

ASIA'S FINTECH REVOLUTION

BY SEAN CREEHAN AND NICHOLAS BORST

Driven by the proliferation of new technologies and startups, financial systems across Asia are undergoing a significant transformation. Finance in Asia has been historically dominated by large banks, many of which have been slow to embrace technological change thereby leaving many parts of the economy underserved in terms of access to financial services. The growing ubiquity of mobile phones, the internet, and other technologies have given rise to new ways of delivering financial services, a phenomenon commonly referred to as “fintech.” The companies leading the introduction of these new services are often startups or firms outside the traditional financial sector. Regulators have sought to keep pace with the rapid evolution of technologies and services.

This *Asia Focus* examines the impact of fintech on payments and lending in Asia, focusing on the new technologies entering the market, the level of disruption faced by banks, and the regulatory response to these new developments.

I. Fintech and Payments

The processing of payments is one of the most important services provided by the financial system. Safe and timely payments are critical to the normal functioning of the economy. Banks have traditionally provided the channels to move money due to their role in holding deposits and their access to payment networks. Non-bank companies have long participated in the payments system, but their roles have been mostly limited to support functions. These companies typically act as service providers to banks, performing functions such as signing up new merchant accounts and providing back-office services for payments processing.

The traditional model is starting to change in Asia as a large number of non-bank companies begin to offer innovative and disruptive new payment services. The change has been driven by a number of factors. First, high rates of smartphone ownership in Asia and the rapid growth of e-commerce have created opportunities for new types of payment services. Second, Asia is the largest payments market in the world by revenue, making the sector an attractive target for startups and venture capital investment.¹ In 2015, payments recorded a significantly higher number of investment deals than other fintech sectors, with many investments being led by China's large technology firms.² Finally, the recent modernization of many Asian financial systems allows potential leapfrogging of old payments technologies directly to the cutting edge.

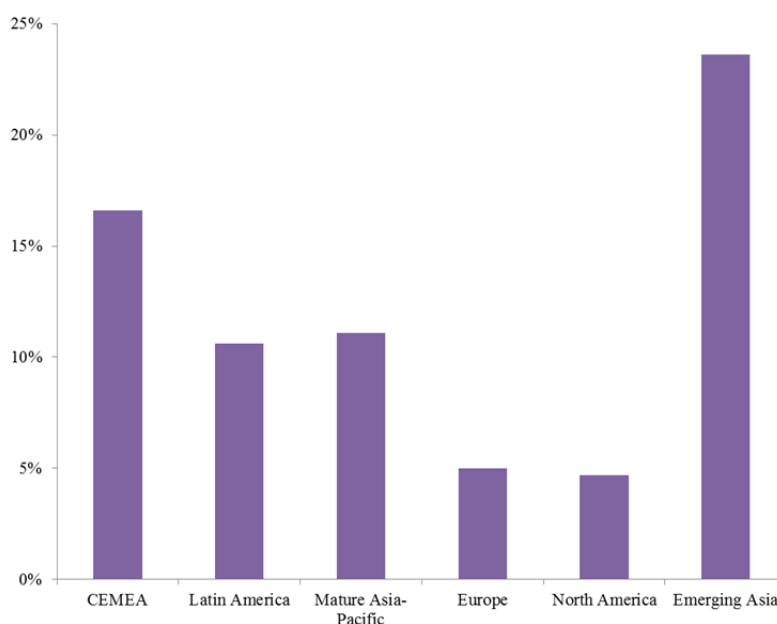
The proliferation of new technologies has the potential to dramatically improve the efficiency of the payments system as well as increase financial access. At the same time, these developments introduce

new risks and potentially make regulation more complex. These dynamics are particularly notable in three key areas: retail payments, blockchain and digital currencies, and remittances.

Retail Payments

While cash is still important in many Asian countries, non-cash payments have grown faster in Emerging Asia than any other region in the world, as shown in *Figure 1*.³ Non-cash retail payments have historically revolved around banks and card networks. Banks issue credit and debit cards that operate under rules set by the card networks, which are typically owned or controlled by a consortium of banks. Settlement of funds then occurs via an interbank payments system operated by a central bank or a non-profit entity. Non-banks function in this system as peripheral service providers to banks.

Figure 1: Non-Cash Payments Growth 2010-2014 (CAGR)



Source: 2016 World Payments Report

The growth of e-commerce and the use of smart phones are driving changes in retail payments. Asia is the world's largest e-commerce market, and online transactions continue to grow quickly with China alone accounting for nearly half of global e-commerce retail transactions.⁴ At the same time, widespread adoption of mobile phones has created new possibilities for retail payments. Utilizing near field communication (NFC), quick response (QR) codes, and other methods, smart phones have emerged as versatile payments tools for both in-person and online transactions. Seizing on these trends, companies from outside the banking industry, including startups and large technology companies, have created new and innovative payment services. As Asian consumers increasingly turn to new methods of payment, these non-bank companies are beginning to play a much larger role in the payments system.

These innovations are bringing about different levels of disruption to retail payments in Asia. Some new payment technologies have been quickly embraced by banks, such as user-friendly apps which allow customers to track and manage their spending and transfer funds between accounts. Other innovations involve cooperation between banks and technology companies. For example, several mobile phone

manufacturers have begun to offer payment services connected to their devices which utilize NFC, QR codes or other methods for contactless payments. Many mobile phone makers offer apps, such as Samsung Pay (Samsung) and Mi Pay (Xiaomi), which allow users to tap their phones or scan a code to pay for goods at checkout. Consumers are drawn to mobile payment services because they offer increased convenience and additional security features. They do not, however, fundamentally alter the underlying structure of the retail payments system because a debit or credit card or a linked bank account is still necessary in order to complete payments.

With other new payment services, the level of disruption can be significantly higher. Many non-bank companies now offer digital wallets that allow customers to store funds and pay for goods and services both online and in-person. Some of the most prominent of examples of digital wallets are those connected to Asia's popular messaging apps, such as China's WeChat and Japan's Line. These widely used apps have embedded digital wallets to facilitate the purchase of products and services without needing to leave the app. Other digital wallets, such as China's Alipay and India's Paytm, were created to facilitate e-commerce for online marketplaces and have since expanded to include in-person payments. Several companies offering digital wallets have now expanded beyond their initial focus on facilitating online payments to offer financial services ranging from insurance to investments products.

While a bank account or bank card is typically required to establish and fund a digital wallet, this has not stopped digital wallet providers from competing with banks and other incumbent players in several areas. For example, several Chinese companies negotiated bilateral agreements with banks to process payments for their digital wallets. These agreements act as an alternative to the national card network, bypassing many of the fees and conditions these networks require. Many digital wallets also allow users to transfer funds to each other within a closed-loop system. Banks only become involved once a user seeks to withdraw funds from the wallet back to their bank account, thereby cutting them out of revenue from transactions within the network. Alipay offers a money market fund that users can load funds into and use to pay for goods and services, siphoning funds away from bank deposits. Paytm has recently established its own specialized payments bank, which will allow the company to accept certain deposits and process digital wallet payments in-house. Digital wallets in Asia continue to rely upon banks in many respects, but at the same time they are increasingly competing with banks and card networks for fee revenue and serving as hubs that offer consumers a range of financial services.

Beyond the impact on the banking system, innovations in retail payments also have the potential to improve financial access for poor and marginalized communities in Asia. The World Bank has identified improving access to payment services as having a significant and positive impact on welfare.⁵ Payment services act as a gateway to broader financial inclusion, offering a first step towards generating a financial history. Financial data from payments can serve as alternatives to traditional credit ratings, opening up critical financial services for poor communities, such as insurance and lending.⁶ Mybank, owned by Alibaba-affiliate Ant Financial, now makes loans to small merchants based on their Alipay transaction history, rather than using a credit rating or collateral.

Third-Party Payments in China

China features Asia's largest and most dynamic payments market. Non-bank companies offering payment services, referred to as third-party payment companies, are licensed by the People's Bank of China (PBoC). Third-party payment companies are permitted to apply for licenses to process three types of payment activities: online/mobile, point of sale, and pre-paid cards. There are currently 269 licensed third-party payment companies in China, the largest of which primarily operate in the online payments area.

Online payments have come to play a significant role within the Chinese economy, accounting for 38 percent of total payments. Two companies, Ant Financial (Alipay) and Tencent (Tenpay) have emerged as the leading firms within China's online payments industry. These two companies together account for more than three-quarters of the entire third-party payments market. Alipay and Tenpay are also aggressively seeking to expand their business outside Mainland China. Both operate in Hong Kong and Taiwan and are in the process of expanding services to a variety of countries frequently visited by Chinese tourists.

The growth of these new payment services has occurred outside the boundaries of the existing regulatory framework in China. Alipay and Tenpay have negotiated bilateral agreements with China's major banks to process these payments instead of using UnionPay, the state-run bank card network. This has led to a considerable amount of friction and UnionPay has urged regulators to curtail these side agreements and the scope of business activities available to third-party payment companies. A new reform currently being implemented by the PBoC will require third-party payment companies to process online payments via a unified clearing house. The new clearing house, operated by the Payment and Clearing Association of China, will bring a greater degree of standardization to China's online payments sector, reduce counterparty risks, as well as facilitate greater oversight by regulators.

Source: Huang, Leping, Joel Ying, and Rex Wu. "China Fintech: Where Is China in the Global Landscape?" Nomura Global Markets Research. July 2016. Accessed October 19, 2016.

Communities in rural areas where access to traditional bank branches is limited are major beneficiaries of the spread of new payment technologies. People in these areas often must use cash to make payments and have difficulty making and receiving remote payments. Mobile phones, however, are common in many of these areas and mobile payment services offer a convenient way to make payments. According to an estimate from McKinsey, over one-third of people in Emerging Asia were unbanked while only 8 percent of the population lacked access to a mobile phone.⁷ The expansion of mobile payment services has the potential to be a major force for improving access to finance in Asia. China's Alipay, for example, claims to have 140 million rural users and has plans to significantly increase its operations in rural areas.⁸

Blockchain and Digital Currencies

Blockchain and digital currencies (which include virtual currencies and crypto-currencies) are technological breakthroughs that have the potential to revolutionize many aspects of the payments system. Blockchain is a type of distributed ledger database that is shared and replicated across multiple entities and synchronized according to a “consensus” mechanism. The applications of blockchain technology for clearing and settlement systems are quite significant. This technology allows peer financial institutions to keep track of transactions and assets without the use of a trusted third-party, such as a clearing house. Blockchain databases are theoretically more secure from tampering and revision than traditional databases. Additionally, blockchain databases can incorporate “smart contracts” into their underlying code, which allows for payments and transfers to automatically be carried out when predetermined conditions are reached.

Related to the development of blockchain technology has been the proliferation of digital currencies. Virtual currencies and crypto-currencies are types of digital currency that can easily be transferred amongst parties, often making use of a blockchain database.⁹ These currencies only exist in virtual form, are not denominated in an existing fiat currency, are not regulated by a central bank, and have their own unit of account.¹⁰ They are sometimes, but not always, convertible to traditional fiat currencies through private exchanges. Bitcoin is the most widely used cryptocurrency and Asia has emerged as the leading center for its use. Two Chinese bitcoin exchanges currently account for an estimated 90 percent of bitcoin trading and 70 percent of bitcoin mining.¹¹

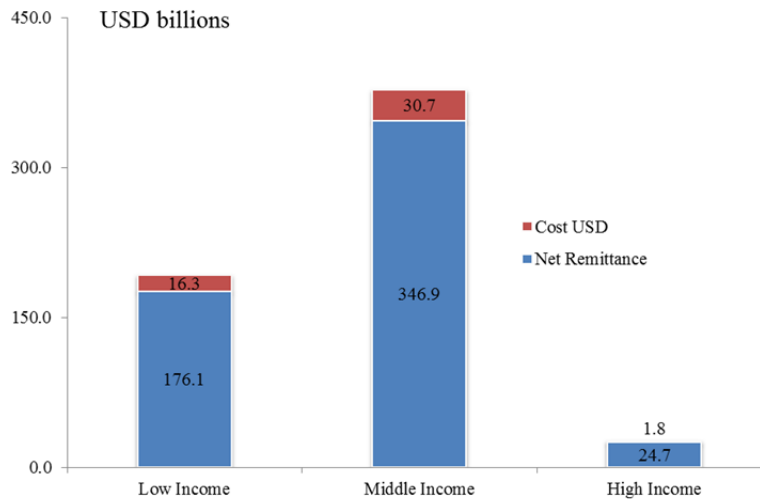
Many financial activities, including trade finance, cross-border payments, syndicated lending, and the transfer of mortgages, take many days, if not longer, to clear and settle. Banks across Asia have been quick to recognize the promise of blockchain and virtual currencies to improve the speed and efficiency of clearing and settlement systems commonly used today. Asian banks have entered into multiple consortiums to experiment with various blockchain applications. For example, in late 2015 Singapore’s DBS and Standard Chartered developed and tested a distributed ledger technology that can be used in trade finance transactions.¹² In August 2016, Japan’s Mitsubishi UFJ Financial Group (MUFG) announced a partnership with Hitachi for a proof of concept project in Singapore that uses blockchain infrastructure for issuing, transferring, and collecting electronic checks.¹³ MUFG has also started to develop its own virtual currency, called MUFG Coin, which will be used for peer-to-peer (P2P) exchange and digital wallet applications.¹⁴ In October 2016, India’s ICICI Bank announced that it had used blockchain to conduct a remittance transaction with another bank as well as track documentation related to international trade.¹⁵ These experimental applications may expand to eventually replace some of the legacy financial infrastructure used by banks for these transactions.

At present, however, most blockchain and virtual currencies in Asia are in the prototype stages and have yet to truly transform the payments system. Nevertheless, the broad range of financial institutions and regulators actively exploring the possibilities of these technologies points to the important role they may come to play in the future.

Remittances

Remittances, the transfer of money by overseas workers back to their home country, are critical to many Asian economies and new technological developments have the potential to dramatically reduce cross-border transactions costs. Remittances exceeded \$600 billion worldwide in 2015, with Emerging Asia receiving roughly \$200 billion, more than any other region. In some countries like India and the Philippines, remittances even exceed foreign direct investment inflows. Remittances provide direct support to poor families across Asia and are often of greater value than domestic social safety net payments or foreign aid contributions. While remittances contribute substantially to Asia's economy, they typically generate high transaction costs that reduce the benefit to recipients. According to World Bank data, on average remittances to East Asia cost 8.5 percent of transaction value as of the second quarter 2016. Remittance fees to South Asia are notably less expensive at 5.6 percent.¹⁶

Figure 2: Total 2015 Remittances and Costs by Destination Country Income



Source: World Bank

Fees on remittances to Asia remain high in part because of the continued dominance of bank-based transfers. Wiring money via a commercial bank has an average total cost of 11.3 percent. In contrast, mobile payment services charge roughly 4.1 percent transaction fees according to World Bank data, more than 50 percent lower than the average rate in East Asia. Some new fintech startups charge even less for international transfers with flat fees of several dollars or lower variable fees of 1-3 percent. These companies are able to offer lower rates to attract new customers by using technology that makes transactions more efficient. Some startups have even explored the idea of using bitcoin for free instantaneous cross-border transactions, though local regulations and the fluctuation of bitcoin exchange rates remain barriers to adoption. A much more basic, but perhaps more effective, form of “remittance fintech” is the pre-paid card. An overseas worker funds a pre-paid card for a friend or family member back home. These cards have average transaction fees of only 1.69 percent and can provide a safe and quick method of transferring funds.

Average remittance fees remain high in part because many Asians lack access to basic infrastructure like payment card readers that make these cheaper options more useful. This underscores the need for broader coordination of financial inclusions efforts as part of economic development to assist the poor. With appropriate infrastructure like card readers in place, fintech can have a major impact improving payments efficiency and saving consumers money even without employing the latest technology.

II. Fintech and Lending

Although Asia is the world's fastest growing financial market with average annual credit increases of 10.2 percent across major economies over the past decade,¹⁷ it also hosts a majority of the world's unbanked population and experiences persistent gaps in lending to households and small- and medium-sized enterprises (SMEs).¹⁸ Particularly in areas like consumer and SME finance, where large commercial banks are less active, fintech firms are growing their market share. Other trends like the growth of e-commerce provide a natural opportunity for nimble technology firms to cross-sell new financial services to their customers.

According to a joint report on alternative finance benchmarking by the Cambridge Centre for Alternative Finance (CCAF), the University of Sydney Business School, and Tsinghua University Graduate School, fintech-based lending exceeded \$102.8 billion in the Asia-Pacific region in 2015. As with payments, China has been the main driver of fintech lending growth in Asia, representing nearly 99 percent of the volume.¹⁹

Fintech lending encompasses a broad range of alternative funding models, including marketplace lending and balance sheet lending.²⁰ Marketplace lending, also commonly referred to as peer-to-peer lending, is the most prominent in Asia, and involves online platforms that connect individual and institutional investors with borrowers. Balance sheet lenders also build online lending platforms but invest with their own capital—this form of lending is common in the United States but has been more limited in Asia.²¹ The following section focuses on marketplace lending as it accounts for the vast majority of fintech lending activities in Asia.

Marketplace Lending

The great attention received by marketplace lending in part reflects the prospect of disintermediation of traditional institutions through genuine peer-to-peer lending. In practice, many marketplace lending platforms also slice and dice their loan portfolio into structured financial products to sell to investors. The key difference between marketplace lending and traditional lending is the role investors play directly funding the loans.²² Unlike in the United States, where many marketplace loans are purchased directly by institutional investors, individual investors provide a significant portion of funding for the sector in Asia, particularly in China.

Marketplace lending represents nearly 90 percent of fintech lending in China and 60 percent in the rest of Asia.²³ China accounts for the vast majority of marketplace lending within Asia. Estimates of the size of China's marketplace lending at year end 2015 ranged from \$72 billion to \$98 billion.²⁴ By any measure, China's marketplace loan volume dwarfs similar activity in the United States, Europe, and the rest of the Asia-Pacific (see *Table 1* below).

Table 1: Marketplace Lending in Major Markets, end-2015

Country	Outstanding Loans (USD billions)
China	72-98
United States	14-29
Europe	4
Rest of Asia	0.7

Sources: Wangdaizhijia, Cambridge Centre for Alternative Finance et. al.,²⁵ Nomura Research

To date, marketplace lending in Asia has mostly been consumer focused. In China, unattractive returns on bank deposits and stock market volatility have driven savers towards alternative investment options, such as money market funds and wealth management products. Firms like Ant Financial and Tencent initially focused on payments, but eventually branched into marketplace lending, taking advantage of their rapidly growing funding from payment accounts and establishing a niche market in consumer finance. Ant Financial, frequently ranked as the most valuable fintech firm by outside analysts, now offers marketplace loans as part of a growing array of financial products.

China's consumer-focused marketplace loans now fund a wide range of activities from home and auto purchases to education. The funding comes primarily from individual retail investors, who represent an estimated 90 percent of all investment.²⁶ In part, the dominance of individual investors reflects Chinese marketplace lenders' early role as an alternative savings vehicle to traditional bank deposits. This contrasts with the rest of Asia, where 63 percent of financing comes from institutional investors, with similar majorities of institutional investment in other markets like the United States.²⁷

Businesses loans in Asia have composed a larger share of total marketplace lending compared to other regions. In the case of China, although consumer marketplace lending is more prominent, an estimated 20-40 percent of loans still go to businesses.²⁸ In the rest of Asia, business loans actually represent the majority of marketplace lending. Given the limited financial inclusion of SMEs in Asia, there is likely ample room for further growth (see "*SME Finance and the Role of Alternative Data in Credit Scoring*" text box below). Marketplace lending to businesses in Asia ex-China is largely funded by individual investors, unlike parallel consumer lending.²⁹

Despite its rapid growth, marketplace lending accounts for a small proportion of overall credit extension in Asia. In China, marketplace lending represented a modest 3 percent of total credit outstanding as of end-2015 and just under 1 percent of GDP.³⁰ Elsewhere in Asia, marketplace lending is less significant (see *Table 2*), but experienced dramatic growth after 2013.³¹

Table 2: Marketplace Lending’s Small Footprint

	2015 Market Volume (USD millions)	% of GDP
China	100,017	0.92
Japan	360	0.01
Australia	348	0.03
New Zealand	268	0.15
Korea	41	0.00
India	40	0.00
Singapore	40	0.01
Taiwan	14	0.00
Hong Kong	9	0.00

Sources: CCAF, World Bank, author calculations

Financial Institutions and Fintech Lending

Traditional banks are increasingly involved in fintech lending, primarily through direct investment in marketplace lending platforms and, in some cases, balance sheet lending. Ping An Insurance, a major Chinese financial conglomerate and owner of Ping An Bank, is the most prominent traditional financial services firm to enter the space through its subsidiary Lufax, which launched in 2012 and is the second largest marketplace lender in China. The fact that Bank of China and China Minsheng Bank are also investors in Lufax likely reflects traditional banks’ view of marketplace lending as both an opportunity and competitive threat.³² China’s largest bank, Industrial & Commercial Bank of China, is experimenting in the balance sheet lending space: in 2015, it reported that it had already issued RMB 1.6 trillion in loans to SMEs using a new online platform.³³

The role of in-person interactions with customers speaks to the potential benefits of traditional institutions partnering with fintech firms. Yirendai, another leading Chinese marketplace lender, reported that 67 percent of its loans were acquired through “offline” channels, physical offices where customer loans are originated.³⁴ Meanwhile, Lufax’s CEO has emphasized the value of in-person interaction with borrowers as part of fraud prevention.³⁵

SME Finance and the Role of Alternative Data in Credit Scoring

SME financing may be the most promising area for fintech lending. SMEs accounted for 42 percent of Asia's GDP in 2015 yet received only 18.7 percent of Asian bank lending according to the Asian Development Bank.

Alternative finance lending may have even greater potential for SMEs in Asia because data sources captured by non-financial firms can be used by lenders to support credit risk analysis even when national credit bureaus are still limited. For example, Asia's e-commerce firms are leveraging information on SME sales and payments activity to assess their ability to repay a loan. Lenders are also using data from service providers like utilities and telecommunications companies to confirm if a borrower has a history of paying bills on time. This data also makes it possible for a lender to corroborate basic elements of a loan application more quickly and cheaply, such as verifying a small business's place of operations through geolocation data obtained from the entrepreneur's telecommunications company.

A number of regulatory and legal concerns come with the use of alternative data sources by lenders. Among the most important considerations are customer protection and privacy: laws, regulations, and supervision should ensure that data is used with the consent of customers and, equally important, that it does not promote intentional or unintentional discriminatory treatment in financing decisions that disadvantage certain populations. Consumers should also have the right to review data for accuracy and correct errors, while lending decisions should be transparent to allow consumers to understand which behaviors impact their credit worthiness, giving them the ability to adjust.

From a bank supervisor's perspective, another risk is that new models based on alternative data have not been tested during a downturn in the credit cycle. Even if technology can improve credit risk management, lenders in much of Asia will still have only limited recourse to seize assets if loans go bad—a challenge faced even by traditional financial institutions in jurisdictions where legal protection of investor rights is weak. The dynamic has already encouraged some unscrupulous fintech firms to use coercion to secure repayment, raising further legal issues.

The use of alternative data from non-financial firms, particularly those with strong market power, also raises competition and anti-trust issues. Traditionally, national credit bureaus share credit scores with other financial institutions, but the development of alternative sources for scoring (*e.g.* e-commerce data) could encourage dominant players to create closed networks with data access limited to their own fintech affiliates, undermining the network effects required to stimulate SME finance. The ideal approach should welcome all stakeholders to share and collaborate in a more robust national credit scoring system that incorporates both traditional and alternative data.

Sources: Asian Development Bank. "[Let's scale up, vary access to SME finance to boost Asia's growth, cross-border trade.](#)" September 21, 2015; Morgan Stanley. "Global Marketplace Lending: Disruptive Innovation in Financials." May 19, 2015.

III. Fintech Risks and Regulatory Treatment

The rapid rise of fintech has not been without incident. New fintech entrants may offer more convenient technological services for borrowers. However, they also create risks to financial stability and consumer protection and the sheer number of new entrants makes regulatory oversight a challenge.

Retail Payments

Many of the new entrants in the payments system come from outside the financial sector and are not familiar with the complex anti-money laundering rules that payment companies must follow. Additionally, many new payment companies are from the technology industry, where experimentation with new products is common and business failures are not overly stigmatized. The norms of the payments industry are a stark contrast, as both consumers and regulators have little tolerance for payments disruption. These factors represent substantial hurdles for startups entering the payments industry.

Regulators in Asia have been generally supportive of innovation in retail payments while emphasizing the need to control risks. In December 2015, the Thai government released the National e-Payment Master Plan, which seeks to create an integrated infrastructure for electronic payments, including mobile payments and digital wallets, and reduce the use of cash in the economy. In August 2016, the Monetary Authority of Singapore (MAS) released the “Singapore Payments Roadmap” which outlined regulatory changes that help promote innovations in the payments sector.³⁶

At the same time, Asian regulators have sought to put in place safeguards to ensure that these new payment services do not become conduits for fraud, money laundering, or terrorist financing. In November 2015, the Hong Kong Monetary Authority (HKMA) announced new regulations on digital wallets that require operators to obtain a license, adhere to anti-money laundering standards, and be subject to regulatory examination. In December 2015, the People’s Bank of China announced new regulations on non-bank payment accounts that required stricter identification requirements for customers and limits on the amount of total payments in a year. Asian regulators are likely to continue their generally supportive approach towards retail payment innovations, while at the same time putting in place new protections as issues arise.

Blockchain and Digital Currencies

Regulators have reacted to blockchain and digital currency technologies with a mixture of interest and skepticism. Several Asian governments have expressed concern that crypto-currencies, bitcoin in particular, are susceptible to being used for the drug trade, money laundering, and the evasion of capital controls. This concern stems from the ability of users to remain anonymous when transacting in many crypto-currencies. In fact, law enforcement agencies in several Asian countries have taken direct action against criminal groups using bitcoin. In December 2013, the Indian Enforcement Directorate and Income Tax Department raided bitcoin operators accused of violating foreign exchange regulations.³⁷ In August 2015, Japanese authorities arrested the founder of Mt. Gox, a large bitcoin exchange based in Tokyo that collapsed in 2014.³⁸ In May 2016, authorities in Taiwan broke up a money laundering ring that utilized bitcoin to hide transactions.³⁹

Many Asian regulators have declared that bitcoin and other crypto-currencies would not be recognized as legal tender and cautioned the public over potential risks associated with investing in them. As of December 2013, the PBoC has prohibited Chinese financial institutions from conducting business in bitcoin, buying or selling bitcoin, or offering bitcoin financial products. The Chinese central bank took further action in January 2017 to rein in bitcoin speculation by requiring bitcoin trading platforms to implement a transaction tax and prohibit margin lending. In May 2016, the Japanese Parliament passed new rules requiring bitcoin exchanges to register with the Financial Service Agency and submit to regular inspection.⁴⁰

Not all of the regulatory attention towards blockchain and digital currencies in Asia has been negative. Many regulators have stated that blockchain databases have potentially significant benefits for financial supervision because all transactions are openly recorded and, if users are properly identified, traceable. The HKMA commissioned a research project to study the potential benefits and risks of blockchain and in November 2016 released a whitepaper on the topic.⁴¹ In October 2016, China's Ministry of Industry and Information and an industry group released a whitepaper on the applications of blockchain and proposals for pilot projects involving the technology.⁴² In December 2016, the Bank of Japan announced a partnership with the European Central Bank to launch a joint research project to study the use of distributed ledger technology for market infrastructure.⁴³

Asian regulators are beginning to experiment with digital currencies and blockchain themselves. In November 2016, Singapore's MAS announced that it had initiated a proof of concept project with R3, a global bank consortium, to use blockchain to facilitate interbank payments.⁴⁴ PBoC officials have discussed a plan whereby the central bank would issue digital currency to banks that would then provide deposit and withdrawal services to the general public.⁴⁵ This approach could lead to the eventual replacement of paper money while maintaining the critical role of the central bank and commercial banks in the circulation of money throughout the financial system. In December 2016, the PBoC successfully completed a trial of the digital currency with several financial institutions using it to transact and settle bank acceptance bills.⁴⁶

Marketplace Lending

To date, developments in fintech-based lending have been supported by regulatory environments that are either permissive—with lighter scrutiny on new entrants than traditional financial firms—or absent given the nascent stage of fintech development. The regulation of fintech-based lending is inconsistent across Asia, likely due to the still limited development of the space beyond startups that represent a tiny slice of the financial system. Regulators in China have so far offered the most detailed regulations for fintech-based lending due to the more rapid development of the sector within its borders, while other Asian regulators experiment with more limited frameworks that promote innovation.

In China, the regulatory focus has been on risk management, fraud prevention, and consumer protection.⁴⁷ Chinese regulators issued comprehensive regulations for marketplace lenders in July 2016, which prohibit marketplace lenders from offering wealth management products or asset-backed securities.⁴⁸ The rules mandate that firms have traditional banks serve as custodians for investor funds, while also establishing limits for both individuals and businesses who lend and borrow on the platforms. They also prohibit marketplace lenders' offer of guarantees to investors, a common, if unscrupulous marketing tactic.

In October 2016 China’s State Council issued additional rules for internet financing, banning equity crowdsourcing funds from investing in bonds (as opposed to equity in unlisted companies) and prohibiting the financing of mortgage down payments by any online lenders. One challenge for Chinese regulators is the highly fragmented nature of the marketplace lending sector, with no single firm controlling even 10 percent of market share. By comparison, prominent U.S. marketplace lender Lending Club represented over half the U.S. market in 2015.⁴⁹ The lack of dominant firms makes any single firm’s failure less systemically important, but the large number of small players makes it more difficult to regulate the nascent sector.⁵⁰

Creating a Broader Regulatory Framework

The most proactive regulation of fintech activity has come in areas where new entrants are already having a disruptive impact, as with retail payments innovation across Asia and marketplace lending in China. Still, a number of questions remain to be answered as regulators respond to fintech developments, particularly as non-traditional firms operate across multiple areas of the financial system. Should firms be regulated according to charter type (e.g. bank or payment operator) or the activity they engage in?⁵¹ Who among competing authorities should take the lead role in regulation among those for payments, banks, securities firms, or even telecommunications? Should regulators implement broad frameworks to stimulate innovation by new entrants or encourage existing players to experiment?

In the face of these questions and the ongoing development of fintech, Asian regulators are attempting to clarify the application of existing regulations to non-bank startups and promote new frameworks to encourage innovation among both traditional and non-traditional firms while managing risk. Several Asian regulators including the MAS, HKMA, Bank Negara Malaysia, Taiwan’s Financial Supervisory Commission, the Bank of Thailand, Indonesia’s Financial Services Authority, and the Australian Securities and Investments Commission have announced new regulatory “sandbox” approaches that will allow them to tailor regulations and supervision of fintech, in some cases relaxing standards to support small-scale innovation that does not pose material risks to consumers or financial stability.⁵² The Reserve Bank of India also has formed a committee to study a new fintech regulatory framework, with some market participants speculating a sandbox approach is also in the works.⁵³

As an example of how sandbox requirements may be tailored, MAS issued additional guidelines in November 2016. The authority will take a risk-based approach to relaxing standards related to asset maintenance, board composition and management experience, capital adequacy, technology risk management, and liquidity. Some mandatory requirements, however, will be applied equally to both startups and banks regardless of other sandbox exceptions, including those related to confidentiality of customer information, custody of customer assets, as well as anti-money laundering and counter-terrorist financing policies.⁵⁴

Although these sandboxes are still in their early stages of development and implementation, distinctions in approach are already apparent. Singapore and Australia intend to allow all fintech players—traditional financial institutions and startups—to participate. The two regulators have also agreed to facilitate bilateral cross-border fintech activity.⁵⁵ Meanwhile, Hong Kong’s framework is specifically designed for existing banks to innovate outside of the normal prudential supervisory regime. The HKMA will approve

banks' applications to test new fintech services within the sandbox, reviewing the scope of business and measures to protect consumers and manage risk.

IV. Conclusion: Integration or Competition with Banking?

Asia is currently experiencing a wave of fintech-driven change and activity. Across the region, a surge of startups and non-banks are entering the financial sector and competing with banks. At the same time, banks are adapting by improving their own technology and entering into partnerships with startups and technology companies. The result has been an evolving mix of cooperation and competition between traditional banks and these new non-banks entering the banking sector.

Two core areas of banking, namely payments and lending, have experienced the greatest amount of disruption. In both areas, startups and non-banks have entered the market with services that compete with banks and put downward pressure on profits. Even in business lines where these new competitors do not yet have a large share of the market, banks have started to adapt in order to ward off the competitive threat. Driven by this pressure, banks across Asia now seem more open to adopting new technologies and systems than ever before.

Financial regulators in Asia have sought to encourage financial innovation while containing the risks associated with these new technologies. Many regulators recognize that financial technology has the potential to create financial systems that are more efficient, diverse, and inclusive. At the same time, regulations will need to be continually revised in order to strike a balance between rapid change, consumer protection, and financial stability.

Endnotes

¹ Bansal, Sukriti, Phil Bruno, Florent Istace, and Marc Niederkorn. "How the Payments Industry Is Being Disrupted." McKinsey & Company. November 2015. Accessed October 19, 2016. <http://www.mckinsey.com/industries/financial-services/our-insights/how-the-payments-industry-is-being-disrupted>.

² "Fintech Investment in Asia-Pacific Set to at Least Quadruple in 2015." Accenture FinTech Innovation Lab. November 2015. Accessed October 19, 2016. https://www.accenture.com/acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_12/Accenture-Fintech-Innovation-Lab-Asia-Pacific.pdf.

³ Emerging Asia includes China, Hong Kong, India, and other emerging Asian countries.

⁴ "Worldwide Retail Ecommerce Sales Will Reach \$1.915 Trillion This Year." EMarketer. August 2016. Accessed October 19, 2016. <https://www.emarketer.com/Article/Worldwide-Retail-Ecommerce-Sales-Will-Reach-1915-trillion-This-Year/1014369>.

⁵ "2014 Global Financial Development Report: Financial Inclusion." The World Bank. September 2013. Accessed October 19, 2016. http://siteresources.worldbank.org/EXTGLOBALFINREPORT/Resources/8816096-1361888425203/9062080-1364927957721/GFDR-2014_Complete_Report.pdf.

⁶ One additional barrier to financial inclusion via mobile phones is the persistent gender gap in phone ownership in countries like India. See: Bellman, Eric and Malhotra, Aditi. "Why the Vast Majority of Women in India Will Never Own a Smartphone." *Wall Street Journal*. October 13, 2016. Accessed November 17, 2016. <http://www.wsj.com/articles/why-the-vast-majority-of-women-in-india-will-never-own-a-smartphone-1476351001>

⁷ Ip, Chris, Pine Kyaw, and Akash Lal. "Payments in Asia: At the Vanguard of Digital Innovation." McKinsey on Payments. October 2015. Accessed October 19, 2016. <http://www.mckinsey.com/industries/financial-services/our-insights/payments-in-asia-at-the-vanguard-of-digital-innovation>.

⁸ Wildau, Gabriel. "Ant Financial Raises \$4.5bn in Record Fintech Private Placement." *The Financial Times*. April 2016. Accessed October 19, 2016. <https://www.ft.com/content/366490b4-0b7d-11e6-9cd4-2be898308be3>.

⁹ A crypto-currency can be defined as a type of virtual currency that makes use of cryptography for security.

¹⁰ He, Dong, Karl Habermeier, and Ross Leckow, et al. “Virtual Currencies and Beyond: Initial Considerations.” International Monetary Fund. January 2016. Accessed October 19, 2016. <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf>. In addition to virtual and crypto-currencies, Asia has also seen experiments with digital fiat currencies, which are issued by central banks and denominated in domestic currency.

¹¹ Chen, Lulu and Yuji Nakamura. “After 4,400% Surge, Bitcoin’s Fate Hinges on Huge Chinese Miners.” Bloomberg. July 2016. Accessed October 19, 2016. <https://www.bloomberg.com/news/articles/2016-07-06/after-4-400-surge-bitcoin-s-fate-hinges-on-huge-chinese-miners>.

¹² Chanjaroen, Chanyaporn and Darren Boey. ““StanChart, DBS’s Trade Finance Distributed Ledger: How It Works.”” Bloomberg. May 2016. Accessed October 19, 2016. <https://www.bloomberg.com/news/articles/2016-05-22/stanchart-dbs-s-trade-finance-distributed-ledger-how-it-works>.

¹³ “Hitachi and BTMU Start Proof of Concept Testing for Utilizing Blockchain Technology for Check Digitization in Singapore.” MUFG. August 2016. Accessed October 19, 2016. <http://www.bk.mufg.jp/global/newsroom/news2016/pdf/newse0822.pdf>.

¹⁴ “Bank of Tokyo-Mitsubishi Says Testing Its Own Digital Currency.” Reuters. June 2016. Accessed October 19, 2016. <http://www.reuters.com/article/us-bitcoin-bank-of-tm-ufj-idUSKCN0Z02KE>.

¹⁵ Anand, Nupur. “ICICI Bank First Indian Lender to Execute Blockchain Transaction.” Business Standard. October 2016. Accessed October 19, 2016. http://www.business-standard.com/article/pti-stories/icici-bank-executes-india-s-first-transaction-on-blockchain-116101200519_1.html.

¹⁶ World Bank. Remittance Prices Worldwide. June 2016. Accessed October 19, 2016. https://remittanceprices.worldbank.org/sites/default/files/rpw_report_june_2016.pdf

¹⁷ Author calculations based on Bank for International Settlements’ Credit to Non-financial Private Sector series from reporting Asian countries (China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Singapore, and Thailand).

¹⁸ Recent financial inclusion efforts in India may have reduced Asia’s share of the global unbanked to a mere plurality. See: 2014 World Bank Global Findex statistics. <http://www.worldbank.org/en/programs/globalfindex>

¹⁹ Cambridge Centre for Alternative Finance, the University of Sydney Business School, and Tginshua University Graduate School. *Harnessing Potential: The Asia-Pacific Alternative Finance Benchmarking Report*. March 2016. Accessed October 18, 2016. https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/harnessing-potential.pdf. The report defines alternative finance as “the provision of finance to individuals and businesses through alternative channels via online marketplaces outside of the banking system.” We use a similar definition of fintech-based lending as the provision of finance through digital marketplaces outside the formal banking system.

²⁰ Another category of fintech-based funding is crowdfunding, a decentralized model where individual investors directly fund a given borrower without the involvement of a traditional exchange, typically receiving an equity stake or other rewards like the first, limited release of a new product. Thus far, crowdfunding platforms—which connect investors directly to issuers without the use of a traditional exchange—have been limited in Asia. Equity-based crowdfunding only raised roughly \$1 billion across the Asia-Pacific in 2015. Including so-called rewards-based crowdfunding—where an investor receives goods or services for her investment—the total rises to roughly \$2 billion.

²¹ Even in the United States, many such balance sheet lenders originate loans for eventual sale into the secondary market.

²² Deposit holders at a traditional bank fund that bank’s loans, but the disintermediation between their deposit and the funded loan is generally more complex.

²³ Op. cit. *Harnessing Potential*

²⁴ Low estimate from Online Lending House (Wangdaizhijia.com), a website that tracks China’s P2P lending sector. High estimate op. cit. *Harnessing Potential*. An alternative estimate from Guotai Junan Wealth Management finds approximately \$150 billion in outstanding liabilities of wealth management products that invest in P2P loans. See: Lin, Caiyi. “China’s RMB 80 trillion Asset Management Market.” Laohu Caijing. May 24, 2016. (In Chinese). Accessed January 12, 2017. <http://www.laohucaijing.com/news/117688/>

²⁵ European estimate from *Sustaining Momentum: The 2nd European Alternative Finance Industry Report*. Cambridge Centre for Alternative Finance. September 2016. U.S. estimate *Breaking New Ground: The Americas Alternative Benchmarking Report*. Cambridge Centre for Alternative Finance and the Polsky Center for Entrepreneurship and Innovation. April 2016.

²⁶ Op. cit. *Harnessing Potential*

²⁷ Banjo, Shelly. “Wall Street is hogging the peer-to-peer lending market.” *Quartz*. March 4, 2015. Accessed October 19, 2016. <http://qz.com/355848/wall-street-is-hogging-the-peer-to-peer-lending-market/>.

²⁸ Op. cit. *Harnessing Potential*; Association of Charter Certified Accountants. “The rise of peer-to-peer lending in China: An overview and survey case study.” 2015. Accessed January 12, 2017. http://www.accaglobal.com/content/dam/ACCA_Global/Technical/manage/ea-china-p2p-lending.pdf. Accessed January 12, 2017.

²⁹ Ibid.

³⁰ Chorzempa, Martin. "P2P Series Part 1: Peering Into China's Growing Peer-to-Peer Lending Market." Petersen Institute for International Economics. June 27, 2016. Accessed October 19, 2016. <https://piie.com/blogs/china-economic-watch/p2p-series-part-1-peering-chinas-growing-peer-peer-lending-market>.

³¹ Op. cit. *Harnessing Potential*

³² A January 2016 private funding valued Lufax at \$18.5 billion and included other prominent financial sector investors like the Bank of China and China Minsheng Bank. See: Zhu, Julie and Barreto, Elzio. "China's largest P2P lender Lufax taps four banks for Hong Kong IPO." *Reuters*. September 23, 2016. Accessed October 18, 2016. <http://www.reuters.com/article/us-ping-an-ins-lufax-ipo-idUSKCN11TOTB>.

³³ Zhang Ye. *Global Times*. "ICBC launches Internet finance brand." March 24, 2015. Accessed November 18, 2016. <http://www.globaltimes.cn/content/913692.shtml>.

³⁴ These branches are run by Creditease, the parent company of Yirendai. See: Yirendai Ltd. (2015). *Form 20-F 2015*. Accessed November 18, 2016. <http://yirendai.investorroom.com/index.php?s=127>.

³⁵ Gibb, Gregg and Jones, Jason. "Fireside Chat with Gregg Gibb and Jason Jones." Lendit USA 2015. Podcast audio. April 2015. <http://www.lendit.com/usa/2015/podcasts/fireside-chat-with-gregg-gibb-jason-jones>. Accessed November 18, 2016

³⁶ "Singapore Payments Roadmap: Enabling the Future of Payments." KPMG. August 2016. Accessed October 19, 2016. <https://home.kpmg.com/sg/en/home/insights/2016/09/singapore-payments-roadmap-enabling-the-future-of-payments.html>.

³⁷ "First Time in the Country, ED Raids a Bitcoin Seller in Ahmedabad." DNA India. December 2013. Accessed October 19, 2016. <http://www.dnaindia.com/india/report-first-time-in-the-country-ed-raids-a-bitcoin-seller-in-ahmedabad-1941187>.

³⁸ Lewis, Leo. "Former Mt Gox Chief Mark Karpelès Arrested in Japan." *Financial Times*. August 2015. Accessed November 2, 2016. <https://www.ft.com/content/7c719a8c-3835-11e5-8613-07d16aad2152>.

³⁹ "Bitcoin Money Laundering Ring Busted, Say Detectives." *The China Post*. May 2016. Accessed October 19, 2016. <http://www.chinapost.com.tw/taiwan/national/national-news/2016/05/08/465515/Bitcoin-money.htm>.

⁴⁰ "Diet OKs Bill to Regulate Virtual Currency Exchanges." *The Japan Times*. May 2016. Accessed October 19, 2016. <http://www.japantimes.co.jp/news/2016/05/25/business/diet-oks-bill-regulate-virtual-currency-exchanges/#.V-7iEPkrKM8>.

⁴¹ "Whitepaper On Distributed Ledger Technology." Hong Kong Monetary Authority. November 2016. Accessed November 14, 2016. http://www.hkma.gov.hk/media/eng/doc/key-functions/financial-infrastructure/Whitepaper_On_Distributed_Ledger_Technology.pdf.

⁴² Wong, Joon Ian. "China's Tech Giants Will Shape International Blockchain Standards, with Beijing's Backing." *Quartz*. October 20, 2016. Accessed October 25, 2016. <http://qz.com/813248/chinas-tech-giants-will-shape-international-blockchain-standards-with-beijings-backing/>.

⁴³ "ECB and the Bank of Japan Launch a Joint Research project on Distributed Ledger Technology." *The Bank of Japan*. December 07, 2016. Accessed January 30, 2017. https://www.boj.or.jp/en/announcements/release_2016/rel161207a.htm/.

⁴⁴ "MAS, R3 and Financial Institutions Experimenting with Blockchain Technology." Monetary Authority of Singapore. November 2016. Accessed November 16, 2016. <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/MAS-experimenting-with-Blockchain-Technology.aspx>.

⁴⁵ Fan, Yifei. "On Digital Currencies, Central Banks Should Lead." *Bloomberg*. September 2016. Accessed October 19, 2016. <http://www.bloomberg.com/view/articles/2016-09-01/on-digital-currencies-central-banks-should-lead>.

⁴⁶ Zhang, Yuzhe and Wei Han. "PBOC Set to Be First to Issue Digital Bills." *Caixin*. January 25, 2017. Accessed January 30, 2017. <http://www.caixinglobal.com/2017-01-26/101049103.html>.

⁴⁷ Most famously Ezubao, an online lender, made headlines for an alleged Ponzi scheme that lost investors nearly \$8 billion. One survey of online lenders by Wangdaizhijia identified roughly 800 marketplace lenders either failed or suffered liquidity issues in 2015. As the China Banking Regulatory Commission noted at the time, there were 2,612 Chinese P2P platforms operating "normally", but over 1,000, or about 30%, had "problems." "China Lays Out Rules for Peer-to-Peer Lending Platforms." *Wall Street Journal*. December 28, 2015. Accessed February 15, 2017. <https://www.wsj.com/articles/china-lays-out-rules-for-peer-to-peer-lending-platforms-1451296090>

⁴⁸ In China, wealth management products are similar to mutual funds, offering investors a diversified basket of securities.

⁴⁹ Op. cit. Nomura Research.

⁵⁰ Indeed, as of the announcement of the regulations, only 2 percent of China's P2P lending platforms met the requirement of using banks as custodians for client funds, for example. See: Wang, Fan. "Majority of P2Ps fail to meet fund regulators' depository requirement." *ECNS Wire*. July 22, 2016. Accessed January 26, 2017. <http://www.ecns.cn/cns-wire/2016/07-22/219456.shtml>

⁵¹ For example, should banks and non-banks receive the same regulatory treatment if they both engage in consumer lending? Should regulators differentiate according to other characteristics such as the firm's source of funding?

⁵² This approach is inspired in part by the United Kingdom's Financial Conduct Authority previously announced framework.

⁵³ "RBI to set up committee to explore fintech in India." Economic Times of India. June 8, 2016. Accessed November 18, 2016. <http://economictimes.indiatimes.com/news/economy/policy/rbi-to-set-up-committee-to-explore-fintech-in-india/articleshow/52632996.cms>

⁵⁴ Giouw, Jolie and Shepherd, Alexander. "Monetary Authority of Singapore issues FinTech regulatory sandbox guidelines." Bird & Bird. November 21, 2016. Accessed January 12, 2016. <http://www.lexology.com/library/detail.aspx?g=756750ff-6553-453d-9064-249e339eab62>.

⁵⁵ Singapore also recently signed an agreement with South Korea to cooperate on joint fintech research. See: "Singapore and South Korea sign cooperation agreement in FinTech." Monetary Authority of Singapore. October 24, 2016. Accessed November 18, 2016. <http://www.mas.gov.sg/news%20and%20publications/media%20releases/2016/singapore%20and%20south%20korea%20sign%20cooperation%20agreement%20in%20fintech.aspx>