ASIA FOCUS

FRBSF | COUNTRY ANALYSIS UNIT | JANUARY 2015

NON-BANKS AND RETAIL PAYMENTS: INNOVATIONS IN CHINA AND THE UNITED STATES

BY NICHOLAS BORST

Retail payment systems worldwide have historically been controlled by banks and card networks closely linked to banks. This paradigm is shifting as a variety of companies from outside the banking industry are entering the payments industry. Non-banks, also referred to as third-party payment companies, are increasingly participating in all aspects of the payment system, ranging from providing customer interfaces to back-end processing.[1] Some non-banks have gone even farther, creating online payment services that bypass much of the existing payments infrastructure. These new services are fostering innovation and competition in the payments industry, but also have the potential to create new challenges for regulators seeking to ensure a stable national payment system. This *Asia Focus* examines the role that non-banks play in retail payment systems, compares the structure of the retail payments industry in United States and China, and discusses potential risks to the financial system.

The Evolving Role of Non-Banks in Retail Payment Systems

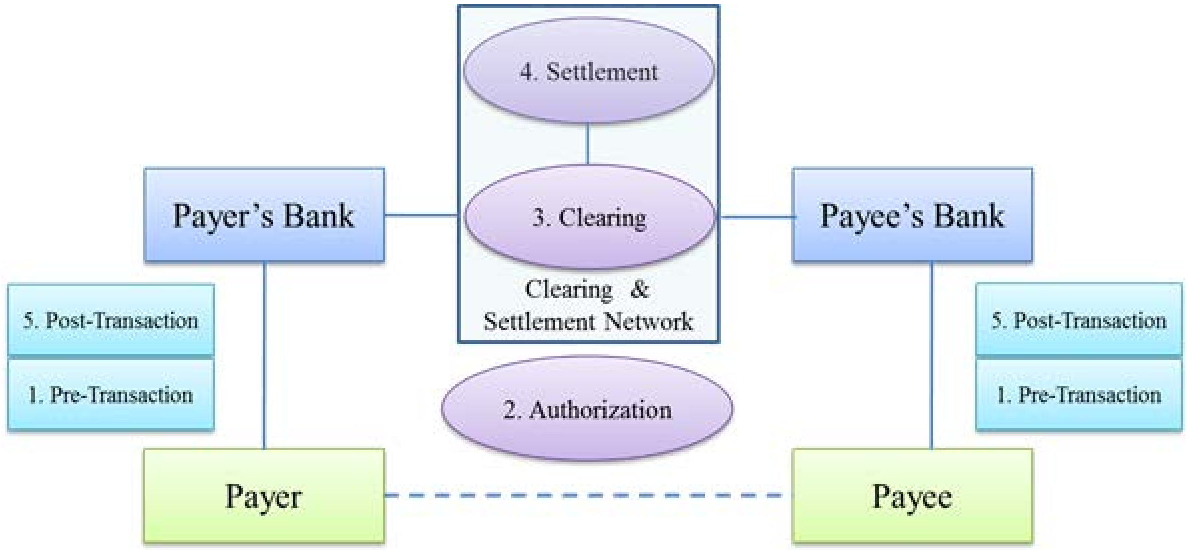
The processing of retail payments is a core function of the financial system. Over the last several decades, electronic non-cash payments have grown rapidly. The scale of non-cash payments is enormous with an estimated 334 billion transactions globally in 2012.[2] Bank cards accounted for 61% of total number of non-cash transactions. Credit transfers and direct debits together accounted for 30% of non-cash transactions. The remainder of transactions consisted of checks, which continue to decline as a share of total transactions.

Payments other than cash generally require three principal steps to be completed: authorization, clearing, and settlement. The first step, authorization, entails transmitting data to the payment processor for confirmation of identity and permission to perform a transaction. The next step, clearing, involves transmitting, reconciling, and netting of transactions. The final phase, settlement, is the transfer of funds to account for net credits and debits from these transactions. *Figure 1* shows a stylized model of a modern retail payment system illustrating the sequence of steps in the processing of a payment. This sequence varies according to the type of payment system and is frequently more complex in reality.

Banks have always been at the center of payment systems due to their role as repositories for savings and their ability to transfer funds across the financial system. In conjunction with banks, card networks have played a significant role in retail payments, providing a secure and convenient form of payment to customers and businesses.

Although banks and card networks operate key aspects of retail payment systems, non-banks also participate as service providers throughout the payments process. *Table 1* outlines the broad categories of roles played by non-banks. Most non-banks have specific and limited functions in retail payment systems, such as providing customer interface or back-office services for payment networks run by banks. Some non-banks also provide clearing and settlement services to banks, thus playing a much larger role as an integral part of payment processing.

Figure 1 – Stylized Model of a Retail Payment System



Source: Adapted from Bank for International Settlements[3]

A significant development in recent years is the emergence of non-banks as end-to-end payment service providers. Primarily through online platforms, these third-party providers offer payment services that operate with varying degrees of independence from existing payment systems. Some function on top of the existing bank card networks and offer financial services in conjunction with banks. Other third-party payment services may involve banks only sparingly, such as for the addition or redemption of funds, while handling the other steps of payment processing independently.

Table 1 – Roles of Non-Banks in Retail Payments

Type of Service	Activity	Interaction with Banks	Examples
Front-end Providers	Provide the interface between users and the clearing and settlement process. Involved in pre-transaction, initiation, and post-transaction stages of a payment, but most frequently not involved in clearing and settlement.	Some competition over providing customer interface; reliance on banks for clearing and settlement.	Mobile wallets, internet payment providers, point of sale conversions for mobile devices, credit card processors, payment and e-money institutions.
Back-end Providers	Provide specialized back-end services related to payment processing.	Cooperative or outsourcing arrangement with banks to provide services.	IT services, data center services, trusted service managers, data security firms, companies offering back office services such as anti-money laundering, audit, or compliance services.
Operators of Retail Payment Infrastructure	Provide clearing and settlement services. Do not offer front-end or back-end services.	Cooperate with banks and other service providers. Often owned by bank.	Visa, MasterCard, China Union Pay.
End-to-end Providers	Offer a combination of front-end, clearing and settlement, and back-end services.	Compete and cooperate with banks. Offer some services that make use of bank payment services and other services that bypass them.	E-money services such as Paypal and Alipay, some remittance services.

Source: Bank for International Settlements[4]

In the United States and China, the payments industry is awash with new entrants, which are often ventures started by Internet and technology companies. The most successful of these new entrants have leveraged their large customer networks and e-commerce platforms to create third-party online payment services which offer full service payment processing to customers and merchants. In the process, they have captured a large share of the e-commerce market in both countries. The result has been a shift of the entire competitive landscape of the payments industry that challenges the dominance of existing payment systems. The following two sections will compare and contrast the evolution of third-party payment companies in both countries and the regulatory environment for payments.

Non-Bank Payment Companies in the United States

The United States has historically been at the forefront of payments innovation. Third-party companies have played a large role in retail payment systems for many decades, particularly in front-end and back-end payment processing activities.[5] *Table 2* outlines the main retail payment systems at work in the United States, including third-party payment companies. With the spread of the Internet and e-commerce, third-party online payment companies have rapidly grown in both size and importance and are offering increasingly comprehensive payment services.

Table 2 – Selected Retail Payment Systems in the United States

Payment System	Description	Operator
Automated Clearing Houses (ACH)	Electronic networks that processes large volumes of credit and debit transactions between participating financial institutions.	The Federal Reserve System and the Electronic Payments Network (EPN)
Check Clearing Systems	Systems that allow checks to be settled directly, or via check clearing houses or the Federal Reserve System. Checks can be imaged for deposit and/or check clearing, or converted into an ACH transaction for clearing.	The Federal Reserve System
Bank Card Networks	Networks that provide communications, transaction authorization, and interbank financial settlement for bank cards. Settlement can occur directly, through settlement banks or via the Federal Reserve System.	Various bank card networks
Third-Party Payment Services	Services that facilitate online and in-person retail payments. Utilize online wallets, bank card networks, and automated clearing houses for clearing and settlement.	Various third-party providers

Source: Bank for International Settlements[6]

Third-party online payment companies in the United States offer services that are both complementary and competitive to bank and card network-centric payment systems. The complementary aspect stems from the fact that many third-party payment services make use of the existing payments infrastructure. For example, third-party payment companies allow their customers to use bank cards for online transactions. These payments are then processed via the incumbent card networks, such as Visa and MasterCard. Third-party payment companies also offer financial services in conjunction with banks, such as working capital loans and payment by installments.

Some payment services offered by third-party payment companies compete with existing payments infrastructure. For example, many third-party payment companies allow customers to link their online accounts to their bank account. This allows for the processing of online payments via an automated clearing house, bypassing the card networks payments chain. Some third-party payment companies even offer closed-loop payments, where virtual accounts for users within the system are credited and debited, without the involvement of outside banks.

Over the past decade, third-party payment services have grown rapidly in the United States. In 2012, the combined amount of secure online payments, mobile wallet payments, and person-to-person online money transfers exceeded 2 billion transactions.[7] One of the largest third-party online payment companies in the United States is Paypal. The company was initially founded as a startup and later acquired by Ebay, a large online auctions site.[8] In subsequent years, the company has expanded globally and now claims more than 157 million active accounts. In 2013, the company processed $180 billion in total payment volume, up 24% from the prior year. Other companies, including Square, Dwolla, Google, Apple, and Amazon, have begun offering payment services that range from bank card processing to alternative payments services which bypass both card networks and the automated clearing houses.

The regulation of non-bank payment companies in the United States is dispersed across multiple regulatory agencies. Third-party online payment providers, such as Paypal, are typically regulated as money transmitters on a state-by-state basis and as money services businesses by the U.S. Department of Treasury.[9] Payment companies registered as money transmitters are subject to the *Bank Secrecy Act* and other anti-money laundering measures and are required to register with the Financial Crimes Enforcement Network (FinCen). The banks that offer financial services in conjunction with third-party payment companies are regulated by state and national banking regulators. When banks outsource payment services to non-banks, the non-banks can be classified as Technology Service Providers (TSPs). Regulation of TSPs is then coordinated through the Federal Financial Institution Examination Council.[10]

The Federal Reserve System (FRS) plays an important role in overseeing the national payment system. The FRS' *Policy on Payment System Risk* addresses the risks that payment and settlement activities present to the financial system and to the Federal Reserve Banks. In 2013, the FRS issued a public consultative paper aimed at gathering input from the public and industry participants on the future development of payment systems. The final recommendations are still forthcoming, but the initial findings highlight the desire to upgrade the speed and safety of existing payment systems.[11]

Non-Bank Payment Companies in China

Trends in payments innovation in China are more recent, but are notable for the speed by which third-party payment providers have grown. The number of third-party payment companies has increased to 269 since the People's Bank of China (PBOC) started issuing licenses to these companies in 2011.[12] The market is dominated by China's major Internet companies, mainly Alibaba and Tencent, which integrated new payment services into their existing online marketplaces and social networks.[13] These new payment services were rapidly adopted by the large customer bases of these Internet companies, because they offered a convenient and secure mechanism for online payments. As the scope and scale of these payment services have expanded, these companies have come into conflict with UnionPay, the country's national bank card network.

Retail payments in China are relatively advanced given the country's level of economic development. The PBOC and UnionPay operate the core systems involved in retail payments. These systems include High-Value Payment System (HVPS), the Bulk Electronic Payment System (BVPS), the Cheque Image System (CIS), the Internet Banking Payment System (IBPS), and the Interbank Bankcard Transaction Clearing System (IBTCS).[14] *Table 3* outlines the main payment systems at work in China in the processing of domestic retail payments.

Table 3 – Selected Retail Payment Systems in China

Payment System	Description	Operator
Bulk Electronic Payment System (BEPS)	Primarily local and non-local paper-based debit payments as well as low-value credit transfers below a given value. Payment instructions in bulk, nets in real time and settles at regular times.	People's Bank of China
Internet Banking Payment System (IBPS)	Primarily interbank retail payment transactions via the Internet, enabling customers to submit online payments and obtain results in real time.	People's Bank of China
Local Clearing Systems	Conduct centralized exchange and netting of local electronic payments and paper-based instruments such as checks, promissory notes, and bank drafts that cannot be truncated.	People's Bank of China, Local Members
Check Image System (CIS)	Check truncation system supporting the use of checks nationwide. It converts physical checks into images, and then transmits the check image and related information to the drawer's bank.	People's Bank of China
Interbank Bankcard Transaction Clearing System (IBTCS)	Clearing for bank credit and debit cards. Settlement is conducted through the HVPS.	UnionPay
Third-Party Payment Services	Clearing systems for online transactions. Settlement occurs with funds held within the network, through a bank card network or via separate agreements with partner banks.	Various third-party operators

Sources: People's Bank of China[15]

As in the United States, non-cash payments have been growing rapidly in China. Until recently, non-cash transactions in China have been dominated by the banks and a single card network, UnionPay. The company was created by the central bank and an association of state-owned commercial banks to serve as the country's unified bank card processor and to operate the Interbank Bankcard Transaction Clearing System. UnionPay-branded cards are ubiquitous in China. The company's status as the only entity licensed to process bank card transactions has allowed it to operate as a quasi-monopoly.

Many new third-party payment services in China are structured in a manner that bypasses the UnionPay bank card payment system. To create these new payment services, third-party payment companies have negotiated agreements directly with the banks to facilitate the settlement of funds. The fees in these agreements are significantly lower than those for bank card transactions. For example, Alipay is reported to charge a fee of 0.1% of a transaction's value rather than the 0.3% to 0.55% that is typical for a UnionPay transaction.[16] Banks have been willing to accept the lower commission in order to retain access to China's dynamic and growing e-commerce market via these new payment services.

The scope and scale of operation of Chinese third-party payment companies is immense. Alipay, the payment service affiliated with Alibaba, has signed settlement agreements with over 200 banks. The company states that it had more than 300 million users in 2013 and processed over 80 million transactions per day.[17] Alipay handled RMB 3.8 trillion ($620 billion) in transactions during its last fiscal year.[18] Beyond payment services, Alipay has branched into small business loans and purchased a fund manager in order to offer a money market fund for its users. Other Internet companies, including Tencent and Baidu, have their own third-party payment services and are beginning to offer financial products and services to their users.

Unsurprisingly, the growth of third-party payment companies in China has generated friction with existing players. The largest conflict has been with UnionPay, which has taken aggressive steps to curb the growth of third-party competitors. UnionPay requires that UnionPay-branded bank cards operate via its own network and not through alternative third-party arrangements. In 2013, the company sent warnings to banks that signed separate agreements with third-party payment providers, requiring them to integrate all online transactions into the UnionPay network by July 2014.[19] However, most banks do not appear to be complying with the regulation. UnionPay has also demanded that in-person payments by third-party payment services be integrated into the UnionPay network, a move that was reinforced by a recent PBOC decision.[20] As a result, payment services such as Alipay have suspended in-person payment services for the moment.[21]

The regulatory structure for payments in China is relatively unified. The PBOC is the primary regulator for payments systems. It is responsible for ensuring the normal operation of and formulating new rules on payment and settlement systems in conjunction with the State Council, which is China's highest executive body. The central bank's approach to third-party payments is nuanced and evolving. It has supported the growth of new payment companies via the granting of numerous third-party payment licenses, but has also taken steps to restrict the operations of new payment companies. In 2014, the PBOC issued regulations that limit the amount of money that can be transferred from banks to online third-party payment accounts and curtailed online payment companies from offering virtual credit cards and payment via QR codes. The central bank has also established requirements that third-party payment companies implement strict identification verification procedures to reduce fraud and money laundering.

However, the level of openness regarding third-party payments appears to have increased significantly in recent months. In October 2014, the State Council ruled that both foreign and domestic companies would be allowed to set up bank card clearing institutions.[22] This puts an end to UnionPay's quasi-monopoly status for bank card processing and paves the way for an even more rapid increase of new entrants into China's payments industry.

Impact on the Financial System

The expanding role of non-banks in Chinese and US payment systems brings both new benefits and new risks. Non-bank payment providers, particularly online payment services, have improved the reach, efficiency, and convenience of payment systems for many consumers and businesses. These services provide a secure and low-cost method of payment for online goods. This has facilitated the growth of e-commerce in both countries, which now accounts for a significant portion of overall GDP.[23]

In both China and the United States, third-party payment services have unique potential to benefit groups underserved by existing financial institutions. These companies utilize technology and customer data to provide financial services to areas and customers that are currently underserved. For example, in the United States, small businesses have benefited significantly from the ability to accept secure payments online. This has dramatically increased their ability to sell to customers across the globe. Moreover, companies like PayPal are now harnessing their relationships with small businesses to offer working capital loans. These loans, offered in conjunction with a partner bank, are processed quickly and lending decisions are based on the business's transaction record with Paypal. This model has the potential to greatly increase access to finance for small and micro businesses, which are often not high-value customers for banks.

In China, access to finance in rural areas and smaller cities is frequently a problem. However, the spread of new payment services has the potential to dramatically improve the range of financial services available to these communities. Most third-party payment services are accessible via mobile phone, making them available to the millions of people in China that do not own a home computer. As a result, many farmers and rural merchants are now buying and selling goods nationwide. Third-party payment companies have embraced this trend and Alipay in particular is seeking to increase its number of rural users to 100 million by 2017.[24]

The growth of new payment services can also foster innovation and improve efficiency in existing payment systems in both China and the United States. Third-party payment companies are seeking to challenge the existing fee structure for bank card transactions, providing competitive pressure to existing bank card networks. To keep pace, incumbent payment services will have to lower their fees and upgrade their technical infrastructure. New payment services have also aggressively developed new services and customer interfaces. This stands in contrast with many existing payment services which are often criticized as outdated and not customer-centric. Again, incumbent players will need to adapt or risk losing more users.

The emergence of new payment services, however, is not a zero sum game. The integration of non-banks into existing payment processing services has improved efficiency and lowered costs. While third-party payment companies compete with incumbent payment services in some areas, they also provide opportunities for business growth by allowing users to process transactions via the bank card networks. As new services and technologies increase the overall number of users and transactions, the entire payments industry has the potential to benefit.

While the benefits of new entrants to the payments industry are potentially large, there are also significant risks. The rise of new payment providers poses new challenges for financial regulators in both countries. Many of the companies that are entering the payments industry are not primarily financial services firms or are new startups and therefore lack experience complying with financial regulations. This can lead to an increase in operational risks in important payment systems, such as errors, omissions, fraud, and lack of system resiliency. For example, new entrants may lack sufficient resources and go out of business, leading to gaps in the payment network and failure to process transactions. New entrants may not adhere to the required levels of customer data protection, leading to breaches of sensitive information. The dominance of non-bank payment services in certain markets, such as e-commerce, can lead to concentration risks. New payment providers may not adhere fully to anti-money laundering and terrorist financing rules and therefore provide new channels for the flow of illicit funds. Internal fraud controls may be weak, putting customer deposits at risk. None of these problems are unique to non-bank payment services, but the degree of risk may be heightened compared to existing services.

Third-party payment companies also add complexity to existing payment systems by increasing the number of players involved in payments processing. The speed at which new entrants enter the field can make proper supervision difficult and in some situations the division of regulatory responsibility is unclear. This has the potential to lead to non-bank payment providers "falling through the cracks" with respect to supervision. Additionally, the resiliency of payment services offered by third-parties, particularly those that bypass rather than make use of the existing payments infrastructure, is mostly untested at present. This makes assessing the risks to the stability of the overall national payment system more difficult.

Conclusion

The growing role of non-banks in payment systems and the increasingly sophisticated and complete payment services they offer constitute a major trend in both China and the United States. Supported by the growth of e-commerce and mobile devices, Internet companies and startups in these countries have leveraged their technological advantage and customer bases to create innovative payment services. These new payment services have grown to play a large role in payment systems, cooperating and competing with existing players. The implications of these trends are now global as new payment firms in both countries have already begun expanding overseas into new markets.

Regulators in China and the United States have been generally supportive of these new entrants to the payments industry. In China, the PBOC has granted numerous licenses to third-party payment providers, while taking steps to circumscribe their entry into areas the central bank deems risky. In the United States, the regulatory environment for non-banks to enter the payments industry is already open, posing few hurdles to new entrants. The FRS has sought consultation from the operators of new payment services as it works to guide the evolution of payment systems in the United States.

Endnotes

1. The definition of non-banks varies by country significantly. A general working definition is entities whose primary business activity is not taking deposits and making loans.

2. "World Payments Report 2014 | Developments in the Global Payments Landscape." World Payments Report 2014: Developments in the Global Payments Landscape. Accessed November 18, 2014. https://www.worldpaymentsreport.com/.

3. "Non-banks in Retail Payments." Bank for International Settlements. September 1, 2014. Accessed November 18, 2014. http://www.bis.org/cpmi/publ/d118.htm.

4. Ibid.

5. Sullivan, Richard. "Risk Management and Nonbank Participation in the U.S. Retail Payments System." Economic Review - Federal Reserve Bank of Kansas City. January 1, 2007. Accessed November 18, 2014. http://www.kansascityfed.org/publicat/econrev/PDF/2q07sull.pdf.

6. "Payment, Clearing and Settlement Systems in the United States." CPSS Red Book - Bank for International Settlements. January 1, 2012. Accessed November 18, 2014. http://www.bis.org/cpmi/publ/d105_us.pdf.

7. "The 2013 Federal Reserve Payments Study: Recent and Long-Term Trends in the United States: 2000–2012." The Federal Reserve. July 1, 2014. Accessed November 18, 2014. https://www.frbservices.org/files/communications/pdf/general/2013_fed_res_paymt_study_detailed_rpt.pdf.

8. In September of 2014, Ebay announced that Paypal would be spun off into a separate entity.

9. "Non-banks in Retail Payments." Bank for International Settlements. September 1, 2014. Accessed November 18, 2014. http://www.bis.org/cpmi/publ/d118.htm.

10. "Nonbanks in the Payments System: European and U.S. Perspectives." Federal Reserve Bank of Kansas City. May 2, 2007. Accessed November 18, 2014. http://www.kansascityfed.org/PUBLICAT/PSR/RWP/NonbanksRWP07-01.pdf.

11. "Federal Reserve Banks Complete Final Phase of Research to Inform Payment System Improvements." Federal Reserve Financial Services Policy Committee. September 4, 2014. Accessed November 18, 2014. http://fedpaymentsimprovement.org/wp-content/uploads/final-phase-research-press-release.pdf.

12. Li, Xiaoxiao. "Central Bank Issues More Third-Party Payment Licenses." Caixin Media. July 16, 2014. Accessed November 18, 2014. http://english.caixin.com/2014-07-16/100705011.html.

13. Alibaba and Tencent are reported to around 70% of the online payment market. See "China's Third-party Internet Payment Exceeded $302B in Q1 2014." China Internet Watch. July 28, 2014. Accessed November 18, 2014. http://www.chinainternetwatch.com/8010/chinas-third-party-internet-payment-exceeded-302b-in-q1-2014/.

14. "Payment, Clearing and Settlement Systems in China." EMEAP Working Group on Payment and Settlement Systems. August 1, 2012. Accessed November 18, 2014. http://www.emeap.org/emeapdb/upload/WGMeeting/Payment, clearing and settlement systems in China.pdf.

15. Chen, Xue. "Development of Retail Payment Services in China." Third Meeting of the CPSS - World Bank Retail Payments Forum. March 19, 2013. Accessed November 18, 2014.

http://siteresources.worldbank.org/EXTPAYMENTREMMITTANCE/Resources/Xue_Day2_final.pdf.

16. Wen, Xiu, and Yuzhe Zhang. "Alipay and UnionPay Battle over How Payments Are Processed." Caixin Media. September 6, 2013. Accessed November 18, 2014. http://english.caixin.com/2013-09-06/100579207.html.

17. Lee, Melanie. "Alipay Targets Rural and Overseas Users." Alizila. October 16, 2014. Accessed November 18, 2014. http://www.alizila.com/alipay-targets-rural-and-overseas-users.

18. Ibid.

19. Weinland, Don. "Central Bank Sends Mixed Signals on Online Payments." South China Morning Post. July 21, 2014. Accessed November 18, 2014. http://www.scmp.com/business/china-business/article/1556884/central-bank-sends-mixed-signals-online-payments.

20. In March of 2014, the central bank suspended activities by Alibaba and Tencent where the companies were allowing the purchase of offline goods by scanning a QR code with a mobile phone.

21. Wen, Xiu, and Yuzhe Zhang. "Alipay and UnionPay Battle over How Payments Are Processed." Caixin Media. September 6, 2013. Accessed November 18, 2014. http://english.caixin.com/2013-09-06/100579207.html.

22. Jiang, Xueqing, and Yiyao Wu. "Bank Card Clearing Market Opened up." China Daily. October 30, 2014. Accessed November 18, 2014. http://english.gov.cn/premier/news/2014/10/30/content_281475003189187.htm.

23. The share of internet-related expenditures in China and the United States is 4.4% and 4.3%, respectively. See Woetzel, Jonathan. "China's Digital Transformation." McKinsey & Company. July 1, 2014. Accessed November 20, 2014. http://www.mckinsey.com/insights/high_tech_telecoms_internet/chinas_digital_transformation.

24. Lee, Melanie. "Alipay Targets Rural and Overseas Users." Alizila. October 16, 2014. Accessed November 18, 2014. http://www.alizila.com/alipay-targets-rural-and-overseas-users.

Written by: Nicholas Borst (nicholas.borst@sf.frb.org)

Additional Contacts: Walter Yao (walter.yao@sf.frb.org) and Chris Sigur (christoper.sigur@sf.frb.org)