development has additional potential in terms of the Chinese market—it is by no accident that an increasing number of Western companies want to break into this market as well. According to World Bank data, close to 80 per cent of the Chinese population above 15 years of age hold accounts with some type of financial institution, which, although it falls significantly short of the rates of above 90 per cent of the euro area or the US, may provide a sound base for the further development of payments. According to World Bank data, and as confirmed by a survey by the MNB, 72 per cent of the Hungarian population have bank relations (75 per cent of the adult population are account holders, cf. *Ilyés – Varga 2015*), but in Hungary the accounts opened are used more extensively and more frequently.

### **3. Clearing and settlement systems**

By forwarding payment information pertaining to specific transactions, payment infrastructures contribute strongly to the execution of transactions in the real economy and finance, and thereby to ensuring that the economy functions efficiently. It is precisely due to this key role that in most countries in the world, the smooth functioning of payments is supervised by the central bank; similarly, in China, the core elements of the payments system are operated by the central bank in exercise of the powers conferred on it by the Central Bank Act. Payment infrastructures employ predefined operational mechanisms and business terms to enable the clearing and settlement of payment orders. In the course of clearing, the payment system accepts payment orders after a series of formal and content checks, then determines the positions of the banks concerned. Clearing is followed by settlement, which is defined as the financial settlement (accounting) of cleared transactions between accounts. Generally, interbank settlement takes place on the accounts of commercial banks with the central bank, using an RTGS<sup>3</sup> system operated by the central bank. In Hungary, the equivalent system is VIBER, while interbank credit transfers and direct debit transactions are cleared by the GIRO clearing house. Payment card transactions are cleared by card companies between individual banks, and are then also settled in the RTGS system (in Hungary, VIBER).

In 1991, the PBC launched the pilot of its nationwide electronic system for interbank messaging and transaction settlement, which initially took 7 to 10 days to process transactions. After a series of developments, the real time gross settlement system for high value payments (HVPS) was launched in 2005, which was followed a year later by the launch of BEPS (Bulk Electronic Payment System), the system used for the clearing of low-value payments. Simultaneously with developments in information technology, the PBC also published its guidelines on payment transactions in 2005 (*UnionPay 2005a*).


Due in part to the large size of the country, the payment system operated by the PBC is rather complex and comprises a number of elements, which are subdivided further regionally:

- High-Value Payment System (HVPS),
- Bulk Electronic Payment System (BEPS),
- Internet Banking Payment System (IBPS),
- Cheque Image System (CIS),
- China Domestic Foreign Currency Payment System (CDFCPS),
- local clearing houses.

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<sup>3</sup> Real-time gross settlement.

**Figure 1**  
**Overview of China's payment systems**

High Value Payment System (HVPS)				CDFPCS
National Processing Center (NPC)		Local Processing Centers (LPCs) By provinces, autonomous regions, cities with province level status		China Domestic Foreign Currency Payment System
BEPS (Bulk Electronic Payment System)	China UnionPay Interbank Card Payment System	Cheques Clearing Houses	SHCH (Shanghai Clearing House)	
IBPS (Internet Banking Payment System)	Local Clearing Houses (ACHs)	RCBFCC (Rural Credit Banks Funds Clearing Center)	CCCB (Clearing Center for City Commercial Banks)	
CIS (Cheque Image System)	ECDS (Electronic Commercial Draft System)	ATM	POS	
SD&C (China Securities Depository and Clearing)	CCDC (China Central Depository and Clearing)	Bank of China Macau and HK	Other clearing systems	
Banking institutions, private and public entities and financial markets				

*Source: Maltem 2015.*

Collectively, the HVPS, BEPS and IBPS systems make up the China National Advanced Payment System (CNAPS). The PBC authorises the opening and closing of banks' settlement accounts, while CNAPS is operated by the China National Clearing Center (CNCC), reporting directly to the PBC. Additionally, the PBC's branches also operate a number of local clearing houses. The PBC is headquartered in Beijing and Shanghai, and also operates 8 provincial centres and several hundred regional sub-branches (*PBC 2015:149*).

Similarly to the Hungarian VIBER, the HVPS is therefore a real time gross settlement system, which is used for the settlement of high-value and time-critical financial transactions, while it is also the platform for settling the net positions of low-value interbank items that have been cleared in other systems. Direct participants in the system are banks and PBC regional offices which have accounts with the HVPS, whereas indirect participants represent the same group of institutions but have no dedicated accounts with the HVPS, and engage a direct participant to handle their payments. In addition to the above two participant groups, there are also participants specifically chartered by the PBC, which render only certain special services and submit the cleared transactions of such services directly to the HVPS for settlement. The extensiveness of the Chinese payment system is also reflected by the number of participants: in 2010, there were 1,729 direct participants, 100,510 indirect participants and 6 chartered participants in the HVPS (*BIS CPMI*

2012:50). Interbank transactions are cleared and settled real-time on a gross basis, whereas chartered participants, e.g. institutions clearing securities, the UnionPay card company's clearing, and local clearing houses submit net positions. The HVPS is structured into two tiers: complementing the core element (National Processing Center, NPC), provincial cities operate additional processing centres (City Clearing Processing Center, CCPC), which only forward messages to the NPC. Participants in the HVPS are typically linked to CCPCs on a regional basis, and the regional centres forward the messages to the central system for settlement, i.e. there is no regional settlement for intra-provincial transactions. It is typically chartered participants that can submit transactions directly to the NPC, which is where, amongst others, payment card clearing results are also received directly. The system is open on business days from 8:30 a.m. to 5:00 p.m., and where required, participants can acquire additional liquidity until 5:30 p.m.

Launched in 2006, the BEPS is the system used for the clearing of paper-based credit transfers and direct debits. As at 2010, a ceiling of CNY 50,000 applies to the submission of ordinary credit and standing order transactions to the BEPS. In addition to the number of direct and indirect participants equivalent to those of the HVPS, there are 16 chartered participants in the system. The BEPS and the HVPS share the same communication network, and also have similar two-tiered regional structures, wherein transactions are submitted by regional centres for central clearing, and are then forwarded on a cyclical basis to the HVPS for settlement. The difference between the two systems is that the BEPS runs and accepts transactions for clearing on a 24/7 basis, but settlement can only take place in the HVPS. Pricing is different for the clearing of local (intra-provincial) and inter-provincial transactions, but fees are also differentiated by period so that traffic load can be better distributed over time.

Launched in 2010, the IBPS system is used for the real-time clearing of electronically submitted payments. Like the BEPS, the IBPS also runs continuously. In 2010, the system had about 120 participants, mainly covering the commercial banks that were providing internet banking interfaces. The transactions cleared in the system are settled in the HVPS; BEPS and IBPS transactions both rely on the same liquidity recorded in the HVPS for their settlement. Payments are cleared within 20 seconds, and may be submitted through banks' internet banking interfaces and mobile applications, or via ATMs. Currently users cannot initiate transactions by supplying a secondary identifier such as a mobile number, they can only place orders by entering the payees' account numbers (*BIS CPMI 2016*). Transactions are cleared in real time (within 20 seconds), but interbank positions are settled only later, six times each business day. Banks must allocate liquidity in advance in the HVPS to settle real-time transactions, which provides for the management of interbank credit risk,

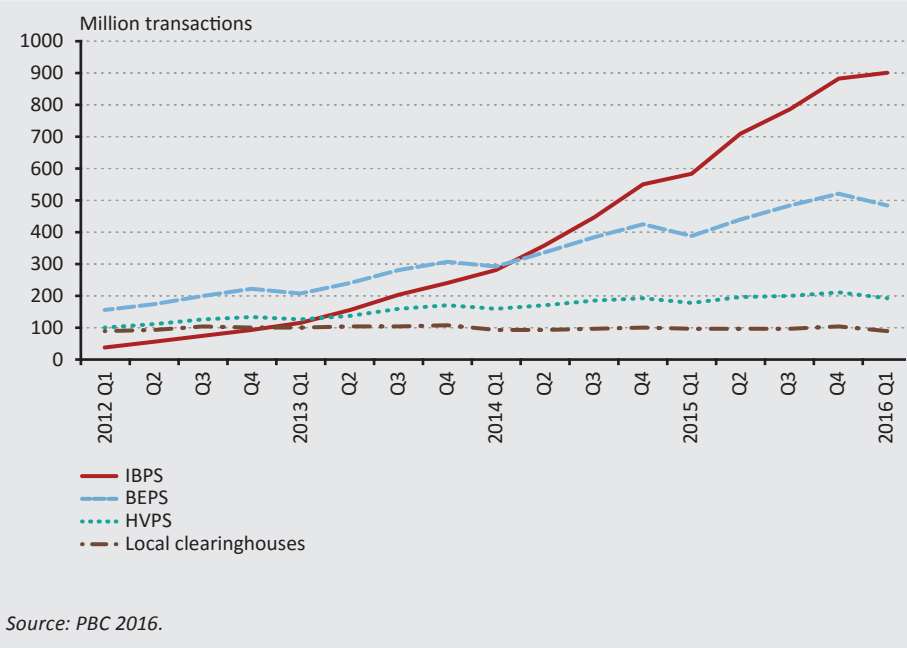
i.e. the risk that the account of the beneficiary is credited, but the payee's bank can only access funds at a later time. The risk from subsequent interbank settlement can be mitigated by applying transaction ceilings, which is CNY 50,000 in the IBPS, but individual banks may also apply additional restrictions. Additionally, banks may place security deposits to reduce loan risks. In the event of a party's insolvency, this security deposit is used to settle the insolvent party's debit position. Where this is insufficient, the situation is handled by sharing losses between the banks.

Accordingly, in this operational model the execution of a real-time payment is somewhat different from that of "conventional" credit transfers. In the conventional model, once the payer has placed the payment order with its payment service provider, the transaction is first cleared between banks (by the GIRO clearing house in Hungary and in the BEPS in China), followed by interbank settlement in the central bank's RTGS (VIBER in Hungary and HVPS in China), and finally the payee's account is credited. By contrast, in China's real-time payment system the payee's account is credited in real time in the IBPS, while the transaction is settled at a later time in the HVPS in one of the 6 cycles each weekday.

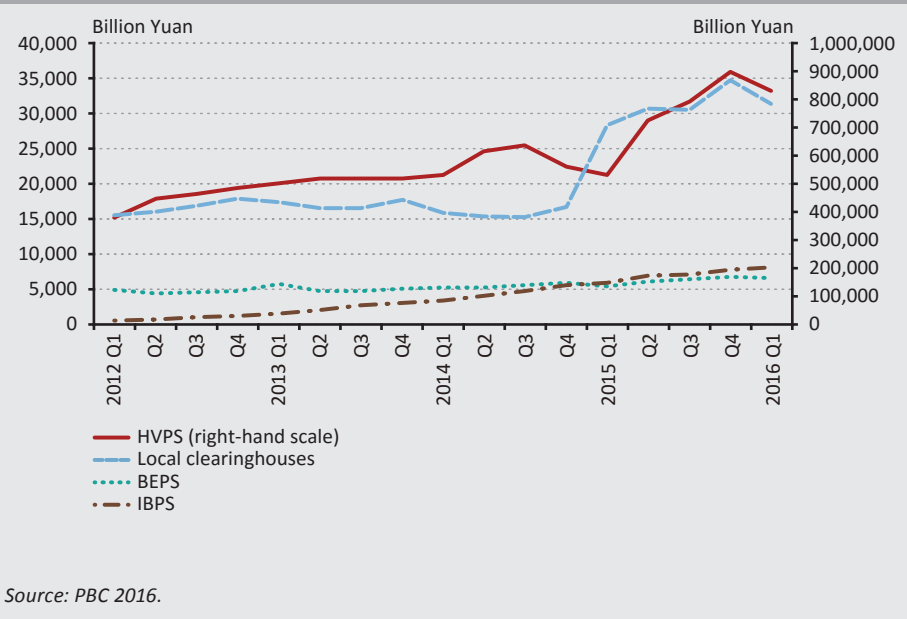
As regards the number of transactions processed in each system, there has been an apparent pick-up in real-time payments, which accounted for the largest volume from 2014 Q2 onwards, exceeding 900 million transactions in 2016 Q1. The relatively low number of transactions cleared in local clearing houses and the high total payments value indicate that typically transactions of larger amounts are submitted to these systems.

Interbank transactions are settled in the HVPS, which is also where participants may submit high-value and time-critical transactions. Consequently, this is where the value of payments processed is the highest, exceeding CNY 2,950,000 billion in 2015. Although the total value of transactions cleared in the BEPS and IBPS systems amounted to a fraction of this (about CNY 25,000 billion and CNY 28,000 billion, respectively), electronic transactions have apparently also been gaining ground in this area: traffic in the IBPS first exceeded that in the BEPS in 2015Q1, and the difference has been increasing ever since. The total value of transactions cleared in local clearing houses exceeded CNY 120,000 billion during the year, which means that the intra-provincial turnover processed here is significantly higher than the value of transactions submitted to national clearing systems.

**Figure 2**  
Turnover of HVPS, BEPS, IBPS and local clearing houses by number of transactions



**Figure 3**  
Turnover of HVPS, BEPS, IBPS and local clearing houses by value





The improved CNAPS II went live in October 2013, and introduced changes in 6 areas (*PBC 2014:144*):

- Single addressee: in the previous system the provincial branches of commercial banks were also required to open accounts in the CNAPS, whereas in the new system each bank's head office and provincial branches use a single account. This makes liquidity management simpler and more efficient.
- Improving liquidity management: in the new system, HVPS allows queued transactions to be matched and thereby the queues to be broken down.
- Supporting users by giving notification when the amount of electronically originated interbank transactions is credited to payees' accounts.
- Increased safety due to enhancements to the operational monitoring system.
- Improved data security and operational reliability.
- In line with international trends, the ISO 20022 message format was adopted.

Apart from the CNAPS, which is the core element of China's payment system, a number of additional systems support the execution of payment transactions. Launched in 2007 and operating on a 24/7 basis, the CIS converts cheques with a value of less than CNY 500,000 into images, which it forwards to the issuing banks for review. Following positive confirmation from the issuing banks, the transactions are cleared in the BEPS. As of 2010, the CIS had 59,548 participants, primarily including local banks and clearing houses (*BIS CPMI 2012:56*). Use of the CIS is free of charge, but local clearing houses, for instance, typically charge fees for the submission of transactions.

CDFCPS handles domestic transactions where purchases of goods or services are paid in foreign currencies. Launched in 2008, the system handles 8 currencies: USD, HKD, GBP, EUR, JPY, CAD, CHF and AUD. CDFCPS consists of two parts: the component responsible for clearing functions is run by the PBC, while settlement is carried out by settlement agents in their own systems. Settlement agents are commercial banks chartered for that purpose by the PBC, usually for 3 years, and direct participants (31 in 2010) open foreign currency accounts with settlement agents. The system operates from 9:00 a.m. to 5:00 p.m. on business days, and the orders submitted are cleared by China's central clearing house (CNCC), and forwarded for settlement.

The volumes processed in the CIS and the CDFCPS are significantly smaller than those processed in the HVPS, BEPS or IBPS; however, while the volume of foreign currency transactions has increased slightly in recent years, cheque turnover has steadily and significantly declined as electronic payment methods have gained grounds.

At the end of 2010, PBC branches operated 1,017 clearing houses, of which specific institutions cleared only certain transactions such as those conducted in securities markets. Local clearing houses are primarily responsible for clearing cheques and drafts. They send net positions to local PBC branches of commercial banks, which forward the positions to the HVPS for settlement. Regional clearing houses are mostly operated on a not-for-profit basis, and bill the institutions using their services only for the cost of their operation.

In addition to the systems operated by the PBC to provide clearing and settlement services, a number of private providers are also engaged in such activities:

- China UnionPay: an entity headquartered in Shanghai that provides clearing for bank card transactions between issuing institutions and acquiring institutions. UnionPay also sets the rules to be followed by card companies, and the technical standards for clearing card transactions.
- Clearing Center for City Commercial Banks (CCCCB): a not-for-profit organisation providing services to urban commercial banks and credit cooperatives, and rural banks. It primarily clears banker's promissory notes, online payments and interbank transactions. It is headquartered in Shanghai, and had 203 members at the end of 2013, and 4,164 at the end of 2014.
- Rural Credit Banks Funds Clearing Center (RCBFCC): set up jointly by 30 rural banks and credit cooperatives and headquartered in Beijing, it clears interbank transactions for such institutions.
- Local clearing houses: private companies to clear transactions for payment service providers; there were 144 such institutions at the end of 2010.

The turnover of the CCCC and the RCBFCC is far smaller than the volumes cleared in the systems of the PBC: in 2015 Q2, 600,000 and 104 million transactions amounted to a total turnover of CNY 134 billion and CNY 801 billion, respectively.

The vast majority of card payments in China are conducted using the cards issued by the card company China UnionPay, across the company's acceptance network. The concept of a Chinese national card system dates back to 1993, when the idea of the "golden card" project was conceived, but was only implemented in 2003, when the company was set up with the participation of the four largest banks in China (ABC, BoC, CCB, ICBC). A further step forward occurred with the 2005 publication of the document "Some Opinions on Promoting Bankcard Industry" by 9 ministries and the PBC, which declared public policy guidelines and strategic goals for the development of the card market (*UnionPay 2005b*).

The turnover cleared by UnionPay is growing steadily: the total value of the 18.67 billion transactions in 2014 amounted to more than CNY 41,000 billion (*PBC 2015:152*), which makes UnionPay a potentially serious competitor to major card

companies such as VISA or MasterCard even on the international scene. According to Nilson (2016) data, in 2014 close to 12 per cent of global credit card transactions and 8.6 per cent of debit card transactions were cleared in Chinese systems, which demonstrated the highest growth rate among international card companies. At the end of 2014, UnionPay's network covered 150 countries, with merchant outlets in 107 countries, ATMs accepting UnionPay cards in 129 countries, and Chinese payment cards issued in 39 countries.

## **4. Turnover of specific payment methods**

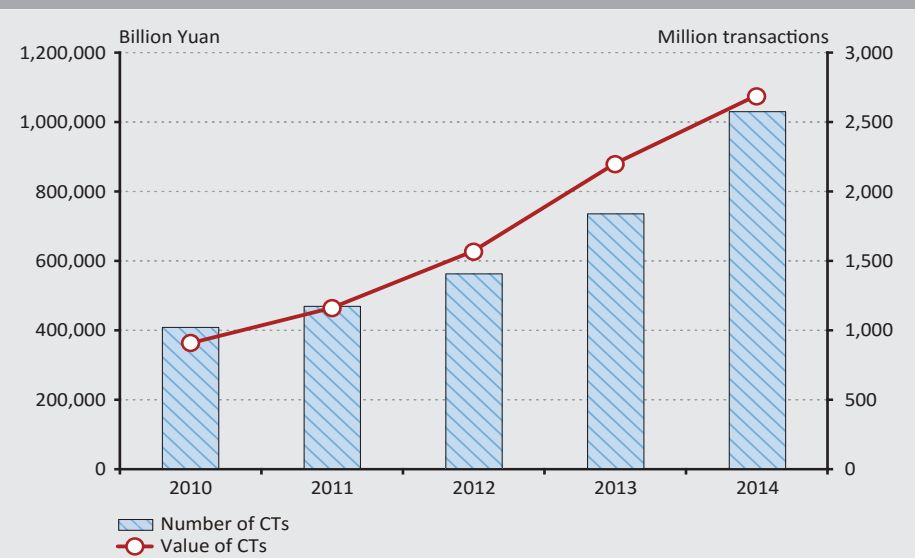
### **4.1. Cheques and drafts**

Cheques are primarily used by businesses. Those with a value of less than CNY 500,000 may be submitted to the CIS, but cheques may also be processed in other local clearing systems. Bank drafts are negotiable instruments issued by banks to businesses and individuals after taking their deposits. Some drafts can be used nationwide, while others only regionally (within specific provinces). Most drafts are cleared in the BEPS, but in certain cases local clearing (CCCB or RCBFCC) is also possible. A commercial draft is also a negotiable instrument, which is issued by a business primarily in connection with commodity transactions, where the acceptor (this could also be a bank) is instructed to pay the given amount on the specified date unconditionally. In the case of electronic drafts, the parties may also agree on six-month payment terms, during which the buyer either purchases commodities or applies the discount. Upon expiration of a draft, the beneficiary instructs their bank to present the draft to the payer's bank. The Electronic Commercial Draft System (ECDS) was established in 2010 to support the dematerialisation of paper-based drafts. It supports issuance, discounting, rediscounting and clearing. Banker's promissory notes are issued by banks after taking deposits, are payable at sight and are cleared in the BEPS. Drafts and promissory notes account for less than ten per cent of total turnover, but the total turnover of cheques has also declined considerably in recent years.

### **4.2. Credit transfers**

The increasing rate at which electronic payment methods are spreading is not only reflected by the decline in cheque payments, but also by the growing turnover of credit transfers. In 2014, the number of transactions was up nearly 40 per cent on the previous year, and the value of the total turnover of credit transfers was also 22.5 per cent higher year on year.

**Figure 4**  
Trend of credit transfers by volume and value



Note: BIS statistics are based on the turnover of the HVPS and the BEPS systems; however, the data presented here cannot be matched directly with the turnover data of each system as presented previously, because in addition to credit transfers, both systems process other transaction types as well. Source: BIS 2015.

### 4.3. Payment cards

Although the dynamic growth in the number of payment cards issued in China decelerated slightly in comparison to the rates of close to 20 per cent seen in previous years, the growth rate of the number of cards compared to the end of 2014 is still considerable, at more than 10 per cent. As a result of the progress made in the past years, the cumulative number of payment cards issued in the country was over 5.6 billion in 2016 Q1, more than 90 per cent of which are debit cards.

The development of the acceptance network has been even more remarkable, with a 2015 growth rate of about 40 per cent compared to the end of the previous year, in terms of both merchant outlets and POS terminals and ATMs (*Annex, Figure 8*). Compared to the more than 17 million merchant outlets and the 23.5 million POS terminals operated in these outlets, the number of ATMs shows a significant shortfall at close to 900,000, but this number is expected to grow at an accelerating rate, as many banks are deploying multifunctional devices that are also capable of other tasks than cash withdrawal. This may be crucial in the supply of banking services to parts of the population residing in areas that are not covered by bank branches, including the possibility of account administration. Using ATMs, payment service providers may also develop additional innovative solutions, which may be instrumental in connecting the population without bank relations to financial services. One example is the method developed by HDFC Bank, which provides

agricultural producers with access to cash in exchange for the supply of certain commodities. The method is also useful because it allows the bank to monitor the sales of the producer concerned, making it possible to grant micro credit on that basis. It is to be noted that Chinese manufacturers have a high share of the ATM market, which is also secured by legal regulations. The regulations introduced in 2014 require Chinese banks to increase the share of IT equipment manufactured in China to 75 per cent in 5 years, and ATM-related data to be stored within the territory of China (*Banking Automation Bulletin 2, 2016*).

The spread of electronic payment methods is supported by the fact that agricultural aid and pensions are transferred to recipients' bank accounts, forcing every household to open at least one account. Consumer campaigns have been run locally involving designated merchants and centrally by the PBC, targeting the population of rural areas with a view to reinforcing confidence in electronic payment methods. Accordingly, the PBC issued its guidelines<sup>4</sup> on the development of the rural payment system, specifically addressing the improvement of bank card payment options for migrant workers working in cities (*PBC 2014:147*). Education on the use of bank cards was also provided specifically to young people in an attempt to reach the older generations indirectly. In these regions, even cash withdrawal using bank cards is a challenge, which is why until the end of 2013 cash can be withdrawn using POS terminals with 850,000 designated merchants. This covered approximately 80 percent (480,000) of towns and villages which had no bank relations. With such withdrawals, interchange fees are lower, and the distribution of interchange fees among issuing banks, acquirers and UnionPay is 3:6:1, tilting towards the acquirers (*PBC 2014:74*), which means that the measure may provide further incentives for increasing the number of cash withdrawal options in areas that have been less covered so far, and may also reduce the costs to customers. In 2013, new regulations on interchange fees were introduced, which specify rates varying by sector (*Wang 2012*):

- food and beverage, entertainment, real estate and automobile sales: varying between 2 per cent and 1.25 per cent, capped at CNY 80 in the case of real estate and automobile sales
- merchandise, travel agencies and ticket services: 0.78 per cent
- utility fee payments: 0.38 per cent
- public welfare sector (e.g. public education and healthcare): no interchange fee charged.

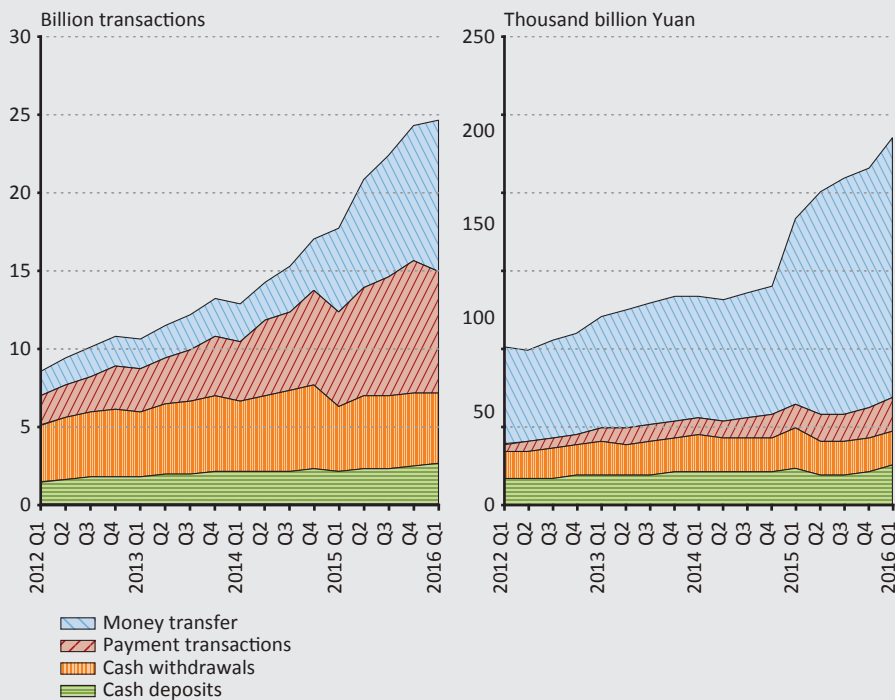
The growth in payment card turnover is primarily attributable to purchases and money transfers, while no significant change has occurred in the number and value of card withdrawals and deposits, which points to the increasing prominence of faster and more efficient electronic payment solutions. The data also show that of

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<sup>4</sup> Guiding opinions on promoting the development of rural payment service environment.

the 24.6 billion card transactions executed in 2016Q1, about one-third were related to purchases and 40 per cent to money transfers, whereas in terms of transaction value, money transfers accounted for more than 70 per cent of the total. This also includes services where the payer is only required to know the card number of the payee, and during the day (between 7:00 a.m. and 11:00 p.m.) the money transferred will be immediately at the payee’s disposal. One example of money transfer by payment card is UnionPay’s solution, which uses e-money to render the money transfer service. Customers are required to open e-money accounts, and top up these accounts from their bank accounts, and money transfers are made between e-money accounts (*MoneySwap 2016*).

**Figure 5**  
Payment card turnover by number of transactions and transaction value



Source: PBC.

It is also appropriate to look at the evolution of the key indicators of card turnover (*Annex, Figure 9*). The steady increase in the average per capita purchase value (exceeding CNY 10,000 by the end of 2015) indicates the growing intensity of consumers’ card use, while the decrease in average transaction value (less than

CNY 1,700 in 2016 Q1) suggests that cardholders are increasingly using their cards also for low-value transactions, which may contribute to the reduction of cash usage. This may be supported by the spread of contactless payment facilities based on the NFC technology; a solution of this kind is already available to cardholders from the Chinese card company.

The market of payment cards is currently the largest in the Asia-Pacific region: in a global comparison, 60 per cent of all payment cards were issued and 47 per cent of all ATMs were operated in the region in 2014, of which China had 42 per cent and 20 per cent shares, respectively (*Banking Automation Bulletin 1, 2016*). That said, there is obviously plenty of room for growth, given that the region's share of the global market is 24 per cent in terms of the number of transactions, and 47 per cent in terms of total transaction value. The low transaction number indicates that presumably the share of cardholders who use their payment cards only for cash withdrawals rather than frequent purchases remains considerable, whereas the higher share of turnover value may suggest that the middle class is becoming stronger in the countries of the region, and so is effective demand as a result.

#### **4.4. Turnover of third-party providers**

Apart from the above payment methods, which are essentially linked to banking services, independent third-party online payment systems provide additional cashless payment options. In such arrangements, customers open dedicated accounts in their online payment providers' systems, which they can generally top up by means of credit transfers or card payments, and use subsequently for their transactions in the providers' self-contained proprietary systems, which are independent of banking infrastructures. Below is a brief overview of the payment solutions applied by China's two most prominent service providers.

One of the first, but undoubtedly the most significant player in the market was Alibaba, and its solution AliPay. Initially, AliPay primarily supported the execution of e-commerce solutions on Alibaba and Taobao platforms by acting as a third party between merchants (in the case of Taobao, the individual seller) and buyers, providing an *escrow* service to remove the obstacles resulting from the lack of trust between the parties, where the consideration for the purchase was held on a central account until the terms of the purchase were fulfilled. It is therefore important to understand that in respect of China's payment system, any reference to a third-party provider means this type of service provider rather than the payment initiation services and account information services under the Payment Services Directive (PSD2),<sup>5</sup> effective as of 2018 in Europe. It is also to be noted that in contrast to US law, where escrow services are regulated in great detail, China did not impose

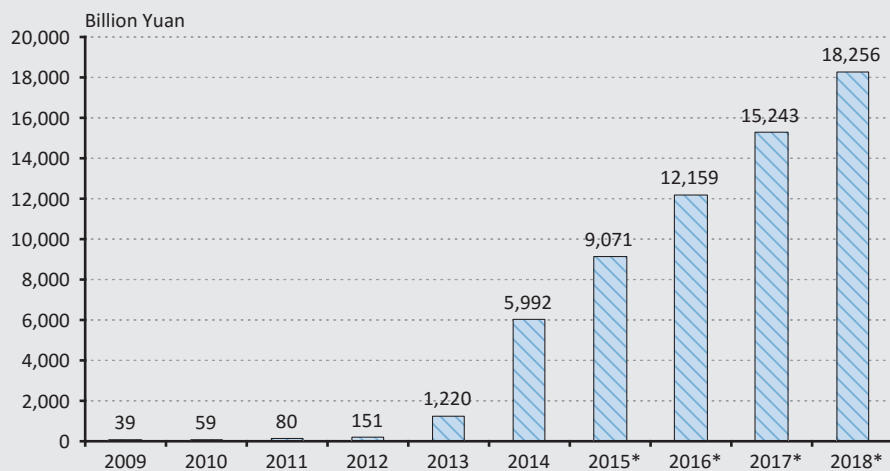
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<sup>5</sup> Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015L2366>.

any legal regulations on such activities before 2011 (Yu – Shen 2015). As online purchases essentially concerned low-value transactions and involved a relatively high level of risk, commercial banks avoided this segment, and the regulator also found that the market was too small to be regulated specifically. By the time the new regulation was finally adopted in 2011 (PBC 2010), commercial banks had lost the vast majority of the market. The new regulation set capital requirements (CNY 100 million for services to be provided in the whole of China, and CNY 30 million for services to be provided in a single province), while it also provided that licences may only be granted to Chinese entities. As a result, for instance Alibaba, otherwise registered in the Cayman Islands, was forced to establish AliPay in China. Later, as the company started to widen the range of its services, P2P money transfers as well as purchases in physical merchant outlets became available, and the latest developments already cover low-value investment services (by the name of Yuebao) and microcredit.

The steadily growing market for the mobile payments of Chinese third-party providers amounted to CNY 5,992 billion in 2014 and the turnover of such payments is estimated to exceed CNY 18,000 billion by 2018.

**Figure 6**  
Gross merchandise volume of Chinese third-party providers' mobile payments



\*estimated figures

Source: iResearch 2015.

P2P credit transfers account for the largest part (close to 60 per cent) of the transaction turnover, while mobile finances, accounting for one quarter of the turnover, include the purchase of financial products such as securities. Online purchases make up approximately one-eighth of the total turnover (iResearch 2016).



The Chinese online payments market is essentially dominated by two players: AliPay, a solution by the e-commerce giant Alibaba, controlled close to one half of the market in 2015, while Tencent, which also operates China's most popular messaging application WeChat, had a market share of 20 per cent (*Annex, Figure 10*).

Among other players, AliPay teamed up with VISA and China's four largest banks (ABC, BoC, CCB, ICBC<sup>6</sup>) to set up an innovative payment system. Launched in 2004, the service supports online purchases both with Alibaba and Taobao, an online marketplace that also generates an extremely high volume of sales in China. Apart from these platforms, it has contracted an additional 500,000 merchant outlets, the services of which cover a major part of the retail sector, and also the electronic payment of utility bills. Foreign companies must pay a USD 1,000 setup fee and are subsequently charged a 2.5 to 3 per cent transaction fee, whereas the setup fee is waived for Chinese companies, which are charged transaction fees ranging from 0.7 to 1.2 per cent of annual sales with a USD 5,000 minimum (*LTP 2013*). At the end of 2013, AliPay had 800 million users, while PayPal, one of the world's largest online payment providers, 132 million. Compared to the previously recorded daily volume of 80 million transactions (*Yu – Shen 2015*), in 2016 AliPay generated a daily turnover of 175 million transactions, 60 per cent of which are conducted via mobile phones (*China Post 2016*).

In 2014, AliPay teamed up with China's largest microblog provider Weibo to enable Weibo users to make payments online or offline (in physical space) using their AliPay accounts. With offline payments (just as with "regular" AliPay purchases made without using the Weibo application), the mobile phone generates a QR code, which is scanned by the merchant to initiate the payment transaction. There is also a payment option where the payee's code is scanned by the payer to initiate a transaction. The partnership with Weibo is a major step, primarily in view of the fact that in addition to providing a payment function for the microblog provider's more than 220 million subscribers and 100 million daily users (*BoA 2015*), the platform also enables various personal discounts to be recorded, and merchants to send direct personal offers.

International expansion has also started, involving an agreement with the ridesharing application Uber, whereby rides can be paid via AliPay in more than 400 cities around the globe, which, given the pick-up in Chinese tourism, could drive a considerable increase in turnover. With a view to expansion in Southeast Asia, the company is set to enter the e-commerce markets of the six most developed countries of the region (Philippines, Indonesia, Malaysia, Singapore, Thailand, Vietnam), which offers the potential of adding another 250 million users (*Card and Payments World 2016*). The company is also expanding in Europe, and following an

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<sup>6</sup> Agricultural Bank of China, Bank of China, China Construction Bank, Industrial and Commercial Bank of China.

agreement with a major participant in Germany's acquirer market, the next step is expected to be the expansion of the Austrian acceptance network.

In China, AliPay's greatest rival is TenPay, established by Tencent in 1994. In addition to purchases with about 1.1 million merchants, the system also enables cash withdrawals and P2P money transfers. These latter are free of charge, whereas 1 per cent transaction fee is charged on each retail purchase. Over the long term, Tencent may derive an advantage from the WeChat messaging application operated by it, which is currently the most popular application of its kind in China, with over 760 million users.

In terms of their operating mechanism, both AliPay and TenPay are based on e-money, requiring each user to open an account in the provider's proprietary system, which they can top up using their payment card. Once the account has been topped up, transactions are conducted outside of the banking system within AliPay's or TenPay's proprietary system, avoiding the use of conventional payment infrastructures. This is one of the factors that allow person-to-person (P2P) and retail (P2B) payments to be executed in real time.

#### *4.4.1. Innovative payment solutions: What makes mobile payments work in China?*

A major part of innovative payment solutions build on the possibilities offered by smartphones and the mobile internet, both of which have become extremely widespread in developed countries. One consequence is that mobile payment has become a collective term for a rather wide variety of technologies. There may be differences in the underlying payment method (credit transfers, direct debits or requests with the features of direct debit, card payments, e-money), the submission channel (e.g. NFC or QR codes), and the operating model (e.g. payments within a phone application, wallet service).

As shown above, enjoying its previous monopoly, the commercial banking sector aided by the state was relatively late to realise the degree of threat third-party providers posed to the banking sector, and by the time they launched their new products such as real-time payments (IBPS) or card transfers, they had suffered a major market loss in retail payments. The further transformation of the payment system and the shifting power of market participants do not only raise a key question in China, but this is where participants have emerged which, with their strong customer base and continually growing product range, have been making deliberate efforts to break the banks' dominance in the market. Other than the loss of customers, the banking sector also faces the risk that a major part of bank liquidity will be channelled from customers' bank accounts to third-party providers' proprietary accounts. In terms of the standard of service, China's banking sector has arguably overcome its previous disadvantage: real-time credit transfers between bank accounts have been implemented, while online money transfers linked to

payment cards, and mobile payment applications are also available. The state itself is actively supporting the use of payment cards in an effort to protect the market of conventional banking actors, which complements recently tightened conditions for third-party providers. On the one hand, as of 2016 H2 any customer can only register in the system of a third-party provider with a payment card issued in China and their real name, following the provider's verification of the customer's identity (*Bloomberg 2016*). Providers are required to classify customers into three categories: customers whose identity has not been established directly by the provider may initiate transactions worth up to CNY 1,000 per year, while the limits are CNY 100,000 and CNY 200,000 for customers whose identity has been verified through 3 and 5 channels, respectively. On the other hand, third-party providers are prohibited from opening accounts for financial institutions in their systems (*Parsons – Zou 2016, Xinhua 2015*). In addition to the fight against money laundering, the regulation<sup>7</sup> seeks to prevent consumers from keeping considerable amounts in systems outside the scope of the deposit guarantee scheme, i.e. to reduce risks to individual consumers and systemic risks.

It is apparent from the foregoing that mobile payments in the broad sense, i.e. including P2P money transfers, purchases in physical merchant outlets and e-commerce transactions executed using mobile applications, are extremely widespread in China in comparison with other countries. This, however, is only partly attributable to initially more relaxed regulations: although online payment services are provided by a number of market participants (such as PayPal) also in the West, they have not been able to gain such a strong market presence. It is then appropriate to ask what local specificities justify this phenomenon in comparison with Western countries that have more advanced financial infrastructures and more bank relations relative to the size of their populations?

Within mobile payments, the popularity of online payments is explained by several factors, one being that the functionality of such applications (most prominently WeChat) is by no means limited to payments. Apart from being the most popular messaging service, which has largely replaced previous call and sms-based communication, especially among the urban population, it can also be used to place taxi or meal orders, book medical appointments, municipal administration, and photo sharing. Consequently, for a large segment of the population using the application has become part of everyday life, and for them payments are only one of the many functions rather than a unique solution.

In terms of business operations, Chinese third-party providers are also different from banking participants in that they create their own ecosystems consisting of

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<sup>7</sup> Announcement of the People's Bank of China (2015) No. 43 – Administrative Measures for Internet Payment Services of Non-banking Payment Institutions.

multiple companies, which cover various segments of the market, but may also offer competition to one another. Organisation and product development is much more flexible, as a result of which such companies are less exposed to disruptive technologies that have been eroding banks' market share. One example is the story of Alibaba, established in 1999 to support trade among small businesses, which was extended to consumer-to-consumer retail in 2003 (Taobao online marketplace) and business-to-consumer retail in 2008 (Tmall). To support additional services, they have set up their cloud-based data platform (Ali Cloud Computing), and have also entered the entertainment industry (Alibaba Pictures, Ali Music) and the financial services market (Ant Financial). Ant Financial is the umbrella for payment services (Alipay), the money market fund (Yuebao), online scoring (Sesame Credit), microlending (Ant Micro), and exclusively internet-based MYBank (Tech in Asia 2015).

Another relevant factor is the extremely rapid development of the Chinese economy over the recent years and decades. In the realm of payment solutions, part of the population has simply skipped the developmental phase represented by physical cards, and switched to mobile payments as their primary electronic payment method directly from cash (*Banking Automation Bulletin 1, 2016*). That is, relative to Western countries, the use of payment cards started later, and although their number is rather high today, many people are still using them only for cash withdrawals, which may partly be attributable to the subdued development of the acceptance network.

Another possible factor is the specific network character of the payments market, which in many cases makes the spread of new payment solutions a challenge. Due to this network character, launching a new product in the market is difficult, because even if a provider offers an extremely innovative and affordable payment solution, it will fail if there are no merchants to accept it, or if its usage is limited (i.e. there are only few people to send money to using the solution). As it were, China's two dominant providers worked around the problem by initially acquiring customers in markets other than payment services: Alibaba became successful and popular in the field of online trade, and Tencent (WeChat) in messaging. In this way, offering payment services to a customer base built around other services enabled these providers to gain considerable market shares immediately, reaching the "critical mass" needed for a successful payment service within a relatively short time.

Certain culture-specific marketing techniques such as running hong bao campaigns may also have contributed to the spread and wide recognition of mobile payment applications. Hong bao is the name of the red envelope used by family and friends to give one another money gifts at the time of the Chinese New Year. Both leading mobile payment systems have developed proprietary solutions to send electronic hong baos; additionally, WeChat staged an extremely popular game in which

participants could win smaller prizes by shaking their mobile phones. In the minute with the highest traffic, 810 million users were shaking their phones at the time of the 2015 new year (*Forbes 2015*), which demonstrates the capability of such campaigns to mobilise massive numbers of people.

As a final key aspect, providers are also trying to generate a higher turnover through pricing, granting discounts to buyers who use an online mobile payment solution to pay sellers, making the choice more worthwhile. Providers of such applications have access to direct and immediate information about the use of discounts and their impact on turnover, which enables them to gain a much better understanding of customer habits than banks.

## 5. Conclusions

China's development in recent decades has also been felt in payments, and major advances have been made in the spread of electronic payment methods. Although an international comparison shows a considerable disadvantage in the field of conventional payment methods relative to countries with the most developed payment systems, data on the past years suggest that the difference has been declining.

In terms of financial infrastructure, advantages could be derived from the vast size of the country and the large number of users. In the case of payments, economies of scale are crucial: due to high fixed costs (infrastructure investments) and low variable costs (the cost of clearing a single transaction being marginal), infrastructures in large and homogeneous markets such as that of China can process electronic transactions at an extremely low cost. Low system costs may support the spread of Chinese cashless payment solutions going forward, particularly if the current system, characterised by multiple levels of complexity, continues to be simplified.

Simultaneously with the decline in the volume of cheque payments, the number of conventional electronic payment methods such as credit transfers and card payments has been growing dynamically. A relevant question about payment cards concerns the extent to which the Chinese card company, which previously enjoyed a monopoly in a closed market, will remain competitive in the domestic market, where as a result of opening up, it will face competition from international card companies as well as Chinese competitors offering extremely powerful mobile payment solutions. Conversely, international expansion could be equally important, as the rapid growth in China's international tourism could provide an advantageous starting point for the global development of the Chinese card system.

While China has also taken the road to advanced, mostly cashless payments which have so far been characteristic of Western countries and particularly Scandinavia, it also has a number of specificities regarding which its development diverges from that of the payment systems of Western states. On the one hand, due to the rapid economic and technological development, a major part of the population switched directly from cash to mobile payment solutions, skipping the interim developmental stages of conventional payment methods such as credit transfers or card payments. This means that although the breakthrough in this respect has been expected for years in Western countries, currently China is the only country with a popular and widespread mobile payment solution that is both known and effectively used by a major portion of the population.

This developmental leap has two consequences. One is the much faster evolution of the process that is also underway in Western countries, and is expected to be reinforced in the new Payment Services Directive to take effect in Europe as of 2018, i.e. the weakening relationship between banks and their customers. Although an increase is expected in both the size and share of the population with bank relations, this does not necessarily mean that banks can also draw a profit from this. As shown for Chinese solutions, topping up a mobile payment account in a simple way (e.g. using a payment card or by credit transfer) still requires a bank account; however, effective payments subsequently take place outside of the banking sector in the proprietary systems of the provider issuing e-money. Chinese third-party providers often have an equivalent number of customers to those of the largest banks in China, and although payment services account for only a relatively small part of their revenues (around 7 per cent), banks may not only lose customers but also key data (such as those suitable for scoring based on actual customer behaviour) as new market participants gain ground (*Citibank 2016:11*). It should also be apparent that the new systems created not only drive banks out of increasingly significant areas of their services: as a result of transactions being executed in specific providers' proprietary systems rather than in conventional clearing systems between bank accounts, bank liquidity may dry up to a large extent in the long run.

The other consequence is that the mobile payments market is currently dominated by two providers, and no major new entries are expected over the short term. Due to the specific network character of payments, it is extremely difficult to spread new services given the need to acquire a critical mass of customers that can make the system viable; however, it is inconvenient for customers to register with a large number of services and assess in every payment situation whether the payee participates in the system concerned, i.e. capable of receiving the amount sent. In this situation, to a certain degree the two service providers are competitors and to a certain degree they have divided up the market (e.g. the focus of Alibaba is e-commerce, and that of WeChat is messaging); however, over the long term

consumers' interests would be served by effective competition and low barriers to entry in a market of many participants. This would ensure continuous technological innovation on the one hand, and the most advantageous prices to customers on the other. This is the direction in which developments on payments are heading in an attempt to increase competition and facilitate market access for new providers and products by means of standardisation and interoperability. In China, the initial steps were helped by a relatively closed market and the fact that certain international IT companies were crowded out or constrained; however, over the long term this does not support the emergence of solutions that are efficient in terms of society as a whole: the systems created are self-contained and not interoperable, which may lead to market failures in the future.

Based on the foregoing, it may be argued that by implementing the recent developments on payments, China has gone down a road that is paved by the same components as those used in Western countries and is, in many respects, similar to the advances made in those countries, but certainly has a specific Chinese character. In managing future challenges, a major role will be played by the Chinese central bank, which is expected to adopt further measures to support market liberalisation and competition.

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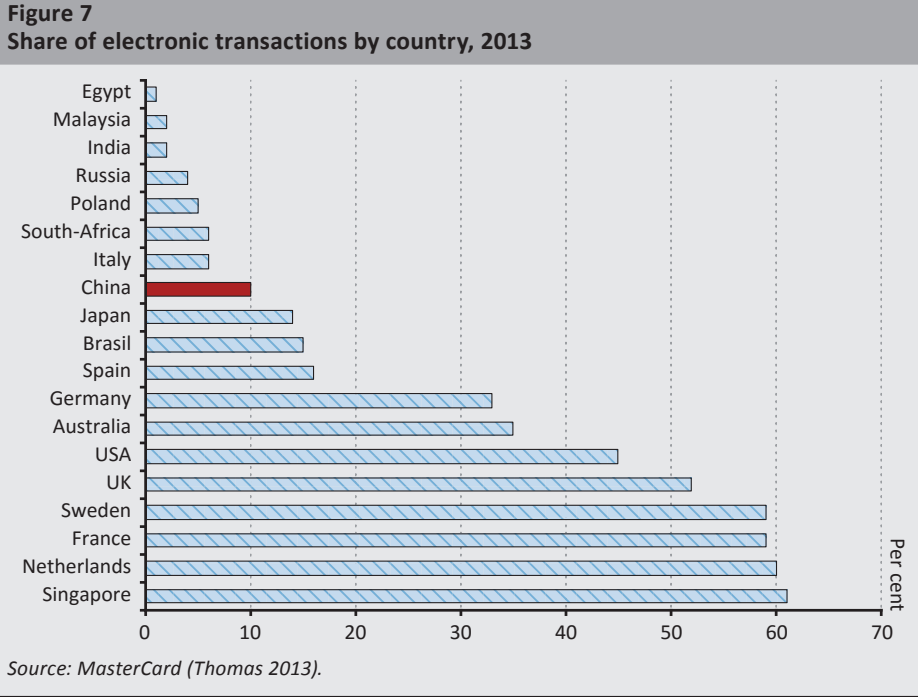
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## Annex

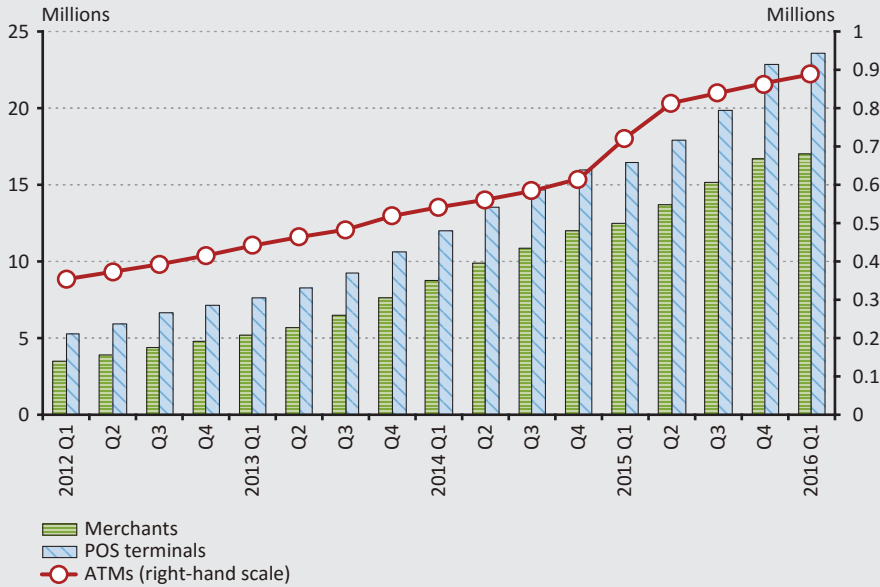


**Table 1**  
**Indicators of the level of development of payments in international comparison**

	2010	2011	2012	2013	2014
China	0.8	0.9	1	1.4	1.9
Brazil	39.4	42.8	45.2	47.7	53
Germany	71.8	74.3	75.1	75.7	71.9
India	0.3	0.3	0.5	0.7	0.9
Japan	11.1	11.3	11.8	12	12.3
Russia	18.4	18.8	18.8	19.7	19.6
South Africa	10.4	11	12.5	12.6	13
USA	24.8	25.7	27.1	28.6	29.7
<b>Number of card payments per inhabitant</b>					
	2010	2011	2012	2013	2014
China	3.6	4.8	6.7	9.5	14.4
Brazil	32.4	37.6	43.6	49.9	54.8
Germany	32.8	36	38.8	44.2	40.5
India	4	4.8	5.3	5.9	6.7
Japan	42.3	47.9	53.5	na.	na.
Russia	7.1	11.6	19.9	31.9	47
South Africa	19.9	21.9	26.1	30.6	36.5
USA	210.9	235.2	248.3	266.4	283.1
<b>Value of cashless transactions as a ratio to GDP</b>					
	2010	2011	2012	2013	2014
China	16.8	16.6	18.2	21.1	21.9
Brazil	7.6	7.5	8.3	9.0	8.7
Germany	24.4	26.2	26.0	25.1	19.5
India	10.3	9.7	8.3	7.9	7.4
Japan	6.1	6.5	6.6	6.9	6.9
Russia	8.3	7.9	8.0	8.7	9.3
South Africa	45.2	43.6	50.0	62.4	na
USA	na	na	10.0	10.0	11.7

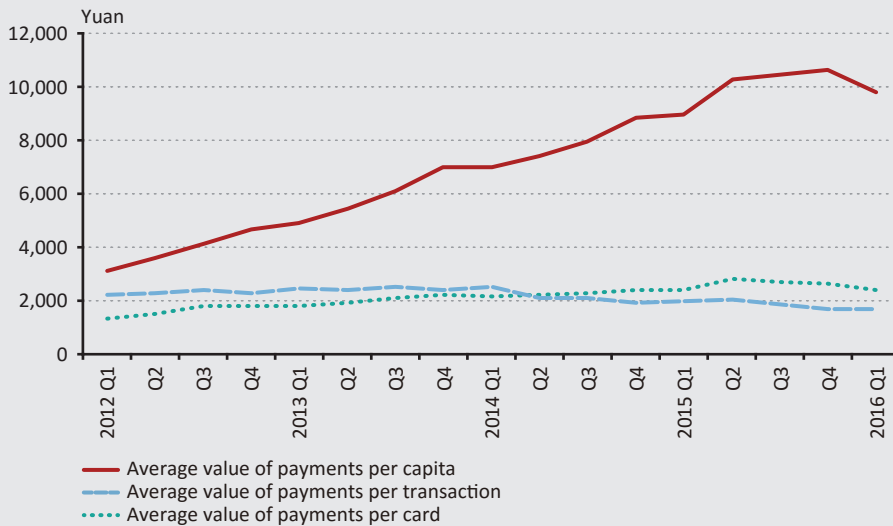
Source: BIS 2015, cashless transactions: credit transfers, direct debit, card, cheques, e-money payments.

**Figure 8**  
China's payment card acceptance network



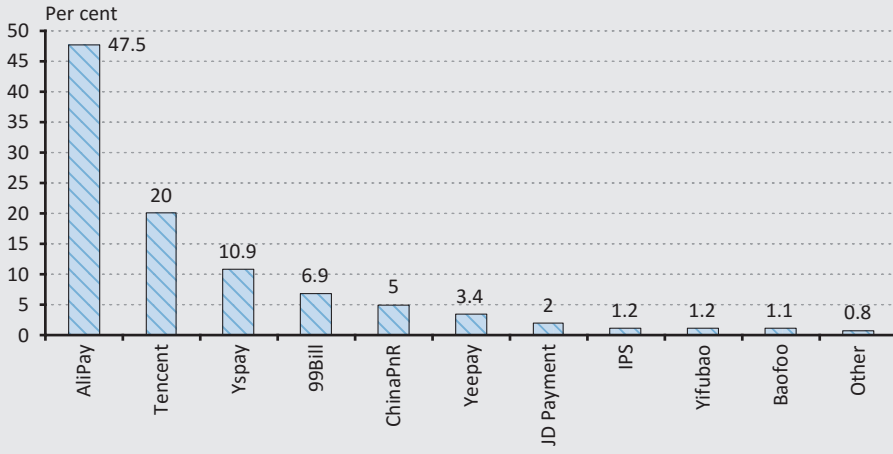
Source: PBC 2016.

**Figure 9**  
Key indicators of payment card turnover



Source: PBC.

**Figure 10**  
Market share of third-party providers (TPPs) in China, 2015



Source: Statista (2016).