

## The Development of Payment and Settlement Systems in China

As Chinese consumption patterns change and financial services become more complex, individuals and businesses are increasingly conducting payments and settlements through their banks. Loan payments can now be debited automatically and common bills for water, power, gas, and telephone services can often be paid via banks. The debit card market in China has grown markedly in the last three years, albeit from a low base (see Table 1 for debit card issuances). In the past, almost all consumer transactions were handled in cash, but by 2007 bank card usage accounted for 21% of total retail sales (up four percentage points over 2006).<sup>i</sup> The number of Point-of-Sale (POS) terminals and ATM machines at year-end 2007 experienced an even more dramatic increase, reaching 1.18 million and 123,000, respectively (up 44.4% y-o-y and 25.8% y-o-y, respectively). Banking by telephone, internet, and mobile technology is gaining popularity as well.

### Role of People’s Bank of China (PBOC) and China Banking Regulatory Commission (CBRC)

In April 2007, PBOC released some of the key points from its *2006 China Payment System Development Report*, one of the first comprehensive analyses of payment system development in China.<sup>ii</sup> The report highlighted both the progress achieved in developing China’s payment systems and the challenges that lie ahead. PBOC acts as overseer of the country’s payment systems and as a service provider of inter-bank clearing and settlement services. As such, it has dual goals of ensuring system safety and reliability, while also striving to improve operational efficiency. PBOC’s Payment System Department is charged with the following key responsibilities: establishing payment and settlement rules including regulations on bills exchange, bank account management (jointly with related government agencies), and bank card settlement businesses; supervising innovations in payment instruments; and establishing reporting systems for large-value and suspicious RMB payment transactions.

**Table 1: Debit Card Issuance in China**

Year	Total # (in billions)	Increase (y-o-y)
2005	0.92	
2006	1.08	17.4%
2007	1.38	27.6%

Source: PBOC

While these trends represent natural steps toward financial modernization, these new products and services have placed pressure on China’s financial infrastructure that require investments in technology and the development of new systems to support the flow of money across the country. The existing gap between the demand for individual payment and settlement services and the present supply of such services by banks has contributed to long wait times at bank outlets. This *Asia Focus* summarizes recent changes in China’s payment and settlement systems and considers how China is addressing technology and risk management concerns as it works to create a more sophisticated, international financial sector.

As a complement to PBOC’s system-wide responsibilities, CBRC focuses on the supervision of individual banks. CBRC supervision tasks involve formulating rules and regulations governing banking institutions, and conducting consolidated supervision to assess, monitor and mitigate the overall risks of each banking institution. CBRC also has dual goals of promoting financial stability and of facilitating financial innovation. Recent CBRC notices related to IT issues and payment systems include: Notice on Strengthening the Risk Management of Bank Card Issuance (February 2007); Guidelines on Operational Risk Management of Commercial Banks (May 2007); and Notice on Improving Risk Management and Services for Internet Banking Businesses (June 2007).

### Rapid Growth and Development of Payment and Settlement Systems

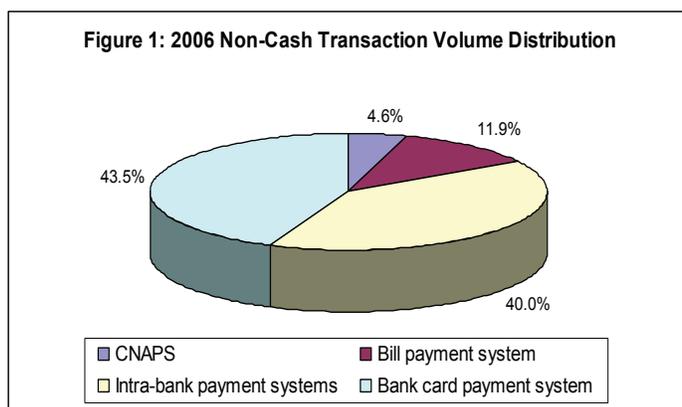
*China National Advanced Payment System (CNAPS)*: One of the primary components of China’s financial infrastructure is CNAPS, which provides clearing services for banking institutions and the overall financial market. CNAPS

consists mainly of two applications: the High-Value Payment System (HVPS) and the Bulk Electronic Payment System (BEPS).

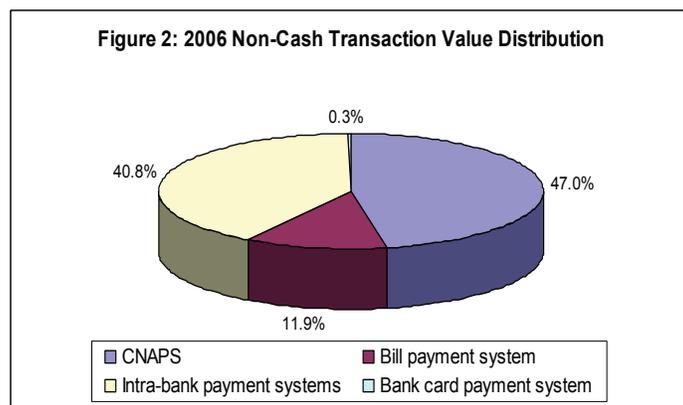
In operation nationally since June 2005, HVPS mainly services large-value credit transfers above a given threshold; settlement is on a trade-by-trade basis at gross value in real time. HVPS is connected to several systems, namely, the central securities system, banking institutions' intra-bank payment systems, bank card payment systems, RMB inter-bank borrowing foreign exchange systems, and to RMB clearing banks in Hong Kong and Macau. In 2007, HVPS processed 170 million payment and clearing transactions totaling RMB 530 trillion (U.S.\$76 trillion), up 21% y-o-y and 105% y-o-y, respectively.<sup>iii</sup> Since its introduction, HVPS has helped to improve the efficiency of China's open market operations by providing PBOC with real-time fund settlement of its securities trades. It also provides PBOC with accurate and immediate information on required reserves.

Launched nation-wide in June 2006, BEPS is HVPS' counterpart. It handles low-value debit payments and credit transfers below a given threshold. The system provides low-cost payment and clearing services for high-volume transactions by sending payment instructions in bulk and making settlement after netting. BEPS offers 24-hour service for online and telephone payments, and is used not only by consumers to settle small bills like utility fees, but also by government agencies for pension, unemployment and other transfers. In 2007, BEPS processed 70 million transactions totaling more than RMB 2 trillion (U.S.\$286 billion).<sup>iv</sup>

Although the two major systems of CNAPS process just 4.6% of non-cash transactions in China by volume, they handle almost half of total non-cash transactions by value (see Figures 1 and 2).



Source: PBOC 2006 China Payment System Development Report



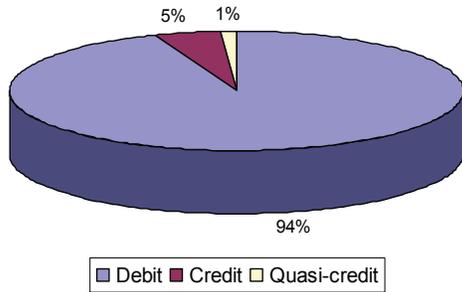
Source: PBOC 2006 China Payment System Development Report

*Check Image System (CIS):* Checks written by individuals and businesses in China have conventionally been accepted only on a local basis, thereby restricting settlement of payments across regions. In December 2006, PBOC began a pilot CIS program in Beijing, Tianjin, Shanghai, Guangdong, Hebei and Shenzhen with the longer-term goal of rolling out a national check image exchange system. CIS deals mostly with inter-bank and intra-bank check image exchange. The corresponding fund clearing and settlement is processed by BEPS.

*Intra-bank Payment Systems:* In the past few years, China's major banking institutions have made investments in capital and technology to enhance their systems for internal fund transfers and clearing with the intent to improve business innovation and risk management. These intra-bank payment systems are being developed to address customer service needs, centralize data processing, strengthen risk management, and integrate domestic and foreign currency accounting systems. In 2007, intra-bank payment systems processed 2.2 billion transactions totaling RMB 272 trillion (U.S.\$39 trillion), representing year-on-year growth of 45% and 21%, respectively.<sup>v</sup>

*Bank Cards:* Founded in March 2002 following approval from the State Council and PBOC, China Union Pay (CUP) operates the country's only inter-bank bank card settlement system. It is a national bank card association in China of all Mainland bank card issuers, who are considered members of CUP. As of the end of 2007, over 150 CUP domestic member banks issued 1.47 billion bank cards (y-o-y growth of 30%) comprised of 1.38 billion debit cards, 17.5 million quasi-credit cards<sup>vi</sup>, and 70 million credit cards (see Figure 3). The number of domestic CUP merchants reached 740,000 by year-end 2007, up 42% over year-end 2006. A total of 13.5 billion bank card transactions were processed in 2007 totaling RMB 120 trillion (U.S.\$17 trillion), up 24% and 67%, respectively, from 2006.

Figure 3: Break-down of Bank Cards by Type (2007)



Source: PBOC

### Recent Changes and Regulatory Guidance

In May 2007, PBOC issued the *Notice on Improving Individual Payment and Settlement Services* (“the Notice”) which sets forth explicit requirements for PBOC branches and commercial banks on the subject of improving payment and settlement services, and strengthening payment and settlement business management. For example, it highlighted the fact that many individuals currently hold multiple bank settlement accounts because public utility companies and employers often require their customers/employees to open an account at a specific bank to make/receive payments. These arrangements have made consolidation of individual personal financial assets relatively difficult. As a result, the Notice provides that banks should not enter into exclusive agreements with entities for the purpose of designating their bank for payment services, and banks should not refuse to handle cross-bank agent collection and payment businesses.

The Notice also raised the ceiling for daily accumulated ATM withdrawals from RMB 5,000 (U.S.\$716), set in 1997, to RMB 20,000 (U.S.\$2,863). Within this limit, banks can set their own caps for each withdrawal and for daily accumulated withdrawals per card depending on the needs of their clients and their IT security capability. The daily accumulated ATM withdrawal limits for credit cards and quasi-credit cards were left unchanged at RMB 2,000 (U.S.\$286) and RMB 5,000 (U.S.\$716), respectively, as the majority of bank card purchases are made with debit cards. The raised ceiling reflects the growing need for large transactions in China’s rapidly developing economy. On the other hand, the Notice also promotes the use of personal and cashiers checks, noting that when people make very large purchases such as cars, houses, and investments they currently tend to pay by withdrawing significant sums of cash from one bank in order to hand it over to another. As China’s CIS expands nationally, PBOC has begun to promote the use of personal and cashiers checks to reduce the inconven-

ience, cost, and security concerns of withdrawing substantial sums of cash.

### Banking Sector Developments in Rural Areas

China’s government remains focused on addressing the country’s imbalanced economic growth, including emphasis on the development of financial services in rural areas. In July 2006, PBOC expanded a one-province pilot program for special bank cards for migrant workers to 11 provinces. The “tailored” bank card service enables migrant rural workers to deposit cash into their CUP bank card account in the city where they work, then withdraw cash from a Rural Credit Cooperative (RCC) in their hometown. By early 2008, the service was expanded to 14 provinces and municipalities. The goal of the program is to diversify deposit and withdrawal options available to migrant workers, to expedite their remittances to families in their hometowns, and to develop the banking and financial sector in rural areas. As of year-end 2007, the number of tailored bank card transactions amounted to 4.16 million.<sup>vii</sup> China’s Postal Savings Bank is planning to introduce a similar service to increase its competitiveness in rural areas as well.

By the end of September 2007, RCCs in 24 provinces had launched bank card businesses, issuing a total of 64.6 million (mainly debit) cards.<sup>viii</sup> As debit cards lack overdraft and other credit-granting functions that could be valuable tools for rural customers, CBRC has encouraged RCCs to develop other products tailored to the needs of rural populations. CBRC’s recent *Articles of Association on Bank Card (Credit Card) Businesses of RCCs* sets specific requirements on internal controls, risk management, and network systems to support an environment suitable for the issuance of credit cards.

### The Olympics and Payment/Information Technology (IT) Infrastructure

One of the forward-looking goals listed in the *2006 China Payment System Development Report* is to ensure that visitors at the 2008 Summer Olympic Games will have secure access to convenient financial services (use of debit and credit cards, access to cash via ATMs, etc.). Beijing is expected to see approximately 800,000 international visitors and 900,000 domestic tourists during the Olympics, and the city government has announced plans to install POS terminals at 90% of the retail outlets at or near Olympic venues.<sup>ix</sup> In February 2008, Chinese media sources reported that CBRC Vice-Chairman Guo Ligen posted a statement on the CBRC website about the importance of bank IT systems to the success of the Olympics. Media reports

also indicate that a number of the largest banks in China have experienced some form of partial system failure or significant slow-down. Although service was restored within a small number of hours, the incidents reveal that banks' IT infrastructure may not be growing as quickly as banks' new products and services. In the CBRC statement, Guo urges banks to enhance equipment, implement trial runs, develop contingency plans, and expand the operating capacity of their IT systems. According to press reports, CBRC plans to inspect major banks' IT systems between February and July of this year.

## Conclusion

As a developing economy, China faces two main challenges with respect to its payment and settlement systems: 1) keeping up with the rapid pace of change and increasing complexity in the banking sector (particularly in urban areas), and 2) improving payment infrastructure and access to financial services in rural areas, which remain relatively underdeveloped. The government has put great effort into creating and implementing, nationally, several significant payment and settlement systems, while individual banks have invested in their own IT infrastructure. Noteworthy progress has been made, but many of the systems are new and untested. Financial institutions and regulators are challenged with developing methods to measure, monitor, and evaluate the operational, legal and IT risks tied to these new systems. Furthermore, because the cash-based economy in China remains quite strong, public education about new financial services will be a critical part of continued progress in this area.

<sup>i</sup> All 2007 figures are from PBOC's website: "PBOC Convened the First Quarterly Meeting on Payment Services and Policies with Commercial Banks in Beijing" posted 1/28/08.

<sup>ii</sup> All 2006 figures are from this report. The full report is available in English on PBOC's website (posted 1/18/08) at: <http://www.pbc.gov.cn/english/detail.asp?col=6400&ID=1002&keyword=payment>

<sup>iii</sup> PBOC figures.

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<sup>vi</sup> PBOC defines a quasi-credit card as "a credit card whose holder is required to deposit a certain amount of reserves in the card and may make purchases within the credit line extended by the issuer of the card when the balance of such reserve account falls short."

<sup>vii</sup> PBOC figures.

<sup>viii</sup> CBRC figures.

<sup>ix</sup> People's Daily Online (Xinhua) 2/20/08

\*Exchange rate used U.S.\$1 = RMB6.9845